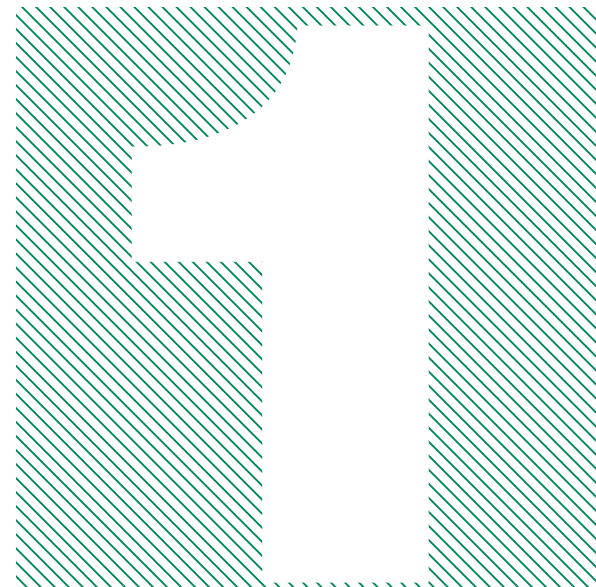




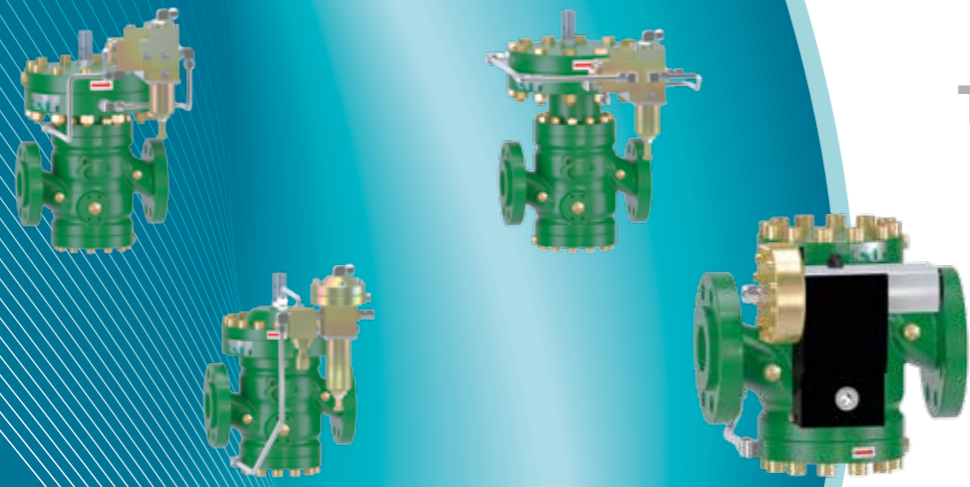
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TA-956 SSV

