

# Series RFU and RFO flow control valves

Unidirectional and bidirectional

Ports: M5, G1/8, G1/4, G3/8 and G1/2

Nominal diameters: 1,5 mm (M5), 2 and 3 mm (G1/8),  
4 and 6 mm (G1/4), 7 mm (G3/8 and 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 equipped with M5, G1/8, G1/4, G3/8 and G1/2 ports.

G1/8 and G1/4 ports are available with two different types of adjustment (see diagrams), whereas M5, G3/8 and G1/2 ports have just one type of adjustment. All models can be panel or wall mounted or they can be mounted on cylinders, as required.

To choose the most suitable model, it is recommended to:

1. calculate the quantity of air in NL/min (see the cylinders tables in the catalogue appendix);
2. determine the stroke time of the cylinder;
3. check the flow diagrams (see pages 2/7.20.03 and 2/7.20.04).

## GENERAL DATA

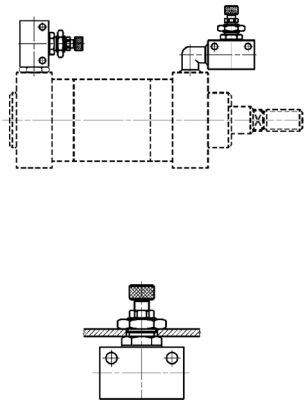
Construction	needle-type
Valve group	unidirectional and bidirectional controller
Materials	AL body - brass needle (not nickel-plated) - NBR seals
Mounting	with screws in the holes of the valve body or panel mounted
Threaded ports	M5 - G1/8 - G1/4 - G3/8 - G1/2
Installation	as required
Operating temperature	0°C ÷ 80°C (with dry air - 20°C)
Operating pressure	1 ÷ 10 bar (for models with M5 - G1/8 - G1/4 ports) 2 ÷ 10 bar (for models with G3/8 - G1/2 ports)
Nominal pressure	6 bar
Nominal flow	see graph
Nominal diameter	M5 = 1,5 - G1/8 = 2 or 3 mm - G1/4 = 4 or 6 mm - G3/8 and G1/2 = 7 mm
Fluid	filtered air. If lubricated air is used, it is recommended to use ISOVG 32 oil. Once applied the lubrication should never be interrupted.

CODING EXAMPLE

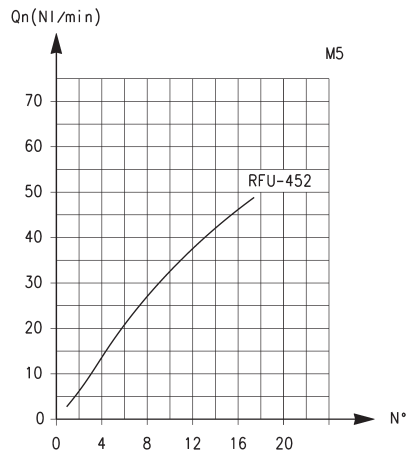
RF	U		4	8	2	-	1/8
RF	SERIES						
U 4	FUNCTION: U 4 = unidirectional O 3 = bidirectional						
8	PORTS: 4 = G1/4 5 = M5 6 = G3/8 7 = G1/2 8 = G1/8						
2	FLOW CONTROL RANGE: 2 = Ø 1.5 mm max (for ports M5) Ø 2 mm max (for ports 1/8 only) 3 = Ø 3 mm max (for ports 1/8 only) 4 = Ø 4 mm max (for ports 1/4 only) 6 = Ø 6 mm max (for ports 1/4 only) 7 = Ø 7 mm max (for ports 3/8, 1/2 only)						
1/8	PORTS: M5 1/8 1/4 3/8 1/2						

SERIES RFU AND RFO VALVES

EXAMPLES OF SERIES RFO - RFU VALVES ASSEMBLY



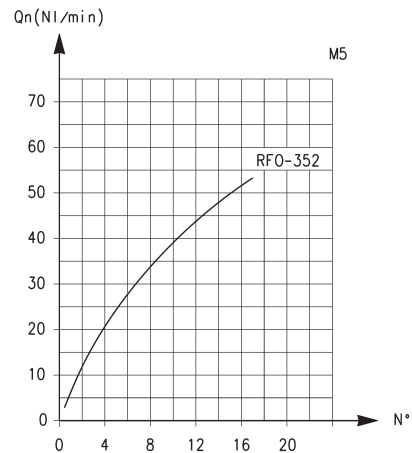
## FLOW DIAGRAMS (1 → 2) - VALVES SERIES RFU / RFO - M5 PORTS



RFU 452-M5: flow from 2 → 1 needle type OPEN = 55 NI/min CLOSED = 41 NI/min

$N^\circ$  = number of screw turns

Note: the flow ( $Q_n$ ) is determined with a pressure of 6 bar at the inlet and  $\Delta P = 1$  bar at the outlet.

