

Climate
Control

IMI Flow Design

ICSS



Automatic Balancing Valves
AutoFlow regulator

ICSS

The ICSS is an automatic flow regulator valve that delivers accurate hydronic performance in a wide range of applications. The valve is ideal for water-based heating and cooling systems. Its corrosion-resistant design also suits demanding applications such as data centre secondary cooling circuits, industrial process cooling, district energy systems, and marine or hygienic installations. The flow cartridge is easily removable from the compact valve body to provide field access for inspection and cleaning. The ICSS comes factory set to automatically limit flow to within $\pm 5\%$ of the specified amount over 95% of the control range.



Key features

Compact design

Allowing the ICSS to fit easily into tight installations.

Precision machined stainless steel

Stainless steel 300-series body and cartridge for enhanced corrosion resistance and reliability.

Flexibility

Expanded lineup with threaded and flanged connection options to meet various project needs.

Technical description

Applications:

Water-based heating and cooling systems, including HVAC, data centre cooling, and light industrial processes.

Functions:

Automatic flow regulator

Sizes:

1/2" - 2" (threaded)
1 1/2" - 2 1/2" (ANSI flanged)

Pressure class:

1/2" - 2" (threaded): 400 psi
1 1/2" - 2 1/2" (ANSI flanged): Class 150

Temperature:

Max. working temperature: 248°F
Min. working temperature: 14°F

Media:

Water or neutral fluids, water-glycol mixtures (PG25 and PG50).

Pressure range:

(L) 2-32 psi
(H) 5-60 psi

L = Low pressure range
H = High pressure range

Accuracy:

$\pm 5\%$ over 95% of the working range.

Material:

1/2" - 2" (threaded):
Body and flow cartridge: Stainless steel 304
Union nut: Nickel plated brass

1 1/2" - 2 1/2" (flanged):

Body and flow cartridge: Stainless steel 316

Marking:

1/2" - 2" (threaded):
Flow direction arrow
Traceability data on cartridge and body

1 1/2" - 2 1/2" (flanged):
IMI, material, class/PN, size, Flow direction arrow
Traceability data on cartridge and body

Connection:

Threaded:
- NPT according to ANSI/ASME B1.20.1.
- BSPP according to ISO 228.

Flanged:

- According to Class 150 ASME/ANSI B16.5
- According to ISO 7005-1, EN 1092-1.

Face to face length:

ISO 5752 series 1, EN 558-1 series 1.

Installation

Straight run requirements

Model ICSS requires no straight runout downstream of the valve.

Upstream, the only requirement is that there be 5 diameters after an increase in pipe size: for instance, if a size 2" ICSS is installed on a size 1 1/2" line, there should be a transition up to size 2" followed by 10" of pipe entering the ICSS. There is no requirement for upstream straight runs after an elbow, tee, or line size control valve.

Operation

Pressure range

The parameter listed as Y below indicates the range of differential pressures over which this particular device will control the flow rate. The first number indicates the pressure at which regulation begins, and the second indicates the pressure at which regulation ends.

Y	Starting pressure	Ending pressure
L (Low)	2 psid	32 psid
H (High)	5 psid	60 psid

L = Low pressure range

H = High pressure range

Outside the control range, the device acts as a fixed orifice at the nearest regulated pressure. When the pressure is between the starting and ending pressure, the flow will be within $\pm 5\%$ of the specified value.

Flow rate

Size	PSID range	Flow rate [gpm]
1/2"	2-32 (L)	0.33, 0.5, 0.67, 0.75, 0.88, 1, 1.1, 1.25, 1.5, 1.75, 2, 2.25, 2.5, 3
	5-60 (H)	1, 1.5, 2, 2.5, 3, 4, 5
3/4"	2-32 (L)	0.33, 0.5, 0.67, 0.75, 0.88, 1, 1.1, 1.25, 1.5, 1.75, 2, 2.25, 2.5, 3, 3.5, 4, 4.5, 5, 6, 7, 8
	5-60 (H)	1, 1.5, 2, 2.5, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
1"	2-32 (L)	9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19
	5-60 (H)	13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27
1 1/4"	2-32 (L)	9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19
	5-60 (H)	13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27
1 1/2"	2-32 (L)	20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 46, 48, 50
	5-60 (H)	28, 30, 32, 34, 36, 38, 40, 42, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 68, 70
2"	2-32 (L)	20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 46, 48, 50
	5-60 (H)	28, 30, 32, 34, 36, 38, 40, 42, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 68, 70
2 1/2"	2-32 (L)	52, 56, 60, 64, 68, 72, 76, 80
	5-60 (H)	72, 80, 84, 88, 92, 96, 100, 104, 108, 112, 116, 120

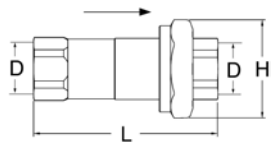
L = Low pressure range

H = High pressure range

Articles

As the flow cartridges are adjusted from factory, please refer to the flow rate and the pressure range when selecting an article.

* use the corresponding code from the section *Model order designation*.



