







OWNER:  شرکت سست و سویی توستر ایرانیاان (سهایی نایان)	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT						EPC CONTRACTOR:  Chagalesh-Enerchimi-Steam Joint Venture BUPC-MEG PLANT PROJECT		
MC :  شرکت سست و سویی توستر ایرانیاان سهایی نایان	CALCULATION & DATA SHEET OF CONTROL VALVES / ON-OFF VALVES FOR EMERGENCY INSTRUMENT AIR COMPRESSOR						 Netherlands		
Owner Document Number: 17811-45B	Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
	BU	20	VD	303	IN	DSH	0091	Rev.: 07	Page 1 of 17

CALCULATION & DATA SHEET OF CONTROL VALVES / ON-OFF VALVES FOR EMERGENCY INSTRUMENT AIR COMPRESSOR






 شرکت سست و سویی توستر ایرانیاان سهایی نایان	 Chagalesh-Enerchimi-Steam Joint Venture BUPC-MEG PLANT PROJECT	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT
Document Review		
Issue Purpose:	AB	
Result Code: AP,AN,CM,RE,NC	AP	
Next Status : IFC,IFA,IFI,AFC,AB	-	
Responsible Department	MECHANICAL	
Commented Date	Jun.27,2023	
Approval or review hereunder shall not be construed to relieve Vendor / Subcontractor of his responsibilities and liability under the contract.		

07	26/06/2023	As Built	TvT	KP	JR	
06	05/09/2022	Approved for Construction	TvT	KP	JR	
05	13/07/2022	Approved for Construction	TvT	KP	JR	
04	01/06/2022	Approved for Construction	TvT	KP	LdM	
03	07/02/2022	Approved for Construction	TvT	KP	LdM	
02	07/01/2022	Approved for Construction	TvT	KP	LdM	
01	25/10/2021	Approved for Construction	TvT	KP	LdM	
01	20/09/2021	For approval	TvT	KP	LdM	
00	25/02/2021	For approval	TvT	KP	LdM	
Rev	Date	Purpose of Issue	Prepared	Checked	Approved	AC Code
					Class: 1	Phase: P

Doc. No : 17811-45B
 Rev. No. : 06
 P&ID. No : BU-20-VD-303-PR-WG-0066
 Page : 3 of 17



INDEX			
No.	Device	Tag Number	Page
1	Hand Ball Valve	No Tag.no.: Qty 1 pc	4
2	Hand Ball Valve	No Tag.no.: Qty 1 pcs	5
3	Hand Ball Valve	No Tag.no.: Qty 2 pcs	6
4	Hand Ball Valve	No Tag.no.: Qty 2 pcs	7
5	Hand Ball Valve	No Tag.no.: Qty 7 pcs	8
6	Pneumatic Actuated Valve	XV-71102	9
7	Pneu.Act. Valve calculation	calculation	10
8	Hand Globe Valve	No Tag.no.: Qty 1 pcs	11
9	Pressure Reducing Valve	No Tag.no.: Qty 1 pcs	12
10	Pressure Control Valve	PV-71101	13
11	Pressure Control Valve	calculation	14/15
12	Check Valve	No Tag.no.: Qty 2 pcs	16
13	Check Valve	No Tag.no.: Qty 1 pcs	17
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			
51			
52			
53			
54			
55			

Notes:

07	TT	26-6-2023	As Built	CALCULATION & DATA SHEET OF CONTROL VALVES / ON-OFF VALVES FOR EMERGENCY INSTRUMENT AIR COMPRESSOR 	   
06	TT	5-9-2022	For Construction		
05	TT	13-7-2022	For Construction		
04	TT	1-6-2022	For Construction		
03	TT	7-2-2022	For Construction		
02	TT	7-1-2022	For Construction		
01	TT	25-10-2021	For Construction		
Rev	By	Date	Description	Sheet	3 of 17
				Based on P&ID	rev. 06



GENERAL	1	Tag Number		No Tag.no.: Qty 1 pc	
	2	Service		Hand Ball valve	
	3	P&ID No.		BU-20-VD-303-PR-WG-0066	
	4	Location		Compressor Inlet	
	5	Line/equip. No.		2"-INA-7001-511C(N)	
	6				
	7				
PROCESS CONDITIONS	8	Fluid	State	Air	Dry Gas
	9	Pressure	Norm. Max.	8 Bar(a)	8,5 Bar(a)
	10	Temperature	Norm. Max.	AMB	65°C
	11	Design	Press. Temp.	13.5 Bar(a)	85°C
	12	Ambient Temp.	Min. Max.	5 °C	52 °C
	13	Oper. Flow		55 Kg/hr / 43 Nm3/hr	
	14				
BODY	16	Body Type		Ball valve, 2-piece, split-body	
	17	Body Size	Bore	2"	Full bore
	18	Guiding	No. Of Ports	-	2
	19	Conn. Type	End Conn. Rat.	RF, ASME B16.5	150#
	20	Body Material		Carbon steel ASTM A 216 Gr. WCB / A105	
	21	Packing/ gasket Material		RPTFE / 304/graphite	
	22	Bonnet Type		bolted	
	23	Form	Floating ball		
	24	Trim	Seat Mat.	RPTFE	
	25	Ball Mat.	Shaft Mat.	SS 316	SS316
	26	Actuation	Material	Lever handle	CS
	27	Bolts & Nuts		B7/2H	
	28	Shaft		Anti blow-out	
	29	Device		Anti static	
	30	Fire safe		Included	
	31				
	32				
	33				
	34				
	35	Leakage rate		API 598 TSO	
	36				
37					
38					
39					
40					
41					
42					
43					
OPTIONS	44				
	45				
	46				
CERTIFICATES	47	3.1 Material certificate		ALFA	
	48	Hydrotest certificate		64sb	
	49				
	50				
	51				
PURCHASE	52	Manufacturer		According to aproved vendor list	
	53	Model		Supplier to advise	
	54				
	55				
	56				
	57				