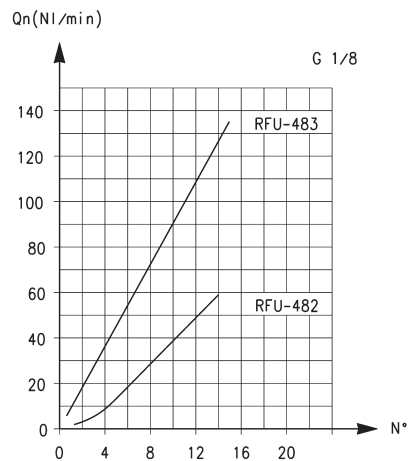


RFO 352-M5

$N^\circ$  = number of screw turns

Note: the flow ( $Q_n$ ) is determined with a pressure of 6 bar at the inlet and  $\Delta P = 1$  bar at the outlet.

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

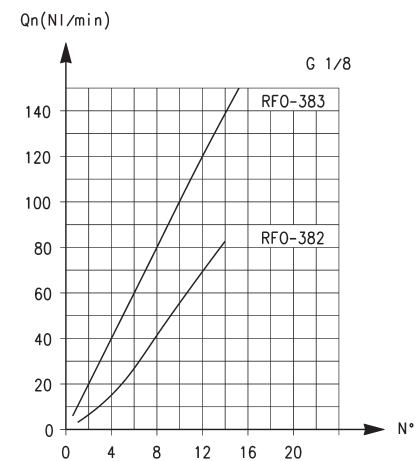


RFU 482-1/8: flow from 2 → 1 needle type OPEN = 149 NI/min CLOSED = 130,5 NI/min

RFU 483-1/8: flow from 2 → 1 needle type OPEN = 180 NI/min CLOSED = 140 NI/min

$N^\circ$  = number of screw turns

Note: the flow ( $Q_n$ ) is determined with a pressure of 6 bar at the inlet and  $\Delta P = 1$  bar at the outlet.

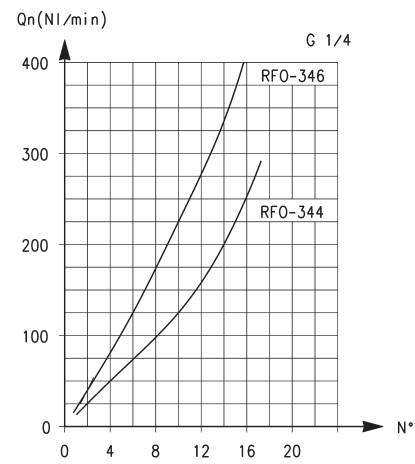
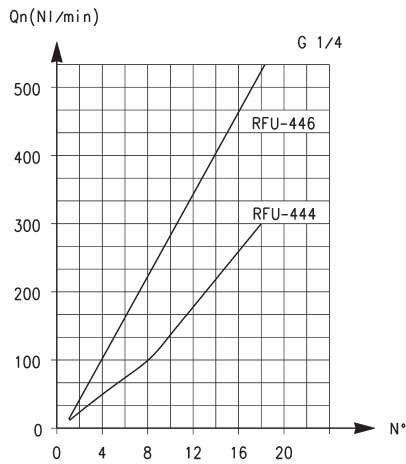


RFO 382-1/8 - RFO 383-1/8

$N^\circ$  = number of screw turns

Note: the flow ( $Q_n$ ) is determined with a pressure of 6 bar at the inlet and  $\Delta P = 1$  bar at the outlet.

