Base Load Power Hub (BLPH)

TECHNICAL DATASHEET for Control Valves

Document Number: 123A90-DDL-IN-DS-40036

Document Class: 2

02	06/12/2023	Accepted for Construction (AFC)	VBA	LCA	DLO
01	28/08/2023	Accepted for Construction (AFC)	VBA	LCA	DLO
00	14/11/2023	Issue for Review (IFR)	VBA	LCA	DLO
Rev.	Date	Description	Prepared	Reviewed	Approved

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36	64-PV-031B - Sh. 1	X	X	X					
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Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Accepted for Construction (AFC)
02	Accepted for Construction (AFC)

HOLDS LIST

No.	Description

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GENERAL REQUIREMENTS / NOTES

1) This datasheet is to be read in conjunction with following documents:
   a) Instrumentation for Package Unit Specification (123A90-DDL-IN-SP-40094);
   b) Material Requisition (123A90-DDL-IN-MR-40037);
   c) Specification for Piping Material Classes (123A90-DDL-PP-SP-70000).
   d) DS - Manual Valves (123A90-DDL-PP-DS-70003).

2) The Valves shall be a completely assembled unit including the actuators, positioner, limit switches (if required), etc.

3) All materials and electronic items shall be suitable for use in marine environment.

4) Ambient Temperature Min: -8.4 °C, Norm: 10.5 °C, Max: +25.0 °C.

5) In general, all hazardous area equipment shall be certified Exd IIC (or IIB+H2) T1 for Zone 2, IP66 as per ATEX directive.

6) All flanges in ASME B31.3 and ASME B31.12 shall be Raised Face type.

7) Vendor shall supply equivalent or better material for valve trim. Special trim design shall be considered for cavitation, flashing and high noise services.

8) Valve sizes indicated are preliminary. Control valves will generally be sized so that the maximum flow does not exceed 90% of the valve capacity. Minimum flow should not be less than 10% of the valve capacity.

9) Valve trim characteristics shall be as per datasheet and vendor selection.

10) Deleted.

11) Required characteristics shall be achieved using the appropriate trim design. Where the characteristic cannot be achieved using the trim design, unless specified on the instrument datasheets, control valves shall generally have equal percentage characteristics.

12) Trim material mentioned in the datasheet as per vendor data. Solid stellite or hardened trim (i.e. closure member, cage, stem, seat ring) shall be considered where required as per process data provided.

13) Vendor is responsible to verify potential flashing or cavitation occurrence in the control valve service and select suitable wetted parts material design pressure and temperature. applicable to the specific condition. Vendor shall confirm all parts (body/ bonnet/trim/packing etc.) of the valve meet process conditions provided.

14) Vendor is responsible to note service condition and selection suitable wetted parts material applicable to the specific condition.

15) Valve Positioner shall be provided for all control valves electro-pneumatic type and certified according to above note 5.

16) Positioner shall have selection for direct and reverse action with same signal without using additional component.

17) Valve assembly shall be suitable for installation in horizontal as well as vertical pipeline. Valve shall be provided permanent marking of flow direction

18) The actual bench setting (spring range) shall be indicated on the valve tag plate.

19) As a minimum, the actuator of globe valve shall be sized for 1.25 times the maximum PD condition.

20) Noise level shall not exceed 85 dBA, at a point 1m downstream of the valve and 1m from the pipe surface.

21) Extension Bonnets shall be provided on services above 200℃ and below 0℃ or in accordance with the manufacturer's recommendation.

22) Instrumentation on BLPH shall be 4-20mA Smart HART Revision 7. All transmitters shall be NAMUR NE43 compliant for defining and differentiating when the process variable is within normal range, out of range but fault-free or when fault detection has occurred.

23) if required, limit switches shall be Hermetically-sealed H CLASS insulated proximity switches as per IEC60947-5-2/3/6 and provided with terminal box (minimum two entry, dedicated for each signal). Mechanical indicator (Red for Close position & Green for open position) shall be provided.

24) Pneumatic tubing and fittings shall be AISI 316L stainless steel, unless otherwise specified. Fittings (Twin-ferrule compression type) and tubing shall be provided by primary manufacturer.

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GENERAL REQUIREMENTS / NOTES

25) Material test certificates MTCs shall be provided by Manufacturer for all valves, tubing & fittings. MTCs shall include EN 10204 3.1 certification for all metallic materials.

26) PED 2014/68/EU Pressure Equipment Directive 2014/68/EU shall apply for all piping materials where Category is applicable.

27) The instrument air supply is available at the following pressure:
Normal: 9 barg; Minimum: 4 barg; Maximum: 10 barg, Design: 11 barg.
Actuator and accessories shall be sizing considering above instrument air pressure.

28) Valve including accessories shall be provided with 316 SS identification tag, permanently attached.

29) Stainless steel material shall be dual certified type (i.e. SS 316 / 316L).

30) Complete valve inspection and testing requirements shall comply to Material Requisition (123A90-DDL-IN-MR-40037) document.

31) Vendor is responsible for selection of suitable wetted parts material applicable to the specific service condition.

32) The SS nameplate shall indicate the tag number, manufacture name, model number, serial number, size, rating, certification data, and other items as required.

33) The colour of the actuator shall be Standard Vendor.

34) Information with asterisk (*) shall be confirmed or provided by manufacturer according to the service condition.

35) The Valve accessories shall be mounted on a suitable plate and shall be provided with mounting accessories.

36) Vendor shall provide provision for applying lubrication to gland packing (as applicable).

37) All valves on HYDROGEN service shall be provided with certified packing for Fugitive Emissions in accordance with ISO 15848-1 Cl B and ISO 15848-2.

38) Valve body painting shall be as per Coating and Painting Specification (123A90-DDL-MAT-SP-60006).

39) Control Valves shall be compliant with IEC 60534.

40) Typically shut off classification for general service control valves will be class IV. For applications involving (safety / environmental issues, product loss etc.) where valve leakage is required to be near zero, class V or class VI shall be used.

41) In hydrogen service control valves shall be class B.

42) Instrumentation on BLPH shall be 4-20mA Smart HART Revision 7. All transmitters shall be NAMUR NE43 compliant for defining and differentiating when the process variable is within normal range, out of range but fault-free or when fault detection has occurred.

43) To be quoted as option considering full bore control valves.

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GENERAL	1	Tag Number	P&ID Number			25-FV-031		123A90-DDL-PR-PID-80015	
	2	Service				NITROGEN FROM NITROGEN SYSTEM (U-64000) TO HYDROGEN STORAGE VESSEL (V-25001A)			
	3	Area Classification	Certification			ATEX ZONE 2		Ex-d IIC (or IIB+H2) T1	
	4	Ambient Temperature:	Min.	Max.		°C		-8.4	+25
	5	Allowable Sound Pressure Level dBA				Max 85 dBA			
	6	Ingress Protection	Power Failure Position			IP-66		-	CLOSE
	7	Air Supply Pressure:	Min.	Norm.	Max.	barg	4	9	10
PIPELINE	8	Line Number	Pipe Insulation			1"-HY-153-03HSS-N			NOT INSULATED (PAINTED)
	9	Line Size and Schedule	Inlet	Outlet		1" / 3.38 mm		1" / 3.38 mm	
	10	Line Spec	Line Material			03HSS		ASTM A312 Gr.TP316/316L	
PROCESS CONDITION	11	Process Fluid	Fluid Phase			NITROGEN		GAS	
	12	Upstream Condition							
	13	Des. Press. / Full Vac.	Des. Temperature Min / Max			40 barg		100 °C	
	14	Critical Pressure	Critical Temperature						
	15	Differential Pressure - Maximum Shut Off				40 bar			
	16					Units	@ Max. Flow	@ Norm. Flow	@ Min. Flow
	17	Flow Rate (Gas)				Nm^3/h		40	
	18	Flow Rate (Liquid)							
	19	Inlet Pressure				barg		7	
	20	Pressure Drop				bar		max 7 - min 4	
	21	Inlet Temperature				°C		15	
	22	Inlet Density / Specific Gravity				kg/m^3		9.3	
	23	Inlet Compressibility Factor				-		0.99	
	24	Inlet Viscosity				cP		0.017	
	25	Inlet Specific Heats Ratio (Cp/Cv)				-		1.4	
	26	Inlet Vapour Pressure							
	27	Molecular Weight				-		28	
CALCULATED RESULTS	28	Flow Coefficient Cv						0.3678 / 0.3846	
	29	Travel				75.6%			
	30	Sound Pressure Level				77-27 dBA (20)			
BODY AND TRIM	31	MFR	Model			AST		CV-8407	
	32	Body Type				GLOBE VALVE (HS03C02RFH)			
	33	Body Size	Trim Size			1"		1/4"	
	34	Rated Cv	Characteristics.			0.85		Equal% (11)	
	35	End Connec. & Rating				FLANGED ASME B16.5 / #300			
	36	Body Material				A351 CF3M			
	37	Bonnet Type	Material			Bolted (21)		A479 36L	
	38	Bolting				A193 B8M Cl. 2 / A194 8M			
	39	Packing Material				PTFE (37)			
	40	Flow Action To				OPEN			
	41	Lubricator	Isolat. Valve			-		By Contractor	
	42	Guiding	No. of Ports			Top Guided		1	
	43	Trim Type				Contoured (12, 13)			
	44	Rated Travel				13mm			
	45	Plug/ Ball/ Disk Material				A479 316L + PTFE			
	46	Seat Material				A479 316L (12)			
	47	Cage	Stem Material			-		A479 316L	
	48	Gasket Material				By Contractor (in line)			
	49	Flange Finish				RF			

No.	Date	Description	By	Chkd	Appr
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO

INSTRUMENT DATASHEET

Control Valve (Sheet 1 of 2)

CROSSWIND

ROSETTI MARINO

Sheet 06 of 37

Code: Dwg.No 123A90-DDL-IN-DS-40036 Rev. 01

ACTUATOR	50	MFR	Model	AST	SD11R
	51	Type		PNUEMATIC / DIAPHRAGM (*)	
	52	Size	Area	SD11R	(*)
	53	Handwheel		NOT REQUIRED	
	54	Bench Range		15-30 psi	
	55	Volume Tank		NOT REQUIRED	
TESTS	56	Hydro. Pressure		REQUIRED	
	57	Leakage		REQUIRED (37)	
	58				
POSITIONER	59	MFR	Model	TISSIN	TS900 (15, 16)
	60	Signal: Inlet	Outlet	4-20 mA	3 to 15 psi
	61	Increase Signal Valve:		OPEN VALE	
	62	Cam Characteristic		(*)	
	63	Bypass	Gauges	NOT REQ.	YES
	64	Signal Transmission		REQUIRED VALVE POSITION 4-20 mA to PCS (22) (25-ZT-001)	
COMM. & SOFTWARE	65	Comm Type	Signal Type	-	-
	66	D D Rev.	CFF Rev.	-	-
	67	Device Tag	Hart Tag	-	-
	68	Diagnostics	Capac	-	-
	69	Segment	Device Addr.	-	-
	70	Device Class	Simulate	-	-
	71	Nom. Current	Oper Volt	-	-
SOLENOID	72	MFR	Model	-	-
	73	Type		-	
	74	When De-Enegr.Valve:		-	
	75	Schematic Detail		-	
SWITCHES	76	MFR	Model	EISENBAU	GDSN0LIS2MS290
	77	Type	Quantity	(*)	2
	78	Contacts / Rating		No. 1 DPDT / 1A	
	79	Switching Position		ON STEAM	
	80				
AIR SET	81	MFR	Model	SITECNA	FR04411S00SSNB2
	82	Set Pressure		Operation Pressure of valve	
	83	Filter	Gauge	YES	YES
ELECT.	84	Connection	Class	No. (*) / M20	-
PURCHASE	85	Manufacturer		AST	
	86	Model		CV-8407	
	87	Purchase Order No.		1724000740	

Notes:
(1) N.1 PSV INSTALLED DOWNSTREAM THE AIR FILTER REGULATOR, SIZE 1/4", SS, set 6 Barg.