NOTES :

06	TT	5-9-2022	For Construction		
05	TT	13-7-2022	For Construction		
04	TT	1-6-2022	For Construction		
03	TT	7-2-2022	For Construction		
02	TT	7-1-2022	For Construction		
01	TT	25-10-2021	For Construction		
Rev	By	Date	Description	Sheet 4 of 17 Based on P&ID rev. 06	



GENERAL	1	Tag Number		No Tag.no.: Qty 1 pcs	
	2	Service		Hand Ball valve	
	3	P&ID No.		BU-20-VD-303-PR-WG-0066	
	4	Location		Compressor Outlet	
	5	Line/equip. No.		2"-INA-7002-539D(N)	
	6				
	7				
PROCESS CONDITIONS	8	Fluid	State	Air	Dry Gas
	9	Pressure	Norm. Max.	21 Bar(a)	-
	10	Temperature	Norm. Max.	40°C	55°C
	11	Design	Press. Temp.	26 Barg	85°C
	12	Ambient Temp.	Min. Max.	5 °C	52 °C
	13	Oper. Flow		55 Kg/hr / 43 Nm3/hr	
	14				
BODY	16	Body Type		Ball valve, 2-piece, split-body	
	17	Body Size	Bore	2"	Full bore
	18	Guiding	No. Of Ports	-	2
	19	Conn. Type	End Conn. Rat.	RF, ASME B16.5	300#
	20	Body Material		Carbon steel ASTM A 216 Gr. WCB / A105	
	21	Packing/ gasket Material		RPTFE / 304/graphite	
	22	Bonnet Type		bolted	
	23	Form	Floating ball		
	24	Trim	Seat Mat.	RPTFE	
	25	Ball Mat.	Shaft Mat.	SS 316	SS316
	26	Actuation	Material	Lever handle	CS
	27	Bolts & Nuts		B7/2H	
	28	Shaft		Anti blow-out	
	29	Device		Anti static	
	30	Fire safe		Included	
	31				
	32				
	33				
	34				
	35	Leakage rate		API 598 TSO	
	36				
37					
38					
39					
40					
41					
42					
43					
OPTIONS	44				
	45				
	46				
CERTIFICATES	47	3.1 Material certificate		ALFA	
	48	Hydrotest certificate		64sb	
	49				
	50				
	51				
PURCHASE	52	Manufacturer		According to aproved vendor list	
	53	Model		Supplier to advise	
	54				
	55				
	56				
	57				

NOTES :

06	TT	5-9-2022	For Construction		
05	TT	13-7-2022	For Construction		
04	TT	1-6-2022	For Construction		
03	TT	7-2-2022	For Construction		
02	TT	7-1-2022	For Construction		
01	TT	25-10-2021	For Construction		
Rev	By	Date	Description	Hand Ball Valve Sheet 5 of 17 Based on P&ID rev. 06	



GENERAL	1	Tag Number		No Tag.no.: Qty 2 pcs	
	2	Service		Hand Ball valve	
	3	P&ID No.		BU-20-VD-303-PR-WG-0066	
	4	Location		Compressor Cooling water	
	5	Line/equip. No.		1 1/2"-CWS-7003-500C(N)/ 1 1/2"-CWR-7008-500C(N)	
	6				
	7				
PROCESS CONDITIONS	8	Fluid	State	Water	Liquid
	9	Pressure	Norm. Max.	4,5 Bar(g)	5 Bar(g)
	10	Temperature	Norm. Max.	35°C	45°C
	11	Design	Press. Temp.	7 Bar(g)	100°C
	12	Ambient Temp.	Min. Max.	5 °C	52 °C
	13	Oper. Flow		1,4 m3/hr	
	14				
BODY	16	Body Type		Ball valve, 2-piece, split-body	
	17	Body Size	Bore	1 1/2"	Full bore
	18	Guiding	No. Of Ports	-	2
	19	Conn. Type	End Conn. Rat.	RF, ASME B16.5	150#
	20	Body Material		Carbon steel ASTM A 216 Gr. WCB / A105	
	21	Packing/ gasket Material		RPTFE / 304/graphite	
	22	Bonnet Type		bolted	
	23	Form	Floating ball		
	24	Trim	Seat Mat.	RPTFE	
	25	Ball Mat.	Shaft Mat.	SS 316	SS316
	26	Actuation	Material	Lever handle	CS
	27	Bolts & Nuts		B7/2H	
	28	Shaft		Anti blow-out	
	29	Device		Anti static	
	30	Fire safe		Included	
	31				
	32				
	33				
	34				
	35	Leakage rate		API 598 TSO	
	36				
37					
38					
39					
40					
41					
42					
43					
OPTIONS	44				
	45				
	46				
CERTIFICATES	47	3,1 Material certificate		ALFA	
	48	Hydrotest certificate		64sb	
	49				
	50				
	51				
PURCHASE	52	Manufacturer		According to aproved vendor list	
	53	Model		Supplier to advise	
	54				
	55				
	56				
	57				

