

In-line Flow Control Valves Series RFU, RFO

Panel/Wall-Mount Design: Meter-Out, Meter-In and Needle Orifice

Thread Type: UNF 10-32

NPTF 1/8", 1/4"

BSP G1/8, G1/4, G3/8, G1/2



- » Series RFU: unidirectional flow control valves for the speed regulation of a cylinder
- » Series RFO: bidirectional flow control valves for the air flow regulation in both directions and for the pressurization or depressurization of a container.

The unidirectional flow controllers are available with two different types of adjustment (see diagrams). G3/8 and G1/2 ports have just one type of adjustment.

They are used mainly for controlling the speed of cylinders.

All models can be panel or wall mounted or they can be mounted on cylinders, as required.

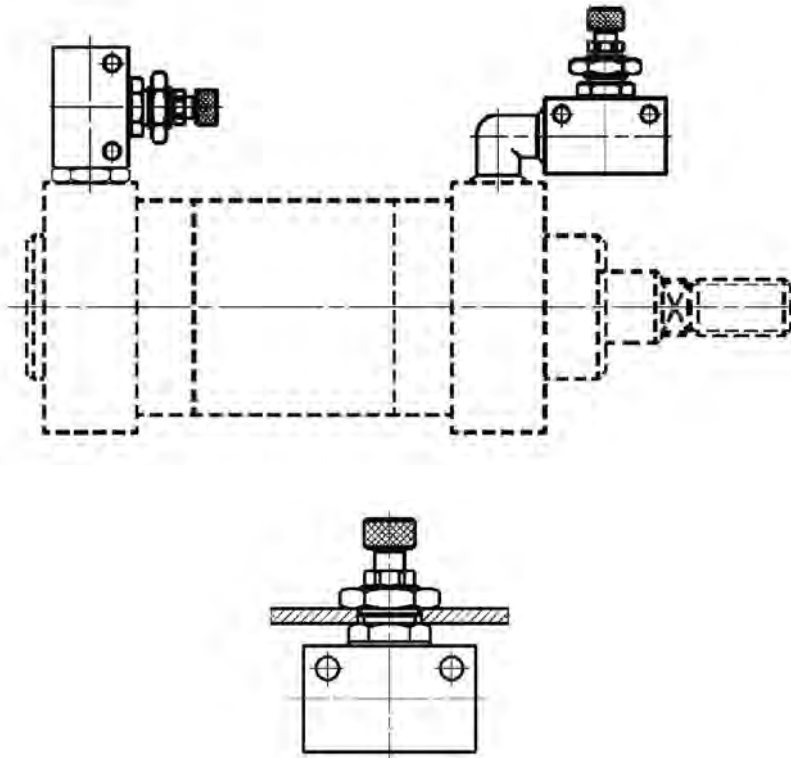
GENERAL DATA

Construction	In-Line Needle type
Valve group	Unidirectional controller (meter-in, meter-out) and Bidirectional (needle-orifice)
Materials	Aluminum body, Brass needle (not nickel-plated), NBR seals (Buna-N)
Mounting	with screws in the holes of the valve body or panel mounted
Threaded ports	10-32 UNF, 1/8", 1/4", NPTF M5 - G1/8 - G1/4 - G3/8 - G1/2 BSP
Installation	as required
Operating temperature	32° - 175° F (dry air necessary down to -4° F)
Operating pressure	1.0 - 10 bar (14.5 - 145 psi) 2 - 10 bar (29 - 145 psi) (for models with G3/8 - G1/2 ports)
Nominal pressure	6 bar (87 psi)
Nominal flow	see graph
Nominal diameter (flow orifice)	1/8" = 2 mm (.079"), or 3 mm (.118") 1/4" = 4 mm (.157"), or 6 mm (.236") 3/8" and 1/2" = 7 mm (.272")
Fluid	filtered air
Lubricant	Oil compatible with Buna-N (3° - 10°F)
	*Qn flowrate (SCFM) determined iwht a supply pressure of 6 bar (87 psi), and with a pressure drop of 1 bar (14.5 psi). **Dimensions are in inches.