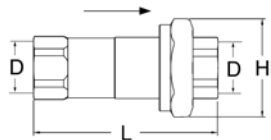
Female NPT

Inlet: Fixed connection

Outlet: Union connection

Max. flow [gpm]
Control range [psi]

Size	D	[in]	[in]	(L) 2-32	(H) 5-60	Weight [lb.]	Article No
1/2"	1/2 NPT	3.8	1.6	3.0	5.0	0.6	ICSS050FFN*
3/4"	3/4 NPT	3.8	1.6	8.0	12	0.9	ICSS075FFN*
1"	1 NPT	5.2	2.8	19	27	1.9	ICSS100FFN*
1 1/4"	1 1/4 NPT	5.4	2.8	19	27	2.1	ICSS125FFN*
1 1/2"	1 1/2 NPT	6.9	3.8	50	70	4.2	ICSS150FFN*
2"	2 NPT	7.0	3.8	50	70	4.2	ICSS200FFN*



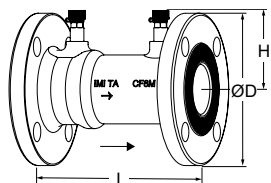
Female BSPP

Inlet: Fixed connection

Outlet: Union connection

Max. flow [gpm]
Control range [psi]

Size	D	[in]	[in]	(L) 2-32	(H) 5-60	Weight [lb.]	Article No
1"	1 BSPP	5.2	2.8	19	27	1.9	ICSS100FFB*
1 1/4"	1 1/4 BSPP	5.4	2.8	19	27	2.1	ICSS125FFB*
1 1/2"	1 1/2 BSPP	6.9	3.8	50	70	4.2	ICSS150FFB*
2"	2 BSPP	7.0	3.8	50	70	4.2	ICSS200FFB*



Flanged

Class 150, ASME/ANSI B16.5

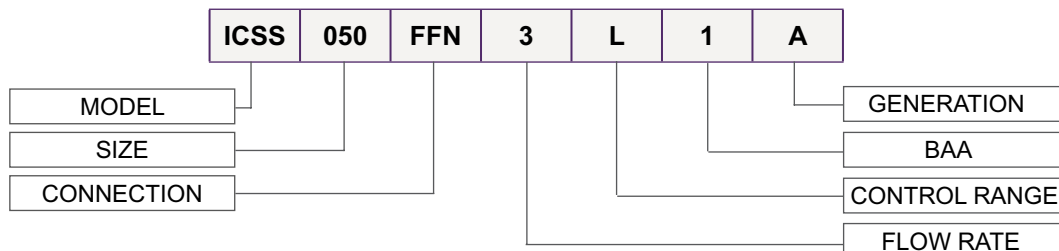
Max. flow [gpm]
Control range [psi]

Size	ØD [in]	[in]	[in]	(L) 2-32	(H) 5-60	Weight [lb.]	Article No
1 1/2"	4.9	6.5	2.89	50	70	10.1	ICSS150FLA*
2"	6.0	7.1	2.87	50	70	12.8	ICSS200FLA*
2 1/2"	7.3	7.5	3.54	80	120	20.3	ICSS250FLA*

→ = Flow direction

Model order designation

As the flow cartridges are adjusted from factory, please refer to the flow rate and the pressure range when selecting an article.
For example, for a size 1/2", with NPT threads (FFN), flow rate of 3 gpm and a pressure range between 2-32 psi, consider the article:



SIZE	(050) = 1/2" (075) = 3/4" (100) = 1" (125) = 1 1/4" (150) = 1 1/2" (200) = 2" (250) = 2 1/2"	FLOW RATE	For desired flow [gpm], see section Flow rate
CONNECTION	(FFN) = Thread NPT (FFB) = Thread BSPP (FLA) = Flanged Class 150, ASME/ANSI B16.5	CONTROL RANGE	(L) = Low pressure range 2-32 psi (H) = High pressure range 5-60 psi
		BAA (Buy American Act)	(1) = Complies

FLOW RATE

Size	PSID range	Flow rate [gpm]
1/2"	2-32 (L)	0.33, 0.5, 0.67, 0.75, 0.88, 1, 1.1, 1.25, 1.5, 1.75, 2, 2.25, 2.5, 3
	5-60 (H)	1, 1.5, 2, 2.5, 3, 4, 5
3/4"	2-32 (L)	0.33, 0.5, 0.67, 0.75, 0.88, 1, 1.1, 1.25, 1.5, 1.75, 2, 2.25, 2.5, 3, 3.5, 4, 4.5, 5, 6, 7, 8
	5-60 (H)	1, 1.5, 2, 2.5, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
1"	2-32 (L)	9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19
	5-60 (H)	13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27
1 1/4"	2-32 (L)	9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19
	5-60 (H)	13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27
1 1/2"	2-32 (L)	20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 46, 48, 50
	5-60 (H)	28, 30, 32, 34, 36, 38, 40, 42, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 68, 70
2"	2-32 (L)	20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 46, 48, 50
	5-60 (H)	28, 30, 32, 34, 36, 38, 40, 42, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 68, 70
2 1/2"	2-32 (L)	52, 56, 60, 64, 68, 72, 76, 80
	5-60 (H)	72, 80, 84, 88, 92, 96, 100, 104, 108, 112, 116, 120