NOTES :

06	TT	5-9-2022	For Construction		
05	TT	13-7-2022	For Construction		
04	TT	1-6-2022	For Construction		
03	TT	7-2-2022	For Construction		
02	TT	7-1-2022	For Construction		
01	TT	25-10-2021	For Construction		
Rev	By	Date	Description	Hand Ball Valve Sheet 6 of 17 Based on P&ID rev. 06	



GENERAL	1	Tag Number		No Tag.no.: Qty 2 pcs	
	2	Service		Hand Ball valve	
	3	P&ID No.		BU-20-VD-303-PR-WG-0066	
	4	Location		Compressor Oil sump drain & block valve	
	5	Line/equip. No.		N/A	
	6				
	7				
PROCESS CONDITIONS	8	Fluid	State	Oil	Liquid
	9	Pressure	Norm. Max.	3 Bar(a)	3,5 Bar(a)
	10	Temperature	Norm. Max.	45°C	65°C
	11	Design	Press. Temp.	5 Bar(a)	80°C
	12	Ambient Temp.	Min. Max.	5 °C	52 °C
	13	Oper. Flow			
	14				
BODY	16	Body Type		Ball valve, screwed type	
	17	Body Size	Bore	1/2"	Full bore
	18	Guiding	No. Of Ports	-	2
	19	Conn. Type	End Conn. Rat.	NPT-F	800#
	20	Body Material		SS316	
	21	Packing Material		PTFE / Graphite	
	22	Bonnet Type		Screwed	
	23	Trim	Form	Floating ball	
	24		Seat Mat.	PTFE / Graphite	
	25		Ball Mat. Shaft Mat.	SS 316	SS316
	26	Actuation	Material	Lever handle	SS
	27				
	28				
	29				
	30				
	31				
	32				
	33				
	34				
	35				
36					
37					
38					
39					
40					
41					
42					
43					
OPTIONS	44				
	45				
	46				
CERTIFICATES	47	3,1 Material certificate		No	
	48	Hydrotest certificate		No	
	49				
	50				
	51				
PURCHASE	52	Manufacturer		ALFA	
	53	Model		20r/t	
	54				
	55				
	56				
	57				

NOTES :

06	TT	5-9-2022	For Construction	 Hand Ball Valve	
05	TT	13-7-2022	For Construction		
04	TT	1-6-2022	For Construction		
03	TT	7-2-2022	For Construction		
02	TT	7-1-2022	For Construction		
01	TT	25-10-2021	For Construction		
Rev	By	Date	Description	Sheet	7 of 17
				Based on P&ID rev. 06	



GENERAL	1	Tag Number		No Tag.no.: Qty 9 pcs	
	2	Service		Hand Ball valve	
	3	P&ID No.		BU-20-VD-303-PR-WG-0066	
	4	Location		Compressor block valve & pulsation drain	
	5	Line/equip. No.		N/A	
	6				
	7				
PROCESS CONDITIONS	8	Fluid	State	Air/ water	Dry Gas
	9	Pressure	Norm. Max.	21 Bar(a)	-
	10	Temperature	Norm. Max.	40°C	55°C
	11	Design	Press. Temp.	26 Barg	70°C
	12	Ambient Temp.	Min. Max.	5 °C	52 °C
	13	Oper. Flow			
14					
15					
BODY	16	Body Type		Ball valve, screwed type	
	17	Body Size	Bore	1/2"	Full bore
	18	Guiding	No. Of Ports	-	2
	19	Conn. Type	End Conn. Rat.	NPT-F	800#
	20	Body Material		SS316	
	21	Packing Material		PTFE / Graphite	
	22	Bonnet Type		Screwed	
	23	Trim	Form	Floating ball	
	24		Seat Mat.	PTFE / Graphite	
	25		Ball Mat. Shaft Mat.	SS 316	SS316
	26	Actuation	Material	Lever handle	SS
	27				
	28				
	29				
	30				
	31				
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
OPTIONS	44				
	45				
	46				
CERTIFICATES	47	3.1 Material certificate		No	
	48	Hydrotest certificate		No	
	49				
	50				
	51				
PURCHASE	52	Manufacturer		ALFA	
	53	Model		20r/1	
	54				
	55				
	56				
	57				

NOTES :

06	TT	5-9-2022	For Construction	 Hand Ball Valve	
05	TT	13-7-2022	For Construction		
04	TT	1-6-2022	For Construction		
03	TT	7-2-2022	For Construction		
02	TT	7-1-2022	For Construction		
01	TT	25-10-2021	For Construction		
Rev	By	Date	Description	Sheet 8 of 17 Based on P&ID rev. 06	





