

## Right Angle Flow Control Valves - Series GMCU - MCU, GSCU - SCU, GSVU - SVU, MVU, SCO, MCO - NPTF/INCH

Meter-In, Meter-Out, Needle Orifice  
banjo flow controllers  
Series GMCU-MCU, GSCU-SCU,  
GSVU-SVU, MVU, SCO, MCO  
Ports M5 [10-32 UNF], 1/8", 1/4",  
3/8", 1/2" NPTF

These unidirectional and bidirectional flow controllers have been designed as small as possible so as to be mounted directly on valves or cylinders. The GMCU's and GSCU's feature Camozzi's new swivel design. This new design features a fully rotatable swivel design and is constructed with a lower profile. The great variety of adjustable fittings makes it possible to complete the regulator with the most suitable system in relation to the available tube.



### TECHNICAL SPECIFICATIONS

Valve group	Unidirectional and bidirectional controller, [meter-in, meter-out, and needle valve]
Construction	Needle type
Mounting	Right-angle male thread
Materials	Nickel-plated brass body, Buna-N seals, Nylon gaskets
Port sizes	M5 [10-32 UNF], 1/8", 1/4", 3/8", 1/2" NPTF
Tube sizes	1/8", 5/32", 1/4", 3/8", 1/2" [O.D.]
Installation	Any position
Operating temperature	32° - 175° F, [dry air necessary down to -4° F]
Fluid	Filtered air
Lubricant	Oil compatible with Buna-N, [ 3° - 10° E]

### PNEUMATIC DATA

Operating pressure	1.0 - 10 bar, [14.5 - 145 psi]
Nominal pressure	6 bar, [87 psi]
Nominal flow	See graphs below
Nominal diameter	M5 [10-32 UNF] = 1.5mm [.059"], 1/8" = 2 mm [.079"] 1/4" = 4 mm [.157"], 3/8" = 7 mm [.275"]

\*Qn flowrate [SCFM] determined with a supply pressure of 6 bar, [87 psi], and with a pressure drop of 1 bar, [14.5 psi].

\*\*Dimensions are in inches

## Nickel-Plated Brass Flow-Control Valves: NPTF & Coated Threads (Optional)



### FEATURES

- Nickel-Plated, All-metal Collet and Release ring
- All-Metal, Nickel-Plated body and Threads,
- Compact Brass bodies from Brass forgings
- Specialized O-ring choices for High-Temp, Low-Temp, Special Fluids, Food-Grade compatibility
- Multiple Thread sealant systems: Vibra-Seal Coated (Optional), Std NPTF & O-Ring Spot Face seals
- Broad Range of configurations
- Removable Collet and tube o-rings
- Highly accurate Flow-rate repeatability & Higher Flow
- Manual Adjustment knob w/ internal hex-key slot or Screw-Driver slot
- Hex Locking-nut
- Precise Manual knob, w/ Internal hex-key
- Full Swivel design, NPTF and Metric/BSP, with integrated Push-In Fittings or Female thread ports
- Alternate Non-Swivel design with Banjo Tube connections and thread adapters
- Meter-IN, Meter-OUT and Needle-Orifice flow designs for assembly on valves, cylinders or in-line use
- Alternate sintered bronze banjo for fully adjustable silencer/muffler with speed control for exhaust port mounting, ( see Part No. 2905 to add to any banjo flow control body)

### BENEFITS

#### Collet

- Won't break like plastic release rings and bodies; More Durable design
- Higher holding force, with easier release
- Won't scratch tubes like "bite-ring" designs
- Less chance of micro-leakage and bubble-leaks over time due to damaged tubing