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



RFU 444-1/4: flow from 2 → 1 needle type OPEN = 680 NL/min CLOSED = 534 NL/min  
 RFU 446-1/4: flow from 2 → 1 needle type OPEN = 680 NL/min CLOSED = 534 NL/min

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

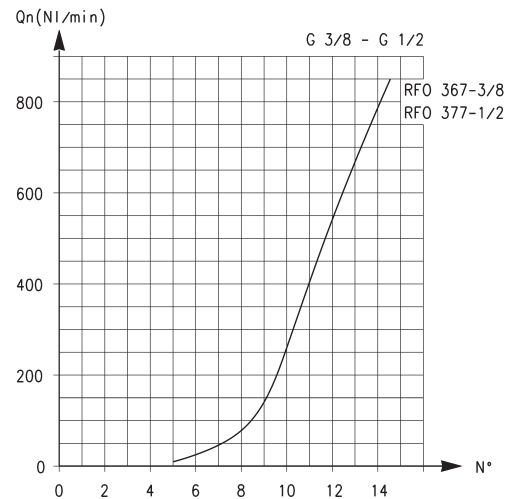
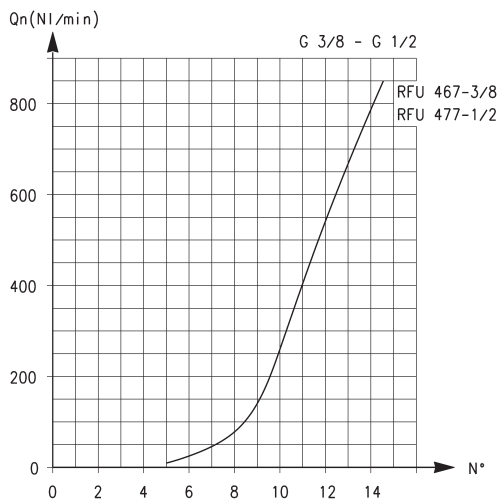
N° = number of screw turns.

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

N° = number of screw turns

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## 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

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  $\Delta P = 1$  bar at the outlet.

N° = number of screw turns

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## Unidirectional flow control valves Series RFU



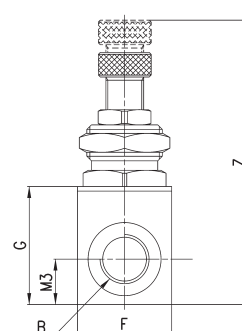
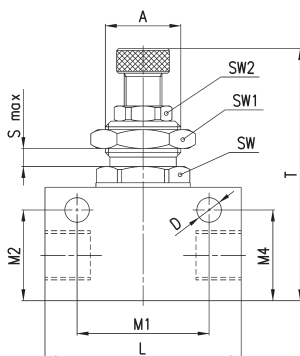
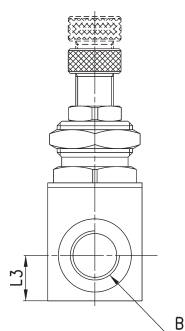
To regulate the cylinder speed, the discharging chamber air flow has to be controlled. Therefore, it is recommended to connect the valve threaded outlet 1 to the cylinder inlet and the outlet 2 to the valve user port.

TABLE NOTE:

\* knurled ring nut



RFU1



### DIMENSIONS

Mod.	Ø	A	B	D	F	G	L	M1	M2	M3	L3	M4	T	Z	S <sub>Max</sub>	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	14	28	7.5	75	85	8	22	22	*
RFU 477-1/2	7	M18x1	G1/2	6.5	27	42	56	43	34.5	14	28	7.5	75	85	8	22	22	*

## Bidirectional flow control valves Series RFO

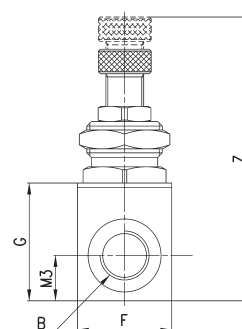
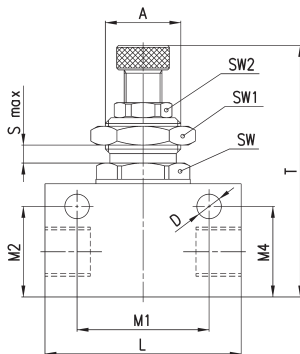
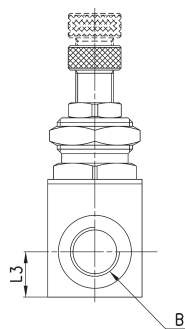


TABLE NOTE:

\* knurled ring nut



RFO1



### DIMENSIONS

Mod.	Ø	A	B	D	F	G	L	M1	M2	M3	L3	M4	T	Z	S <sub>Max</sub>	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	14	28	7.5	75	85	8	22	22	*
RFO 377-1/2	7	M18x1	G1/2	6.5	27	42	56	43	34.5	14	28	7.5	75	85	8	22	22	*