GE Oil & Gas

Technical Specifications
05/2013

Masoneilan* 215X1 Series Control Valve

UOP® Lock Hopper
Over Travel
Control Valves

imagination at work

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Features

Originally designed in conjunction with UOP®, the Masoneilan® 215X1 Series is used in severe on-off service within the UOP Lock Hopper control systems as part of their Continuous Catalyst Regeneration Platforming Process. The 215X1 Series design construction is based on the highly successful and reliable 21000 Series unbalanced single ported control valves. Key design features include:

Heavy Top-Guiding

Rugged valve plug support is provided along the entire stroke length using a large guide bushing ensuring excellent plug stability and control. This is critical for controlling vibration damage, repeatable stroking and seating performance, and minimizing trim mechanical wear.

Over Travel Seating

The valve plug subassembly is designed with a primary hard seat and a secondary soft seat. Initial closing contact is made by the hard seating surfaces, followed by additional plug over travel resulting in soft seat closure. Over travel of approximately 0.25 inches (6.4 mm) is achieved with compression of the disk spring sets in the plug subassembly.

Protected Tight Shutoff

Dual seating configuration provides ANSI Class VI shutoff leakage with the soft seat and ANSI Class IV leakage with the hard seat. As the valve begins to open, the hard seat remains seated while the soft seat retracts into the plug shank. High differential pressure is taken across the metal seat, thus protecting the integrity of the soft seat.

Severe Service Performance

Typical shutoff pressures up to 400 psig (2800 kPa) can be achieved with the 215X1 Over Travel trim design. Materials of construction are designed to withstand high-pressure drop conditions in hydrogen service with alumina (Al_2O_3) dust particles.

Long Life-Cycle

Excellent wear resistant materials, such as solid Stellite and 17-4 stainless steel, are used for the major trim components providing reliable long-term performance with minimum maintenance.

Field Proven Design

The Masoneilan 215X1 Series has a long history of successful operation and performance in numerous UOP Lock Hopper systems installed in refineries around the world.

Ease of Maintenance

Simple top-entry body construction and plug subassembly design allows for easy access and removal of trim components.

General Data

Flow Direction

Over Travel:	Flow-to-Close

Body

Type:	High Capacity Globe
Rating:	ASME Class 300
End Connections:	RFF

Bonnet

Type:	Bolted

Body and Bonnet

Materials:	Carbon Steel

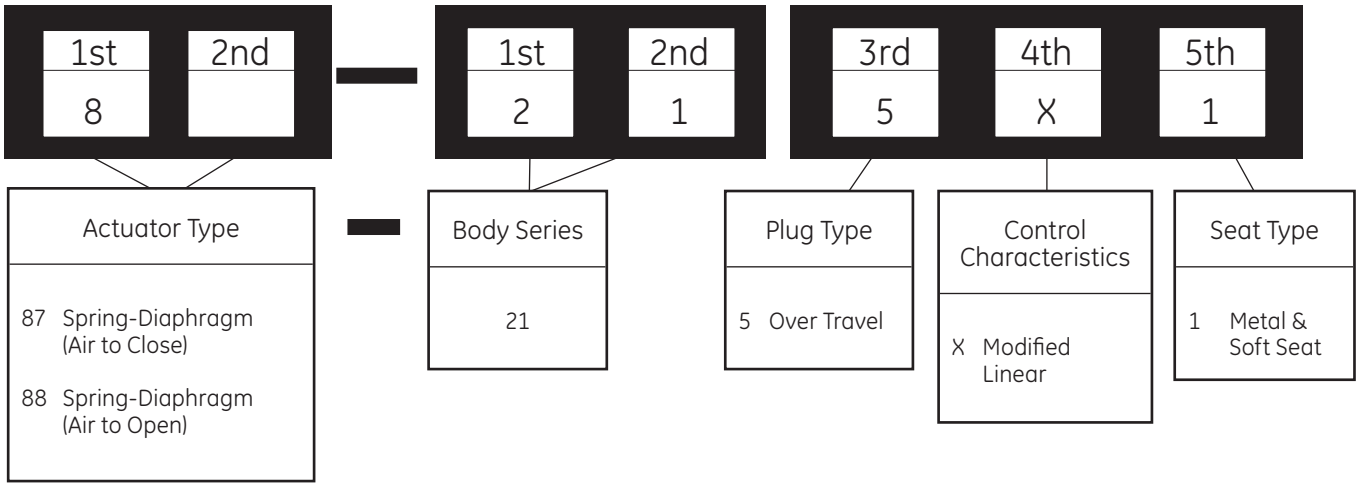
Trim

Plug Type:	Over Travel
Seat Type:	Primary Hard Metal Seat Secondary Soft Seat
Seat Ring:	Threaded
Guide:	Heavy Top Guided
Capacity:	Full Area
Characteristic:	Modified Linear

Actuator

Type:	Spring-Diaphragm
Handwheel:	Optional

Numbering System



Temperature Range / Seat Leakage

Valve Size		Seat Type	Body Rating	Packing Material	Temperature Range		Seat Leakage Class*
inches	DN				Min.	Max.	
1	25	Metal and Soft Seat	ASME Class 300	PTFE	-20°F (-29°C)	450°F (232°C)	VI
1.5	40						
2	50						

* Notes:

1. Seat leakage class ratings per IEC 534-4 and ANSI/FCI 70.2.
2. Primary metal hard seat provides Class IV seat leakage.