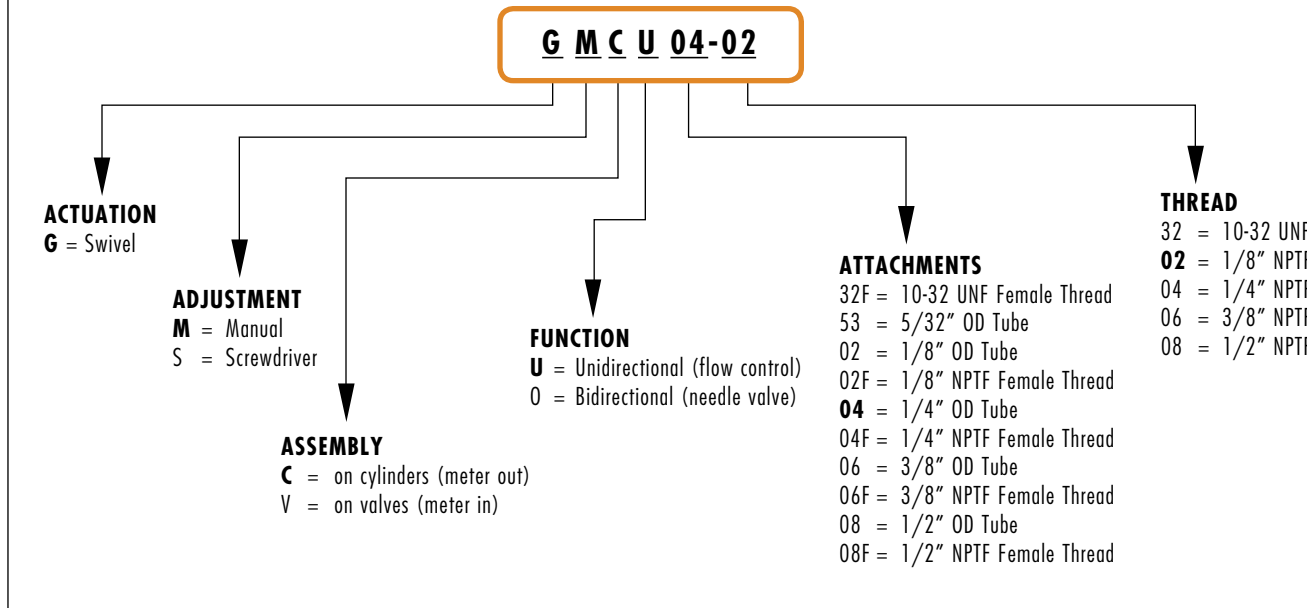
#### Body

- Resistant to UV exposure
- Better resistance to stress-cracking, abrasion, solvents, detergents, hydrocarbons and other fluid media
- FDA/NSF approved materials, ( Including customized Nickel-Plating and o-ring options)
- Simplified manifold circuits with broader variety of fitting combinations and shapes to select
- Lighter weight for End-of-Arm tooling & Robotic handling,
- Compact design reduces overall dimensions for valve & cylinder assemblies, packaging applications and control cabinets
- 25 % Reduction in overall Body size, compared to previous Brass-Banjo line

#### Design

- Accuracy and Repeatability of Flow-Control valves allows timing circuits to be design, faster OEM set-up and simplified MRO field installation and replacements
- Simplified manifold circuits with broader variety of Tube – Thread combinations to select
- Lighter weight for End-of-Arm tooling & Robotic handling
- Compact design reduces overall dimensions for valve assemblies, packaging applications and control cabinets
- More compact flow capacity reduces cylinder spacing with improved overall speed
- Fine tuning of flow with manual knob or screw-driver adjustment
- Convertible into "Tamper-Proof" by removing manual knob or sealing screw-driver slot
- Interchangeable Inch and Metric Tube O.D. banjo connections and thread adapters for "hybrid" Fittings and Flow-control valve requirements

**CODING OF FLOW CONTROL VALVES**



**IDENTIFICATION OF DIFFERENT TYPES**

(on hex of valve)



SCU  
MCU



SVU  
MVU



SCU  
MCO

**AVAILABLE BANJO FLOW CONTROLLERS**



GMCU/6610  
GMVU  
MCO



MCU/2023  
MVU  
MCO



GSCU/6610  
GSVU  
SCO



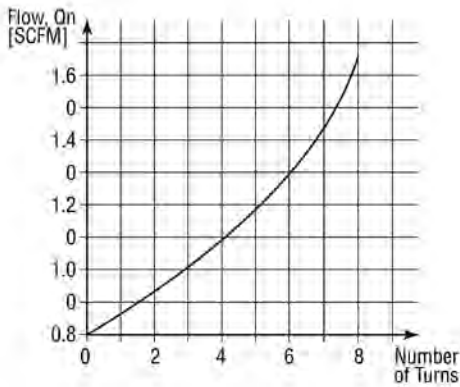
SCU/2023  
SVU  
SCO

**METER IN, METER OUT, NEEDLE ORIFICE FLOW CONTROLLERS**

To ensure the right choice of unidirectional flow controller, proceed as follows: calculate the quantity of air in NL/min (see cylinder Table); determine the stroke time of the cylinder; refer to graph to see which controller is the right type. In the case of bidirectional regulators, refer to the graph and check whether the flow control range is suitable for the work required. (NB: Qn is determined with a supply pressure of 6 bar and with  $\Delta P = 1$  bar at the outlet. N° = number of screw turns.)

