

Technical Specifications of Control Valves

Annexure-A

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Sr. No.	Description		Quantity
01.	Pneumatic Control Valves (R-134a)		01
	Fluid to be controlled	R-134a	
	Application	Control	
	Specific Gravity of R-134a	1.2	
	Type	Globe type single seat	
	Service	Cycles per day	
	Line Schedule	40S	
	Line size	DN80 (3 Inches)	
	Mass Flow Rate	0 -10 kg/s	
	Design Pressure	70 bar	
	Design Temperature	150 °C	
	End connection	RF Flange (ANSI)	
	Pressure Rating	Class 600	
	Normal Inlet Pressure	35 bar	
	Maximum Inlet Pressure	50 bar	
	Maximum ΔP across	97 kPa at 50% opening Cv = 85 (USGPM) @ 75°C inlet temperature	
	Hydrostatic Test Pressure	105 bar	
	Orientation	Horizontal	
	Actuator Type	Pneumatic Multi-Spring Diaphragm	
	Air Supply	3-15 psig	
	Input Signal	4-20 mA (24V DC)	
	Characteristic	Linear	
	Temperature Range	0 to 150 °C	
	Ambient conditions	10 to 60 °C	
	Positioner Type	Digital	
	Position Transmitter	YES	
	Fail safe operation	Fail-Open	
	Field Reversible	YES	
	Material of Construction (Body, Bonnet, Stem, Flanges, Plugs, Seat ring, upper/lower guides, Tubing/Fitting)	SS-304 & TRIM2	
	Fire Protection	IP-65	
	Leakage Class	According to ANSI/FCI (Class V)	
02.	Pneumatic Control Valves (R-134a)		Quantity
	Fluid to be controlled	R-134a	02
	Application	Control	
	Specific Gravity of R-134a	1.2	
	Type	Globe type single seat	
	Service	Cycles per day	

	Line Schedule	40S	
	Line size	DN80 (3 Inches)	
	Mass Flow Rate	0 -10 kg/s	
	Design Pressure	70 bar	
	Design Temperature	150 °C	
	End connection	RF Flange (ANSI)	
	Pressure Rating	Class 600	
	Normal Inlet Pressure	35 bar	
	Maximum Inlet Pressure	50 bar	
	Maximum ΔP across	97 kPa at 50% opening Cv = 85 (USGPM) @ 75°C inlet temperature	
	Hydrostatic Test Pressure	105 bar	
	Orientation	Horizontal	
	Actuator Type	Pneumatic Multi-Spring Diaphragm	
	Air Supply	3-15 psig	
	Input Signal	4-20 mA (24V DC)	
	Characteristic	Linear	
	Temperature Range	0 to 150 °C	
	Ambient conditions	10 to 60 °C	
	Positioner Type	Digital	
	Position Transmitter	YES	
	Fail safe operation	Fail-Close	
	Field Reversible	YES	
	Material of Construction (Body, Bonnet, Stem, Flanges, Plugs, Seat ring, upper/lower guides, Tubing/Fitting)	SS-304 & TRIM2	
	Fire Protection	IP-65	
	Leakage Class	According to ANSI/FCI (Class V)	
03.	Pneumatic Control Valves (DMW)		Quantity
	Fluid to be controlled	DMW (Demineralized water)	01
	Application	Control	
	Specific Gravity of DMW	1.0	
	Type	Globe type single seat	
	Service	Cycles per day	
	Line Schedule	40S	
	Line size	DN100 (4 inches)	
	Mass Flow Rate	0 -15 kg/s	
	Design Pressure	11 bar	
	Design Temperature	66 °C	
	End connection	RF Flange (ANSI)	
	Pressure Rating	Class 150	
	Normal Inlet Pressure	5 bar	