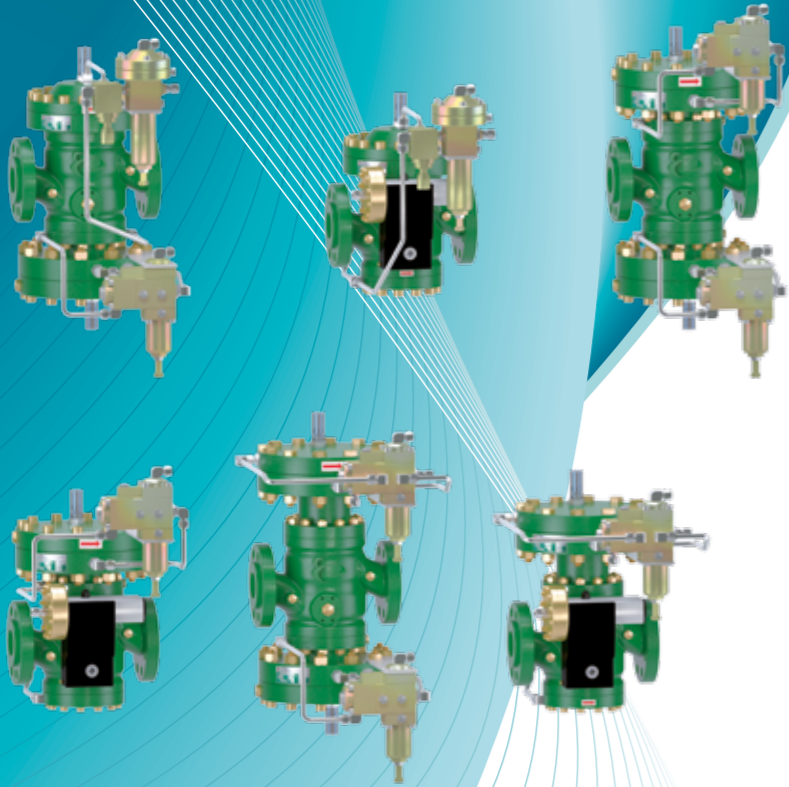
Safety Shutoff Valve

SINGLE FUNCTION

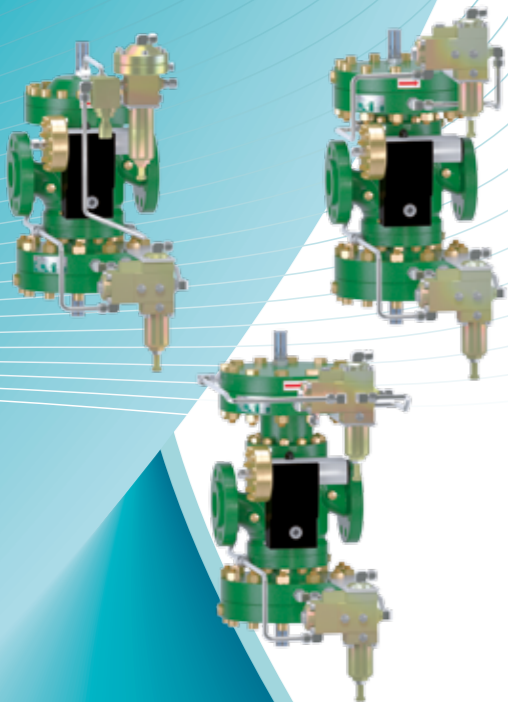


TA-956 SSV

DOUBLE FUNCTION



TRIPLE FUNCTION



Product's range

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TA-956 FAMILY

The TA956 family of pressure regulators and SSV comprises single function units, double function and triple function units.

The modular design in which a single body is capable of accepting up to three separate functions with separate sensing lines, pilots actuators, internal control valves and seats is a peculiar characteristic of TA956 family.

This feature (of three optional integrated independent functions in one body) allows the best possible use of space due to an exceptionally compact configuration.

The modular design allows any installed units, to be updated or upgraded during the entire lifetime of the regulator as the operating requirements or any changes in customers specifications are modified.

TA956 pressure regulators are top entry design, this allow for ease and cost effective maintenance without dismantling regulator body from the line.



APPLICATION

The modular design allows a wide variety of configurations to suit the most demanding applications in gas transmission, gas supply to industrial power plant, city gates, distribution utility systems, industry installations ,etc.

TA956 pressure regulators and SSV are designed to be used with non corrosive and filtered natural gas.

Upon request other gases and different process conditions may be acceptable with specific choice of materials.

TA956SSV is a Safety Shutoff Valve suitable for high, medium, and low pressure applications.

This SSV will go to fully closed position in case of:

- Downstream pressure higher than the MAX set point, Over-pressure Protection;
- Downstream pressure lower than the MIN set point, Under-pressure Protection.

TA956SSV Safety Shutoff Valve is CE marked in accordance with the following standards:

- EU/97/23/EG A lli B (29.05.1997)
- DIN EN 14382 (01.07.2009)

Product Identification Number: CE-0085CO0164



TECHNICAL SPECIFICATIONS TA-956 SSV

Max. inlet pressure p_{max}	100 bar (ANSI 600)			
Nominal diameter and CG value	1" (DN 25)	CG=550		
	2" (DN 50)	CG=2250		
	3" (DN 80)	CG=4500		
	4" (DN 100)	CG=8500		
	6" (DN 150)	CG=16900		
	8" (DN 200)	CG=29000		
	10" (DN 250)	CG=47000		
	12" (DN 300)	CG=67000		
Type of connection	Flanges ANSI 150, ANSI 300, ANSI 600 (PN 16,25,40,100 on request)			
Accuracy Class AG	up to 1% depending on size and pressure range			
	Head	Wdo	AG	Wdu
	CX677	0.015 ... 1.2 bar	10 ... 2.5	0.01 ... 1 bar
	CX640	0.2 ... 10 bar	5 ... 1	0.15 ... 4 bar
	CX630	1 ... 18 bar	2.5 ... 1	0.8 ... 7 bar
	CX615	3 ... 95 bar	2.5 ... 1	2 ... 29 bar
Closing time t_a	0.1 ... 0.5 s according to size and head type			
Operational temperature range	-20 °C to +60 °C (-40°C to +60°C available on request)			
Operation and strength according to	EN 14382, DIRECTIVE 97/23/EC(PED), ANSI B16.5, ANSI B16.34			
CE mark according to PED	CE 0085			
EX protection	Since the device is not fitted with potential ignition sources of its own, it is not subject to ATEX 95 regulations (all used electronic accessories meet ATEX requirements).			
Accessories	Remote closure command			



MATERIALS

Body	ASTM A216 WCB, (ASTM A352 LCC on request)
Diaphragm housing	ASTM A105, SAE1020, ASTM A216 WCB, (ASTM A352LCC or LF2 on request)
Covers	ASTM A105; SAE1020 (ASTM A352 LCC or LF2 on request)
Valve	ASTM A 182 F6 / A105 zinc pltd, (A 350 LF2 ENP on request)
Seat	ASTM A182 F6 Cl.2 + Bonded Nitrile Rubber
Diaphragms	Nitrile rubber with nylon fabric
Seals	Nitrile (NBR) or flouroelastomer (FKM)
SSV device	Steel, Brass, Alluminium