						INSTRUMENT DATASHEET	CROSSWIND		
						Control Valve (Sheet 2 of 2)	ROSETTI MARINO		
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO		Sheet 7 of	37	
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO				
No.	Date	Description	By	Chkd	Appr	Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

GENERAL	1	Tag Number	P&ID Number			25-FV-032		123A90-DDL-PR-PID-80016	
	2	Service				NITROGEN FROM NITROGEN SYSTEM (U-64000) TO HYDROGEN STORAGE VESSEL (V-25001B)			
	3	Area Classification	Certification			ATEX ZONE 2		Ex-d IIC (or IIB+H2) T1	
	4	Ambient Temperature:	Min.	Max.		°C		-8.4	+25
	5	Allowable Sound Pressure Level dBA				Max 85 dBA			
	6	Ingress Protection	Power Failure Position			IP-66		-	CLOSE
	7	Air Supply Pressure:	Min.	Norm.	Max.	barg	4	9	10
PIPELINE	8	Line Number	Pipe Insulation			1"-HY-186-03HSS-N			NOT INSULATED (PAINTED)
	9	Line Size and Schedule	Inlet	Outlet		1" / 3.38 mm		1" / 3.38 mm	
	10	Line Spec	Line Material			03HSS		ASTM A312 Gr.TP316/316L	
PROCESS CONDITION	11	Process Fluid	Fluid Phase			NITROGEN		GAS	
	12	Upstream Condition							
	13	Des. Press. / Full Vac.	Des. Temperature Min / Max			40 barg		100 °C	
	14	Critical Pressure	Critical Temperature						
	15	Differential Pressure - Maximum Shut Off				40 bar			
	16					Units	@ Max. Flow	@ Norm. Flow	@ Min. Flow
	17	Flow Rate (Gas)				Nm^3/h		40	
	18	Flow Rate (Liquid)							
	19	Inlet Pressure				barg		7	
	20	Pressure Drop				bar		max 7 - min 4	
	21	Inlet Temperature				°C		15	
	22	Inlet Density / Specific Gravity				kg/m^3		9.3	
	23	Inlet Compressibility Factor				-		0.99	
	24	Inlet Viscosity				cP		0.017	
	25	Inlet Specific Heats Ratio (Cp/Cv)				-		1.4	
	26	Inlet Vapour Pressure							
	27	Molecular Weight				-		28	
CALCULATED RESULTS	28	Flow Coefficient Cv						0.3678 / 0.3846	
	29	Travel				75.6%			
	30	Sound Pressure Level				77.27 dBA (20)			
BODY AND TRIM	31	MFR	Model			AST		CV-8407	
	32	Body Type				GLOBE VALVE (HS03C02RFH)			
	33	Body Size	Trim Size			1"		1/4"	
	34	Rated Cv	Characteristics.			0.85		Equal% (11)	
	35	End Connec. & Rating				FLANGED ASME B16.5 / #300			
	36	Body Material				A351 CF3M			
	37	Bonnet Type	Material			Bolted (21)		A479 36L	
	38	Bolting				A193 B8M Cl. 2 / A194 8M			
	39	Packing Material				PTFE (37)			
	40	Flow Action To				OPEN			
	41	Lubricator	Isolat. Valve			-		By Contractor	
	42	Guiding	No. of Ports			Top Guided		1	
	43	Trim Type				Contoured (12, 13)			
	44	Rated Travel				13mm			
	45	Plug/ Ball/ Disk Material				A479 316L + PTFE			
	46	Seat Material				A479 316L (12)			
	47	Cage	Stem Material			-		A479 316L	
	48	Gasket Material				By Contractor (in line)			
	49	Flange Finish				RF			

No.	Date	Description	By	Chkd	Appr
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO
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INSTRUMENT DATASHEET

Control Valve (Sheet 1 of 2)

CROSSWIND

ROSETTI MARINO

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Code: Dwg.No 123A90-DDL-IN-DS-40036 Rev. 01

ACTUATOR	50	MFR	Model	AST	SD11R
	51	Type		PNUEMATIC / DIAPHRAGM (*)	
	52	Size	Area	SD11R	(*)
	53	Handwheel		NOT REQUIRED	
	54	Bench Range		15-30 psi	
	55	Volume Tank		NOT REQUIRED	
TESTS	56	Hydro. Pressure		REQUIRED	
	57	Leakage		REQUIRED (37)	
	58				
POSITIONER	59	MFR	Model	TISSIN	TS900 (15, 16)
	60	Signal: Inlet	Outlet	4-20 mA	3 to 15 psi
	61	Increase Signal Valve:		OPEN VALE	
	62	Cam Characteristic		(*)	
	63	Bypass	Gauges	NOT REQ.	YES
	64	Signal Transmission		REQUIRED VALVE POSITION 4-20 mA to PCS (22) (25-ZT-001)	
COMM. & SOFTWARE	65	Comm Type	Signal Type	-	-
	66	D D Rev.	CFF Rev.	-	-
	67	Device Tag	Hart Tag	-	-
	68	Diagnostics	Capac	-	-
	69	Segment	Device Addr.	-	-
	70	Device Class	Simulate	-	-
	71	Nom. Current	Oper Volt	-	-
SOLENOID	72	MFR	Model	-	-
	73	Type		-	
	74	When De-Enegr.Valve:		-	
	75	Schematic Detail		-	
SWITCHES	76	MFR	Model	EISENBAU	GDSN0LIS2MS290
	77	Type	Quantity	(*)	2
	78	Contacts / Rating		No. 1 DPDT / 1A	
	79	Switching Position		ON STEAM	
	80				
AIR SET	81	MFR	Model	SITECNA	FR04411S00SSNB2
	82	Set Pressure		Operation Pressure of valve	
	83	Filter	Gauge	YES	YES
ELECT.	84	Connection	Class	No. (*) / M20	-
PURCHASE	85	Manufacturer		AST	
	86	Model		CV-8407	
	87	Purchase Order No.		1724000740	

Notes:
(1) N.1 PSV INSTALLED DOWNSTREAM THE AIR FILTER REGULATOR, SIZE 1/4", SS, set 6 Barg.

						INSTRUMENT DATASHEET	CROSSWIND		
						Control Valve (Sheet 2 of 2)	ROSETTI MARINO		
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO		Sheet 09 of	37	
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO				
No.	Date	Description	By	Chkd	Appr	Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

GENERAL	1	Tag Number	P&ID Number			25-FV-033		123A90-DDL-PR-PID-80017	
	2	Service				NITROGEN FROM NITROGEN SYSTEM (U-64000) TO HYDROGEN STORAGE VESSEL (V-25001C)			
	3	Area Classification	Certification			ATEX ZONE 2		Ex-d IIC (or IIB+H2) T1	
	4	Ambient Temperature:	Min.	Max.		°C		-8.4	+25
	5	Allowable Sound Pressure Level dBA				Max 85 dBA			
	6	Ingress Protection	Power Failure Position			IP-66		-	CLOSE
	7	Air Supply Pressure:	Min.	Norm.	Max.	barg	4	9	10
PIPELINE	8	Line Number	Pipe Insulation			1"-HY-187-03HSS-N			NOT INSULATED (PAINTED)
	9	Line Size and Schedule	Inlet	Outlet		1" / 3.38 mm		1" / 3.38 mm	
	10	Line Spec	Line Material			03HSS		ASTM A312 Gr.TP316/316L	
PROCESS CONDITION	11	Process Fluid	Fluid Phase			NITROGEN		GAS	
	12	Upstream Condition							
	13	Des. Press. / Full Vac.	Des. Temperature Min / Max			40 barg		100 °C	
	14	Critical Pressure	Critical Temperature						
	15	Differential Pressure - Maximum Shut Off				40 bar			
	16					Units	@ Max. Flow	@ Norm. Flow	@ Min. Flow
	17	Flow Rate (Gas)				Nm^3/h		40	
	18	Flow Rate (Liquid)							
	19	Inlet Pressure				barg		7	
	20	Pressure Drop				bar		max 7 - min 4	
	21	Inlet Temperature				°C		15	
	22	Inlet Density / Specific Gravity				kg/m^3		9.3	
	23	Inlet Compressibility Factor				-		0.99	
	24	Inlet Viscosity				cP		0.017	
	25	Inlet Specific Heats Ratio (Cp/Cv)				-		1.4	
	26	Inlet Vapour Pressure							
	27	Molecular Weight				-		28	
CALCULATED RESULTS	28	Flow Coefficient Cv						0.3678 / 0.3846	
	29	Travel				75.6%			
	30	Sound Pressure Level				77.27 dBA (20)			
BODY AND TRIM	31	MFR	Model			AST		CV-8407	
	32	Body Type				GLOBE VALVE (HS03C02RFH)			
	33	Body Size	Trim Size			1"		1/4"	
	34	Rated Cv	Characteristics.			0.85		Equal% (11)	
	35	End Connec. & Rating				FLANGED ASME B16.5 / #300			
	36	Body Material				A351 CF3M			
	37	Bonnet Type	Material			Bolted (21)		A479 36L	
	38	Bolting				A193 B8M Cl. 2 / A194 8M			
	39	Packing Material				PTFE (37)			
	40	Flow Action To				OPEN			
	41	Lubricator	Isolat. Valve			-		By Contractor	
	42	Guiding	No. of Ports			Top Guided		1	
	43	Trim Type				Contoured (12, 13)			
	44	Rated Travel				13mm			
	45	Plug/ Ball/ Disk Material				A479 316L + PTFE			
	46	Seat Material				A479 316L (12)			
	47	Cage	Stem Material			-		A479 316L	
	48	Gasket Material				By Contractor (in line)			
	49	Flange Finish				RF			

No.	Date	Description	By	Chkd	Appr
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO
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INSTRUMENT DATASHEET

Control Valve (Sheet 1 of 2)

CROSSWIND

ROSETTI MARINO

Sheet 10 of 37

Code: Dwg.No 123A90-DDL-IN-DS-40036 Rev. 01

ACTUATOR	50	MFR	Model	AST	SD11R
	51	Type		PNUEMATIC / DIAPHRAGM (*)	
	52	Size	Area	SD11R	(*)
	53	Handwheel		NOT REQUIRED	
	54	Bench Range		15-30 psi	
	55	Volume Tank		NOT REQUIRED	
TESTS	56	Hydro. Pressure		REQUIRED	
	57	Leakage		REQUIRED (37)	
	58				
POSITIONER	59	MFR	Model	TISSIN	TS900 (15, 16)
	60	Signal: Inlet	Outlet	4-20 mA	3 to 15 psi
	61	Increase Signal Valve:		OPEN VALE	
	62	Cam Characteristic		(*)	
	63	Bypass	Gauges	NOT REQ.	YES
	64	Signal Transmission		REQUIRED VALVE POSITION 4-20 mA to PCS (22) (25-ZT-001)	
COMM. & SOFTWARE	65	Comm Type	Signal Type	-	-
	66	D D Rev.	CFF Rev.	-	-
	67	Device Tag	Hart Tag	-	-
	68	Diagnostics	Capac	-	-
	69	Segment	Device Addr.	-	-
	70	Device Class	Simulate	-	-
	71	Nom. Current	Oper Volt	-	-
SOLENOID	72	MFR	Model	-	-
	73	Type		-	
	74	When De-Enegr.Valve:		-	
	75	Schematic Detail		-	
SWITCHES	76	MFR	Model	EISENBAU	GDSN0LIS2MS290
	77	Type	Quantity	(*)	2
	78	Contacts / Rating		No. 1 DPDT / 1A	
	79	Switching Position		ON STEAM	
	80				
AIR SET	81	MFR	Model	SITECNA	FR04411S00SSNB2
	82	Set Pressure		Operation Pressure of valve	
	83	Filter	Gauge	YES	YES
ELECT.	84	Connection	Class	No. (*) / M20	-
PURCHASE	85	Manufacturer		AST	
	86	Model		CV-8407	
	87	Purchase Order No.		1724000740	

Notes:
(1) N.1 PSV INSTALLED DOWNSTREAM THE AIR FILTER REGULATOR, SIZE 1/4", SS, set 6 Barg.

