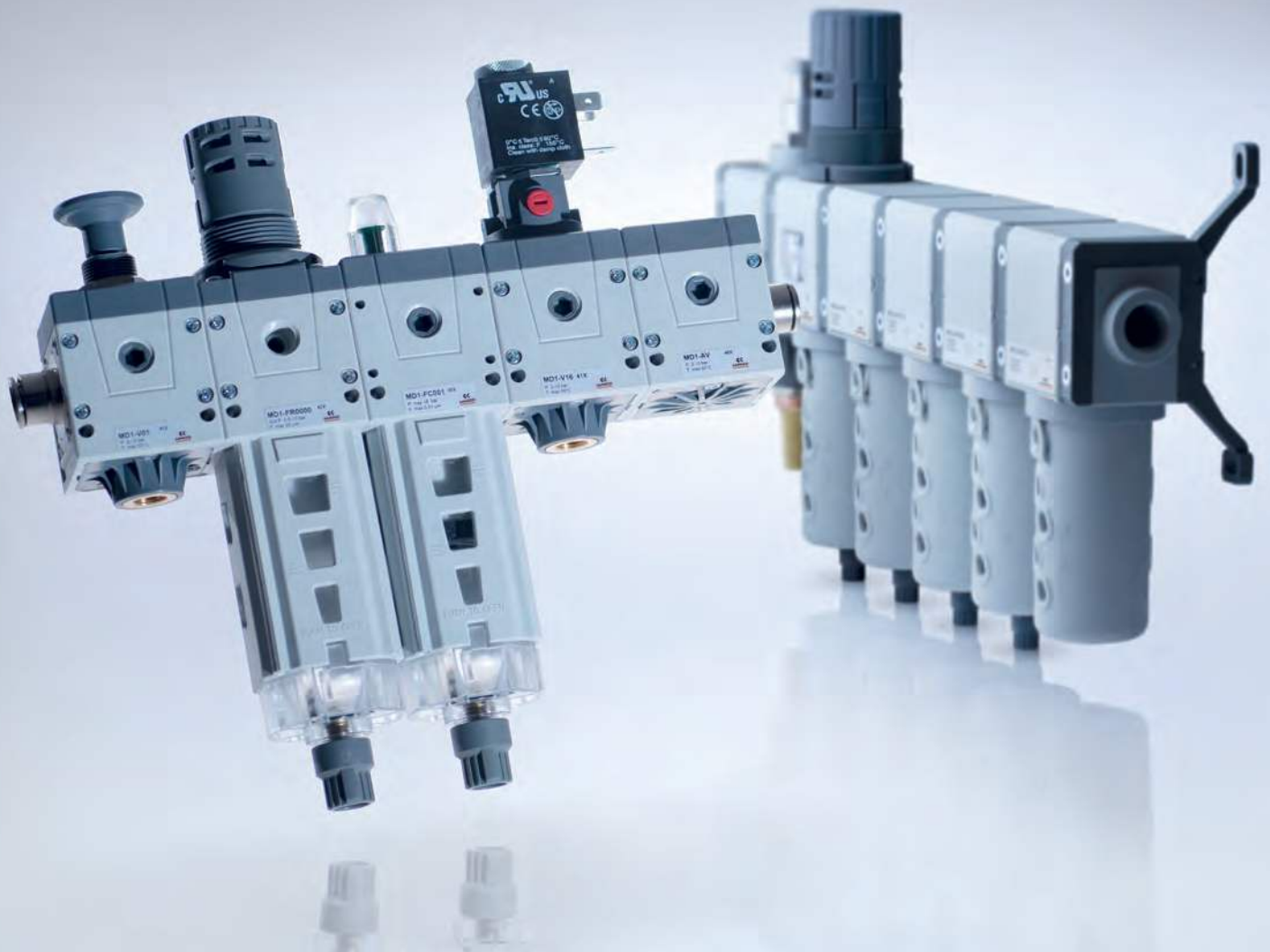




North America  
**AIR TREATMENT  
AND PROPORTIONAL  
PRESSURE TECHNOLOGY**



# WELCOME TO THE WORLD OF **CAMOZZI.**

Welcome to the world of Camozzi and our new FRL Air-Preparation Catalog. As a part of our ongoing effort in continued product development, Camozzi is launching this new, improved and updated catalog designed with an easy-to-use and practical format, which offers a comprehensive and innovative range of air-preparation components.

The catalog includes clear and technical images, drawings, dimension tables, technical specifications and new tools that will provide you with a better understanding of our FRL and Air-Treatment product line.

The new layout and design is organized by product family from the smaller size units to the larger size ports. We have also divided each major product family into chapters that better reflect the general classifications of FRL units by their type of modularity and overall component assembly and design. Several of our air-treatment accessories are in the final chapters. While the very back of the catalog contains all spare parts and seal kits generally available at the time of printing.

We hope you find the new catalog and its overall design changes to be helpful to you and your customers.

[www.camozzi-usa.com](http://www.camozzi-usa.com)



# Camozzi.

## All you need for Automation

---

Since 1964 we realize solutions for industrial automation with the intention to satisfy customers, combining the quality of products and processes with the expertise of people and the most advanced technologies. Thanks to 6 highly automated production plants, which are all organized according to the Lean production philosophy, and to the support of the Camozzi Research Centre, which is entirely devoted to technological research, components and ever more advanced systems are designed and realized

which combine pneumatics, mechanics and electronics. We are well aware that each sector presents different characteristics and our multi-technological approach allows us to identify the most suitable technologies and components to create customized systems for every single application. That is why every day the Camozzi network, present in more than 70 countries through subsidiaries, workshops and distributors, works in close contact with customers to understand their requirements and supply solutions with a real added value.



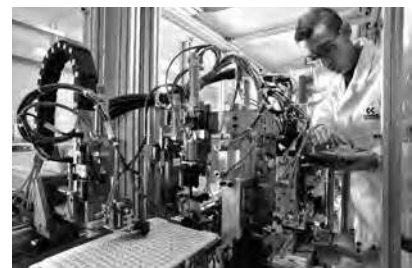
INDUSTRIAL



LIFE SCIENCE



MOBILE AUTOMATION



# Quality... an absolute and total commitment



Everybody talks about quality. We prefer to talk about the many components that work together to create a quality system that ensures excellence, not only in the final product but throughout the entire business process. Research, technological innovation, training, respect for personnel, employee and environmental safety, and total customer care are all factors that Camozzi considers strategic in the achievement of quality reflecting an unyielding commitment to the pursuit of excellence.

#### ISO 9001

Day by day we try to improve ourselves, to extend our competence and our professionalism in a constant way.

#### Mandatory directives

- Directive 99/34/EC concerning liability for defective products modified by Legislative Decree 02/02/01 n° 25.
- Directive 2014/35/EU "Equipment designed for use within certain voltages".
- Directive 2014/30/EU "Electromagnetic Compatibility EMC" and repealing Directive 89/336/EEC.
- Directive 2014/34/EU "Atex".
- Directive 2006/42/EC "Machinery".
- Directive 2014/68/EU "Pressure equipment - PED".
- Directive 2001/95/EC "General product safety".
- Regulation 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

The company reserves the right to vary models and dimensions without notice. These products are designed for industrial applications and are not suitable for sale to the general public.



COMPANY WITH INTEGRATED MANAGEMENT SYSTEM  
CERTIFIED BY DNV

## ISO 9001 - ISO 14001

One of Camozzi's main goals, besides quality and safety, is the protection of the environment and compatibility of our activities with the territorial context in which they are performed.

Since 1993 Camozzi has been certified according to the ISO 9001 standard and in 2003 the company obtained the ISO 14001 certification.

In the same year, DNV certified the Integrated Management System including both standards. Moreover, in 2013 Camozzi spa obtained the ISO/TS 16949 certification for the C-Truck fittings.

In 2013 Camozzi obtained the voluntary certification of its Quality Management System as "Intermediate stage of manufacture" in compliance with the requirements set out in attachment VII, section 3 of the 93/42/EEC Medical Devices Directive for the production and final testing of pressure control valves for fluids in haemodialysis equipment.

From the 1° July 2003, all products commercialised in the European Union and destined to be used in potentially explosive areas, should be approved according directive 94/9/CE better know as ATEX.

This new directive involves also the non electrical parts, as for instance pneumatic commands which should be approved.

As from 19 April 2016 the Atex Directive is replaced by the new directive 2014/34/EU.



### ISO 14001

Minimise the consumption of energy, water, raw material and the production of waste, and focus on recycling wherever possible.

### Technical standards







- ISO 4414 - Pneumatic fluid power - General rules relating to systems.

### Environmental notes











- Packaging: we respect the environment, using materials which can be recycled. The packaging consists of plastic bags which are recyclable PE and paper.
- Green Design Project: in the study of new products, the environmental impact is always taken into consideration (real project, elaboration, etc.).

# 1 Non-Modular FRL Series N 1/8" & 1/4" NPTF

Page














Series N		Summary and Features	<b>21</b>
Series N <b>NEW</b>		Filter and Coalescing Filters	<b>23</b>
Series N		Pressure Regulators	<b>26</b>
Series N <b>NEW</b>		Lubricators	<b>28</b>
Series N <b>NEW</b>		Filter-Regulators	<b>30</b>
Series N and M		Accessories	<b>32</b>

## 2 Modular FRL Series MD, 1/8" & 1/4" NPTF

Series MD <b>NEW</b>		Filters	<b>35</b>
Series MD <b>NEW</b>		Coalescing Filters	<b>40</b>
Series MD <b>NEW</b>		Activated Carbon Filters	<b>45</b>
Series MD <b>NEW</b>		Pressure Regulators	<b>49</b>
Series MD <b>NEW</b>		Lubricators	<b>54</b>
Series MD <b>NEW</b>		Filter-Regulators	<b>58</b>
Series MD <b>NEW</b>		Lockable Isolation 3/2-way Valves	<b>62</b>
Series MD <b>NEW</b>		Soft Start Valves	<b>68</b>
Series MD <b>NEW</b>		Take-off Blocks	<b>71</b>
Series MD <b>NEW</b>		FRL Assemblies	<b>78</b>

**3 Modular FRL Series MC 1/4", 3/8", & 1/2" NPTF**














Page

Series MC		Summary and Features	<b>83</b>
Series MC		Filters	<b>85</b>
Series MC		Coalescing Filters	<b>88</b>
Series MC		Pressure Regulators	<b>95</b>
Series MC		Manifold Pressure Regulators	<b>98</b>
Series MC		Manifold Regulators Assembly Hardware Kits	<b>100</b>
Series MC		Lubricators	<b>101</b>
Series MC		Filter-Regulators	<b>104</b>
Series MC		Lockable Isolation 3/2-Way Valve (Lock-out/Tag-out)	<b>107</b>
Series MC		Electropneumatic/Pneumatic Isolation Valve (Shut-off)	<b>110</b>
Series MC		Soft Start Valves	<b>113</b>
Series MC		Take-Off Blocks, (Distribution-Block)	<b>116</b>
Series MC		Completed Assemblies (Single Part Number Code)	<b>118</b>
Series MC		Assembly Kits Guide	<b>124</b>
Series MC		Mounting Brackets, Accessories and Kits	<b>127</b>










## 4 Modular FRL Series MX 3/8", 1/2", 3/4" and 1" NPTF

Page

Series MX		Summary and Features	<b>133</b>
Series MX		Filters	<b>135</b>
Series MX		Coalescing Filters	<b>139</b>
Series MX		Activated Carbon Filters	<b>143</b>
Series MX		Pressure Regulators	<b>148</b>
Series MX		Lubricators	<b>157</b>
Series MX		Filter-Regulators	<b>160</b>
Series MX		Lockable Isolation 3/2 Way Valves	<b>164</b>
Series MX <b>NEW</b>		SAFEMAX 3/2-way quick exhaust safety valves	<b>169</b>
Series MX		Soft Start Valves	<b>175</b>
Series MX		Take-Off Blocks	<b>179</b>
Series MX		FRL Pre-Assembled	<b>153</b>
Series MX		Pressure Gauges and Accessories	<b>157</b>

## 5 Regulators

Page

Series CLR		Micro Pressure Regulators	<b>199</b>
Series TC <b>NEW</b>		Pressure Microregulators	<b>203</b>
Series M		Pressure Microregulators	<b>208</b>
Series M -H, -R <b>NEW</b>		Pressure Microregulators For Use With Water And Fluids	<b>210</b>
Series T		Pressure Microregulators	<b>212</b>
Series VMR		Adjustable Pressure Relief Valve	<b>216</b>
Series PR <b>NEW</b>		Precision Regulators	<b>218</b>
Series M, T		Mounting Brackets, Accessories and Kits	<b>225</b>

## 6 Proportional Technology

Page

Series K8P <b>NEW</b>		Electronic Proportional Micro Regulators	<b>229</b>
Series PRE <b>NEW</b>		Proportional Pressure Regulator with CoilVision technology	<b>235</b>
Series LR <b>NEW</b>		Digital Proportional Servo Valves	<b>249</b>
Series MX PRO <b>NEW</b>		Electronic Proportional Regulators	<b>258</b>

## 7 Additional Products & Accessories

Page

Series WS <b>NEW</b>		Water Separator	<b>275</b>
Series M, N, T, MC, and MX		Pressure Gauges	<b>276</b>
Series PG <b>NEW</b>		Digital Pressure Gauges	<b>276</b>
		Solenoids U7* - U7*EX - G7* - A8* - H8*	<b>283</b>
Series SWMN <b>NEW</b>		Electronic Vacuum/Pressure Switches in mini format	<b>290</b>
Series SWDN <b>NEW</b>		Electronic Vacuum/Pressure Switches	<b>295</b>
Series SWCN <b>NEW</b>		Electronic Vacuum/Pressure Switches	<b>299</b>

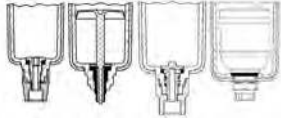
## 8 Drain Styles & Filtering Elements

Page



Filter Elements

**305**



Filter Drain Styles

**307**

## 9 Spare Parts & Seal Kits

Page

Series M	Spare Parts Series M	<b>311</b>
Series N	Spare Parts Series N	<b>312</b>
Series MD	Spare Parts Series MD	<b>315</b>
Series MC	Spare Parts Series MC	<b>318</b>
Series MX	Spare Parts Series MX	<b>324</b>
Series T	Spare Parts Series T	<b>326</b>

## 10 Marketing Materials

Page



Marketing Materials

**329**



Camozzi Subsidiaries Worldwide

**331**

Camozzi Distributors Worldwide

**333**





# Selection Guide

PRODUCT GUIDE

Characteristics of identification			Port Sizes						Operating pressure				Construction type			Relief Flow/ Rapid Exhaust Flow		
Series	Function/ type *	Body Size - General	1/8"	1/4"	5/16" (Tube)	3/8"	1/2"	3/4"	1"	0 - 2 bar (0 - 29 psi)	0 - 4 bar (0 - 58 psi)	0.5 - 7 bar (7.25 - 103 psi)	0.5 - 10 bar (7.25 - 145 psi)	self relieving (standard)	non-relieving	precise relieving	without "VS" option	with "VS" option
MC	F	1																
		2																
	FB	1																
		2																
	R	1																
		2																
	L	1																
		2																
	D	1																
		2																
	V01	1																
		2																
	V16	1																
		2																
	V36	1																
		2																
AV	1																	
	2																	
B	1																	
	2																	
M		1																
MD	F																	
	FB																	
	FCA																	
	R																	
	L																	
	FR																	
	V01																	
	V16																	
	V36																	
	AV																	
	B																	
	M																	
MX	F	2, 3																
	FB	2, 3																
	R	2, 3																
	L	2, 3																
	D	2, 3																
	V00	2, 3																
	AV	2, 3																
	V16	2, 3																
	V36	2, 3																
N	F	1																
	FB	1																
	R	1																
	L	1																
	D	1																
M	R	1																

\* Key for all components listed (function/type)

- F = Filter
- FB = Coalescing Filter
- FCA = Activated Carbon Filter
- R = Regulator
- L = Lubricator
- D = Filter-Regulator Combo Unit
- FR = Filter-Regulator Combo Unit
- V01 = Isolation Valve with Manual Command

- (Manual Lock-Out/Tag-Out)
- V16 = Electropneumatic Isolation Valve (Shut-Off, Solenoid Pilot)
- V36 = Pneumatic Isolation Valve (Shut-Off, Air-Pilot)
- AV = Soft Start Valve
- B = Take-Off Block
- M = Manifold Regulator
- AV.P = Shut-Off Valve and Soft-Start Valve Combo







Characteristics of identification			Filtering Element					Draining of condensate					Bowl Type			Version			Command	
Series	Func. /type <sup>3)</sup>	Size/ Dim.	0.01 μm	5 μm	25 μm	1 μm	Active Carbon	Manual - Semi-automatic	Automatic "Float Drain"	Depressurization "Spitter"	Depressurization protected "Spitter with Filter"	Port 1/8 (no drain)	metallic bowl / Bowl guard	normal bowl	small bowl	W/ Check-Valve	W/O Check-Valve	Manual Lockable	Electro-pneum.	Pneum.
MC	F	1																		
		2																		
	FB	1																		
		2																		
	R	1																		
		2																		
	L	1																		
		2																		
	D	1																		
		2																		
	V01	1																		
		2																		
	V16	1																		
		2																		
	V36	1																		
		2																		
AV	1																			
	2																			
B	1																			
	2																			
M	1																			
MD	F																			
	FC																			
	FCA																			
	R																			
	L																			
	FR																			
	V01																			
	V16																			
	V36																			
	AV																			
	B																			
M																				
MX	F	2,3																		
	FB	2,3																		
	R	2,3																		
	L	2,3																		
	D	2,3																		
	V00	2,3																		
	AV	2,3																		
	V16	2,3																		
	V36	2,3																		
N	F	1																		
	FB	1																		
	R	1																		
	L	1																		
	D	1																		
M	R	1																		





# 1 Non-Modular FRL Series N 1/8" & 1/4" NPTF

Page

Series N		Summary and Features	<b>21</b>
Series N <b>NEW</b>		Filter and Coalescing Filter	<b>23</b>
Series N		Pressure Regulator	<b>26</b>
Series N <b>NEW</b>		Lubricator	<b>28</b>
Series N <b>NEW</b>		Filter/Regulator	<b>30</b>
Series N and M		Accessories	<b>32</b>

NON-MODULAR FRL SERIES N

# Summary and Features

Series M, N & T FRL 1/8" & 1/4" NPTF

## Regulator

- Four Pressure Range Options
- Relieving, Non-Relieving & High Response Diaphragm Options
- Factory Pressure Presets Available
- Tamper-Proof Available
- Locking, Non-Rising Knob Standard
- Front & Rear Gauge Ports
- Convertible To "Piggy-Back" Filter/Reg Combo (Series N Only)



Pressure microregulator  
Series T



Pressure microregulator  
Series M



## Optional Gauges

- Various Pressure Ranges Available
- Panel-Mount Nut Standard



## Filter

- Coalescing, 5 & 25 Micron Elements Available
- Threaded Bowl Design
- Grilamid (Nylon Composite) Bowl Standard
- Four Drain Options Available
- Available In "Piggy-Back" Filter-Regulator Combos



**Lubricator**

- Venturi Design With 2 Micron Drop Size
- Flow Adjustment Built Into Droplet Indicator
- Threaded Bowl Design With O-Ring Seal
- Grilamid (Nylon Composite) Bowl Material

**Optional Wallmount Brackets**

- Rotatable 90° for Panel Mounting Assembly


**Standard Features**

- Inlet Pressure 0.3 - 16 Bar (4.25 - 232 Psi)
- Operating Temp -5° C - 50° C, (23° F - 122° F), With Dew Point Of Air At Least 2° C (4° F) Below The Min Working Temperature
- Custom Assemblies Available From Mckinney, Tx
- Low Temp Versions Available (-23° C/-90° F, With Dew Point 2° Below Operating Temperature)
- Nickel-Plated Brass Construction On Bodies
- Grilamid (Nylon Composite) Bowls Available In 0.5 Oz & 1.0 Oz Sizes For Filters And Lubricators
- Versatile Mounting: Stand-Alone, Panel-Mount, Or Pipe-Nipple
- Single Part Number System For Standard Pre-Assemblies From Mckinney, Tx

# Filter and Coalescing Filter Series N


**New**

Ports 1/8", 1/4" NPTF  
with threaded transparent bowl (Nylon PA12) or nickel-plated brass bowl for  
the small version (N1)


**New Metal Bowl Option**


The Series N filter is available with 1/8" and 1/4" NPTF ports.

The bowl, which is transparent (Nylon PA12), makes monitoring of the condensate levels very easy and is equipped with manual and automatic drain (plus 3 new drain options).

The metal bowl version is suitable for applications subject to impacts or in the presence of aggressive agents that could attack the PA12 bowl.

The models are available with 4 different filtering elements: 25µm, 5µm and 0.01µm and activated carbon.

## TECHNICAL SPECIFICATIONS

Construction	HDPE filtering element
Materials	Nickel-Plated brass body, Buna-N seals, Nylon PA12 bowl, brass internals, filtering element in HDPE
Threaded ports	1/8", 1/4" NPTF
Max. condensate capacity	Size 1 = .4 oz Size 2 = 1 oz
Weight	Kg 0.220 = .5 lbs
Type of mounting	Vertical, in-line
Operating temperature	-5°C - 50°C, (23°F - 122°F), with Dew Point of air at least 2°C (4°F) below the min working temperature
Delivered air quality (ISO 8573-1: 2010)	25 um element = Class 7.8.4 5 um element = Class 6.8.4 0.01 um element = Class 1.8.1 Activated carbon = Class 1.7.1
Draining of condensate	Standard semiautomatic/manual; see code key for options

## PNEUMATIC DATA

Operating pressure	0.3 – 16 bar (4.35 psi - 232 psi) (Maximum pressure 10 bar/145 psi with depressurization drains)
Nominal flow	See chart

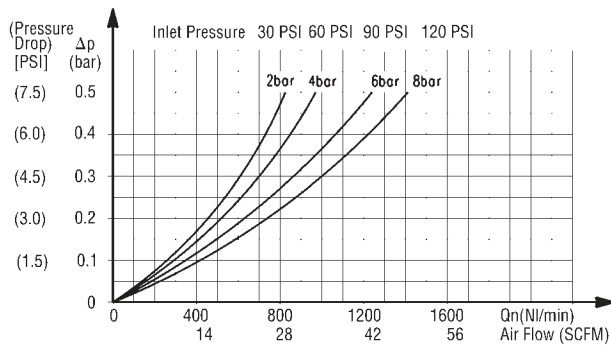
**CODING EXAMPLE**

N	2	04	-	F	0	0	-	TM	TF
---	---	----	---	---	---	---	---	----	----

<b>N</b>	SERIES
<b>2</b>	SIZE 1 = small bowl (0.4 ounces) 2 = normal bowl (1 ounce)
<b>04</b>	PORTS: 08 = 1/8" 04 = 1/4"
<b>F</b>	FILTER
<b>0</b>	FILTERING ELEMENT 0 = 25µm 1 = 5µm B = 0.01µm, coalescing type CA = activated carbon (without drain, normal bowl size 2)
<b>0</b>	DRAINING OF CONDENSATE: 0 = manual - semiautomatic 4 = depressurization ("spitter type") - only normal bowl (Size 2) 5 = depressurization, filtered drain orifice - only normal bowl (Size 2) 8 = port 1/8" female (free flow) Condensate drains (see Accessories section at back of catalog)
<b>TM</b>	BOWL MATERIAL Blank = transparent Nylon PA12 TM = nickel-plated brass bowl (only in small size 1 with semi-auto drain or no drain)
<b>TF</b>	PORT TF = NPTF Blank = BSPP thread ports

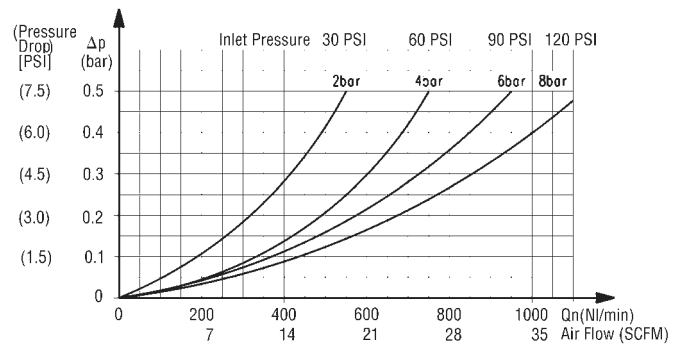
**FLOW DIAGRAMS**

**N204-F00TF**



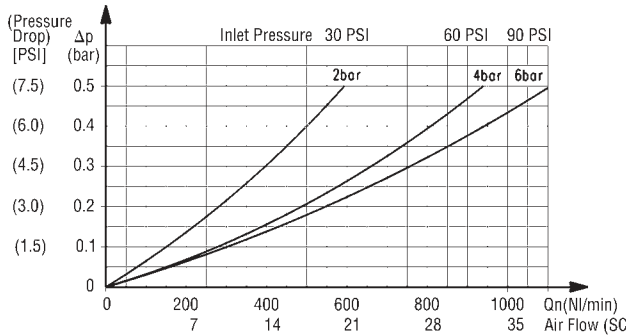
Pa = Inlet pressure  
ΔP = Pressure Drop  
Qn = Flow

**N204-F10TF**



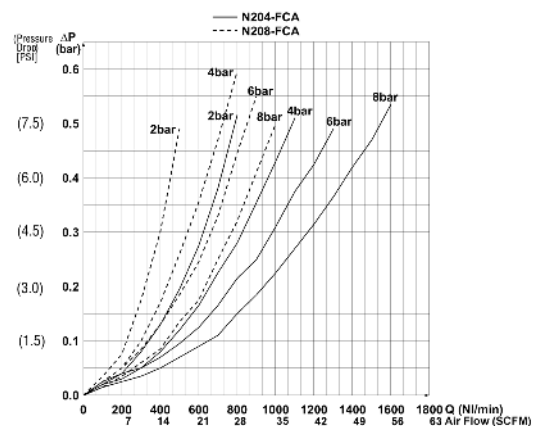
Pa = Inlet pressure  
ΔP = Pressure Drop  
Qn = Flow

**N204-FB0TF**

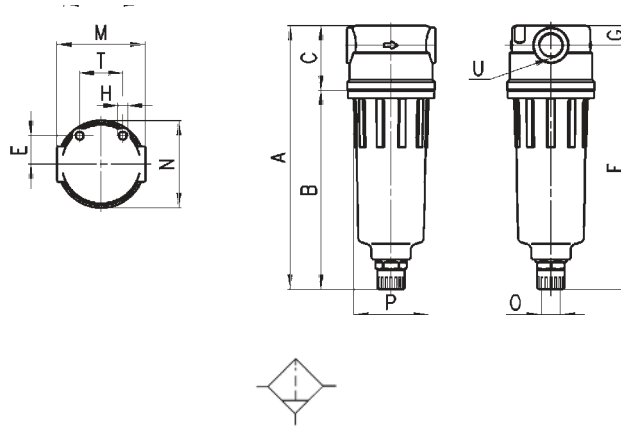


Pa = Inlet pressure  
ΔP = Pressure Drop  
Qn = Flow

**N204-FCATF**



Filters Series N



DIMENSIONS (in inches)													
Mod.	A	B	C	E	F	G	H	M	N	O	P	T	U (NPTF)
N108-F00TF	4.37	3.07	1.299	.570	3.976	.394	M5	1.772	1.751	1/8"	1.496	.866	1/8"
N104-F00TF	4.37	3.07	1.299	.570	3.976	.394	M5	1.772	1.751	1/8"	1.496	.866	1/4"
N208-F00TF	5.315	4.016	1.299	.570	4.921	.394	M5	1.772	1.751	1/8"	1.496	.866	1/8"
N204-F00TF	5.315	4.016	1.299	.570	4.921	.394	M5	1.772	1.751	1/8"	1.496	.866	1/4"

# Pressure Regulator Series N

Ports 1/8", 1/4" NPTF  
Nipple type



The Series N pressure regulator is available with 1/4" and 1/8" NPTF ports.

Its design incorporates a self relieving diaphragm so as to allow incremental adjustments.

This compact regulator may be mounted directly on pipes or onto a console.

## TECHNICAL SPECIFICATIONS

Construction	Diaphragm type - nipple type
Materials	Nickel-Plated brass, brass body, Buna-N seals, Nylon knob, internals in brass
Threaded ports	1/8", 1/4" NPTF
Weight	Kg 0.316 = .7 lbs
Pressure gauge port	1/8" NPTF
Type of mounting	In-line or console (in any position)
Operating temperature	-5° C - 50° C, (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature

## PNEUMATIC DATA

Inlet pressure	0 – 16 bar (0 – 232 psi)
Outlet pressure	0.5 – 10 bar (7.25 – 145 psi), Optional outlet ranges offered
Nominal flow	See graph
Secondary pressure relieving	Standard

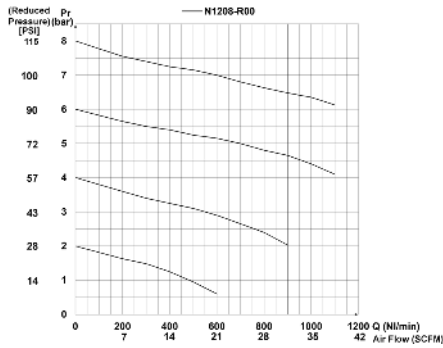
**CODING EXAMPLE**

N	2	04	-	R	0	0	-	■	-	●	TF
<b>N</b>	SERIES										
<b>2</b>	SIZE 1 = small bowl 2 = normal bowl										
<b>04</b>	PORTS: 08 = 1/8" 04 = 1/4"										
<b>R</b>	REGULATOR										
<b>0</b>	OPERATING PRESSURE 0 = 0.5 – 10 bar (7.25 - 145 psi) 1 = 0 – 4 bar (0 - 58 psi) 2 = 0 – 2 bar (0 - 29 psi) 7 = 0.5 – 7 bar (7.25 - 103 psi) T = Calibrated * (adjustable up to a maximum fixed pressure) B = Locked * (fixed at a set pressure; non-adjustable)										
<b>0</b>	DESIGN TYPE 0 = self-relieving diaphragm 1 = non-relieving, diaphragm										
<p>* NOTE : If regulator is "calibrated" or "locked," add the inlet pressure ■ and the outlet pressure ● to the end of the model code.</p> <p>"■" = enter the SUPPLY pressure value (in BAR) "●" = enter the OUTLET pressure (in BAR) for the locked regulator or the maximum pressure value of the calibrated regulator.</p> <p>Example: Calibrated regulator with Inlet Pressure = 6.3 Bar and Outlet Pressure = 4.5 Bar Complete part number: N204-RT0-6,3-4,5TF</p>											
<b>TF</b>	PORT TF = NPTF Blank = BSPP thread ports										

NON-MODULAR FRL SERIES N

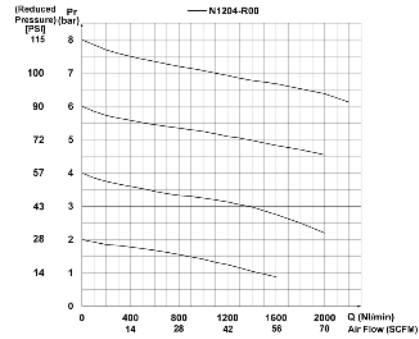
**FLOW DIAGRAMS**

**N208-R00TF, 1/8" Model**



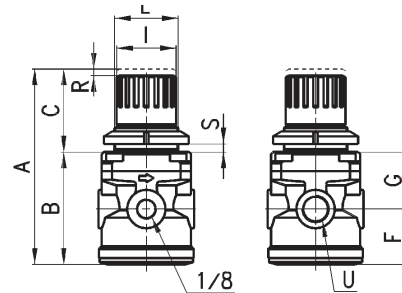
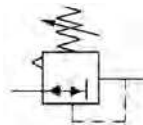
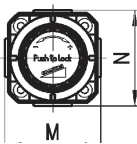
Pa = Inlet pressure  
ΔP = Pressure Drop  
Qn = Flow

**N 204-R00TF, 1/4" Model**



Pa = Inlet pressure  
ΔP = Pressure Drop  
Qn = Flow

**Pressure regulator, Series N**



**DIMENSIONS (in inches)**

Mod.	A	B	C	F	G	I	L	M	N	R	S	U
N208-R00TF	3.622	2.086	1.535	1.023	1.063	1.102	M30x1.5	1.772	1.772	.118	0 - .236	1/8" NPTF
N204-R00TF	3.622	2.086	1.535	1.023	1.063	1.102	M30x1.5	1.772	1.772	.118	0 - .236	1/4" NPTF



# Lubricator Series N

New Version 

Ports 1/8", 1/4" NPTF, Available with transparent Nylon PA12 bowl or nickel-plated brass bowl for the small version (N1)



New Metal Bowl Option



The Series "N" lubricator is available with 1/4" and 1/8" NPTF ports.

The special type of design fulfills a vast range of applications in relation to the amount of oil atomized and the air consumed.

The body of the lubricator is made of Nickel-Plated brass, while the bowl is transparent, (Nylon PA12).

## TECHNICAL SPECIFICATIONS

Construction	Venturi Design
Materials	Nickel-Plated brass, body Buna-N seals, Nylon PA12 or nickel-plated brass , internals in brass
Threaded ports	1/8", 1/4" NPTF
Weight	Kg 0.288 = .63 lbs
Oil capacity	Size 1 = 26 cm <sup>3</sup> (.9 oz) Size 2 = 37 cm <sup>3</sup> (1.28 oz)
Type of mounting	Vertical, in-line
Operating temperature	-5° C - 50° C, (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature
Oil refilling	Without pressure required, can be filled via bowl or cap screw in head
Oil for lubrication	use ISO VG32 oils
Oil consumption	recommendation 1 - 5 drops every 1000 NI of air consumed (35 SCFM) (10 drops = 1cm <sup>3</sup> )
Droplet size	approx. 2µm

## PNEUMATIC DATA

Operating pressure	0 – 16 bar (0 - 232 psi)
Nominal flow	See graph
Minimum air consumption for lubrication	At 1 bar = 7.5 NI/min (14.5 psi = .26 SCFM) At 6 bar = 11 NI/min (87 psi = .38 SCFM)

**CODING EXAMPLE**

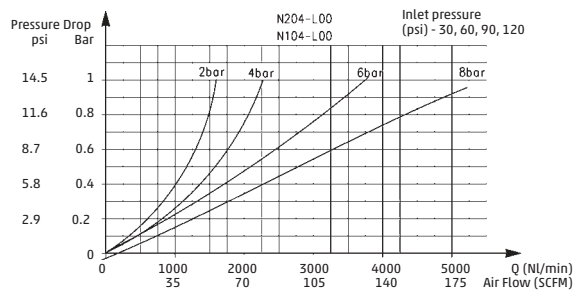
N	2	04	-	L	00	-	TM	TF
---	---	----	---	---	----	---	----	----

<b>N</b>	SERIES
<b>2</b>	SIZE 1 = small bowl (0.9 oz) 2 = normal bowl (1.28 oz)
<b>04</b>	PORTS: 08 = 1/8" 04 = 1/4"
<b>L</b>	LUBRICATOR
<b>00</b>	DESIGN TYPE 00 = atomized oil, approx. 2 microns
<b>TM</b>	BOWL MATERIAL Blank = transparent Nylon PA12 TM = nickel-plated brass bowl (only in small size 1 with semi-auto drain or no drain)
<b>TF</b>	PORT TF = NPTF Blank = BSPP thread ports

NON-MODULAR FRL SERIES N

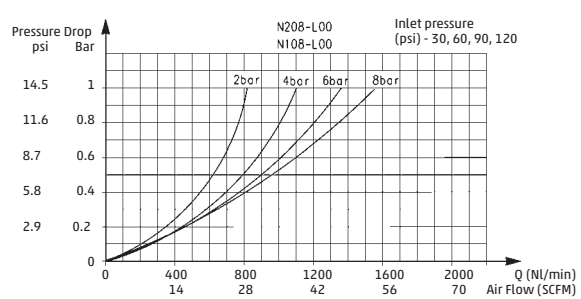
**FLOW DIAGRAMS**

**N204-L00TF - 1/4" Model**



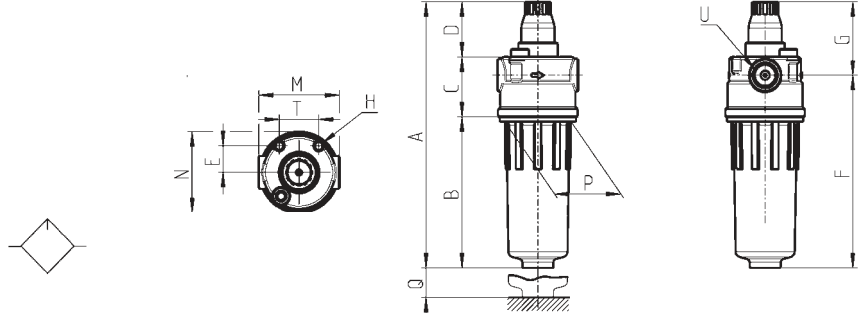
Pa = Inlet pressure  
 $\Delta P$  = Pressure Drop  
 Qn = Flow

**N208-L00TF - 1/8" Model**



Pa = Inlet pressure  
 $\Delta P$  = Pressure Drop  
 Qn = Flow

**Lubricator, Series N**



**DIMENSIONS (in inches)**

Mod.	A	B	C	D	E	F	G	H	M	N	O	P	Q	T	U (NPTF)
N108-L00TF	4.82	2.32	1.29	1.20	.57	2.97	1.57	M5	1.77	1.77	1.75	1.49	1.83	.86	1/8"
N104-L00TF	4.82	2.32	1.29	1.20	.57	2.97	1.57	M5	1.77	1.77	1.75	1.49	1.83	.86	1/4"
N208-L00TF	5.76	3.26	1.29	1.20	.57	4.17	1.57	M5	1.77	1.77	1.75	1.49	1.83	.86	1/8"
N204-L00TF	5.76	3.26	1.29	1.20	.57	4.17	1.57	M5	1.77	1.77	1.75	1.49	1.83	.86	1/4"

# Filter/Regulator Series N

Ports 1/8", 1/4" NPTF

Available with transparent Nylon PA12 bowl or nickel-plated brass bowl for the small version (N1)



The Series N filter/regulator is available with 1/4", 1/8" NPTF ports.

The regulator's design incorporates a self relieving diaphragm.

The filter bowl which is transparent allows easy monitoring of the condensate levels.

There are five (5) total drain options available standard.

## TECHNICAL SPECIFICATIONS

Construction	HDPE and coalescing filtering element
Materials	Nickel-Plated brass body, Buna-N seals, Nylon PA12 or nickel-plated brass, stainless steel spring, filter element in HDPE
Threaded ports	1/8", 1/4" NPTF
Weight	Kg 0.379 = .8 lbs
Oil capacity	Size 1 = 26 cm <sup>3</sup> (.9 oz) Size 2 = 37 cm <sup>3</sup> (1.28 oz)
Pressure gauge port	1/8" NPTF
Type of mounting	Vertical, in-line
Operating temperature	-5° C - 50° C, (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature
Delivered air quality (ISO 8573-1: 2010)	25 um element = Class 7.8.4 5 um element = Class 6.8.4
Draining of condensate	Standard semiautomatic, manual - see Code Key for optional drain styles

## PNEUMATIC DATA

Inlet pressure	0 – 16 bar (0 - 232 psi)
Outlet Pressure	0.5 – 10 bar (7.25 – 145 psi), optional pressure outlet ranges available
Nominal flow	See graph
Secondary pressure relieving	Standard relieving and non-relieving

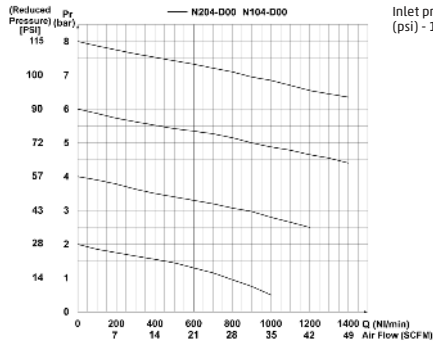
**CODING EXAMPLE**

N	2	04	-	D	0	0	-	TM	TF
---	---	----	---	---	---	---	---	----	----

<b>N</b>	SERIES								
<b>2</b>	SIZE 1 = small bowl (0.4 ounces) 2 = normal bowl (1 ounce)								
<b>04</b>	PORTS: 08 = 1/8" 04 = 1/4"								
<b>D</b>	FILTER-REGULATOR								
<b>0</b>	FILTER DESIGN 0 = 25 µm HDPE element 1 = 5 µm HDPE element Condensate drains (see Accessories section at back of catalog)								
<b>0</b>	DESIGN TYPE / DRAINS TYPE 0 = self-relieving, Manual/Semi-Automatic 1 = non-relieving, Manual/Semi-Automatic 4 = depressurization, self-relieving - "spitter type" (Sz bowl 2 ONLY) 5 = depressurization, protected with relieving, "spitter-type w/ filtered drain orifice" (Sz 2 bowl ONLY) 8 = port 1/8 female thread, self-relieving								
	OPERATING PRESSURE (bar) Blank = 0.5 - 10 (7.25 - 145 psi)      4 = 0 - 4 (0 - 58 psi) 2 = 0 - 2 (only 1/4") (0 - 29 psi)      7 = 0.5 - 7 (only 1/4") (7.25 - 103 psi)								
<b>TM</b>	BOWL MATERIAL Blank = transparent Nylon PA12 TM = nickel-plated brass (only in the small Size 1)								
<b>TF</b>	PORT TF = NPTF Blank = BSPP thread ports								

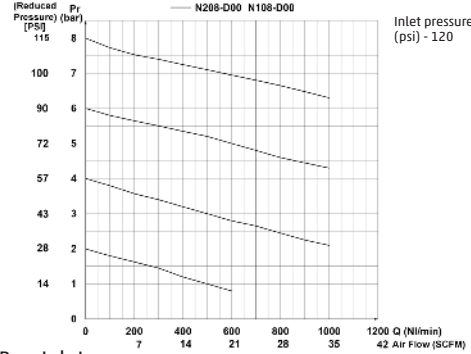
**FLOW DIAGRAMS**

**N204-D00TF**



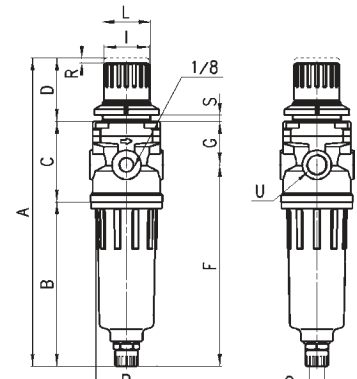
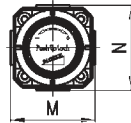
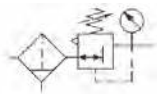
Pa = Inlet pressure  
Pr = Regulated pressure  
Qn = Flow

**N208-D00TF**



Pa = Inlet pressure  
Pr = Regulated pressure  
Qn = Flow

**Filter/regulator, Series N**



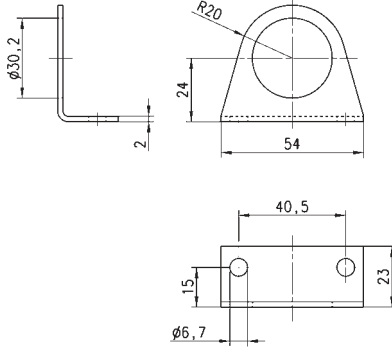
**DIMENSIONS (IN INCHES)**

Mod.	GAUGE PORT										OUTLET PORT U				
	A	B	C	D	F	G	I	L	M	N		O	P	R	S
N108-D00TF	6.574	3.070	1.968	1.535	3.976	1.063	1.102	M30x1.5	1.772	1.772	1/8" NPTF	1.496	.118	0 - .236	1/8" NPTF
N104-D00TF	6.574	3.070	1.968	1.535	3.976	1.063	1.102	M30x1.5	1.772	1.772	1/8" NPTF	1.496	.118	0 - .236	1/4" NPTF
N208-D00TF	7.519	4.016	1.968	1.535	4.921	1.063	1.102	M30x1.5	1.772	1.772	1/8" NPTF	1.496	.118	0 - .236	1/8" NPTF
N204-D00TF	7.519	4.016	1.968	1.535	4.921	1.063	1.102	M30x1.5	1.772	1.772	1/8" NPTF	1.496	.118	0 - .236	1/4" NPTF

# Accessories for Series N and M

## Mounting bracket, Series MC-M-N-T

Mounting bracket for Regulators and Filter-Regulators (1/8 & 1/4) - zinc-plated steel bracket

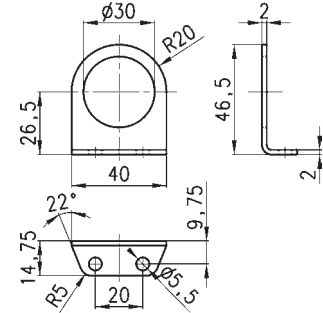


Mod.

C114-ST

## Mounting bracket, Series MC-M-N-T

Mounting bracket for Regulators and Filter-Regulators (1/8 & 1/4) - zinc-plated steel bracket

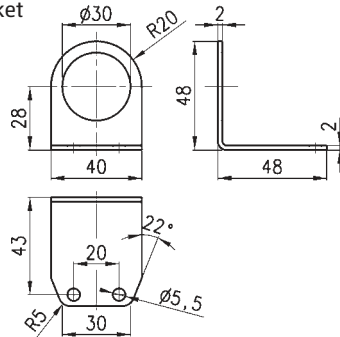


Mod. (dimensions in mm)

C114-ST/1

## Mounting bracket Series MC-M-N-T

Mounting bracket for Regulators and Filter-Regulators, (1/8 & 1/4) - zinc-plated steel bracket

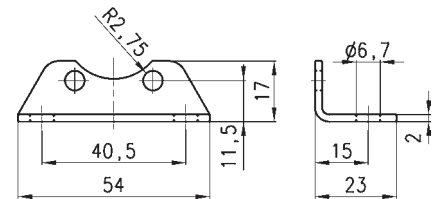


Mod. (dimensions in mm)

C114-ST/2

## Mounting bracket Series Series N

Mounting bracket (for N204 Filters and Lubricators) (complete with 2 screws M5x6 and bracket, zinc-plated steel).

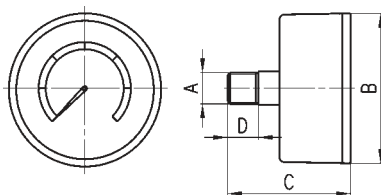


Mod. (dimensions in mm)

N204-ST

## Pressure gauges Mod. M043-P04TF (0 - 60 psi)

Nominal face size 1 1/2"

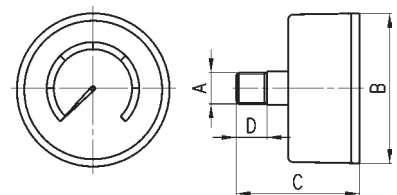


DIMENSIONS (in inches)

Mod.	A	B	C	D
M043-P04TF	1/8" NPTF	1.655	1.600	0.950

## Pressure gauges Mod. M043-P10TF (0 - 160 psi)

Nominal face size 1 1/2"



DIMENSIONS (in inches)











Mod.	A	B	C	D
M043-P10TF	1/8" NPTF	1.655	1.600	0.950



New Series

Page

## 2 Modular FRL Series MD, 1/8" & 1/4" NPTF

Series MD <b>NEW</b>		Filters	<b>35</b>
Series MD <b>NEW</b>		Coalescing Filters	<b>40</b>
Series MD <b>NEW</b>		Activated Carbon Filters	<b>45</b>
Series MD <b>NEW</b>		Pressure Regulators	<b>49</b>
Series MD <b>NEW</b>		Lubricators	<b>54</b>
Series MD <b>NEW</b>		Filter-Regulators	<b>58</b>
Series MD <b>NEW</b>		Lockable Isolation 3/2-way Valves	<b>62</b>
Series MD <b>NEW</b>		Soft Start Valves	<b>68</b>
Series MD <b>NEW</b>		Take-off Blocks	<b>71</b>
Series MD <b>NEW</b>		FRL Assemblies	<b>78</b>

MODULAR FRL SERIES MD

# Filters Series MD


  
New

Ports with Interchangeable cartridges: Threaded (1/8, 1/4, 3/8 NPTF or BSPP) or with push-in fitting for tube sizes  $\varnothing$  1/4", 5/16", 3/8", 6mm, 8mm, or 10mm.

Modular assembly

Bayonet style bowl with technopolymer guard



- » Removal of impurities and condensate
- » Element replacement, visual indicator option
- » Semi-automatic manual or depressurizing condensate drain
- » Version with open drain and 1/8 port
- » Bowl locking system reducing the risk of accidents
- » Additional 1/8" ports on the front and back of each unit provide filtered air

The Series MD air treatment product line is characterized by a clean and modern design as well as high performance. The technopolymer construction enables efficient manufacturing and a lightweight, yet durable product.

The innovative cartridge fitting design of the Series MD facilitates interchangeable port connection. The port cartridges may be female threaded or push-in fittings in various sizes from 1/8" to 3/8". Each module also features additional 1/8" air outlets on the front and back sides. This inlet can be used by components with limited consumption requirements.

## GENERAL DATA

Construction	modular, compact with filtering element in HDPE
Materials	see following page
Ports	with interchangeable cartridges: 1/8, 1/4 and 3/8 NPTF or BSP threaded or integrated with push-in fitting for tube with $\varnothing$ 6mm, 8mm, 10mm, 1/4", 5/16" and 3/8"
Condensate capacity	24 cc
Mounting	vertical in-line; wall-mounting by means of through holes in the body or with a support bracket
Operating temperature	23°F - 122°F / -5°C - 50°C
Condensate drain	semi-automatic manual (standard); depressurization, protected; without drain with G1/8 port
Delivered air quality (ISO 8573-1: 2010)	Class 6.8.4 with 5 $\mu$ m filtering element Class 7.8.4 with 25 $\mu$ m filtering element
Operating pressure	4 - 232 psi / 0.3 - 16 bar
Nominal flow	see FLOW DIAGRAMS on the following pages
Fluid	compressed air



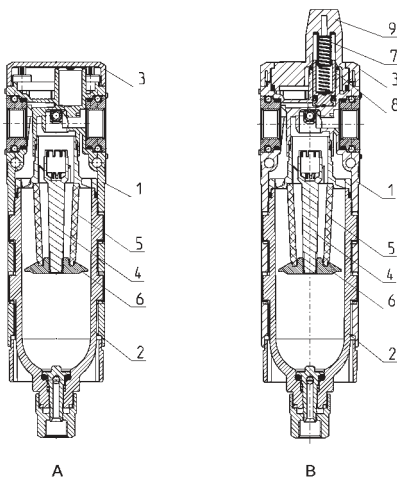
**CODING EXAMPLE**

MD	1	-	F	0	0	0	-	1/8TF
----	---	---	---	---	---	---	---	-------

<b>MD</b>	SERIES
<b>1</b>	DIMENSION: 1 = 42 mm
<b>F</b>	FILTER
<b>0</b>	FILTERING ELEMENT: 0 = 25 µm 1 = 5 µm
<b>0</b>	CONDENSATE DRAIN: 0 = semiautomatic-manual 5 = depressurization, protected 8 = with open drain, with G1/8 port
<b>0</b>	ELEMENT REPLACEMENT VISUAL INDICATOR: 0 = not present 1 = present
<b>1/8</b>	PORTS (IN - OUT)*: = without ports 6 = tube Ø6      04TF = tube Ø1/4" 8 = tube Ø8      05TF = tube Ø5/16" 10 = tube Ø10    06TF = tube Ø3/8" 1/8 = G1/8 Thread    1/8TF = 1/8 NPTF 1/4 = G1/4 Thread    1/4TF = 1/4 NPTF 3/8 = G3/8 Thread    3/8TF = 3/8 NPTF  * NOTE: if the inlet port is different from the outlet port, both values shall be indicated. Example: MD1-F000-1/8-1/4

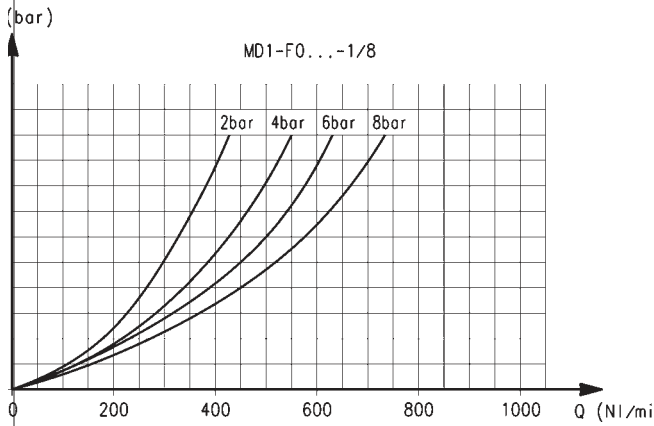
**Filters Series MD - materials**

A = filter  
B = filter with element replacement visual indicator



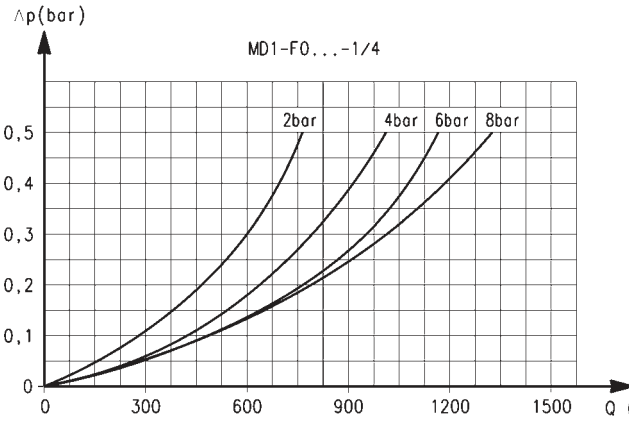
PARTS	MATERIALS
1 = Body	Polyamide
2 = Guide	Polycarbonate
3 = Guard	Polyamide
4 = Valve-guide	Polyacetal
5 = Filtering element	Polyethylene
6 = Separation deflector	Polyacetal
7 = Upper spring	Stainless steel
8 = Piston	Anodized aluminium
9 = Element replacement visual indicator	Polycarbonate
Seals	NBR

FLOW DIAGRAMS for models with 25 µm filtering element



Ports with interchangeable 1/8 threaded cartridges

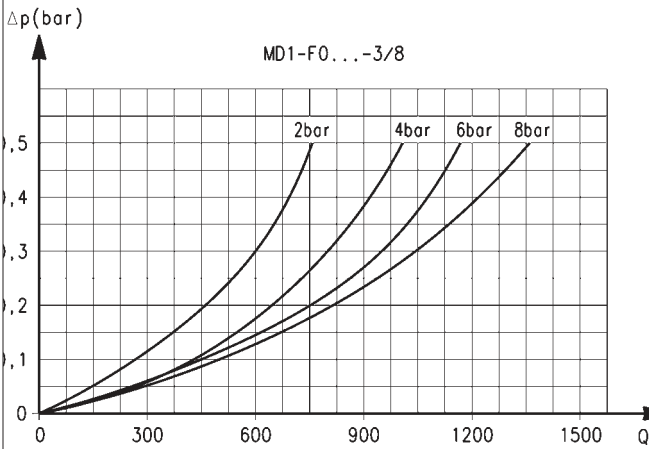
$\Delta p$  = Pressure drop  
Q = Flow



Ports with interchangeable 1/4 threaded cartridges

$\Delta p$  = Pressure drop  
Q = Flow

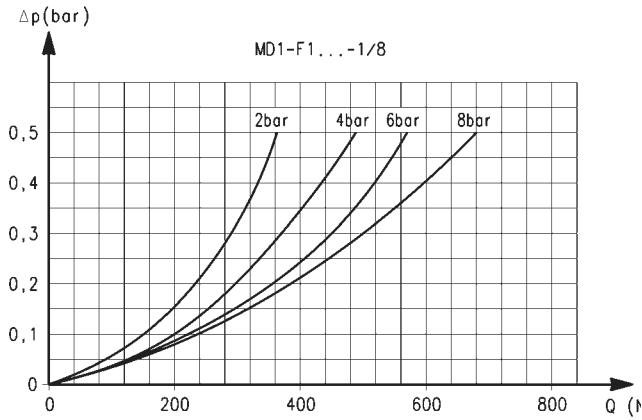
FLOW DIAGRAMS for models with 25 µm filtering element



Ports with interchangeable 3/8 threaded cartridges

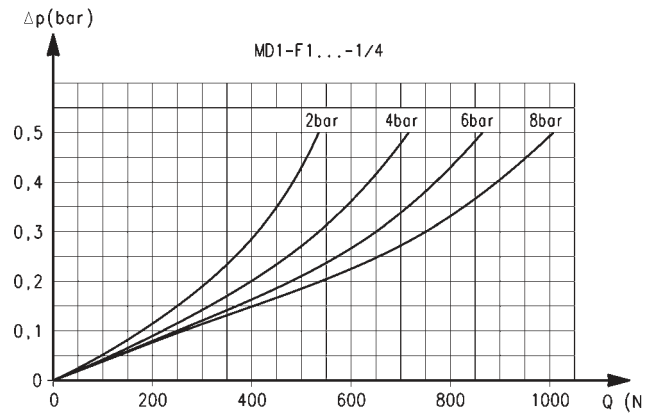
$\Delta p$  = Pressure drop  
Q = Flow

**FLOW DIAGRAMS for models with 5 µm filtering element**



Ports with interchangeable 1/8 threaded cartridges

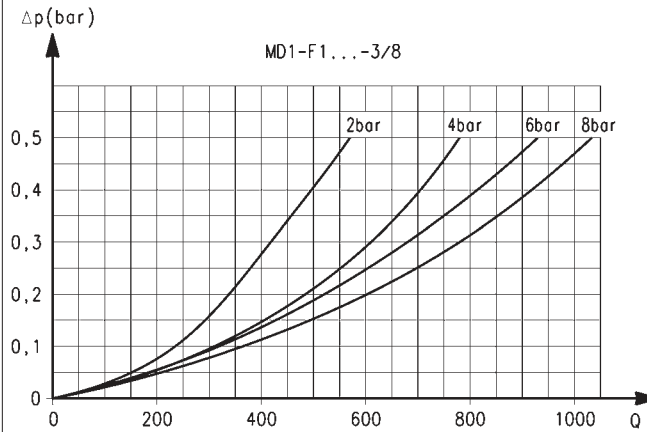
Δp = Pressure drop  
Q = Flow



Ports with interchangeable 1/4 threaded cartridges

Δp = Pressure drop  
Q = Flow

**FLOW DIAGRAMS for models with 5 µm filtering element**



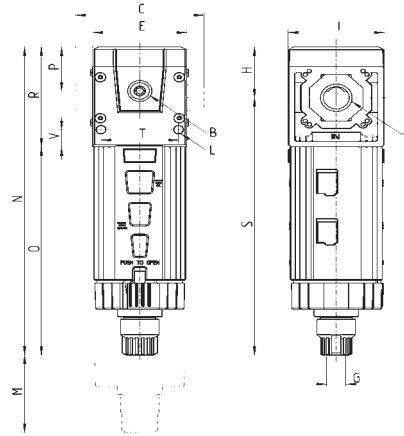
Ports with interchangeable 3/8 threaded cartridges

Δp = Pressure drop  
Q = Flow

Series MD filters - dimensions



FT01 = filter with open drain and threaded port  
 FT02 = filter with semiautomatic manual drain  
 FT03 = filter with automatic or depressurizing drain



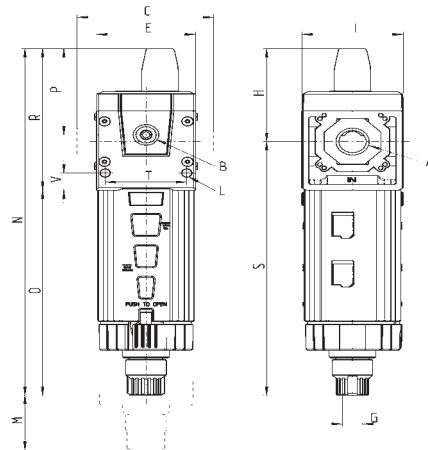
DIMENSIONS

Mod.	A	B	C	E	G	H	I	L	M	N	O	P	R	S	T	V	Weight (Kg)
MD1-F000	-	G1/8	42	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-F000-1/8TF	1/8 NPTF	G1/8	42	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-F000-1/4TF	1/4 NPTF	G1/8	49	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-F000-3/8TF	3/8 NPTF	G1/8	49	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-F000-Ø4TF	Ø1/4"	G1/8	59	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-F000-Ø5TF	Ø5/16"	G1/8	62	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-F000-Ø6TF	Ø3/8"	G1/8	67	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-F000-1/8	G1/8	G1/8	42	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-F000-1/4	G1/4	G1/8	42	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-F000-3/8	G3/8	G1/8	42	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-F000-6	Ø6	G1/8	59	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-F000-8	Ø8	G1/8	62	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-F000-10	Ø10	G1/8	67	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2

Series MD filters with element replacement visual indicator - dimensions



FT01 = filter with open drain and threaded port  
 FT02 = filter with semiautomatic manual drain  
 FT03 = filter with automatic or depressurizing drain



DIMENSIONS

Mod.	A	B	C	E	G	H	I	L	M	N	O	P	R	S	T	V	Weight (Kg)
MD1-F001	-	G1/8	42	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-F001-1/8TF	1/8 NPTF	G1/8	42	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-F001-1/4TF	1/4 NPTF	G1/8	49	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-F001-3/8TF	3/8 NPTF	G1/8	49	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-F001-Ø4TF	Ø1/4"	G1/8	59	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-F001-Ø5TF	Ø5/16"	G1/8	62	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-F001-Ø6TF	Ø3/8"	G1/8	67	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-F001-1/8	G1/8	G1/8	42	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-F001-1/4	G1/4	G1/8	42	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-F001-3/8	G3/8	G1/8	42	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-F001-6	Ø6	G1/8	59	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-F001-8	Ø8	G1/8	62	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-F001-10	Ø10	G1/8	67	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2

# Coalescing Filters Series MD

New

Ports with Interchangeable cartridges: Threaded (1/8, 1/4, 3/8 NPTF or BSPP) or with push-in fitting for tube sizes Ø 1/4", 5/16", 3/8", 6mm, 8mm, or 10mm.

Modular assembly

Bayonet style bowl with technopolymer guard



The coalescing filter is a fine oil separator filter that removes the solids with dimensions from 0.1 to 5 µm and oil vapors with a concentration from 0.01 to 0.1 mg/m<sup>3</sup>. For a proper functioning they require a pre-filtering. It is recommended that filter element be replaced at least every 12 months or 8000 working hours.

The innovative cartridge fitting design of the Series MD facilitates interchangeable port connection. The port cartridges may be female threaded or push-in fittings in various sizes from 1/8" to 3/8". Each module also features additional 1/8" air outlets on the front and back sides.

- » High performance and high purity compressed air
- » Air quality according to ISO 8573-1:2010 standard, Class 1.8.1 and Class 2.8.2
- » Element replacement, visual indicator option
- » Semi-automatic manual or depressurizing condensate drain
- » Version with open drain and 1/8 port
- » Bowl locking system reducing the risk of accidents
- » Additional 1/8" ports on the front and back of each unit provide filtered air.