	Maximum Inlet Pressure	7 bar	
	Maximum ΔP across	111 kPa at 50% opening Cv =120 (USGPM) @ 66°C inlet temperature	
	Hydrostatic Test Pressure	14.7 bar	
	Orientation	Horizontal	
	Actuator Type	Pneumatic Multi-Spring Diaphragm	
	Air Supply	3-15 psig	
	Input Signal	4-20 mA (24 DC)	
	Characteristic	Linear	
	Temperature Range	0 to 66 °C	
	Ambient conditions	10 to 60 °C	
	Positioner Type	Digital	
	Position Transmitter	YES	
	Fail safe operation	Fail-Open	
	Field Reversible	YES	
	Material of Construction (Body, Bonnet, Stem, Flanges, Plugs, Seat ring, upper/lower guides, Tubing/Fitting)	SS-304 & TRIM2	
	Fire Protection	IP-65	
	Leakage Class	According to ANSI/FCI (Class V)	
04.	Pneumatic Control Valves (DMW)		Quantity
	Fluid to be controlled	DMW (Demineralized water)	01
	Application	Control	
	Specific Gravity of DMW	1.0	
	Type	Globe type single seat	
	Service	Cycles per day	
	Line Schedule	40S	
	Line size	DN100 (4 inches)	
	Mass Flow Rate	0 -10 kg/s	
	Design Pressure	11 bar	
	Design Temperature	66 °C	
	End connection	RF Flange (ANSI)	
	Pressure Rating	Class 150	
	Normal Inlet Pressure	5 bar	
	Maximum Inlet Pressure	7 bar	
	Maximum ΔP across	50 kPa at 50% opening Cv =120 (USGPM) @ 66°C inlet temperature	
	Hydrostatic Test Pressure	14.7 bar	
	Orientation	Horizontal	
	Actuator Type	Pneumatic Multi-Spring Diaphragm	
	Air Supply	3-15 psig	
	Input Signal	4-20 mA (24 DC)	
	Characteristic	Linear	

	Temperature Range	0 to 66 °C	
	Ambient conditions	10 to 60 °C	
	Positioner Type	Digital	
	Position Transmitter	YES	
	Fail safe operation	Fail-Open	
	Field Reversible	YES	
	Material of Construction (Body, Bonnet, Stem, Flanges, Plugs, Seat ring, upper/lower guides, Tubing/Fitting)	SS-304 & TRIM2	
	Fire Protection	IP-65	
	Leakage Class	According to ANSI/FCI (Class V)	
05.	Pneumatic Control Valves (DMW)		Quantity
	Fluid to be controlled	DMW (Demineralized water)	01
	Application	Control	
	Specific Gravity of DMW	1.0	
	Type	Globe type single seat	
	Service	Cycles per day	
	Line Schedule	40S	
	Line size	DN80 (3 inches)	
	Mass Flow Rate	0 - 5 kg/s	
	Design Pressure	11 bar	
	Design Temperature	66 °C	
	End connection	RF Flange (ANSI)	
	Pressure Rating	Class 150	
	Normal Inlet Pressure	5 bar	
	Maximum Inlet Pressure	7 bar	
	Maximum ΔP across	50 kPa at 50% opening Cv = 60 (USGPM) @ 66°C inlet temperature	
	Hydrostatic Test Pressure	14.7 bar	
	Orientation	Horizontal	
	Actuator Type	Pneumatic Multi-Spring Diaphragm	
	Air Supply	3-15 psig	
	Input Signal	4-20 mA (24 DC)	
	Characteristic	Linear	
	Temperature Range	0 to 66 °C	
	Ambient conditions	10 to 60 °C	
	Positioner Type	Digital	
	Position Transmitter	YES	
	Fail safe operation	Fail-Open	
	Field Reversible	YES	
	Material of Construction (Body, Bonnet, Stem, Flanges,	SS-304 & TRIM2	

	Plugs, Seat ring, upper/lower guides, Tubing/Fitting)		
	Fire Protection	IP-65	
	Leakage Class	According to ANSI/FCI (Class V)	
06.	Pneumatic Control Valves (R-134a)		Quantity
	Fluid to be controlled	R-134a	01
	Application	Control	
	Specific Gravity of R-134a	1.2	
	Type	Globe type single seat	
	Service	Cycles per day	
	Line Schedule	40S	
	Line size	DN15 (1/2 Inches)	
	Mass Flow Rate	0 - 0.28 kg/s	
	Design Pressure	50 bar	
	Design Temperature	150 °C	
	End connection	RF Flange (ANSI)	
	Pressure Rating	Class 600	
	Normal Inlet Pressure	30 bar	
	Maximum Inlet Pressure	40 bar	
	Maximum ΔP across	23 kPa at 50% opening $C_v = 5$ (USGPM) @ 80°C inlet temperature	
	Hydrostatic Test Pressure	75 bar	
	Fluid Entry	Bottom	
	Orientation	Horizontal	
	Actuator Type	Pneumatic Multi-Spring Diaphragm	
	Air Supply	3-15 psig	
	Input Signal	4-20 mA (24V DC)	
	Characteristic	Linear	
	Temperature Range	0 to 150 °C	
	Ambient conditions	10 to 60 °C	
	Positioner Type	Digital	
	Position Transmitter	YES	
	Fail safe operation	Fail-Open	
	Field Reversible	YES	
	Material of Construction (Body, Bonnet, Stem, Flanges, Plugs, Seat ring, upper/lower guides, Tubing/Fitting)	SS-304 & TRIM2	
	Fire Protection	IP-65	
	Leakage Class	According to ANSI/FCI (Class V)	
07	Pneumatic Control Valves (R-134a)		Quantity
	Fluid to be controlled	R-134a	01
	Application	Control	