PRESSURE SWITCH TA-958 SPRING TABLE

HEAD MODEL	Under Pressure Range					Over Pressure Range				
	Spring		Wdso		Δpwo	Spring		Wdsu		Δpwu
	n°	Color	Min [bar]	Max [bar]	[bar]	n°	Color	Min [bar]	Max [bar]	[bar]
CX 615	1261	Blue	2.00	6.50	1.50					
CX 615	1262	Red	4.00	12.50	2.00					
CX 615	1263	Brown	6.00	19.00	2.50					
CX 615	1264	Black	12.00	29.00	3.50					
CX 615						1267	Light Blue	3.00	10.00	1.50
CX 615						1268	Blue	6.00	22.00	2.00
CX 615						1269	Red	13.00	40.00	3.50
CX 615						1270	Brown	28.00	76.00	4.00
CX 615						1565	Green	70.00	95.00	5.00
CX 615	1261	Blue	2.00	6.50	1.50	1267	Light Blue	3.00	10.00	1.50
CX 615	1261	Blue	2.00	6.50	1.50	1268	Blue	6.00	22.00	2.00
CX 615	1262	Red	4.00	12.50	2.00	1268	Blue	6.00	22.00	2.00
CX 615	1261	Blue	2.00	6.50	1.50	1269	Red	13.00	40.00	3.50
CX 615	1262	Red	4.00	12.50	2.00	1269	Red	13.00	40.00	3.50
CX 615	1263	Brown	6.00	19.00	2.50	1269	Red	13.00	40.00	3.50
CX 615	1261	Blue	2.00	6.50	1.50	1270	Brown	28.00	76.00	4.00
CX 615	1262	Red	4.00	12.50	2.00	1270	Brown	28.00	76.00	4.00
CX 615	1263	Brown	6.00	19.00	2.50	1270	Brown	28.00	76.00	4.00
CX 615	1264	Black	12.00	29.00	3.50	1270	Brown	28.00	76.00	4.00
CX 615	1261	Blue	2.00	6.50	1.50	1565	Green	70.00	95.00	5.00
CX 615	1262	Red	4.00	12.50	2.00	1565	Green	70.00	95.00	5.00
CX 615	1263	Brown	6.00	19.00	2.50	1565	Green	70.00	95.00	5.00
CX 615	1264	Black	12.00	29.00	3.50	1565	Green	70.00	95.00	5.00
CX 630	1261	Blue	0.80	1.70	0.40					
CX 630	1262	Red	1.40	3.00	0.60					
CX 630	1263	Brown	2.50	4.50	0.70					
CX 630	1264	Black	3.80	7.00	1.00					
CX 630						1267	Light Blue	1.00	2.50	0.40
CX 630						1268	Blue	1.80	4.70	0.60
CX 630						1269	Red	3.90	10.00	0.80
CX 630						1270	Brown	8.00	18.00	1.30
CX 630	1261	Blue	0.80	1.70	0.40	1267	Light Blue	1.00	2.50	0.40
CX 630	1261	Blue	0.80	1.70	0.40	1268	Blue	1.80	4.70	0.60
CX 630	1262	Red	1.40	3.00	0.60	1268	Blue	1.80	4.70	0.60
CX 630	1261	Blue	0.80	1.70	0.40	1269	Red	3.90	10.00	0.80
CX 630	1262	Red	1.40	3.00	0.60	1269	Red	3.90	10.00	0.80
CX 630	1263	Brown	2.50	4.50	0.70	1269	Red	3.90	10.00	0.80
CX 630	1261	Blue	0.80	1.70	0.40	1270	Brown	8.00	18.00	1.30
CX 630	1262	Red	1.40	3.00	0.60	1270	Brown	8.00	18.00	1.30
CX 630	1263	Brown	2.50	4.50	0.70	1270	Brown	8.00	18.00	1.30
CX 630	1264	Black	3.80	7.00	1.00	1270	Brown	8.00	18.00	1.30
CX 640	1260	Light Blue	0.15	0.32	0.08					
CX 640	1261	Blue	0.25	0.90	0.12					
CX 640	1262	Red	0.50	1.80	0.20					
CX 640	1263	Brown	0.80	2.50	0.30					
CX 640	1264	Black	2.00	4.00	0.50					