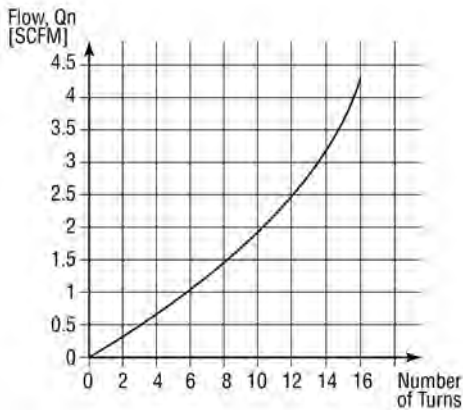
**53-32**

Flow Qn (NL/min.) from B → A with needle OPEN: 60 NL/min.  
(2.12 SCFM)  
Flow Qn (NL/min.) from B → A with needle CLOSED: 43 NL/min.  
(1.52 SCFM)



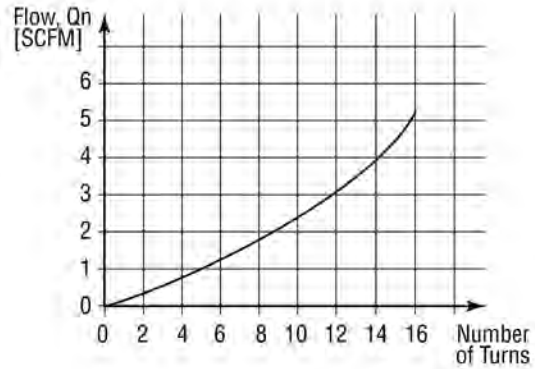
**53-02**

Flow Qn (NL/min.) from B → A with needle OPEN: 107 NL/min  
(3.78 SCFM)  
Flow Qn (NL/min.) from B → A with needle CLOSED: 28.3 NL/min.  
(1.0 SCFM)



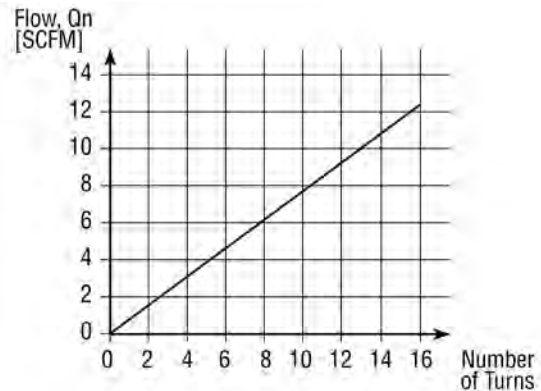
**04-02**

Flow Qn (NL/min.) from B → A with needle OPEN: 164 NL/min.  
(5.79 SCFM)  
Flow Qn (NL/min.) from B → A with needle CLOSED: 33.0 NL/min.  
(1.17 SCFM)



**04-04**

Flow Qn (NL/min.) from B → A with needle OPEN: 367 NL/min  
(12.96 SCFM)  
Flow Qn (NL/min.) from B → A with needle CLOSED: 133.0 NL/min  
(4.71 SCFM)

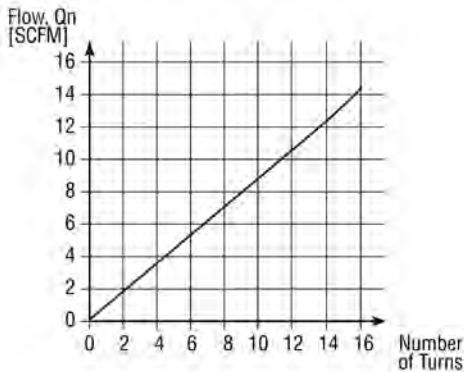


**UNIDIRECTIONAL AND BIDIRECTIONAL FLOW CONTROLLERS**

To ensure the right choice of unidirectional flow controller, proceed as follows: calculate the quantity of air in NL/min (see cylinder Table); determine the stroke time of the cylinder; refer to graph to see which controller is the right type. In the case of bidirectional regulators, refer to the graph and check whether the flow control range is suitable for the work required. (NB: Qn is determined with a supply pressure of 6 bar and with ΔP = 1 bar at the outlet. N° = number of screw turns.)

