







OWNER:  شرکت سست و سویی توهم ایران (سایه شایان)	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								
MC :  شرکت سست و سویی توهم ایران (سایه 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
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- PV-10151 (compressor bypass recycle valve) data sheet and calculation shall be added.
- Revised P&ID shall be issued before this document, latest revision of P&ID (rev.1) has not conformity with instrument data sheet.
- Tag no. shall be revised as per latest rev. of PID.

All check valve and hand valve shall be deleted.

20-C-1002

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

 شرکت سست و سویی توهم ایران (سایه شایان)	 Chagalesh-Enerchimi-Steam Joint Venture BUPC-MEG PLANT PROJECT	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT
Document Review		
Issue Purpose:	AFC	
Result Code: AP,AN,CM,RE,NC	AN	
Next Status : IFC,IFA,IFI,AFC,AB	AFC	
Responsible Department	MECHANICAL	
Commented Date	DEC/18/2021	
Approval or review hereunder shall not be construed to relieve Vendor / Subcontractor of his responsibilities and liability under the contract.		

02	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

These valves will not checked by instrument department and shall be removed from this data sheet

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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	8
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Notes:

				CALCULATION & DATA SHEET OF CONTROL VALVES / ON-OFF VALVES FOR NITROGEN GAS BOOSTER	
02	TT	25/10/2021	Approve For Construction		
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Based on Basis of design of the project design pressure must be specified by the following rule:
 Design pressure of process static EQUIPMENT shall be based on the max. operating pressure.
 Malfunction and EQUIPMENT failure shall be taken into consideration by safety devices.
 Design pressure shall be selected from the list below:
 • for max operating pressure below 2 barg use 3.5 barg
 • for max operating pressure between 2 barg and 15 barg use max operating pressure +1.5 bar
 • for max operating pressure between 15 barg and 100 barg use max operating pressure x 110%
 • for max operating pressure equal and above 100 barg use max operating pressure +10 bar
 The comment is valid for all instruments.

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GENERAL	1	Tag Number	No Tag.no.: Qty 1 pc			
	2	Service	Hand Ball valve			
	3	P&ID No.	20-VD-303-PR-WG-0013			
	4	Location	Compressor Inlet			
	5	Line/equip. No.	2"-INL-1001-511C(N)			
	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.	Shaft Mat.	SS 316	SS316
	26	Actuation	Material	Lever handle	CS	
	27					
	28					
	29					
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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					

This valve will not checked by instrument department and shall be removed from this data sheet

NOTES :

				INSTRUMENT AND VALVE DATASHEET		
				Hand Ball Valve		
02	TT	25/10/2021	Approve For Construction			
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00	TT	25/02/2021	For Approval			
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This valve will not checked by instrument department and shall be removed from this data sheet

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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-0013	
	4	Location		Compressor Outlet	
	5	Line/equip. No.		2"-NL-1003-539D(N)	
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	Trim	Form	Floating ball	
	24		Seat Mat.	PTFE / Graphite	
	25		Ball Mat.	SS 316	SS316
	25		Shaft Mat.		
	26	Actuation	Material	Lever handle	CS
	27				
	28				
29					
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31					
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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				
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NOTES :



				INSTRUMENT AND VALVE DATASHEET		
				Hand Ball Valve		
02	TT	25/10/2021	Approve For Construction			
01	TT	20/09/2021	For Approval			
00	TT	25/02/2021	For Approval			
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This valve will not checked by instrument department and shall be removed from this data sheet

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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-0013	
	4	Location		Compressor Cooling water	
	5	Line/equip. No.		2"-CWS-1004-501C(N)/ 2"-CWB-1011-501C(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	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				
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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	
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NOTES :



				INSTRUMENT AND VALVE DATASHEET	
				Hand Ball Valve	
					
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This valve will not checked by instrument department and shall be removed from this data sheet

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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-0013	
	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	CS
	27				
	28				
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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 :

				INSTRUMENT AND VALVE DATASHEET	
				Hand Ball Valve	
					
02	TT	25/10/2021	Approve For Construction	 Sheet 7 of 14 Based on P&ID rev.A	
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Not Found on PID

This valve will not checked by instrument department and shall be removed from this data sheet

