

# MINIATURE REDUCER/ECONOMIZER, SERIES RML, RMC AND RMS

The RML R miniature pressure regulator belongs to the LINE ON LINE® family and can be connected in series or in parallel with all the other products.

The miniature pressure regulator is available in five different types:

- In-line with push-in input and output fitting
- In-line with threaded input port and push-in output fitting
- In-line with push-in input fitting and threaded output port
- At an angle with threaded input port and push-in output fitting
- Cartridge type for direct assembly in suitably worked slot.

The miniature pressure regulator is fitted with a relief valve for over-pressure exhaust.

- Particularly suitable for use between the valve and actuator and as a pressure regulator in secondary branches of the pneumatic system.



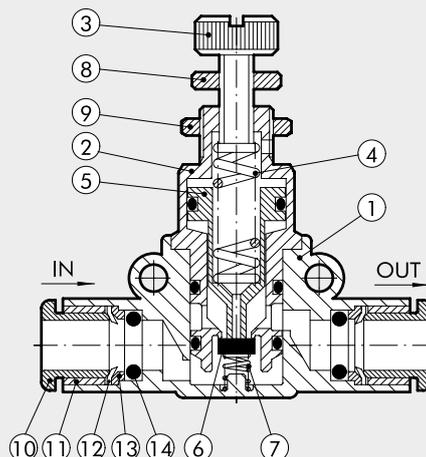
TECHNICAL DATA		RML					RMC			RMS		
		Ø 6	Ø 1/4"	Ø 8 (Ø 5/16")	Ø 3/8"	Ø 10	1/8	1/4	3/8	1/8	1/4	3/8
Threaded ports	G (BSP)	1/8"-1/4"	-	1/8"-1/4"-3/8"	-	1/4"-3/8"-1/2"	1/8"	1/4"	3/8"	1/8"	1/4"	3/8"
Pipe coupling	Ø	6	1/4"	8 ▲	3/8"	10	4 ▲ - 6 - 8 ▲	6 - 8 ▲ - 10	8 ▲ - 10 - 12	-	-	-
Regulation range		1 to 8 bar - 0.1 to 0.8 MPa - 14.5 to 116 psi										
Inlet pressure	MPa	0.2 to 1										
	bar	2 to 10										
	psi	29 to 145										
Flow rate at 6.3 bar (0.63 MPa - 91 psi) ΔP 1 bar	Nl/min	150	260	300	300	150	260	300	150	260	300	
Flow rate on exhaust at 6.3 bar (0.63 MPa - 91 psi)	Nl/min	400	600	1000	1000	400	600	1000	400	600	1000	
Fluid		Lubricated or unlubricated filtered compressed air; if used, must be continuous										
Max. temperature at 1 MPa; 10 bar; 145 psi	°C	- 20 to + 60										
	°F	- 4 to + 140										
Assembly position		Available										
Notes		In the miniature regulator the pressure must always be set upwards										
Compatibility with oils		See <b>chapter Z1</b>										

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

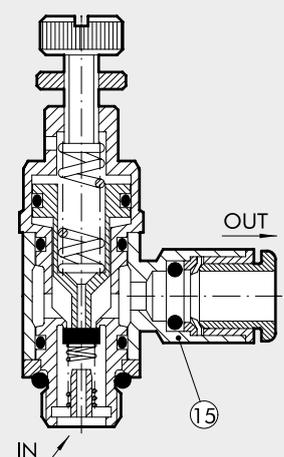
## COMPONENTS

- ① Technopolymer body (brass for RMC)
- ② Nickel-plated brass insert
- ③ Nickel-plated brass adjusting screw
- ④ Steel adjusting spring
- ⑤ Brass piston rod
- ⑥ NBR shutter
- ⑦ Stainless steel shutter spring
- ⑧ Adjusting screw ring nut
- ⑨ Nickel-plated brass wall ring nut
- ⑩ Technopolymer release bushing
- ⑪ Technopolymer stop bushing (brass for RMC)
- ⑫ Stainless steel crimping spring
- ⑬ Technopolymer spring ring
- ⑭ NBR gasket
- ⑮ Nickel-plated brass rotating ring