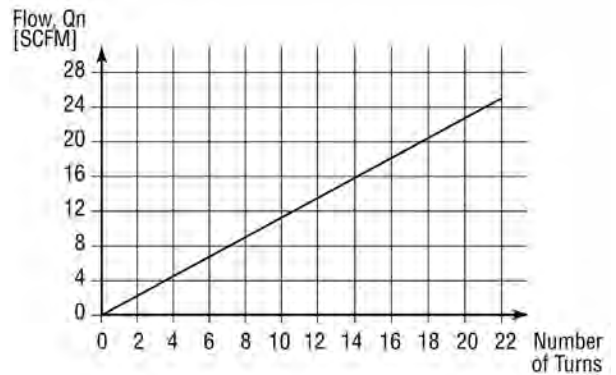
**06-04**

Flow Qn (NL/min.) from B → A with needle OPEN: 466 NL/min. (16.45 SCFM)  
 Flow Qn (NL/min.) from B → A with needle CLOSED: 153 NL/min. (5.40 SCFM)



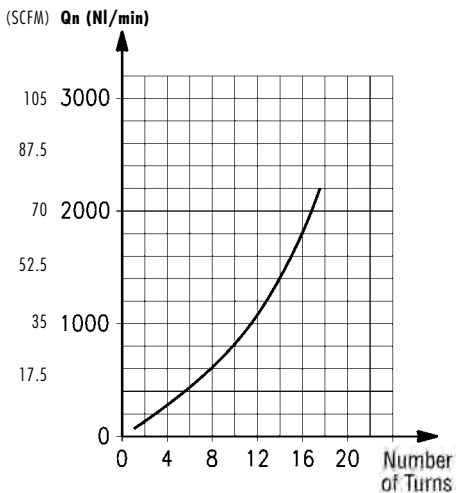
**06-06**

Flow Qn (NL/min.) from B → A with needle OPEN: 875 NL/min. (30.90 SCFM)  
 Flow Qn (NL/min.) from B → A with needle CLOSED: 428 NL/min. (15.11 SCFM)



**08-08**

Flow Qn (NL/min.) from 2 → 1 with needle OPEN: 2570 (90.75 SCFM)  
 Flow Qn (NL/min.) from 2 → 1 with needle CLOSED: 1330 (46.95 SCFM)  
 NB: Qn is determined with a supply pressure of 6 bar and with ΔP = 1 bar at the outlet  
 N° = number of screw turns.



Meter-Out Valves Series GMCU

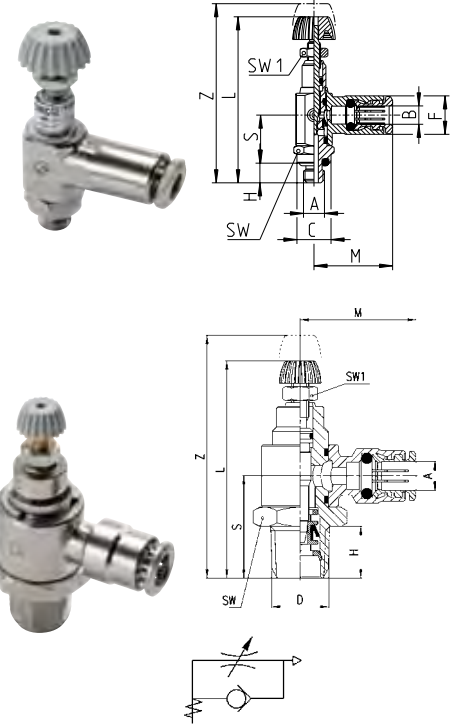
Meter-out unidirectional flow controller for mounting on cylinders or valves. It has a manual adjustment with a right-angle push to connect tube fitting.

