










OWNER:  شرکت سست و سویی توستر ایرانیاان (سهایی نیاان)	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 EMERGENCY INSTRUMENT AIR COMPRESSOR								
MC :  شرکت سست و سویی توستر ایرانیاان (سهایی نیاان)	Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
Owner Document Number: 17811-45B	BU	20	VD	303	IN	DSH	0091	Rev.:	Page
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CALCULATION & DATA SHEET OF CONTROL VALVES / ON-OFF VALVES FOR EMERGENCY INSTRUMENT AIR COMPRESSOR

Rev	Date	Purpose of Issue	Prepared	Checked	Approved	AC Code
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	
					Class: 1	Phase: P





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Notes:

				CALCULATION & DATA SHEET OF CONTROL VALVES / ON-OFF VALVES FOR EMERGENCY INSTRUMENT AIR COMPRESSOR 	   
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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		50 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		Screwed	
	23	Trim	Form	Floating ball	
	24		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		Yes	
	48	Hydrotest certificate		Yes	
	49				
	50				
	51				
PURCHASE	52	Manufacturer		According to aproved vendor list	
	53	Model		Supplier to advise	
	54				
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	56				
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NOTES :

03	TT	07/02/2022	For Construction		  
02	TT	07/01/2022	For Construction		
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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)	85°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, 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		Screwed	
	23	Trim	Form	Floating ball	
	24		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		Yes	
	48	Hydrotest certificate		Yes	
	49				
	50				
	51				
PURCHASE	52	Manufacturer		According to aproved vendor list	
	53	Model		Supplier to advise	
	54				
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03	TT	07/02/2022	For Construction	 Hand Ball Valve	
02	TT	07/01/2022	For Construction		
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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		Screwed	
	23	Trim	Form	Floating ball	
	24		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		Yes	
	48	Hydrotest certificate		Yes	
	49				
	50				
	51				
PURCHASE	52	Manufacturer		According to aproved vendor list	
	53	Model		Supplier to advise	
	54				
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03	TT	07/02/2022	For Construction	 Hand Ball Valve	
02	TT	07/01/2022	For Construction		
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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.	SS 316	SS316
	26	Actuation	Material	Lever handle	CS
	27				
	28				
	29				
	30				
	31				
	32				
	33				
	34				
	35				
36					
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38					
39					
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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 :

03	TT	07/02/2022	For Construction	 Hand Ball Valve	
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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)	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	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.	SS 316	SS316
	26	Actuation	Material	Lever handle	CS
	27				
	28				
	29				
	30				
	31				
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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	
	54				
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03	TT	07/02/2022	For Construction	 Hand Ball Valve	
02	TT	07/01/2022	For Construction		
01	TT	25/10/2021	For Construction		
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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		3,5 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		Screwed	
	22	Trim	Form	Floating ball	
	23		Seat Mat.	RPTFE	
	24		Ball 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		According to approved vendor list	
	53	Valve Model		Supplier to advise	
	54	Actuator Manufacturer		According to approved vendor list	
	55	Actuator Model		Supplier to advise	
	56				
	57				


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03	TT	07/02/2022	For Construction	   
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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		3,5 m3/hr		
BODY	14					
	15	Body Type		Ball valve, 2-piece, split-body		
	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					
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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					
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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.		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		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				
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 :

03	TT	07/02/2022	For Construction		
02	TT	07/01/2022	For Construction		
01	TT	25/10/2021	For Construction		
00	TT	20/09/2021	For Approval		
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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)	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	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		Form		Disc	
	20	Trim	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					
	25					
26						
ACTUATOR	27	Positioner controller			Electro-pneumatic (I/P)	
	28	Interface			4 -20 mA , HART	
	29	Fail Position			FO	
	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			No.	
	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			50 Kg/hr / 43 Nm3/hr	
	42	Pressure	Inlet	outlet	21 bar(a)	8 bar(a)
	43	Pressure drop			VTA	
	44	Cv Selected			VTA	
	45					
	46					
	47					
	48					
CERTIFICATES	49	3.1 Material certificate			Yes	
	50	ATEX			No	
	51	SIL certificate	Level		No	
	52					
PURCHASE	53	Valve Manufacturer			According to aproved vendor list	
	54	Valve Model			Supplier to advise	
	55	Actuator Manufacturer			According to aproved vendor list	
	56	Actuator Model			Supplier to advise	
	57					

				INSTRUMENT AND VALVE DATASHEET			
03	TT	07/02/2022	For Construction			Sheet 13 of 16 Based on P&ID rev. 02	
02	TT	07/01/2022	For Construction				
01	TT	25/10/2021	For Construction				
00	TT	20/09/2021	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)	85°C
	13	Ambient Temp.	Min.	Max.	5 °C	52 °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					
03	TT	07/02/2022	For Construction		   	
02	TT	07/01/2022	For Construction			
01	TT	25/10/2021	For Construction			
00	TT	20/09/2021	For Approval			
Rev	By	Date	Description		Sheet 15 of 16 Based on P&ID rev. 02	

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	
	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				
	51				
PURCHASE	52	Manufacturer		According to aproved vendor list	
	53	Model		Supplier to advise	
	54				
	55				
	56				
03	TT	07/02/2022	For Construction		  
02	TT	07/01/2022	For Construction		
01	TT	25/10/2021	For Construction		
00	TT	20/09/2021	For Approval		
Rev	By	Date	Description		Sheet 16 of 16 Based on P&ID rev. 02