MODULAR FRL SERIES MD

## GENERAL DATA

Construction	modular, compact with filtering element in borosilicate	
Materials	see following page	
Ports	with interchangeable cartridges: 1/8, 1/4 and 3/8 NPTF or BSP threaded or integrated with push-in fitting for tube with Ø 6mm, 8mm, 10mm, 1/4", 5/16" and 3/8"	
Condensate capacity	24 cc	
Mounting	vertical in-line; wall-mounting by means of through holes in the body or with a support bracket	
Operating temperature	23°F - 122°F / -5°C - 50°C	
Condensate drain	semi-automatic manual (standard); depressurization, protected; without drain with G1/8 port	
Delivered air quality (ISO 8573-1: 2010)	Class 2.8.2 with 1 µm filtering element (pre-filtering with Class 6.8.4 is recommended) Class 1.8.1 with 0.01 µm filtering element (pre-filtering with Class 2.8.2 is recommended)	
Operating pressure	4 - 232 psi / 0.3 - 16 bar	
Nominal flow	see FLOW DIAGRAMS on the following pages	
Oil retain efficiency	99,80% (0.01µm)	97% (1µm)
Particles retain efficiency	99,99999% (0.01µm)	99,999% (1µm)
Fluid	compressed air	

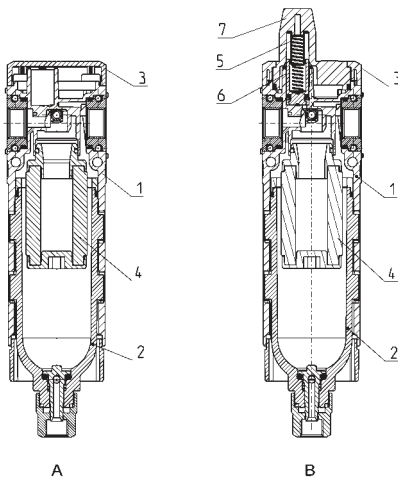
CODING EXAMPLE

MD	1	-	FC	0	0	0	-	1/8TF
----	---	---	----	---	---	---	---	-------

<b>MD</b>	SERIES
<b>1</b>	DIMENSION: 1 = 42 mm
<b>FC</b>	COALESCING FILTER
<b>0</b>	FILTERING ELEMENT: 0 = 0,01 µm 1 = 1 µm
<b>0</b>	CONDENSATE DRAIN: 0 = semiautomatic-manual 5 = depressurization, protected 8 = with open drain and G1/8 port
<b>0</b>	ELEMENT REPLACEMENT VISUAL INDICATOR: 0 = not present 1 = present
<b>1/8</b>	PORTS (IN - OUT)*: = without ports 6 = tube Ø6      04TF = tube Ø1/4" 8 = tube Ø8      05TF = tube Ø5/16" 10 = tube Ø10    06TF = tube Ø3/8" 1/8 = G1/8 Thread    1/8TF = 1/8 NPTF 1/4 = G1/4 Thread    1/4TF = 1/4 NPTF 3/8 = G3/8 Thread    3/8TF = 3/8 NPTF  * NOTE: if the inlet port is different from the outlet port, both values shall be indicated. Example: MD1-FCA0-1/8-1/4

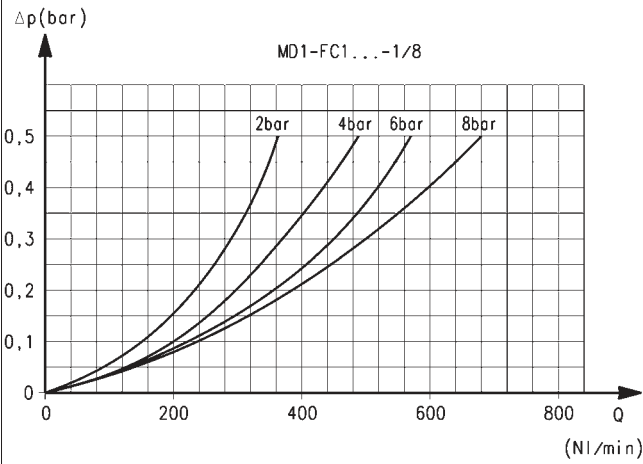
Series MD coalescing filters - materials

A = filter  
B = filter with element replacement visual indicator



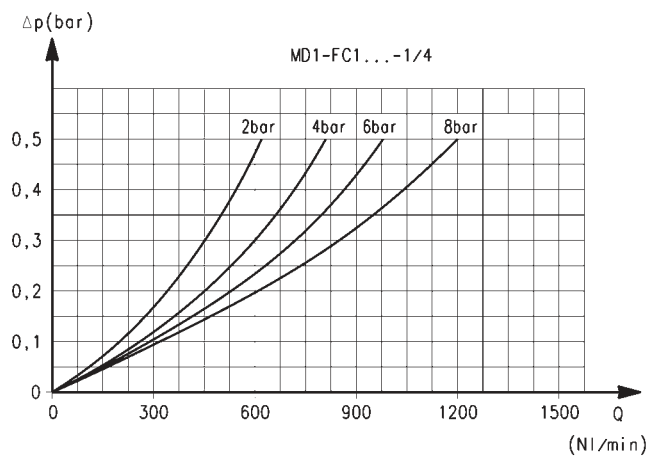
PARTS	MATERIALS
1 = Body	Polyamide
2 = Guide	Polycarbonate
3 = Guard	Polyamide
4 = Filtering element	Borosilicate
5 = Upper spring	Stainless steel
6 = Piston	Anodized aluminium
7 = Element replacement, visual indicator	Polycarbonate
Seals	NBR

**FLOW DIAGRAMS for models with 1 µm filtering element**



Ports with interchangeable 1/8 threaded cartridges

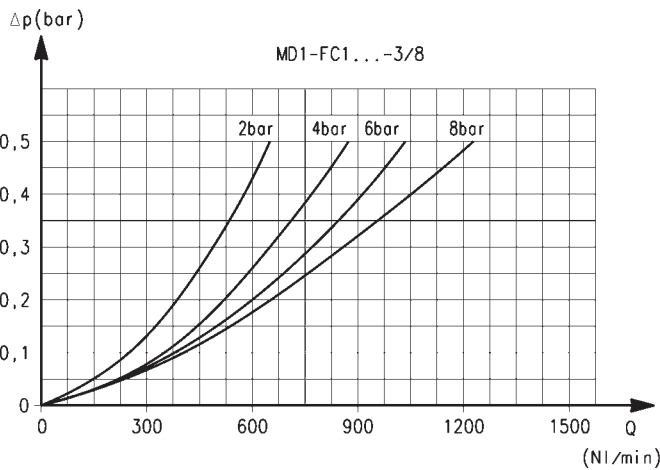
Δp = Pressure drop  
Q = Flow



Ports with interchangeable 1/4 threaded cartridges

Δp = Pressure drop  
Q = Flow

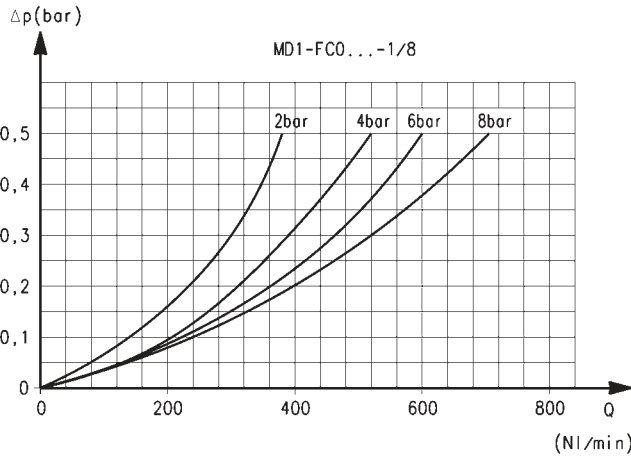
**FLOW DIAGRAMS for models with 1 µm filtering element**



Ports with interchangeable 3/8 threaded cartridges

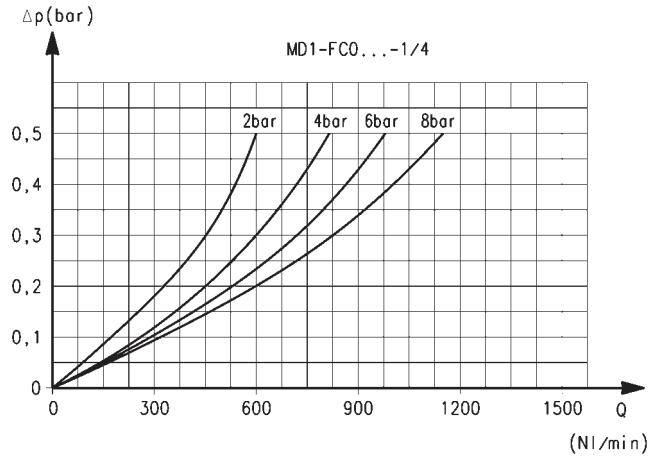
Δp = Pressure drop  
Q = Flow

FLOW DIAGRAMS for models with 0.01 µm filtering element



Ports with interchangeable 1/8 threaded cartridges

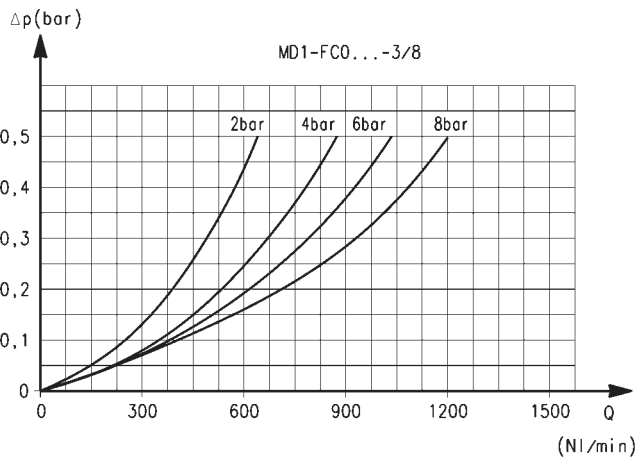
Δp = Pressure drop  
Q = Flow



Ports with interchangeable 1/4 threaded cartridges

Δp = Pressure drop  
Q = Flow

FLOW DIAGRAMS for models with 0.01 µm filtering element



Ports with interchangeable 3/8 threaded cartridges

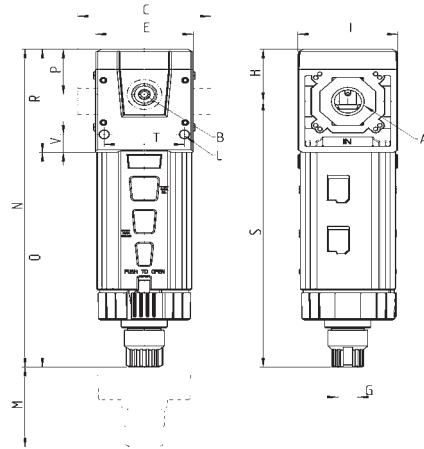
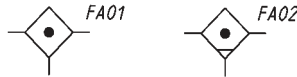
Δp = Pressure drop  
Q = Flow



Series MD coalescing filters - dimensions



FA01 = coalescing filter with open drain and threaded port  
 FA02 = coalescing filter with semi-automatic manual drain  
 FA03 = coalescing filter with automatic or depressurizing drain



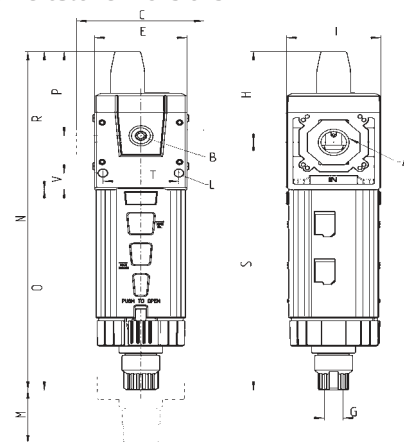
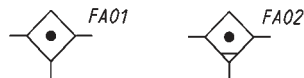
DIMENSIONS

Mod.	A	B	C	E	G	H	I	L	M	N	O	P	R	S	T	V	Weight (Kg)
MD1-FC000	-	G1/8	42	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-FC000-1/8TF	1/8 NPTF	G1/8	42	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-FC000-1/4TF	1/4 NPTF	G1/8	49	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-FC000-3/8TF	3/8 NPTF	G1/8	49	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-FC000-04TF	Ø1/4"	G1/8	59	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-FC000-05TF	Ø5/16"	G1/8	62	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-FC000-06TF	Ø3/8"	G1/8	67	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-FC000-1/8	G1/8	G1/8	42	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-FC000-1/4	G1/4	G1/8	42	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-FC000-3/8	G3/8	G1/8	42	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-FC000-6	Ø6	G1/8	59	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-FC000-8	Ø8	G1/8	62	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2
MD1-FC000-10	Ø10	G1/8	67	42	G1/8	26.2	43	Ø4	90	159.4	107.7	22.7	51.7	133.2	34.6	9	0.2

Series MD coalescing filters with element replacement visual indicator dimensions



FA01 = coalescing filter with open drain and threaded port  
 FA02 = coalescing filter with semi-automatic manual drain  
 FA03 = coalescing filter with automatic or depressurizing drain



DIMENSIONS

Mod.	A	B	C	E	G	H	I	L	M	N	O	P	R	S	T	V	Weight (Kg)
MD1-FC001	-	G1/8	42	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-FC001-1/8TF	1/8 NPTF	G1/8	42	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-FC001-1/4TF	1/4 NPTF	G1/8	49	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-FC001-3/8TF	3/8 NPTF	G1/8	49	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-FC001-04TF	Ø1/4"	G1/8	59	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-FC001-05TF	Ø5/16"	G1/8	62	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-FC001-06TF	Ø3/8"	G1/8	67	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-FC001-1/8	G1/8	G1/8	42	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-FC001-1/4	G1/4	G1/8	42	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-FC001-3/8	G3/8	G1/8	42	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-FC001-6	Ø6	G1/8	59	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-FC001-8	Ø8	G1/8	62	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2
MD1-FC001-10	Ø10	G1/8	67	42	G1/8	48.7	43	Ø4	90	181.9	107.7	45.2	74.2	133.2	34.6	9	0.2

# Activated Carbon Filters Series MD

New

Ports with Interchangeable cartridges: Threaded (1/8, 1/4, 3/8 NPTF or BSPP) or with push-in fitting for tube sizes  $\varnothing$  1/4", 5/16", 3/8", 6mm, 8mm, or 10mm.

Modular assembly

Bayonet style bowl with technopolymer guard



- » Removal of oil, liquid and gas components from compressed air through active carbon
- » Air quality in compliance with ISO 8573-1 standard, Class 1.7.1
- » Visual filter element replacement indicator option
- » Bowl locking system reducing the risk of accidents
- » Additional 1/8" ports on the front and back of each unit provide filtered air

Placement of activated carbon filters downstream of mechanical filters is critical to retain carbon filter performance. Given the characteristics of this filter, it is recommended to replace the filter element every 6 months or 1000 working hours at minimum.

The operating principle is based on the adsorption characteristic of activated carbon which is composed of extremely porous fibers placed on different layers. These fibers create a cross-linked matrix which are able to adsorb contaminants in the air, for example oil vapors/smoke, as well as odors generated from these contaminants.

## GENERAL DATA

Construction	modular, compact with activated carbon filtering element
Materials	see following page
Ports	With interchangeable cartridges: 1/8, 1/4 and 3/8 NPTF or BSP threaded or integrated with push-in fitting for tube with $\varnothing$ 6mm, 8mm, 10mm, 1/4", 5/16" and 3/8"
Mounting	vertical in-line; wall-mounting by means of through holes in the body or with a support bracket
Operating temperature	10°F - 104°F / 10°C - 40°C (t max = 140°F / 60°C)
Condensate drain	NOT PRESENT
Delivered air quality (ISO 8573-1: 2010)	Class 1.7.1 (pre-filtering in Class 1.8.1 is recommended)
Operating pressure	4 - 232 psi / 0.3 - 16 bar
Nominal flow	see FLOW DIAGRAMS on the following pages
Filtering element	active carbon
Residual oil content	< 0.003 mg/m <sup>3</sup>
Fluid	compressed air

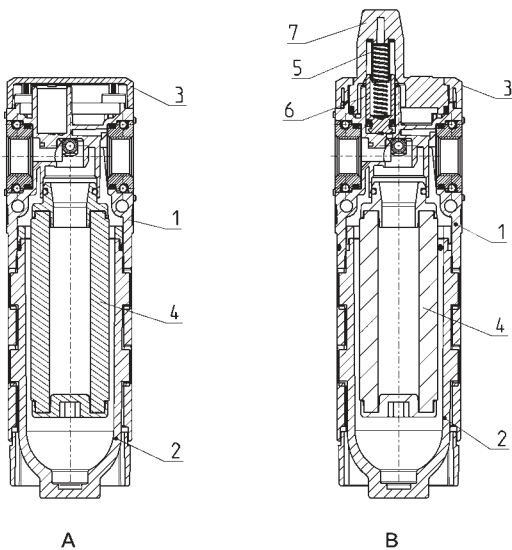
**CODING EXAMPLE**

MD	1	-	FCA	0	-	1/8TF	
----	---	---	-----	---	---	-------	--

<b>MD</b>	SERIES
<b>1</b>	DIMENSION: 1 = 42 mm
<b>FCA</b>	ACTIVATED CARBON FILTER
<b>0</b>	ELEMENT REPLACEMENT VISUAL INDICATOR: 0 = not present 1 = present
<b>1/8</b>	PORTS (IN - OUT)*: = without ports 6 = tube Ø6      04TF = tube Ø1/4" 8 = tube Ø8      05TF = tube Ø5/16" 10 = tube Ø10    06TF = tube Ø3/8" 1/8 = G1/8 Thread    1/8TF = 1/8 NPTF 1/4 = G1/4 Thread    1/4TF = 1/4 NPTF 3/8 = G3/8 Thread    3/8TF = 3/8 NPTF  * NOTE: if the inlet port is different from the outlet port, both values shall be indicated. Example: MD1-FCA0-1/8-1/4

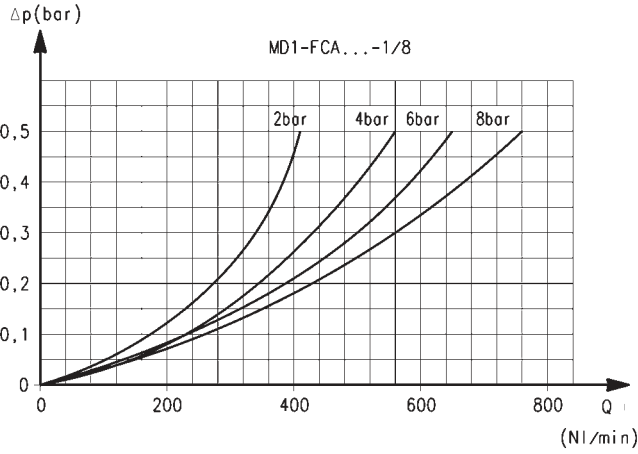
**Series MD activated carbon filters - materials**

A = filter  
B = filter with element replacement visual indicator



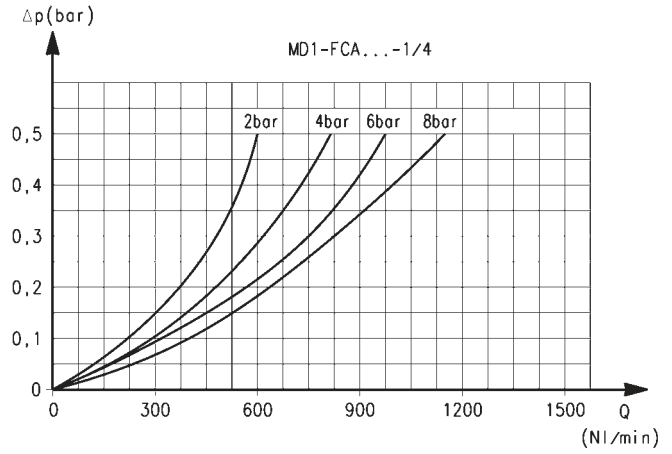
PARTS	MATERIALS
1 = Body	Polyamide
2 = Guide	Polycarbonate
3 = Guard	Polyamide
4 = Filtering element	Active carbons
5 = Upper spring	Stainless steel
6 = Piston	Anodized aluminium
7 = Element replacement visual indicator	Polycarbonate
Seals	NBR

FLOW DIAGRAMS



Ports with interchangeable 1/8 threaded cartridges

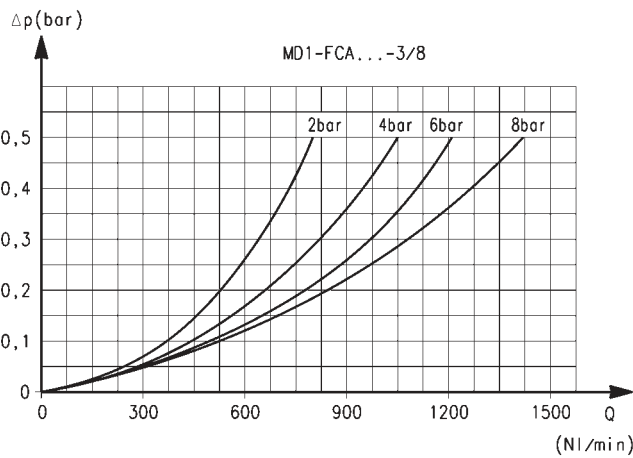
Δp = Pressure drop  
Q = Flow



Ports with interchangeable 1/4 threaded cartridges

Δp = Pressure drop  
Q = Flow

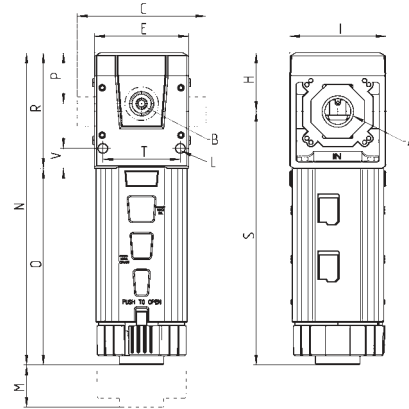
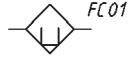
FLOW DIAGRAMS



Ports with interchangeable 3/8 threaded cartridges

Δp = Pressure drop  
Q = Flow

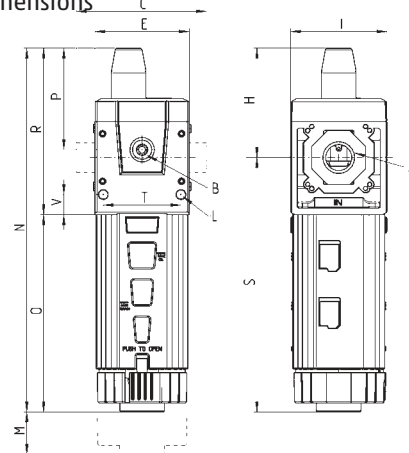
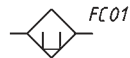
Series MD activated carbon filters - dimensions



DIMENSIONS

Mod.	A	B	C	E	H	I	L	M	N	O	P	R	S	T	V	Weight (Kg)
MD1-FCA0	-	G1/8	42	42	26.2	43	Ø4	90	139.7	88	22.7	51.7	113.5	34.6	9	0.2
MD1-FCA0-1/8TF	1/8 NPTF	G1/8	42	42	26.2	43	Ø4	90	139.7	88	22.7	51.7	113.5	34.6	9	0.2
MD1-FCA0-1/4TF	1/4 NPTF	G1/8	49	42	26.2	43	Ø4	90	139.7	88	22.7	51.7	113.5	34.6	9	0.2
MD1-FCA0-3/8TF	3/8 NPTF	G1/8	49	42	26.2	43	Ø4	90	139.7	88	22.7	51.7	113.5	34.6	9	0.2
MD1-FCA0-04TF	Ø1/4"	G1/8	59	42	26.2	43	Ø4	90	139.7	88	22.7	51.7	113.5	34.6	9	0.2
MD1-FCA0-05TF	Ø5/16"	G1/8	62	42	26.2	43	Ø4	90	139.7	88	22.7	51.7	113.5	34.6	9	0.2
MD1-FCA0-06TF	Ø3/8"	G1/8	67	42	26.2	43	Ø4	90	139.7	88	22.7	51.7	113.5	34.6	9	0.2
MD1-FCA0-1/8	G1/8	G1/8	42	42	26.2	43	Ø4	90	139.7	88	22.7	51.7	113.5	34.6	9	0.2
MD1-FCA0-1/4	G1/4	G1/8	42	42	26.2	43	Ø4	90	139.7	88	22.7	51.7	113.5	34.6	9	0.2
MD1-FCA0-3/8	G3/8	G1/8	42	42	26.2	43	Ø4	90	139.7	88	22.7	51.7	113.5	34.6	9	0.2
MD1-FCA0-6	Ø6	G1/8	47	42	26.2	43	Ø4	90	139.7	88	22.7	51.7	113.5	34.6	9	0.2
MD1-FCA0-8	Ø8	G1/8	62	42	26.2	43	Ø4	90	139.7	88	22.7	51.7	113.5	34.6	9	0.2
MD1-FCA0-10	Ø10	G1/8	67	42	26.2	43	Ø4	90	139.7	88	22.7	51.7	113.5	34.6	9	0.2

Series MD activated carbon filters with visual indicator - dimensions



DIMENSIONS

Mod.	A	B	C	E	H	I	L	M	N	O	P	R	S	T	V	Weight (Kg)
MD1-FCA1	-	G1/8	42	42	48.7	43	Ø4	90	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-FCA1-1/8TF	1/8 NPTF	G1/8	42	42	48.7	43	Ø4	90	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-FCA1-1/4TF	1/4 NPTF	G1/8	49	42	48.7	43	Ø4	90	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-FCA1-3/8TF	3/8 NPTF	G1/8	49	42	48.7	43	Ø4	90	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-FCA1-04TF	Ø1/4"	G1/8	59	42	48.7	43	Ø4	90	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-FCA1-05TF	Ø5/16"	G1/8	62	42	48.7	43	Ø4	90	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-FCA1-06TF	Ø3/8"	G1/8	67	42	48.7	43	Ø4	90	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-FCA1-1/8	G1/8	G1/8	42	42	48.7	43	Ø4	90	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-FCA1-1/4	G1/4	G1/8	42	42	48.7	43	Ø4	90	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-FCA1-3/8	G3/8	G1/8	42	42	48.7	43	Ø4	90	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-FCA1-6	Ø6	G1/8	59	42	48.7	43	Ø4	90	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-FCA1-8	Ø8	G1/8	62	42	48.7	43	Ø4	90	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-FCA1-10	Ø10	G1/8	67	42	48.7	43	Ø4	90	162.2	88	45.2	74.2	113.5	34.6	9	0.2

# Pressure Regulators Series MD


  
New

Ports with Interchangeable cartridges: Threaded (1/8, 1/4, 3/8 NPTF or BSPP) or with push-in fitting for tube sizes  $\varnothing$  1/4", 5/16", 3/8", 6mm, 8mm, or 10mm. .

Versions: single, combined with other functions, Manifold



- » Minimal pressure decrease
- » Knob with position lock
- » Tamper-proof system (lockable regulator)
- » With or without overpressure exhaust (relieving)
- » MANIFOLD version available
- » Version with rapid backflow available
- » Calibrated or locked versions available

The cartridge fitting connections allow for the regulators to be oriented up, down or straight out. Once the regulator knob is locked by pushing down, it is possible to insert as many security locks through the 4 holes. An optional rapid backflow valve allows backflow of downstream air. The choice of four different springs enable a more accurate adjustment of the pressure.

The Series MD offers a solution that ensures savings in terms of installation time, space and costs. The innovative cartridge fitting design of the Series MD facilitates interchangeable port connections. The port cartridges may be female threaded or push-in fittings in various sizes from 1/8" to 3/8". Each module also features additional 1/8" air outlets on the front and back sides.

## GENERAL DATA

Construction	modular, compact with pre-formed diaphragm
Materials	see following page
Ports	With interchangeable cartridges: 1/8, 1/4 and 3/8 NPTF or BSP threaded or integrated with push-in fitting for tube with $\varnothing$ 6mm, 8mm, 10mm, 1/4", 5/16" and 3/8"
Mounting	in-line; wall-mounting by means of through holes in the body or with a support bracket; panel mounting
Operating temperature	23°F - 122°F / -5°C - 50°C
Inlet pressure	0 - 232 psi / 0 - 16 bar
Outlet pressure	0 - 29 psi / 0 - 2 bar 0 - 58 psi / 0 - 4 bar 7 - 101 psi / 0.5 - 7 bar 7 - 145 psi / 0.5 - 10 bar
Overpressure exhaust	with relieving (standard) without relieving
Nominal flow	see FLOW DIAGRAMS on the following pages
Fluid	compressed air

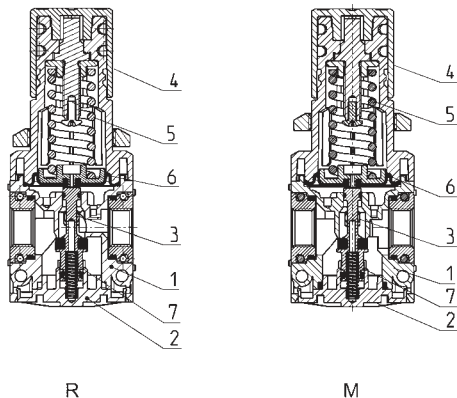
**CODING EXAMPLE**

MD 1 - R T 0 0 - 1/4 - ■ - - ●

<b>MD</b>	SERIES
<b>1</b>	DIMENSION: 1 = 42 mm
<b>R</b>	TYPER OF REGULATOR: R = pressure regulator M = Manifold pressure regulator
<b>T</b>	OPERATING PRESSURE (1 bar = 14.5 psi): 0 = 7.25 - 145 psi / 0.5 - 10 bar 2 = 0 - 29 psi / 0 - 2 bar 4 = 0 - 58 psi / 0 - 4 bar 7 = 7.25 - 101 psi / 0.5 - 7 bar T = calibrated (adjustable to a maximum pressure) ** B = fixed pressure **
<b>0</b>	DESIGN TYPE: 0 = with relieving 1 = without relieving 2 = with relieving / rapid backflow, VS version 3 = without relieving / rapid backflow, VS version
<b>0</b>	PRESSURE GAUGE: 0 = without pressure gauge (with 1/8 port)
<b>1/4</b>	PORTS (IN - OUT)*: = without ports 6 = tube Ø6      04TF = tube Ø1/4" 8 = tube Ø8      05TF = tube Ø5/16" 10 = tube Ø10    06TF = tube Ø3/8" 1/8 = G1/8 Thread    1/8TF = 1/8 NPTF 1/4 = G1/4 Thread    1/4TF = 1/4 NPTF 3/8 = G3/8 Thread    3/8TF = 3/8 NPTF  * NOTE: if the inlet port is different from the outlet port, both values shall be indicated. Example: MD1-FCA0-1/8-1/4
<p>**IF THE REGULATOR IS CALIBRATED OR FIXED, AFTER THE PORTS ADD THE INLET PRESSURE "■" AND THE OUTLET PRESSURE "●", AFTER THE PORTS</p> <p>INLET PRESSURE: ■ = enter the SUPPLY pressure value</p> <p>OUTLET PRESSURE: ● = enter the OUTLET pressure value for the FIXED regulator or the maximum value of the ADJUSTABLE pressure for the CALIBRATED regulator</p> <p>Example of a calibrated regulator with Inlet Pressure = 6.3 bar and Outlet Pressure = 4.5 bar Complete part number: MD1-RT00-1/4-6.3-4.5</p>	

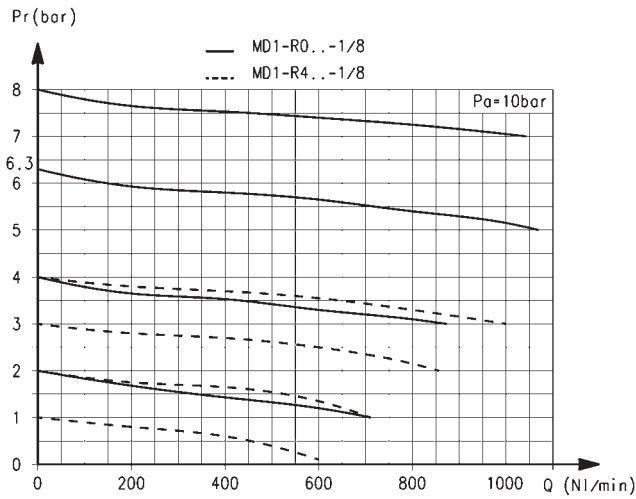
**Pressure regulators Series MD - materials**

R = pressure regulator  
M = Manifold pressure regulator



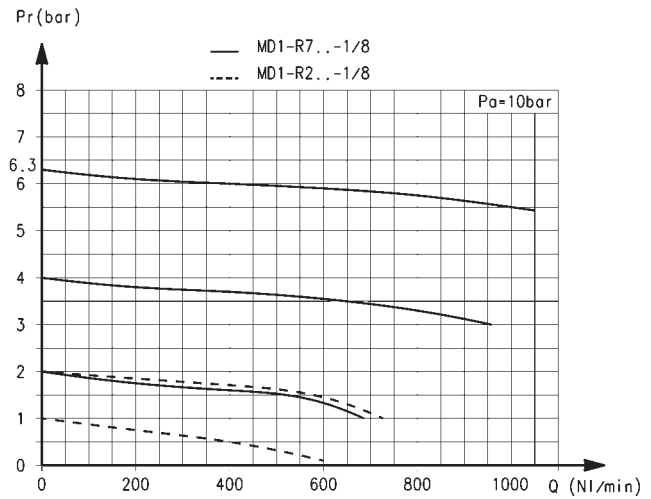
PARTS	MATERIALS
1 = Body	Polyamide
2 = Valve holder plug	Polyamide
3 = Poppet	Brass
4 = Knob	Polyamide
5 = Upper spring	Zinc-plated steel
6 = Diaphragm	NBR
7 = Lower spring	Stainless steel
Seals	NBR

FLOW DIAGRAMS FOR MD1 PRESSURE REGULATORS - 1/8 ports



Pr = Regulated pressure  
Q = Flow

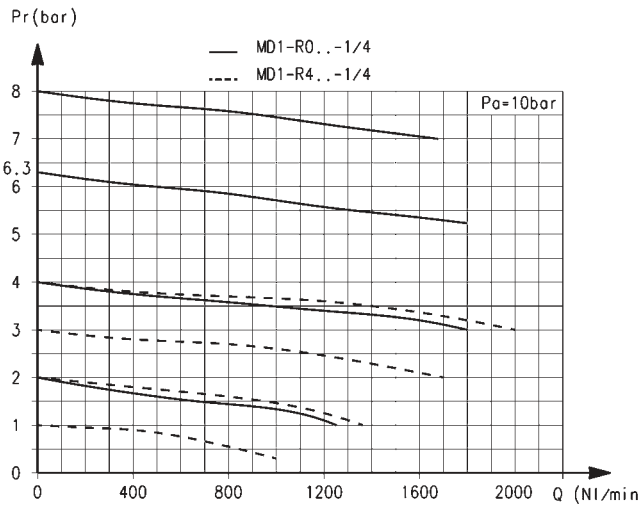
Pa = Inlet pressure



Pr = Regulated pressure  
Q = Flow

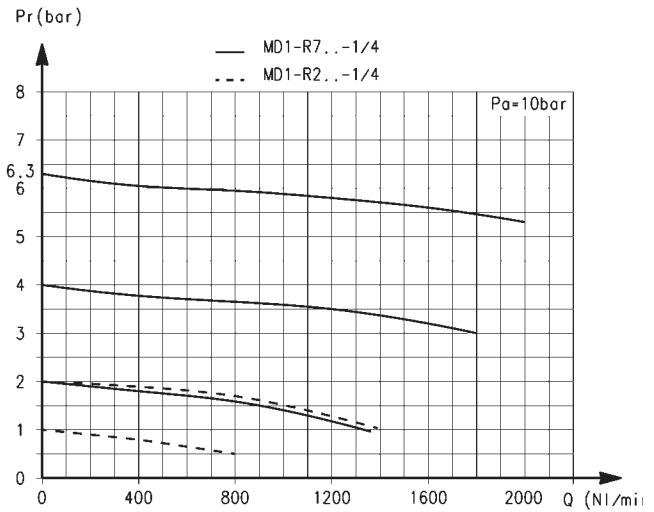
Pa = Inlet pressure

FLOW DIAGRAMS FOR MD1 PRESSURE REGULATORS - 1/4 ports



Pr = Regulated pressure  
Q = Flow

Pa = Inlet pressure

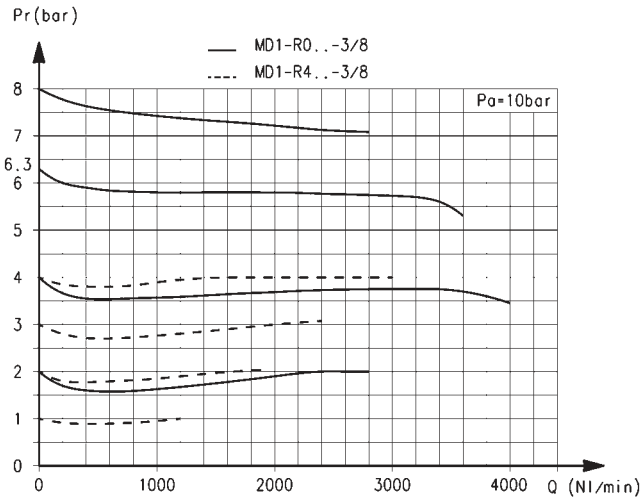


Pr = Regulated pressure  
Q = Flow

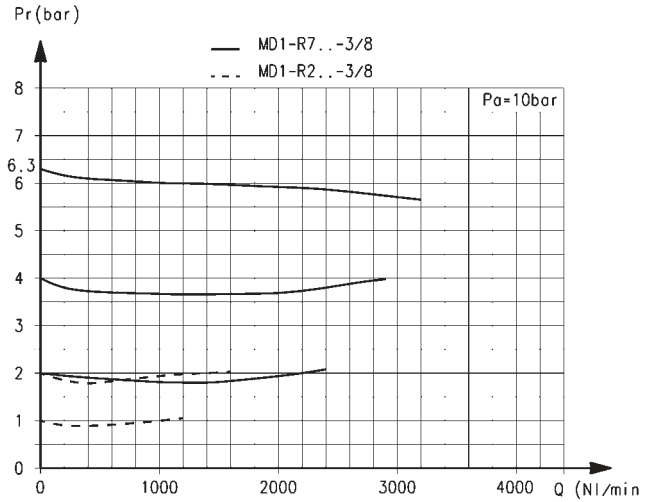
Pa = Inlet pressure



FLOW DIAGRAMS FOR MD1 PRESSURE REGULATORS - 3/8 ports



Pr = Regulated pressure  
Q = Flow  
Pa = Inlet pressure

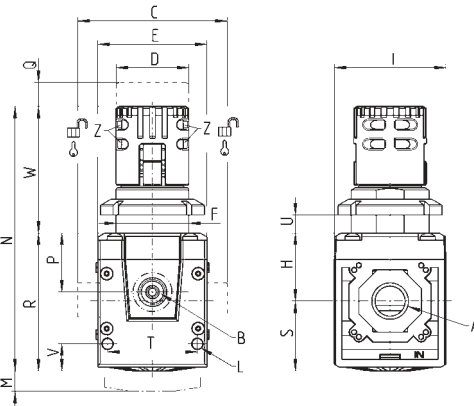
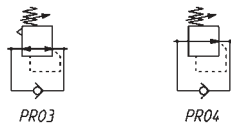


Pr = Regulated pressure  
Q = Flow  
Pa = Inlet pressure

Series MD pressure regulators - dimensions

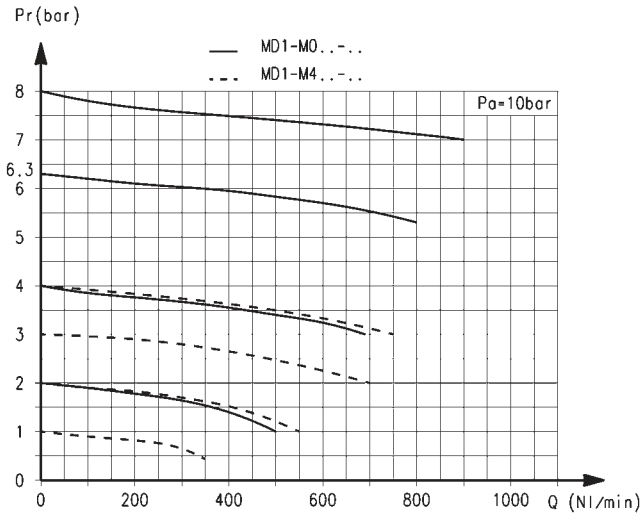


PR03 = regulator with relieving and rapid backflow valve  
PR04 = regulator without relieving and with rapid backflow valve

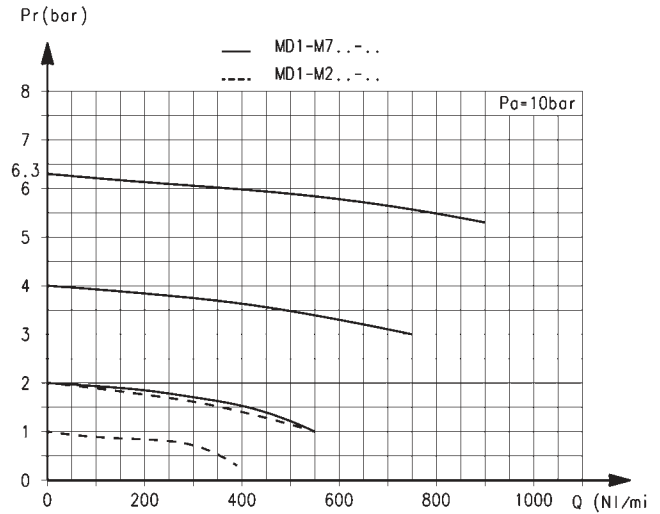


Mod.	A	B	C	D	E	F	H	I	L	M	N	P	Q	R	S	T	U	V	W	Z	Weight (Kg)
MD1-R000	-	G1/8	42	Ø28	42	M28X1,5	26.2	43	Ø4	16	102	22.7	4	53.2	27	34.6	0 - 11	10.5	48.8	Ø3.2	0.2
MD1-R000-1/8TF	1/8 NPTF	G1/8	42	Ø28	42	M28X1,5	26.2	43	Ø4	16	102	22.7	4	53.2	27	34.6	0 - 11	10.5	48.8	Ø3.2	0.2
MD1-R000-1/4TF	1/4 NPTF	G1/8	49	Ø28	42	M28X1,5	26.2	43	Ø4	16	102	22.7	4	53.2	27	34.6	0 - 11	10.5	48.8	Ø3.2	0.2
MD1-R000-3/8TF	3/8 NPTF	G1/8	49	Ø28	42	M28X1,5	26.2	43	Ø4	16	102	22.7	4	53.2	27	34.6	0 - 11	10.5	48.8	Ø3.2	0.2
MD1-R000-04TF	Ø1/4"	G1/8	59	Ø28	42	M28X1,5	26.2	43	Ø4	16	102	22.7	4	53.2	27	34.6	0 - 11	10.5	48.8	Ø3.2	0.2
MD1-R000-05TF	Ø5/16"	G1/8	62	Ø28	42	M28X1,5	26.2	43	Ø4	16	102	22.7	4	53.2	27	34.6	0 - 11	10.5	48.8	Ø3.2	0.2
MD1-R000-06TF	Ø3/8"	G1/8	67	Ø28	42	M28X1,5	26.2	43	Ø4	16	102	22.7	4	53.2	27	34.6	0 - 11	10.5	48.8	Ø3.2	0.2
MD1-R000-1/8	G1/8	G1/8	42	Ø28	42	M28X1,5	26.2	43	Ø4	16	102	22.7	4	53.2	27	34.6	0 - 11	10.5	48.8	Ø3.2	0.2
MD1-R000-1/4	G1/4	G1/8	42	Ø28	42	M28X1,5	26.2	43	Ø4	16	102	22.7	4	53.2	27	34.6	0 - 11	10.5	48.8	Ø3.2	0.2
MD1-R000-3/8	G3/8	G1/8	42	Ø28	42	M28X1,5	26.2	43	Ø4	16	102	22.7	4	53.2	27	34.6	0 - 11	10.5	48.8	Ø3.2	0.2
MD1-R000-6	Ø6	G1/8	59	Ø28	42	M28X1,5	26.2	43	Ø4	16	102	22.7	4	53.2	27	34.6	0 - 11	10.5	48.8	Ø3.2	0.2
MD1-R000-8	Ø8	G1/8	62	Ø28	42	M28X1,5	26.2	43	Ø4	16	102	22.7	4	53.2	27	34.6	0 - 11	10.5	48.8	Ø3.2	0.2
MD1-R000-10	Ø10	G1/8	67	Ø28	42	M28X1,5	26.2	43	Ø4	16	102	22.7	4	53.2	27	34.6	0 - 11	10.5	48.8	Ø3.2	0.2

FLOW DIAGRAMS FOR MD1 PRESSURE REGULATORS - MANIFOLD



Pr = Regulated pressure  
Q = Flow  
Pa = Inlet pressure



Pr = Regulated pressure  
Q = Flow  
Pa = Inlet pressure

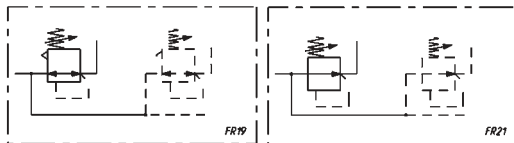
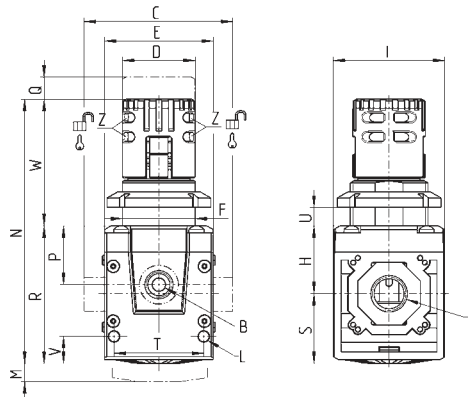
Series MD pressure regulators - dimensions



FR19 = Manifold regulator with relieving and without pressure gauge  
FR21 = Manifold regulator without relieving and without pressure gauge

With the Manifold version it is possible to realize a battery of regulators which are fed by a single source of inlet pressure. Each regulator can be set up at any pressure (lower than the inlet pressure). The front and rear connection of each regulator are regulated pressure ports.

There is no limit to the number of regulators that can be connected.



Mod.	A	B	C	D	E	F	H	I	L	M	N	P	Q	R	S	T	U	V	W	Z	Weight (Kg)
MD1-M000	-	G1/8	42	Ø28	42	M28X1,5	26.2	43	Ø4	16	102	22.7	4	53.2	27	34.6	0-11	10.5	48.8	Ø3.2	0.2

# Lubricators Series MD



New

Ports with Interchangeable cartridges: Threaded (1/8, 1/4, 3/8 NPTF or BSPP) or with push-in fitting for tube sizes  $\varnothing$  1/4", 5/16", 3/8", 6mm, 8mm, or 10mm.

Modular assembly

Bayonet style bowl with technopolymer guard



- » Oil injection adjustment screw
- » Ability to refill the oil even with system under pressure
- » High flow
- » Visual oil level indication through plastic cover openings
- » Bowl locking system reducing the risk of accidents
- » Additional 1/8" ports on the front and back of each unit provide lubricated air.

MODULAR FRL SERIES MD

The lubricator allows the atomization and incorporation of lubricating oil with incoming air by way of an adjustable venturi. This conditioned air improves the function and extends the life of all components.

Oil injection can be adjusted by way of accessible adjustment screws to prevent over-oiling of system.

## GENERAL DATA

Construction	modular, compact
Materials	see following page
Ports	With interchangeable cartridges: 1/8, 1/4 and 3/8 NPTF or BSP threaded or integrated with push-in fitting for tube with $\varnothing$ 6mm, 8mm, 10mm, 1/4", 5/16" and 3/8"
Oil capacity	40 cc
Oil refilling	even during use
Mounting	in vertical position by means of through holes in the body
Operating temperature	23°F - 122°F / -5°C - 50°C
Oil for lubrication	use ISO VG32 oils. Once applied, the lubrication should never be interrupted.
Operating pressure	4 - 232 psi / 0.3 - 16 bar
Min. air consumption for lubrication at 1 bar	.52 SCFM / 15 NL/min
Min. air consumption for lubrication at 6 bar	.88 SCFM / 25 NL/min
Nominal flow	see FLOW DIAGRAMS on the following pages

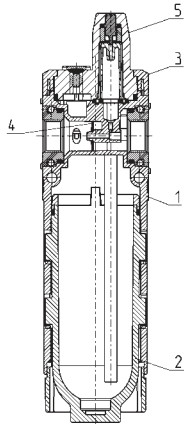
CODING EXAMPLE

MD	1	-	L	0	0	-	1/8TF
----	---	---	---	---	---	---	-------

<b>MD</b>	SERIES
<b>1</b>	DIMENSION: 1 = 42 mm
<b>L</b>	LUBRICATOR
<b>00</b>	DESIGN TYPE: 00 = oil mist with refill valve 10 = oil mist WITHOUT refill valve
<b>1/8</b>	PORTS (IN - OUT)*: = without ports 6 = tube Ø6      04TF = tube Ø1/4" 8 = tube Ø8      05TF = tube Ø5/16" 10 = tube Ø10    06TF = tube Ø3/8" 1/8 = G1/8 Thread    1/8TF = 1/8 NPTF 1/4 = G1/4 Thread    1/4TF = 1/4 NPTF 3/8 = G3/8 Thread    3/8TF = 3/8 NPTF
* NOTE: if the inlet port is different from the outlet port, both values shall be indicated. Example: MD1-L00-1/8-1/4	

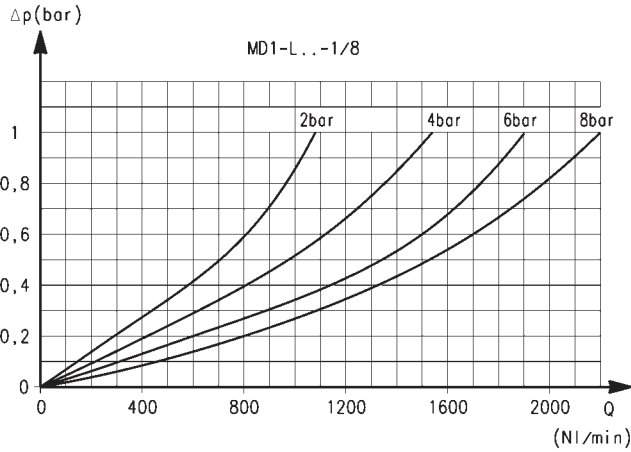
MODULAR FRL SERIES MD

Series MD lubricators - materials



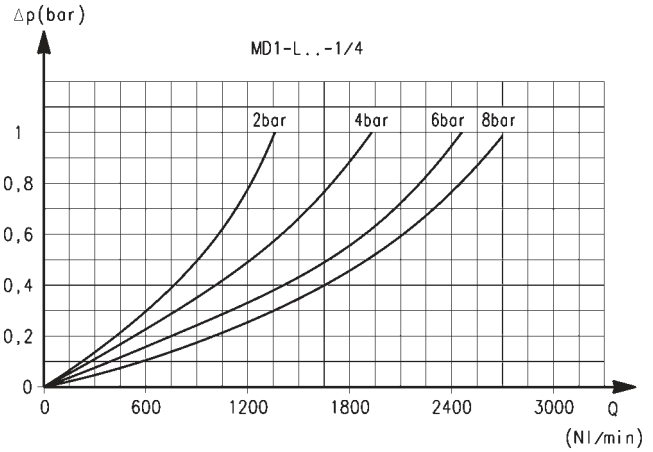
PARTS	MATERIALS
1 = Body	Polyamide
2 = Guide	Polycarbonate
3 = Guard	Polyamide
4 = Diaphragm	NBR
5 = Visual indicator	Polycarbonate
Seals	NBR

FLOW DIAGRAMS



Ports with interchangeable 1/8 threaded cartridges

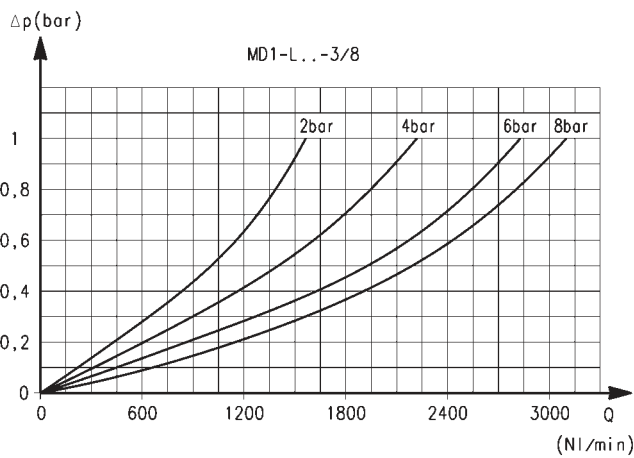
$\Delta p$  = Pressure drop  
 $Q$  = Flow



Ports with interchangeable 1/4 threaded cartridges

$\Delta p$  = Pressure drop  
 $Q$  = Flow

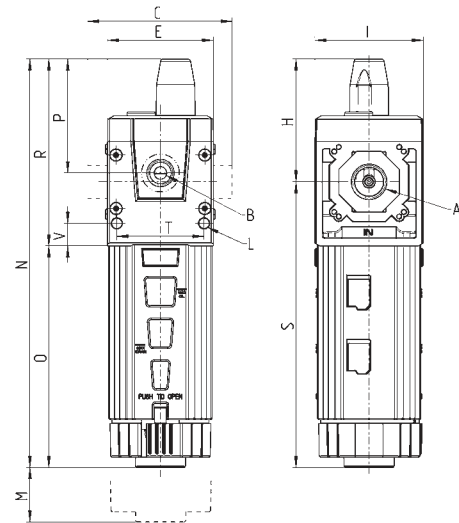
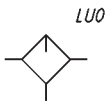
FLOW DIAGRAMS



Ports with interchangeable 3/8 threaded cartridges

$\Delta p$  = Pressure drop  
 $Q$  = Flow

## Series MD lubricators - dimensions



## DIMENSIONS

Mod.	A	B	C	E	H	I	L	M	N	O	P	R	S	T	V	Weight (Kg)
MD1-L00	-	G1/8	42	42	48.7	43	Ø4	75	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-L00-1/8TF	1/8 NPTF	G1/8	42	42	48.7	43	Ø4	75	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-L00-1/4TF	1/4 NPTF	G1/8	49	42	48.7	43	Ø4	75	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-L00-3/8TF	3/8 NPTF	G1/8	49	42	48.7	43	Ø4	75	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-L00-04TF	Ø1/4"	G1/8	59	42	48.7	43	Ø4	75	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-L00-05TF	Ø5/16"	G1/8	62	42	48.7	43	Ø4	75	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-L00-06TF	Ø3/8"	G1/8	67	42	48.7	43	Ø4	75	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-L00-1/8	G1/8	G1/8	42	42	48.7	43	Ø4	75	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-L00-1/4	G1/4	G1/8	42	42	48.7	43	Ø4	75	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-L00-3/8	G3/8	G1/8	42	42	48.7	43	Ø4	75	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-L00-6	Ø6	G1/8	59	42	48.7	43	Ø4	75	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-L00-8	Ø8	G1/8	62	42	48.7	43	Ø4	75	162.2	88	45.2	74.2	113.5	34.6	9	0.2
MD1-L00-10	Ø10	G1/8	67	42	48.7	43	Ø4	75	162.2	88	45.2	74.2	113.5	34.6	9	0.2

# Pressure Filter-Regulators Series MD



New

Ports with Interchangeable cartridges: Threaded (1/8, 1/4, 3/8 NPTF or BSPP) or with push-in fitting for tube sizes  $\varnothing$  1/4", 5/16", 3/8", 6mm, 8mm, or 10mm.

Modular assembly

Bayonet style bowl with technopolymer guard



- » Filtering between 25  $\mu$ m or 5  $\mu$ m
- » Minimum pressure drops
- » Knob with position lock
- » Tamper-proof system (lockable regulator)
- » Bowl locking system reducing the risk of accidents

Series MD filter-regulators integrate filter and pressure regulators into a single unit reducing overall dimensions. The optional rapid backflow valve allows the rapid exhaust of the backflow of downstream air. The choice of four different springs enable a more accurate adjustment of the pressure.

The innovative cartridge fitting design of the Series MD facilitates interchangeable port connection. The port cartridges may be female threaded or push-in fittings in various sizes from 1/8" to 3/8". Each module also features additional 1/8" air outlets on the front and back sides.

## GENERAL DATA

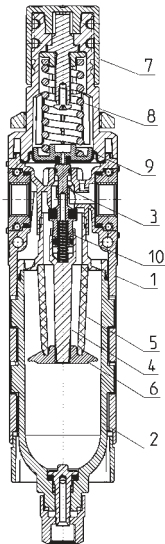
Construction	modular, compact with filtering element in HDPE
Materials	see following page
Ports	With interchangeable cartridges: 1/8, 1/4 and 3/8 NPTF or BSP threaded or integrated with push-in fitting for tube with $\varnothing$ 6mm, 8mm, 10mm, 1/4", 5/16" and 3/8"
Condensate capacity	24 cc
Mounting	in-line; wall-mounting by means of through holes in the body or with a support bracket; panel mounting
Operating temperature	23°F - 122°F / -5°C - 50°C (with the dew point of the fluid lower than 2°C at the min. working temperature)
Porosity of the filtering element	25 $\mu$ m (standard) 5 $\mu$ m
Condensate drain	semi-automatic manual (standard); depressurization, protected; with open drain and G1/8 port
Delivered air quality (ISO 8573-1: 2010)	According to ISO 8573-1: 2010 standard Class 6.8.4 with 5 $\mu$ m filtering element Class 7.8.4 with 25 $\mu$ m filtering element
Outlet Pressure	0 - 29 psi / 0 - 2 bar 0 - 58 psi / 0 - 4 bar 7 - 101 psi / 0.5 - 7 bar 7 - 145 psi / 0.5 - 10 bar
Nominal flow	see FLOW DIAGRAMS on the following pages
Fluid	compressed air

## CODING EXAMPLE

MD	1	-	FR	0	0	0	0	-	1/8TF
----	---	---	----	---	---	---	---	---	-------

<b>MD</b>	SERIES
<b>1</b>	DIMENSION: 1 = 42 mm
<b>FR</b>	FILTER-REGULATOR
<b>0</b>	FILTERING ELEMENT WITH DESIGN TYPE: 0 = 25 µm with relieving 1 = 5 µm with relieving 2 = 25 µm without relieving (with semiautomatic-manual drain only) 3 = 5 µm without relieving (with semiautomatic-manual drain only) 4 = 25 µm with relieving and bypass valve 5 = 5 µm with relieving and bypass valve 6 = 25 µm without relieving with bypass valve (with semiautomatic-manual drain only) 7 = 5 µm without relieving with bypass valve (with semiautomatic-manual drain only)
<b>0</b>	CONDENSATE DRAIN: 0 = semiautomatic-manual 5 = depressurization, protected 8 = with open drain, with G1/8 port
<b>0</b>	OPERATING PRESSURE (1 bar = 14.5 psi): 0 = 7.25 - 145 psi / 0.5 - 10 bar 2 = 0 - 29 psi / 0 - 2 bar 4 = 0 - 58 psi / 0 - 4 bar 7 = 7.25 - 101 psi / 0.5 - 7 bar
<b>0</b>	PRESSURE GAUGE: 0 = without pressure gauge (with 1/8 port)
<b>1/8</b>	PORTS (IN - OUT)*: = without ports 6 = tube ø6    04TF = tube ø1/4" 8 = tube ø8    05TF = tube ø5/16" 10 = tube ø10    06TF = tube ø3/8" 1/8 = G1/8 Thread    1/8TF = 1/8 NPTF 1/4 = G1/4 Thread    1/4TF = 1/4 NPTF 3/8 = G3/8 Thread    3/8TF = 3/8 NPTF  * NOTE: if the inlet port is different from the outlet port, both values shall be indicated. Example: MD1-FR0000-1/8-1/4

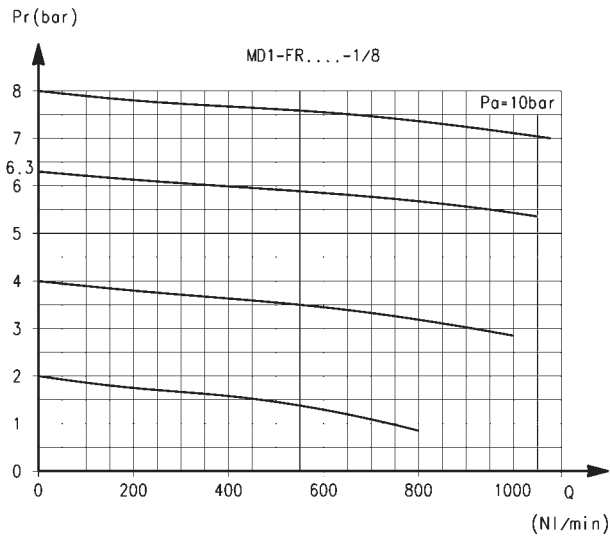
## Series MD filter-regulators - materials



PARTS	MATERIALS
1 = Body	Polyamide
2 = Guide	Polycarbonate
3 = Poppet	Brass
4 = Valve guide	Polyacetal
5 = Filtering element	Polyethylene
6 = Separation deflector	Polyacetal
7 = Knob	Polyamide
8 = Upper spring	Zinc-plated steel
9 = Diaphragm	NBR
10 = Lower spring	Stainless steel
Seals	NBR



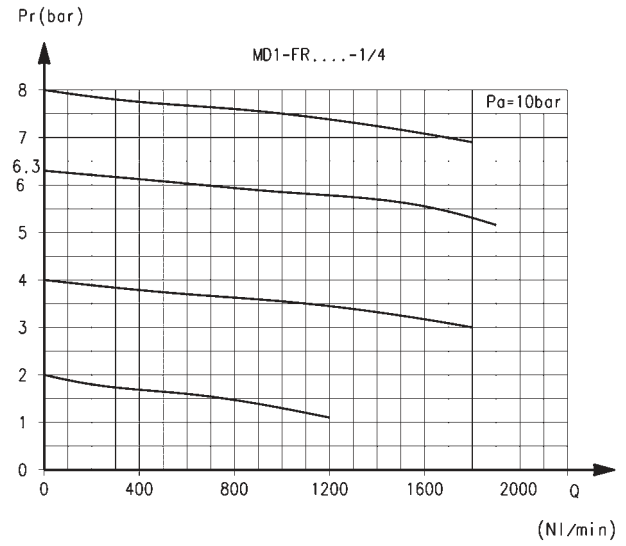
FLOW DIAGRAMS



Ports with interchangeable G1/8 threaded cartridges

Pr = Regulated pressure  
Q = Flow

Pa = Inlet pressure

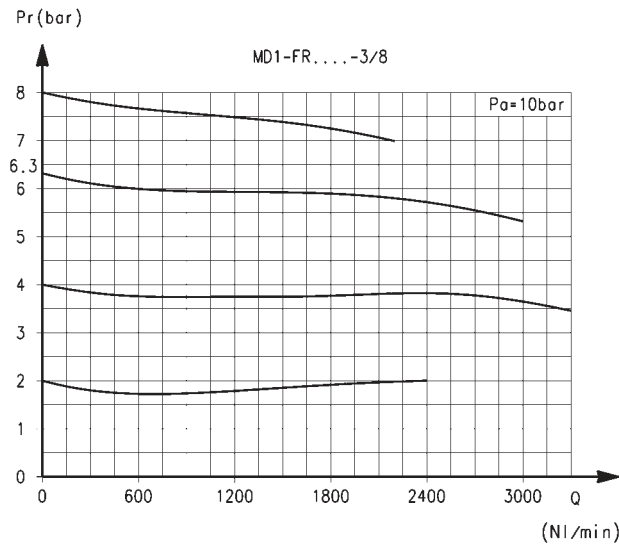


Ports with interchangeable G1/4 threaded cartridges

Pr = Regulated pressure  
Q = Flow

Pa = Inlet pressure

FLOW DIAGRAMS



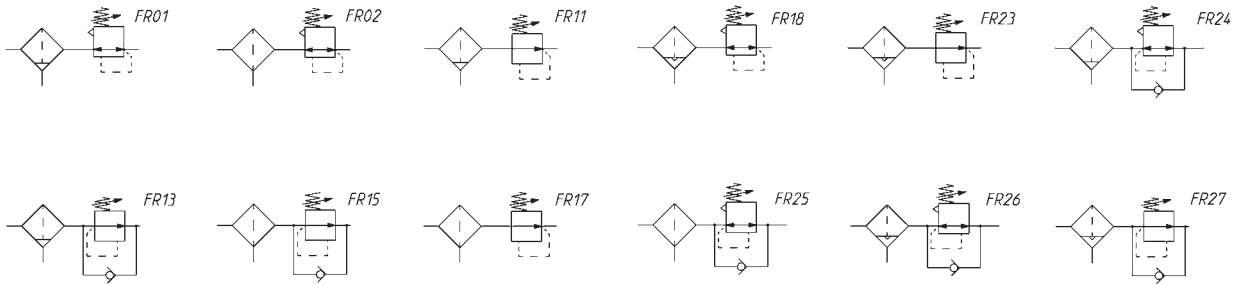
Ports with interchangeable G3/8 threaded cartridges

Pr = Regulated pressure  
Q = Flow

Pa = Inlet pressure

MODULAR FRL SERIES MD

PNEUMATIC SYMBOLS

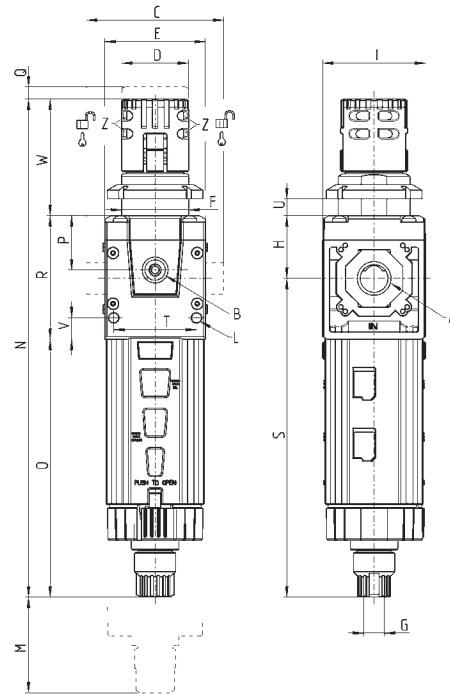


FR01 = filter-regulator with relieving and manual drain  
 FR02 = filter-regulator with relieving, without drain  
 FR11 = filter-regulator no relieving, with manual drain  
 FR13 = filter-regulator no relieving and rapid backflow valve, with manual drain  
 FR15 = filter-regulator without relieving, rapid backflow valve and manual drain  
 FR17 = filter-regulator without relieving and drain

FR18 = filter-reg. with relieving and automatic drain  
 FR23 = filter-reg. no relieving, with automatic drain  
 FR24 = filter-reg. with relieving, rapid backflow valve and manual drain  
 FR25 = filter-reg. with relieving and rapid backflow valve, no drain  
 FR26 = filter-reg. with relieving, rapid backflow valve, automatic drain  
 FR27 = filter-reg. without relieving and rapid backflow valve, with automatic drain

MODULAR FRL SERIES MD

Series MD filter-regulators - dimensions



Mod.	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S	T	U	V	W	Z	Weight (Kg)
MD1-FR000	-	G1/8	42	Ø28	42	M28X1,5	G1/8	26.2	43	Ø4	110	208.2	107.7	22.7	4	51.7	133.2	34.6	0 - 11	9	48.8	Ø3.2	0.2
MD1-FR000-1/8TF	1/8 NPTF	G1/8	42	Ø28	42	M28X1,5	G1/8	26.2	43	Ø4	110	208.2	107.7	22.7	4	51.7	133.2	34.6	0 - 11	9	48.8	Ø3.2	0.2
MD1-FR000-1/4TF	1/4 NPTF	G1/8	49	Ø28	42	M28X1,5	G1/8	26.2	43	Ø4	110	208.2	107.7	22.7	4	51.7	133.2	34.6	0 - 11	9	48.8	Ø3.2	0.2
MD1-FR000-3/8TF	3/8 NPTF	G1/8	49	Ø28	42	M28X1,5	G1/8	26.2	43	Ø4	110	208.2	107.7	22.7	4	51.7	133.2	34.6	0 - 11	9	48.8	Ø3.2	0.2
MD1-FR000-04TF	Ø1/4"	G1/8	59	Ø28	42	M28X1,5	G1/8	26.2	43	Ø4	110	208.2	107.7	22.7	4	51.7	133.2	34.6	0 - 11	9	48.8	Ø3.2	0.2
MD1-FR000-05TF	Ø5/16"	G1/8	62	Ø28	42	M28X1,5	G1/8	26.2	43	Ø4	110	208.2	107.7	22.7	4	51.7	133.2	34.6	0 - 11	9	48.8	Ø3.2	0.2
MD1-FR000-06TF	Ø3/8"	G1/8	67	Ø28	42	M28X1,5	G1/8	26.2	43	Ø4	110	208.2	107.7	22.7	4	51.7	133.2	34.6	0 - 11	9	48.8	Ø3.2	0.2
MD1-FR000-1/8	G1/8	G1/8	42	Ø28	42	M28X1,5	G1/8	26.2	43	Ø4	110	208.2	107.7	22.7	4	51.7	133.2	34.6	0 - 11	9	48.8	Ø3.2	0.2
MD1-FR000-1/4	G1/4	G1/8	42	Ø28	42	M28X1,5	G1/8	26.2	43	Ø4	110	208.2	107.7	22.7	4	51.7	133.2	34.6	0 - 11	9	48.8	Ø3.2	0.2
MD1-FR000-3/8	G3/8	G1/8	42	Ø28	42	M28X1,5	G1/8	26.2	43	Ø4	110	208.2	107.7	22.7	4	51.7	133.2	34.6	0 - 11	9	48.8	Ø3.2	0.2
MD1-FR000-6	Ø6	G1/8	59	Ø28	42	M28X1,5	G1/8	26.2	43	Ø4	110	208.2	107.7	22.7	4	51.7	133.2	34.6	0 - 11	9	48.8	Ø3.2	0.2
MD1-FR000-8	Ø8	G1/8	62	Ø28	42	M28X1,5	G1/8	26.2	43	Ø4	110	208.2	107.7	22.7	4	51.7	133.2	34.6	0 - 11	9	48.8	Ø3.2	0.2
MD1-FR000-10	Ø10	G1/8	67	Ø28	42	M28X1,5	G1/8	26.2	43	Ø4	110	208.2	107.7	22.7	4	51.7	133.2	34.6	0 - 11	9	48.8	Ø3.2	0.2

# Lockable Isolation 3/2-way Valves Series MD



New

Ports with Interchangeable cartridges: Threaded (1/8, 1/4, 3/8 NPTF or BSPP) or with push-in fitting for tube sizes  $\varnothing$  1/4", 5/16", 3/8", 6mm, 8mm, or 10mm.

