






OWNER:  شرکت سست و سویی توهمه ایران (سهامی خاص)	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT						EPC CONTRACTOR:  Chagalesh-Enerchimi-Steam Joint Venture BUPC-MEG PLANT PROJECT		
	CALCULATION & DATA SHEET OF CONTROL VALVES / ON-OFF VALVES FOR NITROGEN GAS BOOSTER						 Netherlands		
MC :  شرکت سست و سویی توهمه ایران (سهامی خاص)	Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
Owner Document Number: 17811-45A	BU	20	VD	303	IN	DSH	0041	Rev.:	Page
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CALCULATION & DATA SHEET OF CONTROL VALVES / ON-OFF VALVES FOR NITROGEN GAS BOOSTER

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


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Notes:

				CALCULATION & DATA SHEET OF CONTROL VALVES / ON-OFF VALVES FOR NITROGEN GAS BOOSTER	
					
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GENERAL	1	Tag Number		No Tag.no.: Qty 1 pc	
	2	Service		Hand Ball valve	
	3	P&ID No.		17811-03	
	4	Location		Compressor Inlet	
	5				
	6				
	7				
PROCESS CONDITIONS	8	Fluid	State	Nitrogen	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
	13	Oper. Flow		707 Kg/hr / 565 Nm3/hr	
	14				
BODY	16	Body Type		Ball valve, bolted type	
	17	Body Size	Bore	2"	Full bore
	18	Guiding	No. Of Ports	-	2
	19	Conn. Type	End Conn. Rat.	RF	150#
	20	Body Material		Carbon steel ASTM A 216 Gr. WCB / A105	
	21	Packing Material		PTFE / Graphite	
	22	Bonnet Type		Screwed	
	23	Trim	Form	Floating ball	
	24		Seat Mat.	PTFE / Graphite	
	25		Ball Mat.	SS 316	SS316
	26	Actuation	Material	Lever handle	CS
	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		According to aproved vendor list	
	53	Model		Supplier to advise	
	54				
	55				
	56				
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NOTES :

				INSTRUMENT AND VALVE DATASHEET	
				Hand Ball Valve	
					
01	TT	20/09/2021	For Approval		
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GENERAL	1	Tag Number		No Tag.no.: Qty 1 pcs		
	2	Service		Hand Ball valve		
	3	P&ID No.		17811-03		
	4	Location		Compressor Outlet		
	5					
	6					
	7					
PROCESS CONDITIONS	8	Fluid	State	Nitrogen	Dry Gas	
	9	Pressure	Norm. Max.	23,5 Bar(a)	25 Bar(a)	
	10	Temperature	Norm. Max.	40°C	55°C	
	11	Design	Press. Temp.	25 Bar(a)	60°C	
	12	Ambient Temp.	Min. Max.	5 °C	52 °C	
	13	Oper. Flow		50 Kg/hr / 43 Nm3/hr		
	14					
BODY	16	Body Type		Ball valve, bolted type		
	17	Body Size	Bore	2"	Full bore	
	18	Guiding	No. Of Ports	-	2	
	19	Conn. Type	End Conn. Rat.	RF	300#	
	20	Body Material		Carbon steel ASTM A 216 Gr. WCB / A105		
	21	Packing Material		PTFE / Graphite		
	22	Bonnet Type		Screwed		
	23	Form		Floating ball		
	24	Trim	Seat Mat.		PTFE / Graphite	
	25		Ball Mat.	Shaft Mat.	SS 316	SS316
	26	Actuation	Material	Lever handle	CS	
	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		According to aproved vendor list		
	53	Model		Supplier to advise		
	54					
	55					
	56					
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NOTES :

01	TT	20/09/2021	For Approval		
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GENERAL	1	Tag Number		No Tag.no.: Qty 2 pcs		
	2	Service		Hand Ball valve		
	3	P&ID No.		17811-03		
	4	Location		Compressor Cooling water		
	5					
	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.	6 Bar(g)	60°C	
	12	Ambient Temp.	Min. Max.	5 °C	52 °C	
	13	Oper. Flow		14,5 m3/hr		
	14					
BODY	16	Body Type		Ball valve, bolted type		
	17	Body Size	Bore	2"	Full bore	
	18	Guiding	No. Of Ports	-	2	
	19	Conn. Type	End Conn. Rat.	RF	150#	
	20	Body Material		Carbon steel ASTM A 216 Gr. WCB / A105		
	21	Packing Material		PTFE / Graphite		
	22	Bonnet Type		Screwed		
	23	Form		Floating ball		
	24	Trim	Seat Mat.		PTFE / Graphite	
	25		Ball Mat.	Shaft Mat.	SS 316	SS316
	26	Actuation	Material	Lever handle	CS	
	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		According to aproved vendor list		
	53	Model		Supplier to advise		
	54					
	55					
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NOTES :