						INSTRUMENT DATASHEET	CROSSWIND		
						Control Valve (Sheet 2 of 2)	ROSETTI MARINO		
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO		Sheet 11 of	37	
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO				
No.	Date	Description	By	Chkd	Appr	Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

GENERAL	1	Tag Number	P&ID Number			25-FV-034		123A90-DDL-PR-PID-80018	
	2	Service				NITROGEN FROM NITROGEN SYSTEM (U-64000) TO HYDROGEN STORAGE VESSEL (V-25001D)			
	3	Area Classification	Certification			ATEX ZONE 2		Ex-d IIC (or IIB+H2) T1	
	4	Ambient Temperature:	Min.	Max.		°C		-8.4	+25
	5	Allowable Sound Pressure Level dBA				Max 85 dBA			
	6	Ingress Protection	Power Failure Position			IP-66		-	CLOSE
	7	Air Supply Pressure:	Min.	Norm.	Max.	barg	4	9	10
PIPELINE	8	Line Number	Pipe Insulation			1"-HY-188-03HSS-N			NOT INSULATED (PAINTED)
	9	Line Size and Schedule	Inlet	Outlet		1" / 3.38 mm		1" / 3.38 mm	
	10	Line Spec	Line Material			03HSS		ASTM A312 Gr.TP316/316L	
PROCESS CONDITION	11	Process Fluid	Fluid Phase			NITROGEN		GAS	
	12	Upstream Condition							
	13	Des. Press. / Full Vac.	Des. Temperature Min / Max			40 barg		100 °C	
	14	Critical Pressure	Critical Temperature						
	15	Differential Pressure - Maximum Shut Off				40 bar			
	16					Units	@ Max. Flow	@ Norm. Flow	@ Min. Flow
	17	Flow Rate (Gas)				Nm^3/h		40	
	18	Flow Rate (Liquid)							
	19	Inlet Pressure				barg		7	
	20	Pressure Drop				bar		max 7 - min 4	
	21	Inlet Temperature				°C		15	
	22	Inlet Density / Specific Gravity				kg/m^3		9.3	
	23	Inlet Compressibility Factor				-		0.99	
	24	Inlet Viscosity				cP		0.017	
	25	Inlet Specific Heats Ratio (Cp/Cv)				-		1.4	
	26	Inlet Vapour Pressure							
	27	Molecular Weight				-		28	
CALCULATED RESULTS	28	Flow Coefficient Cv						0.3678 / 0.3846	
	29	Travel				75.6%			
	30	Sound Pressure Level				77.27 dBA (20)			
BODY AND TRIM	31	MFR	Model			AST		CV-8407	
	32	Body Type				GLOBE VALVE (HS03C02RFH)			
	33	Body Size	Trim Size			1"		1/4"	
	34	Rated Cv	Characteristics.			0.85		Equal% (11)	
	35	End Connec. & Rating				FLANGED ASME B16.5 / #300			
	36	Body Material				A351 CF3M			
	37	Bonnet Type	Material			Bolted (21)		A479 36L	
	38	Bolting				A193 B8M Cl. 2 / A194 8M			
	39	Packing Material				PTFE (37)			
	40	Flow Action To				OPEN			
	41	Lubricator	Isolat. Valve			-		By Contractor	
	42	Guiding	No. of Ports			Top Guided		1	
	43	Trim Type				Contoured (12, 13)			
	44	Rated Travel				13mm			
	45	Plug/ Ball/ Disk Material				A479 316L + PTFE			
	46	Seat Material				A479 316L (12)			
	47	Cage	Stem Material			-		A479 316L	
	48	Gasket Material				By Contractor (in line)			
	49	Flange Finish				RF			

No.	Date	Description	By	Chkd	Appr
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO

INSTRUMENT DATASHEET

Control Valve (Sheet 1 of 2)

CROSSWIND

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Code: Dwg.No 123A90-DDL-IN-DS-40036 Rev. 01

ACTUATOR	50	MFR	Model	AST	SD11R
	51	Type		PNUEMATIC / DIAPHRAGM (*)	
	52	Size	Area	SD11R	(*)
	53	Handwheel		NOT REQUIRED	
	54	Bench Range		15-30 psi	
	55	Volume Tank		NOT REQUIRED	
TESTS	56	Hydro. Pressure		REQUIRED	
	57	Leakage		REQUIRED (37)	
	58				
POSITIONER	59	MFR	Model	TISSIN	TS900 (15, 16)
	60	Signal: Inlet	Outlet	4-20 mA	3 to 15 psi
	61	Increase Signal Valve:		OPEN VALE	
	62	Cam Characteristic		(*)	
	63	Bypass	Gauges	NOT REQ.	YES
	64	Signal Transmission		REQUIRED VALVE POSITION 4-20 mA to PCS (22) (25-ZT-001)	
COMM. & SOFTWARE	65	Comm Type	Signal Type	-	-
	66	D D Rev.	CFF Rev.	-	-
	67	Device Tag	Hart Tag	-	-
	68	Diagnostics	Capac	-	-
	69	Segment	Device Addr.	-	-
	70	Device Class	Simulate	-	-
	71	Nom. Current	Oper Volt	-	-
SOLENOID	72	MFR	Model	-	-
	73	Type		-	
	74	When De-Enegr.Valve:		-	
	75	Schematic Detail		-	
SWITCHES	76	MFR	Model	EISENBAU	GDSN0LIS2MS290
	77	Type	Quantity	(*)	2
	78	Contacts / Rating		No. 1 DPDT / 1A	
	79	Switching Position		ON STEAM	
	80				
AIR SET	81	MFR	Model	SITECNA	FR04411S00SSNB2
	82	Set Pressure		Operation Pressure of valve	
	83	Filter	Gauge	YES	YES
ELECT.	84	Connection	Class	No. (*) / M20	-
PURCHASE	85	Manufacturer		AST	
	86	Model		CV-8407	
	87	Purchase Order No.		1724000740	

Notes:
(1) N.1 PSV INSTALLED DOWNSTREAM THE AIR FILTER REGULATOR, SIZE 1/4", SS, set 6 Barg.

						INSTRUMENT DATASHEET	CROSSWIND		
						Control Valve (Sheet 2 of 2)	ROSETTI MARINO		
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO		Sheet 13 of	37	
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO				
No.	Date	Description	By	Chkd	Appr	Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

GENERAL	1	Tag Number	P&ID Number			25-FV-038		123A90-DDL-PR-PID-80019		
	2	Service				NITROGEN FROM NITROGEN SYSTEM (U-64000) TO HYDROGEN STORAGE VESSEL (V-25001E)				
	3	Area Classification	Certification			ATEX ZONE 2		Ex-d IIC (or IIB+H2) T1		
	4	Ambient Temperature:	Min.	Max.		°C		-8.4	+25	
	5	Allowable Sound Pressure Level dBA				Max 85 dBA				
	6	Ingress Protection	Power Failure Position			IP-66		-	CLOSE	
	7	Air Supply Pressure:	Min.	Norm.	Max.	barg	4	9	10	
PIPELINE	8	Line Number	Pipe Insulation			1"-HY-189-03HSS-N			NOT INSULATED (PAINTED)	
	9	Line Size and Schedule	Inlet	Outlet		1" / 3.38 mm		1" / 3.38 mm		
	10	Line Spec	Line Material			03HSS		ASTM A312 Gr.TP316/316L		
PROCESS CONDITION	11	Process Fluid	Fluid Phase			NITROGEN		GAS		
	12	Upstream Condition								
	13	Des. Press. / Full Vac.	Des. Temperature Min / Max			40 barg		100 °C		
	14	Critical Pressure	Critical Temperature							
	15	Differential Pressure - Maximum Shut Off				40 bar				
	16					Units	@ Max. Flow	@ Norm. Flow	@ Min. Flow	
	17	Flow Rate (Gas)				Nm^3/h		40		
	18	Flow Rate (Liquid)								
	19	Inlet Pressure				barg		7		
	20	Pressure Drop				bar		max 7 - min 4		
	21	Inlet Temperature				°C		15		
	22	Inlet Density / Specific Gravity				kg/m^3		9.3		
	23	Inlet Compressibility Factor				-		0.99		
	24	Inlet Viscosity				cP		0.017		
	25	Inlet Specific Heats Ratio (Cp/Cv)				-		1.4		
	26	Inlet Vapour Pressure								
	27	Molecular Weight				-		28		
CALCULATE RESULTS	28	Flow Coefficient Cv						0.3678 / 0.3846		
	29	Travel				75.6%				
	30	Sound Pressure Level				77.27 dBA (20)				
BODY AND TRIM	31	MFR	Model			AST		CV-8407		
	32	Body Type				GLOBE VALVE (HS03C02RFH)				
	33	Body Size	Trim Size			1"		1/4"		
	34	Rated Cv	Characteristics.			0.85		Equal% (11)		
	35	End Connec. & Rating				FLANGED ASME B16.5 / #300				
	36	Body Material				A351 CF3M				
	37	Bonnet Type	Material			Bolted (21)		A479 36L		
	38	Bolting				A193 B8M Cl. 2 / A194 8M				
	39	Packing Material				PTFE (37)				
	40	Flow Action To				OPEN				
	41	Lubricator	Isolat. Valve			-		By Contractor		
	42	Guiding	No. of Ports			Top Guided		1		
	43	Trim Type				Contoured (12, 13)				
	44	Rated Travel				13mm				
	45	Plug/ Ball/ Disk Material				A479 316L + PTFE				
	46	Seat Material				A479 316L (12)				
	47	Cage	Stem Material			-		A479 316L		
	48	Gasket Material				By Contractor (in line)				
	49	Flange Finish				RF				

No.	Date	Description	By	Chkd	Appr
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO

INSTRUMENT DATASHEET

Control Valve (Sheet 1 of 2)

CROSSWIND

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Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

ACTUATOR	50	MFR	Model	AST	SD11R
	51	Type		PNUEMATIC / DIAPHRAGM (*)	
	52	Size	Area	SD11R	(*)
	53	Handwheel		NOT REQUIRED	
	54	Bench Range		15-30 psi	
	55	Volume Tank		NOT REQUIRED	
TESTS	56	Hydro. Pressure		REQUIRED	
	57	Leakage		REQUIRED (37)	
	58				
POSITIONER	59	MFR	Model	TISSIN	TS900 (15, 16)
	60	Signal: Inlet	Outlet	4-20 mA	3 to 15 psi
	61	Increase Signal Valve:		OPEN VALE	
	62	Cam Characteristic		(*)	
	63	Bypass	Gauges	NOT REQ.	YES
	64	Signal Transmission		REQUIRED VALVE POSITION 4-20 mA to PCS (22) (25-ZT-001)	
COMM. & SOFTWARE	65	Comm Type	Signal Type	-	-
	66	D D Rev.	CFF Rev.	-	-
	67	Device Tag	Hart Tag	-	-
	68	Diagnostics	Capac	-	-
	69	Segment	Device Addr.	-	-
	70	Device Class	Simulate	-	-
	71	Nom. Current	Oper Volt	-	-
SOLENOID	72	MFR	Model	-	-
	73	Type		-	
	74	When De-Enegr.Valve:		-	
	75	Schematic Detail		-	
SWITCHES	76	MFR	Model	EISENBAU	GDSN0LIS2MS290
	77	Type	Quantity	(*)	2
	78	Contacts / Rating		No. 1 DPDT / 1A	
	79	Switching Position		ON STEAM	
	80				
AIR SET	81	MFR	Model	SITECNA	FR04411S00SSNB2
	82	Set Pressure		Operation Pressure of valve	
	83	Filter	Gauge	YES	YES
ELECT.	84	Connection	Class	No. (*) / M20	-
PURCHASE	85	Manufacturer		AST	
	86	Model		CV-8407	
	87	Purchase Order No.		1724000740	

Notes:
(1) N.1 PSV INSTALLED DOWNSTREAM THE AIR FILTER REGULATOR, SIZE 1/4", SS, set 6 Barg.

						INSTRUMENT DATASHEET	CROSSWIND		
						Control Valve (Sheet 2 of 2)	ROSETTI MARINO		
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO		Sheet 15 of	37	
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO				
No.	Date	Description	By	Chkd	Appr	Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

GENERAL	1	Tag Number	P&ID Number			25-FV-036		123A90-DDL-PR-PID-80020	
	2	Service				NITROGEN FROM NITROGEN SYSTEM (U-64000) TO HYDROGEN STORAGE VESSEL (V-25001F)			
	3	Area Classification	Certification			ATEX ZONE 2		Ex-d IIC (or IIB+H2) T1	
	4	Ambient Temperature:	Min.	Max.		°C		-8.4	+25
	5	Allowable Sound Pressure Level dBA				Max 85 dBA			
	6	Ingress Protection	Power Failure Position			IP-66		-	CLOSE
	7	Air Supply Pressure:	Min.	Norm.	Max.	barg	4	9	10
PIPELINE	8	Line Number	Pipe Insulation			1"-HY-190-03HSS-N			NOT INSULATED (PAINTED)
	9	Line Size and Schedule	Inlet	Outlet		1" / 3.38 mm		1" / 3.38 mm	
	10	Line Spec	Line Material			03HSS		ASTM A312 Gr.TP316/316L	
PROCESS CONDITION	11	Process Fluid	Fluid Phase			NITROGEN		GAS	
	12	Upstream Condition							
	13	Des. Press. / Full Vac.	Des. Temperature Min / Max			40 barg		100 °C	
	14	Critical Pressure	Critical Temperature						
	15	Differential Pressure - Maximum Shut Off				40 bar			
	16					Units	@ Max. Flow	@ Norm. Flow	@ Min. Flow
	17	Flow Rate (Gas)				Nm^3/h		40	
	18	Flow Rate (Liquid)							
	19	Inlet Pressure				barg		7	
	20	Pressure Drop				bar		max 7 - min 4	
	21	Inlet Temperature				°C		15	
	22	Inlet Density / Specific Gravity				kg/m^3		9.3	
	23	Inlet Compressibility Factor				-		0.99	
	24	Inlet Viscosity				cP		0.017	
	25	Inlet Specific Heats Ratio (Cp/Cv)				-		1.4	
	26	Inlet Vapour Pressure							
	27	Molecular Weight				-		28	
CALCULATED RESULTS	28	Flow Coefficient Cv						0.3678 / 0.3846	
	29	Travel				75.6%			
	30	Sound Pressure Level				77.27 dBA (20)			
BODY AND TRIM	31	MFR	Model			AST		CV-8407	
	32	Body Type				GLOBE VALVE (HS03C02RFH)			
	33	Body Size	Trim Size			1"		1/4"	
	34	Rated Cv	Characteristics.			0.85		Equal% (11)	
	35	End Connec. & Rating				FLANGED ASME B16.5 / #300			
	36	Body Material				A351 CF3M			
	37	Bonnet Type	Material			Bolted (21)		A479 36L	
	38	Bolting				A193 B8M Cl. 2 / A194 8M			
	39	Packing Material				PTFE (37)			
	40	Flow Action To				OPEN			
	41	Lubricator	Isolat. Valve			-		By Contractor	
	42	Guiding	No. of Ports			Top Guided		1	
	43	Trim Type				Contoured (12, 13)			
	44	Rated Travel				13mm			
	45	Plug/ Ball/ Disk Material				A479 316L + PTFE			
	46	Seat Material				A479 316L (12)			
	47	Cage	Stem Material			-		A479 316L	
	48	Gasket Material				By Contractor (in line)			
	49	Flange Finish				RF			