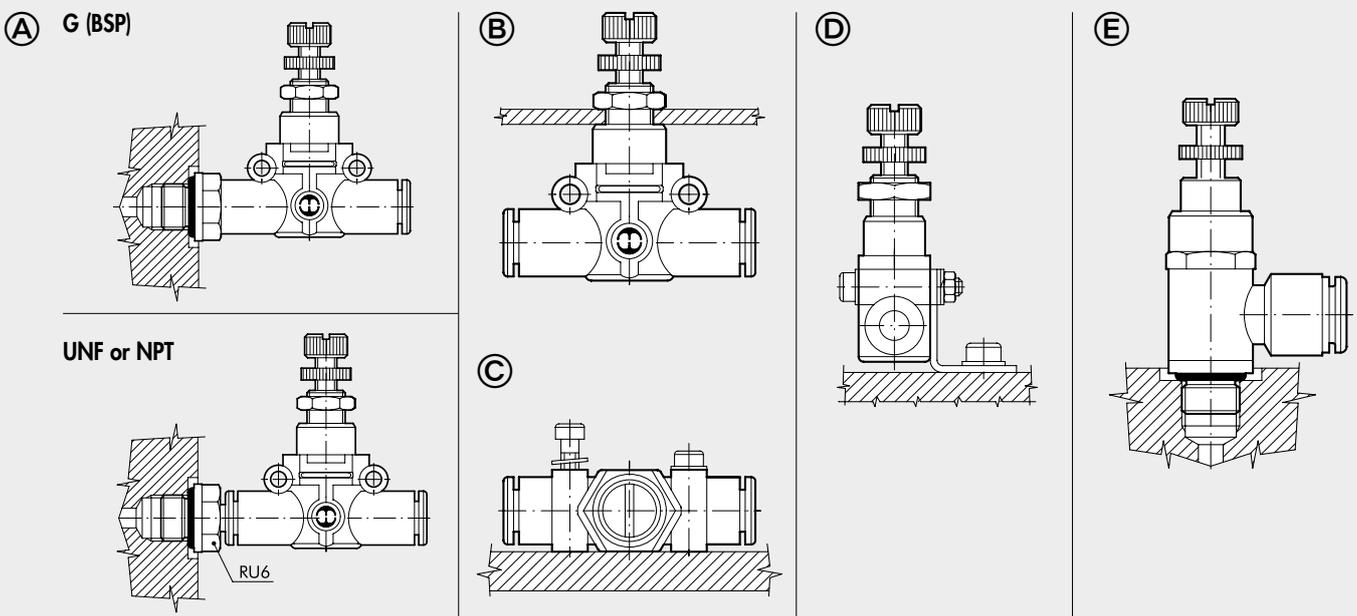
RML



RMC



**ASSEMBLY OPTIONS**

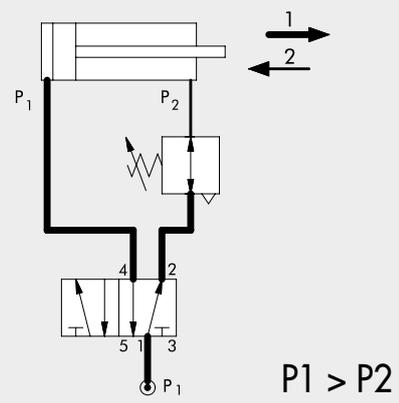


How to assembly RML/RMC:

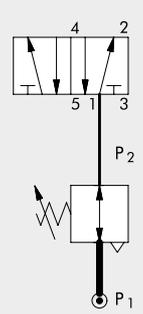
- Fig. **A G (BSP)**: Thanks to the male threaded part it's possible to assembly directly on the actuator or on the valve.  
**UNF or NPT**: Adding a RU6 fitting, with his male UNF or NPT thread, it is possible to mount the RML straight on to the actuator or the control valve.
- Fig. **B**: By using the ring nut screwed on the threaded body it's possible the assembling on panels.
- Fig. **C**: On the plastic body there are two strong ring for the direct wall assembly.
- Fig. **D**: Fixing on plate trough the proper small square SQU L, except for Ø3/8 and Ø10.
- Fig. **E**: For maintaining the tube the most parallel possible to the system, had been designed a specific version (RMC) with inlet and outlet at 90°.