DIMENSIONS (in inches)

Mod.	A	B	C	S	H	L	Z	M	F	SW	SW1
	UNF	OD									
<b>GMCU 53-32</b>	10-32	5/32	.307	.433	.177	1.448	1.614	.709	.346	.315	.217

DIMENSIONS (in inches)

Mod.	OD A	THREAD D	S	H	L	Z	M	SW	SW1
		NPTF							
<b>GMCU 53-02</b>	5/32	1/8	.781	.315	1.775	2.011	.885	.551	.275
<b>GMCU 04-02</b>	1/4	1/8	.781	.315	1.775	2.011	.984	.551	.275
<b>GMCU 04-04</b>	1/4	1/4	.939	.472	1.994	2.227	1.063	.748	.275
<b>GMCU 06-04</b>	3/8	1/4	.939	.472	1.994	2.227	1.181	.748	.275
<b>GMCU 06-06</b>	3/8	3/8	.961	.472	2.223	2.538	1.240	.866	.393



Meter-Out Valves Series GMCU & MCU

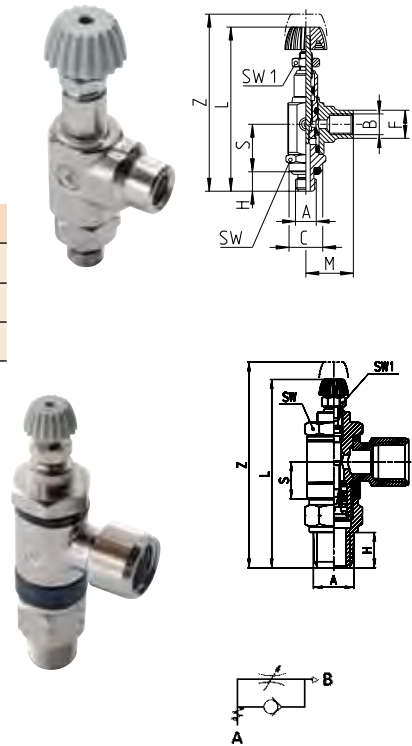
Meter-out unidirectional flow controller for mounting cylinders or valves. It has a manual adjustment with right-angle female threads.

DIMENSIONS (in inches)

Mod.	A	B	C	S	H	L	Z	M	F	SW	SW1
	UNF	UNF									
<b>GMCU 32F-32</b>	10-32	10-32	.307	.433	.177	1.448	1.614	.433	.256	.315	.217

DIMENSIONS

Mod.	Banjo Female Thread	A	S	H	L	Z	SW	SW1
	NPTF	NPTF						
<b>MCU 02F-02</b>	1/8"	1/8"	.511	.374	2.375	2.564	.551	.275
<b>MCU 04F-04</b>	1/4"	1/4"	.453	.511	2.844	3.090	.669	.275
<b>MCU 06F-06</b>	3/8"	3/8"	.484	.511	2.950	3.252	.748	.393
<b>MCU 08F-08</b>	1/2"	1/2"	1.023	.610	4.685	5.295	1.063	.669



Meter-Out Valves Series GSCU

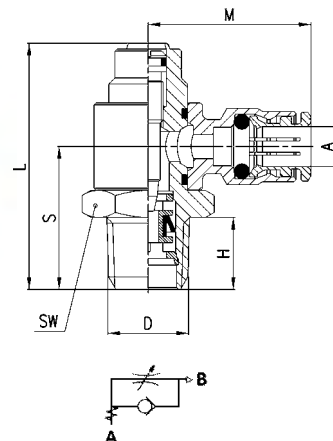
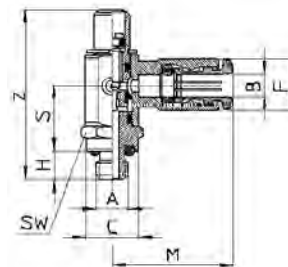
Meter-out unidirectional flow controller for mounting on cylinders or valves. It has a screwdriver adjustment with a right-angle push to connect tube fitting.

DIMENSIONS (in inches)

Mod.	A	OD B	C	S	H	L	M	F	SW
<b>GSCU 53-32</b>	10-32	5/32	.307	.433	.177	1.080	.709	.346	.315

DIMENSIONS (in inches)

Mod.	OD A	THREAD D	S	H	L	M	SW
		<b>NPTF</b>					
<b>GSCU 53-02</b>	5/32	1/8	.781	.315	1.441	.885	.551
<b>GSCU 04-02</b>	1/4	1/8	.781	.315	1.441	.984	.551
<b>GSCU 04-04</b>	1/4	1/4	.939	.472	1.594	1.063	.748
<b>GSCU 06-04</b>	3/8	1/4	.939	.472	1.594	1.181	.748
<b>GSCU 06-06</b>	3/8	3/8	.961	.472	1.791	1.240	.866