MODEL	Under Pressure Range					Over Pressure Range				
	Spring		Wdso		Δpwo	Spring		Wdsu		Δpwu
	n°	Color	Min [bar]	Max [bar]	[bar]	n°	Color	Min [bar]	Max [bar]	[bar]
CX 640						1266	Green	0.20	0.60	0.10
CX 640						1267	Light Blue	0.50	1.70	0.20
CX 640						1268	Blue	1.00	3.50	0.30
CX 640						1269	Red	2.00	6.00	0.50
CX 640						1270	Brown	4.50	10.00	1.00
CX 640	1260	Light Blue	0.15	0.32	0.08	1266	Green	0.20	0.60	0.10
CX 640	1260	Light Blue	0.15	0.32	0.08	1267	Light Blue	0.50	1.70	0.20
CX 640	1261	Blue	0.25	0.90	0.12	1267	Light Blue	0.50	1.70	0.20
CX 640	1260	Light Blue	0.15	0.32	0.08	1268	Blue	1.00	3.50	0.30
CX 640	1261	Blue	0.25	0.90	0.12	1268	Blue	1.00	3.50	0.30
CX 640	1262	Red	0.50	1.80	0.20	1268	Blue	1.00	3.50	0.30
CX 640	1260	Light Blue	0.15	0.32	0.08	1269	Red	2.00	6.00	0.50
CX 640	1261	Blue	0.25	0.90	0.12	1269	Red	2.00	6.00	0.50
CX 640	1262	Red	0.50	1.80	0.20	1269	Red	2.00	6.00	0.50
CX 640	1263	Brown	0.80	2.50	0.30	1269	Red	2.00	6.00	0.50
CX 640	1260	Light Blue	0.15	0.32	0.08	1270	Brown	4.50	10.00	1.00
CX 640	1261	Blue	0.25	0.90	0.12	1270	Brown	4.50	10.00	1.00
CX 640	1262	Red	0.50	1.80	0.20	1270	Brown	4.50	10.00	1.00
CX 640	1263	Brown	0.80	2.50	0.30	1270	Brown	4.50	10.00	1.00
CX 640	1264	Black	2.00	4.00	0.50	1270	Brown	4.50	10.00	1.00
CX 677	1259	Green	0.010	0.040	0.012					
CX 677	1260	Light Blue	0.035	0.120	0.015					
CX 677	1261	Blue	0.085	0.250	0.020					
CX 677	1262	Red	0.220	0.450	0.050					
CX 677	1263	Brown	0.400	0.650	0.060					
CX 677	1264	Black	0.600	1.000	0.090					
CX 677						1265	Yellow	0.015	0.050	0.008
CX 677						1266	Green	0.040	0.130	0.020
CX 677						1267	Light Blue	0.100	0.350	0.024
CX 677						1268	Blue	0.270	0.700	0.040
CX 677						1269	Red	0.600	1.200	0.090
CX 677	1259	Green	0.010	0.040	0.012	1265	Yellow	0.015	0.050	0.008
CX 677	1259	Green	0.010	0.040	0.012	1266	Green	0.040	0.130	0.020
CX 677	1259	Green	0.010	0.040	0.012	1267	Light Blue	0.100	0.350	0.024
CX 677	1260	Light Blue	0.035	0.120	0.015	1267	Light Blue	0.100	0.350	0.024
CX 677	1259	Green	0.010	0.040	0.012	1268	Blue	0.270	0.700	0.040
CX 677	1260	Light Blue	0.035	0.120	0.015	1268	Blue	0.270	0.700	0.040
CX 677	1261	Blue	0.085	0.250	0.020	1268	Blue	0.270	0.700	0.040
CX 677	1259	Green	0.010	0.040	0.012	1269	Red	0.600	1.200	0.090
CX 677	1260	Light Blue	0.035	0.120	0.015	1269	Red	0.600	1.200	0.090
CX 677	1261	Blue	0.085	0.250	0.020	1269	Red	0.600	1.200	0.090
CX 677	1262	Red	0.220	0.450	0.050	1269	Red	0.600	1.200	0.090
CX 677	1263	Brown	0.400	0.650	0.060	1269	Red	0.600	1.200	0.090

TA-956 SSV OPERATING PRINCIPLE

This type of valve is used as a safety measure to shut off the gas flow in case of the downstream pressure being higher than the MAX set point or lower than the MIN set point.

This valve is equipped with a spring loaded valve that is maintained in the open position by a mechanism that is controlled by a pressure switch.

The pressure switch may be equipped with one or more of the following control modes:

- minimum pressure control;
- maximum pressure control;
- minimum and maximum pressure control;
- manual control (local button);
- remote control with 3-way solenoid valve(optional).

Once the set point (according to the installed spring) is reached, the pressure switch releases the latching mechanism and operates closing the valve. The valve is fully balanced therefore its operation is not affected by pressure changes. In the fully closed position the valve sealing force is also increased by differential pressure.