No.	Date	Description	By	Chkd	Appr
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO

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Code: Dwg.No 123A90-DDL-IN-DS-40036 Rev. 01

ACTUATOR	50	MFR	Model	AST	SD11R
	51	Type		PNUEMATIC / DIAPHRAGM (*)	
	52	Size	Area	SD11R	(*)
	53	Handwheel		NOT REQUIRED	
	54	Bench Range		15-30 psi	
	55	Volume Tank		NOT REQUIRED	
TESTS	56	Hydro. Pressure		REQUIRED	
	57	Leakage		REQUIRED (37)	
	58				
POSITIONER	59	MFR	Model	TISSIN	TS900 (15, 16)
	60	Signal: Inlet	Outlet	4-20 mA	3 to 15 psi
	61	Increase Signal Valve:		OPEN VALE	
	62	Cam Characteristic		(*)	
	63	Bypass	Gauges	NOT REQ.	YES
	64	Signal Transmission		REQUIRED VALVE POSITION 4-20 mA to PCS (22) (25-ZT-001)	
COMM. & SOFTWARE	65	Comm Type	Signal Type	-	-
	66	D D Rev.	CFF Rev.	-	-
	67	Device Tag	Hart Tag	-	-
	68	Diagnostics	Capac	-	-
	69	Segment	Device Addr.	-	-
	70	Device Class	Simulate	-	-
	71	Nom. Current	Oper Volt	-	-
SOLENOID	72	MFR	Model	-	-
	73	Type		-	
	74	When De-Enegr.Valve:		-	
	75	Schematic Detail		-	
SWITCHES	76	MFR	Model	EISENBAU	GDSN0LIS2MS290
	77	Type	Quantity	(*)	2
	78	Contacts / Rating		No. 1 DPDT / 1A	
	79	Switching Position		ON STEAM	
	80				
AIR SET	81	MFR	Model	SITECNA	FR04411S00SSNB2
	82	Set Pressure		Operation Pressure of valve	
	83	Filter	Gauge	YES	YES
ELECT.	84	Connection	Class	No. (*) / M20	-
PURCHASE	85	Manufacturer		AST	
	86	Model		CV-8407	
	87	Purchase Order No.		1724000740	

Notes:
(1) N.1 PSV INSTALLED DOWNSTREAM THE AIR FILTER REGULATOR, SIZE 1/4", SS, set 6 Barg.

						INSTRUMENT DATASHEET	CROSSWIND		
						Control Valve (Sheet 2 of 2)	ROSETTI MARINO		
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO		Sheet 17 of	37	
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO				
No.	Date	Description	By	Chkd	Appr	Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

GENERAL	1	Tag Number	P&ID Number			25-PV-035		123A90-DDL-PR-PID-80015	
	2	Service				HYDROGEN FROM STORAGE VESSEL (V-25001A) TO HYDROGEN VENT HEADER			
	3	Area Classification	Certification			ATEX ZONE 2		Ex-d IIC (or IIB+H2) T1	
	4	Ambient Temperature:	Min.	Max.		°C		-8.4	+25
	5	Allowable Sound Pressure Level dBA				Max 85 dBA			
	6	Ingress Protection	Power Failure Position			IP-66		-	CLOSE
	7	Air Supply Pressure:	Min.	Norm.	Max.	barg	4	9	10
PIPELINE	8	Line Number	Pipe Insulation			3"-HY-142-03HSS-N			NOT INSULATED (PAINTED)
	9	Line Size and Schedule	Inlet	Outlet		3" / 3.05 mm		3" / 3.05 mm	
	10	Line Spec	Line Material			03HSS		ASTM A312/TP316/316L	
PROCESS CONDITION	11	Process Fluid	Fluid Phase			HYDROGEN		GAS	
	12	Upstream Condition							
	13	Des. Press. / Full Vac.	Des. Temperature Min / Max			40 Barg		80 °C	
	14	Critical Pressure	Critical Temperature						
	15	Differential Pressure - Maximum Shut Off				40 bar			
	16					Units	N2	H2	
	17	Flow Rate (Gas)				Nm^3/h	40	500	
	18	Flow Rate (Liquid)							
	19	Inlet Pressure				barg	min 1 - max 4	min 1 - max 4	
	20	Pressure Drop				bar	0.7	0.7	
	21	Inlet Temperature				°C	AMB	AMB	
	22	Inlet Density / Specific Gravity				kg/m^3	2.3 - 5.8	0.16 - 0.41	
	23	Inlet Compressibility Factor				-	1	1	
	24	Inlet Viscosity				cP	0.01	0.01	
	25	Inlet Specific Heats Ratio (Cp/Cv)				-	1.3	1.3	
	26	Inlet Vapour Pressure							
	27	Molecular Weight				-	28	2	
CALCULATED RESULTS	28	Flow Coefficient Cv					1.719 / 0.9689	5.772 / 3.241	
	29	Travel				80.8%			
	30	Sound Pressure Level				83.01 dBA (20)			
BODY AND TRIM	31	MFR	Model			AST		CV-8407	
	32	Body Type				GLOBE VALVE (HT03C02RFH)			
	33	Body Size	Trim Size			2"		1"	
	34	Rated Cv	Characteristics.			13		(11) Equal%	
	35	End Connec. & Rating				FLANGED ASME B16.5 / #300			
	36	Body Material				ASTM A351 CF3M			
	37	Bonnet Type	Material			Bolted (21)		A479 316L	
	38	Bolting				A193 B8M Cl. 2 / A194 8M			
	39	Packing Material				Grafite - VF1 (37)			
	40	Flow Action To				OPEN			
	41	Lubricator	Isolat. Valve			-		By Contractor	
	42	Guiding	No. of Ports			Top Guided		1	
	43	Trim Type				Contoured Plug (12, 13)			
	44	Rated Travel				25mm			
	45	Plug/ Ball/ Disk Material				A479 316L + PTFE			
	46	Seat Material				A479 316L (12)			
	47	Cage	Stem Material			-		A479 316L	
	48	Gasket Material				By Contractor (in line)			
	49	Flange Finish				RF			

No.	Date	Description	By	Chkd	Appr
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO

INSTRUMENT DATASHEET

Control Valve (Sheet 1 of 2)

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Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

ACTUATOR	50	MFR	Model	AST	SD13R
	51	Type		PNUEMATIC / DIAPHRAGM (*)	
	52	Size	Area	SD11R	(*)
	53	Handwheel		NOT REQUIRED	
	54	Bench Range		20-44 psi	
	55	Volume Tank		NOT REQUIRED	
TESTS	56	Hydro. Pressure		REQUIRED	
	57	Leakage		REQUIRED (37)	
	58				
POSITIONER	59	MFR	Model	TISSIN	TS900 (15, 16)
	60	Signal: Inlet	Outlet	4-20 mA	3 to 15 psi
	61	Increase Signal Valve:		OPEN VALE	
	62	Cam Characteristic		(*)	
	63	Bypass	Gauges	NOT REQ.	YES
	64	Signal Transmission		REQUIRED VALVE POSITION 4-20 mA to PCS (22) (25-ZT-001)	
COMM. & SOFTWARE	65	Comm Type	Signal Type	-	-
	66	D D Rev.	CFF Rev.	-	-
	67	Device Tag	Hart Tag	-	-
	68	Diagnostics	Capac	-	-
	69	Segment	Device Addr.	-	-
	70	Device Class	Simulate	-	-
	71	Nom. Current	Oper Volt	-	-
SOLENOID	72	MFR	Model	-	-
	73	Type		-	
	74	When De-Enegr.Valve:		-	
	75	Schematic Detail		-	
SWITCHES	76	MFR	Model	EISENBAU	GDSN0LIS2MS290
	77	Type	Quantity	Magnetic	2
	78	Contacts / Rating		No. 1 DPDT / 1A	
	79	Switching Position		ON STEAM	
	80				
AIR SET	81	MFR	Model	SITECNA	FR04411S00SSNB2
	82	Set Pressure		Operation Pressure of valve	
	83	Filter	Gauge	YES	YES
ELECT.	84	Connection	Class	No. (*) / M20	-
PURCHASE	85	Manufacturer		AST	
	86	Model		CV-8407	
	87	Purchase Order No.		1724000740	

Notes:
(1) N.1 PSV INSTALLED DOWNSTREAM THE AIR FILTER REGULATOR, SIZE 1/4", SS, set 6 Barg.
(2) Hydrogen service - Packing ISO 15848-1

						INSTRUMENT DATASHEET	CROSSWIND		
						Control Valve (Sheet 2 of 2)	ROSETTI MARINO		
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO		Sheet 19 of	37	
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO				
No.	Date	Description	By	Chkd	Appr	Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

GENERAL	1	Tag Number	P&ID Number			25-PV-037		123A90-DDL-PR-PID-80016	
	2	Service				HYDROGEN FROM STORAGE VESSEL (V-25001B) TO HYDROGEN VENT HEADER			
	3	Area Classification	Certification			ATEX ZONE 2		Ex-d IIC (or IIB+H2) T1	
	4	Ambient Temperature:	Min.	Max.		°C		-8.4	+25
	5	Allowable Sound Pressure Level dBA				Max 85 dBA			
	6	Ingress Protection	Power Failure Position			IP-66		-	CLOSE
	7	Air Supply Pressure:	Min.	Norm.	Max.	barg	4	9	10
PIPELINE	8	Line Number	Pipe Insulation			3"-HY-167-03HSS-N			NOT INSULATED (PAINTED)
	9	Line Size and Schedule	Inlet	Outlet		3" / 3.05 mm		3" / 3.05 mm	
	10	Line Spec	Line Material			03HSS		ASTM A312/TP316/316L	
PROCESS CONDITION	11	Process Fluid	Fluid Phase			HYDROGEN		GAS	
	12	Upstream Condition							
	13	Des. Press. / Full Vac.	Des. Temperature Min / Max			40 Barg		80 °C	
	14	Critical Pressure	Critical Temperature						
	15	Differential Pressure - Maximum Shut Off				40 bar			
	16					Units	N2	H2	
	17	Flow Rate (Gas)				Nm^3/h	40	500	
	18	Flow Rate (Liquid)							
	19	Inlet Pressure				barg	min 1 - max 4	min 1 - max 4	
	20	Pressure Drop				bar	0.7	0.7	
	21	Inlet Temperature				°C	AMB	AMB	
	22	Inlet Density / Specific Gravity				kg/m^3	2.3 - 5.8	0.16 - 0.41	
	23	Inlet Compressibility Factor				-	1	1	
	24	Inlet Viscosity				cP	0.01	0.01	
	25	Inlet Specific Heats Ratio (Cp/Cv)				-	1.3	1.3	
	26	Inlet Vapour Pressure							
	27	Molecular Weight				-	28	2	
CALCULATED RESULTS	28	Flow Coefficient Cv					1.719 / 0.9689	5.772 / 3.241	
	29	Travel				80.8%			
	30	Sound Pressure Level				83.01 dBA (20)			
BODY AND TRIM	31	MFR	Model			AST		CV-8407	
	32	Body Type				GLOBE VALVE (HT03C02RFH)			
	33	Body Size	Trim Size			2"		1"	
	34	Rated Cv	Characteristics.			13		(11) Equal%	
	35	End Connec. & Rating				FLANGED ASME B16.5 / #300			
	36	Body Material				ASTM A351 CF3M			
	37	Bonnet Type	Material			Bolted (21)		A479 316L	
	38	Bolting				A193 B8M Cl. 2 / A194 8M			
	39	Packing Material				Grafite - VF1 (37)			
	40	Flow Action To				OPEN			
	41	Lubricator	Isolat. Valve			-		By Contractor	
	42	Guiding	No. of Ports			Top Guided		1	
	43	Trim Type				Contoured Plug (12, 13)			
	44	Rated Travel				25mm			
	45	Plug/ Ball/ Disk Material				A479 316L + PTFE			
	46	Seat Material				A479 316L (12)			
	47	Cage	Stem Material			-		A479 316L	
	48	Gasket Material				By Contractor (in line)			
	49	Flange Finish				RF			

