







OWNER:  شرکت سست و سویی گستره ایرانیان (سایه و شایان)	<b>BUSHEHR PETROCHEMICAL COMPANY MEG PLANT</b>						EPC CONTRACTOR:  Chagalesh-Enerchimi-Steam Joint Venture BUPC-MEG PLANT PROJECT		
	<b>CALCULATION &amp; DATA SHEET OF CONTROL VALVES / ON-OFF VALVES FOR NITROGEN GAS BOOSTER</b>						 Netherlands		
MC :  شرکت سست و سویی گستره ایرانیان (سایه و شایان)	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
								01	1 of 14

- All page of data sheet to be in project title block.
- P&ID number to be modified as per related P&ID document number for all instruments.
- Line number of each PSV shall be specified.

## CALCULATION & DATA SHEET OF CONTROL VALVES / ON-OFF VALVES FOR NITROGEN GAS BOOSTER

 شرکت سست و سویی گستره ایرانیان (سایه و شایان)	 Chagalesh-Enerchimi-Steam Joint Venture BUPC-MEG PLANT PROJECT	<b>BUSHEHR PETROCHEMICAL COMPANY MEG PLANT</b>
<b>Document Review</b>		
Issue Purpose:		FA
Result Code: AP,AN,CM,RE,NC		AN
Next Status : IFC,IFA,IFI,AFC,AB		AFC
Responsible Department		MECHANICAL
Commented Date		Oct.09.2021
<b>Approval or review hereunder shall not be construed to relieve Vendor / Subcontractor of his responsibilities and liability under the contract.</b>		


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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4	Hand Ball Valve	No Tag.no.: Qty 2 pcs	7
5	Hand Ball Valve	No Tag.no.: Qty 7 pcs	
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To be modified

**Notes:**

				<b>CALCULATION &amp; DATA SHEET OF          CONTROL VALVES / ON-OFF VALVES FOR          NITROGEN GAS BOOSTER</b>	
					
01	TT	20/09/2021	For Approval		
00	TT	25/02/2021	For Approval		
Rev	By	Date	Description	Sheet	3 of 14
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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				
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	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 :**

				<b>INSTRUMENT AND VALVE DATASHEET</b>	
				<b>Hand Ball Valve</b>	
					
01	TT	20/09/2021	For Approval		
00	TT	25/02/2021	For Approval		
Rev	By	Date	Description		Sheet 4 of 14 Based on P&ID Rev.A


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					
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	35					
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	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		
00	TT	25/02/2021	For Approval		
Rev	By	Date	Description		Sheet 5 of 14 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 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	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				
	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				
	57				

**NOTES :**

01	TT	20/09/2021	For Approval		Sheet 6 of 14
00	TT	25/02/2021	For Approval		
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		
	54					
	55					
	56					
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**NOTES :**

					
01	TT	20/09/2021	For Approval		
00	TT	25/02/2021	For Approval		Sheet 7 of 14
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				
	36				
	37				
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	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	
	54				
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**NOTES :**

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

- According to PID, solenoid valve as an accessories shall be considered for on-off valve.  
 - Leakage class shall be specified.  
 - Trim, seat, ball, stem and etc. material shall be specified.


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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				
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				
	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	
43					
OPTIONS	44				
	45				
	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		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				

Please clarify why 2 pneumatic connection is required?

Actuator yoke and housing material shall be carbon steel


**NOTES :**

				<b>Pneumatic Actuated Valve</b>	
					
01	TT	20/09/2021	For Approval	Sheet	9 of 14
00	TT	25/02/2021	For Approval	Based on P&ID Rev.A	
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						
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36						
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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					
	51					
PURCHASE	52	Manufacturer		According to aproved vendor list		
	53	Model		Supplier to advise		
	54					
	55					
	56					
57						

**NOTES :**


				<b>Hand Globe Valve</b>	
					
01	TT	20/09/2021	For Approval	Sheet	11 of 14
00	TT	25/02/2021	For Approval	Based on P&ID	Rev.A
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					
24					
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	48				
	49	Sizing calculation		No	
	50				
	51				
	52				
PURCHASE	53				
	54	Manufacturer		According to aproved vendor list	
	55	Model		Supplier to advise	
	56				
	57				

Recheck

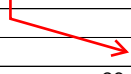



**NOTES :**


				<b>Pressure Reducing Valve</b>	
					
01	TT	20/09/2021	For Approval	Sheet	12 of 14
00	TT	25/02/2021	For Approval	Based on P&ID Rev.A	
Rev	By	Date	Description		

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					
36					
37					
38					
39					
40					
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				

Nitrogen



				<b>Check Valve</b>	
					
01	TT	20/09/2021	For Approval		
00	TT	25/02/2021	For Approval		
Rev	By	Date	Description	Sheet 13 of 14 Based on P&ID Rev.A	

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		
Rev	By	Date	Description		