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Rev	By	Date	Description	Based on P&ID	Rev.A


GENERAL	1	Tag Number		No Tag.no.: Qty 2 pcs		
	2	Service		Hand Ball valve		
	3	P&ID No.		17811-03		
	4	Location		Compressor Oil sump drain & block valve		
	5					
	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	Form		Floating ball		
	24	Trim	Seat Mat.		PTFE / Graphite	
	25		Ball Mat.	Shaft Mat.	SS 316	SS316
	26	Actuation	Material	Lever handle	CS	
	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		According to aproved vendor list		
	53	Model		Supplier to advise		
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NOTES :

					
01	TT	20/09/2021	For Approval		
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Rev	By	Date	Description		Based on P&ID Rev.A


GENERAL	1	Tag Number		No Tag.no.: Qty 7 pcs	
	2	Service		Hand Ball valve	
	3	P&ID No.		17811-03	
	4	Location		Compressor block valve	
	5				
	6				
	7				
PROCESS CONDITIONS	8	Fluid	State	Nitrogen/ water	Dry Gas
	9	Pressure	Norm. Max.	23,5 Bar(a)	25 Bar(a)
	10	Temperature	Norm. Max.	40°C	55°C
	11	Design	Press. Temp.	25 Bar(a)	60°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	CS
	27				
	28				
	29				
	30				
	31				
	32				
	33				
	34				
	35				
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43					
OPTIONS	44				
	45				
	46				
CERTIFICATES	47	3.1 Material certificate		No	
	48	Hydrotest certificate		No	
	49				
	50				
	51				
PURCHASE	52	Manufacturer		According to aproved vendor list	
	53	Model		Supplier to advise	
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Rev	By	Date	Description	Based on P&ID	Rev.A


GENERAL	1	Tag Number		XV-10002		
	2	Service		Ball valve		
	3	P&ID No.		17811-03		
	4	Location		Compressor Cooling water Inlet		
	5					
	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.	6 Bar(g)	60°C	
	12	Ambient Temp.	Min. Max.	5 °C	52 °C	
	13	Oper. Flow		14,5 m3/hr		
	14					
BODY	15	Body Type		Ball valve, bolted type		
	16	Body Size	Bore	2"	Full bore	
	17	Guiding	No. Of Ports	-	2	
	18	Conn. Type	End Conn. Rat.	RF	150#	
	19	Body Material		Carbon steel ASTM A 216 Gr. WCB/ A105		
	20	Packing Material		PTFE / Graphite		
	21	Bonnet Type		Screwed		
	22	Form		Floating ball		
	23	Trim	Seat Mat.	PTFE / Graphite		
	24		Ball Mat.	Shaft Mat.	SS 316	SS316
	25					
26						
ACTUATOR	27	Type		Rack & Pinion, single acting		
	28	Close At	Open At	Spring return	Air supply	
	29	Flow Action To		FTC		
	30	Fail Position		FC		
	31	Pneumatic connection		2 x 1/4" NPT-F		
	32	Instrument Supply Fluid		Instrument Air / Nitrogen		
	33	Instrument Supply Fluid pressure		6.0 bar(g)		
	34	Brackets	Coupling	SS316	SS316	
	35	Housing material		Aluminium, epoxy coated		
	36					
	37					
POSITION MONITOR	38	Type		N/A		
	39	Power supply		N/A		
	40	Type of switch/transmitter		N/A		
	41	Area Classification		N/A		
	42	Cable Gland		N/A		
OPTIONS	43					
	44					
	45					
CERTIFICATES	46					
	47	3.1 Material certificate		Yes		
	48	Hydrotest certificate		Yes		
	49	ATEX		No		
	50	SIL certificate	Level	No		
PURCHASE	51	IP certificate		No		
	52	Valve Manufacturer		According to aproved vendor list		
	53	Valve Model		Supplier to advise		
	54	Actuator Manufacturer		According to aproved vendor list		
	55	Actuator Model		Supplier to advise		
56						
57						