No.	Date	Description	By	Chkd	Appr
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO

INSTRUMENT DATASHEET

Control Valve (Sheet 1 of 2)

CROSSWIND

ROSETTI MARINO

Sheet 20 of 37

Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

ACTUATOR	50	MFR	Model	AST	SD13R
	51	Type		PNUEMATIC / DIAPHRAGM (*)	
	52	Size	Area	SD11R	(*)
	53	Handwheel		NOT REQUIRED	
	54	Bench Range		20-44 psi	
	55	Volume Tank		NOT REQUIRED	
TESTS	56	Hydro. Pressure		REQUIRED	
	57	Leakage		REQUIRED (37)	
	58				
POSITIONER	59	MFR	Model	TISSIN	TS900 (15, 16)
	60	Signal: Inlet	Outlet	4-20 mA	3 to 15 psi
	61	Increase Signal Valve:		OPEN VALE	
	62	Cam Characteristic		(*)	
	63	Bypass	Gauges	NOT REQ.	YES
	64	Signal Transmission		REQUIRED VALVE POSITION 4-20 mA to PCS (22) (25-ZT-001)	
COMM. & SOFTWARE	65	Comm Type	Signal Type	-	-
	66	D D Rev.	CFF Rev.	-	-
	67	Device Tag	Hart Tag	-	-
	68	Diagnostics	Capac	-	-
	69	Segment	Device Addr.	-	-
	70	Device Class	Simulate	-	-
	71	Nom. Current	Oper Volt	-	-
SOLENOID	72	MFR	Model	-	-
	73	Type		-	
	74	When De-Enegr.Valve:		-	
	75	Schematic Detail		-	
SWITCHES	76	MFR	Model	EISENBAU	GDSN0LIS2MS290
	77	Type	Quantity	Magnetic	2
	78	Contacts / Rating		No. 1 DPDT / 1A	
	79	Switching Position		ON STEAM	
	80				
AIR SET	81	MFR	Model	SITECNA	FR04411S00SSNB2
	82	Set Pressure		Operation Pressure of valve	
	83	Filter	Gauge	YES	YES
ELECT.	84	Connection	Class	No. (*) / M20	-
PURCHASE	85	Manufacturer		AST	
	86	Model		CV-8407	
	87	Purchase Order No.		1724000740	

Notes:
(1) N.1 PSV INSTALLED DOWNSTREAM THE AIR FILTER REGULATOR, SIZE 1/4", SS, set 6 Barg.
(2) Hydrogen service - Packing ISO 15848-1

						INSTRUMENT DATASHEET	CROSSWIND		
						Control Valve (Sheet 2 of 2)	ROSETTI MARINO		
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO		Sheet 21 of	37	
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO				
No.	Date	Description	By	Chkd	Appr	Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

GENERAL	1	Tag Number	P&ID Number			25-PV-040		123A90-DDL-PR-PID-80017	
	2	Service				HYDROGEN FROM STORAGE VESSEL (V-25001C) TO HYDROGEN VENT HEADER			
	3	Area Classification	Certification			ATEX ZONE 2		Ex-d IIC (or IIB+H2) T1	
	4	Ambient Temperature:	Min.	Max.		°C		-8.4	+25
	5	Allowable Sound Pressure Level dBA				Max 85 dBA			
	6	Ingress Protection	Power Failure Position			IP-66		-	CLOSE
	7	Air Supply Pressure:	Min.	Norm.	Max.	barg	4	9	10
PIPELINE	8	Line Number	Pipe Insulation			3"-HY-171-03HSS-N			NOT INSULATED (PAINTED)
	9	Line Size and Schedule	Inlet	Outlet		3" / 3.05 mm		3" / 3.05 mm	
	10	Line Spec	Line Material			03HSS		ASTM A312/TP316/316L	
PROCESS CONDITION	11	Process Fluid	Fluid Phase			HYDROGEN		GAS	
	12	Upstream Condition							
	13	Des. Press. / Full Vac.	Des. Temperature Min / Max			40 Barg		80 °C	
	14	Critical Pressure	Critical Temperature						
	15	Differential Pressure - Maximum Shut Off				40 bar			
	16					Units	N2	H2	
	17	Flow Rate (Gas)				Nm^3/h	40	500	
	18	Flow Rate (Liquid)							
	19	Inlet Pressure				barg	min 1 - max 4	min 1 - max 4	
	20	Pressure Drop				bar	0.7	0.7	
	21	Inlet Temperature				°C	AMB	AMB	
	22	Inlet Density / Specific Gravity				kg/m^3	2.3 - 5.8	0.16 - 0.41	
	23	Inlet Compressibility Factor				-	1	1	
	24	Inlet Viscosity				cP	0.01	0.01	
	25	Inlet Specific Heats Ratio (Cp/Cv)				-	1.3	1.3	
	26	Inlet Vapour Pressure							
	27	Molecular Weight				-	28	2	
CALCULATED RESULTS	28	Flow Coefficient Cv					1.719 / 0.9689	5.772 / 3.241	
	29	Travel				80.8%			
	30	Sound Pressure Level				83.01 dBA (20)			
BODY AND TRIM	31	MFR	Model			AST		CV-8407	
	32	Body Type				GLOBE VALVE (HT03C02RFH)			
	33	Body Size	Trim Size			2"		1"	
	34	Rated Cv	Characteristics.			13		(11) Equal%	
	35	End Connec. & Rating				FLANGED ASME B16.5 / #300			
	36	Body Material				ASTM A351 CF3M			
	37	Bonnet Type	Material			Bolted (21)		A479 316L	
	38	Bolting				A193 B8M Cl. 2 / A194 8M			
	39	Packing Material				Grafite - VF1 (37)			
	40	Flow Action To				OPEN			
	41	Lubricator	Isolat. Valve			-		By Contractor	
	42	Guiding	No. of Ports			Top Guided		1	
	43	Trim Type				Contoured Plug (12, 13)			
	44	Rated Travel				25mm			
	45	Plug/ Ball/ Disk Material				A479 316L + PTFE			
	46	Seat Material				A479 316L (12)			
	47	Cage	Stem Material			-		A479 316L	
	48	Gasket Material				By Contractor (in line)			
	49	Flange Finish				RF			

No.	Date	Description	By	Chkd	Appr
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO

INSTRUMENT DATASHEET

Control Valve (Sheet 1 of 2)

CROSSWIND

ROSETTI MARINO

Sheet 22 of 37

Code: Dwg.No 123A90-DDL-IN-DS-40036 Rev. 01

ACTUATOR	50	MFR	Model	AST	SD13R
	51	Type		PNUEMATIC / DIAPHRAGM (*)	
	52	Size	Area	SD11R	(*)
	53	Handwheel		NOT REQUIRED	
	54	Bench Range		20-44 psi	
	55	Volume Tank		NOT REQUIRED	
TESTS	56	Hydro. Pressure		REQUIRED	
	57	Leakage		REQUIRED (37)	
	58				
POSITIONER	59	MFR	Model	TISSIN	TS900 (15, 16)
	60	Signal: Inlet	Outlet	4-20 mA	3 to 15 psi
	61	Increase Signal Valve:		OPEN VALE	
	62	Cam Characteristic		(*)	
	63	Bypass	Gauges	NOT REQ.	YES
	64	Signal Transmission		REQUIRED VALVE POSITION 4-20 mA to PCS (22) (25-ZT-001)	
COMM. & SOFTWARE	65	Comm Type	Signal Type	-	-
	66	D D Rev.	CFF Rev.	-	-
	67	Device Tag	Hart Tag	-	-
	68	Diagnostics	Capac	-	-
	69	Segment	Device Addr.	-	-
	70	Device Class	Simulate	-	-
	71	Nom. Current	Oper Volt	-	-
SOLENOID	72	MFR	Model	-	-
	73	Type		-	
	74	When De-Enegr.Valve:		-	
	75	Schematic Detail		-	
SWITCHES	76	MFR	Model	EISENBAU	GDSN0LIS2MS290
	77	Type	Quantity	Magnetic	2
	78	Contacts / Rating		No. 1 DPDT / 1A	
	79	Switching Position		ON STEAM	
	80				
AIR SET	81	MFR	Model	SITECNA	FR04411S00SSNB2
	82	Set Pressure		Operation Pressure of valve	
	83	Filter	Gauge	YES	YES
ELECT.	84	Connection	Class	No. (*) / M20	-
PURCHASE	85	Manufacturer		AST	
	86	Model		CV-8407	
	87	Purchase Order No.		1724000740	

Notes:
(1) N.1 PSV INSTALLED DOWNSTREAM THE AIR FILTER REGULATOR, SIZE 1/4", SS, set 6 Barg.
(2) Hydrogen service - Packing ISO 15848-1

						INSTRUMENT DATASHEET	CROSSWIND		
						Control Valve (Sheet 2 of 2)	ROSETTI MARINO		
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO		Sheet 23 of	37	
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO				
No.	Date	Description	By	Chkd	Appr	Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

GENERAL	1	Tag Number	P&ID Number			25-PV-043		123A90-DDL-PR-PID-80018	
	2	Service				HYDROGEN FROM STORAGE VESSEL (V-25001D) TO HYDROGEN VENT HEADER			
	3	Area Classification	Certification			ATEX ZONE 2		Ex-d IIC (or IIB+H2) T1	
	4	Ambient Temperature:	Min.	Max.		°C		-8.4	+25
	5	Allowable Sound Pressure Level dBA				Max 85 dBA			
	6	Ingress Protection	Power Failure Position			IP-66		-	CLOSE
	7	Air Supply Pressure:	Min.	Norm.	Max.	barg	4	9	10
PIPELINE	8	Line Number	Pipe Insulation			3"-HY-175-03HSS-N			NOT INSULATED (PAINTED)
	9	Line Size and Schedule	Inlet	Outlet		3" / 3.05 mm		3" / 3.05 mm	
	10	Line Spec	Line Material			03HSS		ASTM A312/TP316/316L	
PROCESS CONDITION	11	Process Fluid	Fluid Phase			HYDROGEN		GAS	
	12	Upstream Condition							
	13	Des. Press. / Full Vac.	Des. Temperature Min / Max			40 Barg		80 °C	
	14	Critical Pressure	Critical Temperature						
	15	Differential Pressure - Maximum Shut Off				40 bar			
	16					Units	N2	H2	
	17	Flow Rate (Gas)				Nm^3/h	40	500	
	18	Flow Rate (Liquid)							
	19	Inlet Pressure				barg	min 1 - max 4	min 1 - max 4	
	20	Pressure Drop				bar	0.7	0.7	
	21	Inlet Temperature				°C	AMB	AMB	
	22	Inlet Density / Specific Gravity				kg/m^3	2.3 - 5.8	0.16 - 0.41	
	23	Inlet Compressibility Factor				-	1	1	
	24	Inlet Viscosity				cP	0.01	0.01	
	25	Inlet Specific Heats Ratio (Cp/Cv)				-	1.3	1.3	
	26	Inlet Vapour Pressure							
	27	Molecular Weight				-	28	2	
CALCULATED RESULTS	28	Flow Coefficient Cv					1.719 / 0.9689	5.772 / 3.241	
	29	Travel				80.8%			
	30	Sound Pressure Level				83.01 dBA (20)			
BODY AND TRIM	31	MFR	Model			AST		CV-8407	
	32	Body Type				GLOBE VALVE (HT03C02RFH)			
	33	Body Size	Trim Size			2"		1"	
	34	Rated Cv	Characteristics.			13		(11) Equal%	
	35	End Connec. & Rating				FLANGED ASME B16.5 / #300			
	36	Body Material				ASTM A351 CF3M			
	37	Bonnet Type	Material			Bolted (21)		A479 316L	
	38	Bolting				A193 B8M Cl. 2 / A194 8M			
	39	Packing Material				Grafite - VF1 (37)			
	40	Flow Action To				OPEN			
	41	Lubricator	Isolat. Valve			-		By Contractor	
	42	Guiding	No. of Ports			Top Guided		1	
	43	Trim Type				Contoured Plug (12, 13)			
	44	Rated Travel				25mm			
	45	Plug/ Ball/ Disk Material				A479 316L + PTFE			
	46	Seat Material				A479 316L (12)			
	47	Cage	Stem Material			-		A479 316L	
	48	Gasket Material				By Contractor (in line)			
	49	Flange Finish				RF			

No.	Date	Description	By	Chkd	Appr
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO