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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-0013		
	4	Location	Compressor block valve		
	5	Line/equip. No.	N/A		
	6				
	7				
PROCESS CONDITIONS	8	Fluid	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.	SS 316	SS316
	26	Actuation	Material	Lever handle	CS
	27				
	28				
	29				
OPTIONS	44				
	45				
	46				
CERTIFICATES	47	3.1 Material certificate	No		
	48	Hydrotest certificate	No		
	49				
	50				
PURCHASE	52	Manufacturer	According to aproved vendor list		
	53	Model	Supplier to advise		
	54				
	55				
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NOTES :

				INSTRUMENT AND VALVE DATASHEET		Hand Ball Valve	
							
02	TT	25/10/2021	Approve For Construction				
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						Based on P&ID #REF!	



Discrepancy with PID, In PID XV-71102

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Tag no. shall be revised

GENERAL	1	Tag Number		XV-10002	
	2	Service		Ball valve	
	3	P&ID No.		BU-20-VD-303-PR-WG-0013	
	4	Location		Compressor Cooling water Inlet	
	5	Line/equip. No.		2"-CWS-1004-501C(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.		5 °C	52 °C
	13	Oper. Flow		14,5 m3/hr	
	14				
BODY	15	Body Type		Ball valve, bolted type	
	16	Body Size		2"	Full bore
	17	Guiding		-	2
	18	Conn. Type			
	19	Body Material shall follow project PMS			
	20	PIECES SPLIT-BODY FULL BORE, B7/2H			
	21	OMET COATED) FLOATING BALL LE L.D.			
	22	API 608, Anti Blow ,Anti Static, Fire Safe, Packing:			
	23	RPTFE, Valve test API 598,Gasket: 304 Metallic			
	24	Winding / Flexible Graphite filler Spiral Wound			
25	Gasket ,ASME B16.5				
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		Solenoid valve is an important accessories in on-off valves so one section must be assigned for this issue and specified general data such as tag no., signal type, ex protection, area classification, material and etc.	
	39	Power supply			
	40	Type of switch/transmitter			
	41	Area Classification			
	42	Cable Gland			
OPTIONS	44				
	45				
	46				
CERTIFICATES	47	3.1 Material certificate		Yes	
	48	Hydrotest certificate		Yes	
	49	ATEX		No	
	50	SIL certificate	Level	No	Ex'd' certificate for solenoid valve is required
	51	IP certificate		No	
PURCHASE	52	Valve Manufacturer		According to aproved vendor list	
	53	Valve Model		Supplier to advise	
	54	Actuator Manufacturer		Supplier to advise	
	55	Actuator Model		Supplier to advise	
	56				
	57				

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				INSTRUMENT AND VALVE DATASHEET	
				Pneumatic Actuated Valve	
					
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This valve will not checked by instrument department and shall be removed from this data sheet

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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-0013	
	4	Location		Compressor Cooling water	
	5	Line/equip. No.		1 1/2"-CWS-1006-501C(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	52 °C
	13	Oper. Flow		14,5 m ³ /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				
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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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				INSTRUMENT AND VALVE DATASHEET	
				Hand Globe Valve	
					
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Please clarify it is not found in PID



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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-0013	
	4	Location		Compressor Inlet & actuator cooling inlet	
	5	Line/equip. No.		N/A	
	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
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					

not Found in PID

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This valve will not checked by instrument department and shall be removed from this data sheet

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GENERAL	1	Tag Number		No Tag.no.: Qty 2 pcs	
	2	Service		Check Valve	
	3	P&ID No.		BU-20-VD-303-PR-WG-0013	
	4	Location		Compressor Outlet	
	5	Line/equip. No.		2"-NL-1003-539D(N)	
	6				
	7				
	8				
PROCESS CONDITIONS	9	Fluid	State		Nitrogen 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				
	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				

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This valve will not checked by instrument department and shall be removed from this data sheet

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GENERAL	1	Tag Number		No Tag.no.: Qty 1 pcs	
	2	Service		Check Valve	
	3	P&ID No.		BU-20-VD-303-PR-WG-0013	
	4	Location		Compressor Cooling water inlet	
	5	Line/equip. No.		2"-CWS-1004-501C(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	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				
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				

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