GENERAL	1	Tag Number		XV-71102	
	2	Service		Ball valve	
	3	P&ID No.		BU-20-VD-303-PR-WG-0066	
	4	Location		Compressor Cooling water Inlet	
	5	Line/equip. No.		1 1/2"-CWS-7003-500C(N)	
	6				
	7				
PROCESS CONDITIONS	8	Fluid	State	Water	Liquid
	9	Pressure	Norm. Max.	4,5 Bar(g)	5 Bar(g)
	10	Temperature	Norm. Max.	35°C	45°C
	11	Design	Press. Temp.	7 Bar(g)	100°C
	12	Ambient Temp.	Min. Max.	5 °C	52 °C
	13	Oper. Flow		1,4 m3/hr	
	14				
BODY	15	Body Type		Ball valve, 2-piece, split-body	
	16	Body Size	Bore	1 1/2"	Full bore
	17	Guiding	No. Of Ports	-	2
	18	Conn. Type	End Conn. Rat.	RF, ASME B16.5	150#
	19	Body Material		Carbon steel ASTM A 216 Gr. WCB/ A105	
	20	Packing/ gasket Material		RPTFE / 304/graphite	
	21	Bonnet Type		bolted	
	22	Trim	Form	Floating ball	
	23		Seat Mat.	RPTFE	
	24		Ball Mat. Shaft Mat.	SS 316	SS316
	25	Bolts & Nuts		B7/2H	
	26	Shaft		Anti blow-out	
	27	Device		Anti static	
28	Fire safe		Included		
ACTUATOR	29	Type		Rack & Pinion, single acting	
	30	Close At	Open At	Spring return	Air supply
	31	Flow Action To		FTC	
	32	Fail Position		FC	
	33	Pneumatic connection		2 x 1/4" NPT-F	
	34	Instrument Supply Fluid		Instrument Air / Nitrogen	
	35	Instrument Supply Fluid pressure		6.0 bar(g)	
	36	Brackets	Coupling	SS316	SS316
	37	Housing material		Aluminium, epoxy coated	
	38				
POSITION MONITOR	39	Type		N/A	
	40	Power supply		N/A	
	41	Type of switch/transmitter		N/A	
	42	Area Classification		N/A	
	43	Cable Gland		N/A	
OPTIONS	44	Solenoid valves		see Instrument datasheet Tag. XY-71102	
	45	Leakage rate		API 598 TSO	
	46				
CERTIFICATES	47	3.1 Material certificate		Yes	
	48	Hydrotest certificate		Yes	
	49	ATEX		No	
	50	SIL certificate	Level	No	
	51	IP certificate		No	
PURCHASE	52	Valve Manufacturer		ALFA	
	53	Valve Model		64sb	
	54	Actuator Manufacturer		Air Torque	
	55	Actuator Model		AT251	
	56				
	57				

NOTES :

06	TT	5-9-2022	For Construction	 
05	TT	13-7-2022	For Construction	
04	TT	1-6-2022	For Construction	
03	TT	7-2-2022	For Construction	
02	TT	7-1-2022	For Construction	
01	TT	25-10-2021	For Construction	
Rev	By	Date	Description	Sheet 9 of 17 Based on P&ID rev. 06



GENERAL	1	Tag Number		XV-71102	
	2	Service		Ball valve	
	3	P&ID No.		BU-20-VD-303-PR-WG-0066	
	4	Location		Compressor Cooling water Inlet	
	5	Line/equip. No.		1 1/2"-CWS-7003-501C(N)	
	6				
	7				
	8				
	9				
	10				
	11				
	12				
	13				
	14				
Calculation	15	1 1/2" Ball valve, 2-piece, split-body		k.k. F03 SW8	
	16	Break to open (Nm)	End to close (Nm)	45 Nm	36 Nm
	17				
	18	Actuator Rack & Pinion single acting		251U S12 A F05/F07 17DS 6 bar	
	19	Break to open (Nm)	End to close (Nm)	65,8 Nm	44 Nm
	20			Including Safety factor 1,5	
	21				
	22				
	23				
	24				
	25				
	26				
	27				
	28				
	29				
	30				
	31				
	32				
	33				
	34				
	35				
	36				
	37				
	38				
	39				
	40				
	41				
	42				
	43				
	44				
	45				
	46				
	47				
	48				
	49				
	50				
	51				
	52				
	53				
	54				
	55				
	56				
57					

NOTES :

06	TT	5-9-2022	For Construction		  
05	TT	13-7-2022	For Construction		
04	TT	1-6-2022	For Construction		
03	TT	7-2-2022	For Construction		
02	TT	7-1-2022	For Construction		
01	TT	25-10-2021	For Construction		
Rev	By	Date	Description	Sheet 10 of 17	Based on P&ID rev. 06