Modular assembly

Manual, electro-pneumatic, servo-pilot and pneumatic control



- » Standard tamperproof lock-out (manual valve)
- » 24 V, 110 V or 230 V coils (see the section 2.2.35)
- » Solenoid valve with or without manual override available in different types
- » Additional 1/8" ports on the front and back of each unit provide air from inlet port

The Series MD offers multi-sector solutions that ensure saving in terms of installation time, space and costs. Series MD lockable isolation valves allow the inlet and exhaust of compressed air from the plant and can meet several application requirements.

The electric version can be equipped with different types of manual override (Push & Turn, Push-in, retaining lever). Moreover, a version without override is also available. The manually operated valve can be locked thanks to the use of padlocks.

MODULAR FRL SERIES MD

## GENERAL DATA

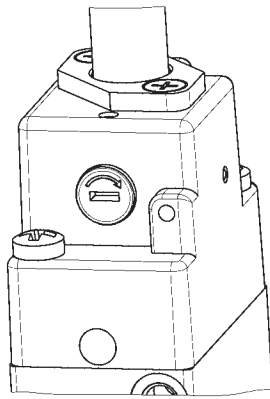
Construction	modular, compact, spool-type
Materials	see following page
Ports	With interchangeable cartridges: 1/8, 1/4 and 3/8 NPTF or BSP threaded or integrated with push-in fitting for tube with $\varnothing$ 6mm, 8mm, 10mm, 1/4", 5/16" and 3/8"
Mounting	in-line; wall-mounting by means of through holes in the body or with a support bracket; panel-mounting (for manually operated version only)
Operating temperature	23°F - 122°F / -5°C - 50°C
Operating pressure	Manual valve: -11.6 - 145 psi / -0.8 - 10 bar Electro-pneumatic valve: 29 - 145 psi / 2 - 10 bar Servopilot or pneumatic valve: -11.6 - 145 psi / 0.8 - 10 bar (with pilot 29 - 145 psi / 2 - 10 bar)
Nominal flow	see FLOW DIAGRAMS on the following pages
Nominal exhaust flow at 6 bar with $\Delta p = 1$ bar	30 SCFM / 850 NL/min
Fluid	compressed air

CODING EXAMPLE

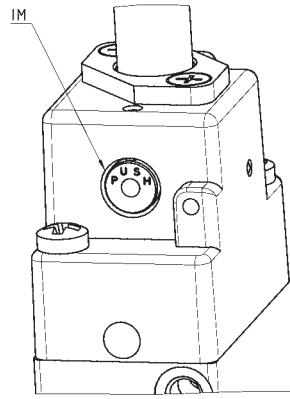
MD	1	-	V	01	-	1/8TF	
----	---	---	---	----	---	-------	--

<b>MD</b>	SERIES						
<b>1</b>	DIMENSION: 1 = 42 mm						
<b>V</b>	3/2-WAY VALVE						
<b>01</b>	DESIGN TYPE: 01 = lockable manual control 16 = electro-pneumatic control, Push & Turn manual override 16IL = electro-pneumatic control, bistable manual override, lever type			16IM = electro-pneumatic control, monostable manual override 16IT = electro-pneumatic control without manual override 36 = pneumatic control			
<b>1/8</b>	PORTS (IN - OUT)*: = without ports 1/8 = G1/8 6 = tube ø6 04TF = tube ø1/4" 1/8TF = 1/8 NPTF 1/4 = G1/4 8 = tube ø8 05TF = tube ø5/16" 1/4TF = 1/4 NPTF 3/8 = G3/8 10 = tube ø10 06TF = tube ø3/8" 3/8TF = 3/8 NPTF						
* NOTE: if the inlet port is different from the outlet port, both values shall be indicated. Example: MD1-V01-1/8-1/4							

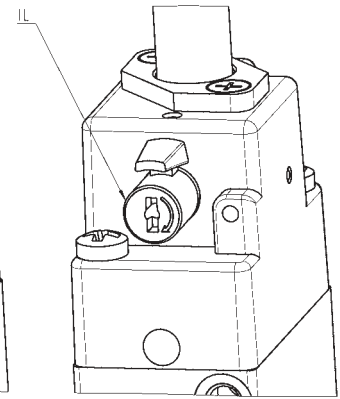
TYPES OF MANUAL OVERRIDE



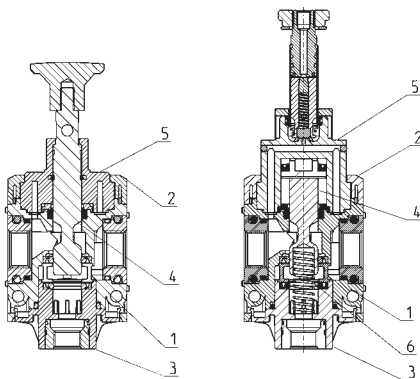
Push & Turn manual override



IL = bistable manual override, lever type  
IM = monostable manual override



Series MD lockable isolation 3/2-way valves - materials

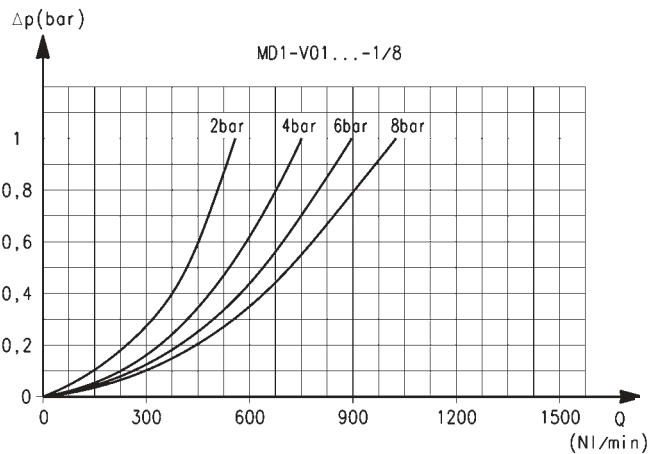


MD...-V01

MD...-V16

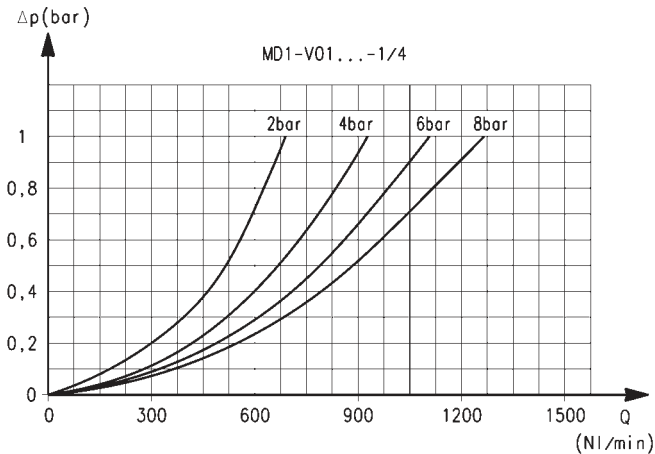
PARTS	MATERIALS
1 = Body	Polyamide
2 = Guard	Polyamide
3 = Plug	Polyamide
4 = Spool	Anodized aluminium
5 = End-cover	Polyamide
6 = Lower spring	Stainless steel
Seals	NBR

**FLOW DIAGRAMS for manually operated models**



Ports with interchangeable G1/8 threaded cartridges

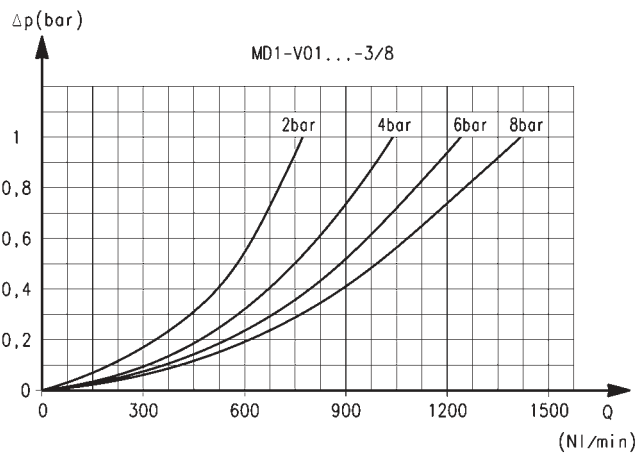
$\Delta p$  = Pressure drop  
 $Q$  = Flow



Ports with interchangeable G1/4 threaded cartridges

$\Delta p$  = Pressure drop  
 $Q$  = Flow

**FLOW DIAGRAM for manually operated models**

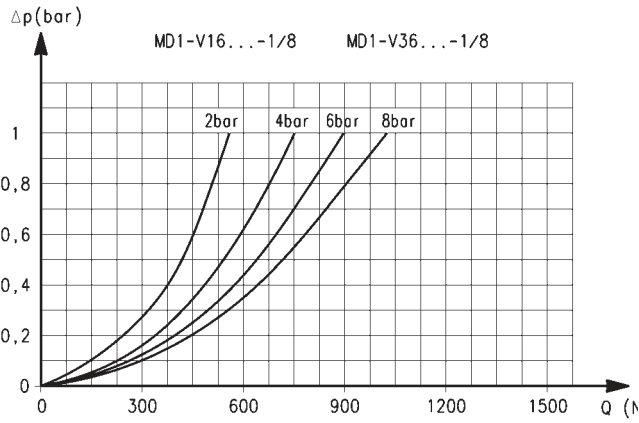


Ports with interchangeable G3/8 threaded cartridges

$\Delta p$  = Pressure drop  
 $Q$  = Flow

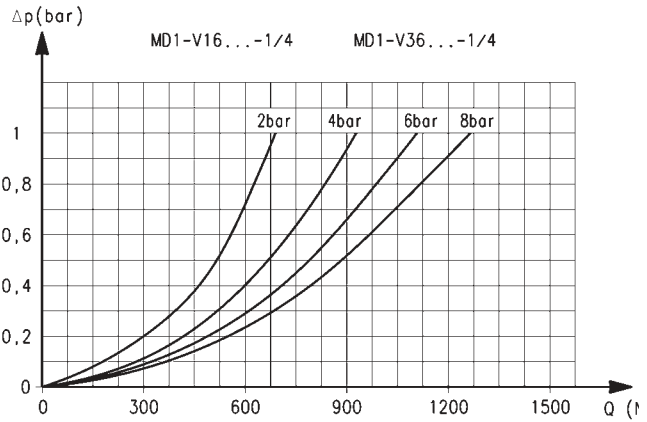
MODULAR FRL SERIES MD

**FLOW DIAGRAMS for electro-pneumatically or pneumatically operated models**



Ports with interchangeable G1/8 threaded cartridges

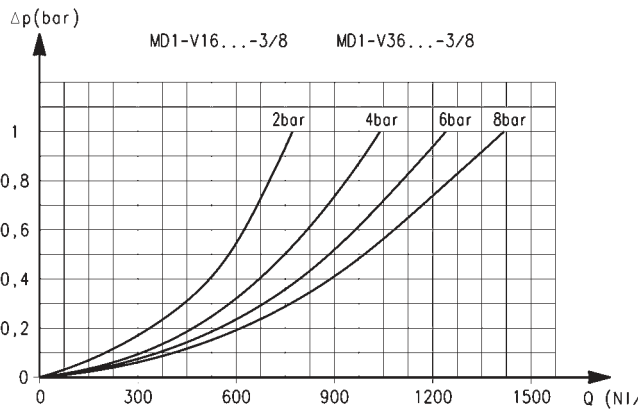
$\Delta p$  = Pressure drop  
Q = Flow



Ports with interchangeable G1/4 threaded cartridges

$\Delta p$  = Pressure drop  
Q = Flow

**FLOW DIAGRAM for electro-pneumatically or pneumatically operated models**



Ports with interchangeable G3/8 threaded cartridges

$\Delta p$  = Pressure drop  
Q = Flow

Manually operated valves - dimensions

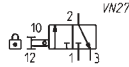


Fig. 1 = closed valve  
Fig. 2 = open valve

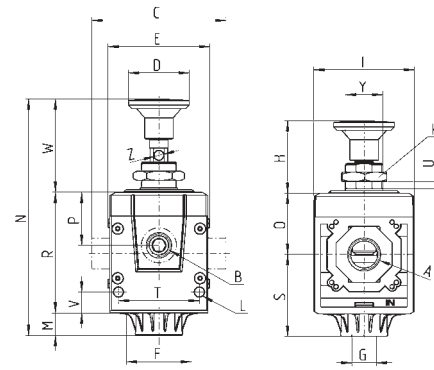
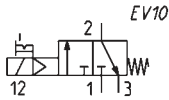


Fig.1

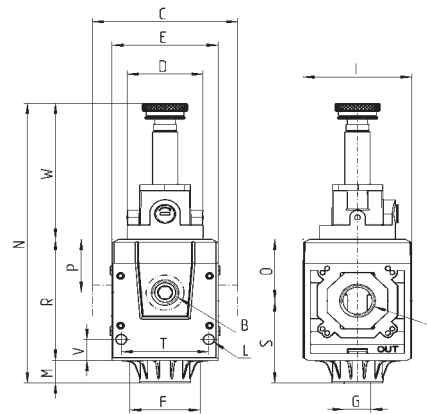
Fig.2

Mod.	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	R	S	T	U	V	W	Y	Z	Weight (Kg)
MD1-V01	-	G1/8	42	Ø26	42	28.5	G1/8	31	43	19	Ø4	9.5	101	26.2	22.7	51.7	35.1	34.6	0-8	9	39.8	M16X1	Ø4	0.2
MD1-V01-1/8TF	1/8 NPTF	G1/8	42	Ø26	42	28.5	G1/8	31	43	19	Ø4	9.5	101	26.2	22.7	51.7	35.1	34.6	0-8	9	39.8	M16X1	Ø4	0.2
MD1-V01-1/4TF	1/4 NPTF	G1/8	49	Ø26	42	28.5	G1/8	31	43	19	Ø4	9.5	101	26.2	22.7	51.7	35.1	34.6	0-8	9	39.8	M16X1	Ø4	0.2
MD1-V01-3/8TF	3/8 NPTF	G1/8	49	Ø26	42	28.5	G1/8	31	43	19	Ø4	9.5	101	26.2	22.7	51.7	35.1	34.6	0-8	9	39.8	M16X1	Ø4	0.2
MD1-V01-04TF	Ø1/4"	G1/8	59	Ø26	42	28.5	G1/8	31	43	19	Ø4	9.5	101	26.2	22.7	51.7	35.1	34.6	0-8	9	39.8	M16X1	Ø4	0.2
MD1-V01-05TF	Ø1/8"	G1/8	62	Ø26	42	28.5	G1/8	31	43	19	Ø4	9.5	101	26.2	22.7	51.7	35.1	34.6	0-8	9	39.8	M16X1	Ø4	0.2
MD1-V01-06TF	Ø3/8"	G1/8	67	Ø26	42	28.5	G1/8	31	43	19	Ø4	9.5	101	26.2	22.7	51.7	35.1	34.6	0-8	9	39.8	M16X1	Ø4	0.2
MD1-V01-1/8	G1/8	G1/8	42	Ø26	42	28.5	G1/8	31	43	19	Ø4	9.5	101	26.2	22.7	51.7	35.1	34.6	0-8	9	39.8	M16X1	Ø4	0.2
MD1-V01-1/4	G1/4	G1/8	42	Ø26	42	28.5	G1/8	31	43	19	Ø4	9.5	101	26.2	22.7	51.7	35.1	34.6	0-8	9	39.8	M16X1	Ø4	0.2
MD1-V01-3/8	G3/8	G1/8	42	Ø26	42	28.5	G1/8	31	43	19	Ø4	9.5	101	26.2	22.7	51.7	35.1	34.6	0-8	9	39.8	M16X1	Ø4	0.2
MD1-V01-6	Ø6	G1/8	59	Ø26	42	28.5	G1/8	31	43	19	Ø4	9.5	101	26.2	22.7	51.7	35.1	34.6	0-8	9	39.8	M16X1	Ø4	0.2
MD1-V01-8	Ø8	G1/8	62	Ø26	42	28.5	G1/8	31	43	19	Ø4	9.5	101	26.2	22.7	51.7	35.1	34.6	0-8	9	39.8	M16X1	Ø4	0.2
MD1-V01-10	Ø10	G1/8	67	Ø26	42	28.5	G1/8	31	43	19	Ø4	9.5	101	26.2	22.7	51.7	35.1	34.6	0-8	9	39.8	M16X1	Ø4	0.2

Electro-pneumatically operated valves - dimensions

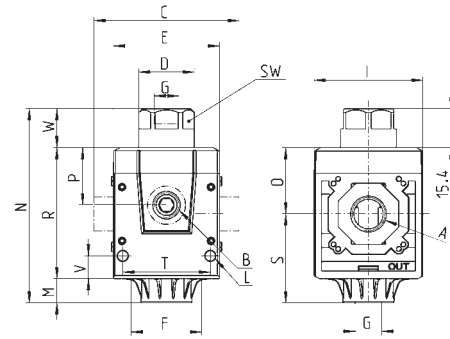
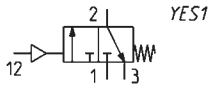


- \* = add:
- IL for the version with bistable manual override, lever type
- IM for the version with monostable manual override
- IT for the version without manual override



Mod.	A	B	C	D	E	F	G	I	L	M	N	O	P	R	S	T	V	W	Weight (Kg)
MD1-V16*	-	G1/8	42	Ø50	42	28.5	G1/8	43	Ø4	9.5	119.4	26.2	22.7	51.7	35.1	34.6	9	58.2	0.2
MD1-V16*-1/8TF	1/8 NPTF	G1/8	42	Ø50	42	28.5	G1/8	43	Ø4	9.5	119.4	26.2	22.7	51.7	35.1	34.6	9	58.2	0.2
MD1-V16*-1/4TF	1/4 NPTF	G1/8	49	Ø50	42	28.5	G1/8	43	Ø4	9.5	119.4	26.2	22.7	51.7	35.1	34.6	9	58.2	0.2
MD1-V16*-3/8TF	3/8 NPTF	G1/8	49	Ø50	42	28.5	G1/8	43	Ø4	9.5	119.4	26.2	22.7	51.7	35.1	34.6	9	58.2	0.2
MD1-V16-04TF	Ø1/4"	G1/8	59	Ø50	42	28.5	G1/8	43	Ø4	9.5	119.4	26.2	22.7	51.7	35.1	34.6	9	58.2	0.2
MD1-V16-05TF	Ø5/16"	G1/8	62	Ø50	42	28.5	G1/8	43	Ø4	9.5	119.4	26.2	22.7	51.7	35.1	34.6	9	58.2	0.2
MD1-V16-06TF	Ø3/8"	G1/8	67	Ø50	42	28.5	G1/8	43	Ø4	9.5	119.4	26.2	22.7	51.7	35.1	34.6	9	58.2	0.2
MD1-V16-1/8	G1/8	G1/8	42	Ø50	42	28.5	G1/8	43	Ø4	9.5	119.4	26.2	22.7	51.7	35.1	34.6	9	58.2	0.2
MD1-V16-1/4	G1/4	G1/8	42	Ø50	42	28.5	G1/8	43	Ø4	9.5	119.4	26.2	22.7	51.7	35.1	34.6	9	58.2	0.2
MD1-V16-3/8	G3/8	G1/8	42	Ø50	42	28.5	G1/8	43	Ø4	9.5	119.4	26.2	22.7	51.7	35.1	34.6	9	58.2	0.2
MD1-V16*-6	Ø6	G1/8	59	Ø50	42	28.5	G1/8	43	Ø4	9.5	119.4	26.2	22.7	51.7	35.1	34.6	9	58.2	0.2
MD1-V16*-8	Ø8	G1/8	62	Ø50	42	28.5	G1/8	43	Ø4	9.5	119.4	26.2	22.7	51.7	35.1	34.6	9	58.2	0.2
MD1-V16*-10	Ø10	G1/8	67	Ø50	42	28.5	G1/8	43	Ø4	9.5	119.4	26.2	22.7	51.7	35.1	34.6	9	58.2	0.2

## Pneumatically operated valves - dimensions



Mod.	A	B	C	D	E	F	G	I	L	M	N	O	P	R	S	T	V	W	SW	Weight (Kg)
MD1-V36	-	G1/8	42	Ø22	42	28.5	G1/8	43	Ø4	9.5	76.6	26.2	22.7	51.7	35.1	34.6	9	15.4	20	0.2
MD1-V36-1/8TF	1/8 NPTF	G1/8	42	Ø22	42	28.5	G1/8	43	Ø4	9.5	76.6	26.2	22.7	51.7	35.1	34.6	9	15.4	20	0.2
MD1-V36-1/4TF	1/4 NPTF	G1/8	49	Ø22	42	28.5	G1/8	43	Ø4	9.5	76.6	26.2	22.7	51.7	35.1	34.6	9	15.4	20	0.2
MD1-V36-3/8TF	3/8 NPTF	G1/8	49	Ø22	42	28.5	G1/8	43	Ø4	9.5	76.6	26.2	22.7	51.7	35.1	34.6	9	15.4	20	0.2
MD1-V36-04TF	ø1/4"	G1/8	59	Ø22	42	28.5	G1/8	43	Ø4	9.5	76.6	26.2	22.7	51.7	35.1	34.6	9	15.4	20	0.2
MD1-V36-05TF	ø5/16"	G1/8	62	Ø22	42	28.5	G1/8	43	Ø4	9.5	76.6	26.2	22.7	51.7	35.1	34.6	9	15.4	20	0.2
MD1-V36-06TF	ø3/8"	G1/8	67	Ø22	42	28.5	G1/8	43	Ø4	9.5	76.6	26.2	22.7	51.7	35.1	34.6	9	15.4	20	0.2
MD1-V36-1/8	G1/8	G1/8	42	Ø22	42	28.5	G1/8	43	Ø4	9.5	76.6	26.2	22.7	51.7	35.1	34.6	9	15.4	20	0.2
MD1-V36-1/4	G1/4	G1/8	42	Ø22	42	28.5	G1/8	43	Ø4	9.5	76.6	26.2	22.7	51.7	35.1	34.6	9	15.4	20	0.2
MD1-V36-3/8	G3/8	G1/8	42	Ø22	42	28.5	G1/8	43	Ø4	9.5	76.6	26.2	22.7	51.7	35.1	34.6	9	15.4	20	0.2
MD1-V36-6	ø6	G1/8	59	Ø22	42	28.5	G1/8	43	Ø4	9.5	76.6	26.2	22.7	51.7	35.1	34.6	9	15.4	20	0.2
MD1-V36-8	ø8	G1/8	62	Ø22	42	28.5	G1/8	43	Ø4	9.5	76.6	26.2	22.7	51.7	35.1	34.6	9	15.4	20	0.2
MD1-V36-10	ø10	G1/8	67	Ø22	42	28.5	G1/8	43	Ø4	9.5	76.6	26.2	22.7	51.7	35.1	34.6	9	15.4	20	0.2



# Soft Start Valves Series MD



New

Ports with Interchangeable cartridges: Threaded (1/8, 1/4, 3/8 NPTF or BSPP) or with push-in fitting for tube sizes  $\varnothing$  1/4", 5/16", 3/8", 6mm, 8mm, or 10mm.

Modular assembly



- » Allows **Safe, Gradual Pressurization** of the pneumatic system from start-up
- » **Screw Adjustment** of timing delay
- » Pressure switches available
- » **Additional 1/8" Ports** on the front and back provide air from inlet port

The soft start valves are used to avoid the sudden movement of pneumatic actuators. Feeding them pneumatically is enough to begin the phase of the pressure gradual increase in the system. By means of a regulation screw, it is possible to determine the time the valve needs to reach the 50% of the inlet pressure. Once this value is reached, the valve opens completely the passage.

The plugged connection on the upper side allows either the time increase to fill the system through a small additional volume or the connection of a pressure switch.

## GENERAL DATA

Construction	modular, compact, poppet-type
Materials	see following page
Ports	With interchangeable cartridges: 1/8, 1/4 and 3/8 NPTF or BSP threaded or integrated with push-in fitting for tube with $\varnothing$ 6mm, 8mm, 10mm, 1/4", 5/16" and 3/8"
Mounting	in-line; wall-mounting by means of through hole in the body or with a support bracket
Operating temperature	23°F - 122°F / -5°C - 50°C
Operating pressure	29 - 145 psi / 2 - 10 bar
Nominal flow at 6 bar with $\Delta P$ 1 bar	MD1-AV-1/8 = 35.3 SCFM / 1000 NL/min MD1-AV-1/4 = 47.7 SCFM / 1350 NL/min MD1-AV-3/8 = 52.9 SCFM / 1500 NL/min
Fluid	compressed air

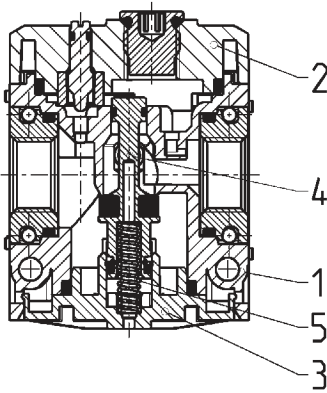
**CODING EXAMPLE**

MD	1	-	AV	-	1/8TF
----	---	---	----	---	-------

<b>MD</b>	SERIES
<b>1</b>	DIMENSION: 1 = 42 mm
<b>AV</b>	SOFT START VALVE
<b>1/8</b>	<p>PORTS (IN - OUT)*:</p> <p>= without ports</p> <p>6 = tube Ø6      04TF = tube Ø1/4"</p> <p>8 = tube Ø8      05TF = tube Ø5/16"</p> <p>10 = tube Ø10    06TF = tube Ø3/8"</p> <p>1/8 = G1/8 Thread    1/8TF = 1/8 NPTF</p> <p>1/4 = G1/4 Thread    1/4TF = 1/4 NPTF</p> <p>3/8 = G3/8 Thread    3/8TF = 3/8 NPTF</p> <p>* NOTE: if the inlet port is different from the outlet port, both values shall be indicated. Example: MD1-AV-1/8-1/4</p>

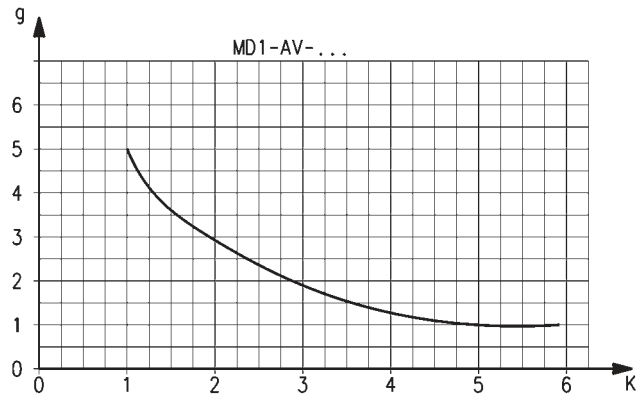
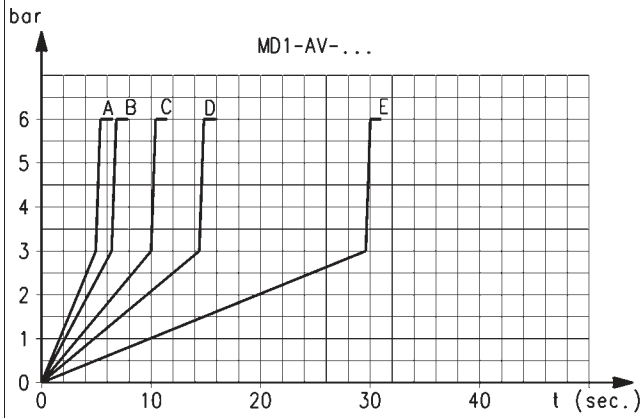
MODULAR FRL SERIES MD

**Series MD soft start valves - materials**



PARTS	MATERIALS
1 = Body	Polyamide
2 = Guard	Polyamide
3 = Plug	Polyamide
4 = Poppet	Brass
5 = Spring	Stainless steel
Seals	NBR

MD1 DIAGRAMS FOR PRESSURISATION TIMES



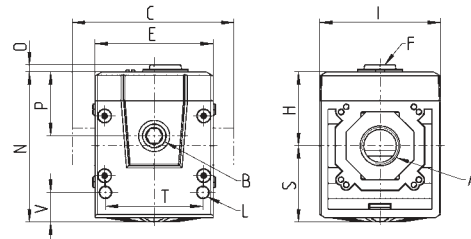
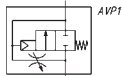
Pressurisation times as to the number of turns of the regulation screw, with downstream volume of 5 litres. A = 5 turns - B = 4 turns - C = 3 turns - D = 2 turns - E = 1 turn. K = number of turns of the regulation screw required to obtain the required pressurisation time with an inlet pressure of 6 bar. Variations of the inlet pressure can cause deviations of the pressure time by ± 20%.  $K = t/V$  where: V = volume of the downstream system in litres; t = desired pressuring time in seconds.

EXAMPLE:  
V = 5 litres  
t = 16 seconds  
 $K = 16/5 = 3,2$

Using in the graph this value K, the number of turns of the regulation screw will be approx. 0,8.

MODULAR FRL SERIES MD

Series MD soft start valves - dimensions



Mod.	A	B	C	E	F	H	I	L	N	O	P	S	T	V	Weight (Kg)
MD1-AV	-	G1/8	42	42	G1/8	26.2	43	Ø4	53.2	2.5	22.7	27	34.6	10.5	0.2
MD1-AV-1/8TF	1/8 NPTF	G1/8	42	42	G1/8	26.2	43	Ø4	53.2	2.5	22.7	27	34.6	10.5	0.2
MD1-AV-1/4TF	1/4 NPTF	G1/8	49	42	G1/8	26.2	43	Ø4	53.2	2.5	22.7	27	34.6	10.5	0.2
MD1-AV-3/8TF	3/8 NPTF	G1/8	49	42	G1/8	26.2	43	Ø4	53.2	2.5	22.7	27	34.6	10.5	0.2
MD1-AV-Ø4TF	Ø1/4"	G1/8	59	42	G1/8	26.2	43	Ø4	53.2	2.5	22.7	27	34.6	10.5	0.2
MD1-AV-Ø5TF	Ø5/16"	G1/8	62	42	G1/8	26.2	43	Ø4	53.2	2.5	22.7	27	34.6	10.5	0.2
MD1-AV-Ø6TF	Ø3/8"	G1/8	67	42	G1/8	26.2	43	Ø4	53.2	2.5	22.7	27	34.6	10.5	0.2
MD1-AV-1/8	G1/8	G1/8	42	42	G1/8	26.2	43	Ø4	53.2	2.5	22.7	27	34.6	10.5	0.2
MD1-AV-1/4	G1/4	G1/8	42	42	G1/8	26.2	43	Ø4	53.2	2.5	22.7	27	34.6	10.5	0.2
MD1-AV-3/8	G3/8	G1/8	42	42	G1/8	26.2	43	Ø4	53.2	2.5	22.7	27	34.6	10.5	0.2
MD1-AV-6	Ø6	G1/8	59	42	G1/8	26.2	43	Ø4	53.2	2.5	22.7	27	34.6	10.5	0.2
MD1-AV-8	Ø8	G1/8	62	42	G1/8	26.2	43	Ø4	53.2	2.5	22.7	27	34.6	10.5	0.2
MD1-AV-10	Ø10	G1/8	67	42	G1/8	26.2	43	Ø4	53.2	2.5	22.7	27	34.6	10.5	0.2

# Take-off Blocks Series MD


  
New

Ports with Interchangeable cartridges: Threaded (1/8, 1/4, 3/8 NPTF or BSPP) or with push-in fitting for tube sizes  $\varnothing$  1/4", 5/16", 3/8", 6mm, 8mm, or 10mm. (5-way version)  
Intermediate joining cartridge (3-way version)



- » Fully Orientatable Ports
- » 4 individual 1/8" outlets (5 outlets if used on the end)
- » Space and Cost Efficient Cartridge option
- » Cartridge with integrated check valve
- » Cartridge is half the width of take-off block

The take-off module enables to draw air from the air treatment group, both in the middle and end position. The same operation, although in a more limited way, can be carried out with the intermediate cartridge.

## GENERAL DATA

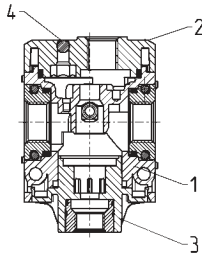
Construction	modular, compact
Materials	see following page
Ports - Take-off block	With interchangeable cartridges: 1/8, 1/4 and 3/8 NPTF or BSP threaded or integrated with push-in fitting for tube with $\varnothing$ 6mm, 8mm, 10mm, 1/4", 5/16" and 3/8"
Ports - Joining cartridge with port	3/8
Derivations - Take-off block	4x 1/8
Derivations - Joining cartridge	2x 1/8
Mounting	in-line; wall-mounting by means of through holes in the body or with a support bracket
Operating temperature	23°F - 122°F / -5°C - 50°C
Operating pressure	4 - 232 psi / 0.3 - 16 bar
Nominal flow at 6 bar with $\Delta p = 1$ bar	MD1-B00-1/8 = 45.9 SCFM / 1300 NL/min MD1-B00-1/4 = 81.2 SCFM / 2300 NL/min MD1-B00-3/8 = 120 SCFM / 3400 NL/min
Fluid	compressed air

**CODING EXAMPLE**

MD	1	-	B	00	-	1/8TF	
----	---	---	---	----	---	-------	--

<b>MD</b>	SERIES
<b>1</b>	DIMENSION: 1 = 42 mm
<b>B</b>	TAKE-OFF BLOCK
<b>00</b>	DESIGN TYPE: 00 = standard derivation 02 = with integrated check valve
<b>1/8</b>	PORTS (IN - OUT)*: = without ports 6 = tube Ø6      04TF = tube Ø1/4" 8 = tube Ø8      05TF = tube Ø5/16" 10 = tube Ø10    06TF = tube Ø3/8" 1/8 = G1/8 Thread    1/8TF = 1/8 NPTF 1/4 = G1/4 Thread    1/4TF = 1/4 NPTF 3/8 = G3/8 Thread    3/8TF = 3/8 NPTF
* NOTE: if the inlet port is different from the outlet port, both values shall be indicated. Example: MD1-B00-1/8-1/4	

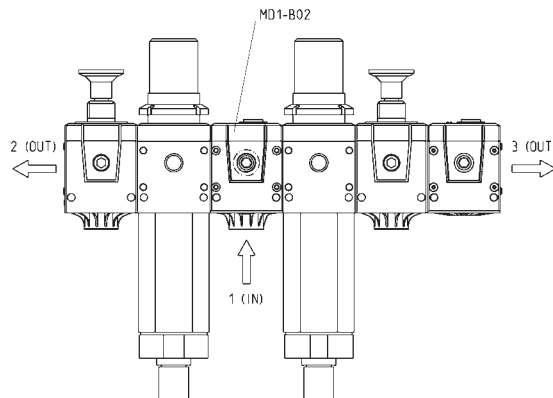
**Series MD take-off block - materials**



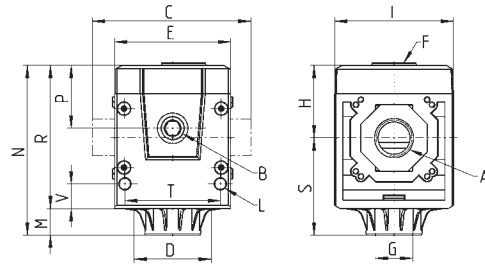
PARTS	MATERIALS
1 = Body	Polyamide
2 = Guard	Polyamide
3 = Plug	Polyamide
4 = Sphere	Stainless steel
Seals	NBR

**Use of the take-off block MD1-B02**

The take-off block MD1-B02 is particularly suitable when Series MD1 modules have to be supplied through the same pressure source. The modules which are connected to the left side are of LH kind.



Series MD take-off block - dimensions

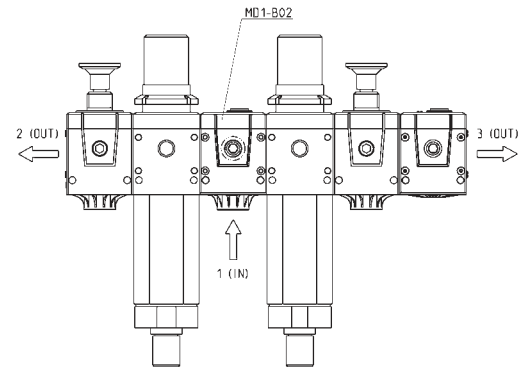


DIMENSIONS

Mod.	A	B	C	D	E	F	G	H	I	L	M	N	P	R	S	T	V	Weight (Kg)
MD1-B00	-	G1/8	42	28.5	42	G1/8	G1/8	26.2	43	Ø4	9.5	61.2	22.7	51.7	35.1	34.6	9	0.2
MD1-B00TF	-	G1/8	42	28.5	42	1/8 NPTF	1/8 NPTF	26.2	43	Ø4	9.5	61.2	22.7	51.7	35.1	34.6	9	0.2
MD1-B00-1/8TF	1/8 NPTF	G1/8	42	28.5	42	G1/8	1/8 NPTF	26.2	43	Ø4	9.5	61.2	22.7	51.7	35.1	34.6	9	0.2
MD1-B00-1/4TF	1/4 NPTF	G1/8	49	28.5	42	G1/8	1/8 NPTF	26.2	43	Ø4	9.5	61.2	22.7	51.7	35.1	34.6	9	0.2
MD1-B00-3/8TF	3/8 NPTF	G1/8	49	28.5	42	G1/8	1/8 NPTF	26.2	43	Ø4	9.5	61.2	22.7	51.7	35.1	34.6	9	0.2
MD1-B00-04TF	Ø1/4"	G1/8	59	28.5	42	G1/8	1/8 NPTF	26.2	43	Ø4	9.5	61.2	22.7	51.7	35.1	34.6	9	0.2
MD1-B00-05TF	Ø5/16"	G1/8	62	28.5	42	G1/8	1/8 NPTF	26.2	43	Ø4	9.5	61.2	22.7	51.7	35.1	34.6	9	0.2
MD1-B00-06TF	Ø3/8"	G1/8	67	28.5	42	G1/8	1/8 NPTF	26.2	43	Ø4	9.5	61.2	22.7	51.7	35.1	34.6	9	0.2
MD1-B00-1/8	G1/8	G1/8	42	28.5	42	G1/8	G1/8	26.2	43	Ø4	9.5	61.2	22.7	51.7	35.1	34.6	9	0.2
MD1-B00-1/4	G1/4	G1/8	42	28.5	42	G1/8	G1/8	26.2	43	Ø4	9.5	61.2	22.7	51.7	35.1	34.6	9	0.2
MD1-B00-3/8	G3/8	G1/8	42	28.5	42	G1/8	G1/8	26.2	43	Ø4	9.5	61.2	22.7	51.7	35.1	34.6	9	0.2
MD1-B00-6	Ø6	G1/8	59	28.5	42	G1/8	G1/8	26.2	43	Ø4	9.5	61.2	22.7	51.7	35.1	34.6	9	0.2
MD1-B00-8	Ø8	G1/8	62	28.5	42	G1/8	G1/8	26.2	43	Ø4	9.5	61.2	22.7	51.7	35.1	34.6	9	0.2
MD1-B00-10	Ø10	G1/8	67	28.5	42	G1/8	G1/8	26.2	43	Ø4	9.5	61.2	22.7	51.7	35.1	34.6	9	0.2

Use of the take-off block MD1-B02

The take-off block MD1-B02 is particularly suitable when Series MD1 modules have to be supplied through the same pressure source. The modules which are connected to the left side are of LH kind.



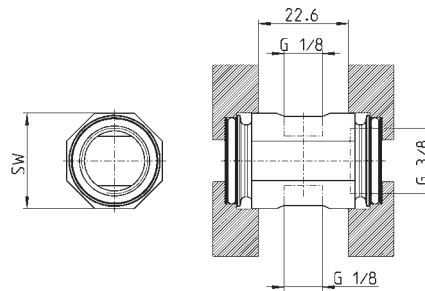
Intermediate joining cartridge with derivation Mod. MD1-B01

The kit is supplied with:  
1x intermediate joining cartridge with derivation  
4x zinc-plated white special screws Ø4,5 TC/RC



Dimensions (mm)

Mod.	A	B	C	SW	Weight (Kg)
MD1-B01-TF	1/8 NPTF	G3/8	22.6	24	.076
MD1-B01	G1/8	G3/8	22.6	24	.076



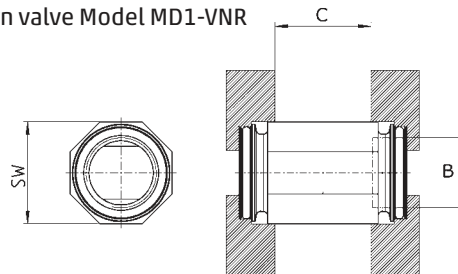
Intermediate joining cartridge with non-return valve Model MD1-VNR

The kit is supplied with:  
1x intermediate joining cartridge with derivation  
4x zinc-plated white special screws Ø4,5 TC/RC



Dimensions (mm)

Model	B	C	SW
MD1-VNR	G 3/8	22.6	24



ACCESSORIES FOR SERIES MD



Threaded cartridges



Integrated cartridges with push-in fitting



Intermediate joining cartridge Mod. MD1-C



Screws for wall mounting Mod. MD1-D



Rear bracket Mod. MD1-ST/1



Mounting bracket Mod. C114-ST



Mounting bracket Mod. C114-ST/1



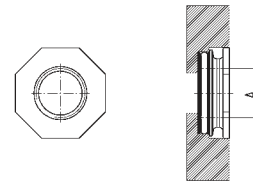
Mounting bracket Mod. C114-ST/2



MODULAR FRL SERIES MD

### Threaded cartridges Mod. MD1-A-...

The kit is supplied with:  
 2x nickel-plated threaded cartridges  
 4x special white zinc-plated screws  $\varnothing 4,5$  TC/RC

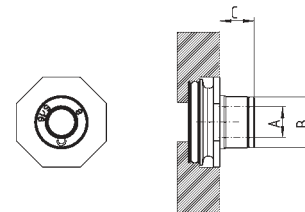


#### DIMENSIONS

Mod.	A	C
MD1-A-1/8TF	1/8 NPTF	0
MD1-A-1/4TF	1/4 NPTF	3.5
MD1-A-3/8TF	3/8 NPTF	3.5
MD1-A-1/8	G1/8	0
MD1-A-1/4	G1/4	0
MD1-A-3/8	G3/8	0

### Integrated cartridges with push-in fitting Mod. MD1-A-...

The kit is supplied with:  
 2x integrated nickel-plated cartridges with push-in fitting  
 4x special white zinc-plated screws  $\varnothing 4,5$  TC/RC

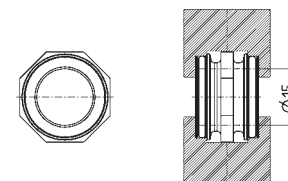


#### DIMENSIONS

Mod.	A	B	C
MD1-A-04TF	$\varnothing 1/4"$	11.9	8.5
MD1-A-05TF	$\varnothing 5/16"$		10
MD1-A-06TF	$\varnothing 3/8"$	15.3	12.5
MD1-A-6	$\varnothing 6$	12.7	8.5
MD1-A-8	$\varnothing 8$	14.2	10
MD1-A-10	$\varnothing 10$	16.5	12.5

### Intermediate joining cartridge Mod. MD1-C

The kit is supplied with:  
 1x intermediate joining cartridge  
 4x special white zinc-plated screws  $\varnothing 4,5$  TC/RC



Mod.

MD1-C



**Screws for wall mounting Mod. MD1-D**

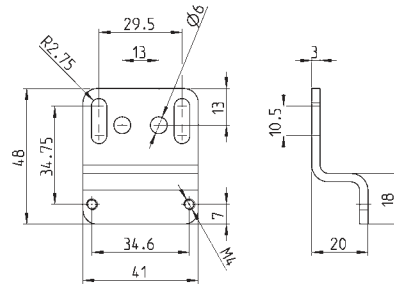
The kit is supplied with:  
2x white zinc-plated screws M4x50



Mod.  
MD1-D

**Mounting bracket Mod. MD1-ST/1**

The kit is supplied with:  
1x zinc-plated bracket  
2x white zinc-plated screws M4x50

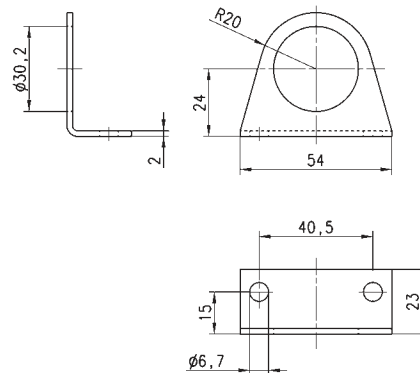


Mod.  
MD1-ST/1

**Mounting bracket Mod. C114-ST**

For regulators and filter-regulators (G1/4 - G1/8)

The kit is supplied with:  
1x zinc-plated steel bracket



Mod.  
C114-ST

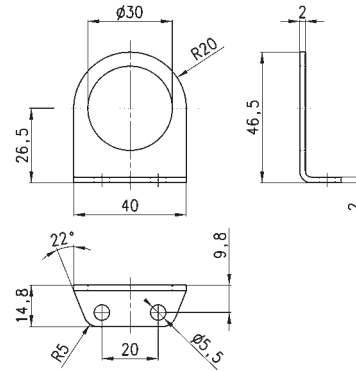
MODULAR FRL SERIES MD



### Mounting bracket Mod. C114-ST/1

For regulators and filter-regulators  
(1/4 - 1/8)

The kit is supplied with:  
1x zinc-plated steel bracket



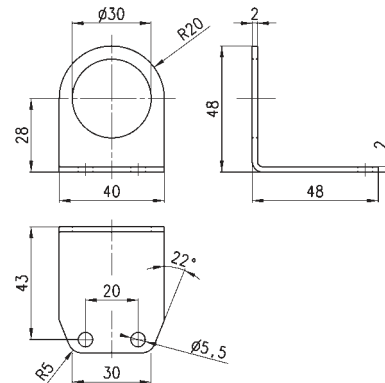
Mod.  
C114-ST/1



### Mounting bracket Mod. C114-ST/2

For regulators and filter-regulators  
(1/4 - 1/8)

The kit is supplied with:  
1x zinc-plated steel bracket



Mod.  
C114-ST/2

# Assembled FRL Series MD



New

Ports with Interchangeable cartridges: Threaded (1/8, 1/4, 3/8 NPTF or BSPP) or with push-in fitting for tube sizes  $\varnothing$  1/4", 5/16", 3/8", 6mm, 8mm, or 10mm..

Modular assembly



- » Compact design
- » Optimized dimensions
- » Great reliability
- » Easy and quick maintenance
- » Reduced weight
- » Quick mounting
- » Wide range of functions
- » Additional air outlets

The various components can be connected with the innovative cartridge fittings. The regulator and the valves can be adjusted so as to have the regulation devices or the actuation in front or lower position. Available with multiple wall mounting options.

The innovative cartridge fitting design of the Series MD facilitates interchangeable port connection. The port cartridges may be female threaded or push-in fittings in various sizes from 1/8" to 3/8". Each module also features additional 1/8" air outlets on the front and back sides.

## GENERAL DATA

Construction	modular, compact
Materials	see catalogue pages referring to the single component
Ports	With interchangeable cartridges: 1/8, 1/4 and 3/8 NPTF or BSP threaded or integrated with push-in fitting for tube with $\varnothing$ 6mm, 8mm, 10mm, 1/4", 5/16" and 3/8"
Mounting	vertical in-line; wall-mounting by means of through holes in the body or with a support bracket; panel mounting
Operating temperature	23°F - 122°F / -5°C - 50°C (according to the single component characteristics)

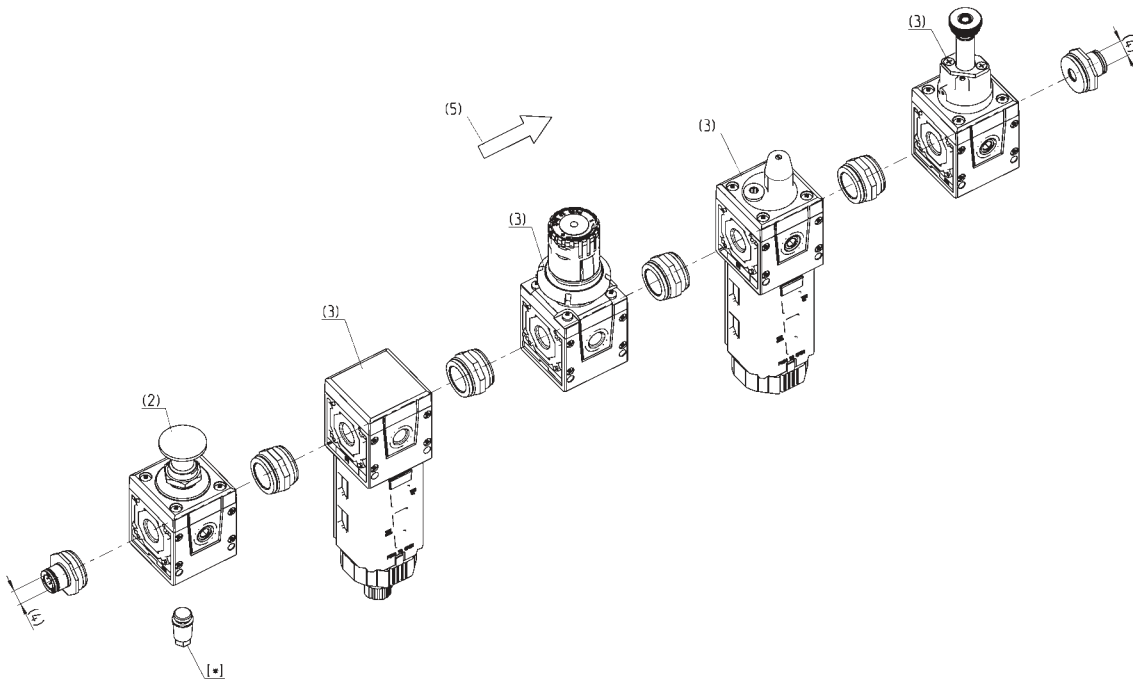
MODULAR FRL SERIES MD

CONFIGURATION OF SERIES MD ASSEMBLED GROUPS

TO CONFIGURE THE SERIES MD ASSEMBLED GROUPS, USE THE EXAMPLE BELOW AND THE RELATED LEGEND ON THE FOLLOWING PAGE.

Configuration of the assembled group in the drawing below:

MD1-V01+A26F000R000L00V16-8



(1)	(2)	[*]	(3)	[*]
MD	1	- V01	+ A26	F000
				R004
				L00
				V16
			(4)	8
				(5)














$n_x$   
 ↓

CONFIGURATOR OF SERIES MD ASSEMBLED GROUPS										
MD	1	-	V01	F000	R004	L00	V16	-	8	-
MD	SERIES									
1	(1)	DIMENSION: 1 = 42 mm								
-										
V01	(2)	MODULE + [ * ] (to configure the modules, see the single components pages): F... = Filter FC... = Coalescing filter FCA... = Activated carbons filter R... = Pressure regulator L... = Lubricator FR... = Filter-Regulator V... = Lockable isolation valve AV... = Soft start valve B... = Take-off block  [ * ] The following ACCESSORIES can be added after every single module:  REGULATOR, FILTER-REGULATOR AND MANIFOLD REGULATOR +A01 = M043-P04 (pressure gauge) +A02 = M043-P06 (pressure gauge) +A03 = M043-P10 (pressure gauge) +A04 = M043-P12 (pressure gauge) +A05 = SWCN-P10-P3-2 (pressure switch) +A06 = SWCN-P10-P4-2 (pressure switch) +A07 = SWCN-P10-P4-M (pressure switch) +A08 = PG010-PB-1/8 (pressure gauge)  LOCKABLE ISOLATION VALVE ...V01 / V16 / V36 +A25 = 2901 1/8 (silencier) +A26 = 2921 1/8 (silencier) - recommended choice +A27 = 2931 1/8 (silencier) +A28 = 2938 1/8 (silencier) +A01 = M043-P04 (pressure gauge) +A02 = M043-P06 (pressure gauge) +A03 = M043-P10 (pressure gauge) +A04 = M043-P12 (pressure gauge) +A05 = SWCN-P10-P3-2 (pressure switch) +A06 = SWCN-P10-P4-2 (pressure switch) +A07 = SWCN-P10-P4-M (pressure switch) +A08 = PG010-PB-1/8 (pressure gauge)  INTERMEDIATE JOINING CARTRIDGE WITH DERIVATION (MD1-B) +A17 = PM681-1 (pressure switch mounted on top) +A18 = PM681-3 (pressure switch mounted on top)  SOFT START VALVE AND 5-WAY TAKE-OFF BLOCK +A15 = PM11-NC (pressure switch mounted on top) +A16 = PM11-NA (pressure switch mounted on top) +A17 = PM681-1 (pressure switch mounted on top) +A18 = PM681-3 (pressure switch mounted on top) +A19 = PM11-SC + S2520 1/8-1/4 (pressure switch with fitting mounted on top) +A05 = SWCN-P10-P3-2 (front mounted pressure switch) +A06 = SWCN-P10-P4-2 (front mounted pressure switch) +A07 = SWCN-P10-P4-M (front mounted pressure switch) +A08 = PG010-PB-1/8 (front mounted pressure switch)  LOCKABLE ISOLATION VALVE...V16 +A35 = U7H (coils 12V DC) +A36 = U77 (coils 24V DC) +A37 = U79 (coils 48V DC) +A38 = U7K (coils 110V AC) +A39 = U7J (coils 230V AC) +A40 = G7H (coils 12V DC) +A41 = G77 (coils 24V DC) +A42 = G79 (coils 48V DC) +A43 = G7K (coils 110V AC) +A44 = G7J (coils 230V AC)								
F000	(3)	see MODULE (2) + [ * ]								
R004	(3)	see MODULE (2) + [ * ]								
L00	(3)	see MODULE (2) + [ * ]								
V16	(3)	see MODULE (2) + [ * ]								
-										
8	(4)	PORTS (IN - OUT)*: = without ports 6 = tube Ø6      04TF = tube Ø1/4" 8 = tube Ø8      05TF = tube Ø5/16" 10 = tube Ø10    06TF = tube Ø3/8" 1/8 = G1/8 Thread    1/8TF = 1/8 NPTF 1/4 = G1/4 Thread    1/4TF = 1/4 NPTF 3/8 = G3/8 Thread    3/8TF = 3/8 NPTF								
-										
LH	(5)	FLOW DIRECTION: = from left to right (standard) LH = from right to left								
(2) + (3) + [ * ]	REPEATABLE COMBINATION for a "n" number of times									



**3 Modular FRL Series MC 1/4", 3/8", & 1/2" NPTF**

Page

Series MC		Summary and Features	<b>83</b>
Series MC		Filters	<b>85</b>
Series MC		Coalescing Filters	<b>88</b>
Series MC		Pressure Regulators	<b>95</b>
Series MC		Manifold Pressure Regulators	<b>98</b>
Series MC		Manifold Regulators Assembly Hardware Kits	<b>100</b>
Series MC		Lubricators	<b>101</b>
Series MC		Filter/Regulators	<b>104</b>
Series MC		Lockable Isolation 3/2-Way Valve (Lock-out/Tag-out)	<b>107</b>
Series MC		Electropneumatic/Pneumatic Isolation Valve (Shut-off)	<b>110</b>
Series MC		Soft Start Valve	<b>113</b>
Series MC		Take-Off Blocks, (Distribution-Block)	<b>116</b>
Series MC		Completed Assemblies (Single Part Number Code)	<b>118</b>
Series MC		Assembly Kits Guide	<b>124</b>
Series MC		Mounting Brackets, Accessories and Kits	<b>127</b>

# Summary and Features

Series MC Modular FRL 1/4", 3/8", 1/2" NPTF

## Manual Shut-Off Valve w/ Lock-Out, Tag-Out

- Downstream quick-dump feature
- 8mm (0.315") diam hole for most locks and hasps in use

## Optional Wallmount brackets

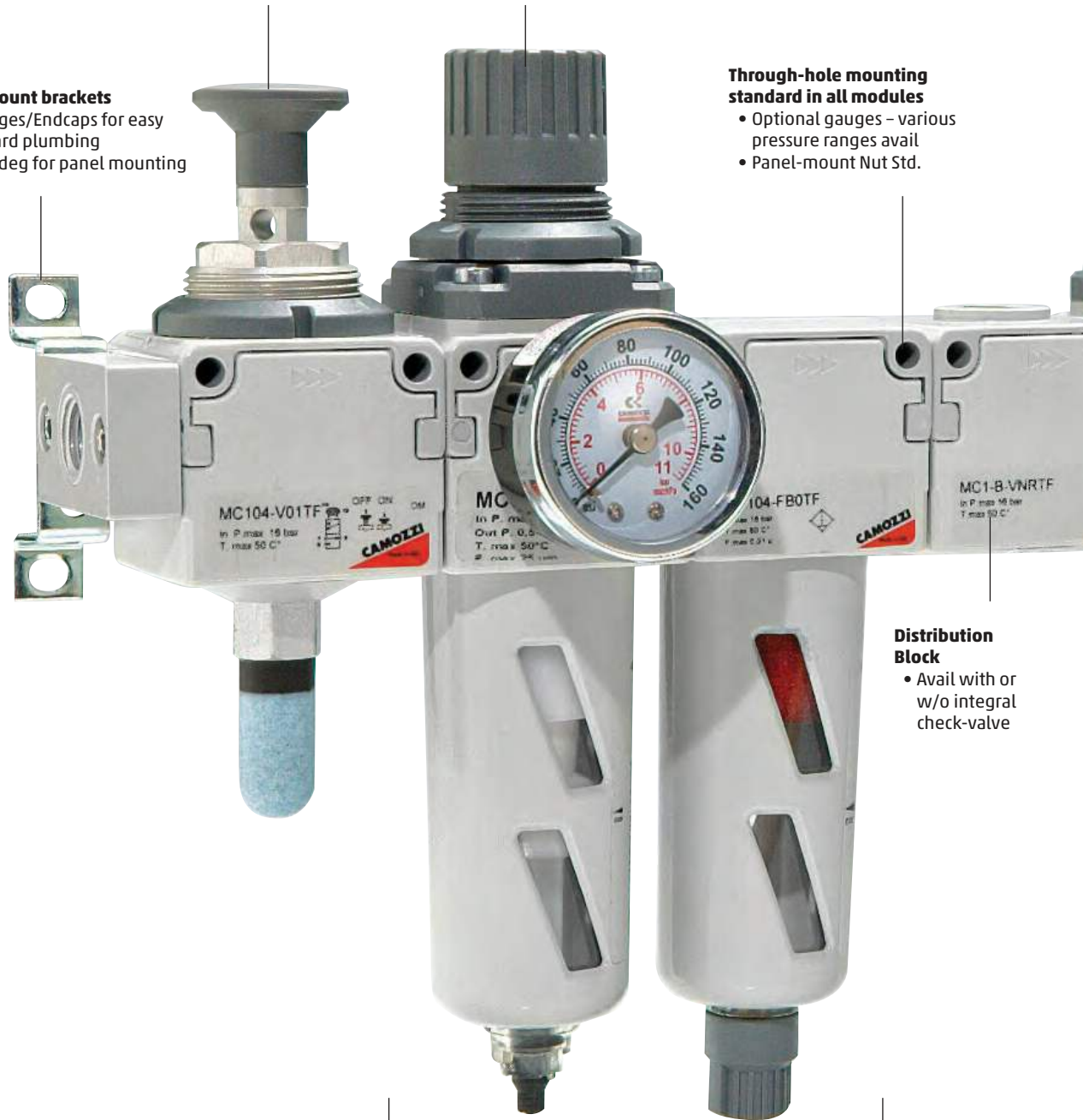
- Optional Flanges/Endcaps for easy removal of hard plumbing
- Rotatable 90 deg for panel mounting assy.

## Regulator

- Four Pressure range options
- Relieving, Non-Relieving & High Response diaphragm options
- Factory Pressure presets avail.
- Tamper-proof avail.
- Locking, Non-rising knob std.
- Parallel-Circuit, Manifold Regulators – Full pressure & flow
- Front & Rear gauge ports

## Through-hole mounting standard in all modules

- Optional gauges – various pressure ranges avail
- Panel-mount Nut Std.



## Distribution Block

- Avail with or w/o integral check-valve

## Filter

- Coalescing, 5 & 25 micron elements avail.
- Quick-Release bayonet bowls
- Grilamid (Nylon Composite) bowl w/ metal bowl shroud std.
- Five Drain Options available
- Available in 'Piggy-back' Filter-Regulator combos



**Lubricator**

- Venturi Design w/ 2 micron drop size, Refillable under pressure in 3/8" & 1/2" sizes
- Flow adjustment built into droplet indicator
- Quick-release bayonet bowl
- Grilamid (Nylon Composite) bowl material w/ metal shroud std.

**Soft-Start Valve**

- Fully adjustable pressure ramp-up during start-up
- Port tap for electronic pressure switch (PM11)
- For assembly with or w/o Isolation Valve
- Poppet valve design

**Isolation Valve (Shut-Off Valve)**

- Solenoid or Air-Pilot activated
- Downstream quick-dump feature
- Spool valve design

**Standard Features**

- Inlet Pressure 0.3 – 16 bar (4.25 – 232 psi)
- Operating Temp -5°C - 50°C, (23°F - 122°F), with Dew Point of air at least 2°C (4°F) below the min working temperature
- Custom Assemblies available from McKinney, TX
- Low Temp versions available
- Aluminum construction with Polyester Epoxy / Polyurethane Enamel finish
- Modular Design with Tie-Rod Assembly system
- Single Part Number system for standard Pre-Assemblies from McKinney, TX.
- Optional accessories shown include, gauges, silencers, solenoid coil operators, and pressure switches.

# Filters Series MC

Port 1/4", 3/8", 1/2" NPTF  
Modular with metal bowl guard and bayonet-type mounting



The Series MC filters are available with port 1/4", 3/8" or 1/2" NPTF.

The bowls of these filters are made of Nylon - Grilamid with an aluminum bowl guard and have a condensate drain valve in five (5) different options.

On request it is possible to order filters with filtering elements in different filtration ranges than those listed standard in the code key.

## TECHNICAL SPECIFICATIONS

Construction	compact modular with filtering element in HDPE			
Materials	Body - Aluminum alloy, Bowl - Grilamid TR 55 (Nylon compound), Seals - Buna-N, internals in brass			
Port	NPTF	1/4"	3/8"	1/2"
Max condensate capacity	oz	1	2.43	2.43
Weight	lbs	.75	1.58	1.52
Mounting	vertical in-line or wall-mounting			
Operating temperature	-5° C - 50° C, (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature			
Delivered air quality (ISO 8573-1: 2010)	Class 6.8.4 with 5 µm element Class 7.8.4 with 25 µm element			
Draining of condensate	manual - semi automatic standard, other options available in code key			
Finishing	Chromate treatment undercoat; Bodies - polyurethane enamel & oven-cured; Bowls - electrostatic coating of polyester epoxy & oven cured			

## PNEUMATIC DATA

Operating pressure	standard or protected depressurization drains: 0.3 - 16 bar (4.25 - 232 psi) depressurization drain: 0.3 - 10 bar (4.25 - 145 psi) automatic drain: 1.5 - 12 bar (22 - 174 psi) for 3/8 and 1/2 port sizes
Nominal flow	see graph

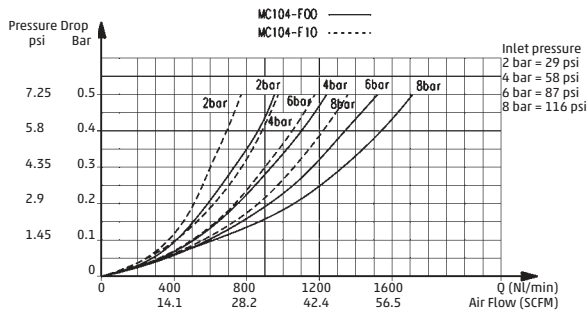
**CODING EXAMPLE**

MC	1	04	-	F	0	0	TF
----	---	----	---	---	---	---	----

<b>MC</b>	SERIES
<b>1</b>	SIZE 1 = 1/4" 2 = 3/8" or 1/2"
<b>04</b>	PORTS: 04 = 1/4" NPTF 38 = 3/8" NPTF 02 = 1/2" NPTF
<b>F</b>	FILTER
<b>0</b>	FILTERING ELEMENT 0 = 25µm 1 = 5µm
<b>0</b>	DRAINING OF CONDENSATE 0 = normal - semiautomatic 3 = Fully automatic, Float-Drain (3/8" & 1/2" ONLY) 4 = depressurization, "Spitter-Type", 1/4" ONLY 5 = depressurization, protected, "Spitter-Type" w/ filtered drain orifice 8 = port 1/8" female, free-flow
<b>TF</b>	PORT TF = NPTF Blank = BSPP thread ports

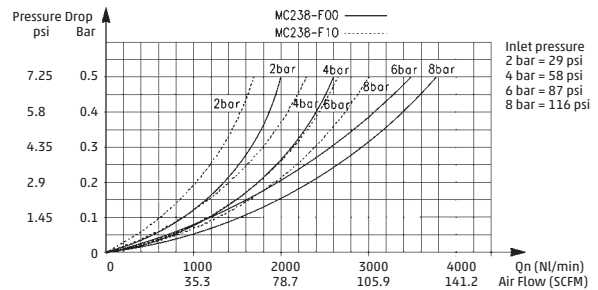
**FLOW DIAGRAMS**

**MC104-F00TF and MC104-F10TF - 1/4" Models**



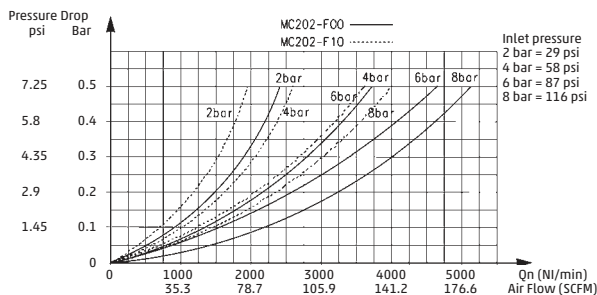
Pa = Inlet pressure  
ΔP = Pressure Drop  
Qn = Flow

**MC238-F00TF and MC238-F10TF - 3/8" Models**



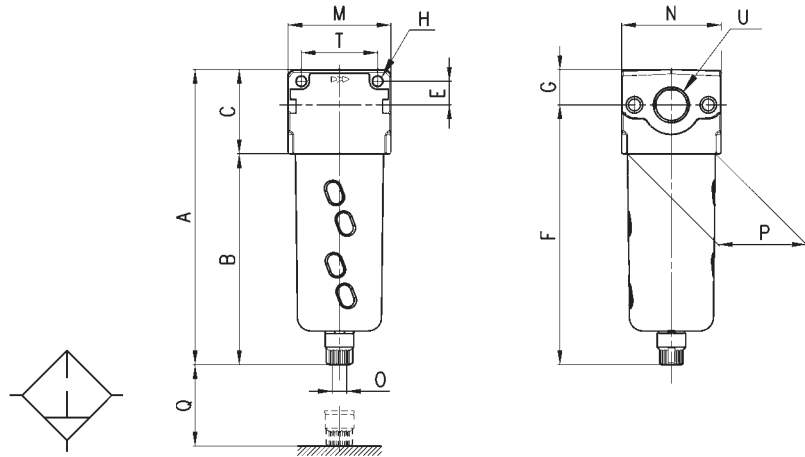
Pa = Inlet pressure  
ΔP = Pressure Drop  
Qn = Flow

**MC202-F00TF and MC202-F10TF - 1/2" Models**



Pa = Inlet pressure  
ΔP = Pressure Drop  
Qn = Flow

Filters Series MC



DIMENSIONS (in inches)

Mod.	A	B	C	E	F	G	H	M	N	DRAIN			NPTF	
										O	P	Q	T	U
MC104-F00TF	5.630	4.016	1.614	.433	4.980	.650	.177	1.772	1.772	1/8	1.457	2.23	1.378	1/4
MC238-F00TF	7.244	5.236	2.008	.551	6.417	.827	.217	2.441	2.362	1/8	2.087	2.835	1.811	3/8
MC202-F00TF	7.244	5.236	2.008	.551	6.417	.827	.217	2.441	2.362	1/8	2.087	2.835	1.811	1/2

# Coalescing Filters Series MC

Port 1/4", 3/8" & 1/2" NPTF

Modular with metal bowl guard and bayonet-type mounting



The Series MC coalescing filters are available with 1/4", 3/8", 1/2" NPTF port.

