





OWNER:  شرکت سست و سویی توهمه ایران (سهامی خاص)	<b>BUSHEHR PETROCHEMICAL COMPANY MEG PLANT</b>							EPC CONTRACTOR:  Chagalesh-Enerchimi-Steam Joint Venture BUPC-MEG PLANT PROJECT	
MC :  شرکت سست و سویی توهمه ایران (سهامی خاص)	<b>CALCULATION &amp; DATA SHEET OF CONTROL VALVES / ON-OFF VALVES FOR EMERGENCY INSTRUMENT AIR COMPRESSOR</b>								
<b>Owner Document Number: 17811-45B</b>	<b>Project</b> BU	<b>Area</b> 20	<b>Phase</b> VD	<b>Unit</b> 303	<b>Dis.</b> IN	<b>Doc.</b> DSH	<b>Seq.</b> 0091	<b>Contract No : 52-98/445</b>	
								<b>Rev.:</b> 01	<b>Page</b> 1 of 14

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

Rev	Date	Purpose of Issue	Prepared	Checked	Approved	AC Code
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	
<b>Class: 1      Phase: P</b>						





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12			
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16			
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**Notes:**

				<b>CALCULATION &amp; DATA SHEET OF          CONTROL VALVES / ON-OFF VALVES FOR          EMERGENCY INSTRUMENT AIR          COMPRESSOR</b>	
02	TT	25/10/2021	Approve For Construction		
01	TT	20/09/2021	For Approval		
00	TT	25/02/2021	For Approval		
Rev	By	Date	Description	Sheet	3 of 14
				Based on P&ID	rev. 02



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)	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	55 °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	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 :**

02	TT	25/10/2021	Approve For Construction	 Hand Ball Valve	
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. 02	



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)	26 Bar(a)
	10	Temperature	Norm. Max.	40°C	55°C
	11	Design	Press. Temp.	26 Bar(a)	60°C
	12	Ambient Temp.	Min. Max.	5 °C	55 °C
	13	Oper. Flow		50 Kg/hr / 43 Nm3/hr	
	14				
	15				
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	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 :**

					
02	TT	25/10/2021	Approve For Construction		
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. 02	

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-7003-501C(N)/ 1 1/2"-CWR-7008-501C(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.	6 Bar(g)	60°C
	12	Ambient Temp.	Min. Max.	5 °C	55 °C
	13	Oper. Flow		3,5 m3/hr	
	14				
	15				
BODY	16	Body Type		Ball valve, bolted type	
	17	Body Size	Bore	1 1/2"	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 :**

02	TT	25/10/2021	Approve For Construction		
01	TT	20/09/2021	For Approval		
00	TT	25/02/2021	For Approval		
Rev	By	Date	Description		Sheet 6 of 14 Based on P&ID rev. 02

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	55 °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	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				
	57				
<b>NOTES :</b>					
02	TT	25/10/2021	Approve For Construction		
01	TT	20/09/2021	For Approval		
00	TT	25/02/2021	For Approval		
Rev	By	Date	Description	Sheet 7 of 14 Based on P&ID rev. 02	



GENERAL	1	Tag Number		No Tag.no.: Qty 7 pcs	
	2	Service		Hand Ball valve	
	3	P&ID No.		BU-20-VD-303-PR-WG-0066	
	4	Location		Compressor block valve	
	5	Line/equip. No.		N/A	
	6				
	7				
PROCESS CONDITIONS	8	Fluid	State	Air/ water	Dry Gas
	9	Pressure	Norm. Max.	21 Bar(a)	26 Bar(a)
	10	Temperature	Norm. Max.	40°C	55°C
	11	Design	Press. Temp.	26 Bar(a)	60°C
	12	Ambient Temp.	Min. Max.	5 °C	55 °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	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				
	57				

**NOTES :**

02	TT	25/10/2021	Approve For Construction		
01	TT	20/09/2021	For Approval		
00	TT	25/02/2021	For Approval		
Rev	By	Date	Description		Sheet 8 of 14 Based on P&ID rev. 02

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				
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	55 °C
	13	Oper. Flow		3,5 m3/hr	
	14				
BODY	15	Body Type		Ball valve, bolted type	
	16	Body Size	Bore	1 1/2"	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	Trim	Form	Floating ball	
	23		Seat Mat.	PTFE / Graphite	
	24		Ball Mat. Shaft Mat.	SS 316	SS316
	25	Leakage rate		API502, zero	
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				
POSITION MONITOR	37				
	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	
PURCHASE	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					





**NOTES :**

					
02	TT	25/10/2021	Approve For Construction		
01	TT	20/09/2021	For Approval		
00	TT	25/02/2021	For Approval		
Rev	By	Date	Description		Sheet 9 of 14 Based on P&ID rev. 02








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.	6 Bar(g)	60°C
	12	Ambient Temp.	Min.	Max.	5 °C	55 °C
	13	Oper. Flow			3,5 m3/hr	
	14					
BODY	15	Body Type			Globe valve type, OS&Y	
	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					
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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 :**




02	TT	25/10/2021	Approve For Construction		  	
01	TT	20/09/2021	For Approval			
00	TT	25/02/2021	For Approval			
Rev	By	Date	Description			Sheet 11 of 14 Based on P&ID rev. 02

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 55 °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						

**NOTES :**

02	TT	25/10/2021	Approve For Construction		   	Sheet 12 of 14 Based on P&ID rev. 02	
01	TT	20/09/2021	For Approval				
00	TT	25/02/2021	For Approval				
Rev	By	Date	Description				

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) 26 Bar(a)
	11	Temperature	Norm.	Max.	40°C 55°C
	12	Design	Press.	Temp.	26 Bar(a) 60°C
	13	Ambient Temp.	Min.	Max.	5 °C 55 °C
	14	Oper. Flow		50 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	
	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				
	51				
PURCHASE	52	Manufacturer		Hoerbigger	
	53	Model		Supplier to advise	
	54				
	55				
	56				
				 Check Valve	
02	TT	25/10/2021	Approve For Construction	 Sheet 13 of 14 Based on P&ID rev. 02	
01	TT	20/09/2021	For Approval		
00	TT	25/02/2021	For Approval		
Rev	By	Date	Description		

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-7003-501C(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.	6 Bar(g) 60°C
	13	Ambient Temp.	Min.	Max.	5 °C 55 °C
	14	Oper. Flow		3,5 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	
	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				
	36				
37					
38					
39					
40					
OPTIONS	41				
	42				
	43				
	44				
	45				
CERTIFICATES	46	3.1 Material certificate		Yes	
	47				
	48				
	49				
	50				
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PURCHASE	52	Manufacturer		According to aproved vendor list	
	53	Model		Supplier to advise	
	54				
	55				
	56				
02	TT	25/10/2021	Approve For Construction		  
01	TT	20/09/2021	For Approval		
00	TT	25/02/2021	For Approval		
Rev	By	Date	Description		
Sheet 14 of 14					Based on P&ID rev. 02