GENERAL	1	Tag Number		No Tag.no: Qty 1 pcs		
	2	Service		Globe valve		
	3	P&ID No.		BU-20-VD-303-PR-WG-0066		
	4	Location		Compressor Cooling water		
	5	Line/equip. No.		1 1/2"-CWS-7005-501C(N)		
	6					
	7					
PROCESS CONDITIONS	8	Fluid	State	Water	Liquid	
	9	Pressure	Norm. Max.	4,5 Bar(g)	5 Bar(g)	
	10	Temperature	Norm. Max.	35°C	45°C	
	11	Design	Press. Temp.	7 Bar(g)	100°C	
	12	Ambient Temp.	Min. Max.	5 °C	52 °C	
	13	Oper. Flow		1,4 m3/hr		
BODY	14					
	15	Body Type		Globe valve, OS&Y, BB		
	16	Body Size		1 1/2"		
	17	Guiding	No. Of Ports	-	2	
	18	Conn. Type	End Conn. Rat.	RF	150#	
	19	Body Material		Carbon steel ASTM A 216 Gr. WCB/WCC / A105		
	20	Packing Material		PTFE / Graphite		
	21	Bonnet Type		Bolted		
	22	Trim	Form		Disc	
	23		Seat Mat.		PTFE / Graphite	
	24		Disc Mat.	Shaft Mat.	SS 316	SS316
	25					
	26					
	27					
	28					
	29					
	30					
	31					
	32					
	33					
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
OPTIONS	44					
	45					
	46					
CERTIFICATES	47	3.1 Material certificate		Yes		
	48	Hydrotest certificate		Yes		
	49					
	50					
	51					
PURCHASE	52	Manufacturer		LVF		
	53	Model		1BR207		
	54					
	55					
	56					
	57					

NOTES :



06	TT	5-9-2022	For Construction		
05	TT	13-7-2022	For Construction		
04	TT	1-6-2022	For Construction		
03	TT	7-2-2022	For Construction		
02	TT	7-1-2022	For Construction		
01	TT	25-10-2021	For Construction		
Rev	By	Date	Description	Sheet	11 of 17
				Based on P&ID rev. 06	




GENERAL	1	Tag Number		No Tag.no: Qty 1 pcs	
	2	Service		Pressure Control Valve	
	3	P&ID No.		BU-20-VD-303-PR-WG-0066	
	4	Location		Compressor Inlet & actuator cooling inlet	
	5	Line/equip. No.		N/A	
	6				
	7				
PROCESS CONDITIONS	8	Fluid	State	Air	Dry Gas
	9	Pressure	Norm. Max.	8 Bar(a)	9 Bar(a)
	10	Temperature	Norm. Max.	55°C	65°C
	11	Design	Press. Temp.	13.5 Bar(a)	80°C
	12	Ambient Temp.	Min. Max.	5 °C	52 °C
BODY	13	Valve Type		Pressure reducing valve	
	14	Body Material		Aluminium	
	15	Diaphragm Material		Nitrile	
	16	Trim	Form	Plug	
	17		Seat Mat.	SS316	
	18		Spring Mat. Disc Mat.	SS316	SS316
	19				
	20				
	21				
ACTUATOR	25	Type		Mechanical, spring type	
	26	Fail Position		FC	
	27				
	28				
	29				
CONNECTIONS	31	Inlet Size	Outlet Size	1/4"	1/4"
	32	Inlet Connection	Outlet Conn.	Threaded NPT-F	Threaded NPT-F
	33	Inlet Rating	Outlet Rating	800#	800#
	34				
SIZING CONDITIONS	35	Flow Rate		10 Nm³/hr	
	36	Pressure drop		0,1 bar	
	37	Pressure setpoint		6,0 bar(g)	
	38				
	39				
OPTIONS	41	Pressure Gauge		Yes	
	42	Material		Aluminium	
	43	Range		0...11 bar(g)	
	44	Filter Regulator and drip well		Yes(Mesh 40)	
CERTIFICATES	45	3.1 Material certificate for body		No	
	46	3.1 Material certificate for stem		No	
	47				
CALCULATIONS	49	Sizing calculation		No	
	50				
	51				
	52				
PURCHASE	54	Manufacturer		Fisher	
	55	Model		67CFR	
	56				
57					



NOTES :

06	TT	5-9-2022	For Construction		
05	TT	13-7-2022	For Construction		
04	TT	1-6-2022	For Construction		
03	TT	7-2-2022	For Construction		
02	TT	7-1-2022	For Construction		
01	TT	25-10-2021	For Construction		
Rev	By	Date	Description	Sheet 12 of 17 Based on P&ID rev. 06	

GENERAL	1	Tag Number			PV-71101		
	2	Service			Recycle valve		
	3	P&ID No.			BU-20-VD-303-PR-WG-0066		
	4	Location			Compressor bypass		
	5						
	6						
	7						
PROCESS CONDITIONS	8	Fluid	State		Air	Dry Gas	
	9	Pressure	Norm.	Max.	21 Bar(a)	-	
	10	Temperature	Norm.	Max.	40°C	55°C	
	11	Design	Press.	Temp.	26 Barg	70°C	
	12	Ambient Temp.	Min.	Max.	5 °C	52 °C	
BODY	13	Type Of Body			Globe valve		
	14	Body Size			1" ANSI RF		
	15	Conn. Type	End Conn. Rat.		RF	300#	
	16	Body Material			Carbon steel ASTM A216 WCB/WCC		
	17	Packing Material			PTFE / Graphite		
	18	Bonnet Type			Integral		
	19	Trim	Form		Disc		
	20		Seat Mat.		PTFE / Graphite		
	21		Disc Mat.	Shaft Mat.	SS 316	SS316	
	22	Required Seat Tightness			IV		
	23	Max. Allow. Sound Level (dBA)			85 dBA		
	24	Required CV			0.294		
	25	Travel %			69		
26	Trim Characteristics			Micro-Flow			
ACTUATOR	27	Positioner controller			Electro-pneumatic (I/P)		
	28	Interface			4 -20 mA , HART		
	29	Fail Position			AFC		
	30	Pneumatic Conn.			1/4" NPT-F		
	31	Instrument Supply Fluid			Instrument Air		
	32	Instrument Supply Fluid pressure			6.0 bar(g)		
	33	Position Monitor			Yes 4-20 mA HART		
	34	Area Classification			Zone 2, Eex'ia		
	35	Electric Connection			ISO M20 x 1,5		
	36	Cable Gland			Yes, Eex 'de' certified (Airpack scope)		
ACCESSORIES	37	Ingress Protection			IP 65		
	38	Filter Regulator			Yes		
	39	Gauges			Yes		
	40						
SERVICE	41	Flow Rate			55 Kg/hr / 43 Nm3/hr		
	42	Pressure	Inlet	outlet	21 bar(a)	8 bar(a)	
	43	Pressure drop			0,55		
	44	CV selected			0,188		
	45						
	46						
	47						
CERTIFICATES	48						
	49	3.1 Material certificate			Yes		
	50	ATEX			No		
	51	SIL certificate	Level		No		
PURCHASE	52						
	53	Valve Manufacturer			Emerson/Fisher		
	54	Valve Model			NPS1GX		
	55	Actuator Manufacturer			Emerson/Fisher		
	56	Actuator Model			DVC6200		
57							