The bowls of these filters are made of Nylon-Grilamid with an aluminum bowl guard and have a condensate drain valve in five (5) different options.

## TECHNICAL SPECIFICATIONS

Construction	modular, coalescing elements			
materials	Body - Aluminum alloy, Bowl - Grilamid TR 55 (Nylon compound), Seals - Buna-N, internals in brass			
Port	NPTF:	1/4"	3/8"	1/2"
Max. condensate capacity	oz	.95	2.64	2.64
Weight	lbs	.75	1.52	1.52
Mounting	vertical in line or wall-mounting			
Operating temperature	-5° C - 50° C, (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature			
Delivered air quality (ISO 8573-1: 2010)	Class 1.8.1 with 0.01 µm filtered element			
Draining of condensate	manual - semi-automatic standard, (other options available in code Key)			
finish	Chromate treatment undercoat; Bodies - polyurethane enamel & oven-cured; Bowls - electrostatic coating of polyester epoxy & oven cured			

## PNEUMATIC DATA

Operating pressure	0.3 - 16 bar, (with depressurizing drain P Max. of 10 bar) : 4.35 - 232 psi, (P Max 145 psi w/ depressurizing drain) - 1.5 - 12 bar for Full Automatic float drain, (22 - 175 psi), 3/8" & 1/2" models only
Nominal flow	see graph

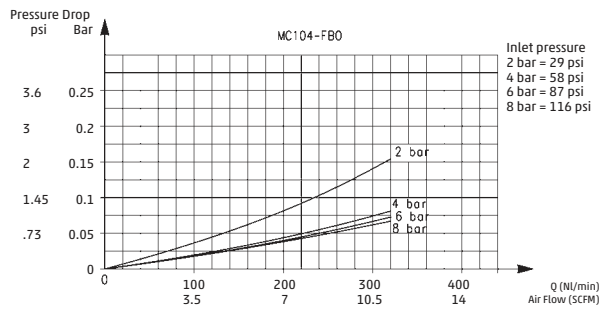
**CODING EXAMPLE**

MC	1	04	-	F	B	O	TF
----	---	----	---	---	---	---	----

<b>MC</b>	SERIES
<b>1</b>	SIZE 1 = 1/4" 2 = 3/8" or 1/2"
<b>04</b>	PORTS: 04 = 1/4" NPTF 38 = 3/8" NPTF 02 = 1/2" NPTF
<b>F</b>	FILTER
<b>B</b>	FILTERING ELEMENT B = 0,01 µm coalescing
<b>O</b>	DRAINING OF CONDENSATE 0 = normal - semiautomatic 3 = Fully automatic, Float-Drain, 3/8" & 1/2" 4 = depressurization, "Spitter-Type", 1/4" ONLY 5 = depressurization, protected, "Spitter-Type" w/ filtered drain orifice 8 = port 1/8" female, free-flow
<b>TF</b>	PORT TF = NPTF Blank = BSPP thread ports

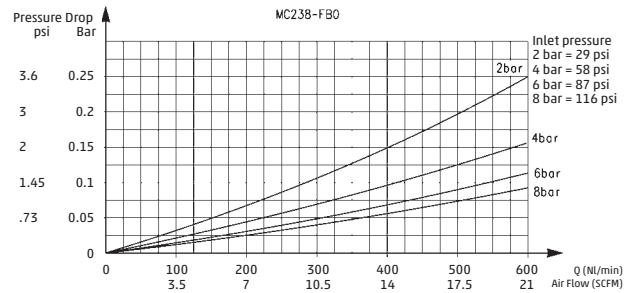
**FLOW DIAGRAMS**

**MC104-FB0TF - 1/4" Models**



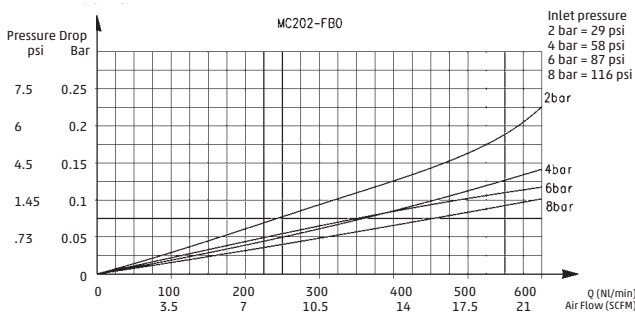
Pa = Inlet pressure  
ΔP = Pressure Drop  
Qn = Flow

**MC238-FB0TF - 3/8" Models**



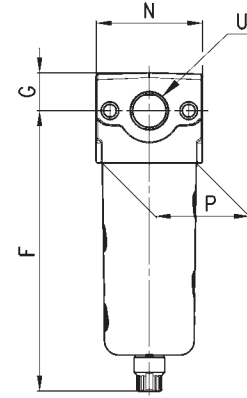
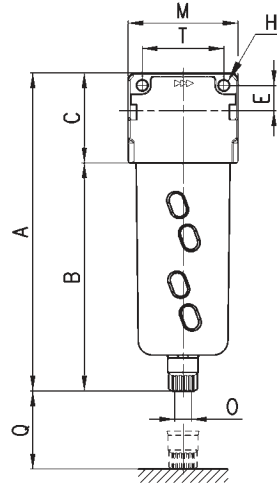
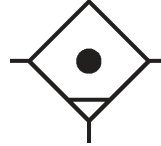
Pa = Inlet pressure  
ΔP = Pressure Drop  
Qn = Flow

**MC202-FB0TF - 1/2" Models**



Pa = Inlet pressure  
ΔP = Pressure Drop  
Qn = Flow

Coalescing filters Series MC



DIMENSIONS (in inches)

Mod.	A	B	C	E	F	G	H	M	N	DRAIN PORT		Q	T	PORTS
										O	P			U (NPTF)
MC104-FB0TF	5.630	4.016	1.614	.433	4.980	.650	.177	1.772	1.772	1/8	1.457	2.126	1.378	1/4"
MC238-FB0TF	7.244	5.236	2.008	.551	6.417	.827	.217	2.441	2.362	1/8	2.087	2.874	1.811	3/8"
MC202-FB0TF	7.244	5.236	2.008	.551	6.417	.827	.217	2.441	2.362	1/8	2.087	2.874	1.811	1/2"

MODULAR FRL SERIES MC

# Activated Carbon Filters Series MC

Ports: 1/4", 3/8" & 1/2" NPTF

Modular with metal bowl guard and bayonet-type mounting



For the removal of oil, liquid, and gaseous components from compressed air through activated carbon

The Series MC activated carbon filters are available with 1/4", 3/8", 1/2" NPTF port.

The bowls of these filters are made of Nylon-Grilamid sight glass and an aluminum bowl guard.

## TECHNICAL SPECIFICATIONS

Construction	modular, compact with activated carbon filtering element			
Materials	Body - Zinc alloy, Bowl - Grilamid TR 55 (Nylon compound), Seals - Buna-N, activated carbon			
Port	NPTF:	1/4"	3/8"	1/2"
Weight	lbs	.75	1.52	1.52
Mounting	vertical in line or wall-mounting			
Operating temperature	10° C - 40° C, (50° F - 104° F), (t max = 140° F)			
Operating Pressure	4 - 230 psi (0.3 - 16 bar)			
Nominal flow	see graph			
Delivered air quality (ISO 8573-1: 2010)	Class 1.7.1			
Draining of condensate	Not present			
Residual oil content	<0.003 mg/m <sup>3</sup>			
Fluid	Compressed Air			
Pre-filtering	It is recommended to use a filter with residual oil of 0.01mg/m <sup>3</sup>			



**CODING EXAMPLE**

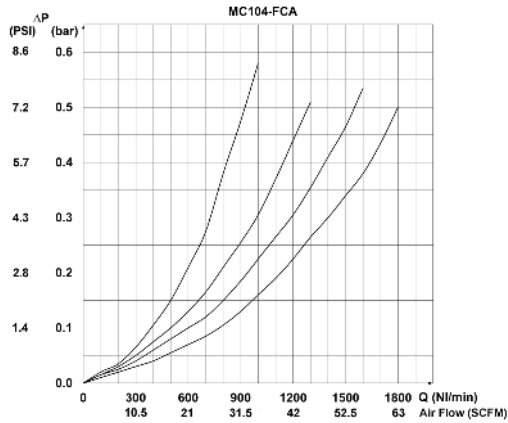
MC	1	04	-	F	CA	TF
----	---	----	---	---	----	----

<b>MC</b>	SERIES
<b>1</b>	SIZE 1 = 1/4" 2 = 3/8" or 1/2"
<b>04</b>	PORTS: 04 = 1/4" NPTF 38 = 3/8" NPTF 02 = 1/2" NPTF
<b>F</b>	FILTER
<b>CA</b>	FILTERING ELEMENT CA = Activated Carbon
<b>TF</b>	PORT TF = NPTF Blank = BSPP thread ports

MODULAR FRL SERIES MC

Flow Diagram

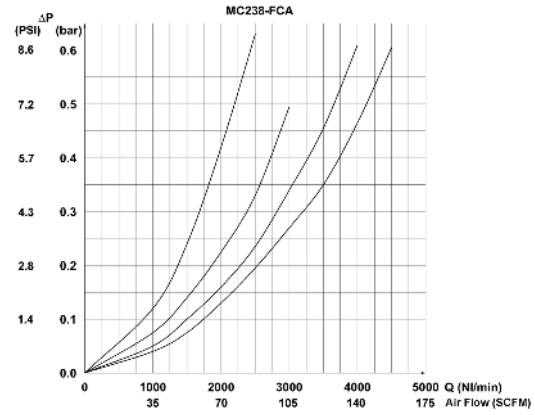
MC104-FCATF



Flow diagram for model: MC104-FCATF  
 ΔP = Pressure drop  
 Q = Flow

In order to guarantee the indicated performances, the maximum flow of the filter must be the one indicated in the graph. A higher flow rate is possible but the performances are not guaranteed.

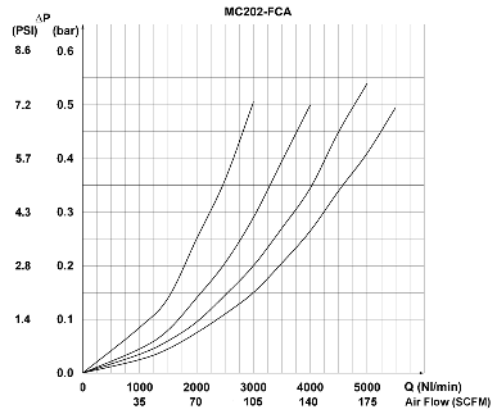
MC238-FCATF



Flow diagram for model: MC238-FCATF  
 ΔP = Pressure drop  
 Q = Flow

In order to guarantee the indicated performances, the maximum flow of the filter must be the one indicated in the graph. A higher flow rate is possible but the performances are not guaranteed.

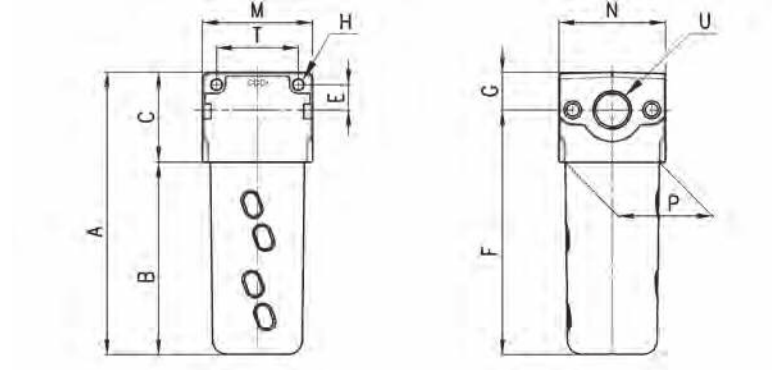
MC202-FCATF



Flow diagram for model: MC202-FCATF  
 ΔP = Pressure drop  
 Q = Flow

In order to guarantee the indicated performances, the maximum flow of the filter must be the one indicated in the graph. A higher flow rate is possible but the performances are not guaranteed.

Activated Carbon Filter Series MC



DIMENSIONS (in inches)												
Mod.	A	B	C	E	F	G	H	M	N	P	T	PORTS U (NPTF)
MC104-FCATF	4.881	3.267	1.624	.433	4.232	.650	.177	1.771	1.771	1.457	1.378	1/4"
MC238-FCATF	6.535	4.527	2.008	.551	5.709	.826	.217	2.440	2.362	2.086	1.811	3/8"
MC202-FCATF	6.535	4.527	2.008	.551	5.709	.826	.217	2.440	2.362	2.086	1.811	1/2"

MODULAR FRL SERIES MC

# Pressure Regulators Series MC

Port 1/4", 3/8", 1/2" NPTF  
Modular



The Series MC pressure regulators are available with port 1/4", 3/8", 1/2" NPTF.

Relieving diaphragms are standard.

Non-Relieving and Fast-Response Relieving diaphragms are optional, as called out in the code key.

All versions can be panel mounted.

## TECHNICAL SPECIFICATIONS

Construction	modular, compact, diaphragm type			
Materials	Aluminum Body, Buna-N Seals, Nylon-Grilamid Knob, Brass internals			
Port	NPTF	1/4"	3/8"	1/2"
Weight	lbs	.71	1.42	1.42
Pressure gauge port	1/8" NPTF			
Mounting	in-line wall or console mounting (in any position)			
Operating temperature	-5° C - 50° C, (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature			
Finishing	Chromate treatment undercoat; Bodies - polyurethane enamel & oven-cured; Bowls - electrostatic coating of polyester epoxy & oven cured			

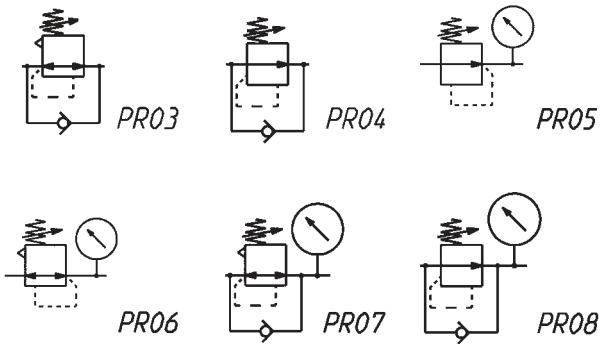
## PNEUMATIC DATA

Inlet pressure	0 – 16 bar (0 - 232 psi)
Outlet pressure	0.5 - 10 bar (7.25 - 145 psi) standard; see code key for optional spring ranges
Nominal flow	see graph
Secondary pressure relieving	standard, Non-Relieving and Sensitive Control Relieving available

CODING EXAMPLE

MC	1	04	-	R	0	0	_	-	VS	-	■	-	●	TF
----	---	----	---	---	---	---	---	---	----	---	---	---	---	----

<b>MC</b>	SERIES
<b>1</b>	SIZE 1 = 1/4" 2 = 3/8" or 1/2"
<b>04</b>	PORTS: 04 = 1/4" NPTF 38 = 3/8" NPTF 02 = 1/2" NPTF
<b>R</b>	REGULATOR
<b>0</b>	OPERATING PRESSURE 0 = 0.5 - 10 bar (standard) (7.25 - 145 psi) 1 = 0 - 4 bar (0 - 58 psi) 2 = 0 - 2 bar (0 - 29 psi), 1/4" ONLY 7 = 0.5 - 7 bar (7.25 - 102 psi), 1/4" ONLY T = calibrated (adjustable to a maximum pressure) ** B = fixed pressure **
<b>0</b>	DESIGN TYPE 0 = self-relieving 1 = non-relieving 5 = fast-response control, (metal-to-metal seat), relieving - 1/4" ONLY
	PRESSURE GAUGE OPTIONS Blank = without pressure gauge (standard) 1 = with pressure gauge 0 - 2.5 bar (0 - 36 psi) 2 = with pressure gauge 0 - 6 bar (0 - 87 psi) 3 = with pressure gauge 0 - 10 bar (0 - 145 psi) 4 = with pressure gauge 0 - 12 bar (0 - 174 psi)
<b>VS</b>	Blank = without high-relief flow VS = with high-relief flow, rapid reverse flow (1/4" units only)
	**IF THE REGULATOR IS CALIBRATED OR FIXED, AFTER THE PORTS ADD THE INLET PRESSURE "■" AND THE OUTLET PRESSURE "●", AFTER THE PORTS
	INLET PRESSURE: ■ = enter the SUPPLY pressure value
	OUTLET PRESSURE: ● = enter the OUTLET pressure value for the FIXED regulator or the maximum value of the ADJUSTABLE pressure for the CALIBRATED regulator
	Example of a calibrated regulator with Inlet Pressure = 6.3 bar and Outlet Pressure = 4.5 bar Complete part number: MD1-RT00-1/4-6,3-4,5TF
<b>TF</b>	PORT TF = NPTF Blank = BSPP thread ports

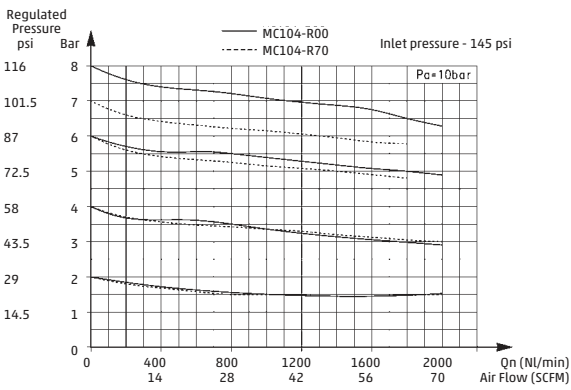


- PR03 = Regulator with relieving and by-pass valve
- PR04 = Regulator without relieving and with by-pass valve
- PR05 = Regulator without relieving and with pressure gauge
- PR06 = Regulator with relieving and pressure gauge
- PR07 = Regulator with relieving, by-pass valve and pressure gauge
- PR08 = Regulator without relieving with by-pass valve and pressure gauge

MODULAR FRL SERIES MC

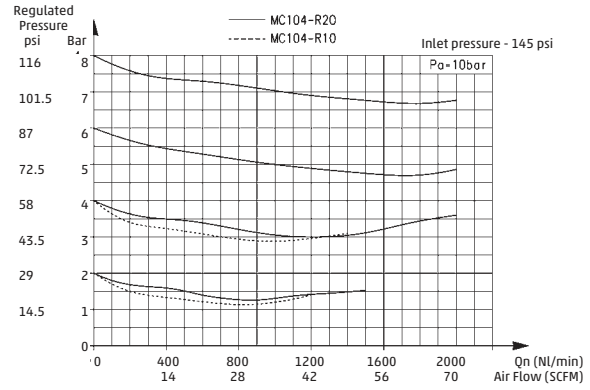
FLOW DIAGRAMS

MC104-R00TF and MC104-R70TF



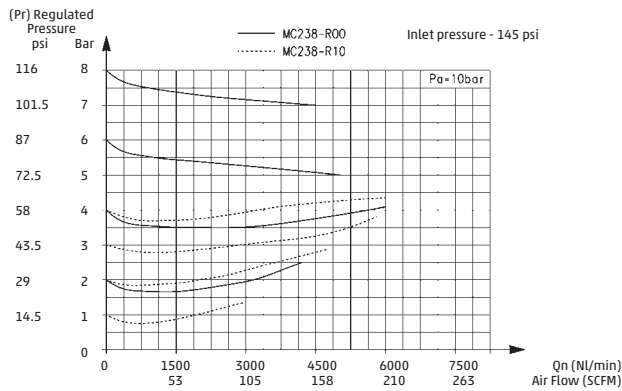
Pa = Inlet pressure Pr = Regulated pressure Qn = Flow

MC104-R20TF and MC104-R10TF



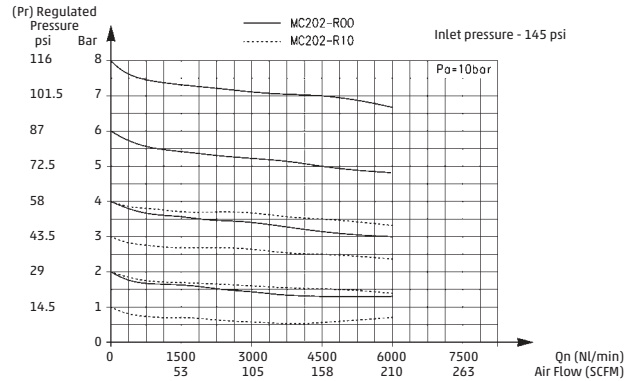
Pa = Inlet pressure Pr = Regulated pressure Qn = Flow

MC238-R00TF and MC238-R10TF



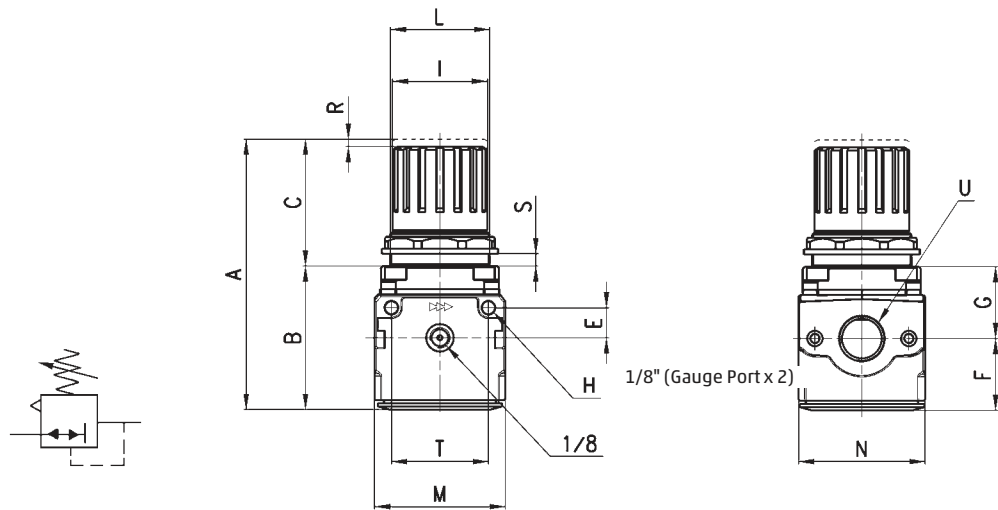
Pa = Inlet pressure Pr = Regulated pressure Qn = Flow

MC202-R00TF and MC202-R10TF



Pa = Inlet pressure Pr = Regulated pressure Qn = Flow

Pressure regulators Series MC



DIMENSIONS (in inches)

Mod.	A	B	C	E	F	G	H	I	L	M	N	O	R	S	T	U (NPTF)
MC104-R00TF	3.701	2.205	1.496	.433	1.122	1.083	.177	1.102	M30x1.5	1.772	1.772	1.772	.118	.236	1.378	1/4"
MC238-R00TF	5.000	2.638	2.362	.551	1.339	1.378	.217	1.772	M47x1.5	2.441	2.441	2.362	.138	.354	1.811	3/8"
MC202-R00TF	5.000	2.638	2.362	.551	1.339	1.378	.217	1.772	M47x1.5	2.441	2.441	2.362	.138	.354	1.811	1/2"

# Manifold Pressure Regulators Series MC

Inlet port 1/4" NPTF, full Inlet pressure (non-cascading),  
2 outlets per unit.

Modular



The manifold pressure regulators are available with port 1/4" NPTF.

Normally they are available with relieving diaphragm as standard and can be panel mounted.

## TECHNICAL SPECIFICATIONS

Construction	compact modular, diaphragm type
Materials	Body - Aluminum alloy, Cover/Head - Grilamid TR 55 (Nylon compound), Seals - Buna-N, internals in brass
Port (Inlet/Outlet)	1/4" NPTF / 1/8" NPTF
Weight	kg 0,320 = .70 lbs
Pressure gauge port / outlet	1/8" NPTF
Mounting	in-line ; wall or panel mounting (in any position)
Operating temperature	-5° C - 50° C, (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature
Finish	Chromate treatment undercoat; Bodies - polyurethane enamel & oven-cured; Bowls - electrostatic coating of polyester epoxy & oven cured

## PNEUMATIC DATA

Inlet pressure	0 – 16 bar (0 - 232 psi)
Outlet pressure	0.5 – 10 bar or 0 – 4 bar (7.25 - 145 psi or 0 - 58 psi)
Flow	see graph
Secondary pressure relieving	standard

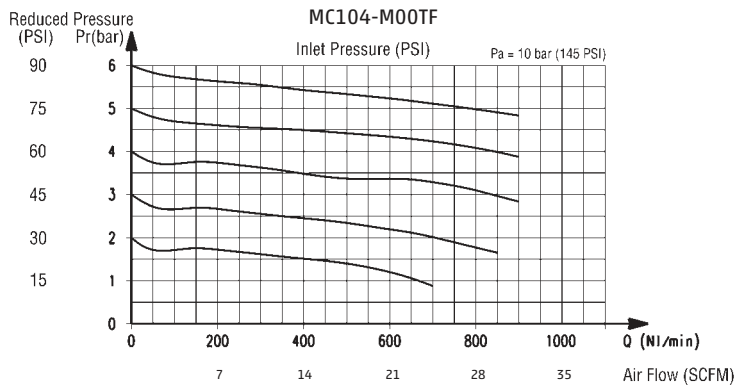
**CODING EXAMPLE**

MC	1	04	-	M	0	0	-	TF
----	---	----	---	---	---	---	---	----

<b>MC</b>	SERIES
<b>1</b>	SIZE 1 = 1/4" NPTF
<b>04</b>	PORT (Inlet/Outlet) 04 = 1/4" NPTF / 1/8" NPTF
<b>M</b>	MANIFOLD REGULATOR
<b>0</b>	OPERATING PRESSURE 0 = 0.5 - 10 bar (7.25 - 145 psi) 1 = 0 - 4 bar (0 - 58 psi) 2 = 0 - 2 bar (0 - 29 psi) 7 = 0.5 - 7 bar (7.25 - 103 psi)
<b>0</b>	CONSTRUCTION 0 = self-relieving 1 = non-relieving 5 = fast-response control, (metal-to-metal seat),relieving
	PRESSURE GAUGE OPTIONS Blank = without pressure gauge (standard) 1 = with pressure gauge 0 - 2.5 bar (0 - 36 psi) 2 = with pressure gauge 0 - 6 bar (0 - 87 psi) 3 = with pressure gauge 0 - 10 bar (0 - 145 psi) 4 = with pressure gauge 0 - 12 bar (0 - 174 psi)
<b>TF</b>	PORT TF = NPTF Blank = BSPP thread ports

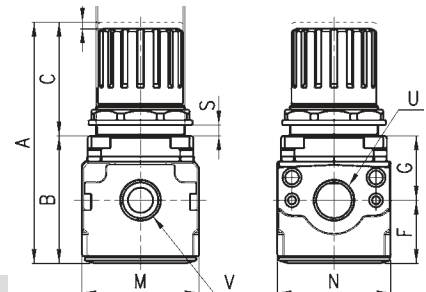
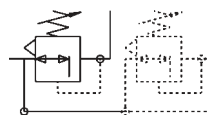
**FLOW DIAGRAM**

**MC104-M00TF**



Pa = Inlet pressure  
Pr = Regulated pressure  
Qn = Flow

**Manifold pressure regulators Series MC**



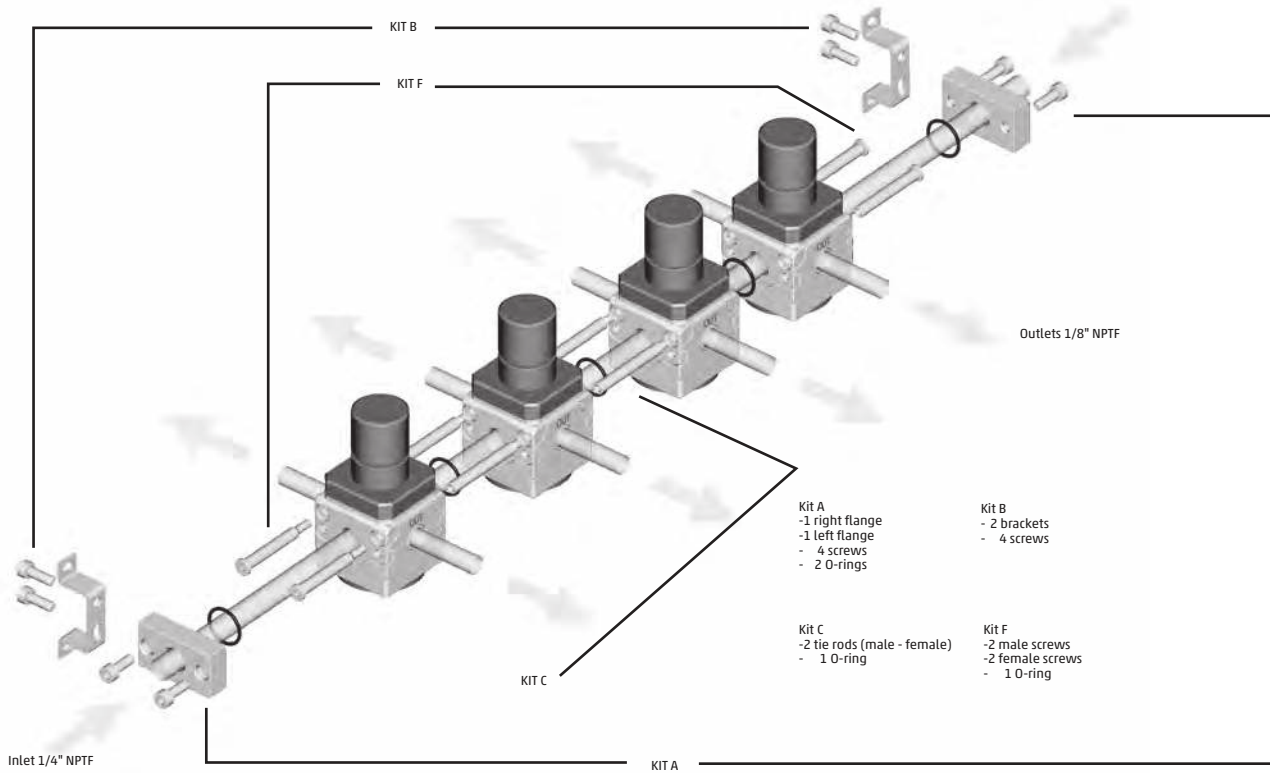
**DIMENSIONS (in inches)**

Mod.	A	B	C	F	G	I	L	M	N	R	S	T	U NPTF	V NPTF
MC104-M00TF	3.700	2.165	1.535	1.102	1.102	1.102	M30x1.5	1.772	1.772	.118	0-.236	1.378	1/4"	1/8"



# Manifold Regulators Series MC Assembly Hardware Kits (1/4" only – MC1)

## Examples assembly hardware kits



MODULAR FRL SERIES MC

### Assembly without end plates



Body	Kit
H + H	1 Kit "F"
H + H + H	1 Kit "F" + 1 Kit "C"
H + H + H + H	1 Kit "F" + 2 Kit "C"
H + H + H + H + H	1 Kit "F" + 3 Kit "C"

### Assembly with end plates



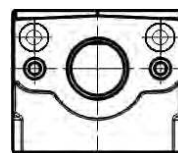
Body	Kit
H + H	1 Kit "A" + 1 Kit "F"
H + H + H	1 Kit "A" + 1 Kit "F" + 1 Kit "C"
H + H + H + H	1 Kit "A" + 1 Kit "F" + 2 Kit "C"
H + H + H + H + H	1 Kit "A" + 1 Kit "F" + 3 Kit "C"

### Types Kit

N.B. for configurations which differ from the ones described, you can only add only bodies type "H" and for every part added you should add a Kit "C".

Components & Part number	
Kit A: MC104-FL-TF	1 right flange + 1 left flange + 4 screws + 1 O-ring 2 brackets + 4 screws
Kit C: MC1-TMF	2 tie rods male - female + 1 O-ring
Kit F: MC1-VMF	2 male screws + 2 female screws + 1 O-ring

### Example body "Manifold" regulator type H



With through holes on top (used to mount the manifold regulators to each other)  
With female no through threads  
- manifold regulator

N.B. Once a group of manifold regulators has been assembled, it can be inserted in a FRL group. In this case the manifold regulator assembly alone would be defined as body type M (see page 126)

# Lubricators Series MC

Port 1/4", 3/8", 1/2" NPTF  
Modular with metal bowl guard and  
bayonet-type mounting



The Series MC lubricators are available with port 1/4", 3/8", 1/2" NPTF.

The bowls of these lubricators are made of metal and are equipped with a transparent viewer. The oil flow can be monitored via the small transparent cap and regulated by means of the special adjusting screw.

In the 3/8" and 1/2" models, oil can be refilled while unit is under pressure by first removing the oil fill cap plug. Oil can be directly filled via cap plug. In addition, once cap plug is removed, the entire bowl may be removed for direct filling while system remains pressurized.

## TECHNICAL SPECIFICATIONS

Construction	modular compact			
Materials	Body - Aluminum alloy, Bowl - Grilamid TR 55 (Nylon compound), Seals - Buna-N			
Port	NPTF:	1/4"	3/8"	1/2"
Oil capacity	oz	1.25	5.75	5.75
Weight	lbs	.75	1.65	1.49
Mounting	vertical in-line or wall-mounting			
Operating temperature	-5° C - 50° C, (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature			
Oil refilling	without pressure only in 1/4" Size : While pressurized for 3/8" & 1/2"			
Oil for lubrication	use ISO VG32 oils. Once applied, the lubrication should never be interrupted.			
Oil consumption	recommendation 2 - 5 drops every 1000 NL of air consumed (35 SCFM)			
Droplet size	> 2µm (10 drops = 1cm <sup>3</sup> )			
Finish	Chromate treatment undercoat; Bodies - polyurethane enamel & oven-cured; Bowls - electrostatic coating of polyester epoxy & oven cured			

## PNEUMATIC DATA

Operating pressure	0 – 16 bar (0 - 232 psi)	
Nominal flow	see graphs	
Min. air consumption for lubr. (NL/min)	1/4", 3/8", 1/2" NPTF	
	at 1 bar (14.5 psi)	8 NL/min (.28 SCFM)
	at 6 bar (87 psi)	15 NL/min (.53 SCFM)

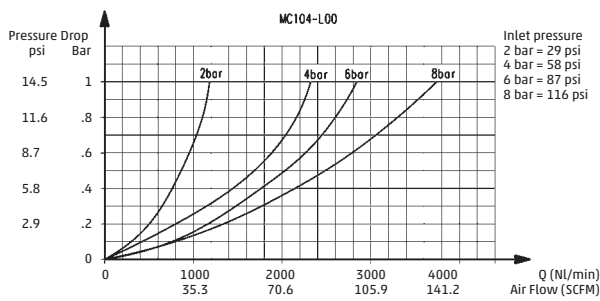
**CODING EXAMPLE**

MC	1	04	-	L	00	TF
----	---	----	---	---	----	----

<b>MC</b>	SERIES
<b>1</b>	SIZE 1 = 1/4" 2 = 3/8" or 1/2"
<b>04</b>	PORTS: 04 = 1/4" NPTF 38 = 3/8" NPTF 02 = 1/2" NPTF
<b>L</b>	LUBRICATOR
<b>00</b>	DESIGN TYPE 00 = atomized oil, ( approx. 2 microns )
<b>TF</b>	PORT TF = NPTF Blank = BSPP thread ports

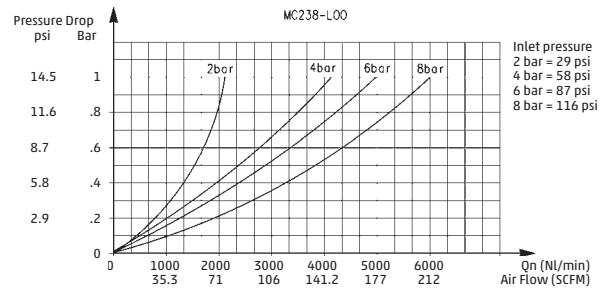
**FLOW DIAGRAMS**

**MC104-L00TF**



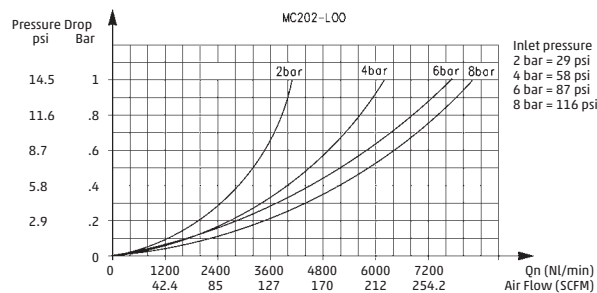
Pa = Inlet pressure  
ΔP = Pressure Drop  
Qn = Flow

**MC238-L00TF**



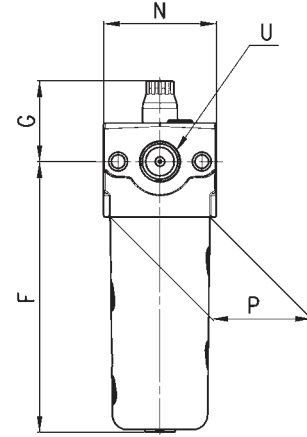
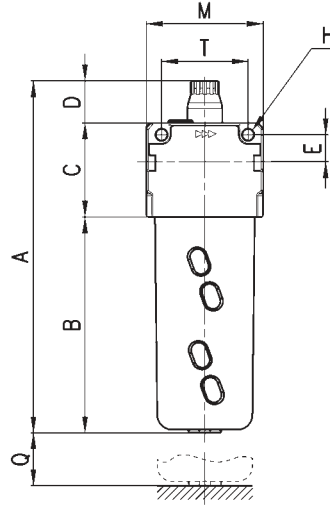
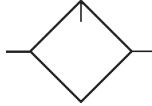
Pa = Inlet pressure  
ΔP = Pressure Drop  
Qn = Flow

**MC202-L00TF**



Pa = Inlet pressure  
ΔP = Pressure Drop  
Qn = Flow

Lubricators Series MC



DIMENSIONS (in inches)

Mod.	A	B	C	D	E	F	G	H	M	N	P	Q	T	NPTF U
MC104-L00TF	5.827	3.268	1.575	.984	.433	4.213	1.614	.177	1.772	1.772	1.457	3.307	1.378	1/4
MC238-L00TF	7.362	4.528	1.969	.866	.551	5.670	1.693	.217	2.441	2.362	2.087	4.606	1.811	3/8
MC202-L00TF	7.362	4.528	1.969	.866	.551	5.670	1.693	.217	2.441	2.362	2.087	4.606	1.811	1/2

# Filter/Regulator Series MC

Port 1/4", 3/8", 1/2" NPTF  
Modular with metal bowl guard and bayonet-type mounting



The filter regulators Series MC are available with port 1/4", 3/8", 1/2" NPTF.

They combine the features of the filters and regulators and have smaller overall dimensions than the two separate components.

## TECHNICAL SPECIFICATIONS

Construction	compact modular with filtering element in HDPE - diaphragm type			
Materials	Body - Aluminum alloy, Bowl - Grilamid TR 55 (Nylon compound), Seals - Buna-N			
Port	NPTF:	1/4"	3/8"	1/2"
Condensate capacity	oz	1	2.4	2.4
Weight	lbs	.98	2.09	2.05
Pressure gauge port	1/8" NPTF			
Mounting	vertical in-line or wall-mounting			
Operating temperature	-5° C - 50° C, (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature			
Delivered air quality (ISO 8573-1: 2010)	Class 7.8.4 with 25 µm element Class 6.8.4 with 5 µm element			
Draining of condensate	manual - semi-automatic standard, optional drains available, see code key			
Finish	Chromate treatment undercoat; Bodies - polyurethane enamel & oven-cured; Bowls - electrostatic coating of polyester epoxy & oven cured			

## PNEUMATIC DATA

Inlet pressure	standard or protected depressurization drains: 0.3 - 16 bar (4.25 - 232 psi) depressurization drain: 0.3 - 10 bar (4.25 - 145 psi) automatic drain: 1.5 - 12 bar (22 - 174 psi) for 3/8 and 1/2 port sizes
Outlet pressure	0.5 - 10 bar (7.25 - 145 psi), see code key for optional spring ranges
Nominal flow	see graph
Secondary pressure relieving	standard

**CODING EXAMPLE**

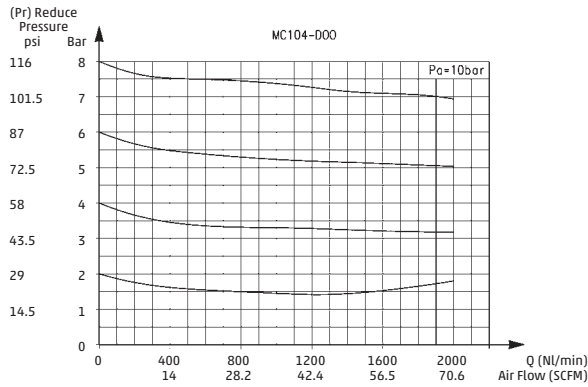
MC	1	04	-	D	0	0	2	-	-	-	TF
----	---	----	---	---	---	---	---	---	---	---	----

<b>MC</b>	SERIES
<b>1</b>	SIZE 1 = 1/4" NPTF 2 = 3/8" OR 1/2" NPTF
<b>04</b>	PORT 04 = 1/4" NPTF 38 = 3/8" NPTF 02 = 1/2" NPTF
<b>D</b>	FILTER-REGULATOR
<b>0</b>	FILTERING ELEMENT 0 = 25µm 1 = 5µm
<b>0</b>	DRAINING OF CONDENSATE 0 = semiautomatic, self-relieving 1 = semiautomatic, non-relieving 3 = automatic, self-relieving (only for 3/8" and 1/2") 4 = depressurization 5 = depressurization, orifice filter, self-relieving 8 = port 1/8"
<b>2</b>	PRESSURE GAUGE OPTIONS** Blank = without pressure gauge (standard) 1 = with pressure gauge 0 - 2.5 bar (0 - 36 psi) 2 = with pressure gauge 0 - 6 bar (0 - 87 psi) 3 = with pressure gauge 0 - 10 bar (0 - 145 psi) 4 = with pressure gauge 0 - 12 bar (0 - 174 psi)
	OPERATING PRESSURE (bar) Blank = 0.5 - 10 (7.25 - 145 psi) 2 = 0 - 2 (only 1/4") (0 - 29 psi) 4 = 0 - 4 (0 - 58 psi) 7 = 0.5 - 7 (only 1/4") (7.25 - 103 psi)
<b>VS</b>	REGULATION TYPE Blank = without by-pass valve (standard) VS = with by-pass valve (only 1/4)
<b>TF</b>	PORT TF = NPTF Blank = BSPP thread ports

\*\*Pressure gauges are supplied unassembled to unit  
for size 1 pressure gauge M043-P..  
for size 2 pressure gauge M053-P..

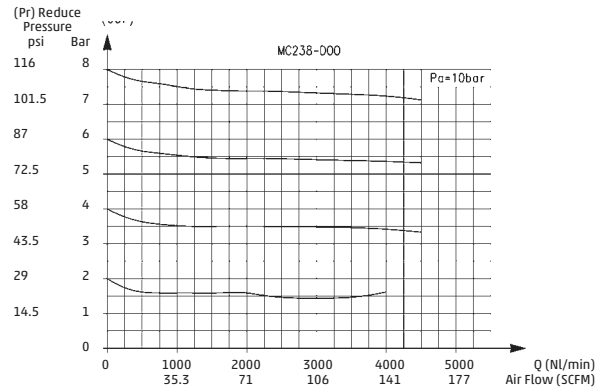
FLOW DIAGRAMS

MC104-D00TF



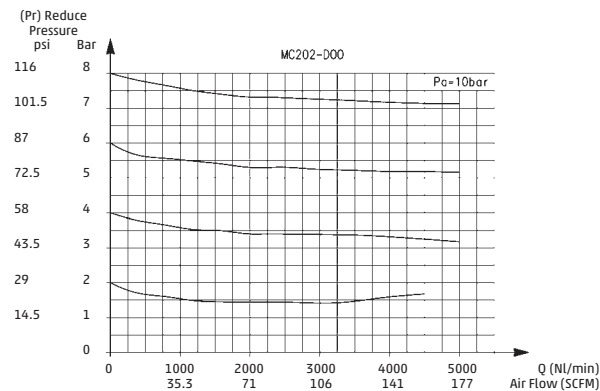
Pa = Inlet pressure  
Pr = Regulated pressure  
Qn = Flow

MC238-D00TF



Pa = Inlet pressure  
Pr = Regulated pressure  
Qn = Flow

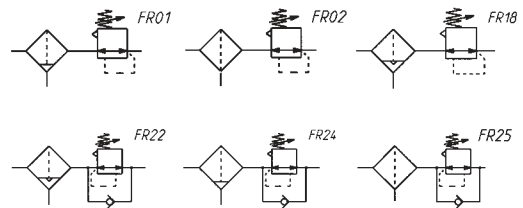
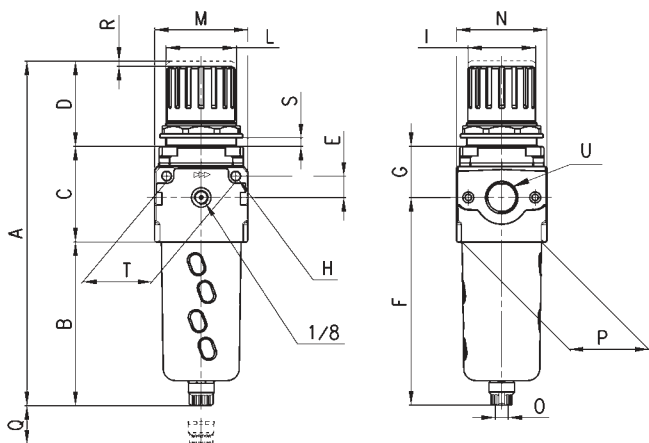
MC202-D00TF



Pa = Inlet pressure  
Pr = Regulated pressure  
Qn = Flow

MODULAR FRL SERIES MC

Filter regulators Series MC



- FR01 = filter-reg. with relieving and manual/semiautomatic drain
- FR02 = filter-reg. with relieving and direct exhaust
- FR18 = filter-reg. with relieving and automatic drain
- FR22 = filter-reg. without relieving, with pressure gauge, automatic-depressurisation drain and by-pass valve
- FR24 = filter-reg. with relieving and manual/semiautomatic drain and bypass valve
- FR25 = filter-reg. with relieving, direct exhaust and by-pass valve

DIMENSIONS (in inches)

Mod.	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S	T	U
MC104-D00TF	7.500	4.016	2.047	1.496	.433	4.980	1.083	.177	1.102	M30x1.5	1.772	1.772	1/8	1.457	2.283	.118	.024	1.378	1/4
MC238-D00TF	10.098	5.236	2.520	2.323	.551	6.378	1.378	.217	1.772	M47x1.5	2.441	2.323	1/8	2.087	2.835	.138	.035	1.811	3/8
MC202-D00TF	10.098	5.236	2.520	2.323	.551	6.378	1.378	.217	1.772	M47x1.5	2.441	2.323	1/8	2.087	2.835	.138	.035	1.811	1/2

The company reserves the right to vary models and dimensions without notice. These products are designed for industrial applications and are not suitable for sale to the general public.

# Lockable Isolation 3/2-Way Valve (Lock-out/Tag-out) Series MC

Port 1/4", 3/8", 1/2" NPTF  
Modular



The valves are designed so that the downstream air pressure can be vented and the valve locked in the non passing condition to allow work to be carried out with greater safety on pneumatically actuated equipment.

Positioning of these valves is often before the FRL unit. Pulling Manual handle in the "UP" direction shuts off inlet flow and exhausts all downstream pressure via the threaded port in the bottom of the unit. (Silencers can be installed to minimize noise).

With handle extended "UP", lock-out hole (0.315" OD), is exposed in handle spool for locks or hasps. ( Valve shown in illustration in "DOWN" position for normal inlet flow to pass.)

## TECHNICAL SPECIFICATIONS

Construction	modular assembly, compact, poppet type			
Materials	Body - Aluminum alloy, Bowl - Grilamid TR 55 (Nylon compound), Seals - Buna-N			
Port	NPTF:	1/4"	3/8"	1/2"
Weight	lbs	.61	1.2	1.13
Mounting	in-line, wall or panel mounting (in any position)			
Operating temperature	-5° C - 50° C, (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature			
Finish	Chromate treatment undercoat; Bodies - polyurethane enamel & oven-cured; Bowls - electrostatic coating of polyester epoxy & oven cured			

## PNEUMATIC DATA

Operating pressure	-0.8 – 10 bar (-12 - 145 psi)
Nominal flow	see graph
Nominal flow in the exhausted direction	Nominal Flow in the Exhausting Direction, 1/4" NPTF - 1080 NI/min, (38 SCFM); 3/8" & 1/2" - 2380 NI/min ( 83 SCFM)
	flow determined at 6 bar with DP= 1 bar (Flow at 87 psi with Pressure Drop of 14.5 psi)



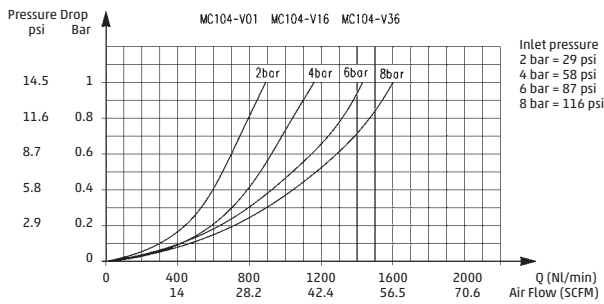
**CODING EXAMPLE**

MC	1	04	-	V	01	TF
----	---	----	---	---	----	----

<b>MC</b>	SERIES
<b>1</b>	SIZE 1 = 1/4" NPTF 2 = 3/8", 1/2" NPTF
<b>04</b>	port 04 = 1/4" NPTF 38 = 3/8" NPTF 02 = 1/2" NPTF
<b>V</b>	V = 3-way/2-position valve, Lock-Out/Tag-Out
<b>01</b>	DESIGN TYPE 01 = padlock valve (manual command, "UP" = off and downstream flow exhausting, "DOWN" = on and inlet flow passing)
<b>TF</b>	PORT TF = NPTF Blank = BSPP thread ports

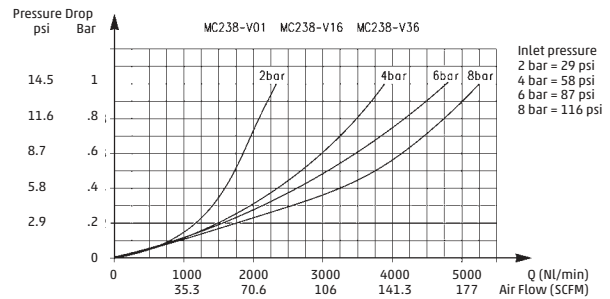
**FLOW DIAGRAMS**

**MC104-V01TF**



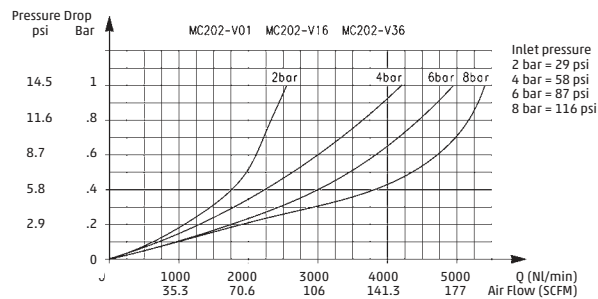
Pa = Inlet pressure  
 $\Delta P$  = Pressure Drop  
 Qn = Flow

**MC238-V01TF**



Pa = Inlet pressure  
 $\Delta P$  = Pressure Drop  
 Qn = Flow

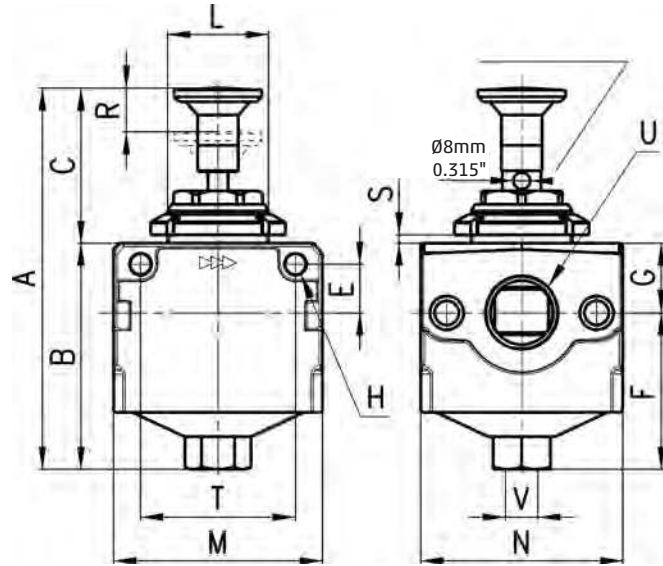
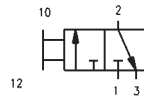
**MC202-V01TF**



Pa = Inlet pressure  
 $\Delta P$  = Pressure Drop  
 Qn = Flow

Lockable isolation valve Series MC

LOOK-OUT NOTE EXPOSED IN UP / OFF POSITION



DIMENSIONS (in inches)

Mod.	A	B	C	E	F	G	H	L	M	N	R	S	T	NPTF U	NPTF V	Actuation Force (at 85 psi)
MC104-V01TF	3.866	2.14	1.713	.43	1.51	.629	.177	M30x1.5	1.77	1.77	.354	0-.236	1.377	1/4"	1/8"	6.5 lbs
MC238-V01TF	4.44	2.63	1.81	.55	1.83	.807	.217	M30x1.5	2.44	2.36	.518	0-.236	1.81	3/8"	1/4"	7.0 lbs
MC202-V01TF	4.44	2.63	1.81	.55	1.83	.807	.217	M30x1.5	2.44	2.36	.518	0-.236	1.81	1/2"	1/4"	7.0 lbs

# Electropneumatic/Pneumatic Isolation Valve(Shut-off) Series MC

Port 1/4", 3/8", 1/2" NPTF:  
 Model '-V16' has Solenoid Pilot  
 Model '-V36' has Air Pilot  
 Modular



These 3/2 way valves are designed to block the air at the inlet of the FRL group to pressurize or depressurize the equipment. The valves can either be electropneumatically or pneumatically operated and can be supplied with port 1/4", 3/8", 1/2" NPTF.

In case of a solenoid valve use coil type U7... or G7... and the coil is ordered as a separate item.

## TECHNICAL SPECIFICATIONS

Construction	compact, poppet-type			
Materials	Body - Aluminum alloy, Bowl - Grilamid TR 55 (Nylon compound), Seals - Buna-N			
Port	NPTF:	1/4"	3/8"	1/2"
Weight	lbs	.69	1.53	1.48
Mounting	in-line wall or panel mounting (in any position)			
Operating temperature	-5° C - 50° C, (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature			
Finish	Chromate treatment undercoat; Bodies - polyurethane enamel & oven-cured; Bowls - electrostatic coating of polyester epoxy & oven cured			

## PNEUMATIC DATA

Operating pressure	Electropneumatic: 2 - 10 (29-145 psi) Pneumatic: -0.8 - 10 bar (-12 - 145 psi)
Nominal flow	see graph
Outlet flow	Nominal Flow in the Exhausting Direction, 1/4" NPTF - 1080 NI/min, (38 SCFM), 3/8" & 1/2" - 2380 NI/min ( 83 SCFM))
Flows determined	at 6 bar with DP = 1 bar (Flow at 87 psi with pressure drop of 14.5 psi)

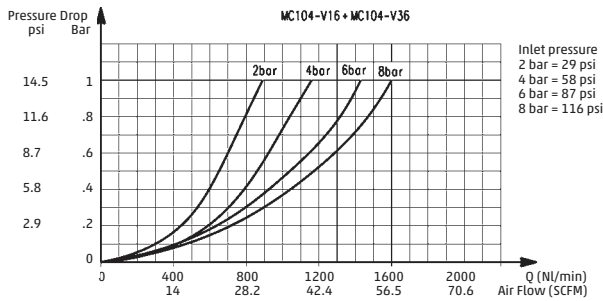
CODING EXAMPLE

MC	1	04	-	V	1	6	TF
----	---	----	---	---	---	---	----

<b>MC</b>	SERIES
<b>1</b>	SIZE 1 = 1/4" 2 = 3/8" or 1/2"
<b>04</b>	PORTS: 04 = 1/4" NPTF 38 = 3/8" NPTF 02 = 1/2" NPTF
<b>V</b>	V = 3-way/2-position valve
<b>16</b>	CONSTRUCTION 16 = electropneumatic – Solenoid Pilot* (*Note: Solenoid coil is ordered as a separate item. See following pages for part number selection. 36 = pneumatic – Air Pilot
<b>TF</b>	PORT TF = NPTF Blank = BSPP thread ports

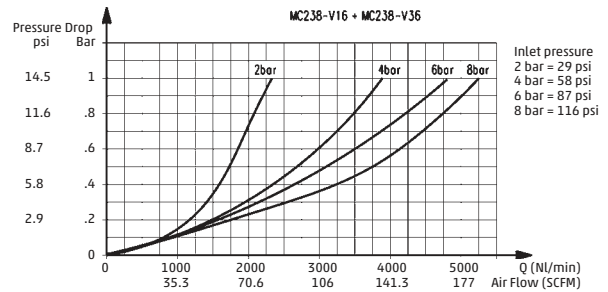
FLOW DIAGRAMS

MC104-V16TF OR V36TF



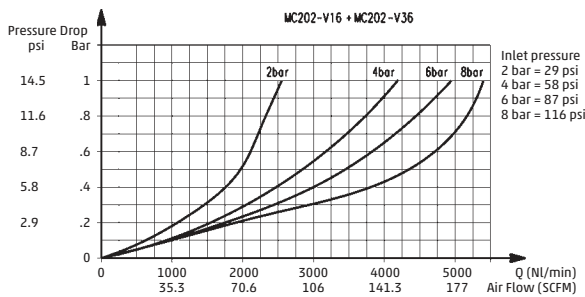
Pa = Inlet pressure  
ΔP = Pressure Drop  
Qn = Flow

MC238-V16TF OR V36TF



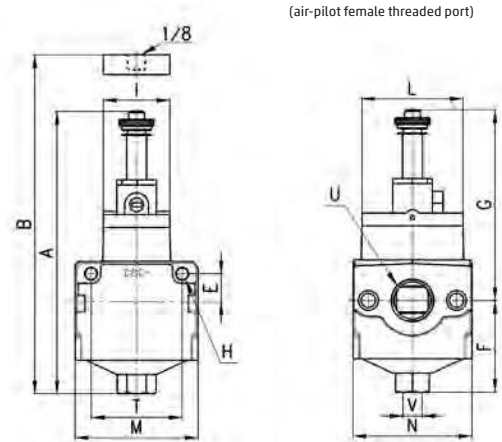
Pa = Inlet pressure  
ΔP = Pressure Drop  
Qn = Flow

MC202-V16TF OR V36TF



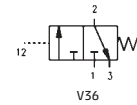
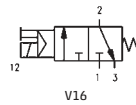
Pa = Inlet pressure  
ΔP = Pressure Drop  
Qn = Flow

Lockable isolation valve Series MC



DIMENSIONS (in inches)

Mod.	A	B	E	F	G	H	I	L	M	N	T	PORT U (NPTF)	EXHAUST V
MC104-V16TF	4.724	-	.433	1.515	3.208	.177	.866	1.259	1.771	1.771	1.377	1/4"	1/8"
MC238-V16TF	5.610	-	.551	1.830	3.779	.217	1.319	2.007	2.440	2.362	1.811	3/8"	1/4"
MC202-V16TF	5.610	-	.551	1.830	3.779	.217	1.319	2.007	2.440	2.362	1.811	1/2"	1/4"
MC104-V36TF	-	3.05	.433	1.515	-	.177	.866	1.259	1.771	1.771	1.377	1/4"	1/8"
MC238-V36TF	-	3.68	.551	1.830	-	.217	1.319	2.007	2.440	2.362	1.811	3/8"	1/4"
MC202-V36TF	-	3.68	.551	1.830	-	.217	1.319	2.007	2.440	2.362	1.811	1/2"	1/4"



MODULAR FRL SERIES MC

# Soft Start Valve Series MC

Ports 1/4", 3/8", 1/2" NPTF



The Series MC sort start valve is used to avoid damaging people or equipment when pressurizing pneumatic systems containing cylinders.

The features of these components allows one to pressurize equipment up to 50% of the set outlet reduced pressure, after which 100% is reached rapidly.

The usual location of the soft start valve is after the FRL. The modular design allows for perfect adaptability with all Series MC.

A pressure switch can be mounted into the upper part of the unit after removal of the S2610 1/8 plug.

An electrical or pneumatic 3-way/2-pos. Shut-Off valve may or may not be installed before the unit to allow Depressurization.

The brass adjustment screw in the head cap varies the timing constant and the pressure ramp-up rate.

## TECHNICAL SPECIFICATIONS

Construction	modular, compact, poppet type		
Materials	Body - Aluminum, Cover - Nylon, Seals - Buna-N, internals in brass		
Ports	NPTF	1/4"	3/8" 1/2"
Weight	lbs	.06	1.250 1.25
Mounting	in-line wall or panel mounting (in any position)		
Operating temperature	-5° C - 50° C, (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature		
Finish	Chromate treatment undercoat; Bodies - polyurethane enamel & oven-cured; Bowls - electrostatic coating of polyester epoxy & oven cured		

## PNEUMATIC DATA

Operating pressure	2 - 10 bar (29 - 145 psi)
Nominal flow (determined at 6 bar with DP1)	1/4" - 1850 NL/min (64.7 SCFM), 3/8" - 4000 NL/min (140 SCFM), 1/2" - 4350 NL/min (152 SCFM)

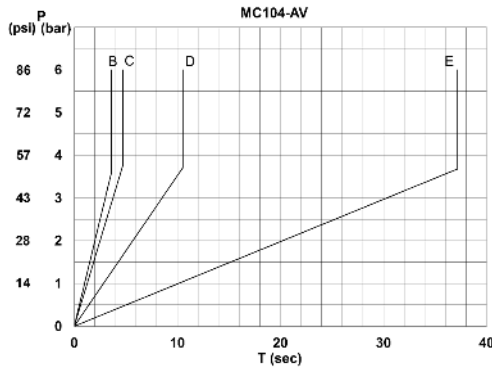
**CODING EXAMPLE**

MC	2	02	-	AV	TF
----	---	----	---	----	----

<b>MC</b>	SERIES
<b>2</b>	SIZE 1 = 1/4" 2 = 3/8" - 1/2"
<b>02</b>	ports 04 = 1/4" 38 = 3/8" 02 = 1/2"
<b>AV</b>	AV = soft start valve
<b>TF</b>	PORT TF = NPTF Blank = BSPP thread ports

**DIAGRAMS FOR PRESSURIZATION TIMES**

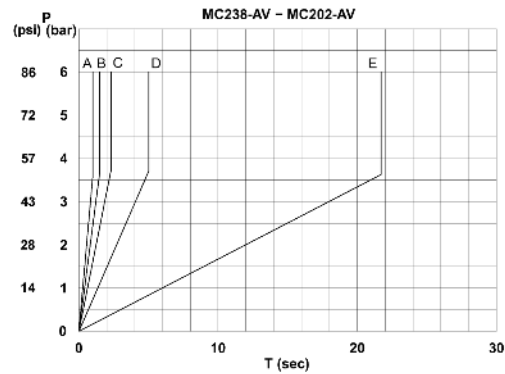
**MC104-AVTF**



Pressurization time is adjusted by n° of turns of the regulation screw, with a downstream pressure of 5 litres (.177 FT<sup>3</sup>):

- A = 5 turns
- B = 4 turns
- C = 3 turns
- D = 2 turns
- E = 1 turn

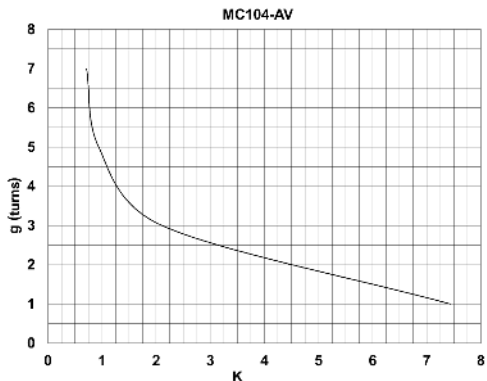
**MC238-AVTF and MC202-AVTF**



Pressurization time is adjusted by n° of turns of the regulation screw, with a downstream pressure of 5 litres (.177 FT<sup>3</sup>):

- A = 9 turns
- B = 7 turns
- C = 5 turns
- D = 3 turns
- E = 1 turn

**MC104-AVTF**



Value "K" is used to calculate the number of turns, (open from dead bottom closed), of the regulation screw required to obtain the required pressurization time with an inlet pressure of 87 psi. Variations of the inlet pressure can cause deviations of the pressure time by ± 20%.

$K = t/V$

V = volume of the downstream system in Liters

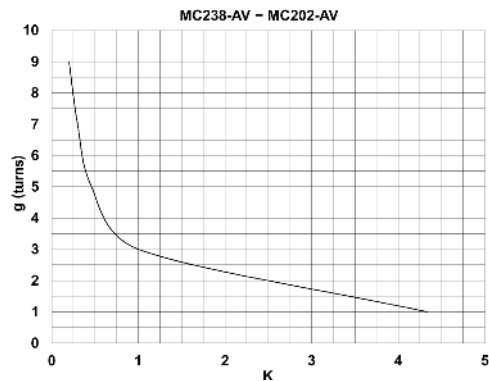
t = desired pressuring time in seconds

g = number of turns

Example: V = 5 Liters      t = 16 seconds      K = 16/5 = 3.2

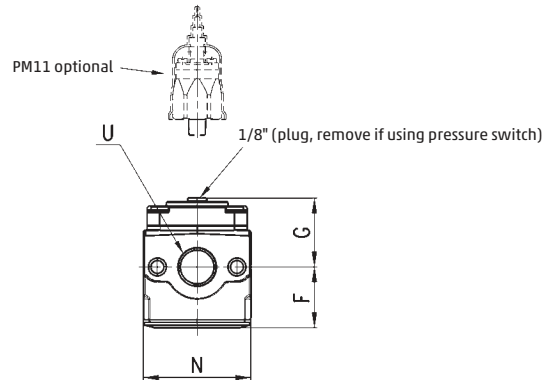
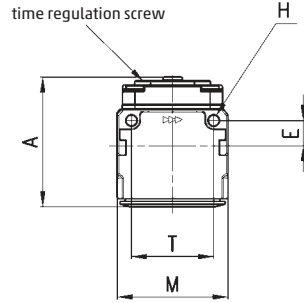
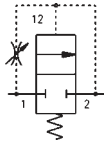
Using in the graph this value K, the number of turns of the regulation screw will be approx. 1.8 turns open from dead bottom closed.