CODING EXAMPLE

RF	U4	8	2	-	02
RF	SERIES: RF				
U4	FUNCTION: U4 = unidirectional, meter out/meter in 03 = bidirectional, needle-orifice (BSP threads only)				
8	PORTS 5 = M5 or 10-32 UNF 8 = 1/8" NPTF or G1/8 BSP 4 = 1/4" NPTF or G1/4 BSP 6 = G3/8 BSP 7 = G1/2 BSP				
2	FLOW CONTROL RANGE: 2 = ø 2 max 3 = ø 3 max 4 = ø 4 max 6 = ø 6 max 7 = ø 7 max				
02	PORTS M5 = M5 (10-32 UNF) NPTF 02 = 1/8" NPTF 04 = 1/4" NPTF BSP 1/8 = G1/8 1/4 = G1/4 3/8 = G3/8 1/2 = G1/2				

EXAMPLES OF VALVES SERIES RFO - RFU ASSEMBLY



FLOW CONTROLLER SELECTION

4

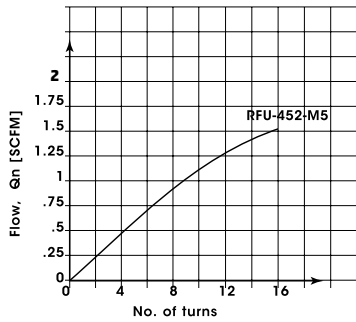
To ensure the right choice of flow controller, proceed as follows: calculate the quantity of air in NL/min. (see cylinder table), determine the stroke time of the cylinder; refer to the graph to see which controller is the right type. In the case of bidirectional regulators, refer to the graph and check whether the flow control range is suitable for the work required.

FLOW DIAGRAMS (1 → 2) - VALVES SERIES RFU / RFO - M5, 10/32 PORTS

RFU-452

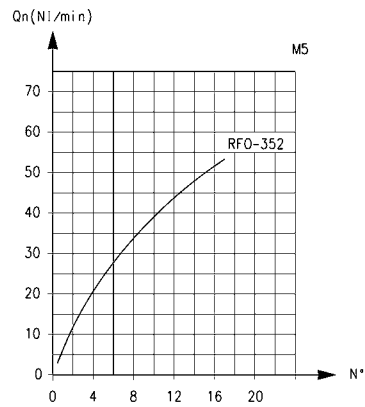
flow from B → A needle type
 OPEN = 55 NL/min [1.94 SCFM]
 CLOSED = 41 NL/min [1.45 SCFM]

NB: Qn is determined with a pressure of 6 bar at the inlet and ΔP=1 bar at the outlet.
 N° = number of screw turns



RFO 352-M5

N° = number of screw turns
 Note: the flow (Qn) is determined with a pressure of 6 bar at the inlet and ΔP = 1 bar at the outlet.



FLOW CONTROL VALVES

FLOW DIAGRAMS (1 → 2) - VALVES SERIES RFU / RFO - 1/8 PORTS

RFU 482 BSP / NPT

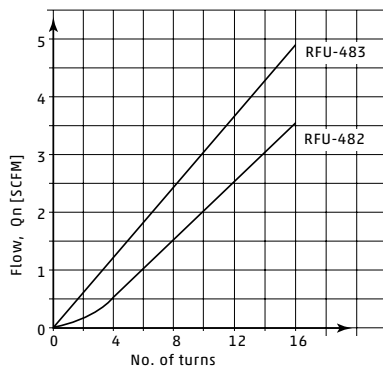
flow from B → A needle type
 OPEN = 149 NL/min [6.32 SCFM]
 CLOSED = 130.5 NL/min [4.61 SCFM]

RFU 483

flow from B → A needle type
 OPEN = 180 NL/min [6.36 SCFM]
 CLOSED = 140 NL/min [4.94 SCFM]

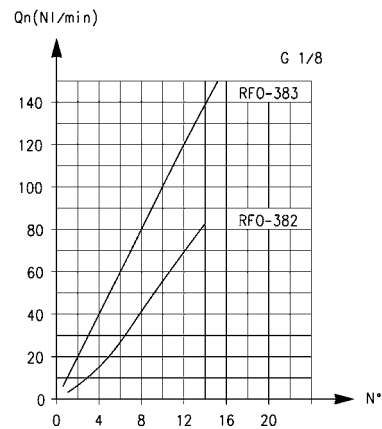
NB: Qn is determined with a pressure of 6 bar at the inlet and ΔP = 1 bar at the outlet.

N° = number of screw turns.



RFO 382-1/8 - RFO 383-1/8 (BSP Only)

N° = number of screw turns
 Note: the flow (Qn) is determined with a pressure of 6 bar at the inlet and ΔP = 1 bar at the outlet.