Capacity and Actuation

Valve Size		Rated C_v	Travel		Actuator Size	Bench Range	Air Action
inches	DN		inches	mm			
1	25	12	0.8	20.3	No. 10	6 - 30	Direct or Reverse (On-Off)
1.5	40	25	0.8	20.3	No. 10		
2	50	45	0.8	20.3	No. 16		

Materials of Construction

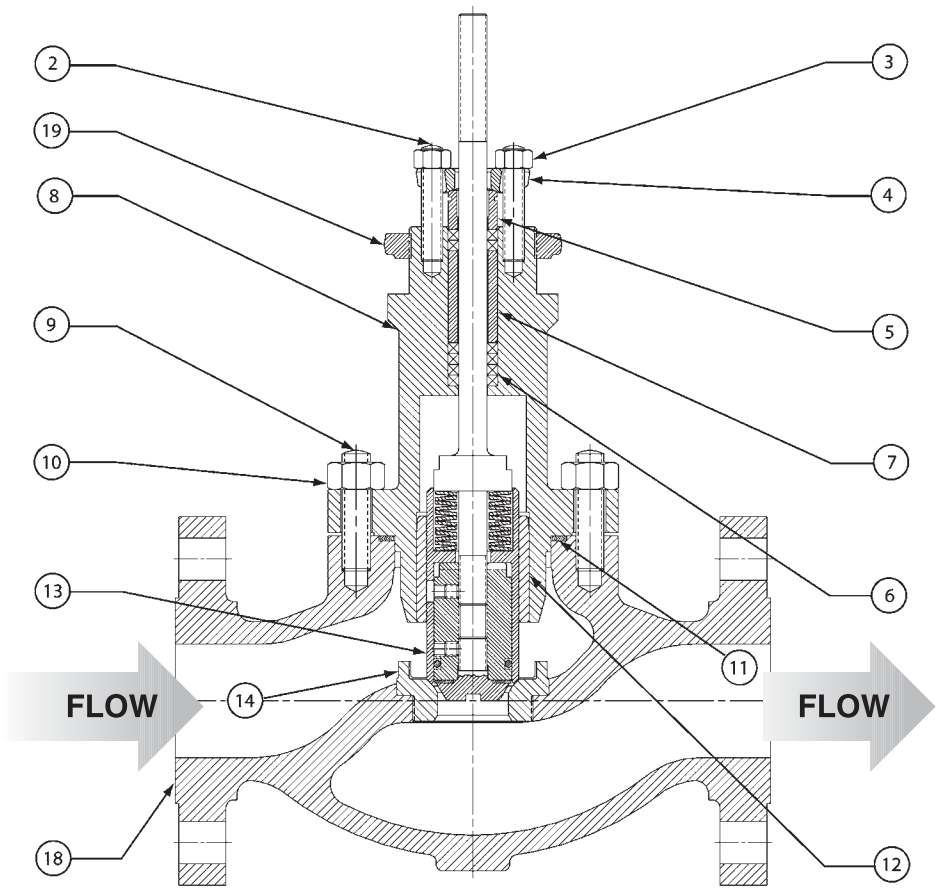


Figure 7 - Body S/A Section

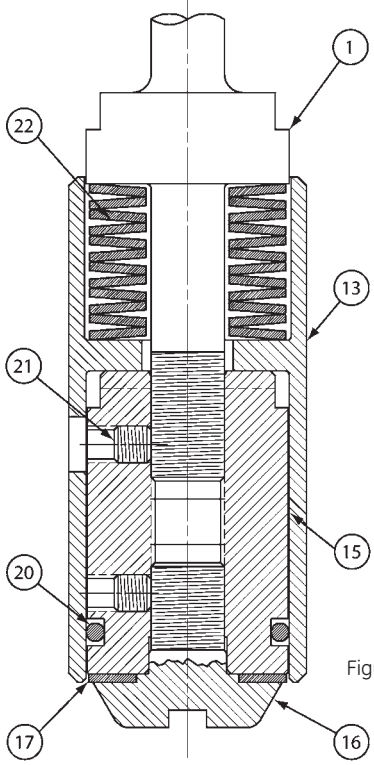


Figure 2 - Trim Details

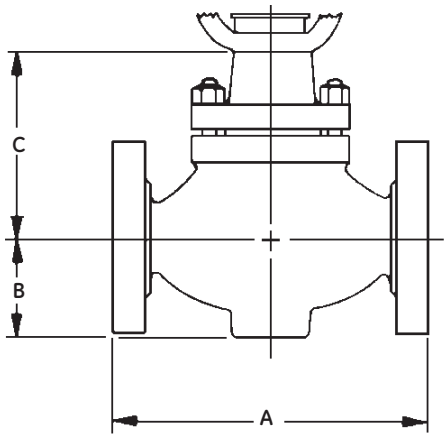
Materials of Construction

Standard Material Options

Valve Sizes: 1", 1.5" and 2" (DN 25-50)
Body Ratings: ASME Class 300

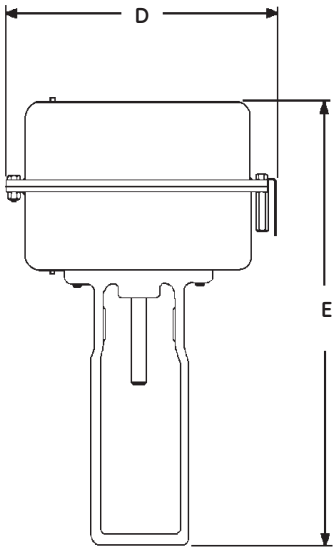
Ref No.	Temperature Range ▽ -20°F 450°F ▽ Description	Standard Materials
1	Plug Stem	316 St. St. ASTM A479 TY 316
2	Packing Flange Stud	304 St. St. ASTM A193 GR B8
3	Packing Flange Nut	304 St. St. ASTM A194 GR B8
4	Packing Flange	Carbon Steel ASTM A668 CL B or ASTM A216 GR WCC
5	Packing Follower	Austenitic 300 Series Stainless Steel
6	PTFE Packing	PTFE (Teflon)
7	Lantern Ring (Optional)	Austenitic 300 Series Stainless Steel
8	Valve Bonnet	Carbon Steel ASTM A515 Grade 70 (UNSK03101)
9	Body Stud	Alloy Steel ASTM A193 GR B7
10	Body Stud Nut	Carbon Steel ASTM A194 GR 2H
11	Body Gasket	316L St. St. w/Flexible Graphite Filler (Spiral Wound)
12	Guide Bushing	440C St. St. ASTM A276 TY 440C
13	Plug Shank	Stellite 6 UNS 30006
14	Seat Ring	316 St. St. ASTM A479 TY 316 with Hardfaced Seat
15	Insert Retainer	17-4 PH St. St. ASTM A564 GR 630 (Condition H900)