NOTES :

				Pneumatic Actuated Valve	
					
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Rev	By	Date	Description		


GENERAL	1	Tag Number		No Tag.no: Qty 1 pcs	
	2	Service		Globe valve	
	3	P&ID No.		17811-03	
	4	Location		Compressor Cooling water	
	5				
	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.	6 Bar(g) 60°C
	12	Ambient Temp.	Min.	Max.	5 °C 52 °C
	13	Oper. Flow		14,5 m3/hr	
	14				
BODY	15	Body Type		Globe valve type, OS&Y	
	16	Body Size		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					
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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		According to aproved vendor list	
	53	Model		Supplier to advise	
	54				
	55				
	56				
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NOTES :


				Hand Globe Valve	
					
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Rev	By	Date	Description		

GENERAL	1	Tag Number		No Tag.no: Qty 1 pcs	
	2	Service		Pressure Control Valve	
	3	P&ID No.		17811-03	
	4	Location		Compressor Inlet & actuator cooling inlet	
	5				
	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		Will be informed later	
	16	Trim	Form	Disc / Plug / Globe	
	17		Seat Mat.	Will be informed later	
	18		Spring Mat. Disc Mat.	Will be informed later	Will be informed later
	19				
	20				
	21				
22					
23					
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		To be advised by the manufacturer	
	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				
	53				
PURCHASE	54	Manufacturer		According to aproved vendor list	
	55	Model		Supplier to advise	
	56				
	57				

NOTES :

				Pressure Reducing Valve	
					
01	TT	20/09/2021	For Approval	Sheet	12 of 14
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GENERAL	1	Tag Number		No Tag.no.: Qty 2 pcs	
	2	Service		Check Valve	
	3	P&ID No.		17811-03	
	4	Location		Compressor Outlet	
	5				
	6				
	7				
	8				
PROCESS CONDITIONS	9	Fluid	State	Air	Dry Gas
	10	Pressure	Norm. Max.	23.5 Bar(a)	25 Bar(a)
	11	Temperature	Norm. Max.	40°C	55°C
	12	Design	Press. Temp.	25 Bar(a)	60°C
	13	Ambient Temp.	Min. Max.	5 °C	52 °C
	14	Oper. Flow		707 Kg/hr / 565 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	
	23	Cracking Pressure		To be stated by supplier	
	24	Inlet Connection	Outlet Conn.	RF	RF
	25	Inlet Rating	Outlet Rating	300#	300#
	26				
	27				
	28				
	29				
	30				
	31				
	32				
	33				
	34				
	35				
	OPTIONS	41			
42					
43					
44					
45					
CERTIFICATES	46	3.1 Material certificate		Yes	
	47				
	48				
	49				
	50				
PURCHASE	52	Manufacturer		Hoerbigger	
	53	Model		Supplier to advise	
	54				
	55				
	56				
01	TT	20/09/2021	For Approval		Sheet 13 of 14 Based on P&ID Rev.A
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Rev	By	Date	Description		

GENERAL	1	Tag Number		No Tag.no.: Qty 1 pcs	
	2	Service		Check Valve	
	3	P&ID No.		17811-03	
	4	Location		Compressor Cooling water inlet	
	5				
	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.	6 Bar(g)	60°C
	13	Ambient Temp.	Min. Max.	5 °C	52 °C
	14	Oper. Flow		14,5 m3/hr	
	15				
	16				
	17				
	18				
BODY	20	Type Of Body		Flanged bolted type	
	21	Type Of valve		Swing disc	
	21	Body Size		2" ANSI	
	22	Body Material		Carbon steel	
	23	Cracking Pressure		To be stated by supplier	
	24	Inlet Connection	Outlet Conn.	RF	RF
	25	Inlet Rating	Outlet Rating	150#	150#
	26				
	27				
	28				
	29				
	30				
	31				
	32				
	33				
	34				
	35				
	OPTIONS	41			
42					
43					
44					
45					
CERTIFICATES	46	3.1 Material certificate		Yes	
	47				
	48				
	49				
	50				
	51				
PURCHASE	52	Manufacturer		According to aproved vendor list	
	53	Model		Supplier to advise	
	54				
	55				
	56				
01	TT	20/09/2021	For Approval		Sheet 14 of 14 Based on P&ID Rev.A
00	TT	25/02/2021	For Approval		
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