FLOW DIAGRAMS (1 → 2) - VALVES SERIES RFU / RFO - 1/4" NPTF, G1/4 PORTS

RFU 444

flow from B → A needle type

OPEN = 680 NL/min
[24.01 SCFM]
CLOSED = 534 NL/min
[18.86 SCFM]

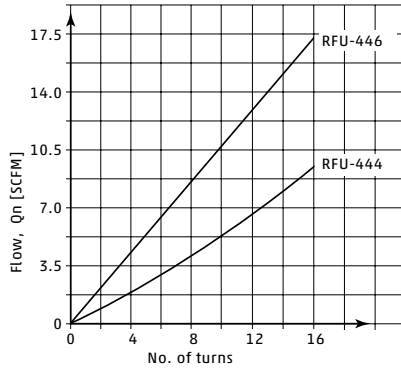
RFU 446

flow from B → A needle type

OPEN = 680 NL/min
[24.01 SCFM]
CLOSED = 534 NL/min
[18.86 SCFM]

NB: Qn is determined with a pressure of 6 bar at the inlet and ΔP = 1 bar at the outlet.

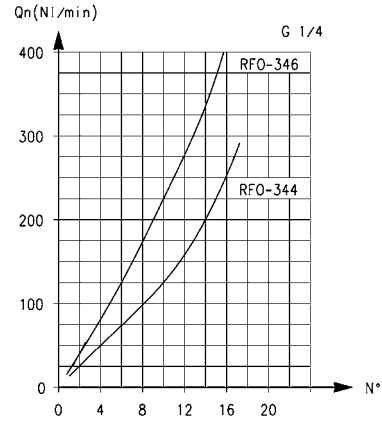
N° = number of screw turns.



RFO 344-1/4 - RFO 346-1/4

N° = number of screw turns.

Note: the flow (Qn) is determined with a pressure of 6 bar at the inlet and ΔP = 1 bar at the outlet.



FLOW DIAGRAMS (1 → 2) - VALVES SERIES RFU / RFO - G3/8, G1/2 PORTS

RFU 467-3/8:

flow from 2 → 1 needle type

OPEN = 1700 NL/min
CLOSED = 1700 NL/min

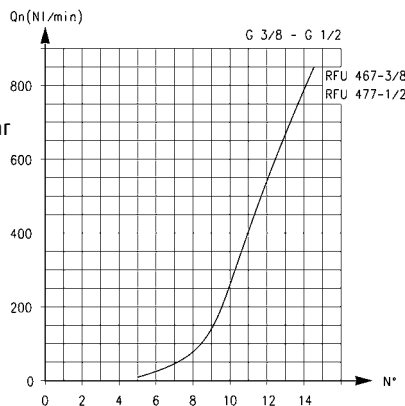
RFU 477-1/2:

flow from 2 → 1 needle type

OPEN = 1700 NL/min
CLOSED = 1700 NL/min

N° = number of screw turns

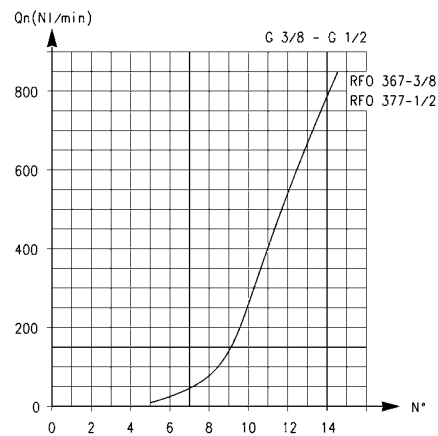
Note: the flow (Qn) is determined with a pressure of 6 bar at the inlet and ΔP = 1 bar at the outlet.



RFO 367-3/8 - RFO 377-1/2

N° = number of screw turns

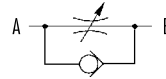
Note: the flow (Qn) is determined with a pressure of 6 bar at the inlet and ΔP = 1 bar at the outlet.



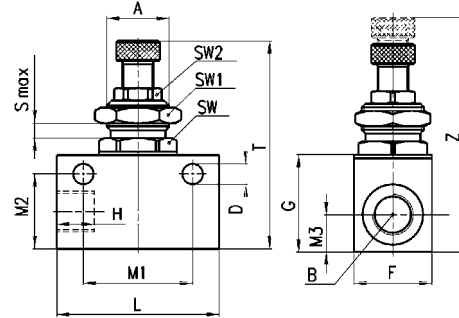
Unidirectional flow controller Series RFU

To regulate the speed of a cylinder, the air flow from the chamber which is being discharged must be regulated.

For this reason, the unidirectional flow controller must be connected as follows:
connect the threaded outlet marked A to the cylinder inlet and the threaded outlet marked B to the valve user port.