INSTRUMENT DATASHEET

Control Valve (Sheet 1 of 2)

CROSSWIND

ROSETTI MARINO

Sheet 24 of 37

Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

ACTUATOR	50	MFR	Model	AST	SD13R
	51	Type		PNUEMATIC / DIAPHRAGM (*)	
	52	Size	Area	SD11R	(*)
	53	Handwheel		NOT REQUIRED	
	54	Bench Range		20-44 psi	
	55	Volume Tank		NOT REQUIRED	
TESTS	56	Hydro. Pressure		REQUIRED	
	57	Leakage		REQUIRED (37)	
	58				
POSITIONER	59	MFR	Model	TISSIN	TS900 (15, 16)
	60	Signal: Inlet	Outlet	4-20 mA	3 to 15 psi
	61	Increase Signal Valve:		OPEN VALE	
	62	Cam Characteristic		(*)	
	63	Bypass	Gauges	NOT REQ.	YES
	64	Signal Transmission		REQUIRED VALVE POSITION 4-20 mA to PCS (22) (25-ZT-001)	
COMM. & SOFTWARE	65	Comm Type	Signal Type	-	-
	66	D D Rev.	CFF Rev.	-	-
	67	Device Tag	Hart Tag	-	-
	68	Diagnostics	Capac	-	-
	69	Segment	Device Addr.	-	-
	70	Device Class	Simulate	-	-
	71	Nom. Current	Oper Volt	-	-
SOLENOID	72	MFR	Model	-	-
	73	Type		-	
	74	When De-Enegr.Valve:		-	
	75	Schematic Detail		-	
SWITCHES	76	MFR	Model	EISENBAU	GDSN0LIS2MS290
	77	Type	Quantity	Magnetic	2
	78	Contacts / Rating		No. 1 DPDT / 1A	
	79	Switching Position		ON STEAM	
	80				
AIR SET	81	MFR	Model	SITECNA	FR04411S00SSNB2
	82	Set Pressure		Operation Pressure of valve	
	83	Filter	Gauge	YES	YES
ELECT.	84	Connection	Class	No. (*) / M20	-
PURCHASE	85	Manufacturer		AST	
	86	Model		CV-8407	
	87	Purchase Order No.		1724000740	

Notes:
(1) N.1 PSV INSTALLED DOWNSTREAM THE AIR FILTER REGULATOR, SIZE 1/4", SS, set 6 Barg.
(2) Hydrogen service - Packing ISO 15848-1

						INSTRUMENT DATASHEET	CROSSWIND		
						Control Valve (Sheet 2 of 2)	ROSETTI MARINO		
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO		Sheet 25 of	37	
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO				
No.	Date	Description	By	Chkd	Appr	Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

GENERAL	1	Tag Number	P&ID Number			25-PV-046		123A90-DDL-PR-PID-80019	
	2	Service				HYDROGEN FROM STORAGE VESSEL (V-25001E) TO HYDROGEN VENT HEADER			
	3	Area Classification	Certification			ATEX ZONE 2		Ex-d IIC (or IIB+H2) T1	
	4	Ambient Temperature:	Min.	Max.		°C		-8.4	+25
	5	Allowable Sound Pressure Level dBA				Max 85 dBA			
	6	Ingress Protection	Power Failure Position			IP-66		-	CLOSE
	7	Air Supply Pressure:	Min.	Norm.	Max.	barg	4	9	10
PIPELINE	8	Line Number	Pipe Insulation			3"-HY-180-03HSS-N			NOT INSULATED (PAINTED)
	9	Line Size and Schedule	Inlet	Outlet		3" / 3.05 mm		3" / 3.05 mm	
	10	Line Spec	Line Material			03HSS		ASTM A312/TP316/316L	
PROCESS CONDITION	11	Process Fluid	Fluid Phase			HYDROGEN		GAS	
	12	Upstream Condition							
	13	Des. Press. / Full Vac.	Des. Temperature Min / Max			40 Barg		80 °C	
	14	Critical Pressure	Critical Temperature						
	15	Differential Pressure - Maximum Shut Off				40 bar			
	16					Units	N2	H2	
	17	Flow Rate (Gas)				Nm^3/h	40	500	
	18	Flow Rate (Liquid)							
	19	Inlet Pressure				barg	min 1 - max 4	min 1 - max 4	
	20	Pressure Drop				bar	0.7	0.7	
	21	Inlet Temperature				°C	AMB	AMB	
	22	Inlet Density / Specific Gravity				kg/m^3	2.3 - 5.8	0.16 - 0.41	
	23	Inlet Compressibility Factor				-	1	1	
	24	Inlet Viscosity				cP	0.01	0,01	
	25	Inlet Specific Heats Ratio (Cp/Cv)				-	1.3	1.3	
	26	Inlet Vapour Pressure							
	27	Molecular Weight				-	28	2	
CALCULATE	28	Flow Coefficient Cv					1.719 / 0.9689	5.772 / 3.241	
RESULTS	29	Travel				80.8%			
	30	Sound Pressure Level				83.01 dBA (20)			
BODY AND TRIM	31	MFR	Model			AST		CV-8407	
	32	Body Type				GLOBE VALVE (HT03C02RFH)			
	33	Body Size	Trim Size			2"		1"	
	34	Rated Cv	Characteristics.			13		(11) Equal%	
	35	End Connec. & Rating				FLANGED ASME B16.5 / #300			
	36	Body Material				ASTM A351 CF3M			
	37	Bonnet Type	Material			Bolted (21)		A479 316L	
	38	Bolting				A193 B8M Cl. 2 / A194 8M			
	39	Packing Material				Grafite - VF1 (37)			
	40	Flow Action To				OPEN			
	41	Lubricator	Isolat. Valve			-		By Contractor	
	42	Guiding	No. of Ports			Top Guided		1	
	43	Trim Type				Contoured Plug (12, 13)			
	44	Rated Travel				25mm			
	45	Plug/ Ball/ Disk Material				A479 316L + PTFE			
	46	Seat Material				A479 316L (12)			
	47	Cage	Stem Material			-		A479 316L	
	48	Gasket Material				By Contractor (in line)			
	49	Flange Finish				RF			

No.	Date	Description	By	Chkd	Appr
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO

INSTRUMENT DATASHEET

Control Valve (Sheet 1 of 2)

CROSSWIND

ROSETTI MARINO

Sheet 26 of 37

Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

ACTUATOR	50	MFR	Model	AST	SD13R
	51	Type		PNUEMATIC / DIAPHRAGM (*)	
	52	Size	Area	SD11R	(*)
	53	Handwheel		NOT REQUIRED	
	54	Bench Range		20-44 psi	
	55	Volume Tank		NOT REQUIRED	
TESTS	56	Hydro. Pressure		REQUIRED	
	57	Leakage		REQUIRED (37)	
	58				
POSITIONER	59	MFR	Model	TISSIN	TS900 (15, 16)
	60	Signal: Inlet	Outlet	4-20 mA	3 to 15 psi
	61	Increase Signal Valve:		OPEN VALE	
	62	Cam Characteristic		(*)	
	63	Bypass	Gauges	NOT REQ.	YES
	64	Signal Transmission		REQUIRED VALVE POSITION 4-20 mA to PCS (22) (25-ZT-001)	
COMM. & SOFTWARE	65	Comm Type	Signal Type	-	-
	66	D D Rev.	CFF Rev.	-	-
	67	Device Tag	Hart Tag	-	-
	68	Diagnostics	Capac	-	-
	69	Segment	Device Addr.	-	-
	70	Device Class	Simulate	-	-
	71	Nom. Current	Oper Volt	-	-
SOLENOID	72	MFR	Model	-	-
	73	Type		-	
	74	When De-Enegr.Valve:		-	
	75	Schematic Detail		-	
SWITCHES	76	MFR	Model	EISENBAU	GDSN0LIS2MS290
	77	Type	Quantity	Magnetic	2
	78	Contacts / Rating		No. 1 DPDT / 1A	
	79	Switching Position		ON STEAM	
	80				
AIR SET	81	MFR	Model	SITECNA	FR04411S00SSNB2
	82	Set Pressure		Operation Pressure of valve	
	83	Filter	Gauge	YES	YES
ELECT.	84	Connection	Class	No. (*) / M20	-
PURCHASE	85	Manufacturer		AST	
	86	Model		CV-8407	
	87	Purchase Order No.		1724000740	

Notes:
(1) N.1 PSV INSTALLED DOWNSTREAM THE AIR FILTER REGULATOR, SIZE 1/4", SS, set 6 Barg.
(2) Hydrogen service - Packing ISO 15848-1

						INSTRUMENT DATASHEET	CROSSWIND		
						Control Valve (Sheet 2 of 2)	ROSETTI MARINO		
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO		Sheet 27 of	37	
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO				
No.	Date	Description	By	Chkd	Appr	Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

GENERAL	1	Tag Number	P&ID Number			25-PV-049		123A90-DDL-PR-PID-80020	
	2	Service				HYDROGEN FROM STORAGE VESSEL (V-25001F) TO HYDROGEN VENT HEADER			
	3	Area Classification	Certification			ATEX ZONE 2		Ex-d IIC (or IIB+H2) T1	
	4	Ambient Temperature:	Min.	Max.		°C		-8.4	+25
	5	Allowable Sound Pressure Level dBA				Max 85 dBA			
	6	Ingress Protection	Power Failure Position			IP-66		-	CLOSE
	7	Air Supply Pressure:	Min.	Norm.	Max.	barg	4	9	10
PIPELINE	8	Line Number	Pipe Insulation			3"-HY-184-03HSS-N			NOT INSULATED (PAINTED)
	9	Line Size and Schedule	Inlet	Outlet		3" / 3.05 mm		3" / 3.05 mm	
	10	Line Spec	Line Material			03HSS		ASTM A312/TP316/316L	
PROCESS CONDITION	11	Process Fluid	Fluid Phase			HYDROGEN		GAS	
	12	Upstream Condition							
	13	Des. Press. / Full Vac.	Des. Temperature Min / Max			40 Barg		80 °C	
	14	Critical Pressure	Critical Temperature						
	15	Differential Pressure - Maximum Shut Off				40 bar			
	16					Units	N2	H2	
	17	Flow Rate (Gas)				Nm^3/h	40	500	
	18	Flow Rate (Liquid)							
	19	Inlet Pressure				barg	min 1 - max 4	min 1 - max 4	
	20	Pressure Drop				bar	0.7	0.7	
	21	Inlet Temperature				°C	AMB	AMB	
	22	Inlet Density / Specific Gravity				kg/m^3	2.3 - 5.8	0.16 - 0.41	
	23	Inlet Compressibility Factor				-	1	1	
	24	Inlet Viscosity				cP	0.01	0.01	
	25	Inlet Specific Heats Ratio (Cp/Cv)				-	1.3	1.3	
	26	Inlet Vapour Pressure							
	27	Molecular Weight				-	28	2	
CALCULATED RESULTS	28	Flow Coefficient Cv					1.719 / 0.9689	5.772 / 3.241	
	29	Travel				80.8%			
	30	Sound Pressure Level				83.01 dBA (20)			
BODY AND TRIM	31	MFR	Model			AST		CV-8407	
	32	Body Type				GLOBE VALVE (HT03C02RFH)			
	33	Body Size	Trim Size			2"		1"	
	34	Rated Cv	Characteristics.			13		(11) Equal%	
	35	End Connec. & Rating				FLANGED ASME B16.5 / #300			
	36	Body Material				ASTM A351 CF3M			
	37	Bonnet Type	Material			Bolted (21)		A479 316L	
	38	Bolting				A193 B8M Cl. 2 / A194 8M			
	39	Packing Material				Grafite - VF1 (37)			
	40	Flow Action To				OPEN			
	41	Lubricator	Isolat. Valve			-		By Contractor	
	42	Guiding	No. of Ports			Top Guided		1	
	43	Trim Type				Contoured Plug (12, 13)			
	44	Rated Travel				25mm			
	45	Plug/ Ball/ Disk Material				A479 316L + PTFE			
	46	Seat Material				A479 316L (12)			
	47	Cage	Stem Material			-		A479 316L	
	48	Gasket Material				By Contractor (in line)			
	49	Flange Finish				RF			

No.	Date	Description	By	Chkd	Appr
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO

INSTRUMENT DATASHEET

Control Valve (Sheet 1 of 2)