06	TT	5-9-2022	For Construction	INSTRUMENT AND VALVE DATASHEET Pressure Control Valve 	
05	TT	13-7-2022	For Construction		
04	TT	1-6-2022	For Construction		
03	TT	7-2-2022	For Construction		
02	TT	7-1-2022	For Construction		
01	TT	25-10-2021	For Construction		
Rev	By	Date	Description	Sheet 13 of 17 Based on P&ID rev. 06	

GENERAL	1	Tag Number		No Tag.no.: Qty 2 pcs	
	2	Service		Check Valve	
	3	P&ID No.		BU-20-VD-303-PR-WG-0066	
	4	Location		Compressor Outlet	
	5	Line/equip. No.		2"-INA-7002-539D(N)	
	6				
	7				
	8				
PROCESS CONDITIONS	9	Fluid	State	Air	Dry Gas
	10	Pressure	Norm. Max.	21 Bar(a)	-
	11	Temperature	Norm. Max.	40°C	55°C
	12	Design	Press. Temp.	26 Barg	85°C
	13	Ambient Temp.	Min. Max.	5 °C	52 °C
	14	Oper. Flow		55 Kg/hr / 43 Nm3/hr	
	15				
	16				
	17				
	18				
BODY	20	Type Of Body		Wafer type	
	21	Type Of valve		Disc style, pulsation service	
	21	Body Size		DN 50 (Process line = 2" ANSI 300# RF)	
	22	Body Material		Carbon steel ASTM A216 WCB	
	23	Cracking Pressure		0,002 bar	
	24	Inlet Connection	Outlet Conn.	RF	RF
	25	Inlet Rating	Outlet Rating	300#	300#
	26	Trim materials		SS316	
	27				
	28				
	29				
	30				
	31				
	32				
	33				
	34				
35					
36					
37					
38					
39					
40					
OPTIONS	41				
	42				
	43				
	44				
	45				
CERTIFICATES	46	3.1 Material certificate		Yes	
	47				
	48				
	49				
	50				
	51				
PURCHASE	52	Manufacturer		Hoerbigger	
	53	Model		49D0	
	54				
	55				
	56				
06	TT	5-9-2022	For Construction		
05	TT	13-7-2022	For Construction		
04	TT	1-6-2022	For Construction		
03	TT	7-2-2022	For Construction		
02	TT	7-1-2022	For Construction		
01	TT	25-10-2021	For Construction		
Rev	By	Date	Description		
				Sheet 16 of 17	
				Based on P&ID rev. 06	

GENERAL	1	Tag Number		No Tag.no.: Qty 1 pcs	
	2	Service		Check Valve	
	3	P&ID No.		BU-20-VD-303-PR-WG-0066	
	4	Location		Compressor Cooling water inlet	
	5	Line/equip. No.		1 1/2"-CWS-7003-500C(N)	
	6				
	7				
	8				
PROCESS CONDITIONS	9	Fluid	State	Water	Liquid
	10	Pressure	Norm. Max.	4,5 Bar(g)	5 Bar(g)
	11	Temperature	Norm. Max.	35°C	45°C
	12	Design	Press. Temp.	7 Bar(g)	100°C
	13	Ambient Temp.	Min. Max.	5 °C	52 °C
	14	Oper. Flow		1,4 m3/hr	
	15				
	16				
	17				
	18				
BODY	20	Type Of Body		Flanged bolted type	
	21	Type Of valve		Swing disc	
	21	Body Size		1 1/2" ANSI	
	22	Body Material		Carbon steel ASTM A105	
	23	Cracking Pressure		0,05 bar	
	24	Inlet Connection	Outlet Conn.	RF	RF
	25	Inlet Rating	Outlet Rating	150#	150#
	26	Trim materials		SS316	
	27				
	28				
	29				
	30				
	31				
	32				
	33				
	34				
	35				
	36				
37					
38					
39					
40					
OPTIONS	41				
	42				
	43				
	44				
	45				
CERTIFICATES	46	3.1 Material certificate		Yes	
	47				
	48				
	49				
	50				
	51				
PURCHASE	52	Manufacturer		LVF	
	53	Model		1BR507	
	54				
	55				
	56				
06	TT	5-9-2022	For Construction		
05	TT	13-7-2022	For Construction		
04	TT	1-6-2022	For Construction		
03	TT	7-2-2022	For Construction		
02	TT	7-1-2022	For Construction		
01	TT	25-10-2021	For Construction		
Rev	By	Date	Description	Sheet 17 of 17 Based on P&ID rev. 06	