Meter-Out Valves Series GSCU & SCU

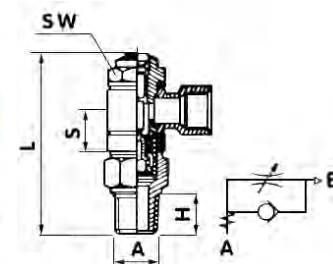
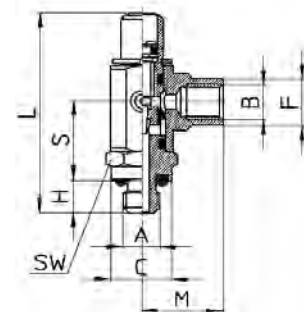
Meter-out unidirectional flow controller for mounting on cylinders or valves. It has screwdriver adjustment with right-angle female threads.

DIMENSIONS (in inches)

Mod.	A	B	C	S	H	L	M	F	SW
	UNF	UNF							
<b>GSCU 32F-32</b>	10-32	10-32	.307	.433	.177	1.080	.413	.256	.315

DIMENSIONS

Mod.	Banjo Female Thread	A	S	H	L	SW
	<b>NPTF</b>	<b>NPTF</b>				
<b>SCU 02F-02</b>	1/8"	1/8"	.511	.374	2.000	.551
<b>SCU 04F-04</b>	1/4"	1/4"	.453	.511	2.250	.669
<b>SCU 06F-06</b>	3/8"	3/8"	.484	.511	2.440	.748
<b>SCU 08F-08</b>	1/2"	1/2"	1.023	.610	3.169	1.063

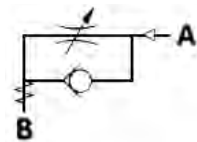
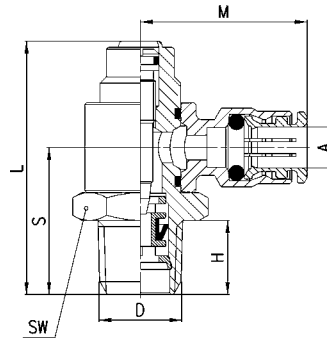


NEW

NEW

Meter-In Valves Series GSVU

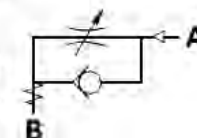
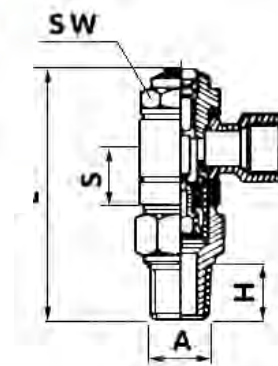
Meter-in unidirectional flow control designed to be mounted on cylinders or valves. It has a screwdriver adjustment with a right-angle push to connect tube fitting.



DIMENSIONS							
Mod.	OD A	D	S	H	L	M	SW
		NPTF					
<b>GSVU 53-02</b>	5/32	1/8	.781	.315	1.441	.885	.551
<b>GSVU 04-02</b>	1/4	1/8	.781	.315	1.441	.984	.551
<b>GSVU 04-04</b>	1/4	1/4	.939	.472	1.594	1.063	.748
<b>GSVU 06-04</b>	3/8	1/4	.939	.472	1.594	1.181	.748
<b>GSVU 06-06</b>	3/8	3/8	.961	.472	1.791	1.240	.866

Meter-In Valves Series SVU

Meter-in unidirectional flow control designed to be mounted on valves or cylinders. It has a screwdriver adjustment with right-angle female threads.



DIMENSIONS (in inches)						
Mod.	Banjo Female Thread	A	S	H	L	SW
	UNF	UNF				
<b>SVU 32F-32</b>	10-32	10-32	.216	.177	1.141	.315
	NPTF	NPTF				
<b>SVU 02F-02</b>	1/8"	1/8"	.511	.374	2.000	.551
<b>SVU 04F-04</b>	1/4"	1/4"	.453	.511	2.250	.669
<b>SVU 08F-08</b>	1/2"	1/2"	1.023	.610	3.169	1.036

NEW

NEW

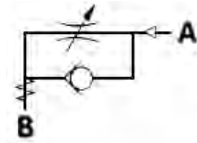
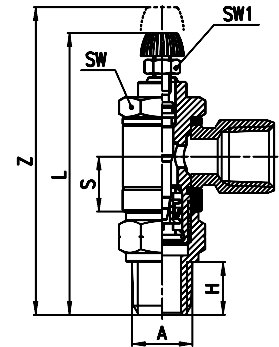


Meter-In Valves Series MVU

Meter-in unidirectional flow control designed to be mounted on valves or cylinders. It has a manual adjustment with right-angle female threads.