**POSSIBLE APPLICATIONS**

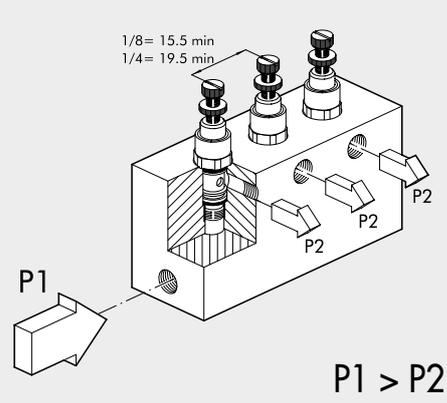
**ECONOMIZER**



**REMOTE REDUCER**



**CARTRIDGE REDUCER, SERIE RMS**



If in a cylinder you require a thrust in one direction only, e.g. piston rod extension, and a lower thrust and pressure is sufficient in the other direction, you can save a lot of energy by mounting an economizer valve.

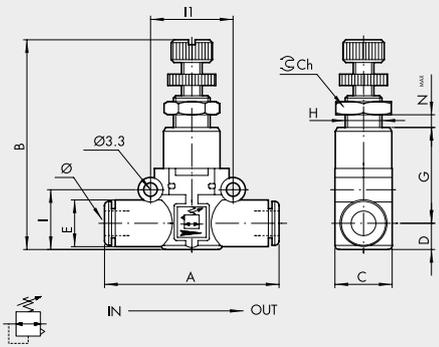
**Example**

Cylinder Ø 80 mm, stroke 200 mm, 6 bar, 12 cycles/min, 16 hours a day, 230 days a year.  
 Consumption: 144 Nl/min => 3460 kWh/year => 880 litres of oil => 2428 kg of CO<sub>2</sub> => € 346/year.  
 If you install an economizer that reduces the pressure from 6 to 2 bar, you SAVE: € 115/year.

The cartridge regulator can be used:

- Fitted directly into the structure or along the air supply ducting.
- Package with common feed and separate regulated outlets.

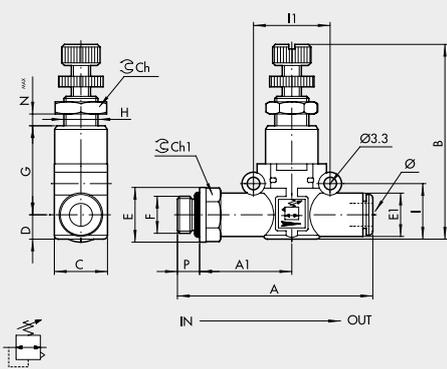
**LINE-MOUNTED MINIATURE REDUCER, SERIES RML**



Code	Ref.	Ø	A	B	C	D	E	G	H	I	II	Ch	Nmax
9061316	RML Ø6-Ø6	6	49.4	46÷52	14.7	6.4	11.4	24.8	M9x0.75	14.6	20	11	4.5
9061316U	RML Ø1/4-Ø1/4	1/4	49.4	46÷52	14.7	6.4	11.4	24.8	M9x0.75	14.6	20	11	4.5
9061324	RML Ø8-Ø8	8 ▲	57.3	52÷58	18.7	9.1	13.8	27.4	M11x1	18.7	24	13	3.8
9061332U	RML Ø3/8-Ø3/8	3/8	65	59÷66	21	10.9	16	30	M13x1	21.4	26	16	4.5
9061332	RML Ø10-Ø10	10	65	59÷66	21	10.9	16	30	M13x1	21.4	26	16	4.5

▲ Ø8 = Ø5/16"