	Design Temperature	66 °C	
	End connection	RF Flange (ANSI)	
	Pressure Rating	Class 150	
	Normal Inlet Pressure	5 bar	
	Maximum Inlet Pressure	7 bar	
	Maximum ΔP across	52 kPa at 50% opening $C_v = 35$ (USGPM) @ 66°C inlet temperature	
	Hydrostatic Test Pressure	14.7 bar	
	Fluid Entry	Bottom	
	Orientation	Horizontal	
	Actuator Type	Pneumatic Multi-Spring Diaphragm	
	Air Supply	3-15 psig	
	Input Signal	4-20 mA (24 DC)	
	Characteristic	Linear	
	Temperature Range	0 to 66 °C	
	Ambient conditions	10 to 60 °C	
	Positioner Type	Digital	
	Position Transmitter	YES	
	Fail safe operation	Fail-Open	
	Field Reversible	YES	
	Material of Construction (Body, Bonnet, Stem, Flanges, Plugs, Seat ring, upper/lower guides, Tubing/Fitting)	SS-304 & TRIM2	
	Fire Protection	IP-65	
	Leakage Class	According to ANSI/FCI (Class V)	
09.	Pneumatic Control Valves (DMW)		Quantity
	Fluid to be controlled	DMW (Demineralized water)	01
	Application	Control	
	Specific Gravity of DMW	1.0	
	Type	Globe type single seat	
	Service	Cycles per day	
	Line Schedule	40S	
	Line size (Quantity)	DN100 (4 Inches)	
	Mass Flow Rate	0 - 36 kg/s	
	Design Pressure	11 bar	
	Design Temperature	66 °C	
	End connection	RF Flange (ANSI)	
	Pressure Rating	Class 150	
	Normal Inlet Pressure	5 bar	
	Maximum Inlet Pressure	7 bar	
	Maximum ΔP across	255 kPa at 50% opening $C_v = 190$ (USGPM) @ 66°C inlet temperature	

	Hydrostatic Test Pressure	14.7 bar
	Orientation	Horizontal
	Actuator Type	Pneumatic Multi-Spring Diaphragm
	Air Supply	3 -15 psig
	Input Signal	4 -20 mA (24 DC)
	Characteristic	Linear
	Temperature Range	0 to 66 °C
	Ambient conditions	10 to 60 °C
	Positioner Type	Digital
	Position Transmitter	YES
	Field Reversible	YES
	Fail safe operation	Fail-Open
	Material of Construction (Body, Bonnet, Stem, Flanges, Plugs, Seat ring, upper/lower guides, Tubing/Fitting)	SS-304 & TRIM2
	Fire Protection	IP-65
	Leakage Class	According to ANSI/FCI (Class V)
10.	Terms and conditions – documentation required	
	i. CV will be calculated by supplier. CV data should be available at 10-100 % opening. ii. 3.1 B Material test certificate. iii. Liquid penetrant Test. iv. Seat leakage Test (ANSI / FCI Class V)	v. Standard QA certificate should be provided. vi. Hydrostatic Test vii. Fugitive Emission Test viii. Diagnostic Test ix. Compliance Certificate x. Third party certification is compulsory for point iii), iv) and vi).
11.	Actuator Accessories (with every control valve)	
	Air Filter / Regulator with gauges	Positioner (Digital)
	Limit switch	Transducer
	Position transmitter	Proximity switch
	Solenoid valve	SS tubing / connectors
	Other necessary accessories may be provided if available	
12.	Spares along-with the itemized cost	
	Provide the necessary spares for 5 years operation	
13.	Make	European/ American/Japanese Samson or Equivalent