**MC238-AVTF and MC202-AVTF**



MODULAR FRL SERIES MC

Soft start valve Series MC



DIMENSIONS (in inches)									
Mod.	A	E	F	G	H	M	N	T	NPTF
									U
MC104-AVTF	2.343	.433	1.122	1.220	.177	1.772	1.772	1.378	1/4
MC238-AVTF	2.854	.551	1.339	1.516	.217	2.441	2.362	1.811	3/8
MC202-AVTF	2.854	.551	1.339	1.516	.217	2.441	2.362	1.811	1/2

MODULAR FRL SERIES MC



# Take-Off Blocks, (Distribution-Block) Series MC

Ports 1/4", (3/8"), 1/2" NPTF  
Modular, with or without internal Check-Valve



The take-off blocks when equipped with a check-valve, allow the use of non lubricated air from the vertical outlets if inserted between the regulator and the lubricator. Otherwise, the check-valve prevents downstream lubrication from siphoning back upstream where non-lube components may be required.

If mounted as last component in a completed assembly, the distribution block requires the use of end-plates since its main horizontal flow path ports are non-threaded. Meaning, no direct threaded components can be assembled in the left-to-right flow path. ONLY end-plates can be used, unless otherwise in the middle of a typical FRL assembly.

## TECHNICAL SPECIFICATIONS

Construction	modular, compact, diaphragm type with or without internal VNR check-valve		
Materials	Body - Aluminum, Seals - Buna-N, internals in brass		
Ports	NPTF	1/4"	1/2" (3/8" assemblies utilize the larger 1/2" model)
Weight	lbs	.511	.836
Outlet ports	NPTF	1/4"	1/2", (Threaded outlet ports only, along vertical axis. Horizontal flow-path ports are un-threaded and require assembly within an existing assembly or terminal end-plates kits.)
Mounting	in-line wall or panel mounting (in any position)		
Operating temperature	-5° C - 50° C, (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature		
Finish	Chromate treatment undercoat; Bodies - polyurethane enamel & oven-cured; Bowls - electrostatic coating of polyester epoxy & oven cured		

## PNEUMATIC DATA

Operating pressure	0 - 16 bar (0 - 235 psi)		
Nominal flow (determined at 87 psi with a pressure drop of 14.5 psi)	MC1-B = 144 SCFM; MC1-B-VNR = 83 SCFM, (with VNR check-valve)	MC2-B = 297 SCFM; MC2-B-VNR = 198 SCFM, (with VNR check-valve)	

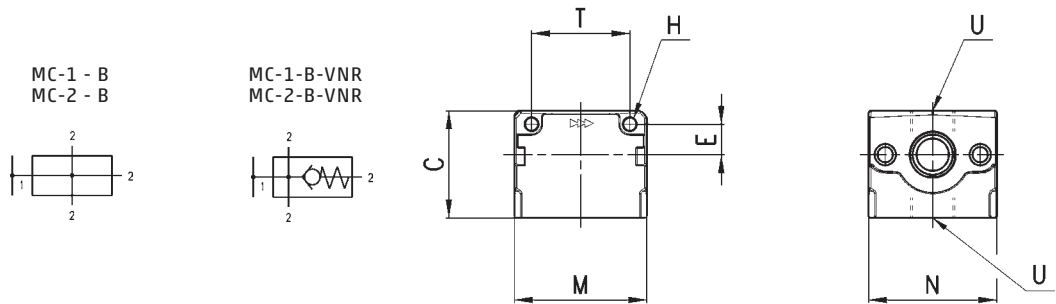
CODING EXAMPLE

MC	2	-	B	-	VNR	TF
----	---	---	---	---	-----	----

<b>MC</b>	SERIES
<b>2</b>	SIZE 1 = 1/4" outlets 2 = 1/2" outlets, (used on 3/8" models also)
<b>B</b>	B = take off block
<b>VNR</b>	OPTIONS "Blank" = standard VNR = with check valve built in
<b>TF</b>	PORT TF = NPTF Blank = BSPP thread ports

Take off blocks Series MC

\*\*NOTE: Inlet and Outlet are not threaded. ONLY vertical ports "U" are threaded. MUST be used with flanges or intermediate within assembly.



DIMENSIONS (in inches)							
Mod.	C	H	E	M	N	T	NPTF U size
MC1-B	1.693	.177	.433	1.772	1.772	1.378	1/4" 1
MC1-B-VNR	1.693	.177	.433	1.772	1.772	1.378	1/4" 1
MC2-B	1.969	.217	.551	2.441	2.362	1.811	1/2 2
MC2-B-VNR	1.969	.217	.551	2.441	2.362	1.811	1/2 2

# FRL Series MC - Completed Assemblies (Single Part Number Code)

Ports 1/4", 3/8", 1/2" NPTF



The FRL Series MC Fully Assembled version are easier to order using one single part number code and to mount.

The version with end-plate kit flanges is supplied without rear mounting bracket assembly, KIT B, (sold separately).

MODULAR FRL SERIES MC

## TECHNICAL SPECIFICATIONS

Construction	modular, compact, either with or without end-plate flange kits.
Materials	Body - Aluminum, Heads/Covers - Nylon, Bowls - Nylon (Grilamid), Bowl Guard - Aluminum, Seals - Buna-N, internals in brass
Ports	1/4" - 3/8" - 1/2" NPTF
Mounting	vertical, in-line or wall-mounting
Finish	Chromate treatment undercoat; Bodies - polyurethane enamel & oven-cured; Bowls - electrostatic coating of polyester epoxy & oven cured

## PNEUMATIC DATA

Operating pressure	-5° C - 50° C, (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature
Flow	determined at 87 psi inlet supply with pressure drop of 14.5 psi (Pressure drop of 7.25 for FRL assembly group utilizing "R00", instead of "D00" models.)

CODING EXAMPLE

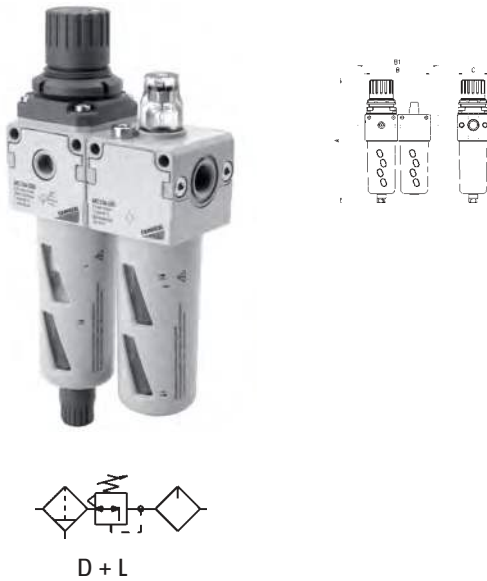
MC	2	02	-	C	-	5	-	FL	TF
----	---	----	---	---	---	---	---	----	----

<b>MC</b>	SERIES
<b>2</b>	SIZE 1 = 1/4" 2 = 3/8" or 1/2"
<b>02</b>	PORTS: 04 = 1/4" NPTF 38 = 3/8" NPTF 02 = 1/2" NPTF
<b>C</b>	ASSEMBLY GROUP** C = D + L E = V01 + D + L FRL = F + R + L GN = D + L + V16 + AV HNA = V01 + D + L + V16 + AV + PRESS N.A. HNC = V01 + D + L + V16 + AV + PRESS N.C. N = V01 + D
<b>5</b>	FILTERING ELEMENT 5 = 5 MM 25 = 25 MM
<b>FL</b>	FL = WITH END-PLATE FLANGES "BLANK" = NO END-PLATES ON ASSEMBLY
<b>TF</b>	PORT TF = NPTF Blank = BSPP thread ports

\*\* Assembly group KEY for Code Abbreviations

D	MC***-D00 Filter-regulator 0-10 bar semi-automatic manual drain filtering element 5µm or 25µm
V01	MC***-V01 Lock-Out Valve 3/2 way manually operated
V16	MC***-V16 Shut-Off Valve 3/2 way electropneumatically operated, (coils sold separately, not included in assemblies)
L	MC***-L00 Lubricator
F	MC***-F00 Filter 5 µm or 25 µm
R	MC***-R00 Regulator 0 - 10 bar (0 - 145 psi)
AV	MC***-AV Soft start valve
PRESS	PM11-NA or NC, Pressure switches (define if NC or NO)

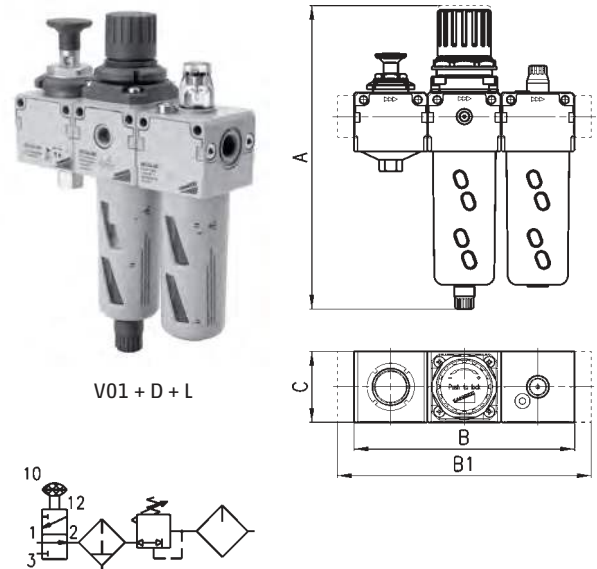
Assembly group C



DIMENSIONS (in inches)					
Mod.	A	B	C	Flow NL/ min	SCFM
MC104-C-5TF	7.618	3.543	1.772	1450	51.2
MC238-C-5TF	10.098	4.882	2.362	4800	169.5
MC202-C-5TF	10.098	4.882	2.362	4900	173

DIMENSIONS (in inches)				
Mod.	A	B1	Flow NL/min	SCFM
MC104-C-5-FLTF	7.618	4.488	1450	51.2
MC238-C-5-FLTF	10.098	5.984	4800	169.5
MC202-C-5-FLTF	10.098	5.984	4900	173

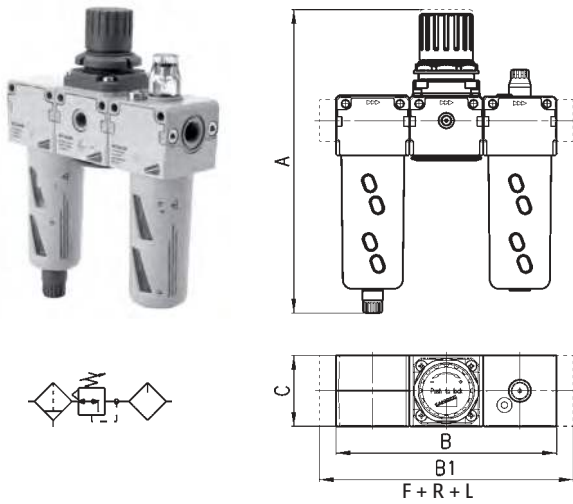
Assembly group E



DIMENSIONS (in inches)					
Mod.	A	B	C	Flow NL/min	SCFM
MC104-E-5TF	7.618	5.315	1.772	1450	51.2
MC238-E-5TF	10.098	7.323	2.362	4800	169.5
MC202-E-5TF	10.098	7.323	2.362	4950	175

DIMENSIONS (in inches)					
Mod.	A	B1	C	Flow NL/ min	SCFM
MC104-E-5-FLTF	7.618	6.260	1.772	1450	51.2
MC238-E-5-FLTF	10.098	8.425	2.362	4800	169.5
MC202-E-5-FLTF	10.098	8.425	2.362	4950	175

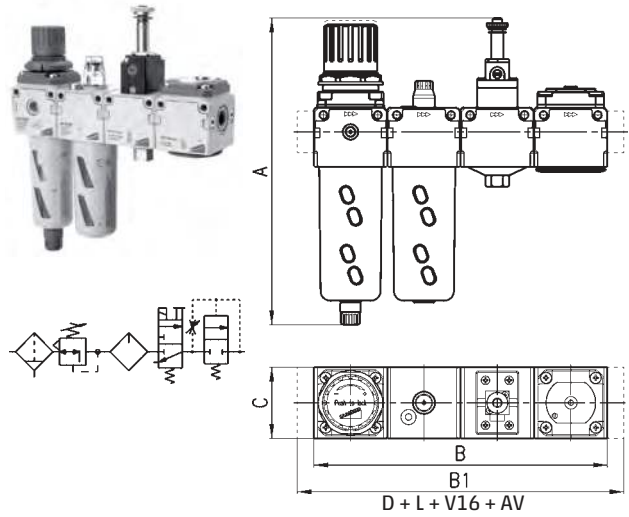
Assembly group FRL



DIMENSIONS (in inches)					
Mod.	A	B	C	Flow NI/min	SCFM
MC104-FRL-5TF	7.618	5.315	1.772	1450	51.2
MC238-FRL-5TF	10.098	7.323	2.362	4800	169.5
MC202-FRL-5TF	10.098	7.323	2.362	4900	173

DIMENSIONS (in inches)					
Mod.	A	B1	C	Flow NI/min	SCFM
MC104-FRL-5-FLTf	7.618	6.260	1.772	1450	51.2
MC238-FRL-5-FLTf	10.098	8.425	2.362	4800	169.5
MC202-FRL-5-FLTf	10.098	8.425	2.362	4900	173

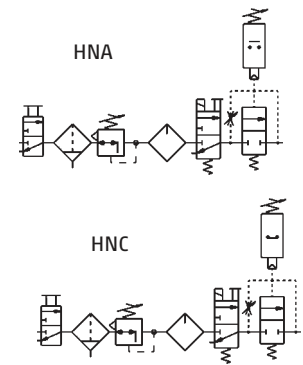
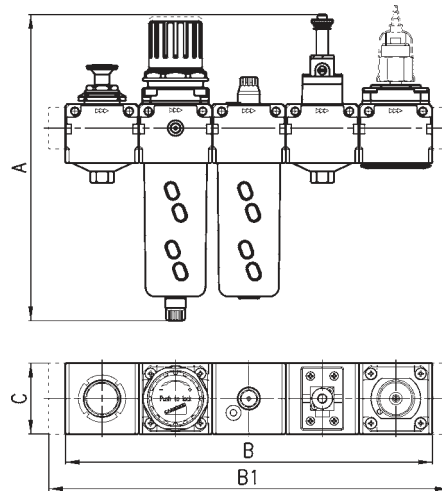
Assembly group GN



DIMENSIONS (in inches)					
Mod.	A	B	C	Flow NI/min	SCFM
MC104-GN-5TF	8.189	7.087	1.772	1450	51.2
MC238-GN-5TF	10.197	9.764	2.362	4800	169.5
MC202-GN-5TF	10.197	9.764	2.362	4900	173

DIMENSIONS (in inches)					
Mod.	A	B1	C	Flow NI/min	SCFM
MC104-GN-5-FLTf	8.189	8.031	1.772	1450	51.2
MC238-GN-5-FLTf	10.197	10.866	2.362	4800	169.5
MC202-GN-5-FLTf	10.197	10.866	2.362	4900	173

Assembly group HN... ( Complete code with "A" or "C" for PM11 choice)

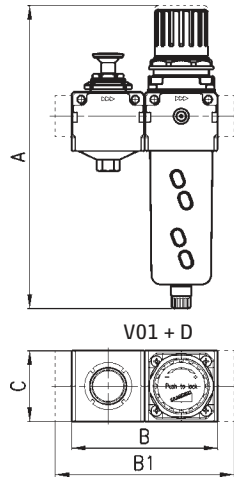
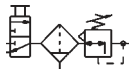


DIMENSIONS (in inches)					
Mod.	A	B	C	Flow NI/min	SCFM
MC104-HN...-5TF	8.189	8.858	1.772	1450	51.2
MC238-HN...-5TF	10.193	12.205	2.362	4800	169.5
MC202-HN...-5TF	10.193	12.205	2.362	4900	173

DIMENSIONS (in inches)					
Mod.	A	B1	C	Flow NI/min	SCFM
MC104-HN...-5-FLTf	8.189	9.803	1.772	1450	51.2
MC238-HN...-5-FLTf	10.193	13.307	2.362	4800	169.5
MC202-HN...-5-FLTf	10.193	13.307	2.362	4950	175

V01 + D + L + V16 + AV + PRESS

Assembly group N



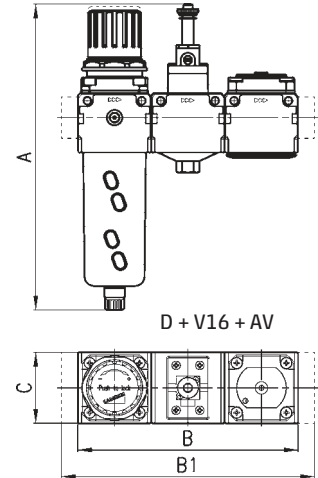
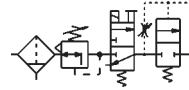
**DIMENSIONS (in inches)**

Mod.	A	B	C	Flow NL/min	SCFM
MC104-N-STF	7.618	3.543	1.772	1450	51.2
MC238-N-STF	10.098	4.882	2.362	4800	169.5
MC202-N-STF	10.098	4.882	2.362	4950	175

**DIMENSIONS (in inches)**

Mod.	A	B1	C	Flow NL/min	SCFM
MC104-N-5-FLTF	7.618	4.488	1.772	1450	51.2
MC238-N-5-FLTF	10.098	5.984	2.362	4800	169.5
MC202-N-5-FLTF	10.098	5.984	2.362	4950	175

Assembly group PN, (coils sold separately, not included in assemblies)



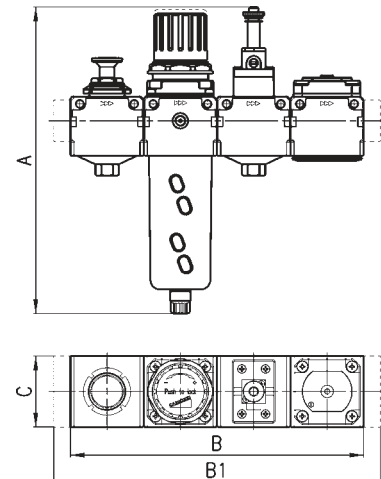
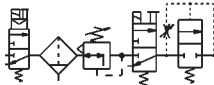
**DIMENSIONS (in inches)**

Mod.	A	B	C	Flow NL/min	SCFM
MC104-PN-STF	8.189	5.315	1.772	1450	51.2
MC238-PN-STF	10.197	7.323	2.362	4800	169.5
MC202-PN-STF	10.197	7.323	2.362	4950	175

**DIMENSIONS (in inches)**

Mod.	A	B1	C	Flow NL/min	SCFM
MC104-PN-5-FLTF	8.189	8.189	1.772	1450	51.2
MC238-PN-5-FLTF	10.197	10.866	2.362	4800	169.5
MC202-PN-5-FLTF	10.197	10.866	2.362	4950	175

Assembly group QN, (coils sold separately, not included in assemblies)



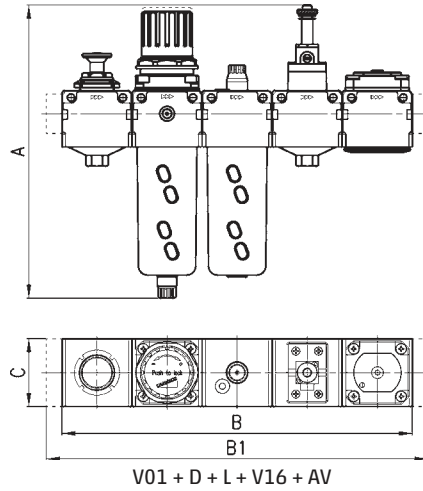
**DIMENSIONS (in inches)**

Mod.	A	B	C	Flow NL/min	SCFM
MC104-QN-STF	8.189	7.087	1.772	1450	51.2
MC238-QN-STF	10.197	9.764	2.362	4800	169.5
MC202-QN-STF	10.197	9.764	2.362	4950	175

**DIMENSIONS (in inches)**

Mod.	A	B1	C	Flow NL/min	SCFM
MC104-QN-5-FLTF	8.189	8.031	1.772	1450	51.2
MC238-QN-5-FLTF	10.197	10.866	2.362	4800	169.5
MC202-QN-5-FLTF	10.197	10.866	2.362	4950	175

Assembly group TN, (coils sold separately, not included in assemblies).

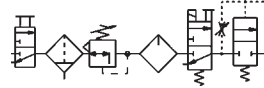


DIMENSIONS (in inches)

Mod.	A	B	C	Flow NI/min	SCFM
MC104-TN-5TF	8.189	8.858	1.772	1450	51.2
MC238-TN-5TF	10.197	12.205	2.362	4800	169.5
MC202-TN-5TF	10.197	12.205	2.362	4950	175

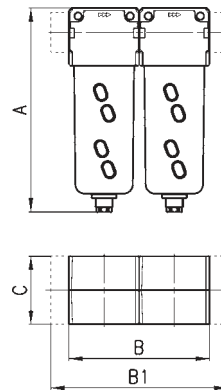
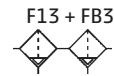
DIMENSIONS (in inches)

Mod.	A	B1	C	Flow NI/min	SCFM
MC104-TN-5-FLTF	8.189	9.803	1.772	1450	51.2
MC238-TN-5-FLTF	10.197	13.307	2.362	4800	169.5
MC202-TN-5-FLTF	10.197	13.307	2.362	4950	175



MODULAR FRL SERIES MC

Assembly group U



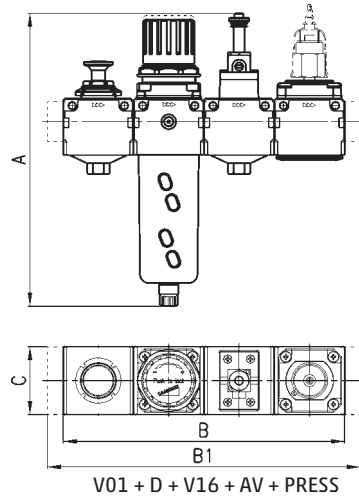
DIMENSIONS (in inches)

Mod.	A	B	C	Flow NI/min	SCFM
MC238-U-5TF	7.087	4.882	2.362	2050	72.4
MC202-U-5TF	7.087	4.882	2.362	2300	81.2

DIMENSIONS (in inches)

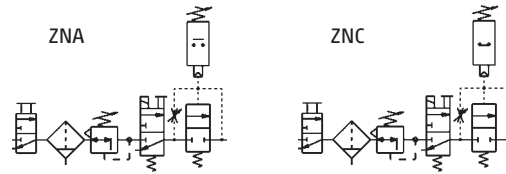
Mod.	A	B1	C	Flow NI/min	SCFM
MC238-U-5-FLTF	7.087	5.984	2.362	2050	72.4
MC202-U-5-FLTF	7.087	5.984	2.362	2300	81.2

Assembly group ZN... (complete Code with "A" or "C" for PM11 choice),  
(coils sold separately, not included in assemblies)



DIMENSIONS (in inches)					
Mod.	A	B	C	Flow NI/min	SCFM
MC104-ZN... -5TF	8.189	7.087	1.772	1450	51.2
MC238-ZN... -5TF	10.197	9.764	2.362	4800	169.5
MC202-ZN... -5TF	10.197	9.764	2.362	4950	175

DIMENSIONS (in inches)					
Mod.	A	B1	C	Flow NI/min	SCFM
MC104-ZN... -5-FLTF	8.189	8.031	1.772	1450	51.2
MC238-ZN... -5-FLTF	10.197	10.866	2.362	4800	169.5
MC202-ZN... -5-FLTF	10.197	10.866	2.362	4950	175





# FRL Series MC Assembly Kits Guide

**LEGEND \***

All Components use an abbreviated Single-Letter code for determining KITS required. (see table below for examples of various assemblies and KITS)

- F** = Filter (MC\*\*\*-F00) - with "pass-through" assembly holes
- R** = Regulator (MC\*\*\*-R00) - with threaded fixed assembly holes
- L** = Lubricator (MC\*\*\*-L00) - with "pass-through" assembly holes
- D** = Filter- Regulator Combo / In-Line Unit (MC\*\*\*-D00) - with threaded fixed assembly holes
- V** = 3/2-way Manual "Lock-Out" Valve, or Solenoid Shut-Off Valve, or Air-Pilot Shut-Off Valve (MC\*\*\*-V01, MC\*\*\*-V16, MC\*\*\*-V36) - with "pass-through" assembly holes
- B** = Additional outlet pressure block, "Take-Off" Block (MC\*-B\*\*\*) - with "pass-through" assembly holes
- AV** = Slow start valve / Soft-Start valve (MC\*\*\*-AV) - with "pass-through" assembly holes

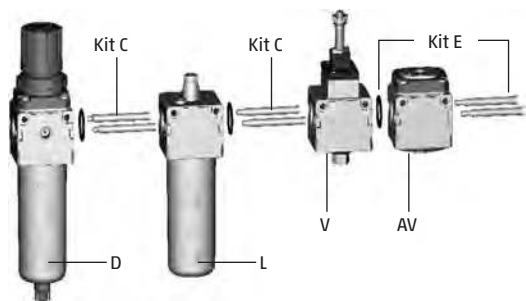


**INSTRUCTIONS**

1. In deciding which KITS to use for assembly, you must first decide if End-Plates, (KIT A), are to be used based upon customer preference. This affects the number of Tie-Rod KITS, (KIT C or KIT D) that will be required, as opposed to Cap-Screw KITS, (KIT E or KIT F), when no End-Plates are used in assembly.
2. ONLY Regulators and Filter-Regulators have threads in their bodies, which require Tie-Rod or Cap-Screw KITS to terminate in them. All other components allow the Tie-Rods and Cap-Screws to pass through their bodies. This allows for the most common Tie-Rod set, (KIT C), to be used in all assemblies, and merely change the final terminating/outside Tie-Rods or Cap-Screws based on the use of End-Plates, or not.
3. If no Regulators or Filter-Regulators are used, and all components are a "Pass-Through" type with no threads, then alternate KITS D or F would be used to finish the Tie-Rod or Cap-Screw assembly.

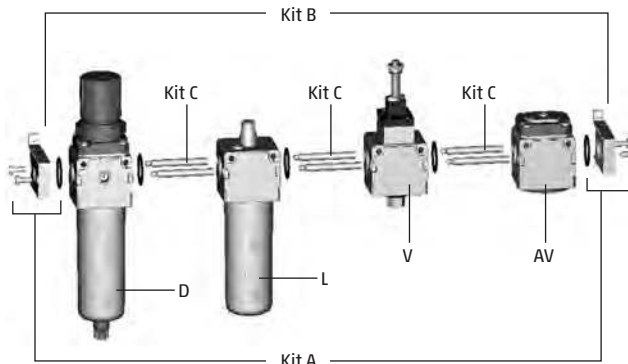
**FRL without End-Plates**

1D + 1L + 1V + 1AV + 2 kit C + 1 kit E



**FRL with End-Plates + Wall-Mount Brackets**

1D + 1L + 1V + 1AV + 3 kit C + 1 kit A + 1 kit B

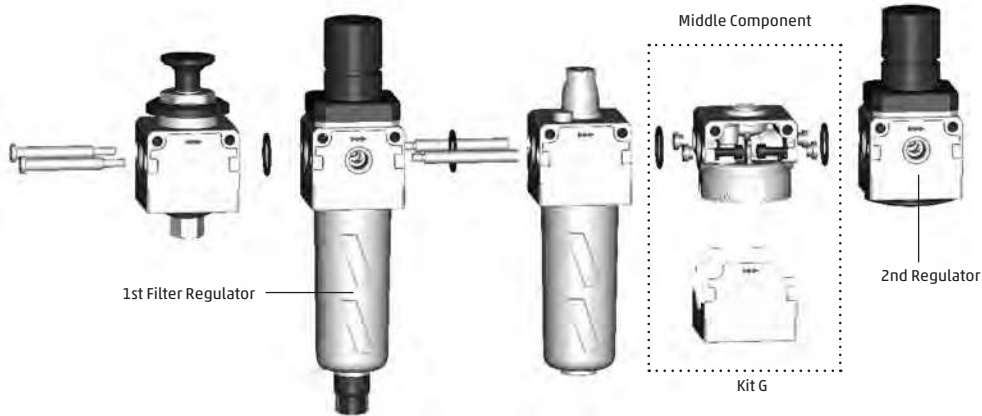


EXAMPLE OF FRL MODULAR ASSEMBLY, Based on Components in assembly using Legend above \*

ASSEMBLY WITHOUT END-PLATES		ASSEMBLY WITH END-PLATES	
Components *	KITS Needed	Components *	KITS Needed
F + R + L	2 kit E	F + R + L	1 kit A + 2 kit C
D + L	1 kit E	D + L	1 kit A + 1 kit C
D + B + L	1 kit E + 1 kit C	D + B + L	1 kit A + 2 kit C
D + B + R + L	2 kit E + 1 kit C	D + B + R + L	1 kit A + 3 kit C
V + F + R + L	2 kit E + 1 kit C	V + F + R + L	1 kit A + 3 kit C
V + F + R + L + V + AV	2 kit E + 3 kit C	V + F + R + L	1 kit A + 5 kit C
F + L	1 kit F	F + L	1 kit A + 1 kit C + 1 Kit D
F + L + V + AV	2 kit C + 1 kit F	F + L + V + AV	1 kit A + 3 kit C + 1 Kit D
V + D + V + AV	2 kit E + 1 kit C	V + D + V + AV	1 kit A + 3 kit C

KIT COMPOSITION			
Kit A	Left and Right End-plate + 4 cap-screws + 2 O-Rings	Kit D	2 Female-Female tie-rods
Kit B	2 Wall-Mount supports + 4 M5 screws	Kit E	2 male cap-screws + 1 o-ring
Kit C	2 Male-Female tie-rods + 1 O-Ring	Kit F	2 male cap-screws + 2 female cap-screws + 1 o-ring
		Kit G **	4 male cap-screws + 4 washers/bushings + 2 o-rings

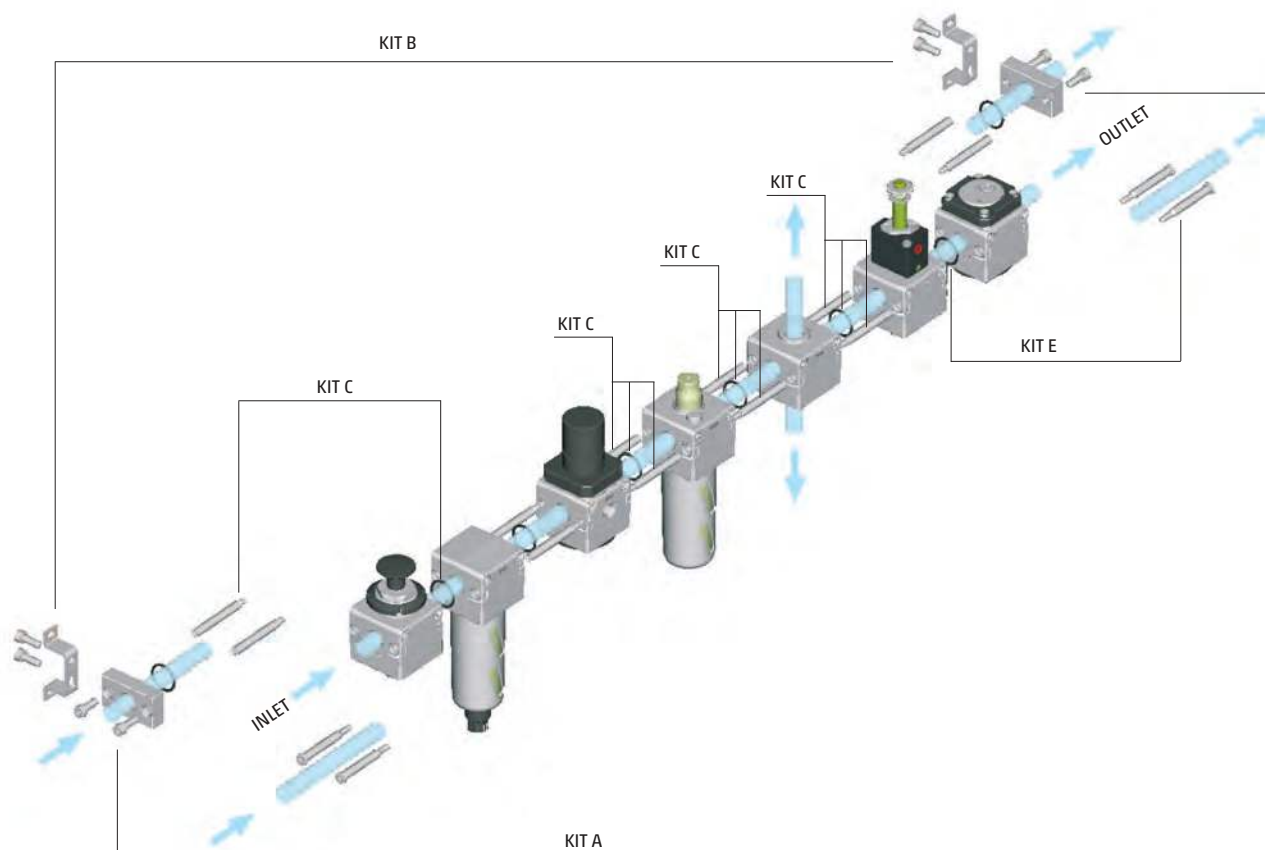
\*\* Example of KIT "G" used below. KIT "G" is to be used whenever there is a second regulator or filter-regulator in the same common assembly. KIT "G" allows the component to the left of the second regulator to be assembled onto the second regulator on its right side and also back into the component or tie-rod KIT to its left side. You must remove the outer plastic shell or cover of that middle component in order to assemble the bushings and cap-screws of Kit "G" both to the left and right.



\*\* **NOTE:** See below table for all KIT Part Numbers when ordering, or checking stock and price.

Part Numbers For Kits			
KIT	1/4" Units	3/8" Units	1/2" Units
Kit A	MC104-FL-TF	MC238-FL-TF	MC202-FL-TF
Kit B	MC104-ST	MC104-ST	MC104-ST
Kit C	MC1-TMF	MC2-TMF	MC2-TMF
Kit D	MC1-TFF	MC2-TFF	MC2-TFF
Kit E	MC1-VM	MC2-VM	MC2-VM
Kit F	MC1-VMF	MC2-VMF	MC2-VMF
Kit G	MC1-VMD	MC2-VMD	MC2-VMD

\*\* All kits and accessories located at end of chapter and in Appendix section. Consult for ordering codes and descriptions.



**Types Kit**

**Components**

Kit A: 1 right flanges + 1 left flanges + 4 screws + 2 O-ring

Kit B: 2 brackets + 4 screws

Kit C: 2 tie-rods male-female + 1 O-ring

Kit D: 2 tie rods female-female

Kit E: 2 male screws + 1 O-ring

Kit F: 2 male screws + 2 female screws + 1 O-ring

Kit G: 4 screws + 4 washers + 2 O-ring

N.B. only one "M" can be present within the assembled composition; for assembly configurations which differ from the ones described, you can add only types "P" and for each added element you need a Kit "C".

**Examples body type "M"**

With female no through threads

R = Regulator (MC\*\*\*-R00) - with threaded fixed assembly holes

D = Filter- Regulator Combo / In-Line Unit (MC\*\*\*-D00) - with threaded fixed assembly holes

H = Manifold Regulator (MC104-M00TF) , with threaded fixed assembly holes

**Assembly Kit Requirements – Guide to Kits with Body types "P" and "M"**

Components	Without terminal flanges	With terminal flanges
P + M	1 Kit E	1 Kit A + 1 Kit C
M + P	1 Kit E	1 Kit A + 1 Kit C
P + P	1 Kit F	1 Kit A + 1 Kit C + 1 Kit D
P + M + P	2 Kit E	1 Kit A + 2 Kit C
P + P + P	1 Kit F + 1 Kit C	1 Kit A + 2 Kit C + 1 Kit D
M + P + P	1 Kit E + 1 Kit C	1 Kit A + 2 Kit C
P + M + P + P	2 Kit E + 1 Kit C	1 Kit A + 3 Kit C
P + P + M + P + P	2 Kit E + 2 Kit C	1 Kit A + 4 Kit C

**Examples body type "P"**

With through holes

F = Filter (MC\*\*\*-F00) - with "pass-through" assembly holes

L = Lubricator (MC\*\*\*-L00) - with "pass-through" assembly holes

AV = Slow start valve / Soft-Start valve (MC\*\*\*-AV) - with "pass-through" assembly holes

V = 3/2-way Manual "Lock-Out" Valve, or Solenoid Shut-Off Valve, or Air-Pilot Shut-Off Valve (MC\*\*\*-V01, MC\*\*\*-V16, MC\*\*\*-V36) - with "passthrough" assembly holes

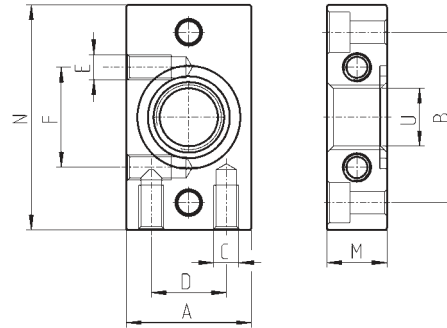
B = Additional outlet pressure block, "Take-Off" Block (MC\*-B\*\*\*) - with "pass-through" assembly holes

# Mounting Brackets, Accessories and Kits - Series MC

## Terminal flanges Series MC (Kit A)

Each of the kits MC202-FL and MC238-FL is supplied with: 1x left terminal flange; 1x right terminal flange; 4x screws M5x14; 2x O-Ring 3100.

Materials: enameled aluminium flanges, zinc-plated steel screws and NBR O-ring.



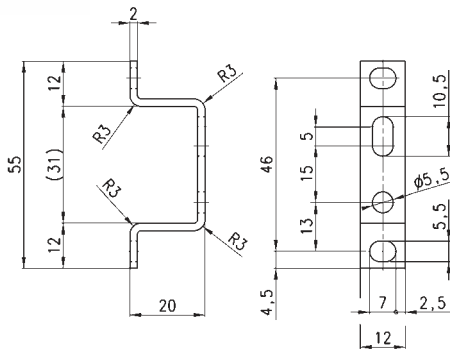
DIMENSIONS (in mm)								
Mod.	A	B	C	D	N	M	U	size
MC104-FL	25	34	M5	15	45	12	G1/4	1
MC238-FL	35	44.5	M5	20	60	14	G3/8	2
MC202-FL	35	44.5	M5	20	60	14	G1/2	2
MC104-FLTF	25	34	M5	15	45	12	1/4" NPTF	
MC238-FLTF	35	44.5	M5	20	60	14	3/8" NPTF	
MC202-FLTF	35	44.5	M5	20	60	14	1/2" NPTF	

## Mounting bracket Series MC (Kit B)

Mounting bracket for terminals 1/4, 3/8, 1.

The kit MC104-ST is supplied with:  
 - 2x terminal brackets  
 - 4x screws M5x10

Materials: zinc-plated steel brackets and screws.

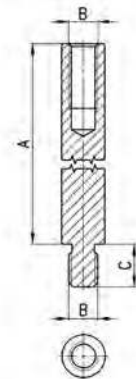


Mod. (Dimensions in mm)	
MC104-ST	

## Tie-rod for assembling, Series MC (Kit C)

The kit MC1-TMF is supplied with:  
 2 male/female tie-rods; 1 O-ring 2068.  
 The kit MC2-TMF is supplied with:  
 2 male/female tie-rods; 1 O-ring 3100.

Materials: nickel-plated steel tie-rods and NBR O-ring.



Mod. (dimensions in mm)	A	B	SW	size
MC1-TMF	45	M4	6	1
MC2-TMF	62	M5	6	2

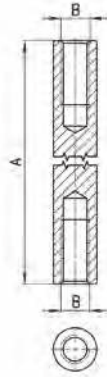
**Tie-rod for assembling, Series MC (Kit D)**



The kit MC1-TFF is supplied with 2 female tie-rods.

The kit MC2-TFF is supplied with 2 female tie-rods.

Materials: nickel-plated steel tie-rods.



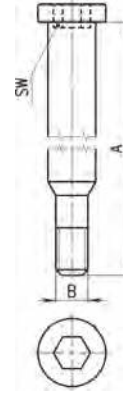
Mod. (Dimensions in mm)	A	B	size
MC1-TFF	44	M4	1
MC2-TFF	61	M5	2

**Screw for assembling, Series MC (Kit E)**



The kit MC1-VM is supplied with: 2 male screws; 1 O-ring 2068.  
The kit MC2-VM is supplied with: 2 male screws; 1 O-ring 3100

Materials: zinc-plated steel screws and NBR O-ring.



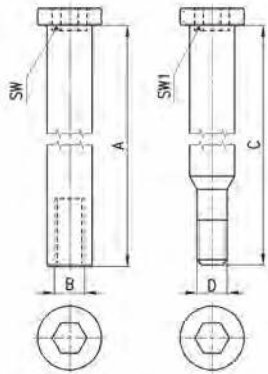
Mod. (Dimensions in mm)	A	B	SW	size
MC1-VM	48.5	M4	4	1
MC2-VM	65.5	M5	4	2

**Screw for assembling, Series MC (Kit F)**



The kit is supplied with: 2 male screws; 2 female screws; 1 O-ring (OR 2068 for MC1-VMF; OR 3100 for MC2-VMF).

Materials: zinc-plated steel male screws, nickel-plated steel female screws and NBR O-ring.



Mod. (dimensions in mm)	A	B	C	D	SW	SW1	size
MC1-VMF	42	M4	42.5	M4	4	4	1
MC2-VMF	59	M5	59.5	M5	4	4	2

**Tie-rod for assembling, Series MC (Kit G)**

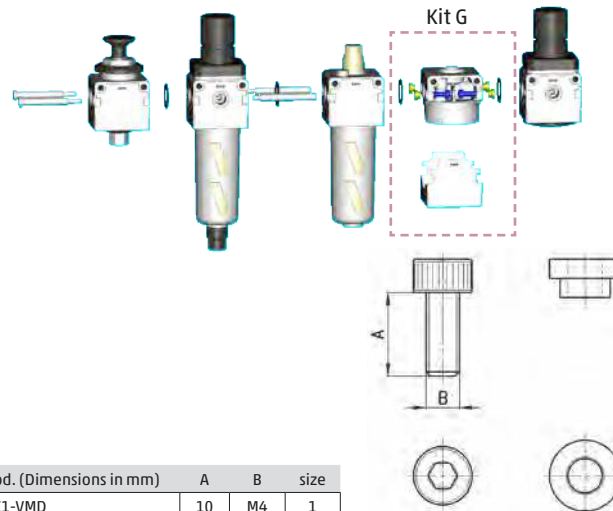
4 screws - 4 washers/spacers - 2 o-rings

\*\* See example at right. KIT "G" is to be used whenever there is a second regulator or filter-regulator in the same common assembly. KIT "G" allows the component to the left of the second regulator to be assembled onto the second regulator on its right side and also back into the component or tie-rod KIT to its left side. You must remove the outer plastic shell or cover of that middle component in order to assemble the bushings and cap-screws of Kit "G" both to the left and right.



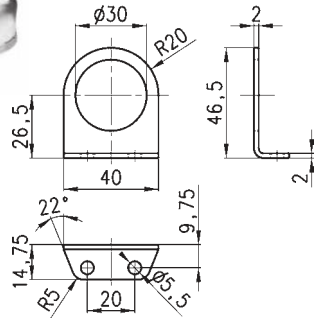
The kit MC1-VMD is supplied with: 4 screws M4X10; 4 spacers; 2 O-ring 2068.  
The kit MC2-VMD is supplied with: 4 screws M5X12; 4 spacers; 2 O-ring 3100.

Materials: zinc-plated steel screws, brass spacers and NBR O-ring.



Mod. (Dimensions in mm)	A	B	size
MC1-VMD	10	M4	1
MC2-VMD	12	M5	2

**Mounting bracket, Series MC-M-N-T**  
 Mounting bracket for Regulators and Filter-Regulators (1/8 & 1/4) - zinc-plated steel bracket

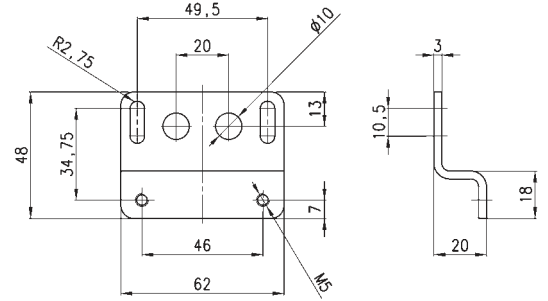


Mod. (dimensions in mm)  
 C114-ST/1

**Mounting bracket, Series MC**  
 Mounting bracket for MC238 and MC202  
 The kit is supplied with:  
 1 bracket; 2 screws M5X65

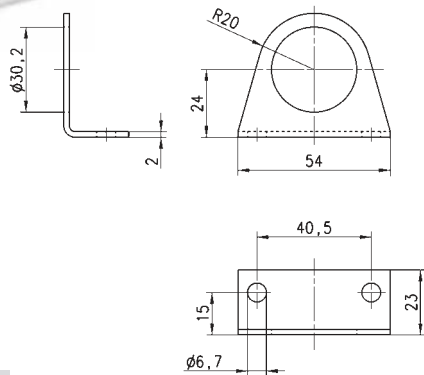


Materials: zinc-plated steel bracket and screws



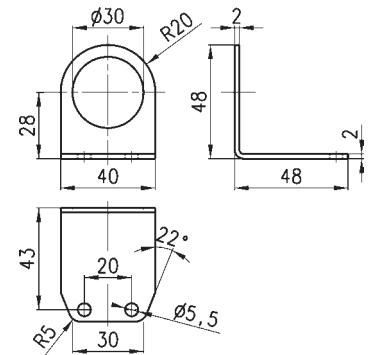
Mod. (dimensions in mm)  
 C238-ST/1

**Mounting bracket, Series MC-M-N-T**  
 Mounting bracket for Regulators and Filter-Regulators (1/8 & 1/4) - zinc-plated steel bracket



Mod. (dimensions in mm)  
 C114-ST

**Mounting bracket, Series MC-M-N-T**  
 Mounting bracket for Regulators and Filter-Regulators, (1/8 & 1/4) - zinc-plated steel bracket

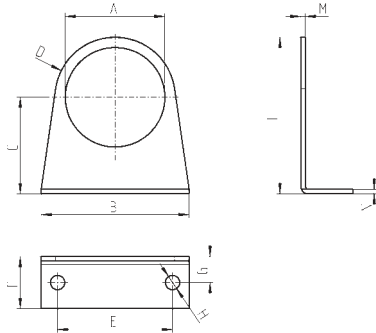


Mod. (dimensions in mm)  
 C114-ST/2

**Mounting bracket, Series MX2-S**

Mounting bracket for MC238 and MC202

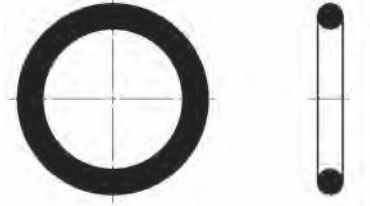
The kit is supplied with 1 zinc-plated steel bracket



Mod.	A	B	C	D	E	F	G	H	L	M	N
MX2-S	Ø 47,2	73	60,5	R29,5	54	25	15	Ø 6,2	90	2,5	2,5

**Assembly O-ring, Series MC**

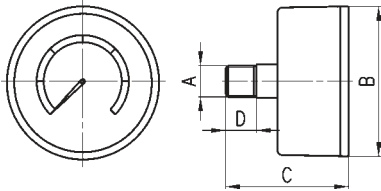
Assembly O-ring F-R-L-D  
for MC104 mod. 458-33/1 (OR 2068)  
for MC238 and MC202 mod. 80-26-11/4T  
(OR 3100)  
(spare part only).



\* spare parts only

Mod.	O-ring	For assembly
458-33/1	OR 2068	MC104
80-26-11/4T	OR 3100	MC238 - MC202 *
160-39-11/19	OR 3125	MX2
C401-F33	OR 3150	MX3

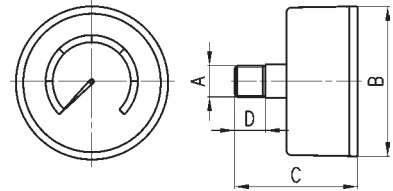
**Pressure gauges  
Mod. M043-P04TF (0 - 60 psi)  
Nominal face size 1 1/2"**



DIMENSIONS (in inches)

Mod.	A	B	C	D
M043-P04TF	1/8" NPTF	1.655	1.600	0.950

**Pressure gauges  
Mod. M043-P10TF (0 - 160 psi)  
Nominal face size 1 1/2"**



DIMENSIONS (in inches)













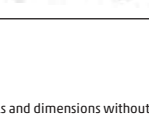
Mod.	A	B	C	D
M043-P10TF	1/8" NPTF	1.655	1.600	0.950





## 4 Modular FRL Series MX 3/8", 1/2", 3/4" and 1" NPTF

Page

Series MX		Summary and Features	<b>133</b>
Series MX		Filters	<b>135</b>
Series MX		Coalescing Filters	<b>139</b>
Series MX		Activated Carbon Filters	<b>143</b>
Series MX		Pressure Regulators	<b>148</b>
Series MX		Lubricators	<b>157</b>
Series MX		Filter-Regulators	<b>160</b>
Series MX		Lockable Isolation 3/2 Way Valves	<b>164</b>
Series MX <b>NEW</b>		SAFEMAX 3/2-way quick exhaust safety valves	<b>169</b>
Series MX		Soft Start Valves	<b>175</b>
Series MX		Take-Off Blocks	<b>179</b>
Series MX		FRL Pre-Assembled	<b>182</b>
Series MX		Pressure Gauges and Accessories	<b>192</b>

MODULAR FRL SERIES MX

# 4 Summary and Features

## Series MX - Modular 3/8" - 1" NPTF

MODULAR FRL SERIES MX



### Optional Flanges/Endcaps

- For easy removal of hard plumbing

### Regulator

- Three Pressure range options
- Relieving, Non-Relieving, and rapid backflow diaphragm options
- Factory Pressure presets avail.
- Tamper-proof available (slots for hard locks on all adjustment knobs)
- Locking, Non-rising knob std.
- Front & Rear gauge ports (pre-installed gauges standard)



### Manual Shut-Off Valve w/ Lock-Out, Tag-Out

- Downstream quick-dump feature
- Lock-Out hole is 8mm ( 0.315" ) OD, to accommodate most locks and hasps
- Unit flows to downstream when handle is down - Lifting handle exposes lock-out hole and exhausts downstream pressure

### Filter

- Coalescing, active carbon, 5 & 25 micron elements available
- Quick-Release bayonet bowls
- Grilamid (Nylon Composite) outer shroud, inner polycarbonate
- Manual, Depressurizing & Automatic Float Drain Options available
- Visual filter blockage indicators optional
- Thumb-latch on all bowls prevents accidental opening of bowl

**Lubricator -**

- Venturi Design w/ 2 micron drop size
- Flow adjustment near droplet indicator
- Quick-release bayonet bowl
- Grilamid (Nylon Composite) sight-glass material w/ Nylon composite shroud over the inner polycarbonate
- Oil Refillable while pressurized
- Large volume capacity bowl



**Optional Wallmount brackets**



**Standard assembly brackets**

**Isolation / Soft-Start Valve Combo -**

- Solenoid or Air-Pilot activated
- Downstream quick-dump feature
- Fully adjustable pressure ramp-up during start-up
- Port tap for electronic pressure switch (ex. PM11)
- Poppet valve design Isolation/Soft-Start Valve
- 1/2" - 3/4" Silencer ports on Shut-Off valves for Quick-Exhaust feature

**Standard Features -**

- Inlet Pressure 0.3 - 16 bar (4.25 - 232 psi)
- Operating Temp (-5° C - 50° C, (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature)
- Custom Assemblies available from McKinney, TX
- Low Temp versions available
- Aluminum construction w Polyurethane Enamel finish
- Modular Design w/ Simple bracket assembly system
- Single Part Number system for custom Assemblies

MODULAR FRL SERIES MX

# Filters Series MX

Ports 3/8" - 1" NPTF

MX2 ports: 3/8", 1/2", 3/4" NPTF - MX3 ports: 3/4", 1" NPTF

Innovative modular clamping system

Quick-Release, locking bayonet bowls



- » Removal of impurities and condensate
- » High flow with minimal pressure decreases
- » Cartridge filters of 25 or 5 µm
- » Manual, automatic, depressurizing and ported condensate drain
- » Bowl locking mechanism reduces the risk of accidents
- » Visual clog indicator option

This modular FRL is characterized by a modern, compact design, and high performance. The integration between metal alloys and technopolymers has allowed the realization of a reliable product, both light and strong at the same time. The unique and patented modular clamping system simplifies the mounting of components.

The Series MX appeals to a broad spectrum of markets and applications because of the savings realized in installation time, space requirements and total cost.

A special configurator, available on Camozzi's global website at <http://catalogue.camozzi.com> (sec. Configurators), allows the customer to choose the most suitable solution for his application, selecting single components or by configuring assembled FRLs.

## GENERAL DATA

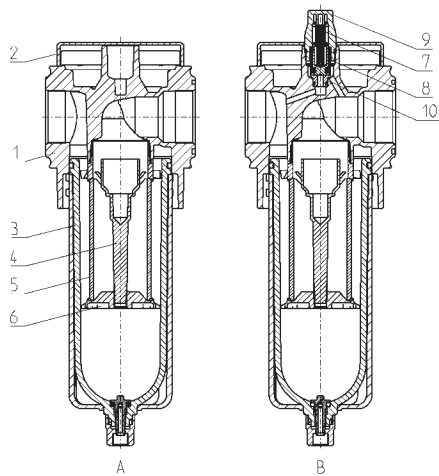
Construction	modular, compact with filtering element in HDPE
Materials	see TABLE OF MATERIALS
Ports	3/8" - 1" NPTF
Condensate capacity	MX3: 85 cc, (approx. 3 oz.), MX2: 55 cc (approx. 1.9 oz.)
Mounting	vertical in-line wall-mounting (by means of clamps)
Operating temperature	-5°C - 50°C at 16 bar with Dew Point of air at least 2° C (4° F) below the min working temperature, (23 F - 122 F @ 232 psi, up to 140 F MAX at 145 psi) -5°C - 60°C at 10 bar with Dew Point of air at least 2° C (4° F) below the min working temperature
Delivered air quality (ISO 8573-1: 2010)	Class 6.8.4 with 5 µm element Class 7.8.4 with 25 µm element
Draining of condensate	manual, automatic, depressurizing and ported
Operating pressure	0.3 - 16 bar (with automatic drain 1.5 - 12 bar); (4.5 - 232 psi, with automatic drain 22 - 175 psi)
Nominal flow	see FLOW DIAGRAMS
Fluid	compressed air

CODING EXAMPLE											
<b>MX</b>	<b>2</b>	<b>-</b>	<b>3/8</b>	<b>-</b>	<b>F</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>-</b>	<b>—</b>	<b>TF</b>
<b>MX</b>	SERIES										
<b>2</b>	SIZE: 2 = 3/8" - 1/2" - 3/4" 3 = 3/4" - 1"										
<b>3/8</b>	PORTS: 3/8 = 3/8 1/2 = 1/2 3/4 = 3/4 1 = 1										
<b>F</b>	FILTER										
<b>0</b>	FILTERING ELEMENT: 0 = 25 µm (standard) 1 = 5 µm										
<b>0</b>	DRAINING OF CONDENSATE: 0 = semiautomatic-manual drain (standard) 3 = automatic drain 5 = depressuring drain, filtered orifice 8 = without drain, with port G1/8										
<b>1</b>	Visual Indicator = not included (standard) 1 = included										
	FLOW DIRECTION: = from left to right (standard) LH = from right to left (only available with automatic drain or without drain (G1/8 port))										
<b>TF</b>	TF = NPTF ports blank = BSP ports										

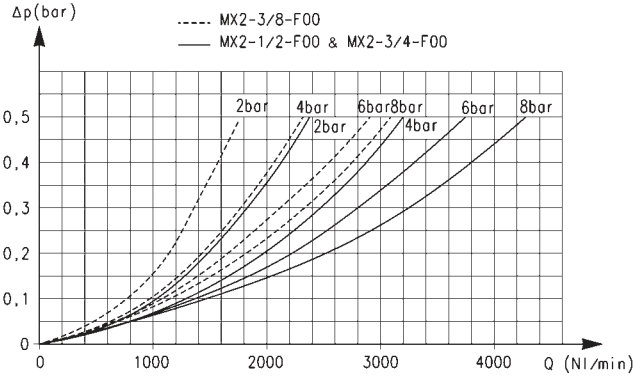
For the assembly of a single component with fixing flanges or wall-mounting, see the section "FRL Series MX Assembled"

**Filters Series MX - materials**

A = Filter  
 B = Filter with visual clog indicator

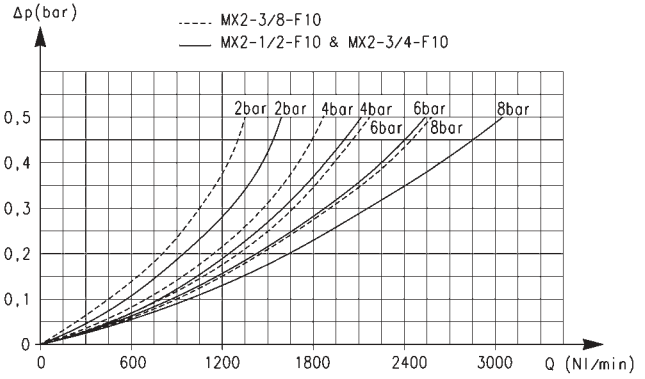


PARTS	MATERIALS
1 = Body	Aluminium
2 = Covering	Polyacetal
3 = Bowl cover	Polycarbonate/Polyamide
4 = Valve-guide	Polyacetal
5 = Filtering element	Polyethylene
6 = Separation deflector	Polyacetal
7 = Upper spring	Stainless Steel
8 = Piston	Anodized Aluminum
9 = Visual indicator bell	Polycarbonate
10 = Visual indicator body	Brass
Seals	NBR



\* Reference diagram for models with filtering element = 25 µm

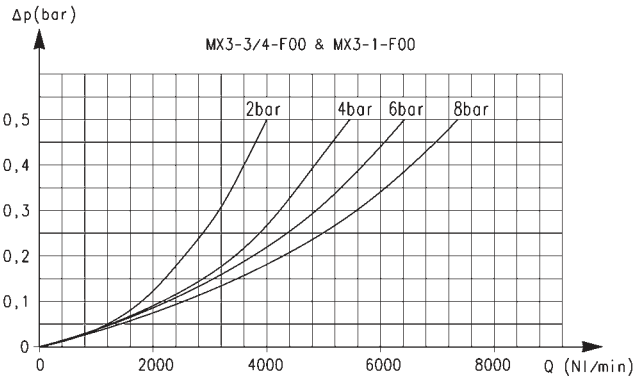
Δp = Pressure drop (bar)  
Q = Flow (NL/min)



\*\* Reference diagram for models with filtering element = 5 µm

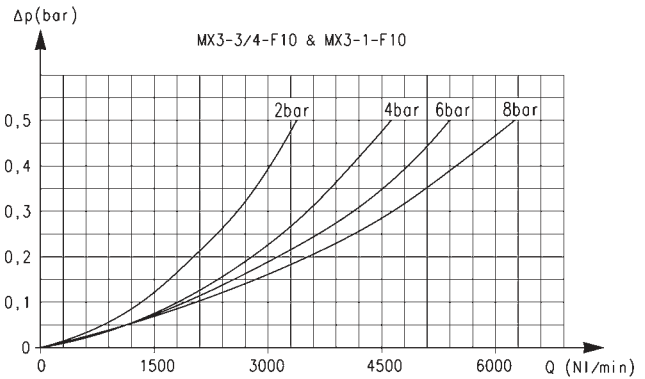
Δp = Pressure drop (bar)  
Q = Flow (NL/min)

MX3 FILTERS FLOW DIAGRAMS



\* Reference diagram for models with filtering element = 25 µm

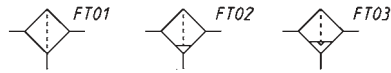
Δp = Pressure drop (bar)  
Q = Flow (NL/min)



\*\* Reference diagram for models with filtering element = 5 µm

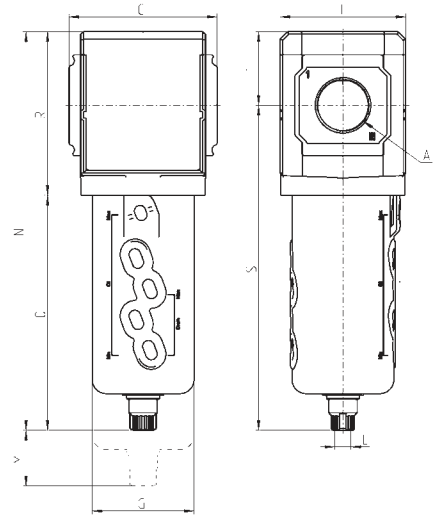
Δp = Pressure drop (bar)  
Q = Flow (NL/min)

Filters Series MX - dimensions



FT01 = filter without drain with threaded port  
 FT02 = filter with semiautomatic

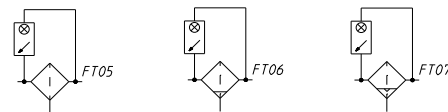
manual drain  
 FT03 = filter with automatic or depressuring drain



DIMENSIONS (in inches)

Mod.	A	C	G	I	L	M	N	O	R	S	T	Weight (kg)
MX2-3/8-F00-TF	3/8	2.756	2.177	2.677	1/8	2.264	8.346	5.000	3.346	6.870	1.476	0.5
MX2-1/2-F00-TF	1/2	2.756	2.177	2.677	1/8	2.264	8.346	5.000	3.346	6.870	1.476	0.5
MX2-3/4-F00-TF	3/4	2.756	2.177	2.677	1/8	2.264	8.346	5.000	3.346	6.870	1.476	0.5
MX3-3/4-F00-TF	3/4	3.524	2.421	2.992	1/8	2.953	9.488	5.591	3.898	7.736	1.752	0.8
MX3-1-F00-TF	1	3.524	2.421	2.992	1/8	2.953	9.488	5.591	3.898	7.736	1.752	0.7

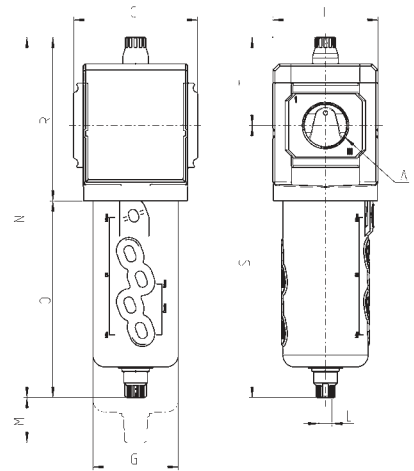
Filters Series MX - dimensions



FT05 = filter without drain with threaded port and visual indicator

FT07 = filter with automatic or depressuring drain and visual clog indicator

FT06 = filter with semiautomatic manual drain and visual clog indicator



DIMENSIONS (in inches)

Mod.	A	C	G	I	L	M	N	O	R	S	T	Weight (kg)
MX2-3/8-F001-TF	3/8	2.756	2.177	2.677	1/8	2.264	9.094	5	4.094	6.870	2.224	0.5
MX2-1/2-F001-TF	1/2	2.756	2.177	2.677	1/8	2.264	9.094	5	4.094	6.870	2.224	0.5
MX2-3/4-F001-TF	3/4	2.756	2.177	2.677	1/8	2.264	9.094	5	4.094	6.870	2.224	0.5
MX3-3/4-F001-TF	3/4	3.523	2.42	2.992	1/8	2.953	10.236	5.59	4.646	7.736	2.5	0.8
MX3-1-F001-TF	1	3.523	2.42	2.992	1/8	2.953	10.236	5.59	4.646	7.736	2.5	0.7

# Coalescing Filters Series MX

Ports 3/8" - 1" NPTF

MX2 ports: 3/8", 1/2", 3/4" NPTF - MX3 ports: 3/4", 1" NPTF

Innovative modular clamping system

Quick-Release, locking bayonet bowls



- » High performance and compressed air purity
- » Air quality according to ISO 8573-1 standard
- » Cartridge filters 1 or 0,01 µm
- » Manual, depressurizing, automatic and ported condensate drain
- » Bowl locking mechanism reducing the risk of accidents
- » Visual clog indicator option

This modular FRL is characterized by a modern, compact design, and high performance. The integration between metal alloys and technopolymers has allowed the realization of a reliable product, both light and strong at the same time. The unique and patented modular clamping system simplifies the mounting of components.

The Series MX appeals to a broad spectrum of markets and applications because of the savings realized in installation time, space requirements and total cost.

A special configurator, available on Camozzi's global website at <http://catalogue.camozzi.com> (sec. Configurators), allows the customer to choose the most suitable solution for his application, selecting single components or by configuring assembled FRLs.