Sliding Stem Valve Specification

Customer: AIRPACK NEDERLAND BV	Emerson Process Management BV	
Contact:	Contact: Jordy Cobben	
Customer Reference: Inquiry 17811 VV-0801 (CV)	Sales Office Reference: 083MEE9014	Lead Time: 5 weeks
Item: 200	Rev: Qty: 1	
Tags: PV-71101	Date Last Modified: 12/07/2022	
Description: NPS 1 GX DVC6200 Factory Mtgs DVC6200/DVC2000		
Service Description: Recycle valve		

Service: Size and Type: NPS 1 GX	Positioner Type: DVC6200,HART Communicating-HC Input Signal: 4 to 20 mA dc (in+output) Access: 67CFR Filter/Regulator Gauges: 0-160 psig/0-11 bar Action: Direct Certification: ATEX,Intrinsic Safe/Flameproof/Type n
Body Style: Globe Design Temp: 60 deg C Design Press: 26 bar(a) End Connect/In/Out: CL300/RF Flg/RF Flg Material: WCC Steel Ports: 1 Flow Direction: Up	Controller Type: Action: Measure Element: Range: Output: Mounting: Airset: Mounting:
Trim Number: Standard Cage Matl: Not App Retainer Matl: Bushing Matl: Seat Ring Matl: CF3M SST	Transducer: Input Signal: Output Signal: Action: Mounting: Airset: Certifications:
VALVE PLUG Material: R31233 Alloy Guiding: Stem Balance: Unbalanced Shutoff Class: ANSI CL IV Port Size: 4.8 mm Characteristic: Micro Flow 4 Deg 39 Min Stem Material: S31603 SST Stem Size: 10 mm	Line In: 1 in, SCH STD Line Out: 1 in, SCH STD Insulation: None Service Cond: Process Fluid: ~NITROGEN Critical Pressure: Shutoff Drop: 21 bar
Bonnet Style: Standard Boss Size: Packing: Enviro-Seal Live Loaded PTFE Access: Bolt, Bonnet: SA-193-B7 Studs/2H Nuts NCF2 PackFlg/Bltg:	Max Rated Cv: 0.294
Actuator: Spring & Diaphragm Type/Size: GX/225 Travel: 20 mm Bench Set: Push Down To: PDTC Supply: Air To Actuator: 4.0 to 6.0 barg (58 to 87 psig) Fails Valve: Close (ATO) Handwheel: None	

Variable Name	Unit	Normal			
Volumetric Flow Rate Gas (Qg)	Nm3/h	43.000			
Inlet Pressure (P1)	bar(a)	21.000			
Outlet Pressure (P2)	bar(a)	8.000			
Inlet Temperature (T1)	deg C	55.000			
M / Gg	M	28.130			
Specific heats ratio (gamma)		1.400			
Dynamic Viscosity (Mu)	cP	0.017			
Sizing Coefficient (Cv)		0.188			
% Open		69			

NOTES:

Documents included: - EN10204-3.1 Mat Cert. for body & bonnet - Decl. of Incorp. EC Machinery Directive - Hydrotest & Function/Leak Test Report - EC/PED/ATEX on Assembly	Valve Offered with: - 67CFR Filter Regulator + Gauge 0-11 bar - Standard factory coating on Assembly FPS-2A
---	---

Valve/Regulator Sizing Calculation

Customer: AIRPACK NEDERLAND BV	Emerson Process Management BV	
Contact:	Contact: Jordy Cobben	
Customer Reference: Inquiry 17811 VV-0801 (CV)	Sales Office Reference: 083MEE9014	Lead Time: 5 weeks
Item: 200 Rev:	Qty: 1	Rev: B
Tags: PV-71101	Date Last Modified: 12/07/2022	
Description: NPS 1 GX DVC6200 Factory Mtgs DVC6200/DVC2000		
Service Description: Recycle valve		