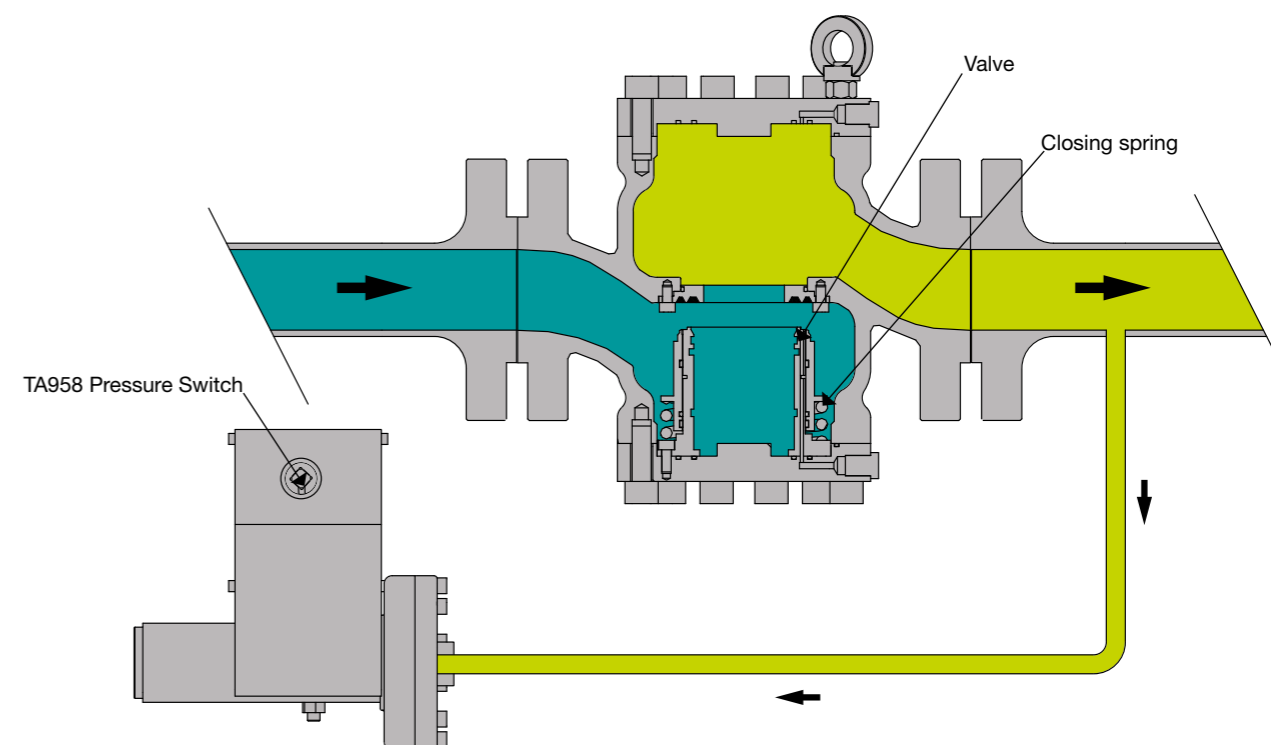
The system may be re-latched to the open position only when the pressure conditions allow and only by operating the latching lever to re-set it to the open position using a suitable wrench.

Remote operation is possible by installing an optional solenoid valve that in normal conditions would maintain the connection of the pressure switch head to the outlet pressure being monitored.

When the valve is remotely tripped it will connect the pressure switch head to atmosphere therefore venting the pressure and generating a minimum pressure trip operation.

The SSV can be always closed with the manual button.

This button must be used only by qualified personnel during normal maintenance operations or during emergencies.