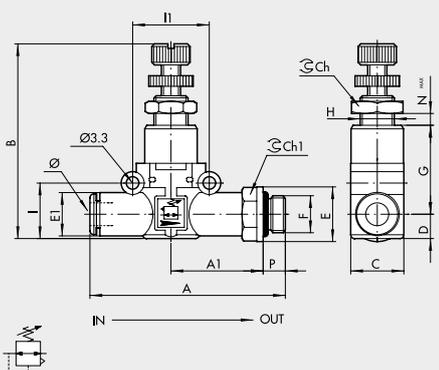
**LINE-MOUNTED G (BSP) THREAD - PIPE MINIATURE REDUCER SERIES RML**



Code	Ref.	F	Ø	P	A	AI	B	C	D	E	EI	G	H	I	II	Ch	Ch1	Nmax
9061408	RML 1/8-Ø6	1/8	6	6	58.5	27.8	46÷52	14.7	6.4	14	11.4	24.8	M9x0.75	14.6	20	11	12	4.5
9061409	RML 1/4-Ø6	1/4	6	8	61.5	28.8	46÷52	14.7	6.4	18	11.4	24.8	M9x0.75	14.6	20	11	14	4.5
9061410	RML 1/8-Ø8	1/8	8 ▲	6	66.2	31.8	52÷58	18.7	9.1	15	13.8	27.4	M11x1	18.7	24	13	14	3.8
9061411	RML 1/4-Ø8	1/4	8 ▲	8	70.6	34.2	52÷58	18.7	9.1	18	13.8	27.4	M11x1	18.7	24	13	14	3.8
9061412	RML 3/8-Ø8	3/8	8 ▲	9	72.2	34.8	52÷58	18.7	9.1	22	13.8	27.4	M11x1	18.7	24	13	17	3.8
9061415	RML 1/4-Ø10	1/4	10	8	79.9	39.2	59÷66	21	10.9	18	16	30	M13x1	21.4	26	16	16	4.5
9061416	RML 3/8-Ø10	3/8	10	9	81.2	40.4	59÷66	21	10.9	20	16	30	M13x1	21.4	26	16	17	4.5
9061417	RML 1/2-Ø10	1/2	10	11	83.7	40	59÷66	21	10.9	26	16	30	M13x1	21.4	26	16	22	4.5

▲ Ø8 = Ø5/16"

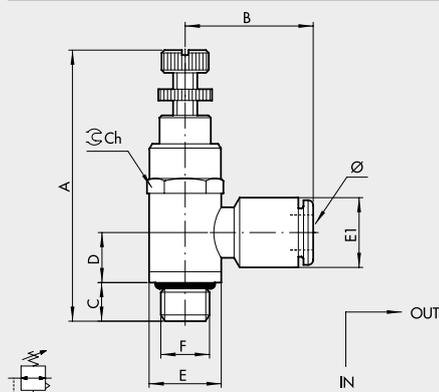
**LINE-MOUNTED PIPE - G (BSP) THREAD MINIATURE REDUCER, SERIES RML**



Code	Ref.	Ø	F	P	A	AI	B	C	D	E	EI	G	H	I	II	Ch	Ch1	Nmax
9061508	RML Ø6-1/8	6	1/8	6	58.5	27.8	46÷52	14.7	6.4	14	11.4	24.8	M9x0.75	14.6	20	11	12	4.5
9061509	RML Ø6-1/4	6	1/4	8	61.5	28.8	46÷52	14.7	6.4	18	11.4	24.8	M9x0.75	14.6	20	11	14	4.5
9061510	RML Ø8-1/8	8 ▲	1/8	6	66.2	31.8	52÷58	18.7	9.1	15	13.8	27.4	M11x1	18.7	24	13	14	3.8
9061511	RML Ø8-1/4	8 ▲	1/4	8	70.6	34.2	52÷58	18.7	9.1	18	13.8	27.4	M11x1	18.7	24	13	14	3.8
9061512	RML Ø8-3/8	8 ▲	3/8	9	72.2	34.8	52÷58	18.7	9.1	22	13.8	27.4	M11x1	18.7	24	13	17	3.8
9061515	RML Ø10-1/4	10	1/4	8	79.9	39.2	59÷66	21	10.9	18	16	30	M13x1	21.4	26	16	16	4.5
9061516	RML Ø10-3/8	10	3/8	9	81.2	40.4	59÷66	21	10.9	20	16	30	M13x1	21.4	26	16	17	4.5
9061517	RML Ø10-1/2	10	1/2	11	83.7	40	59÷66	21	10.9	26	16	30	M13x1	21.4	26	16	22	4.5

▲ Ø8 = Ø5/16"