## GENERAL DATA

Construction	modular, compact	
Materials	see TABLE OF MATERIALS	
Ports	3/8" - 1" NPTF	
Condensate capacity	MX3: 85 cc. (approx. 3 oz.), MX2: 55 cc (approx. 1.9 oz.)	
Mounting	vertical in-line wall-mounting (by means of clamps)	
Operating temperature	-5°C - 50°C at 16 bar with Dew Point of air at least 2° C (4° F) below the min working temperature, (23° F - 122°F @ 232 psi, up to 140 F MAX at 145 psi) -5°C - 60°C at 10 bar with Dew Point of air at least 2° C (4° F) below the min working temperature	
Draining of condensate	manual, automatic, depressurizing and ported	
Operating pressure	0.3 - 16 bar (with automatic drain 1.5 - 12 bar); (4.5 - 232 psi, with automatic drain 22 - 175 psi)	
Nominal flow	see FLOW DIAGRAMS	
Delivered air quality (ISO 8573-1: 2010)	Class 2.8.2 with 1 µm filter element Class 1.8.1 with 0.01 µm filter element	
Residual oil content with inlet at 3 mg/m <sup>3</sup>	< 0.01mg/m <sup>3</sup>	< 0.1mg/m <sup>3</sup>
Oil retain efficiency	99.80%	97%
Particles retain efficiency	99.99999%	99.999%
Fluid	compressed air	
Pre-filtering with filtering element of 1 µm	it is recommended to use a filter of 5 µm	
Pre-filtering with filtering element of 0.01 µm	it is recommended to use a filter with residual oil of 0.1 mg/m <sup>3</sup>	



**CODING EXAMPLE**

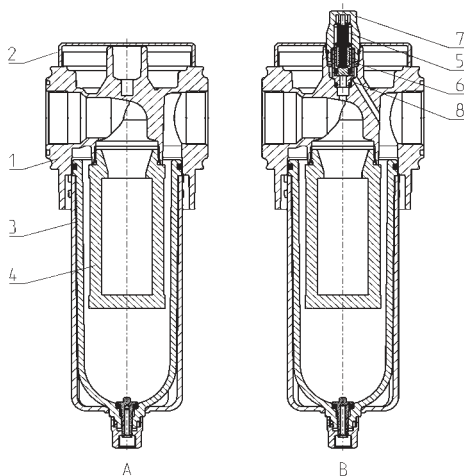
<b>MX</b>	<b>2</b>	<b>-</b>	<b>3/8</b>	<b>-</b>	<b>FC</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>-</b>	<b>—</b>	<b>TF</b>
-----------	----------	----------	------------	----------	-----------	----------	----------	----------	----------	----------	-----------

<b>MX</b>	SERIES
<b>2</b>	SIZE: 2 = 3/8" - 1/2" - 3/4" 3 = 3/4" - 1"
<b>3/8</b>	PORTS: 3/8 = 3/8 1/2 = 1/2 3/4 = 3/4 1 = 1
<b>FC</b>	COALESCING FILTER
<b>0</b>	FILTERING ELEMENT: 0 = 0,01 µm (standard) 1 = 1 µm
<b>0</b>	DRAINING OF CONDENSATE: 0 = semiautomatic-manual drain (standard) 3 = automatic drain 5 = depressuring drain, filtered orifice 8 = without drain, with port 1/8
<b>1</b>	Visual Indicator = not included (standard) 1 = included
	FLOW DIRECTION: Blank = from left to right (standard) LH = from right to left
<b>TF</b>	TF = NPTF ports blank = BSP ports

For the assembly of a single component with fixing flanges or wall-mounting, see the section "FRL Series MX Assembled"

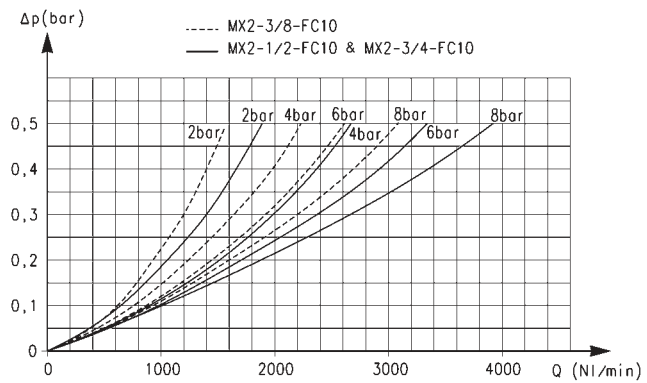
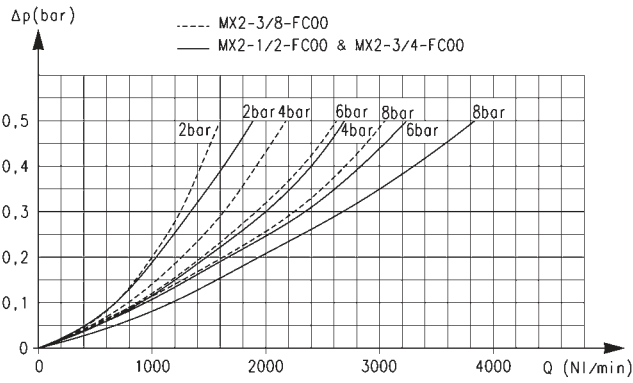
**Coalescing filters Series MX - materials**

A = Filter  
B = Filter with visual clog indicator



PARTS	MATERIALS
1 = Body	Aluminium
2 = Covering	Polyacetal
3 = Bowl with technopolymer cover	Polycarbonate/Polyamide
4 = Valve-guide	Polyacetal
5 = Filtering element	Polyethylene
6 = Separation deflector	Polyacetal
7 = Upper spring	Stainless Steel
8 = Piston	Anodized Aluminum
9 = Visual indicator bell	Polycarbonate
10 = Visual indicator body	Brass
Seals	NBR

**MX2 FLOW DIAGRAMS**



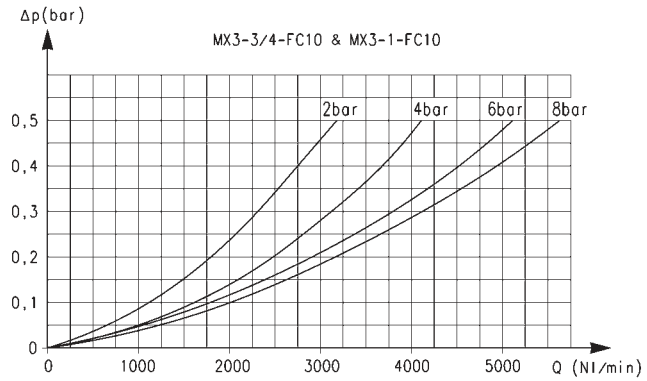
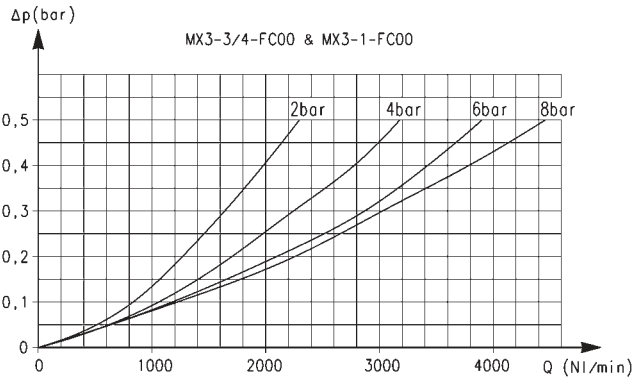
\* Reference diagram for models with filtering element = 0.01 µm

\*\* Reference diagram for models with filtering element = 1 µm

Δp = Pressure drop (bar)  
Q = Flow (NL/min)

Δp = Pressure drop (bar)  
Q = Flow (NL/min)

**MX3 FLOW DIAGRAMS**



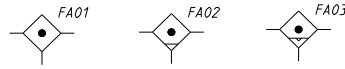
\* Reference diagram for models with filtering element = 0.01 µm

\*\* Reference diagram for models with filtering element = 1 µm

Δp = Pressure drop (bar)  
Q = Flow (NL/min)

Δp = Pressure drop (bar)  
Q = Flow (NL/min)

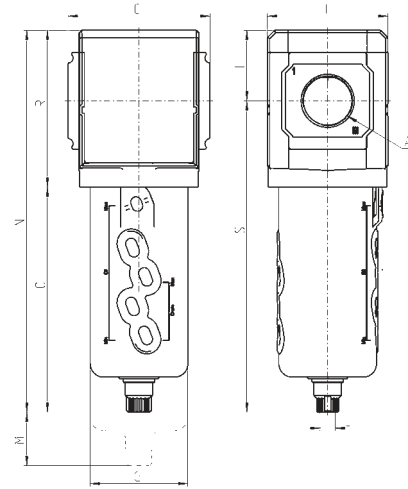
Coalescing filters Series MX - dimensions



FA01 = coalescing filter without drain with threaded port

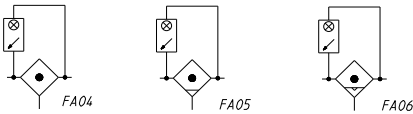
FA03 = coalescing filter with automatic or depressuring drain

FA02 = coalescing filter with semiautomatic manual drain



DIMENSIONS (in inches)												
Mod.	A	C	G	I	L	M	N	O	R	S	T	Weight (kg)
MX2-3/8-FC00-TF	3/8	2.756	2.177	2.677	1/8	2.047	8.346	5.000	3.346	6.870	1.476	0.5
MX2-1/2-FC00-TF	1/2	2.756	2.177	2.677	1/8	2.047	8.346	5.000	3.346	6.870	1.476	0.5
MX2-3/4-FC00-TF	3/4	2.756	2.177	2.677	1/8	2.047	8.346	5.000	3.346	6.870	1.476	0.5
MX3-3/4-FC00-TF	3/4	3.524	2.421	2.992	1/8	2.953	9.488	5.591	3.898	7.736	1.752	0.8
MX3-1-FC00-TF	1	3.524	2.421	2.992	1/8	2.953	9.488	5.591	3.898	7.736	1.752	0.8

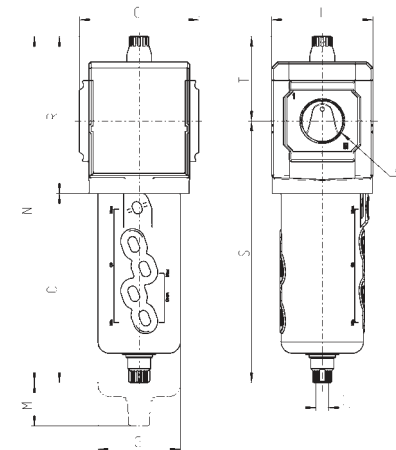
Coalescing filters Series MX - dimensions



FA04 = coalescing filter without drain with threaded port and visual clog indicator

FA06 = coalescing filter with automatic or depressuring drain and visual clog indicator

FA05 = coalescing filter with semiautomatic manual drain and visual clog indicator



DIMENSIONS (in inches)												
Mod.	A	C	G	I	L	M	N	O	R	S	T	Weight (kg)
MX2-3/8-FC001-TF	3/8	2.756	2.177	2.677	1/8	2.047	9.094	5	4.094	6.870	2.224	0.5
MX2-1/2-FC001-TF	1/2	2.756	2.177	2.677	1/8	2.047	9.094	5	4.094	6.870	2.224	0.5
MX2-3/4-FC001-TF	3/4	2.756	2.177	2.677	1/8	2.047	9.094	5	4.094	6.870	2.224	0.5
MX3-3/4-FC001-TF	3/4	3.524	2.421	2.992	1/8	2.953	10.236	5.591	4.646	7.736	2.5	0.8
MX3-1-FC001-TF	1	3.524	2.421	2.992	1/8	2.953	10.236	5.591	4.646	7.736	2.5	0.8

# Activated Carbon Filters Series MX

Ports 3/8" - 1" NPTF

MX2 ports: 3/8", 1/2", 3/4" NPTF - MX3 ports: 3/4", 1" NPTF

Innovative modular clamping system

Quick-Release, locking bayonet bowls



- » Removal of compressed air oil, liquid, and gas components through the active carbons
- » Air quality conforming to ISO 8573-1 standard, up to class 1.7.1
- » Bowl locking mechanism reducing the risk of accidents
- » Visual clog indicator option

This modular FRL is characterized by a modern, compact design, and high performance. The integration between metal alloys and technopolymers has allowed the realization of a reliable product, both light and strong at the same time. The unique and patented modular clamping system simplifies the mounting of components.

The Series MX appeals to a broad spectrum of markets and applications because of the savings realized in installation time, space requirements and total cost.

A special configurator, available on Camozzi's global website at <http://catalogue.camozzi.com> (sec. Configurators), allows the customer to choose the most suitable solution for his application, selecting single components or by configuring assembled FRLs.

## GENERAL DATA

Construction	modular, compact with activated carbon filtering element
Materials	see TABLE OF MATERIALS
Ports	3/8" - 1" NPTF
Mounting	vertical in-line wall-mounting (by means of clamps)
Operating temperature	10°C - 40°C (t max = 60°C), (50°F - 105 F, max temp. 140°F)
Draining of condensate	NO DRAINING
Operating pressure	0.3 - 16 bar (4.5 - 232 psi)
Nominal flow	see FLOW DIAGRAMS
Filtering element	Class 1.7.1
Residual oil content	< 0.003 mg/m <sup>3</sup>
Fluid	compressed air
Pre-filtering	it is recommended to use a coalescing filter with residual oil of 0,01mg/m <sup>3</sup>

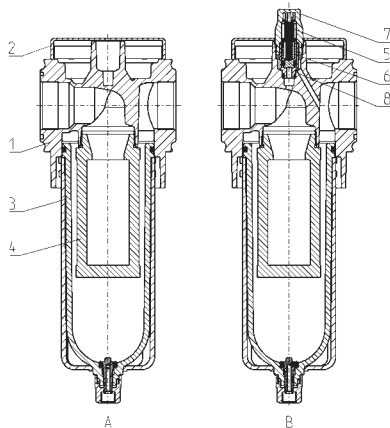
**CODING EXAMPLE**

MX	2	-	3/8	-	FCA	1	-	—	TF
----	---	---	-----	---	-----	---	---	---	----

<b>MX</b>	SERIES
<b>2</b>	SIZE: 2 = 3/8" - 1/2" - 3/4" 3 = 3/4" - 1"
<b>3/8</b>	PORT: 3/8 = 3/8 1/2 = 1/2 3/4 = 3/4 1 = 1
<b>FCA</b>	ACTIVATED CARBON FILTER
<b>1</b>	VISUAL BLOCKAGE INDICATOR: Blank = not present 1 = present
	FLOW DIRECTION: = from left to right (standard) LH = from right to left
<b>TF</b>	TF = NPTF ports blank = BSP ports

For the assembly of a single component with fixing flanges or wall-mounting, see the section "FRL Series MX Assembled"

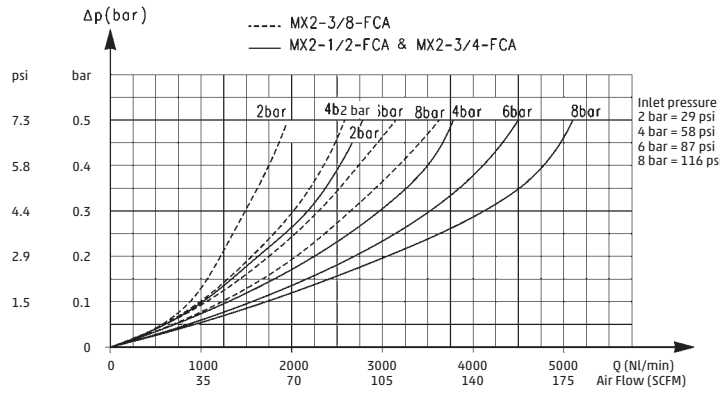
**Activated carbon filters Series MX - materials**



PARTS	MATERIALS
1 = Body	Aluminium
2 = Covering	Polyacetal
3 = Bowl cover	Polycarbonate / Polyamide
4 = Filtering element	Active carbon
5 = Upper spring	Stainless steel
6 = Piston	Anodized aluminum
7 = Viewer	Polycarbonate
8 = Indicator body	Brass
Seals	NBR

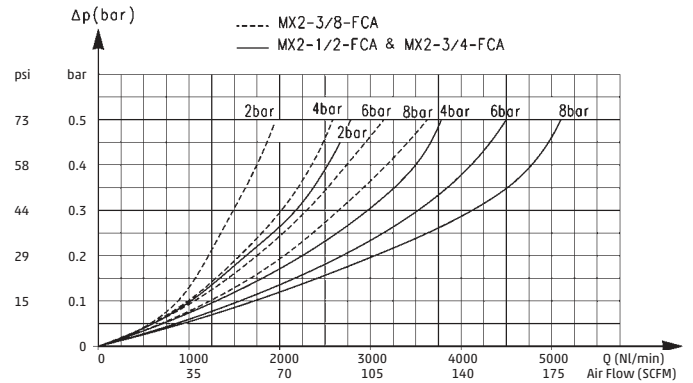
FLOW DIAGRAMS, MX3 & MX2

MX3 flow curves



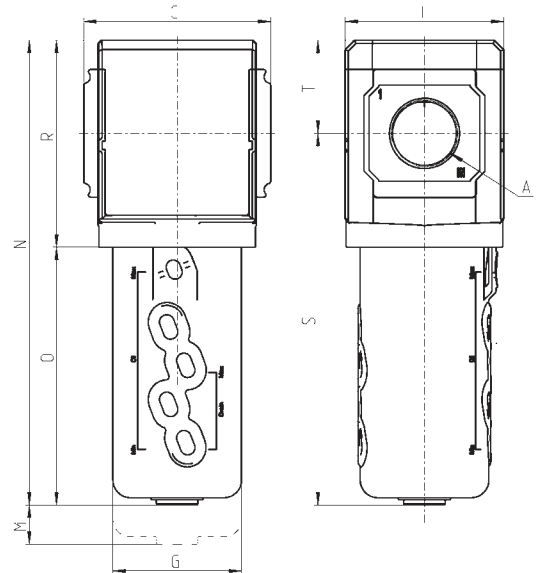
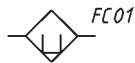
$\Delta P$  = Pressure drop  
 Q = Flow

MX2 flow curves



$\Delta p$  = Pressure drop  
 Q = Flow

Activated carbon filters Series MX - dimensions

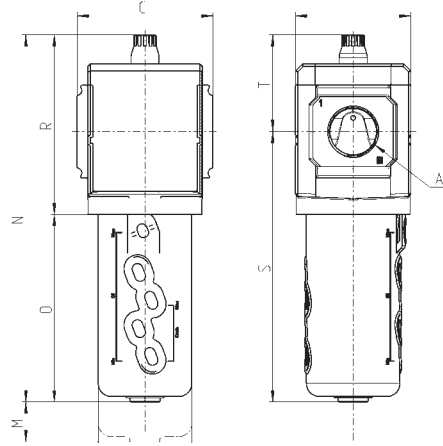
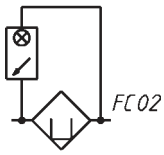


DIMENSIONS (in inches-s)											
Mod.	A	C	G	I	M	N	O	R	S	T	Weight (kg)
MX2-3/8-FCA-TF	3/8	2.756	2.177	2.677	3.524	7.461	4.114	3.346	5.984	1.476	0.5
MX2-1/2-FCA-TF	1/2	2.756	2.177	2.677	3.524	7.461	4.114	3.346	5.984	1.476	0.5
MX2-3/4-FCA-TF	3/4	2.756	2.177	2.677	3.524	7.461	4.114	3.346	5.984	1.476	0.5
MX3-3/4-FCA-TF	3/4	3.524	2.421	2.992	4.213	8.740	4.843	3.898	6.988	1.752	0.8
MX3-1-FCA-TF	1	3.524	2.421	2.992	4.213	8.740	4.843	3.898	6.988	1.752	0.8

Activated carbon filters Series MX - dimensions



FC02 = activated carbon filter with visual blockage indicator



Mod.	A	C	G	I	M	N	O	R	S	T	Weight (Kg)
MX2-3/8-FCA1-TF	G3/8	70	55.3	68	89.5	208.5	104.5	104	152	56.5	0.5
MX2-1/2-FCA1-TF	G1/2	70	55.3	68	89.5	208.5	104.5	104	152	56.5	0.5
MX2-3/4-FCA1-TF	G3/4	70	55.3	68	89.5	208.5	104.5	104	152	56.5	0.5
MX3-3/4-FCA1-TF	G3/4	89.5	61.5	76	107	241	123	118	177.5	63.5	0.8
MX3-1-FCA1-TF	G1	89.5	61.5	76	107	241	123	118	177.5	63.5	0.8

MODULAR FRL SERIES MX





# Pressure Regulators Series MX

Standard Regulators MX2 ports: 3/8", 1/2", 3/4" NPTF - MX3 ports: 3/4", 1" NPTF

Manifold mount design: 1/2" NPTF (MX2 only)

Innovative modular clamping system

Available with built-in pressure gauges or  
with threaded ports for gauges



- » Low set-point variance, or hysteresis
- » Lockable knob with adjustment stop
- » Tamper-proof system via slots in handle offers a fully lockable regulator
- » Integral return exhaust (relieving)
- » Available as Manifold regulator, non-cascading

Reliable and repeatable set-points of the secondary reduced pressure ensures performance optimization and energy saving. Available in 2 standard spring options for regulated pressure ranges. All regulators are equipped with an integrated locking system and built-in pressure gauges for a more compact product. The regulators Series MX are suitable also for panel mountings.

The Series MX appeals to a broad spectrum of markets and applications because of the savings realized in installation time, space requirements and total cost.

A special configurator, available on Camozzi's global website at <http://catalogue.camozzi.com> (sec. Configurators), allows the customer to choose the most suitable solution for his application, selecting single components or by configuring assembled FRLs.

## GENERAL DATA

Construction	modular, compact, diaphragm type
Materials	see TABLE OF MATERIALS
Ports	3/8" - 1" NPTF
Mounting	vertical in-line wall-mounting (by means of clamps) panel mounting
Operating temperature	-5°C - 50°C at 16 bar with Dew Point of air at least 2° C (4° F) below the min working temperature, (23 F - 122 F @ 232 psi, up to 140 F MAX at 145 psi ) -5°C - 60°C at 10 bar with Dew Point of air at least 2° C (4° F) below the min working temperature
Inlet pressure	0 - 16 bar (0 - 232 psi)
Outlet pressure	0,5 - 10 bar, (7 - 145 psi) or 0 - 4 bar, (0 - 60 psi) 0.5 - 7 bar (7 - 102 psi) (MX2 only)
Overpressure exhaust	with relieving or without relieving
Nominal flow	see FLOW DIAGRAMS
Fluid	compressed air
Pressure gauge	version with built-in pressure gauge or version with threaded gauge ports (1/8" on MX2 and 1/4" on MX3)

**CODING EXAMPLE**

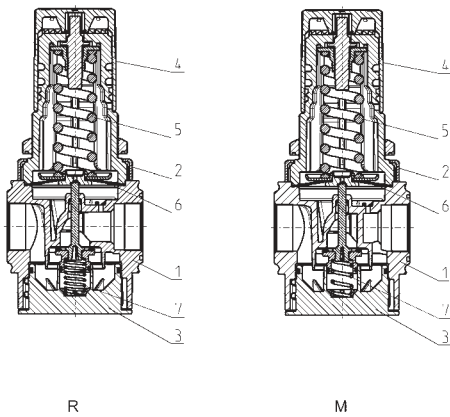
MX	2	-	3/8	-	R	0	0	4	-	—	TF
----	---	---	-----	---	---	---	---	---	---	---	----

<b>MX</b>	SERIES
<b>2</b>	SIZE: 2 = 3/8" - 1/2" - 3/4" 3 = 3/4" - 1"
<b>3/8</b>	PORTS: 3/8 = 3/8 1/2 = 1/2 3/4 = 3/4 1 = 1
<b>R</b>	TYPER OF REGULATOR: R = pressure regulator M = Manifold pressure regulator (MX2 - 1/2" NPTF only)
<b>0</b>	OPERATING PRESSURE (1 bar = 14,5 psi) 0 = 0,5 - 10 bar (7.25 - 145 psi) 4 = 0 - 4 bar (0 - 58 psi) 7 = 0.5 - 7 bar (MX2 only) (7.25 - 103 psi)
<b>0</b>	DESIGN TYPE: 0 = relieving 1 = without relieving 2 = relieving, with by-pass valve 3 = without relieving, with by-pass valve
<b>4</b>	PRESSURE GAUGE: 0 = without pressure gauge (with threaded port for gauges) 2 = with built-in pressure gauge 0-6 bar and working pressure 0 - 4 bar 3 = with built-in pressure gauge 0-10 bar and working pressure 0 - 7 bar (MX2 only) 4 = with built-in pressure gauge 0-12 bar and working pressure 0.5 - 10 bar
	FLOW DIRECTION: = from left to right (standard) LH = from right to left
<b>TF</b>	TF = NPTF ports blank = BSP ports

For the assembly of a single component with fixing flanges or wall-mounting, see the section "FRL Series MX Assembled"

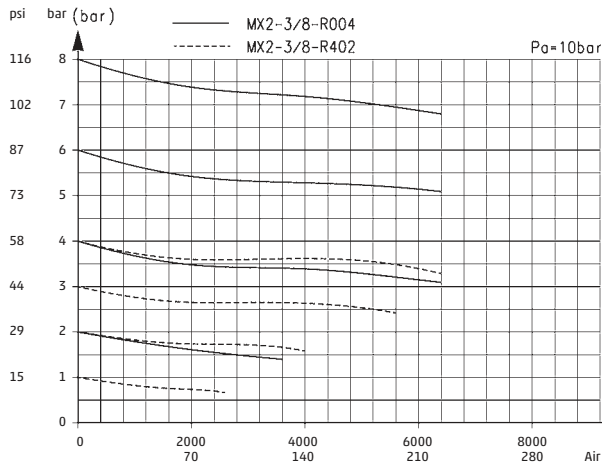
**Pressure regulators Series MX - materials**

R = pressure regulator  
M = Manifold pressure regulator

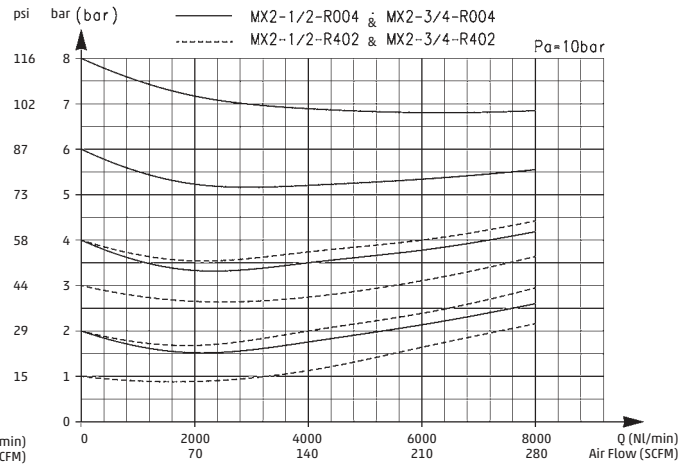


PARTS	MATERIALS
1 = Body	Aluminium
2 = Covering	Polyacetal
3 = Valve holder plug	Polyacetal
4 = Regulator knob	Polyamide
5 = Upper spring	Zinc-plated steel
6 = Diaphragm	NBR
7 = Lower spring	Stainless steel
Seals	NBR

**MX2 FLOW DIAGRAMS**



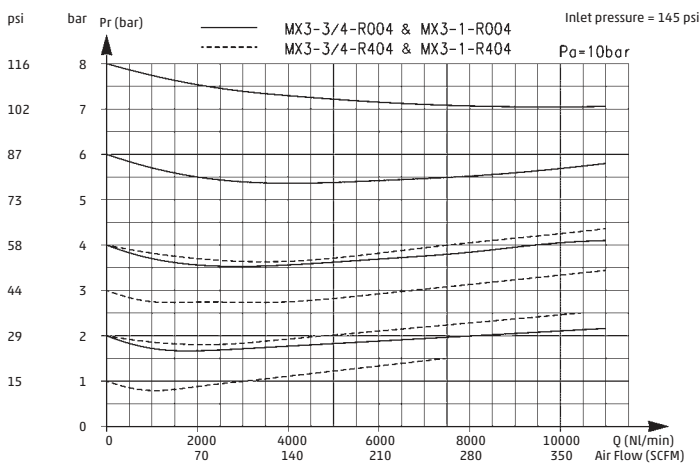
Pr = Regulated pressure  
 Q = Flow  
 Pa = Inlet pressure



Pr = Regulated pressure  
 Q = Flow  
 Pa = Inlet pressure

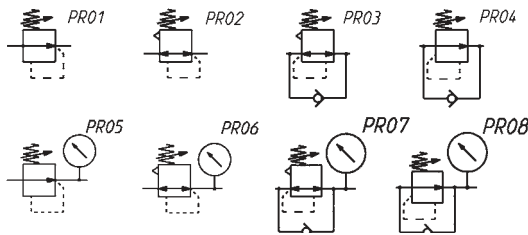
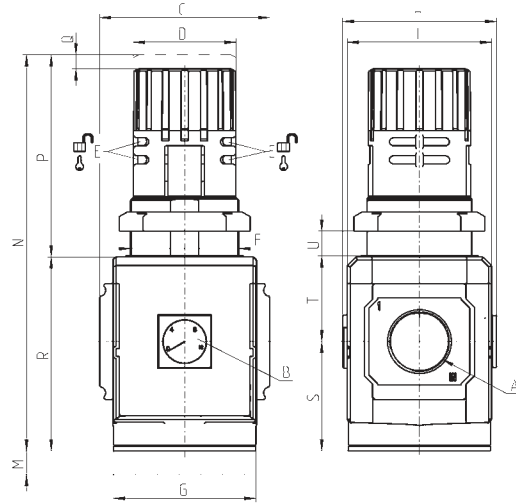
MODULAR FRL SERIES MX

**MX3 FLOW DIAGRAMS**



Pr = Regulated Pressure  
 Q = Flow  
 Pa = Inlet pressure

Pressure regulators Series MX - dimensions

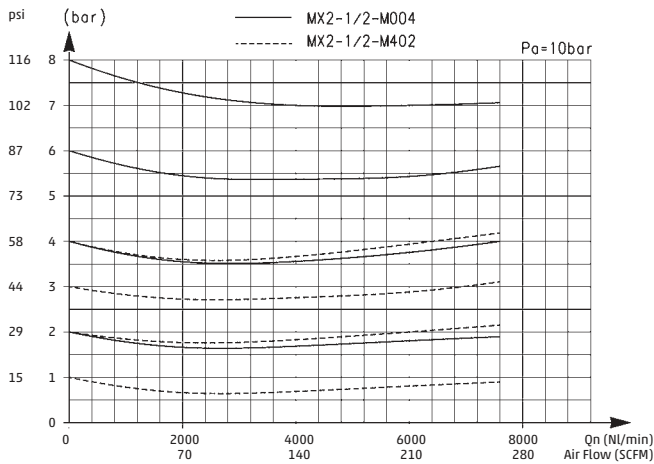


- PR01 = regulator without relieving
- PR02 = regulator with relieving
- PR03 = regulator with relieving and by-pass valve
- PR04 = regulator without relieving with by-pass valve
- PR05 = regulator without relieving and with pressure gauge
- PR06 = regulator with relieving and pressure gauge
- PR07 = regulator with relieving, by-pass valve and pressure gauge
- PR08 = reg. without reliev. with by-pass valve and pressure gauge

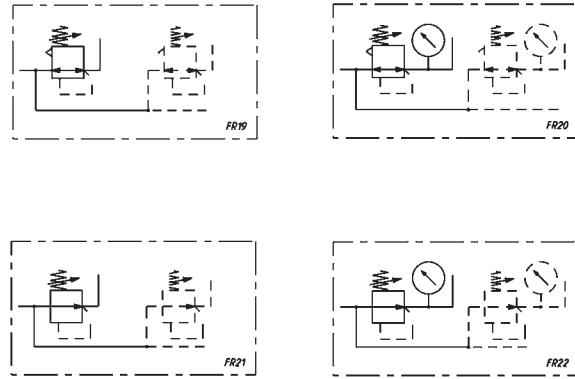
DIMENSIONS (in inches)

Mod.	A	B	C	D	E	F	G	H	I	M	N	P	Q	R	S	T	U	Weight (kg)
MX2-3/8-R004-TF	3/8	0-12 bar	2.756	1.772	Ø 5/32"	M47x1.5	2.756	2.933	2.677	1.772	6.535	3.071	0.197	3.465	1.988	1.476	0-13	0.6
MX2-1/2-R004-TF	1/2	0-12 bar	2.756	1.772	Ø 5/32"	M47x1.5	2.756	2.933	2.677	1.772	6.535	3.071	0.197	3.465	1.988	1.476	0-13	0.6
MX2-3/4-R004-TF	3/4	0-12 bar	2.756	1.772	Ø 5/32"	M47x1.5	2.756	2.933	2.677	1.772	6.535	3.071	0.197	3.465	1.988	1.476	0-13	0.6
MX3-3/4-R004-TF	3/4	0-12 bar	3.524	2.126	Ø 5/32"	M57x1.5	2.953	3.189	2.992	1.772	8.110	4.094	0.197	4.016	2.264	1.752	0-20	1
MX3-1-R004-TF	1	0-12 bar	3.524	2.126	Ø 5/32"	M57x1.5	2.953	3.189	2.992	1.772	8.110	4.094	0.197	4.016	2.264	1.752	0-20	1

MANIFOLD REGULATOR - FLOW DIAGRAM and PNEUMATIC SYMBOLS



Pr = Regulated pressure  
 Q = Flow  
 Pa = Inlet pressure

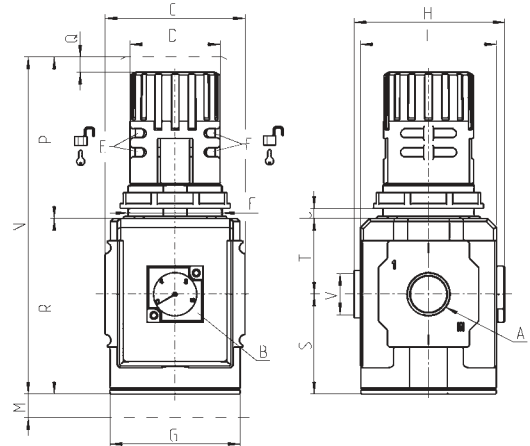


FR19 = Manifold regulator with relieving and without gauge  
 FR20 = Manifold regulator with relieving and gauge  
 FR21 = Manifold regulator without relieving or gauge  
 FR22 = Manifold regulator without relieving and with gauge

MANIFOLD pressure regulator Series MX - dimensions



The picture on the left side shows that it is possible to assemble a certain number of regulators with the same inlet pressure using proper mounting kits, with or without flanges. The regulation of the outlet pressure (OUT port) of each regulator can be set by rotating the knob clockwise or counterclockwise until the desired pressure is reached. This regulation has no effect on the inlet pressure of regulators mounted downstream.



DIMENSIONS (in inches)

Mod.	A	B	C	D	E	F	G	H	I	M	N	P	Q	R	S	T	U	V	Weight (kg)
MX2-1/2-M004	1/2	0-12 bar	2.756	1.772	5/32"	M47x1.5	2.756	2.972	2.677	1.772	6.535	3.071	0.197	3.465	1.988	1.476	0-13	G 1/2	0.6

MODULAR FRL SERIES MX

# Pneumatic Pilot Operated Pressure Regulators Series MX

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

Modular - Available with built-in pressure gauges or ports for gauges



- » Pneumatically operated regulation
- » Minimal pressure decreases
- » Integral return exhaust (relieving)

The availability of constant values of the secondary pressure ensures performance optimization and energy saving. All regulators are equipped with an integrated locking system and built-in pressure gauges for a more compact product.

The Series MX has been realized to offer a multi-sector solution that guarantees saving in terms of installation time, space and costs.

A special configurator, available on Camozzi website at <http://catalogue.camozzi.com> (sec. Configurators), allows the customer to choose the most suitable solution for his application, selecting single components or by configuring assembled FRLs.

## GENERAL DATA

Construction	modular, compact, diaphragm type
Materials	see TABLE OF MATERIALS on the following page
Ports	G3/8 - G1/2 - G3/4
Mounting	vertical in-line wall-mounting (by means of clamps)
Operating temperature	-5°C ÷ 50°C up to 16 bar (with the dew point of the fluid lower than 2°C at the min. working temperature) -5°C ÷ 60°C up to 10 bar (with the dew point of the fluid lower than 2°C at the min. working temperature)
Inlet pressure	0 ÷ 16 bar
Outlet pressure	10 bar
Overpressure exhaust	with relieving (standard) without relieving
Nominal flow	see FLOW DIAGRAMS on the following pages
Fluid	compressed air
Pressure gauge	built-in pressure gauge (standard) with G1/8 port

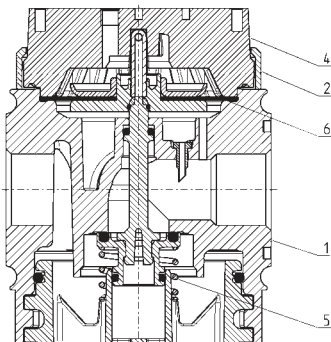
**CODING EXAMPLE**

MX	2	-	1/2	-	R	CP	0	0	4	-		-	TF
----	---	---	-----	---	---	----	---	---	---	---	--	---	----

<b>MX</b>	SERIES
<b>2</b>	SIZE: 2 = G3/8 - G1/2 - G3/4
<b>1/2</b>	PORTS: 3/8 = G3/8 1/2 = G1/2 3/4 = G3/4
<b>R</b>	TYPER OF REGULATOR: R = pressure regulator
<b>CP</b>	TYPE OF COMMAND/PILOT SUPPLY: CP = pneumatic pilot supply
<b>0</b>	OPERATING PRESSURE: 0 = 7 - 145 psi (0.5 - 10 bar)
<b>0</b>	DESIGN TYPE: 0 = relieving (standard) 1 = without relieving
<b>4</b>	PRESSURE GAUGE: 0 = without pressure gauge (with threaded port for gauges) 4 = with built-in pressure gauge 0-12 and working pressure 0.5 ÷ 10 bar (standard)
	FLOW DIRECTION: = from left to right (standard) LH = from right to left
<b>TF</b>	TF = NPTF ports blank = BSP ports

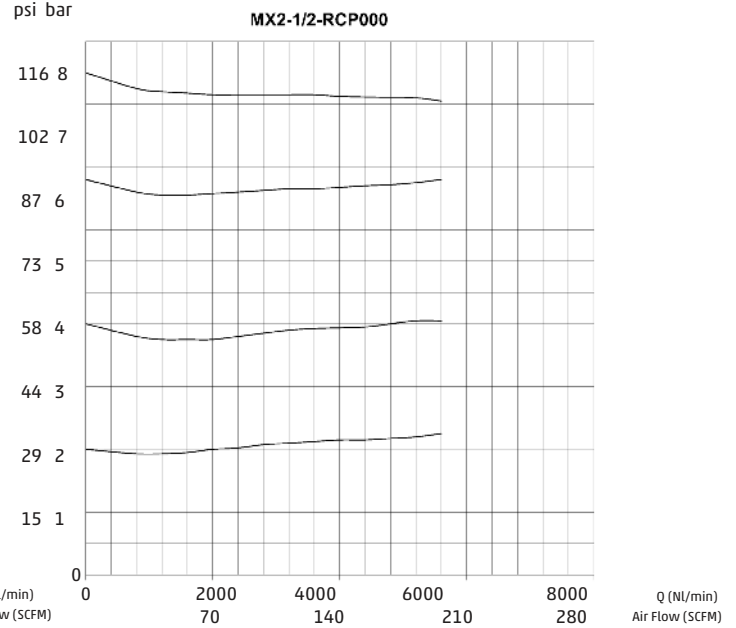
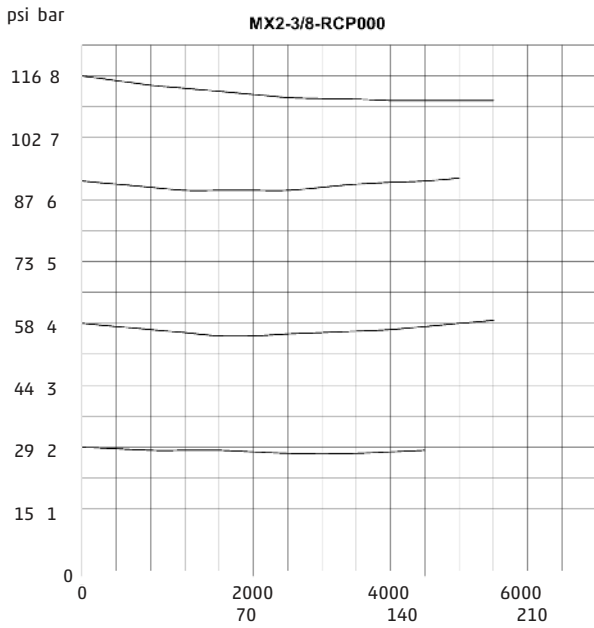
For the assembly of a single component with fixing flanges or wall-mounting, see the section "FRL Series MX Assembled"

**Pneumatic pilot operated pressure regulators Series MX - materials**



PARTS	MATERIALS
1 = Body	Aluminium
2 = Covering	Polyacetal
3 = Valve holder plug	Polyacetal
4 = Upper base	Polyamide
5 = Lower spring	Stainless steel
6 = Diaphragm	NBR
Seals	NBR

DIAGRAMS OF PNEUMATIC PILOT OPERATED PRESSURE REGULATORS



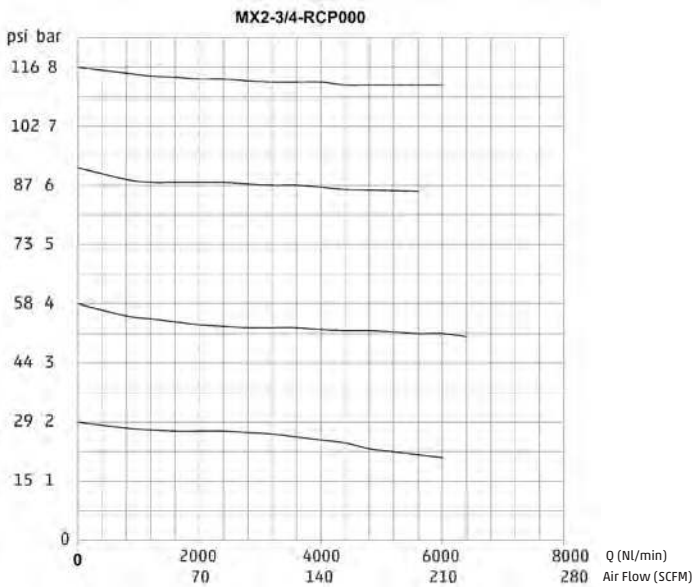
Pr = Regulated pressure (bar)  
Q = Flow (NL/min)

Inlet pressure = 10bar

Pr = Regulated pressure (bar)  
Q = Flow (NL/min)

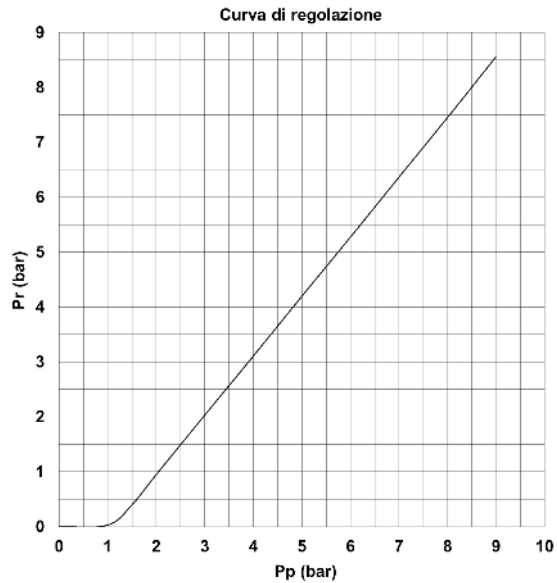
Inlet pressure = 10bar

MODULAR FRL SERIES MX



Pr = Regulated pressure (bar)  
Q = Flow (NL/min)

Inlet pressure = 10bar



ADJUSTMENT CURVE

Pr = regulated pressure (bar)  
Pp = pilot pressure (bar)

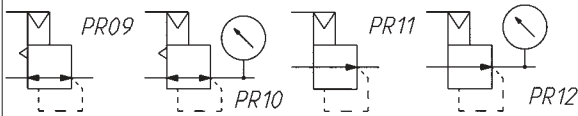
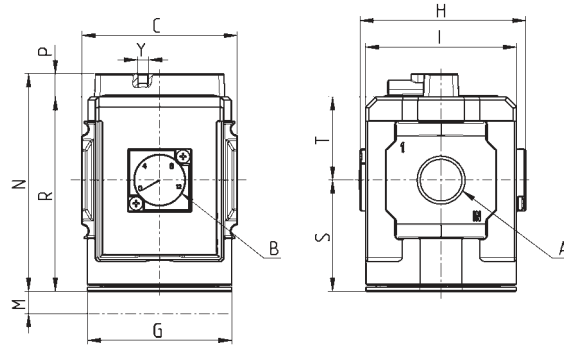
Inlet pressure = 10bar



Pneumatic pilot operated pressure regulators Series MX - dimensions



PR09 = reg. with relieving  
 PR10 = regulator with relieving and pressure gauge  
 PR11 = regulator without relieving  
 PR12 = regulator without relieving and with pressure gauge



Mod.	A	B (bar)	C	G	H	I	M	Y (Pilot supply)	N	P	R	S	T	Weight (Kg)
MX2-3/8-RCP004-TF	3/8	0 - 12	70	65	74.5	68	45	M5	98	10	88	50.5	37.5	0.5
MX2-1/2-RCP004-TF	1/2	0 - 12	70	65	74.5	68	45	M5	98	10	88	50.5	37.5	0.5
MX2-3/4-RCP004-TF	3/4	0 - 12	70	65	74.5	68	45	M5	98	10	88	50.5	37.5	0.5

MODULAR FRL SERIES MX

# Lubricators Series MX

Ports 3/8" - 1" NPTF

MX2 ports: 3/8", 1/2", 3/4" NPTF - MX3 ports: 3/4", 1" NPTF

Innovative modular clamping system

Quick-Release, locking bayonet bowls



- » Oil adjustment screw in sight glass
- » Ability to refill the oil even with system under pressure
- » High flow
- » Oil level visible through transparent slots in bowl shroud
- » Bowl locking mechanism
- » Enhanced safety features

This modular FRL is characterized by a modern, compact design, and high performance. The integration between metal alloys and technopolymers has allowed the realization of a reliable product, both light and strong at the same time. The unique and patented modular clamping system simplifies the mounting of components.

The Series MX appeals to a broad spectrum of markets and applications because of the savings realized in installation time, space requirements and total cost.

A special configurator, available on Camozzi's global website at <http://catalogue.camozzi.com> (sec. Configurators), allows the customer to choose the most suitable solution for his application, selecting single components or by configuring assembled FRLs.

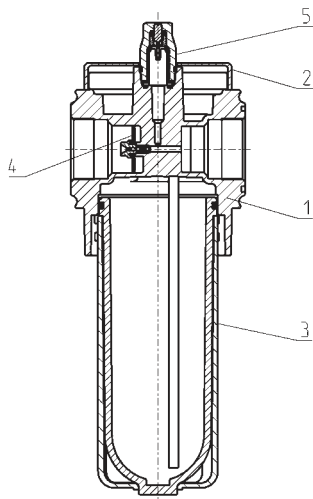
## GENERAL DATA

Construction	modular, compact
Materials	see TABLE OF MATERIALS
Ports	3/4" - 1" NPTF
Oil capacity	MX3: 170 cc (5.75 oz), MX2: 118 cc ( 4.0 oz.)
Oil refilling	while under system pressure allowed by means of cap screw in head, or directly into bowl without pressure
Mounting	vertical in-line wall-mounting (by means of clamps)
Operating temperature	-5°C - 50°C at 16 bar (with Dew Point of air at least 2° C (4° F) below the min working temperature), (23 F - 122 F @ 232 psi, up to 140 F MAX at 145 psi) -5°C - 60°C at 10 bar (with Dew Point of air at least 2° C (4° F) below the min working temperature)
Oil for lubrication	Use ISO VG32 oils. 3°E - 10°E, Engler (approx 32 centistokes) recommendation 1 - 5 drops every 1000 NL of air consumed (35 SCFM) (10 drops = 1 mL = 1cm <sup>3</sup> =.061 in <sup>3</sup> )
Droplet Size	> 2 microns
Operating pressure	0 - 16 bar (0 - 232 psi)
Min. air consumption for lubrication at 1 bar	MX2: 17 NL/min (0.6 SCFM) MX3: 50 NL/min (1.75 SCFM)
Min. air consumption for lubrication at 6 bar	MX2: 38 NL/min (1.3 SCFM) MX3: 90 NL/min (3.1 SCFM)
Nominal flow	See FLOW DIAGRAMS on the following pages

CODING EXAMPLE									
MX	2	-	3/8	-	L	00	-		TF
<b>MX</b>	SERIES								
<b>2</b>	SIZE: 2 = 3/8" - 1/2" - 3/4" 3 = 3/4" - 1"								
<b>3/8</b>	PORT: 1/2 = 1/2 3/4 = 3/4 1 = 1								
<b>L</b>	LUBRICATOR								
<b>00</b>	DESIGN TYPE: 00 = atomized oil								
	FLOW DIRECTION: = from left to right (standard) LH = from right to left								
<b>TF</b>	TF = NPTF ports blank = BSP ports								

For the assembly of a single component with fixing flanges or wall-mounting, see the section "FRL Series MX Assembled"

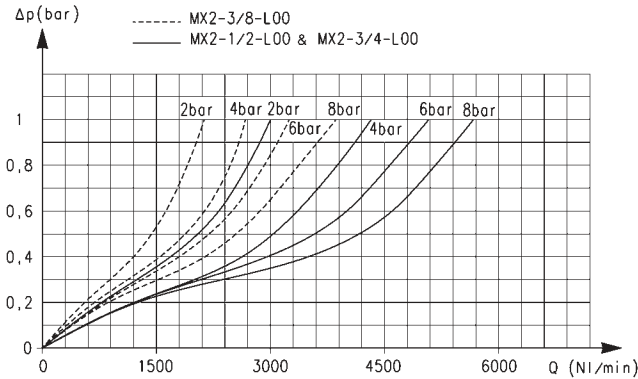
**Lubricators Series MX - materials**



PARTS	MATERIALS
1 = Body	Aluminium
2 = Covering	Polyacetal
3 = Bowl with technopolymer cover	Polycarbonate/Polyamide
4 = Diaphragm	NBR
5 = Viewer	Polyamide
Seals	NBR

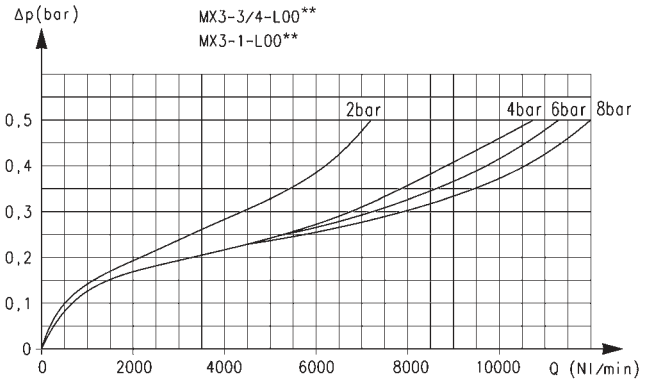
FLOW DIAGRAMS, MX2 & MX3

MX2 flow curves



$\Delta p$  = Pressure drop  
Q = Flow

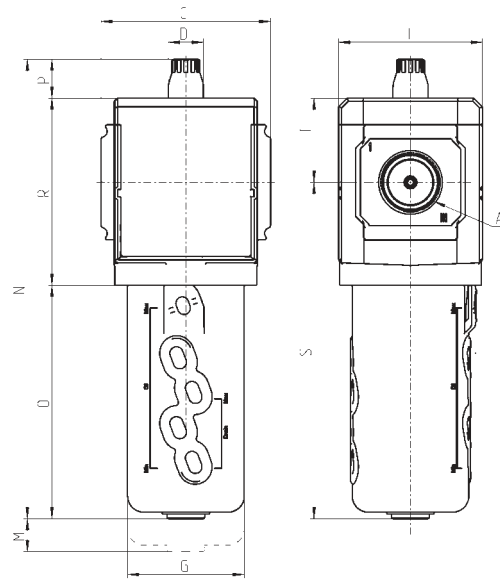
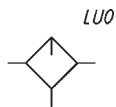
MX3 flow curves



$\Delta P$  = Pressure drop  
Q = Flow

MODULAR FRL SERIES MX

Lubricators Series MX - dimensions



DIMENSIONS (in inches)

Mod.	A	C	D	G	I	M	N	O	P	R	S	T	Weight (Kg)
MX2-3/8-L00-TF	3/8	2.756	0.728	2.185	2.677	3.327	8.268	4.114	0.807	3.346	5.984	1.476	0.5
MX2-1/2-L00-TF	1/2	2.756	0.728	2.185	2.677	3.327	8.268	4.114	0.807	3.346	5.984	1.476	0.5
MX2-3/4-L00-TF	3/4	2.756	0.728	2.185	2.677	3.327	8.268	4.114	0.807	3.346	5.984	1.476	0.5
MX3-3/4-L00-TF	3/4	3.524	0.728	2.421	2.992	3.937	9.567	4.843	0.827	3.898	7.008	1.752	0.8
MX3-1-L00-TF	1	3.524	0.728	2.421	2.992	3.937	9.567	4.843	0.827	3.898	7.008	1.752	0.8

# Filter-Regulators Series MX

Ports 3/8" - 1" NPTF

MX2 ports: 3/8", 1/2", 3/4" NPTF - MX3 ports: 3/4", 1" NPTF

Innovative modular clamping system

Quick-Release, locking bayonet bowls



- » Filtering element options of 25 µm or 5 µm
- » Available versions: with built-in gauge or with ports for gauge
- » Lockable knob with mechanical stop and tamper-proof lock-out features
- » Bowl locking mechanism

Filter-regulators Series MX integrate filter and pressure regulator in one unit. They are, therefore, compact and suitable for pre-filtering functions.

Available in relieving or non-relieving, they are equipped with a valve diaphragm for a direct pressure regulation and with an integrated condensate drain, manual, automatic, depressurizing and ported. Moreover, they can be equipped with a built-in pressure gauge.

The Series MX has been realized to offer a multi-sector solution that guarantees saving in terms of installation time, space and costs. A special configurator, available on Camozzi's global website at <http://catalogue.camozzi.com> (sec. Configurators), allows the customer to choose the most suitable solution for his application, selecting single components or by configuring assembled FRLs.

## GENERAL DATA

Construction	modular, compact with filtering element in HDPE
Materials	see TABLE OF MATERIALS
Ports	3/8" - 1" NPTF
Condensate capacity	MX3: 85 cc, (approx. 3 oz.), MX2: 55 cc ( approx. 1.9 oz. )
Mounting	vertical in-line wall-mounting (by means of clamps) panel mounting
Operating temperature	-5°C - 50°C at 16 bar (with Dew Point of air at least 2° C (4° F) below the min working temperature), (23 F - 122 F @ 232 psi, up to 140 F MAX at 145 psi) -5°C - 60°C at 10 bar (with Dew Point of air at least 2° C (4° F) below the min working temperature)
Delivered air quality (ISO 8573-1: 2010)	Class 6.8.4 with 5 µm filter element Class 7.8.4 with 25 µm filter element
Draining of condensate	manual, automatic, depressurizing and ported
Operating pressure	0.3 - 16 bar (with automatic drain 1.5 - 12 bar); (4.5 - 232 psi, with automatic drain 22 - 175 psi)
Nominal flow	see FLOW DIAGRAMS
Fluid	compressed air
Pressure gauge	version with built-in pressure gauge or version with threaded gauge ports (1/8" on MX2 and 1/4" on MX3)

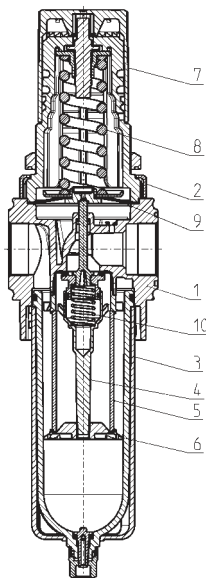
CODING EXAMPLE

MX	2	-	3/8	-	FR	0	0	0	4	-	—	-	TF
----	---	---	-----	---	----	---	---	---	---	---	---	---	----

<b>MX</b>	SERIES
<b>2</b>	SIZE: 2 = 3/8" - 1/2" - 3/4" 3 = 3/4" - 1"
<b>3/8</b>	PORT: 3/8 = 3/8 1/2 = 1/2 3/4 = 3/4 1 = 1
<b>FR</b>	FILTER-REGULATOR
<b>0</b>	FILTERING ELEMENT WITH DESIGN TYPE: 0 = 25 µm with relieving (standard) 1 = 5 µm with relieving 2 = 25 µm without relieving (with semiautomatic-manual drain only) 3 = 5 µm without relieving (with semiautomatic-manual drain only) 4 = 25 µm with relieving and by-pass valve 5 = 5 µm with relieving and by-pass valve 6 = 25 µm without relieving, with by-pass valve 7 = 5 µm without relieving, with by-pass valve
<b>0</b>	DRAINING OF CONDENSATE: 0 = semiautomatic-manual drain 3 = automatic drain 5 = depressuring drain, filtered orifice 8 = without drain, with port G1/8
<b>0</b>	OPERATING PRESSURE: 0 = 0.5 - 10 bar (7.25 - 145 psi) 4 = 0 - 4 bar (0 - 58 psi) 7 = 0.5 - 7 bar (MX2 only) (7.25 - 103 psi)
<b>4</b>	PRESSURE GAUGE: 0 = without pressure gauge (with threaded port) 2 = with built-in pressure gauge 0-6 and working pressure 0 - 4 bar 3 = with built-in pressure gauge 0-10 and working pressure 0 - 7 bar (MX2 only) 4 = with built-in pressure gauge 0-12 and working pressure 0.5 - 10 bar
	FLOW DIRECTION: = from left to right (standard) LH = from right to left
<b>TF</b>	TF = NPTF ports blank = BSP ports

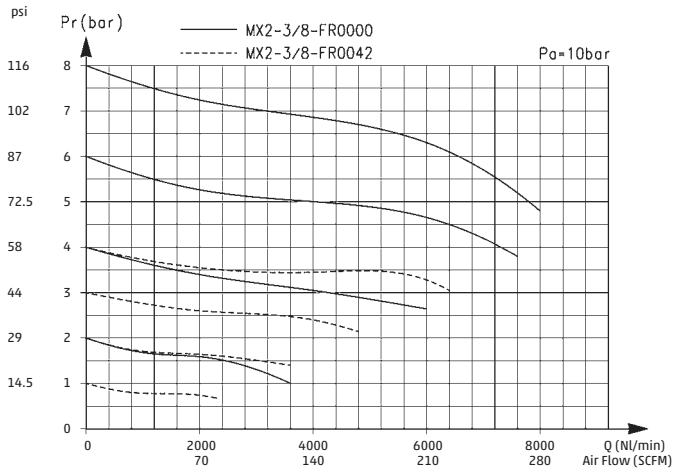
For the assembly of a single component with fixing flanges or wall-mounting, see the section "FRL Series MX Assembled"

Filter-regulators Series MX - materials

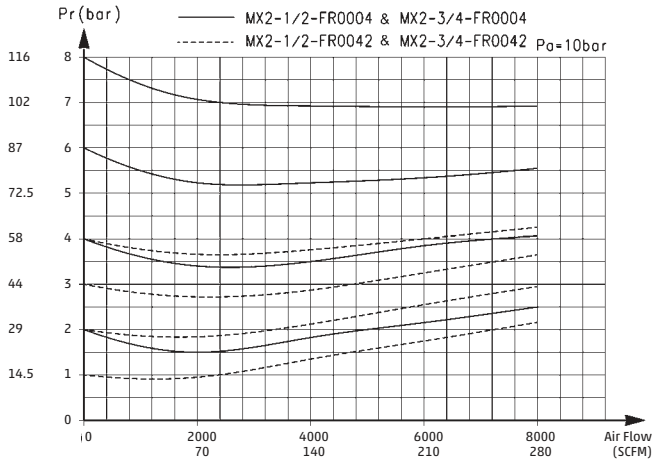


PARTS	MATERIALS
1 = Body	Aluminium
2 = Covering	Polyacetal
3 = Bowl with technopolymer cover	Polycarbonate/Polyamide
4 = Valve guide	Polyacetal
5 = Filtering element	Polyethylene
6 = Separation deflector	Polyacetal
7 = Knob	Polyamide
8 = Upper spring	Zinc-plated steel
9 = Diaphragm	NBR
10 = Lower spring	Stainless steel
Seals	NBR

**MX2 FLOW DIAGRAMS**

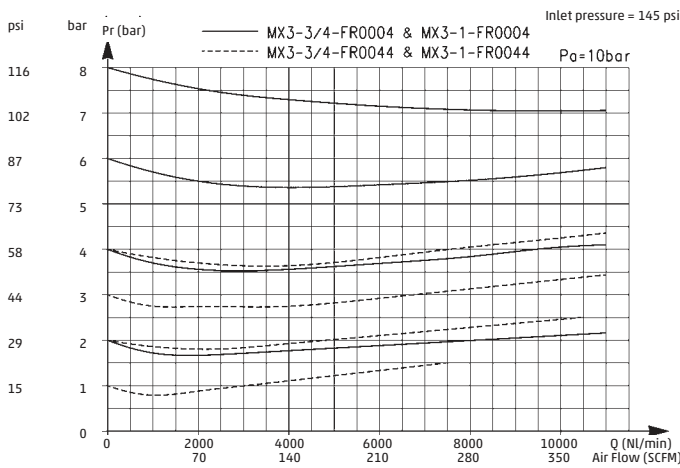


Pr = Regulated pressure  
 Q = Flow  
 Pa = Inlet pressure



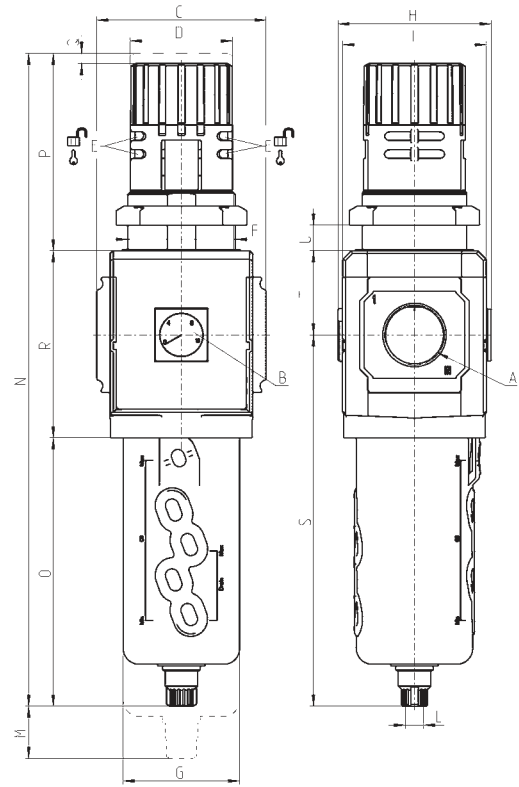
Pr = Regulated pressure  
 Q = Flow  
 Pa = Inlet pressure

**MX3 FLOW DIAGRAMS**



Pr = Regulated Pressure  
 Q = Flow  
 Pa = Inlet pressure

Filter-regulators Series MX - dimensions



DIMENSIONS (in inches)

Mod.	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S	T	U	Weight (kg)
MX2-3/8-FR0004-TF	3/8	0-12 bar	2.756	1.772	Ø 5/32	M47x1.5	2.185	2.933	2.677	1/8	2.598	11.417	5.000	3.071	0.197	3.346	6.870	1.476	0-16	0.8
MX2-1/2-FR0004-TF	1/2	0-12 bar	2.756	1.772	Ø 5/32	M47x1.5	2.185	2.933	2.677	1/8	2.598	11.417	5.000	3.071	0.197	3.346	6.870	1.476	0-16	0.8
MX2-3/4-FR0004-TF	3/4	0-12 bar	2.756	1.772	Ø 5/32	M47x1.5	2.185	2.933	2.677	1/8	2.598	11.417	5.000	3.071	0.197	3.346	6.870	1.476	0-16	0.8
MX3-3/4-FR0004-TF	3/4	0-12 bar	3.524	2.126	Ø 5/32	M57x1.5	2.421	3.189	2.992	1/8	2.953	13.583	5.591	4.094	0.197	3.898	7.736	1.752	0-20	1.3
MX3-1-FR0004-TF	1	0-12 bar	3.524	2.126	Ø 5/32	M57x1.5	2.421	3.189	2.992	1/8	2.953	13.583	5.591	4.094	0.197	3.898	7.736	1.752	0-20	1.3



# Lockable Isolation 3/2 Way Valves Series MX

Ports 3/8" - 1" NPTF

MX2 ports: 3/8", 1/2", 3/4" NPTF - MX3 ports: 3/4", 1" NPTF

Innovative modular clamping system

Manual, Solenoid Pilot,

Externally Indirect Air-Piloted Solenoid,

Air-Pilot controls



- » Shut-off valves with manual, solenoid or air-pilot operation
- » 8mm (0.315") OD hole for the lock-out feature accommodates most locks and hasps (manual valve version)
- » Electro-pneumatic versions available in 24 V, 110 V or 230 V
- » Quick-exhaust feature via port in base
- » Silencers available on request, 1/2" - 3/4" exhaust port in base of valves for silencer assembly

Manual isolation valves allow for depressurization of the pneumatic system so that system components may be serviced safely. The system is depressurized with the de-activation of the valve.

Electropneumatic isolation valves are ideal where manual access is difficult since they allow maximum positioning flexibility and are designed to pressurize or depressurize pneumatic systems. The built-in manual override guarantees security in case of an emergency.

The Series MX has been realized to offer a multi-sector solution that guarantees saving in terms of installation time, space and costs. A special configurator, available on Camozzi's global website at <http://catalogue.camozzi.com> (sec. Configurators), allows the customer to choose the most suitable solution for his application, selecting single components or by configuring assembled FRLs.