CROSSWIND

ROSETTI MARINO

Sheet 28 of 37

Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

ACTUATOR	50	MFR	Model	AST	SD13R
	51	Type		PNUEMATIC / DIAPHRAGM (*)	
	52	Size	Area	SD11R	(*)
	53	Handwheel		NOT REQUIRED	
	54	Bench Range		20-44 psi	
	55	Volume Tank		NOT REQUIRED	
TESTS	56	Hydro. Pressure		REQUIRED	
	57	Leakage		REQUIRED (37)	
	58				
POSITIONER	59	MFR	Model	TISSIN	TS900 (15, 16)
	60	Signal: Inlet	Outlet	4-20 mA	3 to 15 psi
	61	Increase Signal Valve:		OPEN VALE	
	62	Cam Characteristic		(*)	
	63	Bypass	Gauges	NOT REQ.	YES
	64	Signal Transmission		REQUIRED VALVE POSITION 4-20 mA to PCS (22) (25-ZT-001)	
COMM. & SOFTWARE	65	Comm Type	Signal Type	-	-
	66	D D Rev.	CFF Rev.	-	-
	67	Device Tag	Hart Tag	-	-
	68	Diagnostics	Capac	-	-
	69	Segment	Device Addr.	-	-
	70	Device Class	Simulate	-	-
	71	Nom. Current	Oper Volt	-	-
SOLENOID	72	MFR	Model	-	-
	73	Type		-	
	74	When De-Enegr.Valve:		-	
	75	Schematic Detail		-	
SWITCHES	76	MFR	Model	EISENBAU	GDSN0LIS2MS290
	77	Type	Quantity	Magnetic	2
	78	Contacts / Rating		No. 1 DPDT / 1A	
	79	Switching Position		ON STEAM	
	80				
AIR SET	81	MFR	Model	SITECNA	FR04411S00SSNB2
	82	Set Pressure		Operation Pressure of valve	
	83	Filter	Gauge	YES	YES
ELECT.	84	Connection	Class	No. (*) / M20	-
PURCHASE	85	Manufacturer		AST	
	86	Model		CV-8407	
	87	Purchase Order No.		1724000740	

Notes:
(1) N.1 PSV INSTALLED DOWNSTREAM THE AIR FILTER REGULATOR, SIZE 1/4", SS, set 6 Barg.
(2) Hydrogen service - Packing ISO 15848-1

						INSTRUMENT DATASHEET	CROSSWIND		
						Control Valve (Sheet 2 of 2)	ROSETTI MARINO		
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO		Sheet 29 of	37	
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO				
No.	Date	Description	By	Chkd	Appr	Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

GENERAL	1	Tag Number	P&ID Number			25-PV-055A		123A90-DDL-PR-PID-80014	
	2	Service				HYDROGEN FROM STORAGE VESSEL TO FUEL CELL PACKAGE			
	3	Area Classification	Certification			ATEX ZONE 2		Ex-d IIC (or IIB+H2) T1	
	4	Ambient Temperature:	Min.	Max.		°C		-8.4	+25
	5	Allowable Sound Pressure Level dBA				Max 85 dBA			
	6	Ingress Protection	Power Failure Position			IP-66		-	CLOSE
	7	Air Supply Pressure:	Min.	Norm.	Max.	barg	4	9	10
PIPELINE	8	Line Number	Pipe Insulation			1-1/2"-HY-148-03HSS-N			NOT INSULATED (PAINTED)
	9	Line Size and Schedule	Inlet	Outlet		1-1/2" / 3.68 mm		1-1/2" / 3.68 mm	
	10	Line Spec	Line Material			03HSS		ASTM A312/TP316/316L	
PROCESS CONDITION	11	Process Fluid	Fluid Phase			HYDROGEN		GAS	
	12	Upstream Condition							
	13	Des. Press. / Full Vac.	Des. Temperature Min / Max			40 barg		100 °C	
	14	Critical Pressure	Critical Temperature						
	15	Differential Pressure - Maximum Shut Off				40 bar			
	16					Units	@min CV		@max CV
	17	Flow Rate (Gas)				kg/h	106		106
	18	Flow Rate (Liquid)							
	19	Inlet Pressure				barg	30		4.5
	20	Pressure Drop				bar	26.5		1
	21	Inlet Temperature				°C	15		15
	22	Inlet Density / Specific Gravity				kg/m^3	2.58		0.46
	23	Inlet Compressibility Factor				-	1.01		1
	24	Inlet Viscosity				cP	0.0086		0.0084
	25	Inlet Specific Heats Ratio (Cp/Cv)				-	1.42		1.41
	26	Inlet Vapour Pressure							
	27	Molecular Weight				-	2		2
CALCULATED RESULTS	28	Flow Coefficient Cv					0.7563		6.271
	29	Travel				48%			
	30	Sound Pressure Level				76.26 dBA (20)			
BODY AND TRIM	31	MFR	Model			AST		CV-8407	
	32	Body Type				GLOBE VALVE (HS03C02RFH)			
	33	Body Size	Trim Size			1-1/2"		1"	
	34	Rated Cv	Characteristics.			13		(11) Equal%	
	35	End Connec. & Rating				FLANGED ASME B16.5 / #300			
	36	Body Material				A351 CF3M			
	37	Bonnet Type	Material			Bolted (21)		A479 316L	
	38	Bolting				A193 B8M Cl. 2 / A194 8M			
	39	Packing Material				Graphite - VF1 (37)			
	40	Flow Action To				OPEN			
	41	Lubricator	Isolat. Valve			-		By Contractor	
	42	Guiding	No. of Ports			Top Guided		1"	
	43	Trim Type				Contoured Plug (12, 13)			
	44	Rated Travel				20mm			
	45	Plug/ Ball/ Disk Material				A479 316L+PTFE (12)			
	46	Seat Material				A479 316L (12)			
	47	Cage	Stem Material			-		A479 316L	
	48	Gasket Material				By Contractor (in line)			
	49	Flange Finish				RF			

No.	Date	Description	By	Chkd	Appr
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO

INSTRUMENT DATASHEET

Control Valve (Sheet 1 of 2)

CROSSWIND

ROSETTI MARINO

Sheet 30 of 37

Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

ACTUATOR	50	MFR	Model	AST	SD11R
	51	Type		PNUEMATIC / DIAPHRAGM (*)	
	52	Size	Area	SD11R	(*)
	53	Handwheel		NOT REQUIRED	
	54	Bench Range		20-44 psi	
	55	Volume Tank		NOT REQUIRED	
TESTS	56	Hydro. Pressure		REQUIRED	
	57	Leakage		REQUIRED (37)	
	58				
POSITIONER	59	MFR	Model	TISSIN	TS900 (15, 16)
	60	Signal: Inlet	Outlet	4-20 mA	3 to 15 psi
	61	Increase Signal Valve:		OPEN VALE	
	62	Cam Characteristic		(*)	
	63	Bypass	Gauges	NOT REQ.	YES
	64	Signal Transmission		REQUIRED VALVE POSITION 4-20 mA to PCS (22) (25-ZT-025A)	
COMM. & SOFTWARE	65	Comm Type	Signal Type	-	-
	66	D D Rev.	CFF Rev.	-	-
	67	Device Tag	Hart Tag	-	-
	68	Diagnostics	Capac	-	-
	69	Segment	Device Addr.	-	-
	70	Device Class	Simulate	-	-
	71	Nom. Current	Oper Volt	-	-
SOLENOID	72	MFR	Model	-	-
	73	Type		-	
	74	When De-Enegr.Valve:		-	
	75	Schematic Detail		-	
SWITCHES	76	MFR	Model	EISENBAU	GDSN0LIS2MS290
	77	Type	Quantity	Magnetic	2
	78	Contacts / Rating		No. 1 DPDT / 1A	
	79	Switching Position		ON STEAM	
	80				
AIR SET	81	MFR	Model	SITECNA	FR04411S00SSNB2
	82	Set Pressure		Operation Pressure of valve	
	83	Filter	Gauge	YES	YES
ELECT.	84	Connection	Class	No. (*) / M20	-
PURCHASE	85	Manufacturer		AST	
	86	Model		CV-8407	
	87	Purchase Order No.		1724000740	

Notes:
(1) N.1 PSV INSTALLED DOWNSTREAM THE AIR FILTER REGULATOR, SIZE 1/4", SS, set 6 Barg.
(2) Hydrogen service - Packing ISO 15848-1

						INSTRUMENT DATASHEET	CROSSWIND		
						Control Valve (Sheet 2 of 2)	ROSETTI MARINO		
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO		Sheet 31 of	37	
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO				
No.	Date	Description	By	Chkd	Appr	Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

GENERAL	1	Tag Number	P&ID Number			25-PV-055B		123A90-DDL-PR-PID-80014	
	2	Service				HYDROGEN FROM STORAGE VESSEL TO FUEL CELL PACKAGE			
	3	Area Classification	Certification			ATEX ZONE 2		Ex-d IIC (or IIB+H2) T1	
	4	Ambient Temperature:	Min.	Max.		°C		-8.4	+25
	5	Allowable Sound Pressure Level dBA				Max 85 dBA			
	6	Ingress Protection	Power Failure Position			IP-66		-	CLOSE
	7	Air Supply Pressure:	Min.	Norm.	Max.	barg	4	9	10
PIPELINE	8	Line Number	Pipe Insulation			1-1/2"-HY-148-03HSS-N			NOT INSULATED (PAINTED)
	9	Line Size and Schedule	Inlet	Outlet		1-1/2" / 3.68 mm		1-1/2" / 3.68 mm	
	10	Line Spec	Line Material			03HSS		ASTM A312/TP316/316L	
PROCESS CONDITION	11	Process Fluid	Fluid Phase			HYDROGEN		GAS	
	12	Upstream Condition							
	13	Des. Press. / Full Vac.	Des. Temperature Min / Max			40 barg		100 °C	
	14	Critical Pressure	Critical Temperature						
	15	Differential Pressure - Maximum Shut Off				40 bar			
	16					Units	@min CV		@max CV
	17	Flow Rate (Gas)				kg/h	106		106
	18	Flow Rate (Liquid)							
	19	Inlet Pressure				barg	30		4.5
	20	Pressure Drop				bar	26,5		1
	21	Inlet Temperature				°C	15		15
	22	Inlet Density / Specific Gravity				kg/m^3	2.58		0.46
	23	Inlet Compressibility Factor				-	1.01		1
	24	Inlet Viscosity				cP	0.0086		0.0084
	25	Inlet Specific Heats Ratio (Cp/Cv)				-	1.42		1.41
	26	Inlet Vapour Pressure							
	27	Molecular Weight				-	2		2
CALCULATED RESULTS	28	Flow Coefficient Cv					0.02151		0.1841
	29	Travel				75.6%			
	30	Sound Pressure Level				76.26 dBA (20)			
BODY AND TRIM	31	MFR	Model			AST		CV-8407	
	32	Body Type				GLOBE VALVE (HS03C02RFH)			
	33	Body Size	Trim Size			1-1/2"		1"	
	34	Rated Cv	Characteristics.			0,45		(11) Equal%	
	35	End Connec. & Rating				FLANGED ASME B16.5 / #300			
	36	Body Material				A351 CF3M			
	37	Bonnet Type	Material			Bolted (21)		A479 316L	
	38	Bolting				A193 B8M Cl. 2 / A194 8M			
	39	Packing Material				Graphite - VF1 (37)			
	40	Flow Action To				OPEN			
	41	Lubricator	Isolat. Valve			-		By Contractor	
	42	Guiding	No. of Ports			Top Guided		5/32"	
	43	Trim Type				Contoured Plug (12, 13)			
	44	Rated Travel				20mm			
	45	Plug/ Ball/ Disk Material				A479 316L+PTFE (12)			
	46	Seat Material				A479 316L (12)			
	47	Cage	Stem Material			-		A479 316L	
	48	Gasket Material				By Contractor (in line)			
	49	Flange Finish				RF			

No.	Date	Description	By	Chkd	Appr
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO

INSTRUMENT DATASHEET

Control Valve (Sheet 1 of 2)

CROSSWIND

ROSETTI MARINO

Sheet 32 of 37

Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

ACTUATOR	50	MFR	Model	AST	SD11R
	51	Type		PNUEMATIC / DIAPHRAGM (*)	
	52	Size	Area	SD11R	(*)
	53	Handwheel		NOT REQUIRED	
	54	Bench Range		20-44 psi	
	55	Volume Tank		NOT REQUIRED	
TESTS	56	Hydro. Pressure		REQUIRED	
	57	Leakage		REQUIRED (37)	
	58				
POSITIONER	59	MFR	Model	TISSIN	TS900 (15, 16)
	60	Signal: Inlet	Outlet	4-20 mA	3 to 15 psi
	61	Increase Signal Valve:		OPEN VALE	
	62	Cam Characteristic		(*)	
	63	Bypass	Gauges	NOT REQ.	YES
	64	Signal Transmission		REQUIRED VALVE POSITION 4-20 mA to PCS (22) (25-ZT-025A)	
COMM. & SOFTWARE	65	Comm Type	Signal Type	-	-
	66	D D Rev.	CFF Rev.	-	-
	67	Device Tag	Hart Tag	-	-
	68	Diagnostics	Capac	-	-
	69	Segment	Device Addr.	-	-
	70	Device Class	Simulate	-	-
	71	Nom. Current	Oper Volt	-	-
SOLENOID	72	MFR	Model	-	-
	73	Type		-	
	74	When De-Enegr.Valve:		-	
	75	Schematic Detail		-	
SWITCHES	76	MFR	Model	EISENBAU	GDSN0LIS2MS290
	77	Type	Quantity	Magnetic	2
	78	Contacts / Rating		No. 1 DPDT / 1A	
	79	Switching Position		ON STEAM	
	80				
AIR SET	81	MFR	Model	SITECNA	FR04411S00SSNB2
	82	Set Pressure		Operation Pressure of valve	
	83	Filter	Gauge	YES	YES
ELECT.	84	Connection	Class	No. (*) / M20	-
PURCHASE	85	Manufacturer		AST	
	86	Model		CV-8407	
	87	Purchase Order No.		1724000740	