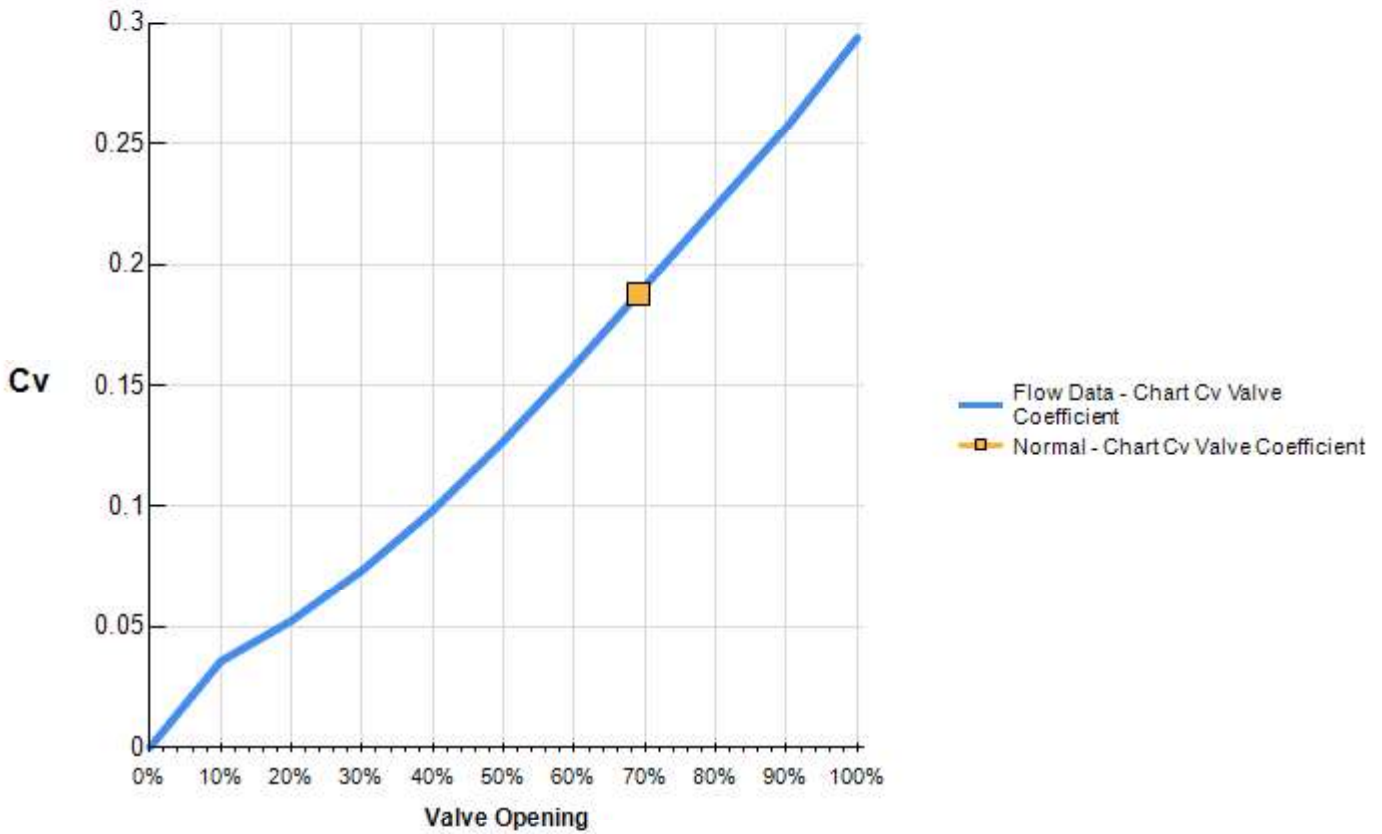
Sizing Type: Gas	Flow is Turbulent	Solving for: Cv	Noise is None	Flow is Volumetric
Variable Name	Units	Normal		

SERVICE & SIZING		
Gas		~NITROGEN
Inlet Pressure (P1)	bar(a)	21.000
Outlet Pressure (P2)	bar(a)	8.000
Inlet Temperature (T1)	deg C	55.000
Volumetric Flow Rate Gas (Qg)	Nm3/h	43.000
Pressure drop ratio factor (Xt)		0.550
Pressure Recovery Factor (Fl)		0.930
Valve style modifier (Fd)		0.217
Atmospheric Pressure	bar	1.013
Dynamic Viscosity (Mu)	cP	0.017
Specific heats ratio (gamma)		1.400
Molecular Weight/Specific Gravity	M	28.130
Inlet Compressibility Factor (Z1)		1.000
Pipe Size Up	in	1
Pipe Schedule Up		STD
Pipe Size Down	in	1
Pipe Schedule Down		STD
Nominal Valve Diameter (dv)	in	1.000
Sizing Coefficient (Cv)		0.188
% Open		69
dP Choked	bar	11.550
dP/P1 Valve		0.619
Fp		1.000
VELOCITY OUTPUTS		
M1 Pipe	Mach	0.003
Mo Valve	Mach	0.010
M2 Pipe	Mach	0.009
V1 Pipe	m/s	1.242
Vo Valve	m/s	3.704
V2 Pipe	m/s	3.261
C1 Pipe	m/s	368.603
Co Valve	m/s	368.603
C2 Pipe	m/s	368.603
Item Notes:		

Flow Coefficient Graph

Customer: AIRPACK NEDERLAND BV	Emerson Process Management BV	Lead Time: 5 weeks
Contact:	Contact: Jordy Cobben	
Customer Reference: Inquiry 17811 VV-0801 (CV)	Sales Office Reference: 083MEE9014	
Item: 200	Rev:	Qty: 1
Tags: PV-71101	Date Last Modified: 12/07/2022	
Description: NPS 1 GX DVC6200 Factory Mtgs DVC6200/DVC2000		
Service Description: Recycle valve		

Flow Coefficient vs. Valve Opening



Product: GX Valve Size=NPS 1 Trim Style/Characteristic=Micro Flow 4 Deg 39 Min Port Diameter=4.8 mm Trim
 Capacity=Full Capacity Travel=20 mm Balance=Unbalanced