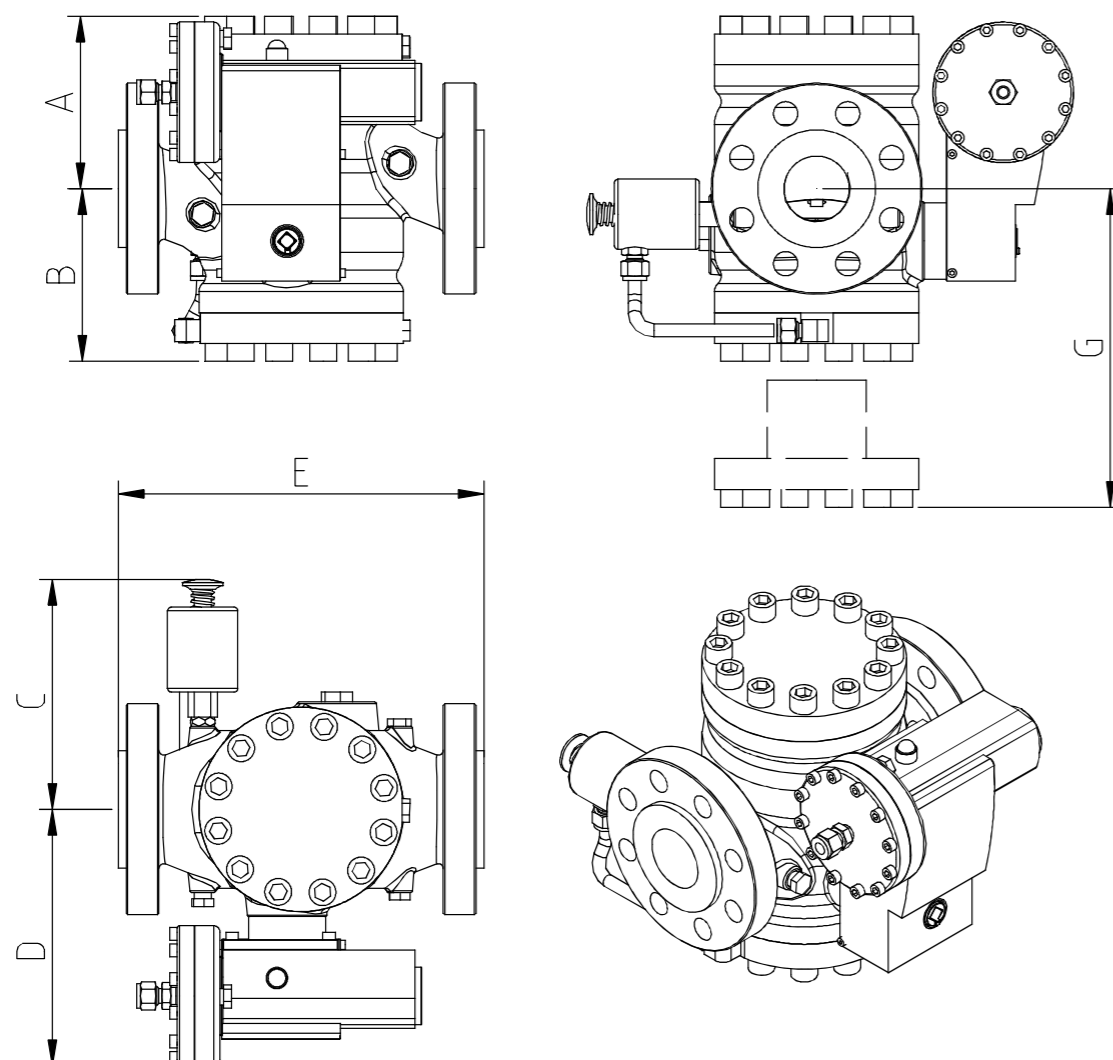
Pressure legend

■ Inlet ■ Controlled

WEIGHTS [kg] TA-956 SSV

Class	DN25	DN50	DN80	DN100	DN150	DN200	DN250
#150	14	25	49	70	170	292	570
#300	21	47	74	87	213	365	712
#600	22	48	76	92	227	403	787

DIMENSIONS



DIMENSIONS [mm] TA-956 SSV

DN	Class	A	B	C	D	E	G
25 (1")	#150	170	120	80	170	184	220
	#300			197			
	#600			210			
50 (2")	#150	170	140	100	200	254	290
	#300			267			
	#600			286			
80 (3")	#150	200	170	150	230	298	370
	#300			318			
	#600			337			
100 (4")	#150	250	200	150	250	352	450
	#300			368			
	#600			394			
150 (6")	#150	350	290	200	300	451	650
	#300			473			
	#600			508			
200 (8")	#150	430	360	270	360	543	820
	#300			568			
	#600			610			
250 (10")	#150	500	430	350	420	673	920
	#300			708			
	#600			752			

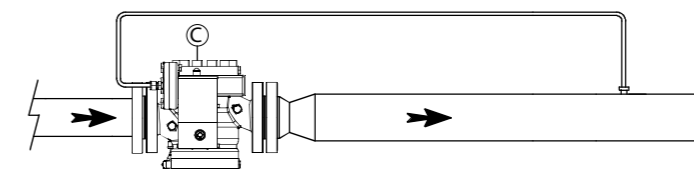
Note: Picture shows the configuration with flow from left to right (Right), opposite configuration (Left) available on request.

FEATURES

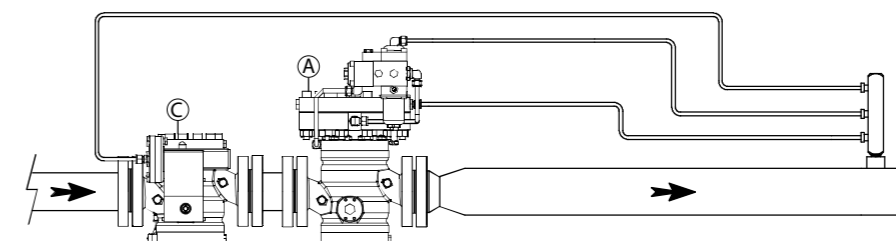
- Body specifically designed for high capacity with low noise generation;
- Completely self operated using the outlet gas pressure to operate the pressure switch to close the safety shut off valve;
- Fully balanced valve;
- Fast operation up to 0.1s depending on sizes ;
- Available with Open limit switch suitable for classified area installation;
- Available with remote closing command device;
- Available in double and triple function configurations with built in active pressure regulator and/or monitor.