NPTF Threads

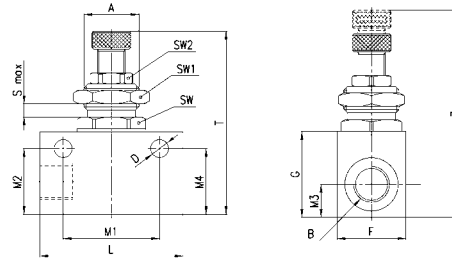


NPT THREADS

DIMENSIONS (in inches)

Model	A	B	H	D	F	G	L	M1	M2	M3	T	Z	SMax	SW	SW1	SW2
	METRIC	UNF														
RFU 452-M5	M10x1	10-32	.256	.165	.551	.630	1.02	.728	.520	.280	1.54	1.750	.118	.472	.551	.315
	M12x1	1/8"	.354	.177	.629	.826	1.338	.964	.649	.315	1.811	2.007	.157	.551	.669	.354
RFU 483-02	M12x1	1/8"	.354	.177	.629	.826	1.338	.964	.649	.315	1.811	2.007	.157	.551	.669	.354
RFU 444-04	M20x1.5	1/4"	.492	.255	.984	1.181	2.047	1.377	.944	.472	2.362	2.716	.275	.866	.944	.551
RFU 446-04	M20x1.5	1/4"	.492	.255	.984	1.181	2.047	1.377	.944	.472	2.362	2.716	.275	.866	.944	.551

BSP Threads



BSP THREADS

DIMENSIONS (in mm)

Model	g_N	A	B	D	F	G	L	M1	M2	M3	M4	T	Z	S_{Max}	SW	SW1	SW2
RFU 452-M5	1.5	M10x1	M5	4.2	14	16	26	18.5	13.2	7	13.2	39	44.5	3	12	14	8
RFU 482-1/8	2	M12x1	G1/8	4.5	16	21	34	24.5	16.5	8	16.5	46	51	4	14	17	9
RFU 483-1/8	3	M12x1	G1/8	4.5	16	21	34	24.5	16.5	8	16.5	46	51	4	14	17	9
RFU 444-1/4	4	M20x1.5	G1/4	6.5	25	30	52	35	24	12	24	60	69	7	22	24	14
RFU 446-1/4	6	M20x1.5	G1/4	6.5	25	30	52	35	24	12	24	60	69	7	22	24	14
RFU 467-3/8	7	M18x1	G3/8	6.5	27	42	56	43	34.5	28	7.5	75	85	8	22	22	*
RFU 477-1/2	7	M18x1	G1/2	6.5	27	42	56	43	34.5	28	7.5	75	85	8	22	22	*

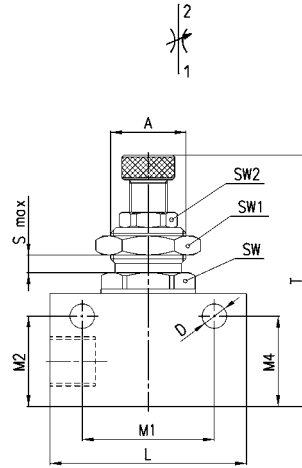
Bidirectional flow control valves Series RFO

4

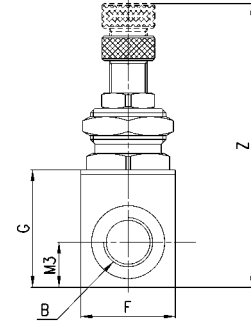
FLOW CONTROL VALVES

TABLE NOTE:

* knurled ring nut



BSP Threads



BSP THREADS

Model	N	DIMENSIONS (in mm)															
		A	B	D	F	G	L	M1	M2	M3	M4	T	Z	S _{Max}	SW	SW1	SW2
RFO 352-M5	1.5	M10x1	M5	4.2	14	16	26	18.5	13.2	7	13.2	39	44.5	3	12	14	8
RFO 382-1/8	2	M12x1	G1/8	4.2	16	21	34	24.5	16.5	8	16.5	46	51	4	14	17	9
RFO 383-1/8	3	M12x1	G1/8	4.5	16	21	34	24.5	16.5	8	16.5	46	51	4	14	17	9
RFO 344-1/4	4	M20x1.5	G1/4	6.5	25	30	52	35	24	12	24	60	69	7	22	24	14
RFO 346-1/4	6	M20x1.5	G1/4	6.5	25	30	52	35	24	12	24	60	69	7	22	24	14
RFO 367-3/8	7	M18x1	G3/8	6.5	27	42	56	43	34.5	28	7.5	75	85	8	22	22	*
RFO 377-1/2	7	M18x1	G1/2	6.5	27	42	56	43	34.5	28	7.5	75	85	8	22	22	*