Notes:
(1) N.1 PSV INSTALLED DOWNSTREAM THE AIR FILTER REGULATOR, SIZE 1/4", SS, set 6 Barg.
(2) Hydrogen service - Packing ISO 15848-1

						INSTRUMENT DATASHEET	CROSSWIND		
						Control Valve (Sheet 2 of 2)	ROSETTI MARINO		
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO		Sheet 33 of	37	
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO				
No.	Date	Description	By	Chkd	Appr	Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

GENERAL	1	Tag Number	P&ID Number			64-PV-031A		123A90-DDL-PR-PID-80027	
	2	Service				NITROGEN FROM NITROGEN SYSTEM (U-64000) TO HEADER			
	3	Area Classification	Certification			ATEX ZONE 2		Ex-d IIC (or IIB+H2) T1	
	4	Ambient Temperature:	Min.	Max.		°C		-8.4	+25
	5	Allowable Sound Pressure Level dBA				Max 85 dBA			
	6	Ingress Protection	Power Failure Position			IP-66		-	CLOSE
	7	Air Supply Pressure:	Min.	Norm.	Max.	barg	4	9	10
PIPELINE	8	Line Number	Pipe Insulation			1"-N-158-01CS-N			NOT INSULATED (PAINTED)
	9	Line Size and Schedule	Inlet	Outlet		1" / 4.55 mm		1" / 4.55 mm	
	10	Line Spec	Line Material			01CS		ASTM/ASME A/SA333 Gr.6	
PROCESS CONDITION	11	Process Fluid	Fluid Phase			NITROGEN		GAS	
	12	Upstream Condition							
	13	Des. Press. / Full Vac.	Des. Temperature Min / Max			10 barg		100 °C	
	14	Critical Pressure	Critical Temperature						
	15	Differential Pressure - Maximum Shut Off				10 bar			
	16					Units	@ Max. Flow	@ Norm. Flow	@ Min. Flow
	17	Flow Rate (Gas)				Nm^3/h	60	10	7
	18	Flow Rate (Liquid)							
	19	Inlet Pressure				barg	8	8	8
	20	Pressure Drop				bar	0.5	1	1
	21	Inlet Temperature				°C	15	15	15
	22	Inlet Density / Specific Gravity				kg/m^3	10.6	10.6	10.6
	23	Inlet Compressibility Factor				-	0.99	0.99	0.99
	24	Inlet Viscosity				cP	0.017	0.017	0.017
	25	Inlet Specific Heats Ratio (Cp/Cv)				-	1.4	1.4	1.4
	26	Inlet Vapour Pressure							
	27	Molecular Weight				-	28	28	28
CALCULATED RESULTS	28	Flow Coefficient Cv					1.22	0.1474	0.1032
	29	Travel				33.9%			
	30	Sound Pressure Level				<75 dBA (20)			
BODY AND TRIM	31	MFR	Model			AST		CV-8407	
	32	Body Type				GLOBE VALVE (HS01A02RF)			
	33	Body Size	Trim Size			1"		3/8"	
	34	Rated Cv	Characteristics.			1.9		(11) Equal%	
	35	End Connec. & Rating				FLANGED ASME B16.5 / #150			
	36	Body Material				ASTM A350 LF2			
	37	Bonnet Type	Material			Bolted (21)		ASTM A350 LF2	
	38	Bolting				A193 B8M Cl. 2 / A194 8M			
	39	Packing Material				PTFE			
	40	Flow Action To				OPEN			
	41	Lubricator	Isolat. Valve			-		By Contractor	
	42	Guiding	No. of Ports			Top Guided		1	
	43	Trim Type				Contoured Plug (12, 13)			
	44	Rated Travel				13mm			
	45	Plug/ Ball/ Disk Material				A479 316L+CoCr-A (12)			
	46	Seat Material				A479 316L+CoCr-A (12)			
	47	Cage	Stem Material			-		A479 316L	
	48	Gasket Material				By Contractor (in line)			
	49	Flange Finish				RF			

No.	Date	Description	By	Chkd	Appr
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO
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INSTRUMENT DATASHEET

Control Valve (Sheet 1 of 2)

CROSSWIND

ROSETTI MARINO

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Code: Dwg.No 123A90-DDL-IN-DS-40036 Rev. 01

ACTUATOR	50	MFR	Model	AST	SD11R
	51	Type		PNUEMATIC / DIAPHRAGM (*)	
	52	Size	Area	SD11R	(*)
	53	Handwheel		NOT REQUIRED	
	54	Bench Range		15-30 psi	
	55	Volume Tank		NOT REQUIRED	
TESTS	56	Hydro. Pressure		REQUIRED	
	57	Leakage		REQUIRED (37)	
	58				
POSITIONER	59	MFR	Model	TISSIN	TS900 (15, 16)
	60	Signal: Inlet	Outlet	4-20 mA	3 to 15 psi
	61	Increase Signal Valve:		OPEN VALE	
	62	Cam Characteristic		(*)	
	63	Bypass	Gauges	NOT REQ.	YES
	64	Signal Transmission		REQUIRED VALVE POSITION 4-20 mA to PCS (22) (25-ZT-025A)	
COMM. & SOFTWARE	65	Comm Type	Signal Type	-	-
	66	D D Rev.	CFF Rev.	-	-
	67	Device Tag	Hart Tag	-	-
	68	Diagnostics	Capac	-	-
	69	Segment	Device Addr.	-	-
	70	Device Class	Simulate	-	-
	71	Nom. Current	Oper Volt	-	-
SOLENOID	72	MFR	Model	-	-
	73	Type		-	
	74	When De-Enegr.Valve:		-	
	75	Schematic Detail		-	
SWITCHES	76	MFR	Model	EISENBAU	GDSN0LIS2MS290
	77	Type	Quantity	Magnetic	2
	78	Contacts / Rating		No. 1 DPDT / 1A	
	79	Switching Position		ON STEAM	
	80				
AIR SET	81	MFR	Model	SITECNA	FR04411S00SSNB2
	82	Set Pressure		Operation Pressure of valve	
	83	Filter	Gauge	YES	YES
ELECT.	84	Connection	Class	No. (*) / M20	-
PURCHASE	85	Manufacturer		AST	
	86	Model		CV-8407	
	87	Purchase Order No.		1724000740	

Notes:

						INSTRUMENT DATASHEET	CROSSWIND		
						Control Valve (Sheet 2 of 2)	ROSETTI MARINO		
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO		Sheet 35 of 37		
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO				
No.	Date	Description	By	Chkd	Appr	Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01

GENERAL	1	Tag Number	P&ID Number			64-PV-031B		123A90-DDL-PR-PID-80027	
	2	Service				NITROGEN FROM NITROGEN SYSTEM (U-64000) TO HEADER			
	3	Area Classification	Certification			ATEX ZONE 2		Ex-d IIC (or IIB+H2) T1	
	4	Ambient Temperature:	Min.	Max.		°C		-8.4	+25
	5	Allowable Sound Pressure Level dBA				Max 85 dBA			
	6	Ingress Protection	Power Failure Position			IP-66		-	CLOSE
	7	Air Supply Pressure:	Min.	Norm.	Max.	barg	4	9	10
PIPELINE	8	Line Number	Pipe Insulation			1"-N-158-01CS-N			NOT INSULATED (PAINTED)
	9	Line Size and Schedule	Inlet	Outlet		1" / 4.55 mm		1" / 4.55 mm	
	10	Line Spec	Line Material			01CS		ASTM/ASME A/SA333 Gr.6	
PROCESS CONDITION	11	Process Fluid	Fluid Phase			NITROGEN		GAS	
	12	Upstream Condition							
	13	Des. Press. / Full Vac.	Des. Temperature Min / Max			10 barg		100 °C	
	14	Critical Pressure	Critical Temperature						
	15	Differential Pressure - Maximum Shut Off				10 bar			
	16					Units	@ Max. Flow	@ Norm. Flow	@ Min. Flow
	17	Flow Rate (Gas)				Nm^3/h	60	10	7
	18	Flow Rate (Liquid)							
	19	Inlet Pressure				barg	8	8	8
	20	Pressure Drop				bar	0.5	1	1
	21	Inlet Temperature				°C	15	15	15
	22	Inlet Density / Specific Gravity				kg/m^3	10.6	10.6	10.6
	23	Inlet Compressibility Factor				-	0.99	0.99	0.99
	24	Inlet Viscosity				cP	0.017	0.017	0.017
	25	Inlet Specific Heats Ratio (Cp/Cv)				-	1.4	1.4	1.4
	26	Inlet Vapour Pressure							
	27	Molecular Weight				-	28	28	28
CALCULATED RESULTS	28	Flow Coefficient Cv					1.22	0.1474	0.1032
	29	Travel				33.9%			
	30	Sound Pressure Level				<75 dBA (20)			
BODY AND TRIM	31	MFR	Model			AST		CV-8407	
	32	Body Type				GLOBE VALVE (HS01A02RF)			
	33	Body Size	Trim Size			1"		3/8"	
	34	Rated Cv	Characteristics.			1.9		(11) Equal%	
	35	End Connec. & Rating				FLANGED ASME B16.5 / #150			
	36	Body Material				ASTM A350 LF2			
	37	Bonnet Type	Material			Bolted (21)		ASTM A350 LF2	
	38	Bolting				A193 B8M Cl. 2 / A194 8M			
	39	Packing Material				PTFE			
	40	Flow Action To				OPEN			
	41	Lubricator	Isolat. Valve			-		By Contractor	
	42	Guiding	No. of Ports			Top Guided		1	
	43	Trim Type				Contoured Plug (12, 13)			
	44	Rated Travel				13mm			
	45	Plug/ Ball/ Disk Material				A479 316L+CoCr-A (12)			
	46	Seat Material				A479 316L+CoCr-A (12)			
	47	Cage	Stem Material			-		A479 316L	
	48	Gasket Material				By Contractor (in line)			
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No.	Date	Description	By	Chkd	Appr
01	28/08/24	Accepted for Construction (AFC)	VBA	LCA	DLO
00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO

INSTRUMENT DATASHEET

Control Valve (Sheet 1 of 2)

CROSSWIND

ROSETTI MARINO

Sheet 36 of 37

Code: | Dwg.No 123A90-DDL-IN-DS-40036 | Rev. 01

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COMM. & SOFTWARE	65	Comm Type	Signal Type	-	-
	66	D D Rev.	CFF Rev.	-	-
	67	Device Tag	Hart Tag	-	-
	68	Diagnostics	Capac	-	-
	69	Segment	Device Addr.	-	-
	70	Device Class	Simulate	-	-
	71	Nom. Current	Oper Volt	-	-
SOLENOID	72	MFR	Model	-	-
	73	Type		-	
	74	When De-Enegr.Valve:		-	
	75	Schematic Detail		-	
SWITCHES	76	MFR	Model	EISENBAU	GDSN0LIS2MS290
	77	Type	Quantity	Magnetic	2
	78	Contacts / Rating		No. 1 DPDT / 1A	
	79	Switching Position		ON STEAM	
	80				
AIR SET	81	MFR	Model	SITECNA	FR04411S00SSNB2
	82	Set Pressure		Operation Pressure of valve	
	83	Filter	Gauge	YES	YES
ELECT.	84	Connection	Class	No. (*) / M20	-
PURCHASE	85	Manufacturer		AST	
	86	Model		CV-8407	
	87	Purchase Order No.		1724000740	

Notes:
(1) N.1 PSV INSTALLED DOWNSTREAM THE AIR FILTER REGULATOR, SIZE 1/4", SS, set 6 Barg.
(2) Hydrogen service - Packing ISO 15848-1

						INSTRUMENT DATASHEET	CROSSWIND		
						Control Valve (Sheet 2 of 2)	ROSETTI MARINO		
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00	14/11/23	Issued for Review (IFR)	VBA	LCA	DLO				
No.	Date	Description	By	Chkd	Appr	Code:	Dwg.No	123A90-DDL-IN-DS-40036	Rev. 01