## GENERAL DATA

Construction	modular, compact, spool-type, 3-way/2-position
Materials	see TABLE OF MATERIALS
Ports	3/8" - 1" NPTF
Mounting	in-line wall-mounting (by means of clamps) panel mounting, manual only
Operating temperature	-5°C - 50°C at 16 bar (with Dew Point of air at least 2° C (4° F) below the min working temperature), (23 F - 122 F @ 232 psi, up to 140 F MAX at 145 psi) -5°C - 60°C at 10 bar (with Dew Point of air at least 2° C (4° F) below the min working temperature)
Operating pressure	Manual valve: -0.8 - 10 bar (26 in-Hg - 145 psi) Electro-pneumatic valve: 2 - 10 bar (30 - 145 psi) Servopilot or pneumatic valve: -0.8 - 10 bar (with pilot 3.5 - 10 bar)
Nominal flow	see FLOW DIAGRAMS
Nominal exhaust flow at 6 bar with $\Delta p = 1$ bar	MX3: 3/4" - 1" NPTF = 9200 NL/m, (322 SCFM); MX2: 3/8" - 3/4" NPTF = 6000 NL/min, (210 SCFM)
Fluid	compressed air

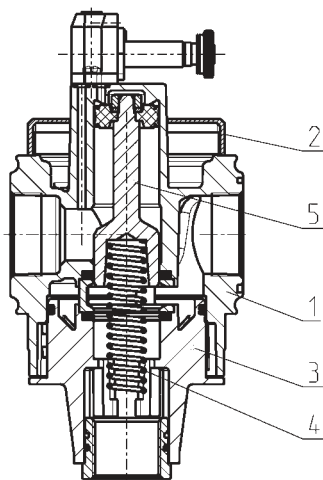
CODING EXAMPLE

MX	2	-	3/8	-	V	01	-	—	TF
----	---	---	-----	---	---	----	---	---	----

<b>MX</b>	SERIES
<b>2</b>	SIZE: 2 = 3/8" - 1/2" - 3/4" 3 = 3/4" - 1"
<b>3/8</b>	PORT: 3/8 = 3/8 1/2 = 1/2 3/4 = 3/4 1 = 1
<b>V</b>	3/2-WAY VALVE
<b>01</b>	DESIGN TYPE: 01 = lockable manual control (lock-out design) 16 = electro-pneumatic control (solenoid pilot-operated) 17 = servo-pilot control (external air-signal pilot for solenoid w/ lower than 30 psi pressure supply) 36 = pneumatic control (air-pilot operated)
	FLOW DIRECTION: = from left to right (standard) LH = from right to left
<b>TF</b>	TF = NPTF ports blank = BSP ports

For the assembly of a single component with fixing flanges or wall-mounting, see the section "FRL Series MX Assembled"

Lockable isolation 3/2 way valves Series MX - materials



PARTS	MATERIALS
1 = Body	Aluminium
2 = Covering	Polyacetal
3 = Valve holder plug	Polyacetal
4 = Lower spring	Zinc-plated steel
5 = Spool	Stainless steel (MX...V16 - V17 - V36) Aluminium (MX...V01)
Seals	NBR

FLOW DIAGRAM for valves Mod. MX...V01

MX2 flow curves

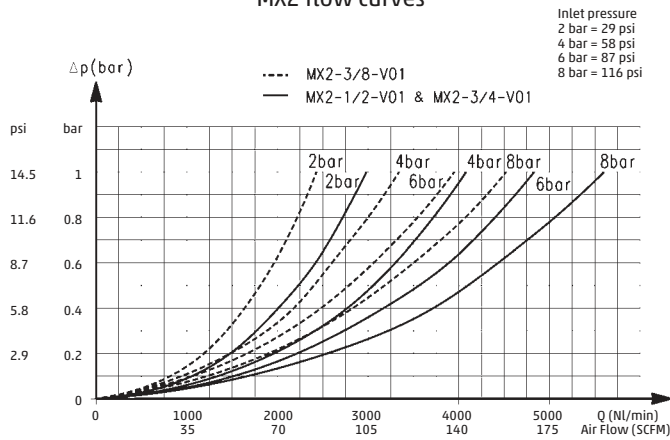


Diagram for lockable manual control valves  
 $\Delta P$  = Pressure drop  
 Q = Flow

MX3 flow curves

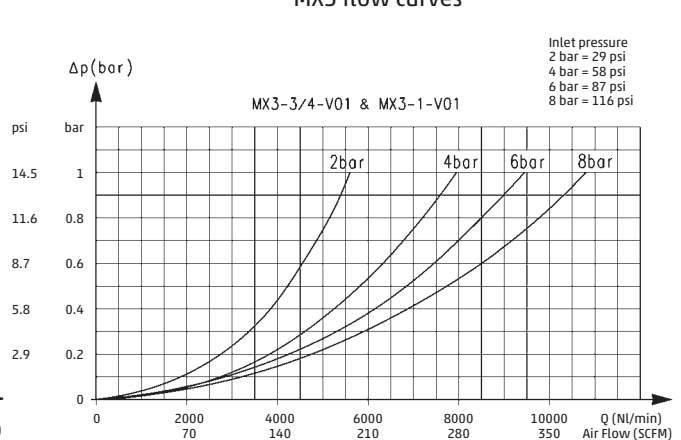
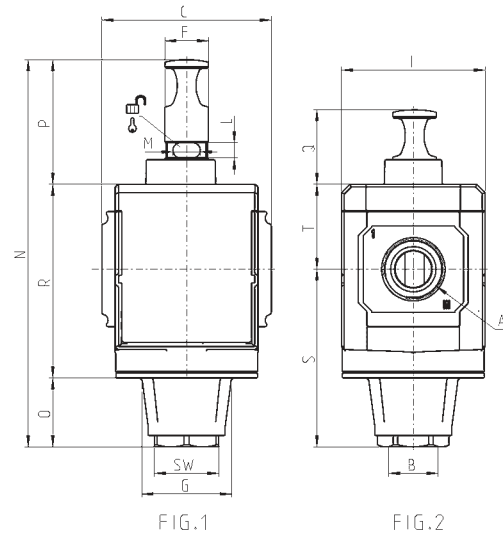
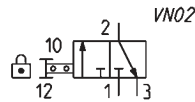


Diagram for lockable manual control valves  
 $\Delta P$  = Pressure drop  
 Q = Flow

Lockable (Lock-Out), manual valves Series MX - dimensions

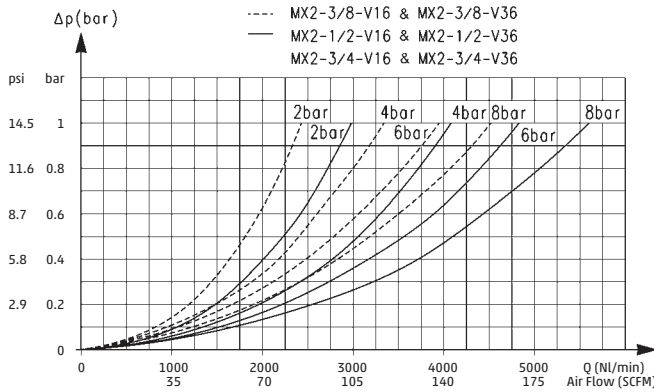
Fig. 1 = closed valve, lock opening exposed, exhausting downstream pressure  
 Fig. 2 = open valve, "down" handle position, flow 1 to 2



DIMENSIONS (in inches)															Weight (kg)		
Mod.	A	B	C	F	G	I	L	M	N	O	P	Q	R	S		SW	T
MX2-3/8-V01-TF	3/8	G 1/2	2.756	0.709	1.358	2.677	0.354	0.315	5.984	0.512	2.008	1.220	3.465	2.500	1.063	1.476	0.5
MX2-1/2-V01-TF	1/2	G 1/2	2.756	0.709	1.358	2.677	0.354	0.315	5.984	0.512	2.008	1.220	3.465	2.500	1.063	1.476	0.5
MX2-3/4-V01-TF	3/4	G 1/2	2.756	0.709	1.358	2.677	0.354	0.315	5.984	0.512	2.008	1.220	3.465	2.500	1.063	1.476	0.5
MX3-3/4-V01-TF	3/4	G 3/4	3.524	0.906	1.890	2.992	0.315	0.315	8.091	1.457	2.618	1.575	4.016	3.720	1.339	1.752	0.9
MX3-1-V01-TF	1	G 3/4	3.524	0.906	1.890	2.992	0.315	0.315	8.091	1.457	2.618	1.575	4.016	3.720	1.339	1.752	0.9

FLOW DIAGRAM for valves Mod. MX...V16 and MX...V36

MX2 flow curves



MX3 flow curves

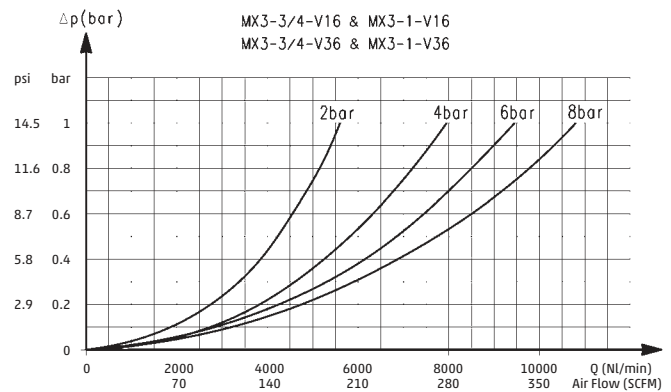


Diagram for solenoid pilot or air-pilot valves MX2

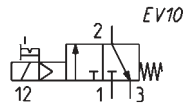
$\Delta p$  = Pressure drop  
 Q = Flow

Diagram for solenoid pilot or air-pilot valves MX3

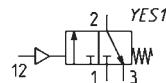
$\Delta p$  = Pressure drop  
 Q = Flow

3/2-way isolation valves Series MX - dimensions

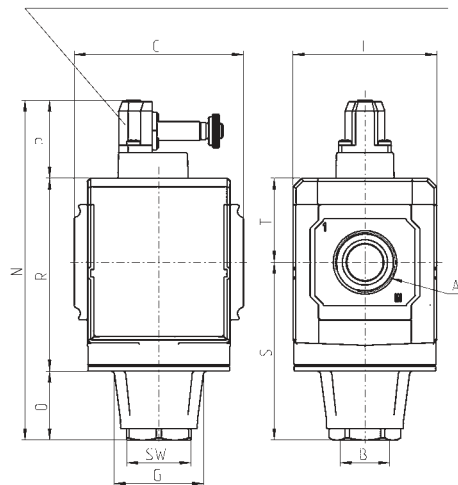
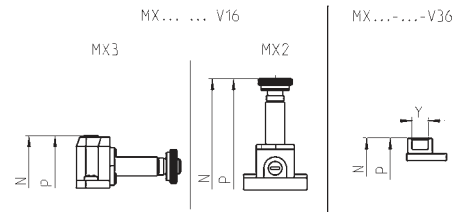
Solenoid pilot and air-pilot operated valves



EV10 = solenoid valve, 3/2 NC, monostable, with bistable manual override



YES1 = pneumatically operated valve, 3/2, monostable, mechanical spring



DIMENSIONS (in inches)

Mod.	A	Exhaust Port B	C	G	I	N	O	P	R	S	SW	T	Pilot Port Y	Weight (Kg)
MX2-3/8-V16-TF	3/8	G 1/2	2.756	1.358	2.677	6.732	0.512	2.756	3.465	2.500	1.339	1.476	-	0.5
MX2-1/2-V16-TF	1/2	G 1/2	2.756	1.358	2.677	6.732	0.512	2.756	3.465	2.500	1.339	1.476	-	0.5
MX2-3/4-V16-TF	3/4	G 1/2	2.756	1.358	2.677	6.732	0.512	2.756	3.465	2.500	1.339	1.476	-	0.5
MX2-3/8-V36-TF	3/8	G 1/2	2.756	1.358	2.677	4.803	0.512	0.827	3.465	2.500	1.339	1.476	1/8	0.5
MX2-1/2-V36-TF	1/2	G 1/2	2.756	1.358	2.677	4.803	0.512	0.827	3.465	2.500	1.339	1.476	1/8	0.5
MX2-3/4-V36-TF	3/4	G 1/2	2.756	1.358	2.677	4.803	0.512	0.827	3.465	2.500	1.339	1.476	1/8	0.5
MX3-3/4-V16-TF	3/4	G 3/4	3.524	1.890	2.992	7.106	1.457	1.634	4.016	3.720	1.339	1.752	-	0.9
MX3-1-V16-TF	1	G 3/4	3.524	1.890	2.992	7.106	1.457	1.634	4.016	3.720	1.339	1.752	-	0.9
MX3-3/4-V36-TF	3/4	G 3/4	3.524	1.890	2.992	6.457	1.457	1.004	4.016	3.720	1.339	1.752	1/8	0.9
MX3-1-V36-TF	1	G 3/4	3.524	1.890	2.992	6.457	1.457	1.004	4.016	3.720	1.339	1.752	1/8	0.9

FLOW DIAGRAM for valves Mod. MX...V17

MX2 flow curves

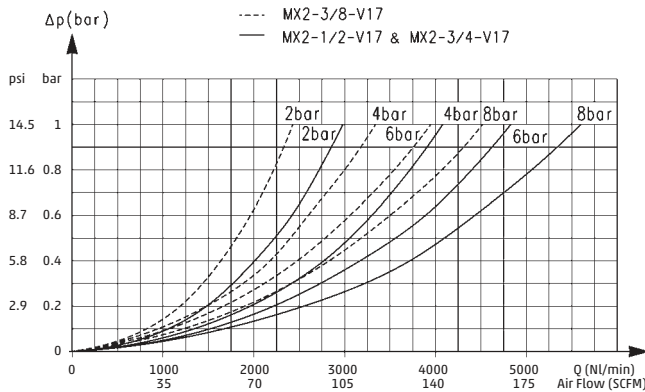


Diagram for servo-pilot control valves MX2

Δp = Pressure drop  
 Q = Flow

MX3 flow curves

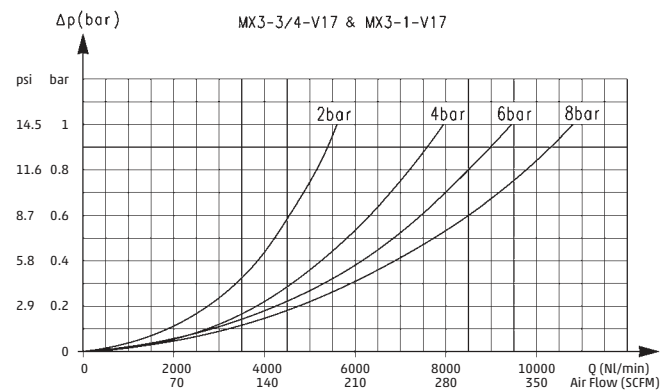


Diagram for servo-pilot control valves MX3

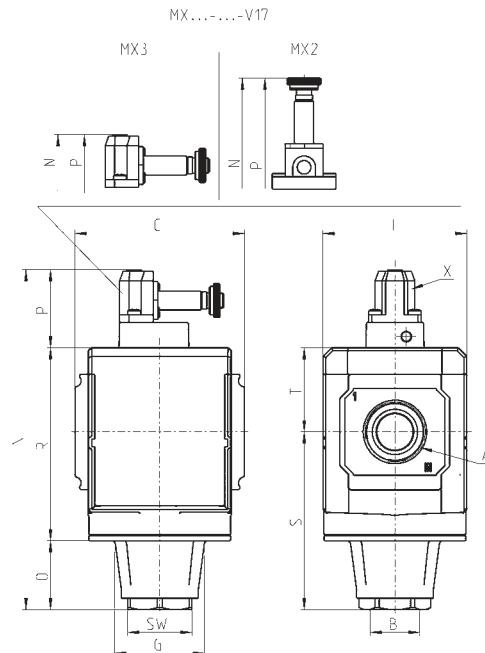
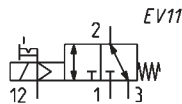
Δp = Pressure drop  
 Q = Flow

3/2-way isolation valves Series MX - dimensions

External air-pilot, solenoid operated (for operating line pressures below 30 psi; min. pilot pressure 30 psi) valves



EV11 = solenoid valve, 3/2, monostable, solenoid pilot with separate air supply and bistable manual override



DIMENSIONS (in inches)

Mod.	Exhaust Port													Weight (Kg)
	A	B	C	G	I	N	O	P	R	S	SW	T	X	
MX2-3/8-V17-TF	3/8	G 1/2	2.756	1.358	2.677	6.732	0.512	2.756	3.465	2.500	1.339	1.476	M5	0.5
MX2-1/2-V17-TF	1/2	G 1/2	2.756	1.358	2.677	6.732	0.512	2.756	3.465	2.500	1.339	1.476	M5	0.5
MX2-3/4-V17-TF	3/4	G 1/2	2.756	1.358	2.677	6.732	0.512	2.756	3.465	2.500	1.339	1.476	M5	0.5
MX3-3/4-V17-TF	3/4	G 3/4	3.524	1.890	2.992	7.106	1.457	1.634	4.016	3.720	1.339	1.752	M5	0.9
MX3-1-V17-TF	1	G 3/4	3.524	1.890	2.992	7.106	1.457	1.634	4.016	3.720	1.339	1.752	M5	0.9

# Series MX SAFEMAX

## 3/2-way quick exhaust safety valves

New



- » According to Machinery Directive 2006/42 / CE
- » Easy integration with Series MX FRLunits
- » » » Solutions to reach Performance Level E

Series MX SAFEMAX solenoid valves are equipped with an integrated sensor that detects the position of the spool and enables to quickly exhaust the system in case of emergency. The single channel valve is classified in category 2 and can reach Performance level D. The double channel valve is classified in category 4 and can reach Performance level E. Please note: the safety valve is not sufficient, alone, to guarantee the safety function. Its setup requires the use of a monitoring device.

The Machinery Directive (MD) 2006/42 / EC establishes the safety requirements that a machine must respect in order to protect the health of people during its use. Series MX SAFEMAX solenoid valves comply with ISO 13849-1, regarding the safe design of control systems that perform safety functions.

### GENERAL DATA

Construction	modular, compact, spool-type
Materials	see TABLE OF MATERIALS
Ports	1/2" NPTF
Mounting	in-line wall-mounting (by means of clamps) panel mounting, manual only
Operating temperature	-5 ÷ +60 °C
Operating pressure	with internal servo-pilot: 3,5 bar ÷ 10 bar with external servo-pilot: 0,5 bar ÷ 10 bar (pilot 3,5 bar ÷ 10 bar, greater or equal to operating P)
Flow rate (6 bar)	single version: 1→2 = 5600 Nl/min (ΔP 1) 2→3 = 5000 Nl/min (free flow) double version: 1→2 = 4100 Nl/min (ΔP 1) 2→3 = 5000 Nl/min (free flow)
Medium	Filtered air in class 7.4.4 according to ISO 8573-1. In case lubricated air is used, we recommend ISOVG32 oil and to never interrupt lubrication.

### COIL SPECIFICATIONS

Connection	DIN EN 175 301-803-B
Voltage	24V DC (±10%) 3,1W (ED 100%)

### SENSOR SPECIFICATION

Connection	with wires, M8
Voltage	10-28V DC
Operation	Magneto-resistive
Type of contact	N.O. PNP
Max. current	EX version: 200 mA 0,65 W UL version: 100 mA 3 W CE version: 200 mA 5,5W

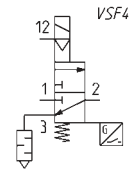
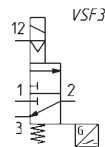
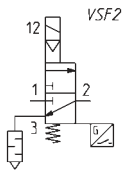
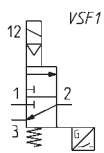
### COMPLIANCE WITH EN ISO 13849-1 STANDARD

Performance level reachable (PL)	single version: category 2, PLd double version: category 4, PLe
B10d	1.000.000 cycles

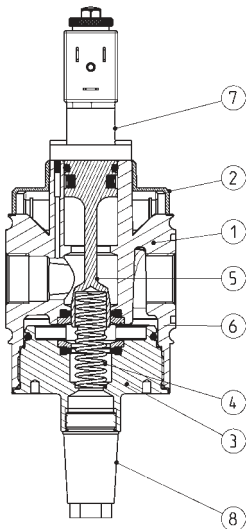
**CODING EXAMPLE**

<b>MX</b>	<b>2</b>	<b>-</b>	<b>1/2</b>	<b>-</b>	<b>V</b>	<b>16</b>	<b>2</b>	<b>0</b>	<b>A</b>	<b>B</b>	<b>-</b>	<b>KK</b>	<b>-</b>	<b>LH</b>
<b>MX</b>	SERIES													
<b>2</b>	SIZE: 2 = 3/8" - 1/2" - 3/4" 3 = 3/4" - 1"													
<b>1/2</b>	PORT: 1/2 = 1/2													
<b>V</b>	COMPONENT V=3/2-WAY VALVE													
<b>16</b>	DESIGN TYPE: 16=internal servo-pilot 17=external servo-pilot													
<b>2</b>	CHANNEL: 2 = single													
<b>0</b>	ACCESSORIES: 0 = without silencer 1 = with silencer													
<b>A</b>	SENSOR: A = UL sensor, 2 mt cable B = UL sensor, 5 mt cable C = ATEX sensor, 2 mt cable D = ATEX sensor, 5 mt cable E = CE sensor M8 connector, 300 mm cable													
<b>B</b>	VERSION: A = Atex B = UL C = CE													
<b>KK</b>	MOUNTING: = without mounting accessories HH = side quick clamps and flanges JJ = side wall clamps and flanges KK = side wall brackets and flanges													
<b>LH</b>	FLOW DIRECTION: = from left to right (standard) LH = from right to left													

**Symbols for single version**



**Series MX SAFEMAX single valve - materials**



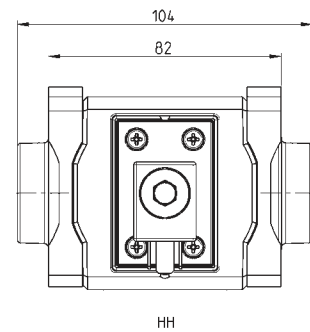
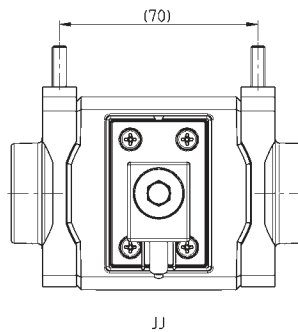
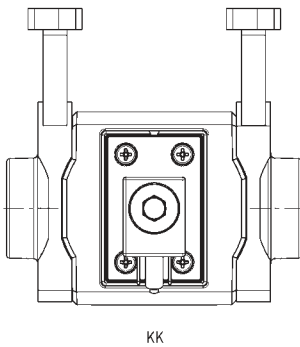
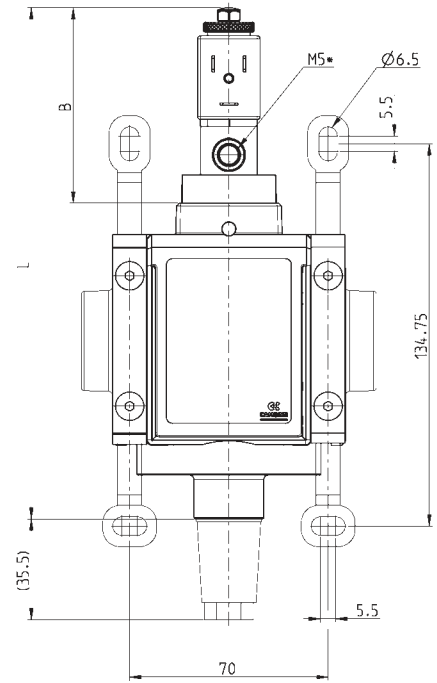
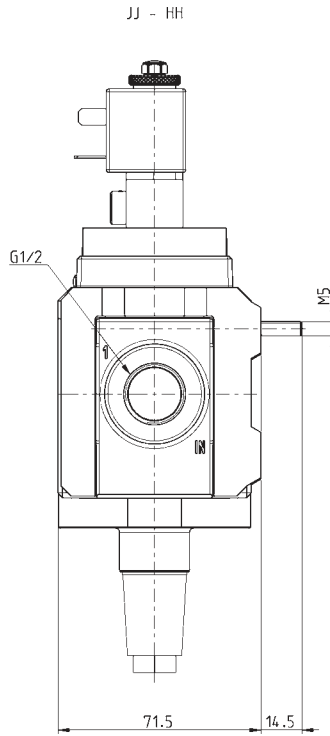
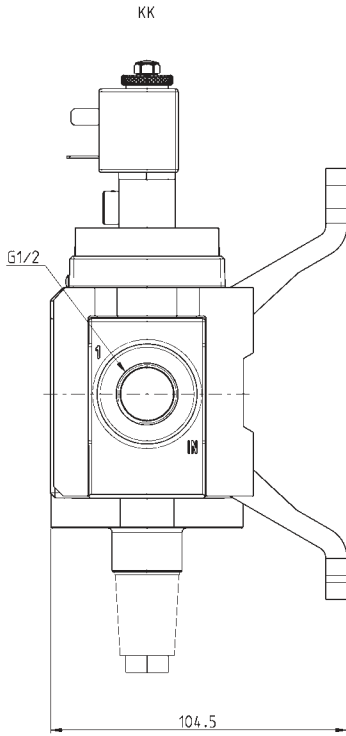
PARTS	MATERIALS
1 = Body	Aluminium
2 = Covering	POM Polyacetal
3 = Cover	Polyacetal
4 = Lower spring	Steel
5 = Spool	Stainless steel
6 = Cage element	Brass
7 = Solenoid	Steel, brass, PBT, POM
8 = Silencer	Bronze, steel
Seals	NBR, FKM
Sensor	PA body, epoxy resin and PU cable

Series MX SAFEMAX single valve - dimensions



The solenoid valve is supplied complete with sensor and coil

\*connection available only with external pilot version



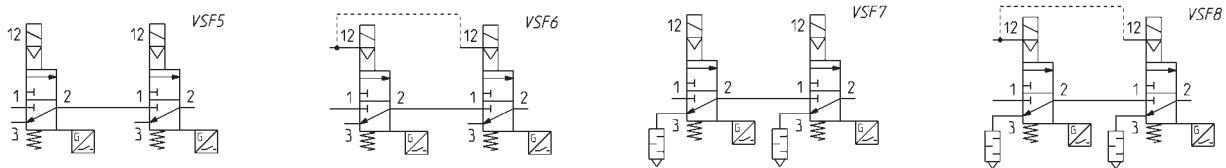
Mod.	L (mm)	B (mm)
MX2-1/2-V162*	175	63
MX2-1/2-V172*	180.5	69



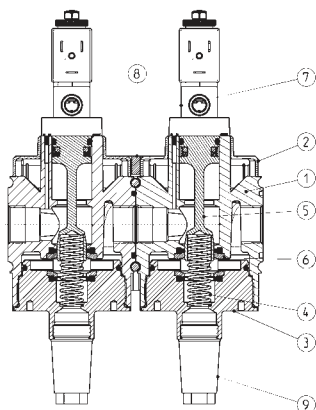
**CODING EXAMPLE**

<b>MX</b>	<b>2</b>	<b>-</b>	<b>1/2</b>	<b>-</b>	<b>V</b>	<b>16</b>	<b>4</b>	<b>0</b>	<b>A</b>	<b>B</b>	<b>-</b>	<b>KK</b>	<b>-</b>	<b>LH</b>
<b>MX</b>	SERIES													
<b>2</b>	SIZE: 2 = 3/8" - 1/2" - 3/4" 3 = 3/4" - 1"													
<b>1/2</b>	PORT: 1/2 = 1/2													
<b>V</b>	COMPONENT V=3/2-WAY VALVE													
<b>16</b>	DESIGN TYPE: 16=internal servo-pilot 17=external servo-pilot													
<b>4</b>	CHANNEL: 4 = double													
<b>0</b>	ACCESSORIES: 0 = without silencer 1 = with silencer													
<b>A</b>	SENSOR: A = UL sensor, 2 mt cable B = UL sensor, 5 mt cable C = ATEX sensor, 2 mt cable D = ATEX sensor, 5 mt cable E = CE sensor M8 connector, 300 mm cable													
<b>B</b>	VERSION: A = Atex B = UL C = CE													
<b>KK</b>	MOUNTING: = without mounting accessories HH = side quick clamps and flanges JJ = side wall clamps and flanges KK = side wall brackets and flanges													
<b>LH</b>	FLOW DIRECTION: = from left to right (standard) LH = from right to left													

**Symbols for double version**



**Series MX SAFEMAX double valve - materials**



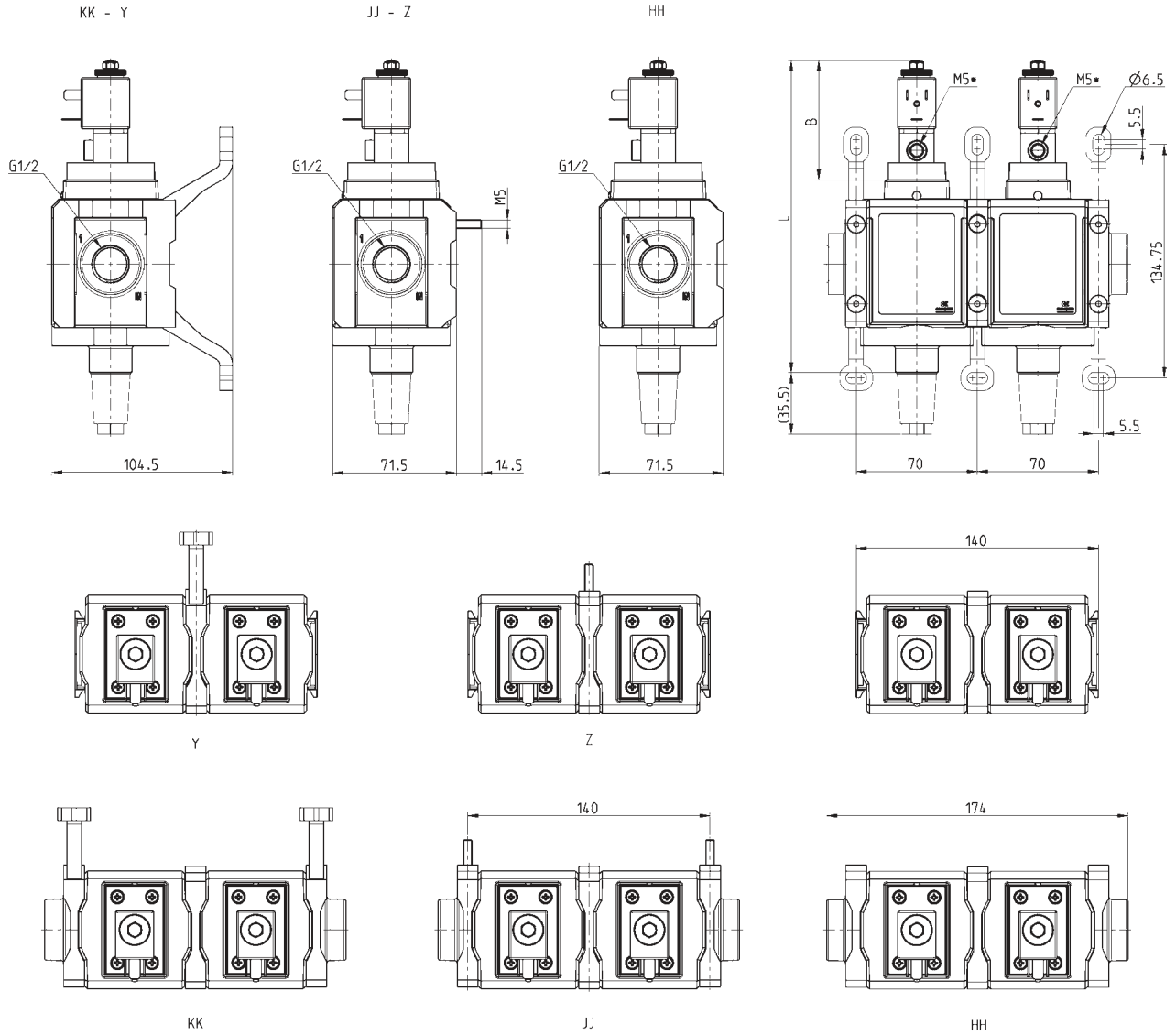
PARTS	MATERIALS
1 = Body	Aluminium
2 = Covering	POM Polyacetal
3 = Cover	Polyacetal
4 = Lower spring	Steel
5 = Spool	Stainless steel
6 = Cage element	Brass
7 = Solenoid	Steel, brass, PBT, POM
8 = Intermediate Flange	PA66
9 = Silencer	Bronze, steel
Seals	NBR, FKM
Sensor	PA body, epoxy resin and PU cable

Series MX SAFEMAX double valve - dimensions



The solenoid valve is supplied complete with sensor and coil

\*connection available only with external pilot version



Mod.	L (mm)	B (mm)
MX2-1/2-V162*	175	63
MX2-1/2-V172*	180.5	69



# Soft Start Valves Series MX

Ports 3/8" - 1" NPTF

MX2 ports: 3/8", 1/2", 3/4" NPTF - MX3 ports: 3/4", 1" NPTF

Modular



- » Allow for a safe, gradual pressurization of the pneumatic system from start-up
- » Screw adjustment of the timing delay which regulates inlet pressure to 50% of its value before full pressurization
- » Optional pressure switches are available on request

These soft start valves allow a gradual increase of the pressure in pneumatic systems. The pressure increases slowly according to the screw-adjustable regulation until it reaches half of the set value, then it increases rapidly. The valve poppet shifts slowly and securely to the open position to prevent sudden and unsafe movements of the pneumatic components in the system.

The Series MX has been realized to offer a multi-sector solution that guarantees saving in terms of installation time, space and costs. A special configurator, available on Camozzi's global website at <http://catalogue.camozzi.com> (sec. Configurators), allows the customer to choose the most suitable solution for his application, selecting single components or by configuring assembled FRLs.

## GENERAL DATA

Construction	modular, compact, poppet-type
Materials	see TABLE OF MATERIALS
Ports	3/8" - 1" NPTF
Mounting	in-line wall-mounting (by means of clamps)
Operating temperature	-5°C - 50°C at 16 bar with Dew Point of air at least 2° C (4° F) below the min working temperature, (23 F - 122 F @ 232 psi, up to 140 F MAX at 145 psi ) -5°C - 60°C at 10 bar with Dew Point of air at least 2° C (4° F) below the min working temperature
Operating pressure	2 - 16 bar (30 - 232 psi)
Nominal flow (at 6 bar with ΔP 1 bar)	MX3: 8500 l/min, (298 SCFM) , MX2: 5800 NI/min, 203 SCFM (1/2" , 3/4") MX2: 4500 NI/min, 157 SCFM (3/8")
Fluid	compressed air

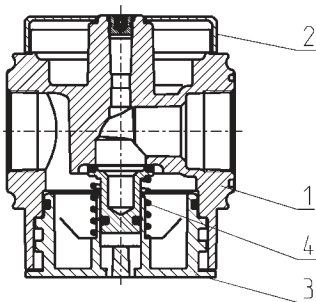
**CODING EXAMPLE**

<b>MX</b>	<b>2</b>	<b>-</b>	<b>3/8</b>	<b>-</b>	<b>AV</b>	<b>-</b>	<b>—</b>	<b>TF</b>
-----------	----------	----------	------------	----------	-----------	----------	----------	-----------

<b>MX</b>	SERIES
<b>2</b>	SIZE: 2 = 3/8" - 1/2" - 3/4" 3 = 3/4" - 1"
<b>3/8</b>	PORT: 3/8 = 3/8 1/2 = 1/2 3/4 = 3/4 1 = 1
<b>AV</b>	SOFT START VALVE
	FLOW DIRECTION: = from left to right (standard) LH = from right to left
<b>TF</b>	TF = NPTF ports blank = BSP ports

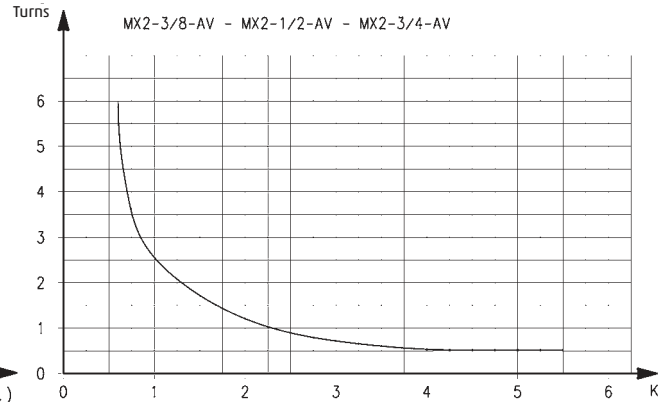
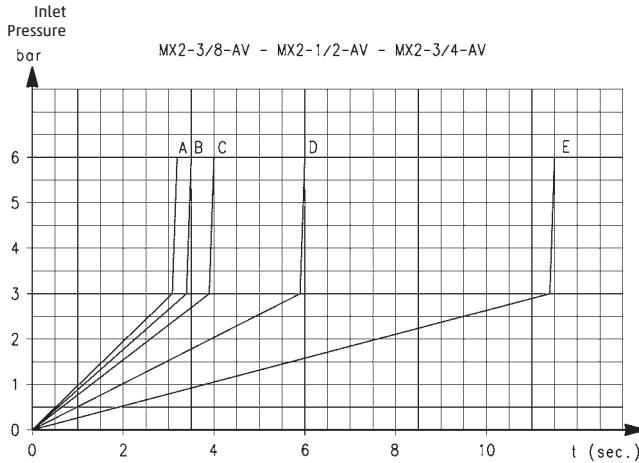
For the assembly of a single component with fixing flanges or wall-mounting, see the section "FRL Series MX Assembled"

**Soft start valves Series MX - materials**



PARTS	MATERIALS
1 = Body	Aluminium
2 = Covering	Polyacetal
3 = Valve holder plug	Polyacetal
4 = Lower spring	Stainless steel
Seals	NBR

**MX2 DIAGRAMS FOR PRESSURISATION TIMES**

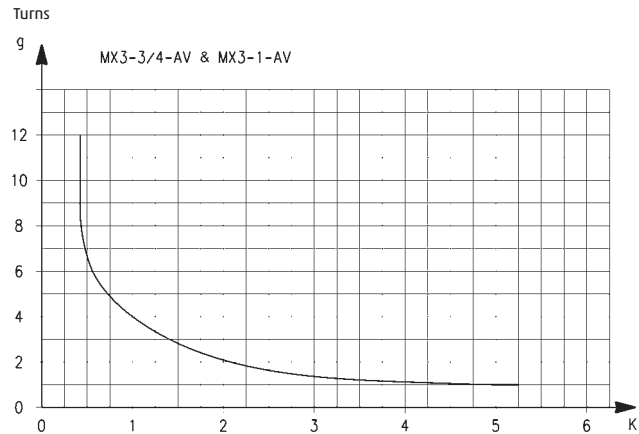
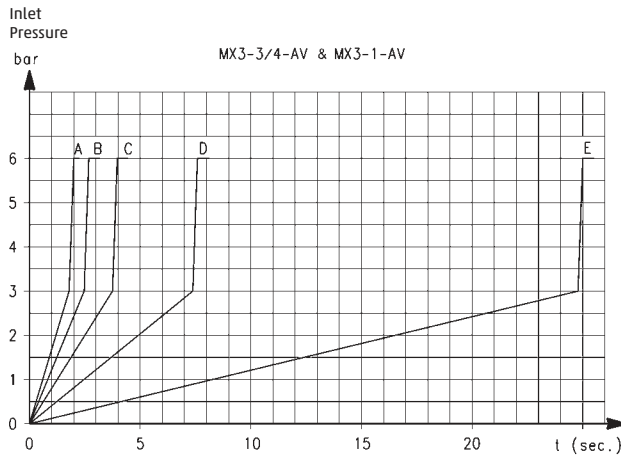


Pressurisation times as to the number of turns of the regulation screw, with downstream volume of 5 litres. A = 5 turns - B = 4 turns - C = 3 turns - D = 2 turns - E = 1 turn. K = number of turns of the regulation screw required to obtain the required pressurisation time with an inlet pressure of 6 bar. Variations of the inlet pressure can cause deviations of the pressure time by  $\pm 20\%$ .  $K = t/V$  where: V = volume of the downstream system in litres; t = desired pressuring time in seconds.

**EXAMPLE:**  
 V = 5 litres  
 t = 16 seconds  
 K = 16/5 = 3,2

Using in the graph this value K, the number of turns of the regulation screw will be approx. 0,8.

**MX3 DIAGRAMS FOR PRESSURISATION TIMES**

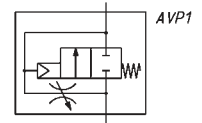
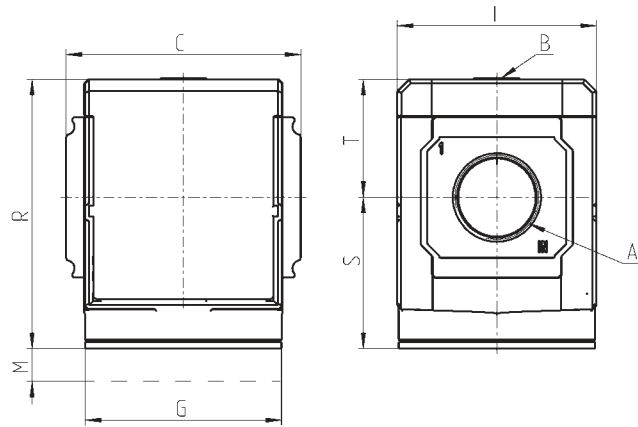


Pressurisation times as to the number of turns of the regulation screw, with downstream volume of 5 litres. A = 5 turns - B = 4 turns - C = 3 turns - D = 2 turns - E = 1 turn. K = number of turns of the regulation screw required to obtain the required pressurisation time with an inlet pressure of 6 bar. Variations of the inlet pressure can cause deviations of the pressure time by  $\pm 20\%$ .  $K = t/V$  where: V = volume of the downstream system in litres; t = desired pressuring time in seconds.

**EXAMPLE:**  
 V = 5 litres  
 t = 16 seconds  
 K = 16/5 = 3,2

Using in the graph this value K, the number of turns of the regulation screw will be approx. 1,8.

Soft start valves Series MX - dimensions



DIMENSIONS (in inches)

Mod.	A	Pressure Sensor Port B	C	G	I	M	R	S	T	Weight (Kg)
MX2-3/8-AV-TF	3/8	G 1/8	2.756	2.559	2.677	1.831	3.465	1.988	1.476	0.4
MX2-1/2-AV-TF	1/2	G 1/8	2.756	2.559	2.677	1.831	3.465	1.988	1.476	0.4
MX2-3/4-AV-TF	3/4	G 1/8	2.756	2.559	2.677	1.831	3.465	1.988	1.476	0.4
MX3-3/4-AV-TF	3/4	G 1/8	3.524	2.953	2.992	1.890	4.016	2.264	1.752	0.7
MX3-1-AV-TF	1	G 1/8	3.524	2.953	2.992	1.890	4.016	2.264	1.752	0.7

MODULAR FRL SERIES MX

# Take-Off Blocks Series MX

MX2 port: 1/2" NPTF

MX3 port: 1" NPTF

Modular



- » Compact design
- » Available with or without an internal check-valve after take-off ports, and before modular port 2 outlet
- » Pressure switches available on request

The Take-off blocks, when equipped with a check-valve, can be inserted before a lubricator to access non-lubricated air from its top and bottom distribution ports.

The Series MX has been realized to offer a multi-sector solution that guarantees saving in terms of installation time, space and costs. A special configurator, available on Camozzi's global website at <http://catalogue.camozzi.com> (sec. Configurators), allows the customer to choose the most suitable solution for his application, selecting single components or by configuring assembled FRLs.

## GENERAL DATA

Construction	modular, compact, diaphragm-type
Materials	see TABLE OF MATERIALS
Ports	MX2: 1/2" NPTF , MX3: 1" NPTF
Take-off ports	MX2: 1/2" NPTF , MX3: 1" NPTF
Mounting	in-line wall-mounting (by means of clamps)
Operating temperature	-5°C - 50°C at 16 bar with Dew Point of air at least 2° C (4° F) below the min working temperature, (23 F - 122 F @ 232 psi, up to 140 F MAX at 145 psi) -5°C - 60°C at 10 bar with Dew Point of air at least 2° C (4° F) below the min working temperature
Operating pressure	0 - 16 bar, (0 - 232 psi)
Nominal flow at 6 bar with $\Delta p = 1$ bar	MX2-1/2-B00 = 6800 NL/m, (238 SCFM) MX2-1/2-B01 = 5700 NL/m, (200 SCFM) MX3-1-B00 = 14500 NL/m, (507 SCFM) MX3-1-B01 = 10500 NL/m, (367 SCFM)
Fluid	compressed air



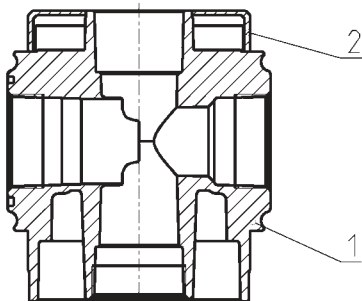
**CODING EXAMPLE**

MX	2	-	1/2	-	B	00	-	—	TF
----	---	---	-----	---	---	----	---	---	----

<b>MX</b>	SERIES
<b>2</b>	SIZE: 2 = 1/2" NPTF 3 = 1" NPTF
<b>1/2</b>	1/2 = 1/2" 1 = 1"
<b>B</b>	TAKE-OFF BLOCK
<b>00</b>	DESIGN TYPE: 00 = without internal check valve 01 = with internal check valve 02 = without internal check valve, with double o-ring seat
	FLOW DIRECTION: = from left to right (standard) LH = from right to left
<b>TF</b>	TF = NPTF ports blank = BSP ports

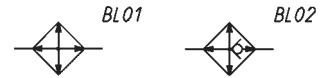
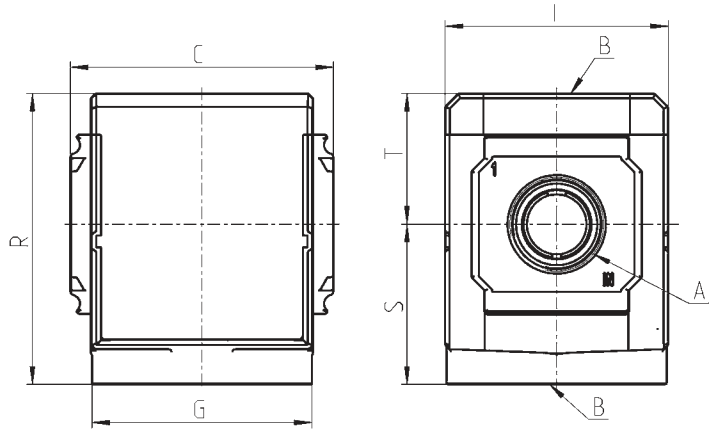
For the assembly of a single component with fixing flanges or wall-mounting, see the section "FRL Series MX Assembled"

**Take-off blocks Series MX - materials**



PARTS	MATERIALS
1 = Body	Aluminium
2 = Covering	Polyacetal
Seals	NBR

Take-off blocks Series MX - dimensions



BL01 = take-off block

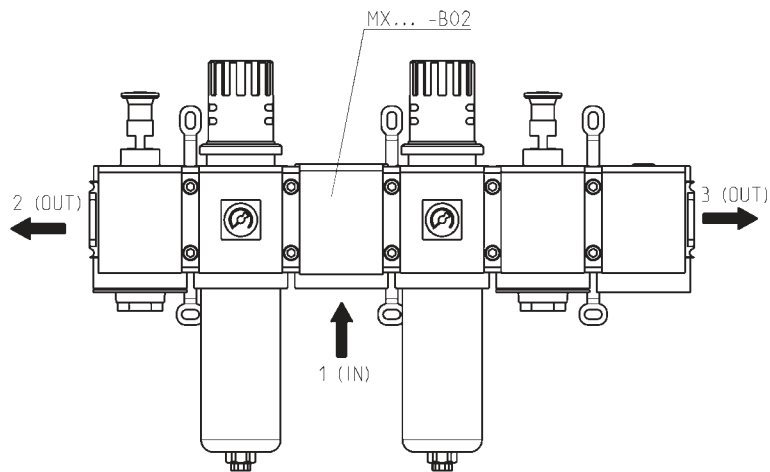
BL02 = take-off block with VNR

DIMENSIONS (in inches)

Mod.	A	B	C	G	I	R	S	T	Weight (Kg)
MX2-1/2-B00-TF	1/2	1/2	2.756	2.559	2.677	3.386	1.870	1.516	0.4
MX3-1-B00-TF	1	1	3.524	2.953	2.992	3.898	2.146	1.752	0.6

Use of the take-off block MX...-B02

The take-off block with double O-ring seat is particularly suitable when Series MX modules have to be supplied through the same pressure source. The modules which are connected to the left side are of LH kind.



# FRL Series MX Pre-Assembled

(single part number codes, fully assembled)

Ports 3/8" - 1" NPTF

MX2 ports: 3/8", 1/2", 3/4" NPTF; MX3 ports: 3/4", 1" NPTF

Assembly can be specified with either standard modular brackets and/ or integrated wall-mount brackets



- » Compact design
- » Simple modularity
- » Great reliability and performance
- » Easy and quick maintenance
- » Reduced weight

**The new FRL Series MX can be easily assembled through rapid clamps which allow the connection among single components creating an unlimited number of combinations. The FRL groups Series MX are also available in the already mounted version (with a single code).**

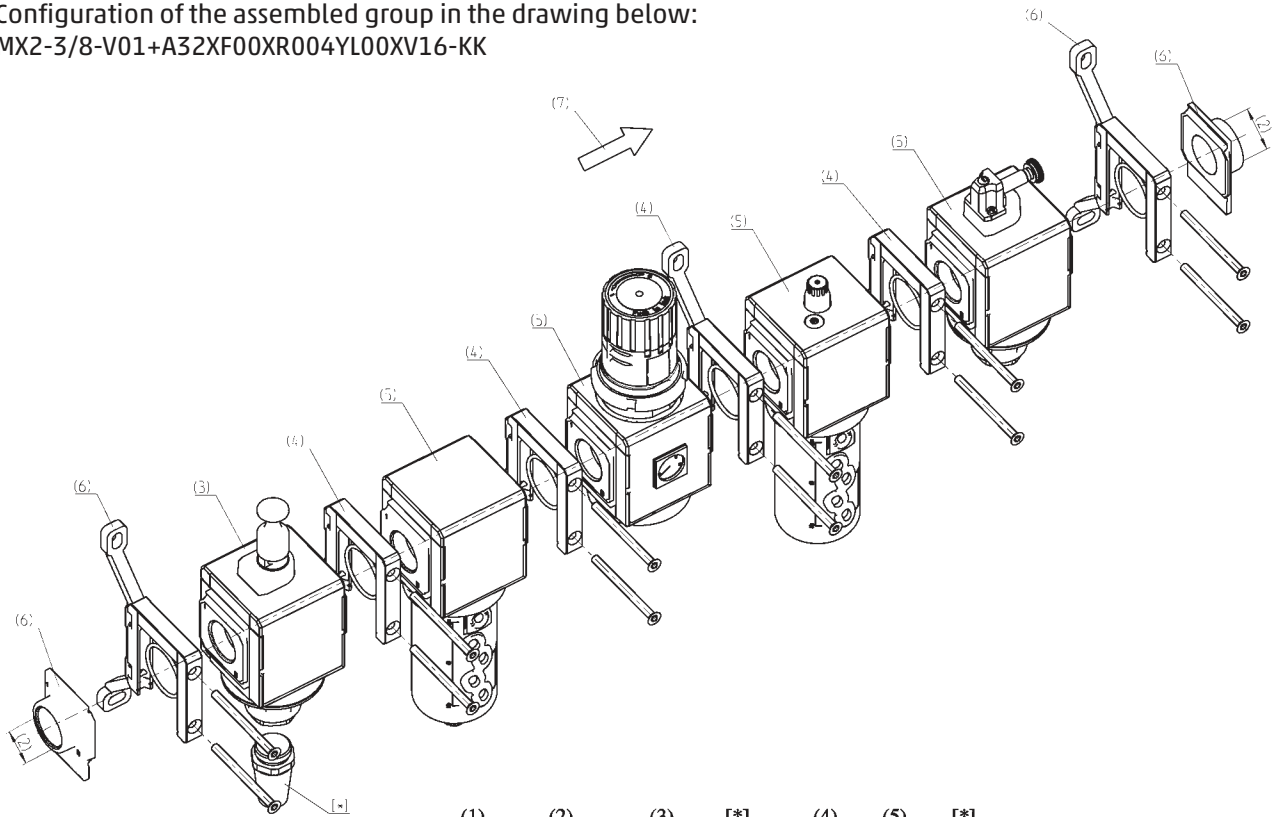
The use of three different types of rapid clamps (standard, with wall mounting screws or with wall-mount brackets) allows an easy mounting of the assembled groups and to carry out maintenance operations on the single components with no need to disassemble the group.

## GENERAL DATA

Construction	modular, compact
Materials	see catalogue pages referring to the single component
Ports	3/8" - 1" NPTF
Mounting	vertical in-line wall-mounting (by means of direct screws or bracket mounts) panel mounting
Operating temperature	-5°C - 50°C at 16 bar (according to the single component characteristics) -5°C - 60°C at 10 bar (according to the single component characteristics)

ASSEMBLY GUIDE AND TEMPORARY LONG CODES FOR SERIES MX

Configuration of the assembled group in the drawing below:  
 MX2-3/8-V01+A32XF00XR004YL00XV16-KK



	(1)	(2)	(3)	[*]	(4)	(5)	[*]			
	MX	2	-	3/8	-	V01	+A32	X	F00	

$n_x$

X	R004
Y	L00

X	V16		(6)	[**]	(7)
			KK		

Numbers in above position boxes refer to positions called out on next page in the Code Key. Each number is called out in order of the components' thread size and assembly order, including bracket choices.

- Position 1** is for general family body size (in this case, 2)
- Position 2** is for thread port size options (in this case, 3/8" ports)
- Position 3** is the first component (in this case, a "...-V01" lock-out valve with a 2931 1/2 silencer accessory)
- Positions 4 & 5** will continue to repeat for each additional component and the bracket that typically comes before it
- Position 6** is final outer edge bracket choices, with or without flange units
- Position 7** is only for optional right-to-left assembly/flow diagram requests

**Positions 3 & 5** will require in most cases that the entire callout of the module be assembled with its unique features (such as the above regulator called out as "R004")

**Positions 4 & 6**, outer brackets and intermediate brackets, utilize the same abbreviated letters for bracket styles, EXCEPT if wall-mount flanges are desired (see Code Key place "6" for options - 'HH' 'JJ' and 'KK' for the end bracket sets to include the wall flange kits)

ASSEMBLY GUIDE AND TEMPORARY LONG CODES FOR SERIES MX

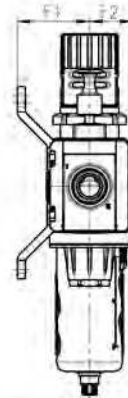
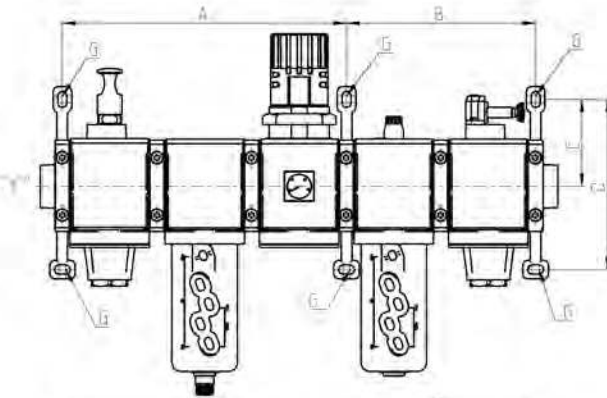
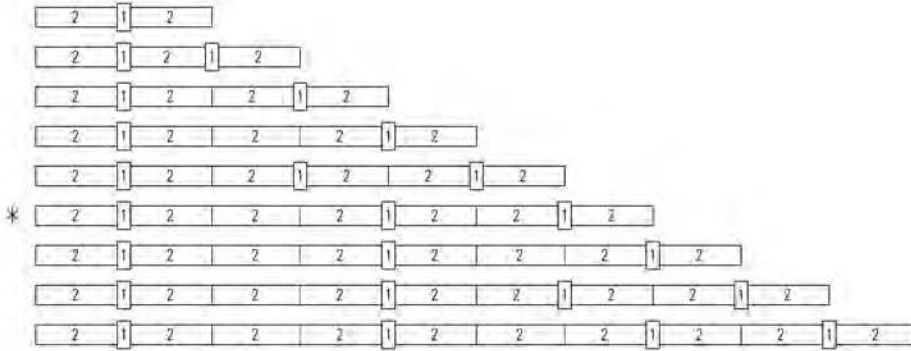
<b>MX</b>	<b>2</b>	<b>-</b>	<b>3/8</b>	<b>-</b>	<b>V01</b>	<b>X</b>	<b>F00</b>	<b>-</b>	<b>KK</b>	<b>-</b>	<b>LH</b>	<b>TF</b>
<b>MX</b>	SERIES											
<b>2</b>	(1)	SIZE: 2 = 3/8 - 1/2 - 3/4 3 = 3/4 - 1										
<b>3/8</b>	(2)	IN / OUT THREADS: 3/8 = 3/8" 1/2 = 1/2" 3/4 = 3/4" 1 = 1"										
<b>V01</b>	(3)	MODULE + [ * ] (to configure the modules, see the single components pages): F... = Filter FC... = Coalescing filter FCA... = Activated carbons filter R... = Pressure regulator L... = Lubricator FR... = Filter-Regulator V... = Lockable isolation valve AV... = Soft start valve B... = Take-off block (MX2: 3/8", 1/2" only - MX3: 3/4", 1")										
	[ * ]	The following ACCESSORIES codes could be added after each individual module which they are assembled into:  REGULATOR AND FILTER-REGULATOR MX2 +A56 = M053-P06 (Pressure gauge) +A57 = M053-P10 (Pressure gauge) +A58 = M063-P12 (Pressure gauge)  LOCKABLE ISOLATION VALVE MX2 +A30 = 2901 1/2" (Silencier) +A31 = 2921 1/2" (Silencier) +A32 = 2931 1/2" (Silencier) +A33 = 2938 1/2" (Silencier)  SOFT START VALVE +A00 = PM11-NA (Pressure switch, normally open) +A01 = PM11-NC (Pressure switch, normally closed)  TAKE-OFF BLOCK MX2 +A08 = PM11-NA (normally open pressure switch) with fitting for fixing to the module +A09 = PM11-NC (normally closed pressure switch) with fitting for fixing to the module +A03 = PM11-SC with fitting for fixing to the module  <b>Example: MX2-3/8-V01+A32XF00-KK-LH</b>										
		REGULATOR AND FILTER-REGULATOR MX3 +A60 = M063-P06 (Pressure gauge) +A61 = M063-P12 (Pressure gauge)  LOCKABLE ISOLATION VALVE MX3 +A34 = 2901 3/4" (Silencier) +A35 = 2921 3/4" (Silencier) +A36 = 2931 3/4" (Silencier)  TAKE-OFF BLOCK MX3 +A06 = PM11-NA (normally open pressure switch) with fitting for fixing to the module +A07 = PM11-NC (normally closed pressure switch) with fitting for fixing to the module +A02 = PM11-SC with fitting for fixing to the module  <b>Example: MX3-3/4-V01+A36XF00-KK-LH</b>										
<b>X</b>	(4)	MODULES CONNECTION X = Rapid clamp kit Z = Rapid clamp kit with wall fixing screw Y = Rapid clamp kit with wall fixing brackets										
<b>F00</b>	(5) + [ * ]	see MODULE (3)										
<b>KK</b>	(6)	TERMINAL CONNECTIONS + [ ** ] Blank = no end-plate flanges connection HH = n° 1 rapid clamp kit with flanges (IN / OUT) JJ = n° 1 rapid clamp kit with wall fixing screws + flanges (IN / OUT) KK = n° 1 rapid clamp kit with wall fixing brackets + flanges (IN / OUT)										
	[ ** ]	WALL CONNECTION (optional if wall mounting of Regulator or Filter-Regulator only, by way of panel bracket Mod. S): REGULATOR and FILTER-REGULATOR S = Bracket (only with clamps mod. X or HH) Codes examples: MX3-1-R..XV..-S; MX3-1-R..XV..-HSH										
<b>LH</b>	(7)	FLOW DIRECTION: = from left to right (standard) LH = from right to left										
	(4) + (5) + [ * ]	REPEATABLE COMBINATION for a "n" number of times										
<b>TF</b>		TF = NPTF ports Blank = BSP ports										

Wall mounting dimensions and positioning scheme

Legend of the POSITIONING SCHEME:  
 1 = rapid clamp with wall fixing screw  
 or with wall fixing bracket  
 2 = module / flange

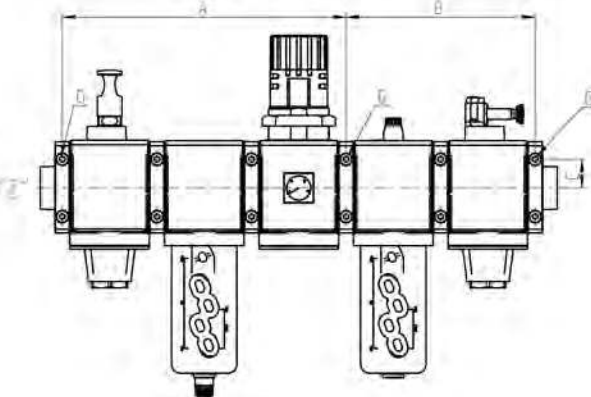
\* POSITIONING SCHEME referring to drawings "Y" and "Z".

Legend of the ASSEMBLED GROUPS DRAWINGS:  
 "Y" = with rapid clamps with wall fixing brackets (MX...-Y)  
 "Z" = with rapid clamp with wall fixing screws (MX...-Z)  
 G = wall mount screw hole



Temporary Assembly Guide: Ex.:  
 MX3-3/4-V01XF00XR004YL00XV16-KK TF

Notes:  
 3/4" NPTF unit, w/o silencers  
 or switch accessories.  
 Utilizing wall-mount brackets and flange end-plates



Temporary Assembly Guide Ex.:  
 MX3-1-V01XF00ZR004ZL00XV16-HH TF

Notes:  
 1" NPTF unit, w/o silencers  
 or switch accessories.  
 Utilizing only rapid mounting clamps, wall screws  
 and flange end-plates.