16	Plug Tip	17-4 PH St. St. ASTM A564 GR 630 (Condition H900)
17	Soft Seat Insert	Teflon® ASTM D1457
18	Valve Body	Carbon Steel ASTM A216 Grade WCC
19	Drive Nut	Carbon Steel SAE 1117 or ASTM A216 GR WCC
20	O-Ring	Buna-N ASTM D1418 Class 1 NBR (Nitrile)
21	Set Screw	Austenitic 300 Series St. St. with NYLOK® Insert
22	Disc Springs	17-7 PH St. St. ASTM A564 GR 631
Ref. No.	**Temperature Range** Δ **-29°C** **232°C** Δ	

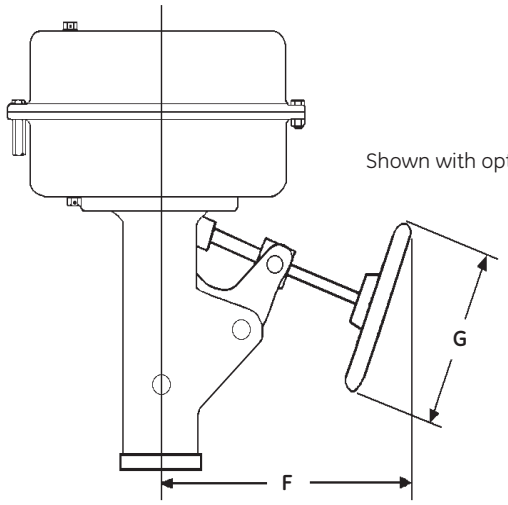
Dimensions



215X1 Series Body S/A Dimensions ASME Class 300 RFF

Valve Size		A		B		C	
inches	mm	inches	mm	inches	mm	inches	mm
1	25	7.76	197	2.13	54	5.51	140
1.5	40	9.25	235	2.52	64	5.51	140
2	50	10.51	267	3	76	5.51	140





Shown with optional handwheel

Model 87/88 Acuator Dimensions

Actuator Size	D		E		F		G	
	inches	mm	inches	mm	inches	mm	inches	mm
10	14.50	368	19.58	497	10.90	277	12.00	305
16	18.75	476	28.22	717	14.00	356	18.00	457

Weights

215X1 Series Body S/A

ASME Class 300 RFF

Valve Size		Weight	
inches	mm	lbs.	kg
1	25	36	16
1.5	40	49	22
2	50	57	26

Model 87/88 Acuator

Valve Size	Weight		With Handwheel	
	lbs.	kg	lbs.	kg
10	85	39	105	48
16	210	95	245	111

Accessories and Options

Environmental Capabilities (Low Emissions Packing)
Air Sets
Solenoids
Switches

DIRECT SALES OFFICE LOCATIONS

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Phone: +32-2-344-0970
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