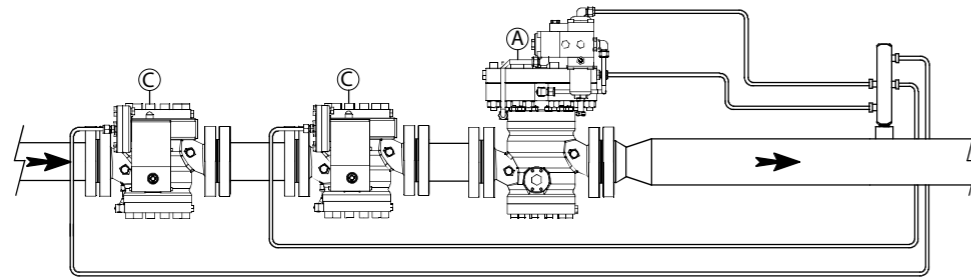
INSTALLATION SCHEMATICS



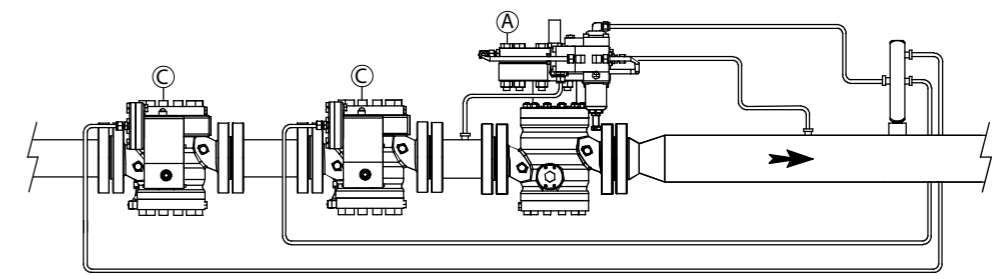
C - TA956 SSV SAFETY SHUTOFF VALVE



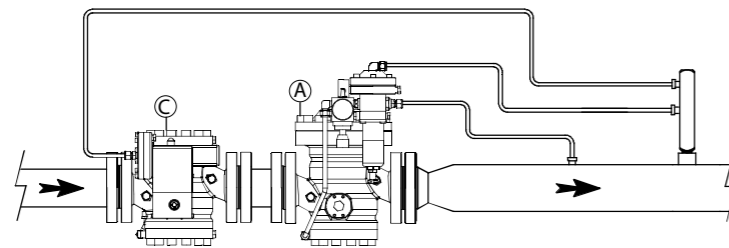
A - TA956 FC PRESSURE REGULATOR
C - TA956 SSV SAFETY SHUTOFF VALVE



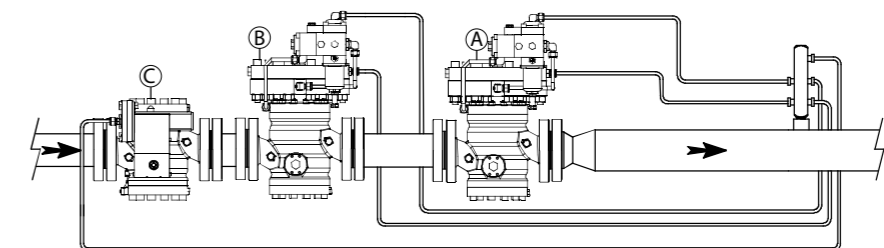
A - TA956 FC PRESSURE REGULATOR
C - TA956 SSV SAFETY SHUTOFF VALVE



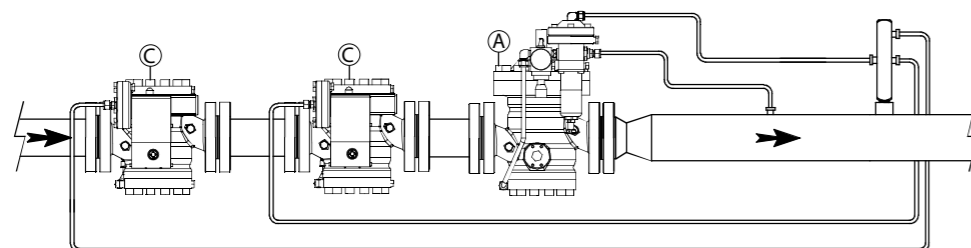
A - TA956 MFO PRESSURE REGULATOR
C - TA956 SSV SAFETY SHUTOFF VALVE



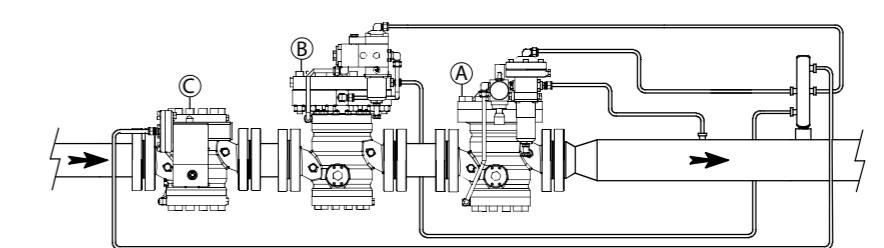
A - TA956 DFO PRESSURE REGULATOR
C - TA956 SSV SAFETY SHUTOFF VALVE



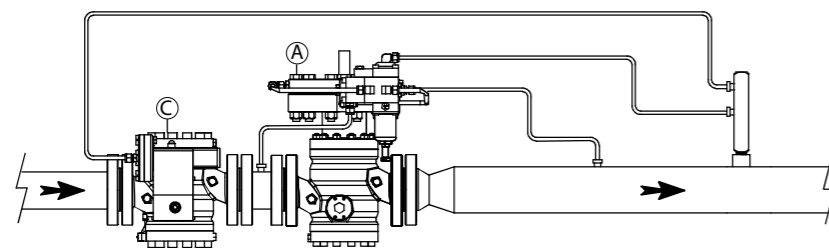
A - TA956 FC ACTIVE REGULATOR
B - TA956 FC MONITOR
C - TA956 SSV SAFETY SHUTOFF VALVE