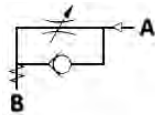
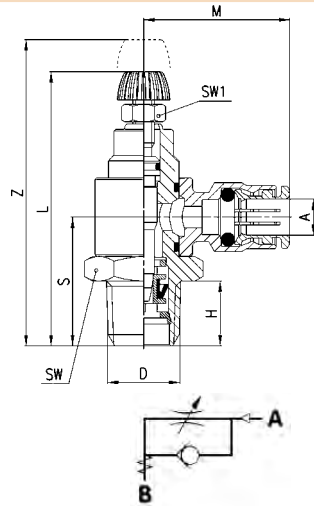
DIMENSIONS (in inches)

Mod.	Banjo Female Thread	A	S	H	L	Z	SW	SW1
	UNF	UNF						
<b>MVU 32F-32</b>	10-32	10-32	.216	.177	1.500	1.670	.315	.216
	NPTF	NPTF						
<b>MVU 02F-02</b>	1/8"	1/8"	.511	.374	2.375	2.564	.551	.275
<b>MVU 04F-04</b>	1/4"	1/4"	.453	.511	2.844	3.090	.669	.275
<b>MVU 08F-08</b>	1/2"	1/2"	1.023	.610	4.685	5.295	1.063	.669



Meter-In Valves Series GMVU

Meter-in unidirectional flow control designed to be mounted on valves or cylinders. It has a manual adjustment with a right-angle push to connect tube fitting.



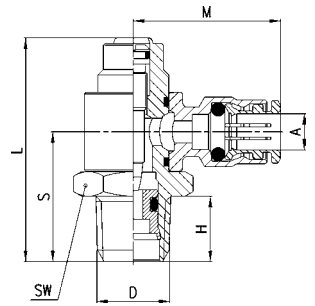
DIMENSIONS (in inches)

Mod.	OD A	THREAD D	S	H	L	Z	M	SW	SW1
		NPTF							
<b>GMVU 53-02</b>	5/32	1/8	.781	.315	1.775	2.011	.885	.551	.275
<b>GMVU 04-02</b>	1/4	1/8	.781	.315	1.775	2.011	.984	.551	.275
<b>GMVU 04-04</b>	1/4	1/4	.939	.472	1.994	2.227	1.063	.748	.275
<b>GMVU 06-04</b>	3/8	1/4	.939	.472	1.994	2.227	1.181	.748	.275

Needle Orifice Valves Series GSCO

**NEW**

This needle-orifice bidirectional flow control is designed with a needle orifice. It has a screwdriver adjustment with a right-angle push to connect tube fitting.

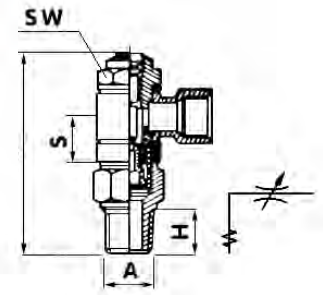


DIMENSIONS (in inches)

Mod.	OD A	D	S	H	L	M	SW
		NPTF					
<b>GSCO 53-02</b>	5/32	1/8	.781	.315	1.441	.885	.551
<b>GSCO 04-02</b>	1/4	1/8	.781	.315	1.441	.984	.551
<b>GSCO 04-04</b>	1/4	1/4	.939	.472	1.594	1.063	.748
<b>GSCO 06-04</b>	3/8	1/4	.939	.472	1.594	1.181	.748
<b>GSCO 06-06</b>	3/8	3/8	.961	.472	1.791	1.240	.866

Needle Orifice Valves Series SCO

This needle-orifice bidirectional flow control is designed with a needle orifice. It has a screwdriver adjustment with right-angle female threads.