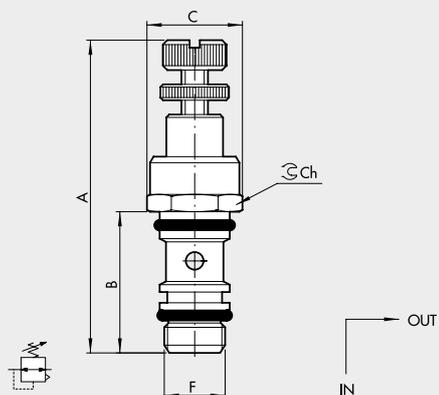
### MINIATURE REDUCER, SERIES RMC



Code	Ref.	Ø	F	A	B	C	D	E	E1	Ch
9061102	RMC 1/8-Ø4	4 ▲	1/8	51±57	20.4	7.1	12.7	14	9.5	14
9061108	RMC 1/8-Ø6	6	1/8	51±57	23.7	7.1	12.7	14	11.3	14
9061110	RMC 1/8-Ø8	8 ▲	1/8	51±57	25.6	7.1	12.7	14	13.8	14
9061109	RMC 1/4-Ø6	6	1/4	57±63	25.1	9	11	18	11.3	17
9061111	RMC 1/4-Ø8	8 ▲	1/4	57±63	27	9	11	18	13.8	17
9061112	RMC 1/4-Ø10	10	1/4	57±63	32.2	9	11	18	16.5	17
9061113	RMC 3/8-Ø8	8 ▲	3/8	67±74	28.5	9	13.4	21	13.8	21
9061114	RMC 3/8-Ø10	10	3/8	67±74	32.8	9	13.4	21	16	21
9061115	RMC 3/8-Ø12	12	3/8	67±74	35.3	9	13.4	21	19.5	21

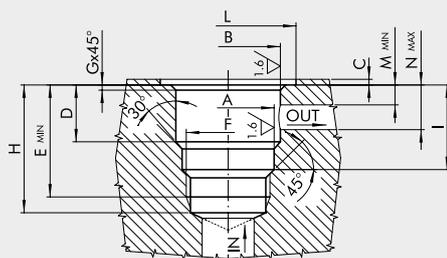
▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

### CARTRIDGE REDUCER, SERIES RMS



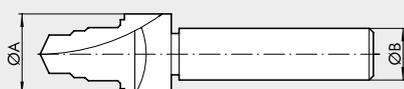
Code	Ref.	F	A	B	C	Ch
9061001	RMS 1/8	1/8	51±57	24.3	15	14
9061002	RMS 1/4	1/4	57±63	27.8	19	17
9061003	RMS 3/8	3/8	67±74	33	23.5	21

### SEAT OF A MINIATURE CARTRIDGE REDUCER



Code	F	A	B	C	D	E	G	H	I	L	M	N
SE.RMS 1/8	1/8	9.8 <sup>+0.1/-0</sup>	11.2 <sup>±0.05</sup>	0.5 <sup>±0.5</sup>	15.6 <sup>±0.07</sup>	24.6	0.3	27	18.1 <sup>±0.2</sup>	15.4	3.5	12
SE.RMS 1/4	1/4	13.5 <sup>+0.1/-0</sup>	14.4 <sup>±0.05</sup>	0.5 <sup>±0.5</sup>	17.5 <sup>±0.07</sup>	28	0.4	31.2	20.8 <sup>±0.2</sup>	19.4	3.5	13.5
SE.RMS 3/8	3/8	17 <sup>+0.1/-0</sup>	17.7 <sup>±0.05</sup>	0.5 <sup>±0.5</sup>	22 <sup>±0.07</sup>	33.5	0.8	42	25.2 <sup>±0.2</sup>	23.8	3.6	16.2

### TOOL FOR RMS SEAT



Code	Ref.	ØA	ØB
9062001	UT.SE 1/8	16	12
9062002	UT.SE 1/4	20	15
9062003	UT.SE 3/8	26	15

# lineonline®

## LINE OF PRODUCTS ON LINE

LINE ON LINE® is an exclusive range of products for mounting on pneumatic circuits. With these small, highly efficient components it is possible

to perform all pneumatic functions at any point of the circuit.

LINE ON LINE® is ultra-modular - the components can be connected in parallel, in series or combined parallel/series.

All LINE ON LINE® products are available for pipe-pipe connection with two push-in fittings, or for thread-pipe connection with a brass nickel-plated male ISO 228 G (BSP) thread and a push-in fitting.