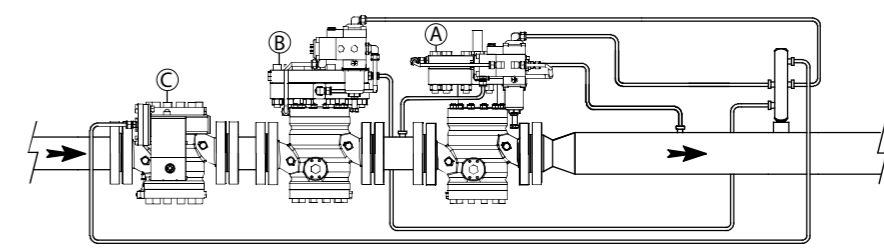
A - TA956 DFO PRESSURE REGULATOR
C - TA956 SSV SAFETY SHUTOFF VALVE



A - TA956 DFO ACTIVE REGULATOR
B - TA956 FC MONITOR
C - TA956 SSV SAFETY SHUTOFF VALVE



A - TA956 MFO PRESSURE REGULATOR
C - TA956 SSV SAFETY SHUTOFF VALVE



A - TA956 MFO ACTIVE REGULATOR
B - TA956 FC MONITOR
C - TA956 SSV SAFETY SHUTOFF VALVE

SIZING

Sizing of SSV involves establishing if the pressure drop through the SSV is acceptable and if the outlet velocity of gas at SSV outlet flange is within the required limits.

The following units shall be used in the below formulas:

- Q = Flow Rate [Sm³/h] (Reference conditions T=15°C, P=1 barg)
- P_u = Upstream Pressure [bar g]
- P_d = Downstream (Controlled) Pressure [bar g]
- P_b = Atmospheric Pressure [bar]
- d = Gas Density Relative to Air
- t_u = Upstream Temperature [°C]
- DN = Regulator Outlet Nominal Diameter [mm]
- v = Gas Velocity at Outlet Flange [m/s]
- ΔP = Pressure drop across SSV [bar]

Pressure drop ΔP is calculated with good approximation with the following formula.

$$\Delta P = Q^2 \frac{d(t_u + 273)}{13.57^2 C_g^2 (P_u + P_b)}$$

CG TA-956 SSV

Class	DN25	DN50	DN80	DN100	DN150	DN200	DN250	DN300
Cg	550	2250	4500	8500	16900	29000	47000	67000

Gas conversion table

In case of gases different from d=0.61 Natural Gas a correction factor F shall be used in the value of the Flow Rate Q used in the above formulas. The Flow Rate to be used shall be Q'=Q/F. F is taken from the following table.

Gas	Relative Density [d]	Coefficient [f]
Air	1	0.78
City Gas	0.44	1.17
Butane	2.01	0.55
Propane	1.53	0.63
Nitrogen	0.97	0.79
Carbon Dioxide	1.52	0.63
Hydrogen	0.07	3

Velocity of gas at regulator outlet flange shall be calculated using the following formula:

$$v = \frac{345.92 Q (1 - 0.002 P_d)}{DN^2 (P_d + P_b)}$$

Allowable velocity: 70m/s

TA-956 SSV PART NUMBERING FOR ASSEMBLED UNITS

Progressive Part Numbering

FIXED			MODEL	CLASS/ FLANGES	SIZE	MATERIALS	SILENCER	PILOT (upper unit)	Continue	Continue	PILOT (lower unit)	SSV HEAD	QEV	ACCESSORY REGULATOR	ACCESSORY PILOTS	ACCESSORY SSV	FLOW ORIENTATION		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
9	5	6	S				0	0	0		0	0	0			0	0

0	NONE
1	ANSI 150 RF
2	ANSI 300 RF
3	ANSI 400 RF
4	ANSI 600 RF
5	ANSI 900 RF
7	PN 16
8	PN 25
9	PN 40
A	PN 64
B	PN 100
D	ANSI 150 RTJ
E	ANSI 300 RTJ
F	ANSI 400 RTJ
G	ANSI 600 RTJ
H	ANSI 900 RTJ

INLET x OUTLET	
1	25x25
3	50x50
4	80x80
5	100x100
6	150x150
7	200x200
8	250x250
9	300x300
A	400x400
B	500x500

0	NONE
1	CX615
2	CX630
3	CX640
4	CX677

000	NO SPECIAL REQUESTS
001	SPECIAL REQUESTS

0	NONE
R	LEFT TO RIGHT (STANDARD)
L	RIGHT TO LEFT

0	NONE
1	OPEN POSITION SWITCH
2	REMOTE TRIP
3	THREE WAY TEST VALVE

1	Standard Temperature Range -20/+60°C
2	Low Temperature Steel Survival -40/+60°C
3	Low Temperature Steel Operating -40/+60 °C
4	Standard Temperature Range -20/+60°C - High Aromatics
5	Low Temperature Steel Survival -40/+60°C - High Aromatics

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