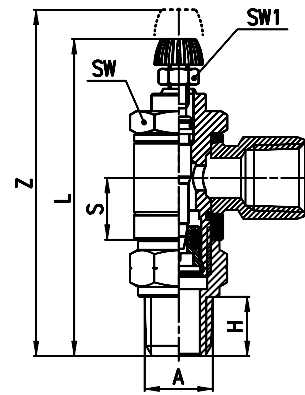
DIMENSIONS (in inches)

Part No.	Banjo Female Thread	A	S	H	L	SW
	<b>UNF</b>	<b>UNF</b>				
<b>SCO 32F-32</b>	10-32	10-32	.216	.177	1.141	.315
	<b>NPTF</b>	<b>NPTF</b>				
<b>SCO 02F-02</b>	1/8"	1/8"	.511	.374	2.000	.551
<b>SCO 04F-04</b>	1/4"	1/4"	.453	.511	2.250	.669
<b>SCO 08F-08</b>	1/2"	1/2"	1.023	.610	3.169	1.063

NEW

Needle Orifice Valves Series MCO

This needle-orifice bidirectional flow control is designed with a needle orifice. It has a manual adjustment with right-angle female threads.



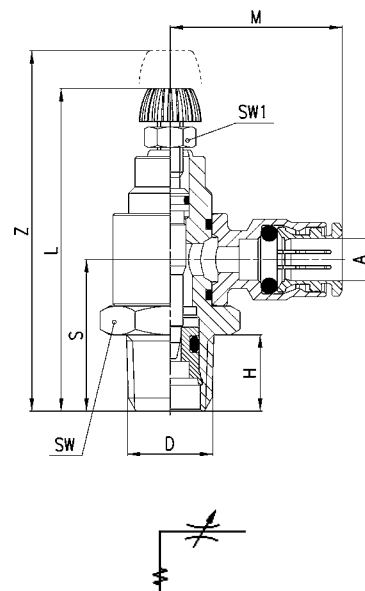
DIMENSIONS (in inches)

Mod.	Banjo Female Thread	A	S	H	L	Z	SW	SW1
	<b>UNF</b>	<b>UNF</b>						
<b>MCO 32F-32</b>	10-32	10-32	.216	.177	1.500	1.670	.315	.216
	<b>NPTF</b>	<b>NPTF</b>						
<b>MCO 02F-02</b>	1/8"	1/8"	.511	.374	2.375	2.564	.551	.275
<b>MCO 04F-04</b>	1/4"	1/4"	.453	.511	2.844	3.090	.669	.275
<b>MCO 08F-08</b>	1/2"	1/2"	1.023	.610	4.685	5.295	1.063	.669

NEW

Needle Orifice Valves Series GMCO

This needle-orifice bidirectional flow control is designed with a needle orifice. It has a manual adjustment with a right-angle push to connect tube fitting.

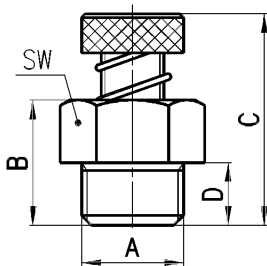


DIMENSIONS

Mod.	OD A	THREAD D NPTF	S	H	L	Z	M	SW	SW1
GMCO 53-02	5/32	1/8	.781	.315	1.775	2.011	.885	.551	.275
GMCO 04-02	1/4	1/8	.781	.315	1.775	2.011	.984	.551	.275
GMCO 04-04	1/4	1/4	.939	.472	1.994	2.227	1.063	.748	.275
GMCO 06-04	3/8	1/4	.939	.472	1.994	2.227	1.181	.748	.275

Flow control valves with silencer Series RSW

Flow control valves with silencer.  
Connections: G1/8, G1/4, G1/2



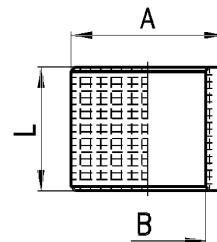
DIMENSIONS (MM)

Mod.	A BSP	B	C	D	SW
RSW 1/8	G1/8	13	22	6	12
RSW 1/4	G1/4	16	27	8	16
RSW 1/2	G1/2	26	35	11	26



Silencer bushing Series 2905

Silencer Bushing for Mod. SCO... or MCO...



DIMENSIONS (MM)

Mod.	A	S	H
2905 1/8	14	10	14,5
2905 1/4	18	13,5	14,5
2905 3/8	21	16,8	14,5