The body is made of technopolymer, giving a product that is extremely lightweight and compact.

One side of the body is marked with an indelible pneumatic symbol to facilitate identification and indicate the direction of flow.

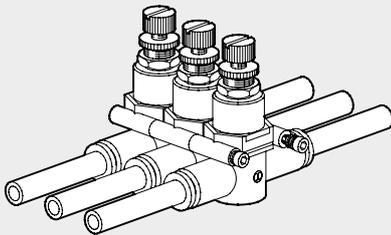
For almost every function it is available  $\varnothing 1/4$  and  $\varnothing 3/8$ " tube version.

It is also possible to use RU6 fitting to mount LINE ON LINE® on thread UNF or NPT.

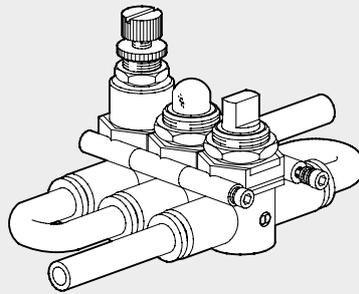


### CONNECTION FREE

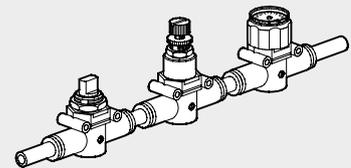
Parallel lines



Serial line parallel fitting



Serial line in-line fitting



### FIXING FREE

Wall fixing

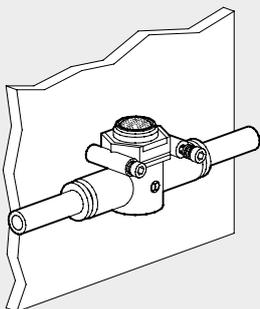
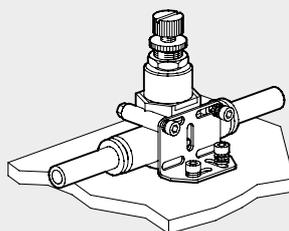
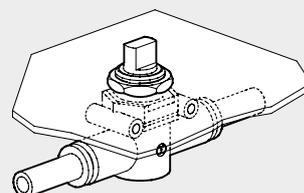


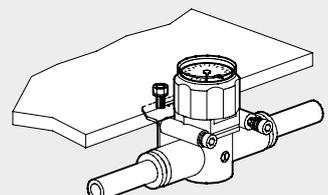
Plate fixing

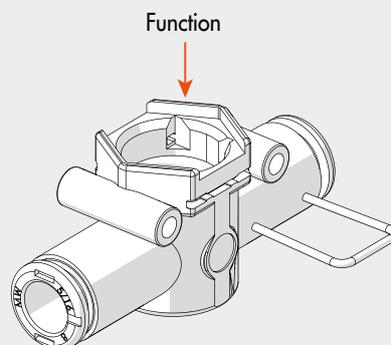


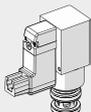
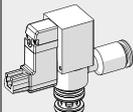
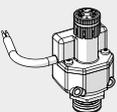
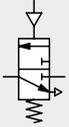
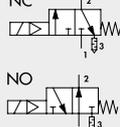
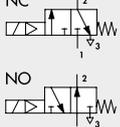
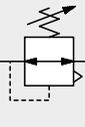
Panel fixing

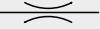
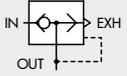
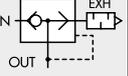
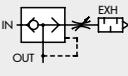
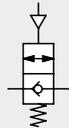


Under wall fixing



**ALL THE PNEUMATIC FUNCTIONS WITH THE SAME EXTERNAL DIMENSIONS**


PNV	SOV	RML ●▲	MAN ●▲	PRS ●▲	LAM ●	V2V ●▲	V3V ●▲	
								
3-way pneumatic valve	Solenoid valve 3-way with silenced exhaust	Solenoid valve 3-way with conveyed exhaust	Pressure regulator	Pressure gauge	Pressure switch	Pressure indicator	Shut-off valve 2-way	Shut-off valve 3-way
								
See page E1.7	See page E1.10	See page E1.14	See page E1.18	See page E1.20	See page E1.24	See page E1.26	See page E1.26	

RFL ●▲	RFF	VSR ●▲	VSRR	STP	VNR ●▲	FIL ▲			
									
Flow regulator unidirectional	Flow regulator bidirectional	Calibrated choke unidirectional	Calibrated choke bidirectional	Quick-exhaust valve conveyed	Quick-exhaust valve silenced	Quick-exhaust valve regulated	Stop valve	Check valve	Filter
									
See page E1.29	See page E1.34	See page E1.37	See page E1.39	See page E1.42	See page E1.45	See page E1.47			

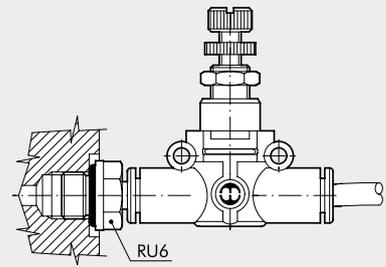
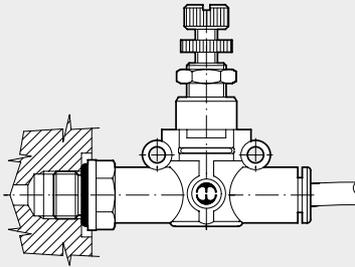
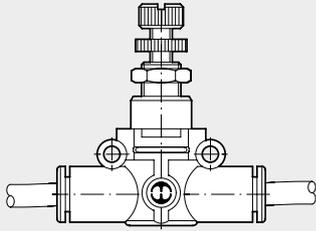
- Available also in tube Ø 1/4" version
- ▲ Available also in tube Ø 3/8" version

PIPE - PIPE

THREAD - PIPE

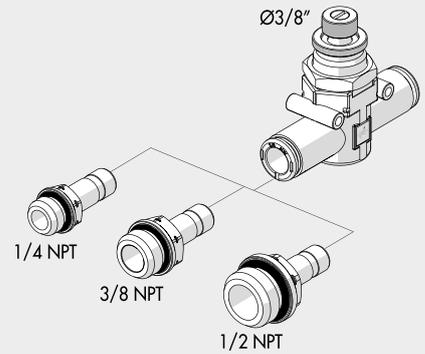
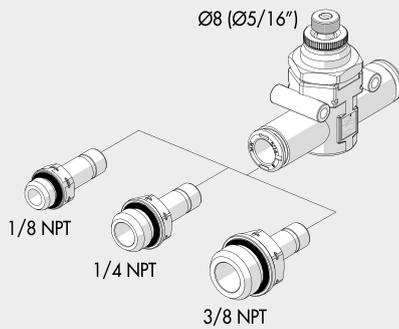
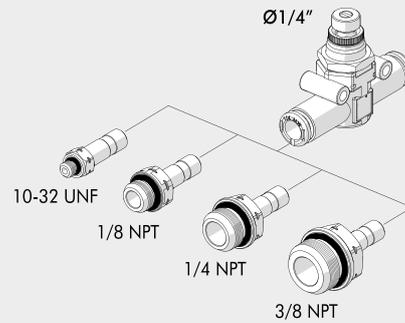
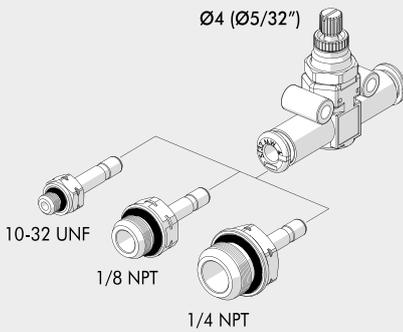
ISO 228 G (BSP) THREAD

UNF or NPT THREAD

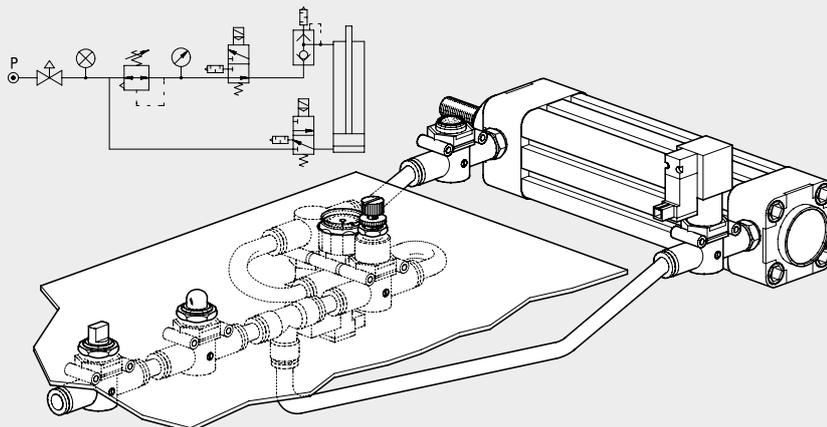


FROM TUBE - TUBE TO UNF or NPT THREAD - TUBE TRANSFORMATION

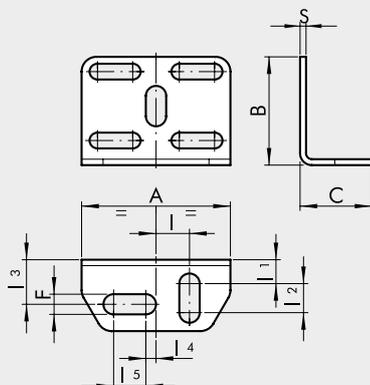
Using the RU6 fitting, it is possible to mount every Line on Line products on to the actuator or the control valve.



APPLICATION EXAMPLE



## FIXING SQUARE KIT



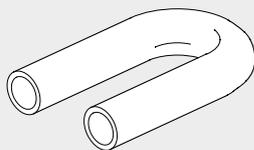
Code	Description	A	B	C	F	I	I1	I2	I3	I4	I5	S
9062110	SQU L	30	22	14.5	4.2	6.8	4.8	5.9	9.1	2	6.5	1.2

NOTE: comes with two M3x16 screws (for L.O.L.  $\varnothing 4$ ▲), two M3x25 screws (for L.O.L.  $\varnothing 6$ - $\varnothing 1/4$ - $\varnothing 8$ ▲), two M3 hexagonal nuts, 2 groovers, 4 washers.

NOT COMPATIBLE WITH  $\varnothing 3/8$  AND  $\varnothing 10$

▲  $\varnothing 4 = \varnothing 5/32"$ ;  $\varnothing 8 = \varnothing 5/16"$

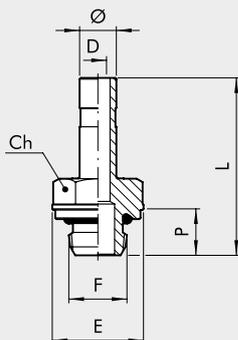
## U-BOLT



Code	Description
9062216	TUB L $\varnothing 6$ - $\varnothing 6$
9062216U	TUB L $\varnothing 1/4$ - $\varnothing 1/4$
9062224	TUB L $\varnothing 8$ - $\varnothing 8$ ▲

▲  $\varnothing 8 = \varnothing 5/16"$

## RU6 - STEM ADAPTORS UNF or NPT



Code	Ref.	$\varnothing$	F	Ch			L	D	E
				Inc	mm	P			
2U06001	RU6	5/32	10-32 UNF	5/16	8	4	25.2	2	9
2U06002	RU6	5/32	1/8 NPT	0.472	12	6	27.7	2.5	13
2U06003	RU6	5/32	1/4 NPT	0.551	14	8	30.2	2.5	16.4
2U06000	RU6	1/4	10-32 UNF	5/16	8	4	25.7	2	9
2U06007	RU6	1/4	1/8 NPT	0.472	12	6	28.2	4	13
2U06008	RU6	1/4	1/4 NPT	0.551	14	8	30.5	4	16.4
2U06020	RU6	1/4	3/8 NPT	0.669	17	9	33.3	4	20
2U06009	RU6	5/16	1/8 NPT	0.472	12	6	29.2	5.5	13
2U06010	RU6	5/16	1/4 NPT	0.551	14	8	31.5	6	16.4
2U06011	RU6	5/16	3/8 NPT	0.669	17	9	34.3	6	20
2U06012	RU6	3/8	1/4 NPT	0.551	14	8	34.8	7.3	16.4
2U06013	RU6	3/8	3/8 NPT	0.669	17	9	37.6	7.3	20
2U06022	RU6	3/8	1/2 NPT	0.748	19	11	41.2	7.3	24.5