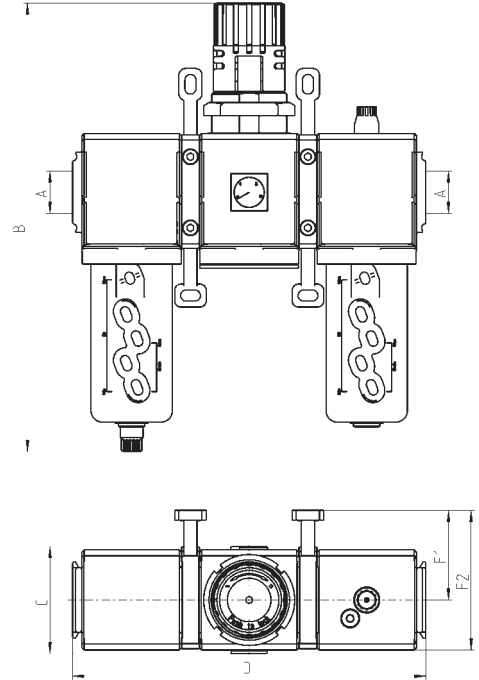
Dimensions in millimeters (mm)

Mod.	A	B	C	D	F1	F2	L	M
MX2-Y	210	140	68,5	134,5	70	37	-	-
MX2-Z	210	140	23	-	37,5	37	13,5	M5
MX3-Y	267	178	82	160	68	40,5	-	-
MX3-Z	267	178	27	-	40,5	40,5	13	M6

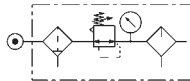
Composition of the assembled group 000001



Components:  
Filter  
Regulator  
Lubricator



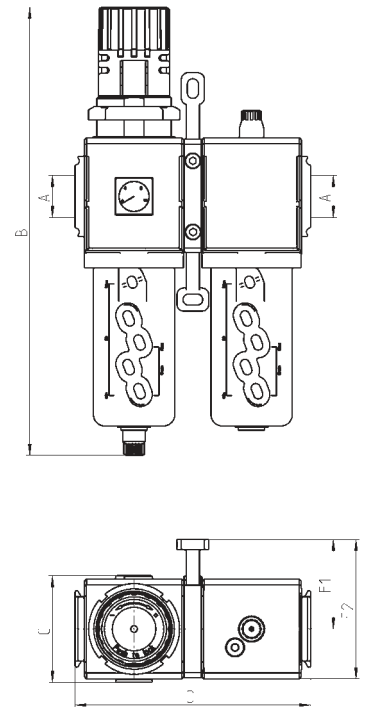
Mod.	A	B	C	D	F1	F2
MX2-3/8-000001	G3/8	289	74,5	210	70	104,5
MX2-1/2-000001	G1/2	289	74,5	210	70	104,5
MX2-3/4-000001	G3/4	289	74,5	210	70	104,5
MX3-3/4-000001	G3/4	345	81	268,5	68	106
MX3-1-000001	G1	345	81	268,5	68	106



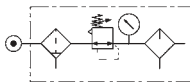
Composition of the assembled group 000002



Components:  
Filter-regulator  
Lubricator



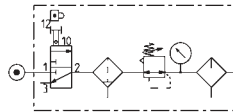
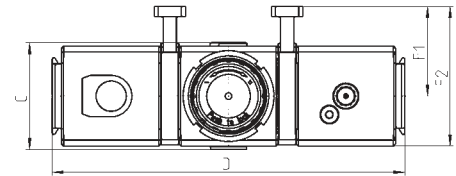
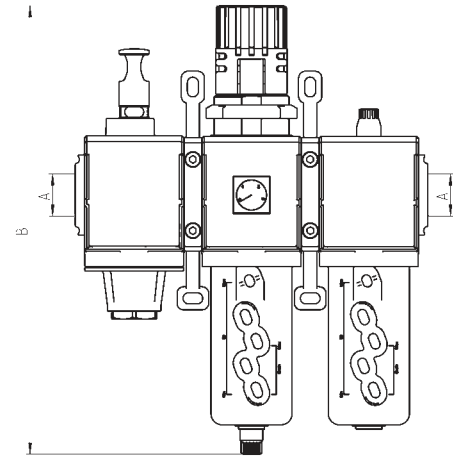
Mod.	A	B	C	D	F1	F2
MX2-3/8-000002	G3/8	289	74,5	140	70	104,5
MX2-1/2-000002	G1/2	289	74,5	140	70	104,5
MX2-3/4-000002	G3/4	289	74,5	140	70	104,5
MX3-3/4-000002	G3/4	345	81	179	68	106
MX3-1-000002	G1	345	81	179	68	106



Composition of the assembled group 000003



Components:  
 Lockable isolation 3/2-way valve  
 Filter-regulator  
 Lubricator

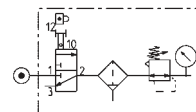
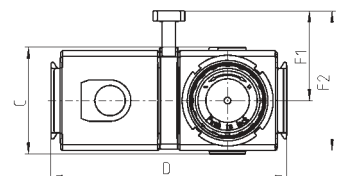
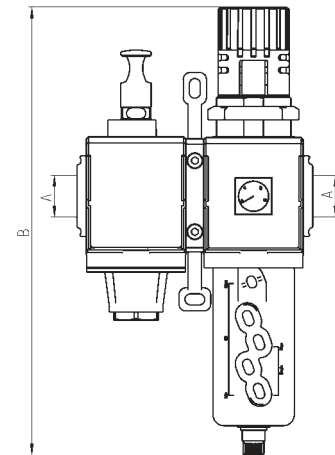


Mod.	A	B	C	D	F1	F2
MX2-3/8-000003	G3/8	289	74,5	210	70	104,5
MX2-1/2-000003	G1/2	289	74,5	210	70	104,5
MX2-3/4-000003	G3/4	289	74,5	210	70	104,5
MX3-3/4-000003	G3/4	345	81	268,5	68	106
MX3-1-000003	G1	345	81	268,5	68	106

Composition of the assembled group 000004



Components:  
 Lockable isolation 3/2-way valve  
 Filter-regulator



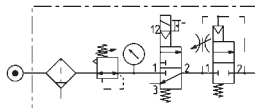
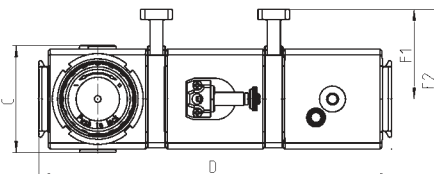
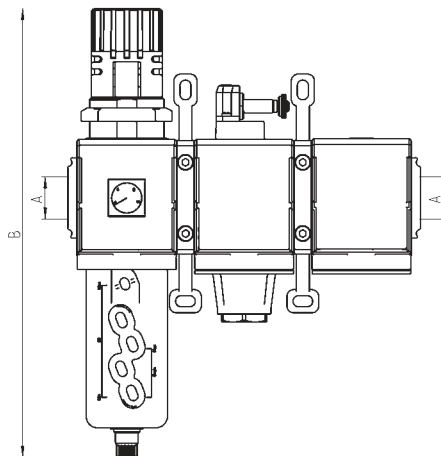
Mod.	A	B	C	D	F1	F2
MX2-3/8-000004	G3/8	289	74,5	140	70	104,5
MX2-1/2-000004	G1/2	289	74,5	140	70	104,5
MX2-3/4-000004	G3/4	289	74,5	140	70	104,5
MX3-3/4-000004	G3/4	345	81	179	68	106
MX3-1-000004	G1	345	81	179	68	106



Composition of the assembled group 000005



Components:  
 Filter-regulator  
 Lockable isolation 3/2-way valve  
 Soft start valve

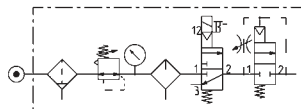
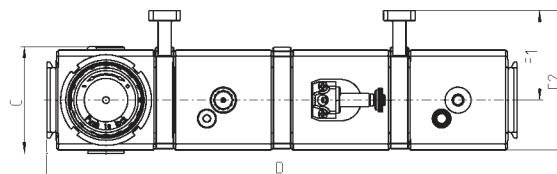
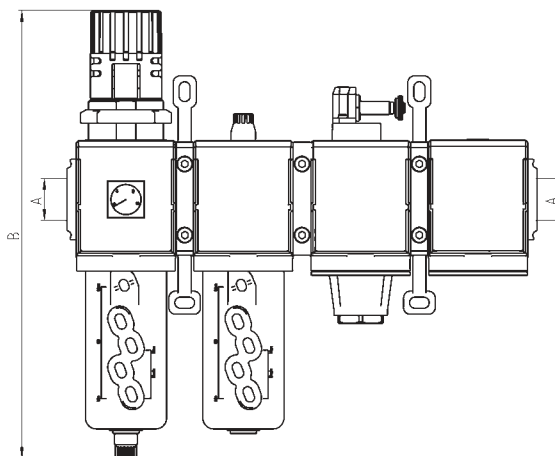


Mod.	A	B	C	D	F1	F2
MX2-3/8-000005	G3/8	289	74,5	210	70	104,5
MX2-1/2-000005	G1/2	289	74,5	210	70	104,5
MX2-3/4-000005	G3/4	289	74,5	210	70	104,5
MX3-3/4-000005	G3/4	345	81	268,5	68	106
MX3-1-000005	G1	345	81	268,5	68	106

Composition of the assembled group 000006



Components:  
 Filter-regulator  
 Lubricator  
 Lockable isolation 3/2-way valve  
 Soft start valve

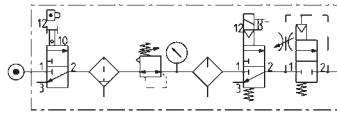
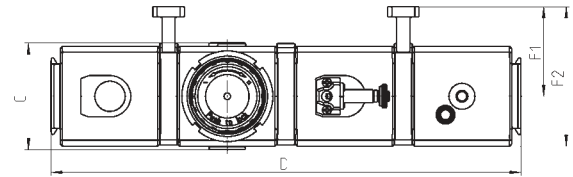
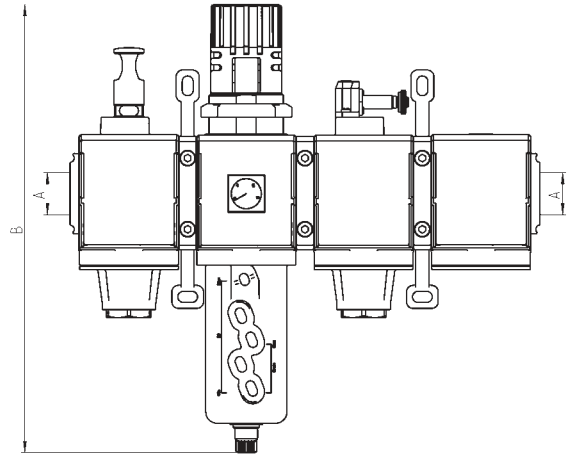


Mod.	A	B	C	D	F1	F2
MX2-3/8-000006	G3/8	289	74,5	280	70	104,5
MX2-1/2-000006	G1/2	289	74,5	280	70	104,5
MX2-3/4-000006	G3/4	289	74,5	280	70	104,5
MX3-3/4-000006	G3/4	345	81	358	68	106
MX3-1-000006	G1	345	81	358	68	106

Composition of the assembled group 000007



- Components:  
 Lockable isolation 3/2-way valve  
 Filter-regulator  
 Lockable isolation 3/2-way valve  
 Soft start valve

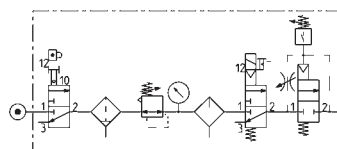
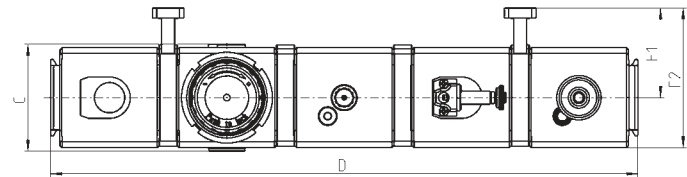
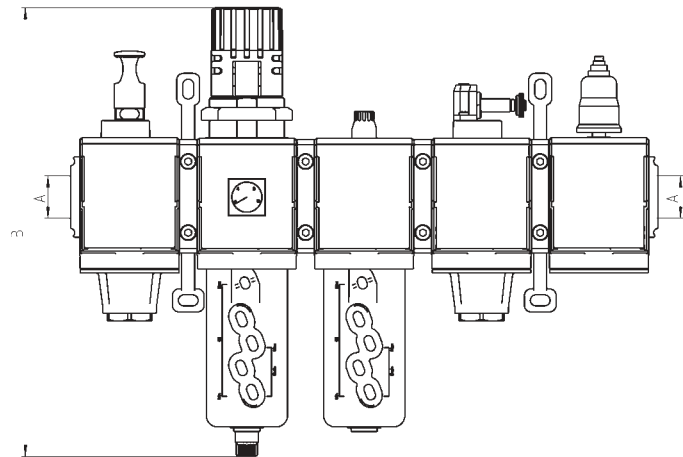


Mod.	A	B	C	D	F1	F2
MX2-3/8-000007	G3/8	289	74,5	280	70	104,5
MX2-1/2-000007	G1/2	289	74,5	280	70	104,5
MX2-3/4-000007	G3/4	289	74,5	280	70	104,5
MX3-3/4-000007	G3/4	345	81	358	68	106
MX3-1-000007	G1	345	81	358	68	106

Composition of the assembled group 000008



- Components:  
 Lockable isolation 3/2-way valve  
 Filter-regulator  
 Lubricator  
 Lockable isolation 3/2-way valve  
 Soft start valve + pressure switch (NO)

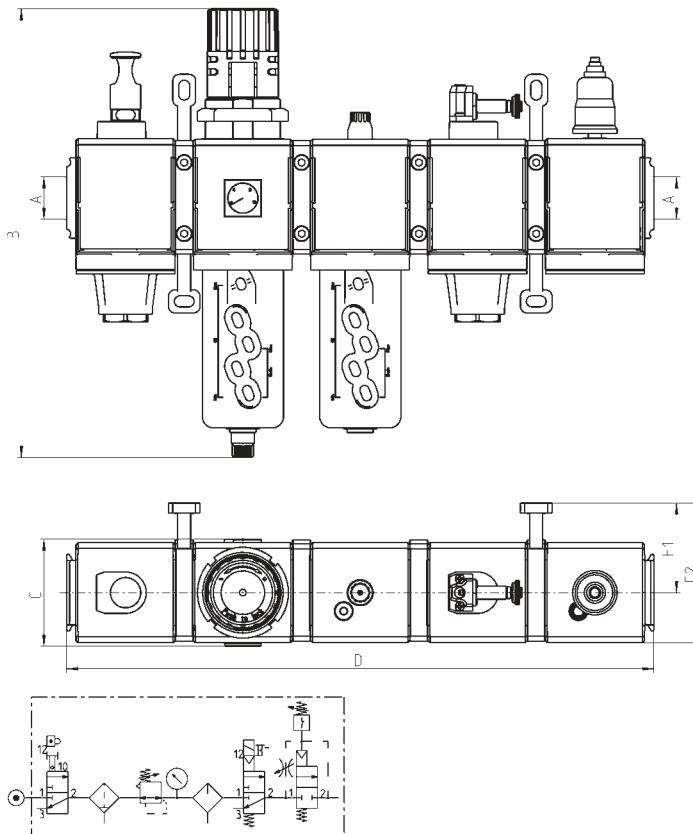


Mod.	A	B	C	D	F1	F2
MX2-3/8-000008	G3/8	289	74,5	350	70	104,5
MX2-1/2-000008	G1/2	289	74,5	350	70	104,5
MX2-3/4-000008	G3/4	289	74,5	350	70	104,5
MX3-3/4-000008	G3/4	345	81	447,5	68	106
MX3-1-000008	G1	345	81	447,5	68	106

Composition of the assembled group 000009



- Components:  
 Lockable isolation 3/2-way valve  
 Filter-regulator  
 Lubricator  
 Lockable isolation 3/2-way valve  
 Soft start valve + pressure switch (NC)

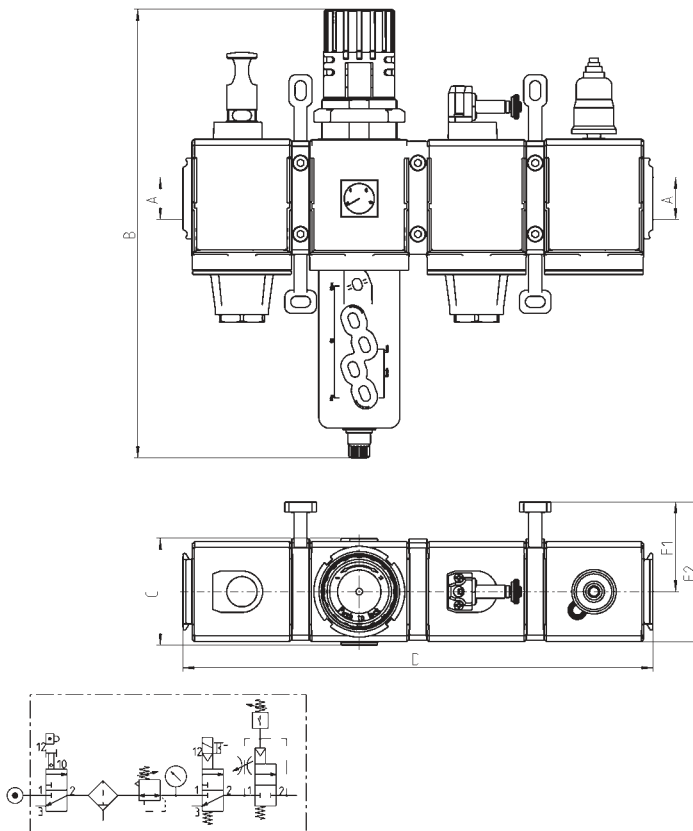


Mod.	A	B	C	D	F1	F2
MX2-3/8-000009	G3/8	289	74,5	350	70	104,5
MX2-1/2-000009	G1/2	289	74,5	350	70	104,5
MX2-3/4-000009	G3/4	289	74,5	350	70	104,5
MX3-3/4-000009	G3/4	345	81	447,5	68	106
MX3-1-000009	G1	345	81	447,5	68	106

Composition of the assembled group 000010



- Components:  
 Lockable isolation 3/2-way valve  
 Filter-regulator  
 Lubricator  
 Lockable isolation 3/2-way valve  
 Soft start valve + pressure switch (NO)

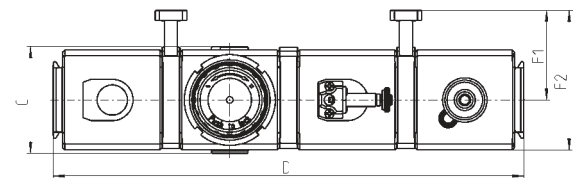
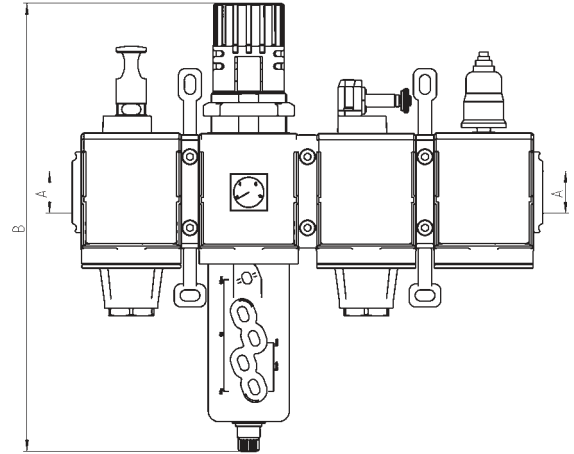


Mod.	A	B	C	D	F1	F2
MX2-3/8-000010	G3/8	289	74,5	280	70	104,5
MX2-1/2-000010	G1/2	289	74,5	280	70	104,5
MX2-3/4-000010	G3/4	289	74,5	280	70	104,5
MX3-3/4-000010	G3/4	345	81	358	68	106
MX3-1-000010	G1	345	81	358	68	106

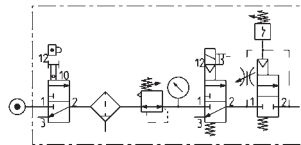
Composition of the assembled group 000011



- Components:  
 Lockable isolation 3/2-way valve  
 Filter-regulator  
 Lockable isolation 3/2-way valve  
 Soft start valve + pressure switch (NC)



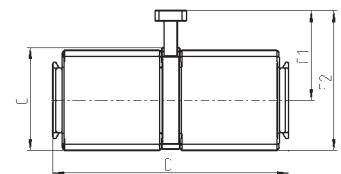
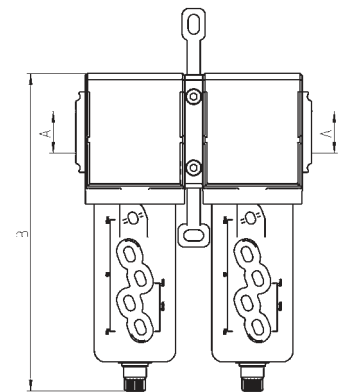
Mod.	A	B	C	D	F1	F2
MX2-3/8-000011	G3/8	289	74,5	280	70	104,5
MX2-1/2-000011	G1/2	289	74,5	280	70	104,5
MX2-3/4-000011	G3/4	289	74,5	280	70	104,5
MX3-3/4-000011	G3/4	345	81	358	68	106
MX3-1-000011	G1	345	81	358	68	106



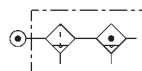
Composition of the assembled group 000012



- Components:  
 Filter  
 Coalescing filter



Mod.	A	B	C	D	F1	F2
MX2-3/8-000012	G3/8	210	72	140	70	104,5
MX2-1/2-000012	G1/2	210	72	140	70	104,5
MX2-3/4-000012	G3/4	210	72	140	70	104,5
MX3-3/4-000012	G3/4	231	78	179	68	106
MX3-1-000012	G1	231	78	179	68	106



# ACCESSORIES FOR SERIES MX



Rapid clamps



Rapid clamps with brackets



Terminal flanges (IN/OUT)



Fixing brackets for regulators



Block for pressure gauge fixing



Assembly O-ring



MX built-in pressure gauge



MODULAR FRL SERIES MX

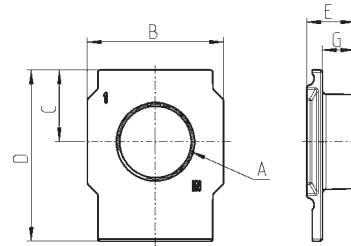
Systems of rapid connections designed to make mounting easier.

**Terminal flanges (IN/OUT) for series MX (Threaded End-plates)**



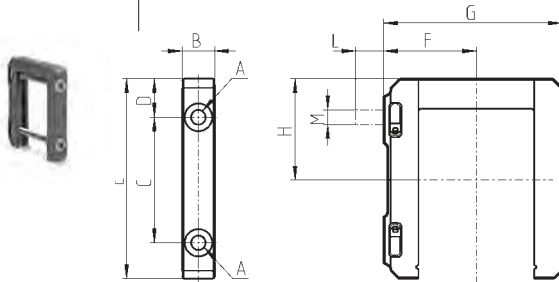
The kit is supplied with:  
 - n°1 flange INLET side  
 - n°1 flange OUTLET side

Materials: painted aluminum flanges



DIMENSIONS (in inches)						
Mod.	A (NPTF)	B	C	D	E	G
MX2-3/8-FL-TF	3/8	1.969	1.043	2.500	0.669	0.433
MX2-1/2-FL-TF	1/2	1.969	1.043	2.500	0.669	0.433
MX2-3/4-FL-TF	3/4	1.969	1.043	2.500	0.669	0.433
MX3-3/4-FL-TF	3/4	2.283	1.201	2.874	0.807	0.531
MX3-1-FL-TF	1	2.283	1.201	2.874	0.807	0.531

**Rapid clamps kit for series MX**



Kit MX2-X supplied with: 1 rapid clamp, 1 O-ring OR 3125\*\*, 2 hexagonal nuts M5, 2 screws M5x69.

Kit MX2-Z supplied with: 1 rapid clamp, 1 O-ring OR 3125\*\*, 1 hexagonal nut M5, 1 screw M5x69, 1 screw M5x85 for wall fixing.

\*\* OR 3125 can be ordered separately (cod. 160-39-11/19)

Materials: technopolymer clamp, NBR O-ring, zinc-plated steel nuts and screws.

The kit MX3-X is supplied with:  
 1 rapid clamp, 1 O-ring, OR 38X2.8 \*\*  
 2 square nuts, 2 screws M6x75

The kit MX3-Z is supplied with:  
 1 rapid clamp, 1 O-ring, OR 38X2.8 \*\*  
 1 square nut, 1 screw M6x75,  
 1 screw M6x90 for direct wall-mounting

\*\*OR 38X2.8 can be ordered separately (mod. OR 38X2.8 NBR)

DIMENSIONS (in inches)										
Mod.	A	B	C	D	E	F	G	H	L	M
MX2-X	0.205	0.472	1.811	0.551	2.894	1.476	2.776	1.457	-	-
MX2-Z	0.205	0.472	1.811	0.551	2.894	1.476	2.776	1.457	0.551	*
MX3-X	0.244	0.551	2.126	0.650	3.386	1.575	3.031	1.713	-	-
MX3-Z	0.244	0.551	2.126	0.650	3.386	1.575	3.031	1.713	0.512	M6 *

\* kit with wall mounting screw

**Rapid clamp kit with wall mount brackets for series MX**

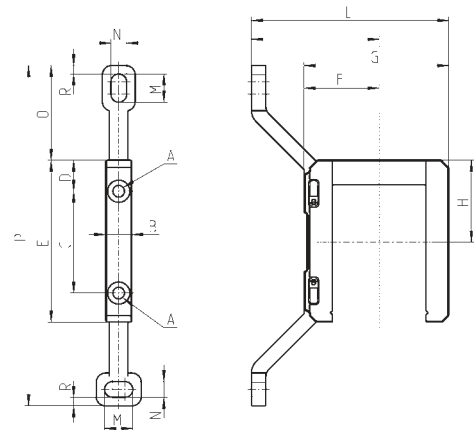


The kit MX3-Y is supplied with:  
 1 wall rapid clamp, 1 O-ring, OR 3150 \*\*  
 2 square nuts, 2 screws M6x75  
 \*\*OR 38X2.8 can be ordered separately (mod. OR 38X2.8 NBR)

The kit MX2-Y is supplied with:  
 1 wall rapid clamp, 1 O-ring OR 3125 \*\*, 2 hexagonal nuts, 2 screws M5x69.

\*\* OR 3125 can be separately ordered (mod. 160-39-11/19)

Materials: technopolymer clamp, NBR O-ring, zinc-plated steel nuts and screws.



DIMENSIONS (in inches)															
Mod.	A	B	C	D	E	F	G	H	I	L	M	N	O	P	R
MX2-Y	0.205	0.472	1.811	0.551	2.894	1.280	2.776	1.457	2.776	4.055	0.472	0.256	1.654	5.984	0.157
MX3-Y	0.244	0.551	2.126	0.650	3.386	1.575	3.031	1.713	2.677	4.134	0.591	0.331	1.988	7.126	0.177

Assembly brackets and flange kit for series MX



Mod.	The kit is supplied with:
MX2-3/8-HH-TF	1x MX2-3/8-FL-TF + 2x MX2-X
MX2-1/2-HH-TF	1x MX2-1/2-FL-TF + 2x MX2-X
MX2-3/4-HH-TF	1x MX2-3/4-FL-TF + 2x MX2-X
MX2-3/8-JJ-TF	1x MX2-3/8-FL-TF + 2x MX2-Z
MX2-1/2-JJ-TF	1x MX2-1/2-FL-TF + 2x MX2-Z
MX2-3/4-JJ-TF	1x MX2-3/4-FL-TF + 2x MX2-Z
MX3-3/4-HH-TF	1x MX3-3/4-FL-TF + 2x MX3-X
MX3-1-HH-TF	1x MX3-1-FL-TF + 2x MX3-X
MX3-3/4-JJ-TF	1x MX3-3/4-FL-TF + 2x MX3-Z
MX3-1-JJ-TF	1x MX3-1-FL-TF + 2x MX3-Z

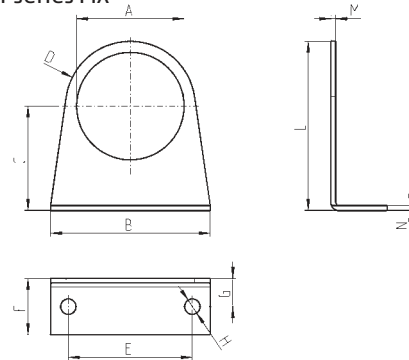
Wall-mount brackets and flange kit for series MX



Mod.	The kit is supplied with:
MX2-3/8-KK-TF	1x MX2-3/8-FL-TF + 2x MX2-Y
MX2-1/2-KK-TF	1x MX2-1/2-FL-TF + 2x MX2-Y
MX2-3/4-KK-TF	1x MX2-3/4-FL-TF + 2x MX2-Y
MX3-3/4-KK-TF	1x MX3-3/4-FL-TF + 2x MX3-Y
MX3-1-KK-TF	1x MX3-1-FL-TF + 2x MX3-Y

Single wall-mount bracket for regulator or filter-regulator series MX

The kit is supplied with 1 zinc-plated steel bracket



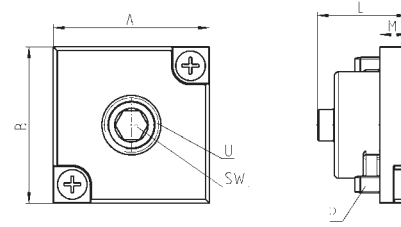
Mod.	A	B	C	D	E	F	G	H	L	M	N
MX2-S	Ø 1.858	2.874	2.382	R 1.161	2.126	0.984	0.591	Ø 0.244	3.543	0.098	0.098
MX3-S	Ø 2.252	3.346	2.185	R 1.358	2.598	1.181	0.591	Ø 0.323	3.543	0.098	0.098

DIMENSIONS (in millimeters)

**Threaded block for mounting external gauge**



The kit is supplied with:  
 1 block  
 1 plug  
 2 screws  
 1 seal

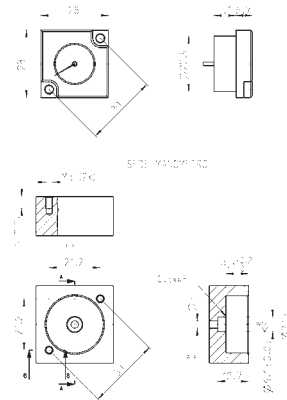


DIMENSIONS							
Mod.	A	B	L	M	P	U	SW
MX2-R26/1-P	28	28	16.5	5	M3X7	1/8	5
MX3-R26/1-P	28	28	16.5	5	M3X7	1/4	6

**MX Built-in pressure gauge**



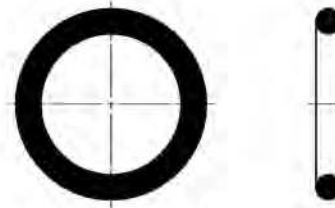
The kit is supplied with:  
 1 gauge  
 2 screws  
 1 seal



Mod.	Range
MX3-R30/W-P	0-2.5 bar (0-36 psi)
MX3-R31/W-P	0-6 bar (0-87 psi)
MX3-R32/W-P	0-10 bar (0-145 psi)
MX3-R33/W-P	0-12 bar (0-174 psi)

Fig. 1 = pressure gauge  
 Fig. 2 = seat

**O-ring for assembling Series MC - MX**



Mod.	O-ring	For assembly between units and/or end-plates	*
458-33/1	OR 2068	MC104	*
80-26-11/4T	OR 3100	MC238 - MC202	*
160-39-11/19	OR 3125	MX2	*
OR 38X2.8 NBR	OR 38X2.8	MX3	*

\* spare parts only







# 5 Regulators

Series CLR		Micro Pressure Regulators	<b>199</b>
Series TC <b>NEW</b>		Pressure Microregulators	<b>203</b>
Series M		Pressure Microregulators	<b>208</b>
Series M -H, -R <b>NEW</b>		Pressure Microregulators For Use With Water And Fluids	<b>210</b>
Series T		Pressure Microregulators	<b>212</b>
Series VMR		Adjustable Pressure Relief Valve	<b>216</b>
Series PR <b>NEW</b>		Precision Regulators	<b>218</b>
Series M, T		Mounting Brackets, Accessories and Kits	<b>225</b>

# Micro Pressure Regulators Series CLR

Micro pressure regulators with composite banjo or direct cartridge mounting

Ports: 1/8 or 1/4 in NPTF or BSPP

Tube Connection: Inch or Metric sizes



**Series CLR micro pressure regulators are available with 1/8 and 1/4, "G" or NPTF connections. A relieving piston and VS function (rapid reverse flow) has been incorporated into its design.**

**The body is in brass, while the banjo fitting is in technopolymer which guarantees maximum lightness.**

**With a threaded top part of the body both direct mounting to a valve outlet (1/8 and 1/4 threads) and panel mounting are easily facilitated.**

**The pressure is precisely regulated simply by turning the polymer knob with a locking nut available to set the desired output. Pressure is regulated in the 'meter-out' style, from the male thread connection, up and out the tube OD connection.**

## TECHNICAL SPECIFICATIONS

Construction	piston-type regulation
Materials	Body - Nickel-Plated brass, Knob and Banjo - Nylon composite, Seals - Buna-N, Internals - Brass, Spring - stainless steel
Ports	G1/8 - G1/4, 1/8" & 1/4" NPTF
Weight	Kg 0,035 (0.08 lbs)
Mounting	in-line or panel mounting (in any position)
Operating temperature	-5° C - 50° C (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature
Inlet pressure	2 - 10 bar (29 - 145 psi)
Outlet pressure	0.5 - 10 bar (7.35 - 145 psi)
Nominal flow	see graphs
Secondary pressure relieving	standard (all regulators are provided with high relief flow VS function)
Fluid	Compressed air

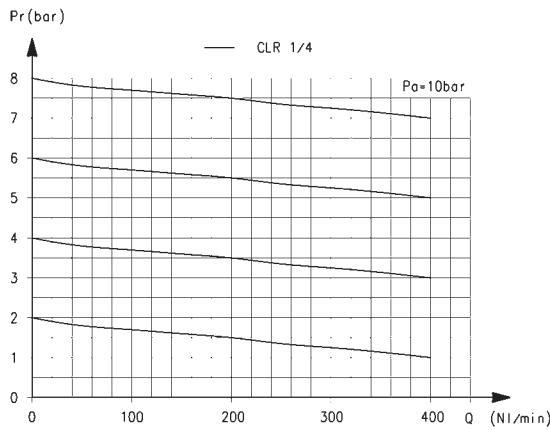
**CODING EXAMPLE**

CL	R	1/8	-	01	-	4
----	---	-----	---	----	---	---

<b>CL</b>	SERIES
<b>R</b>	R = REGULATOR
<b>1/8</b>	PORTS: 1/8 = G1/8 1/4 = G1/4 02 = 1/8" NPTF with adapters 04 = 1/4" NPTF with adapters
<b>01</b>	DESIGN TYPE: = with relieving 01 = without relieving
<b>4</b>	TUBE: = without banjo 4 = Ø4 mm (G1/8 only) 6 = Ø6 mm 8 = Ø8 mm 53 = 5/32" OD 04 = 1/4" OD 05 = 5/16" OD 06 = 3/8" OD 1/8L = single metal banjo with thread G1/8 (only CLR 1/8) 1/8D = double metal banjo with double thread G1/8 (only CLR 1/8)

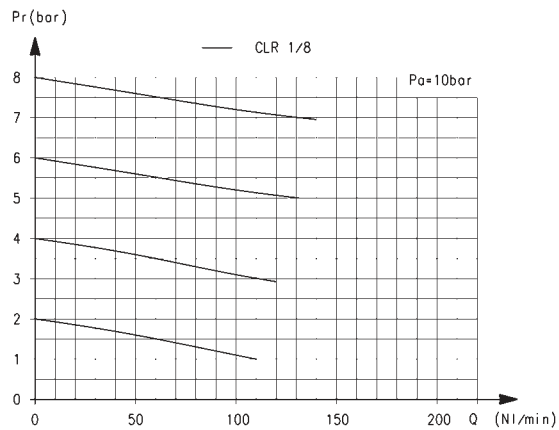
**FLOW DIAGRAMS at 6 bar with ΔP1**

**CLR 1/4" THREAD MODELS**



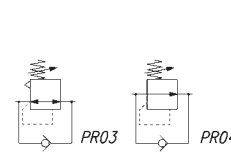
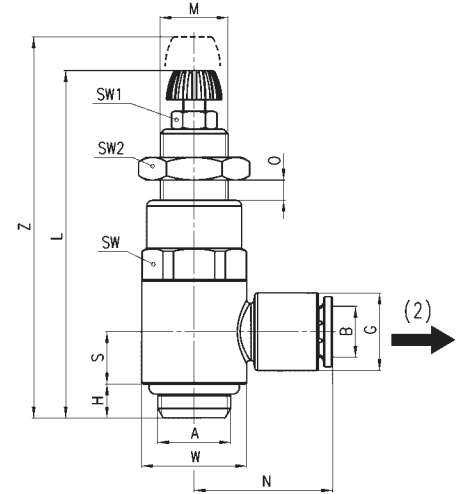
Pa = Inlet pressure (bar)  
Pr = Regulated pressure (bar)  
Q = Flow (NL/min)  
CLR 1/4-6 = 209 NL/min  
CLR 1/4-8 = 310 NL/min

**CLR 1/8" THREAD MODELS**



Pa = Inlet pressure (bar)  
Pr = Regulated pressure (bar)  
Q = Flow (NL/min)  
CLR 1/8-4 = 90 NL/min  
CLR 1/8-6 = 120 NL/min  
CLR 1/8-8 = 120 NL/min

Micro pressure regulators Series CLR



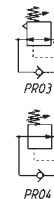
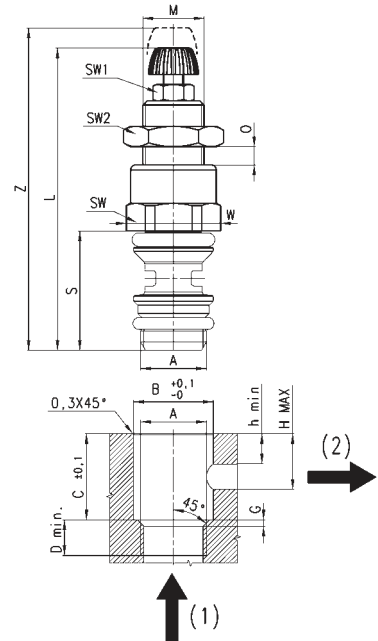
(1) = inlet pressure  
(2) = regulated pressure

DIMENSIONS (in millimeters)

Mod.	A	B	G	H	L	M	N	O	S	W	SW	SW1	SW2	Z
CLR 1/8-4	G1/8	4	11.6	5	52	M11x1	21	0-6.5	7.75	14	14	7	14	59
CLR 1/8-6	G1/8	6	11.6	5	52	M11x1	21	0-6.5	7.75	14	14	7	14	59
CLR 1/8-8	G1/8	8	13.9	5	52	M11x1	22.5	0-6.5	7.75	14	14	7	14	59
CLR 1/4-6	G1/4	6	13.9	6	59.5	M12x1	24.5	0-8	9.25	18.6	17	7	17	68
CLR 1/4-8	G1/4	8	13.9	6	59.5	M12x1	24.5	0-8	9.25	18.6	17	7	17	68
CLR 02-53	1/8" NPTF	5/32" OD	11.6	8	65	M11x1	21	0-6.5	7.75	17.75	14	7	14	72
CLR 02-04	1/8" NPTF	1/4" OD	11.6	8	65	M11x1	21	0-6.5	17.75	14	14	7	14	72
CLR 04-04	1/4" NPTF	1/4" OD	13.9	12	77	M12x1	24.5	0-6.5	21	18.6	17	7	17	85.5
CLR 04-05	1/4" NPTF	5/16" OD	13.9	12	77	M12x1	24.5	0-8	21	18.6	17	7	17	85.5
CLR 04-06	1/4" NPTF	3/8" OD	16.0	12	77	M12x1	24.5	0-8	21	18.6	17	7	17	85.5

Note: 2520 NPTF adapters added to create NPTF units. Pressure regulation is 'meter-out' style, up and out the thread through the tube connection. Dimension "S" is center-line clearance above sealing surface

Series CLR Micro pressure regulators without banjo



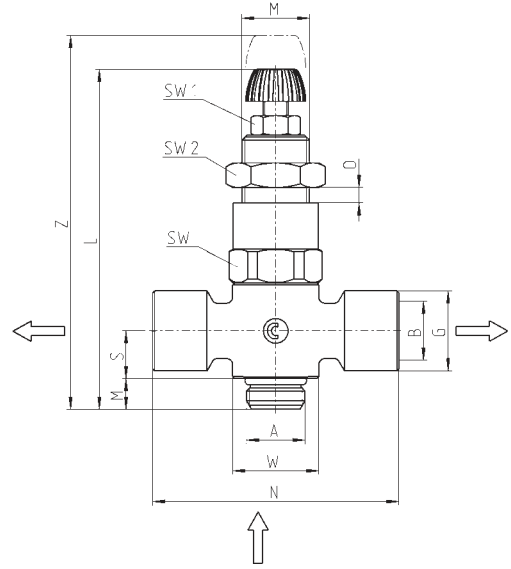
(1) = inlet pressure  
(2) = regulated pressure

Dimensions in millimeters (mm)

Mod.	A	B	C	D	G	h	H	L	M	O	S	W	SW	SW1	SW2	Z
CLR 1/8	G1/8	11	15.5	6	1	5,5	10	52	M11x1	0-6.5	20.5	15.2	14	7	14	59
CLR 1/4	G1/4	15.65	18.5	7	1.25	7	12	59.5	M12x1	0-8	24,5	18.5	17	7	17	68

PRO3 = Regulator with relieving and by-pass valve  
PRO4 = Regulator without relieving and with by-pass valve

Series CLR Micro pressure regulators with double banjo

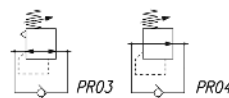
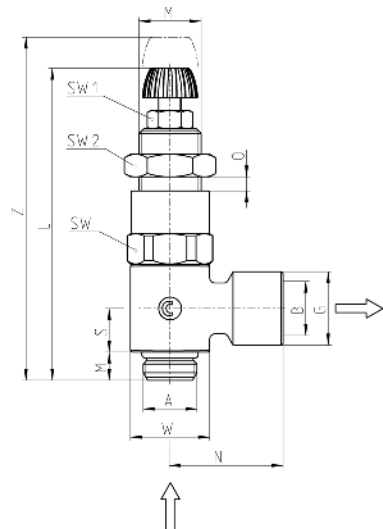


DRAWING NOTE  
 (1) = inlet pressure  
 (2) = regulated pressure

PR03 = Regulator with relieving and by-pass valve  
 PR04 = Regulator without relieving and with by-pass valve

Mod.	A	B	G	H	L	M	N	O	S	W	SW	SW1	SW2	Z
CLR 1/8-1/8D	G1/8	G1/8	13	5	52	M11x1	40	0 ± 6.5	7.75	14	14	7	14	59

Series CLR Micro pressure regulators with banjo



DRAWING NOTE  
 (1) = inlet pressure  
 (2) = regulated pressure

PR03 = Regulator with relieving and by-pass valve  
 PR04 = Regulator without relieving and with by-pass valve

Mod.	A	B	G	H	L	M	N	O	S	W	SW	SW1	SW2	Z
CLR 1/8-1/8L	G1/8	G1/8	13	5	52	M11x1	20	0 ± 6.5	7.75	14	14	7	14	59

# Pressure Microregulators Series TC

New

For applications with oxygen, without relieving  
Ports: cartridge construction, G1/8 and 1/8 NPTF

REGULATORS



- » Compact design
- » High performance
- » Easy to install
- » Materials suitable with several gases

**The new Series TC pressure regulator has been designed to be used for all the applications and equipment where a regulator needs to be integrated into a custom pneumatic circuits (manifolds) or collectors.**

The cartridge design and the compact size allow the regulator to be plugged in a proper seat, making the installation easier and reducing the assembly time. To produce the new TC regulator, materials have been chosen on the basis of their suitability with the gas media. The body in PPS and the seals in FKM ensure thus full compatibility with a wide range of gaseous fluids.

## GENERAL DATA

Construction	compact with pre-formed diaphragm
Materials	see the TABLE OF MATERIALS
Ports	cartridge construction in manifold - G1/8 or 1/8NPTF (aluminium body version only)
Mounting	in-line or cartridge (any position)
Operating temperature	-5°C - 50°C (23 F - 122F)
Inlet pressure	0 - 10 bar (0-145 psi)
Outlet pressure	0 - 0.5 bar (0 - 7.25 psi) 0 - 2 bar (0 - 29 psi) 0 - 3 bar (0 - 43.5 psi) 0 - 4 bar (0 - 58 psi)
Overpressure exhaust	without relieving
Nominal flow	see the FLOW DIAGRAMS
Medium	air, inert and medical gases, OXYGEN
Repeatability	±0.2% FS

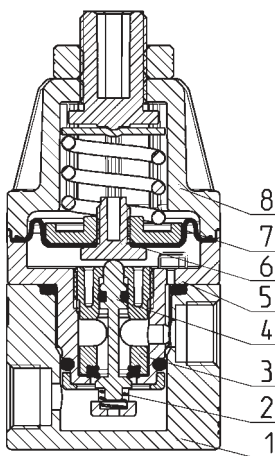


**CODING EXAMPLE**

TC	1	-	R	3	1	-	C	-	V	-	OX2
----	---	---	---	---	---	---	---	---	---	---	-----

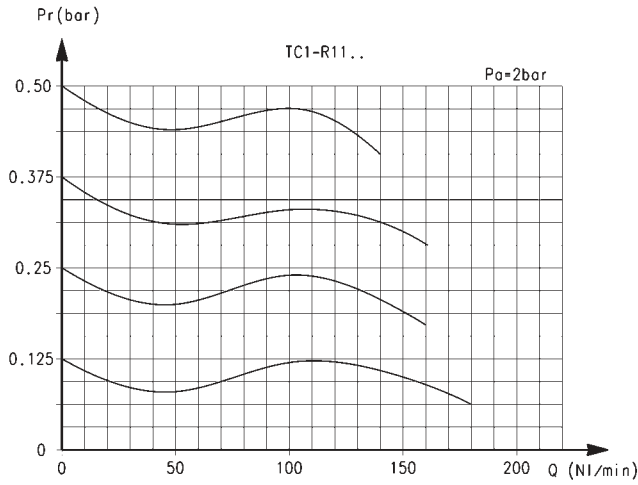
<b>TC</b>	SERIES
<b>1</b>	SIZE
<b>R</b>	REGULATOR
<b>3</b>	WORKING PRESSURE: 1 = 0 - 0.5 bar (0 - 7.25 psi) 2 = 0 - 2 bar (0 - 29 psi) 3 = 0 - 3 bar (0 - 43.5 psi) 4 = 0 - 4 bar (0 - 58 psi)
<b>1</b>	TYPE OF CONSTRUCTION: 1 = without relieving
<b>C</b>	PORTS: C = Cartridge 1/8 = G1/8 1/8TF = 1/8NPTF
<b>V</b>	SEALS MATERIAL: V = FKM
<b>OX2</b>	VERSIONS: OX1 = for oxygen (non-volatile residue lower than 550 mg/m <sup>2</sup> ) OX2 = for oxygen (non-volatile residue lower than 33 mg/m <sup>2</sup> )

**Series TC pressure microregulators - materials**

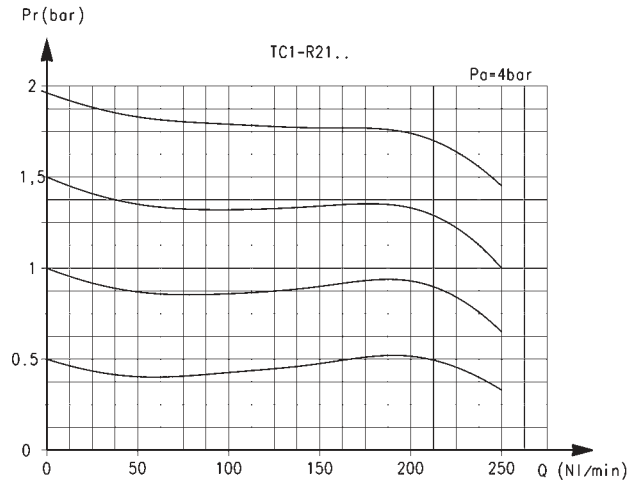


PARTS	MATERIALS
1. Base body	Anodized aluminium
2. Lower spring	Stainless steel
3. Insert	PPS
4. Poppet	Stainless steel
5. Body	PPS
6. Valve guide	PPS
7. Diaphragm	FKM
8. Bell	Polyamide
Seals	FKM

FLOW DIAGRAMS - 0.5 and 2 bar working pressure

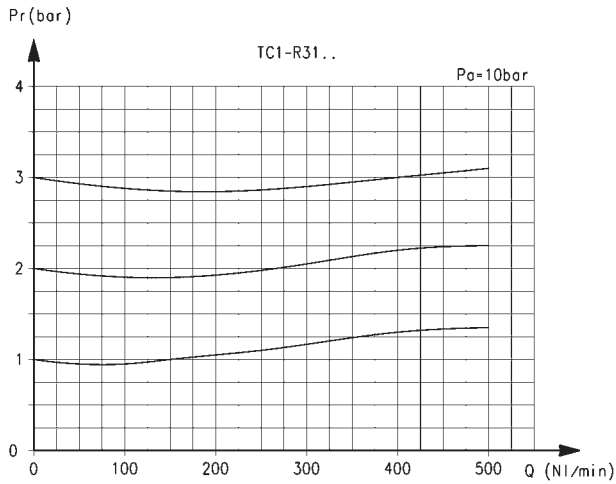


Pr = Regulated pressure (bar)  
Q = Flow (NL/min)  
Pa = Inlet pressure (bar)

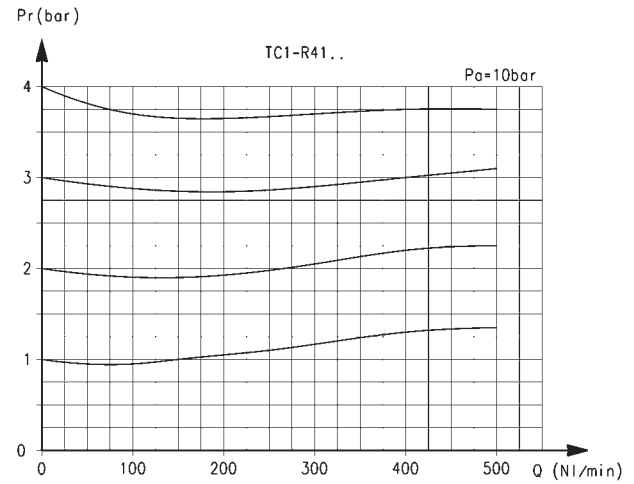


Pr = Regulated pressure (bar)  
Q = Flow (NL/min)  
Pa = Inlet pressure (bar)

FLOW DIAGRAMS - 3 and 4 bar working pressure

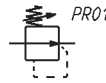
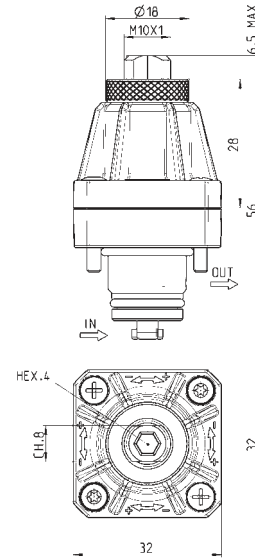


Pr = Regulated pressure (bar)  
Q = Flow (NL/min)  
Pa = Inlet pressure (bar)



Pr = Regulated pressure (bar)  
Q = Flow (NL/min)  
Pa = Inlet pressure (bar)

Series TC cartridge pressure microregulators



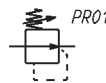
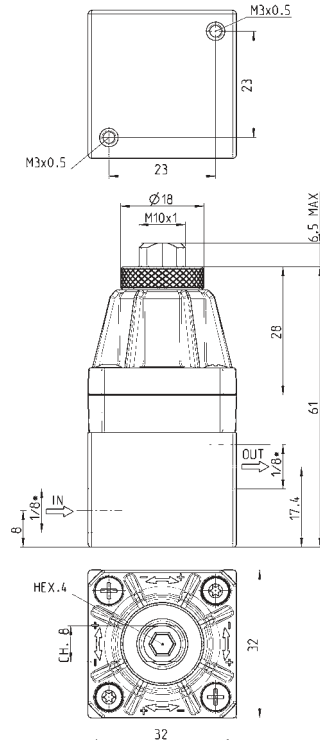
PR01 = regulator without relieving

Mod.

- TC1-R11-C-V-OX1
- TC1-R11-C-V-OX2
- TC1-R21-C-V-OX1
- TC1-R21-C-V-OX2
- TC1-R31-C-V-OX1
- TC1-R31-C-V-OX2
- TC1-R41-C-V-OX1
- TC1-R41-C-V-OX2

Series TC pressure microregulators with aluminium body

\* to choose the type of thread (G1/8 or 1/8 NPTF) see the Coding example

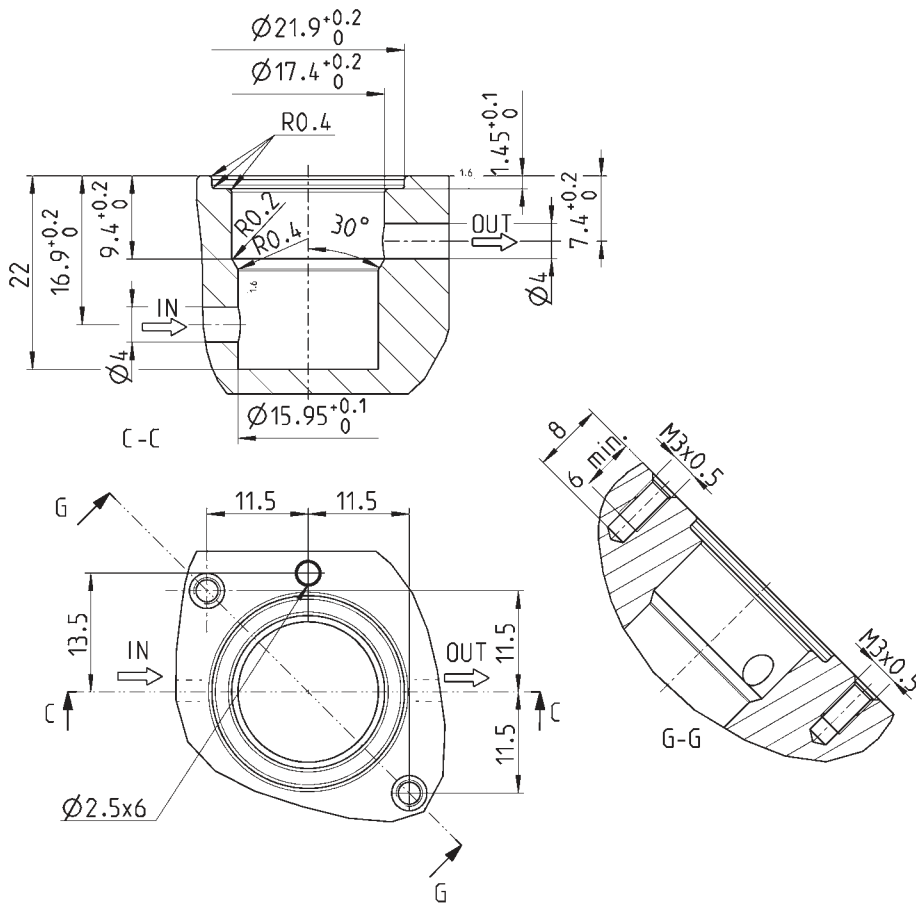


PR01 = regulator without relieving

Mod.

- TC1-R11-\*-V-OX1
- TC1-R11-\*-V-OX2
- TC1-R21-\*-V-OX1
- TC1-R21-\*-V-OX2
- TC1-R31-\*-V-OX1
- TC1-R31-\*-V-OX2
- TC1-R41-\*-V-OX1
- TC1-R41-\*-V-OX2

Seat dimensions for cartridge version



# Pressure Microregulator Series M

Ports 1/8", 1/4" NPTF  
Nipple type



## New Options for Series M:

- » Locked: preset and non-adjustable at a fixed outlet pressure
- » Calibrated: adjustable up to a maximum preset pressure

The Series "M" pressure regulator is available with 1/8" and 1/4" NPTF ports. Its design incorporates a relieving diaphragm so as to allow incremental adjustments as well.

Microregulators are available with optional regulation types: relieving, non-relieving, very sensitive self-relieving (constant air leak) and VS (valve with rapid reverse flow).

The regulator with sensitive self-relieving holds pressure regulation setting with less hysteresis around set point.

The regulator with the "VS" option offers quicker response in the reverse flow direction, as is typically required when a regulator is mounted between a valve and a cylinder.

These regulators, which have very small dimensions, may be mounted directly on pipes or on a console.

## TECHNICAL SPECIFICATIONS

Construction	Diaphragm type
Materials	Nickel-Plated brass body, Buna-N seals, Nylon knob, internals in brass, stainless steel spring
Threaded ports	1/8", 1/4" NPTF
Weight	Kg 0.235 = .5 lbs
Pressure gauge port	1/8" NPTF
Type of mounting	In-line or panel mounting (in any position)
Operating temperature	-5° C - 50° C, (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature

## PNEUMATIC DATA

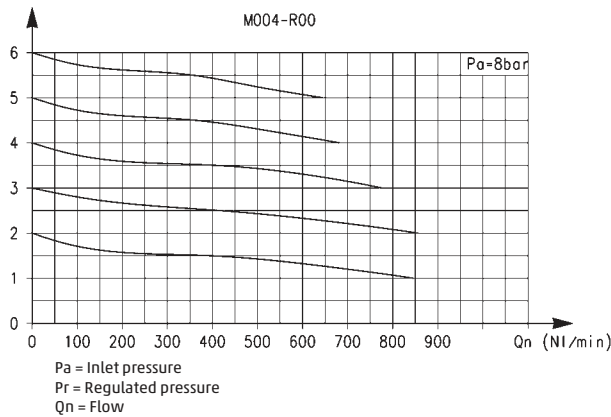
Inlet pressure	0 – 16 bar (0 – 232 psi)
Outlet pressure	0.5 – 10 bar (7.25 – 145 psi), optional outlet pressure ranges offered; see coding
Nominal flow	See graph
Secondary pressure relieving	Standard = self relieving, non-relieving, and fast-response control relieving

CODING EXAMPLE

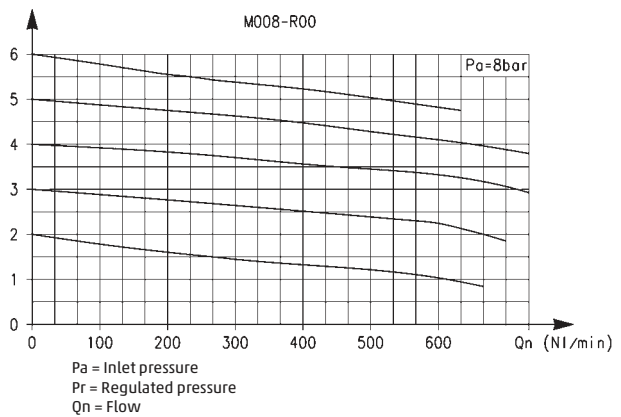
M	0	04	-	R	T	0	2	-	VS	■	-	●	-	TF
<b>M</b>	SERIES													
<b>0</b>	SIZE													
<b>04</b>	PORTS: 08 = 1/8 04 = 1/4													
<b>R</b>	REGULATOR													
<b>T</b>	OPERATING PRESSURE: 0 = 0.5 – 10 bar (7.25 - 145 psi) 1 = 0 – 4 bar (0 - 58 psi) 2 = 0 – 2 bar (0 - 29 psi) 7 = 0.5 – 7 bar (7.25 - 103 psi) T = Calibrated * (adjustable up to a maximum fixed pressure) B = Locked * (fixed at a set pressure; non-adjustable)													
<b>0</b>	DESIGN TYPE: 0 = self relieving diaphragm 1 = non relieving 5 = fast-response control, (metal-to-metal seat),relieving													
<b>2</b>	PRESSURE GAUGE = without pressure gauge (standard) 1 = with pressure gauge 0-2.5 with working pressure 0+2 bar (0-30 psi) 2 = with pressure gauge 0-6 with working pressure 0+4 bar (0-60) 3 = with pressure gauge 0-10 with working pressure 0,5+7 bar (0-102) 4 = with pressure gauge 0-12 with working pressure 0,5+10 bar (0-145 psi)													
<b>VS</b>	REGULATION TYPE "Blank" = without high relief flow VS = high relief flow, rapid reverse flow													
<b>●</b>	* NOTE : If regulator is "calibrated" or "locked," add the inlet pressure ■ and the outlet pressure ● to the end of the model code. ■ = enter the SUPPLY pressure value (in BAR) ● = enter the OUTLET pressure (in BAR) for the locked regulator or the maximum pressure value of the calibrated regulator. Example: Calibrated regulator with Inlet Pressure = 6.3 Bar and Outlet Pressure = 4.5 Bar Complete part number: M004-RT0-6.3-4.5-TF													
<b>TF</b>	PORT TF = NPTF Blank = BSPP thread ports													

FLOW DIAGRAMS

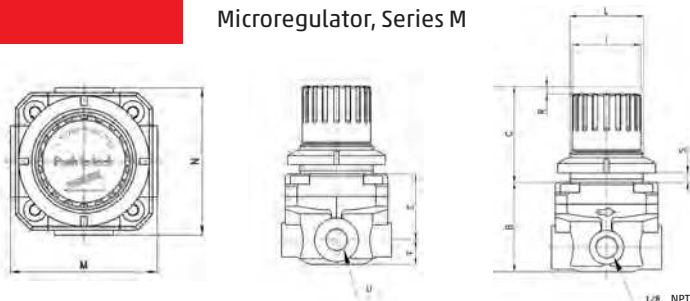
M004-R00TF - 1/4" Model



M008-R00TF - 1/8" Model

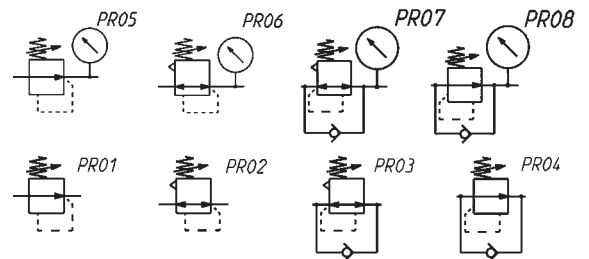


Microregulator, Series M



DIMENSIONS (in inches)

Mod.	A	B	C	F	G	I	L	M	N	R	S	U
M008-R00TF	2.992	1.457	1.535	.394	1.063	1.102	30x1.5	1.772	1.772	.118	0 - .236	1/8" NPTF
M004-R00TF	2.992	1.457	1.535	.394	1.063	1.102	30x1.5	1.772	1.772	.118	0 - .236	1/4" NPTF



- PR01 = reg. without relieving
- PR02 = reg. with relieving
- PR03 = reg. with relieving and by-pass valve
- PR04 = reg. without relieving with by-pass valve
- PR05 = reg. without relieving with pressure gauge
- PR06 = reg. with relieving and pressure gauge
- PR07 = reg. with relieving, by-pass valve and pressure gauge
- PR08 = reg. without relieving with by-pass valve and pressure gauge

# Pressure Microregulators for use with Water and Fluids Series M

New

5

Ports G1/8, G1/4



- » Versions with certified diaphragms and seal materials available
- » Version with non nickel-plated body for applications with water or fluids (gaseous or liquid) available

Series M pressure regulator is available with G1/8 and G1/4 ports.

The versions with non nickel-plated body are equipped with KTW certified seals and can be thus used with water or non aggressive fluids.

REGULATORS

## TECHNICAL SPECIFICATIONS

Construction	Diaphragm type
Materials	body: non nickel-plated brass spring: stainless steel seals: diaphragm in EPDM (H versions only)
Threaded ports	G1/8 - G1/4
Weight	Kg 0.235 = .5 lbs
Pressure gauge port	G1/8
Type of mounting	In-line or panel mounting (in any position)
Operating temperature	-5° C - 50° C, (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature

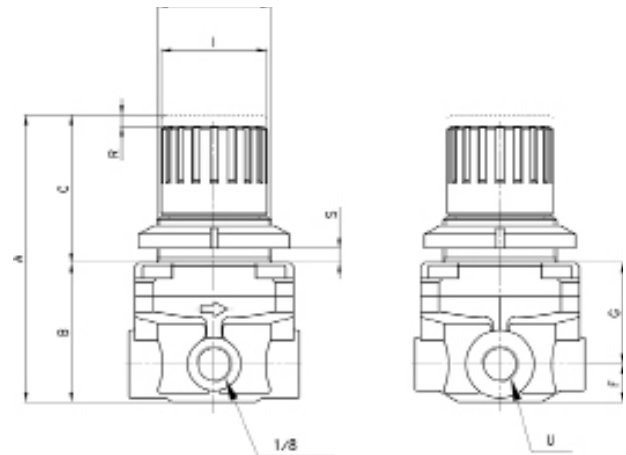
## PNEUMATIC DATA

Inlet pressure	0 – 16 bar (0 – 232 psi)
Outlet pressure	0.5 – 10 bar (7.25 – 145 psi), optional outlet pressure ranges offered
Nominal flow	air: Qn 480 (NL/min) water: Kv 0.42 (N3h)

CODING EXAMPLE

M 0 04 - R 0 1 - H

<b>M</b>	SERIES
<b>0</b>	SIZE
<b>04</b>	PORTS: 08 = G1/8 04 = G1/4
<b>R</b>	REGULATOR
<b>0</b>	OPERATING PRESSURE: 0 = 0.5 – 10 bar (7.25 - 145 psi)
<b>0</b>	DESIGN TYPE: 1 = non relieving
	VERSION: H = for use with water F = for use with various fluids



DIMENSIONS (in inches)

Mod.	A	B	C	F	G	I	L	M	N	R	S	U
M008-R01-H	76	37	39	10	27	28	M30x1.5	45	45	3	0-6	G1/8
M008-R01-F	76	37	39	10	27	28	M30x1.5	45	45	3	0-6	G1/8
M004-R01-H	76	37	39	10	27	28	M30x1.5	45	45	3	0-6	G1/4
M004-R01-F	76	37	39	10	27	28	M30x1.5	45	45	3	0-6	G1/4



# Pressure Microregulators Series T

5

Ports 1/8" and 1/4" NPTF



- » Extremely lightweight
- » Compact
- » In-line or console mounting

REGULATORS

Series T pressure regulators are available with 1/8 and 1/4 brass connections.

A self-relieving piston has been incorporated into the standard design.

Non-relieving versions are also available.

All models are equipped with a valve enabling rapid reverse flow (VS) which is useful when a regulator should be inserted between the valve and cylinder (or volume chamber) without any negative influence on the normal exhaust.

## TECHNICAL SPECIFICATIONS

Construction	piston -type regulation, ( not diaphragm )
Materials	Nylon Composite Body, Buna-N seals, Nylon knob, internals in brass
Threaded ports	1/8", 1/4" NPTF
Weight	g 95 , 0.2 lbs
Pressure gauge port	1/8" NPTF
Type of mounting	In-line or panel mounting (in any position)
Operating temperature	-5° C - 50° C, (23° F - 122° F), with Dew Point of air at least 2° C (4° F) below the min working temperature

## PNEUMATIC DATA

Inlet pressure	0 - 12 bar , 0 - 175 psi
Outlet pressure	0.5 -10 bar (7.25 - 145 psi), optional outlet pressure ranges offered
Nominal flow	See graph
Secondary pressure relieving	Standard = self relieving, non-relieving, and fast-response control relieving

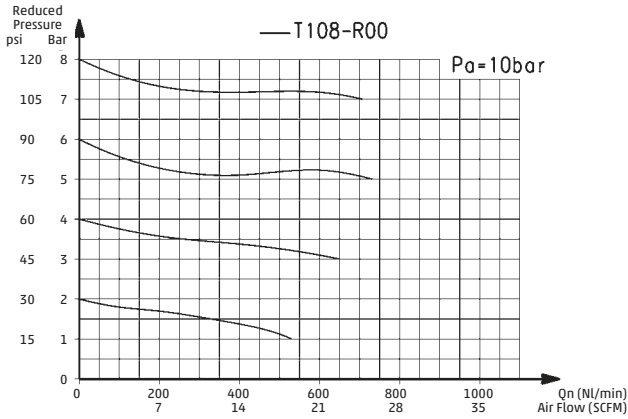
**CODING EXAMPLE**

T	1	08	-	R	0	0	-	TF
---	---	----	---	---	---	---	---	----

<b>T</b>	SERIES
<b>1</b>	SIZE
<b>08</b>	PORTS: 08 = 1/8 04 = 1/4
<b>R</b>	REGULATOR
<b>0</b>	OPERATING PRESSURE: 0 = 0,5 - 10 (7.25 - 145 psi) 1 = 0 - 4 (0 - 58 psi) 2 = 0 - 2 (0 - 29 psi) 7 = 0 - 7 (0 - 103 psi)
<b>0</b>	DESIGN TYPE: 0 = self-relieving 1 = non relieving
	PRESSURE GAUGE: Blank = without pressure gauge 1 = with pressure gauge 0-2.5 bar with working pressure 0-2 bar (0-30 psi) 2 = with pressure gauge 0-6 bar with working pressure 0-4 bar (0-60 psi) 3 = with pressure gauge 0-10 bar with working pressure 0-7 bar (0-102 psi) 2 = with pressure gauge 0-12 bar with working pressure 0-10 bar (0-145 psi)
<b>TF</b>	PORT TF = NPTF Blank = BSPP thread ports

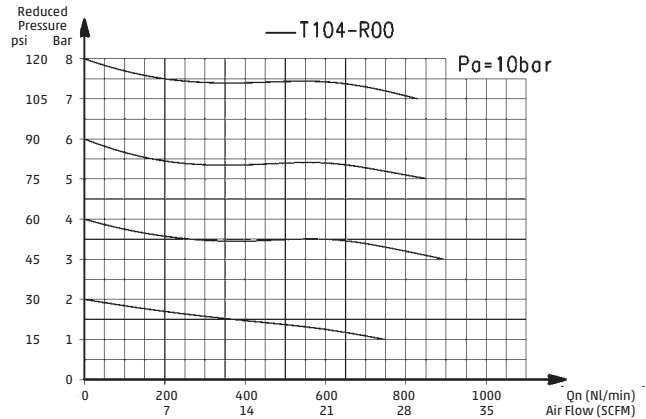
**FLOW DIAGRAMS**

**T108-R00TF**



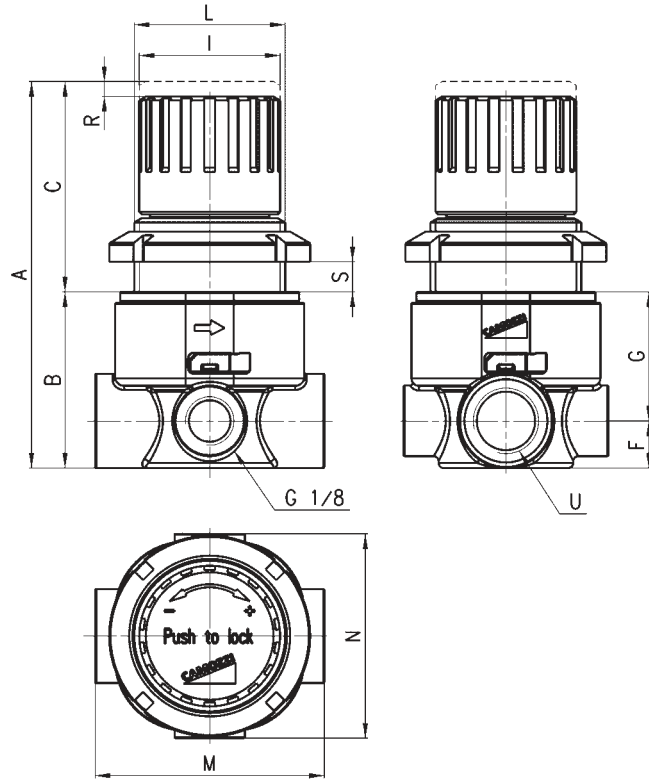
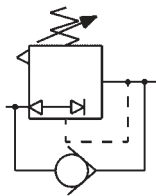
Pa = Inlet pressure  
Pr = Regulated pressure  
Qn = Flow

**T104-R00TF**



Pa = Inlet pressure  
Pr = Regulated pressure  
Qn = Flow

Pressure microregulator Series T

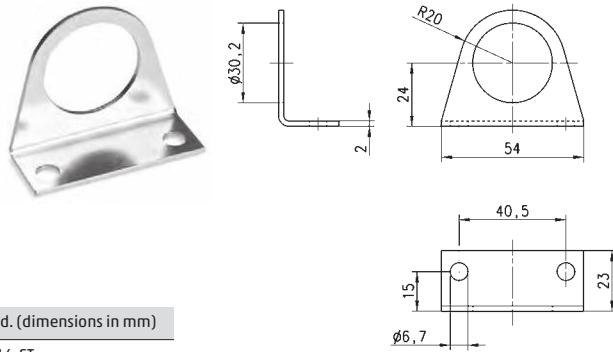


DIMENSIONS (in inches)												
Mod.	A	B	C	F	G	I	L	M	N	R	S	U (NPTF)
T108-R00TF	3.032	1.378	1.654	0.375	1.00	1.102	M30X1,5	1.811	1.614	0.118	0.276	1/8
T104-R00TF	3.032	1.378	1.654	0.375	1.00	1.102	M30X1,5	1.811	1.614	0.118	0.276	1/4

# Mounting Brackets, Accessories and Kits - Series M, N, and T

## Mounting bracket, Series MC-M-N-T

Mounting bracket for Regulators and Filter-Regulators (1/8 & 1/4) - zinc-plated steel bracket

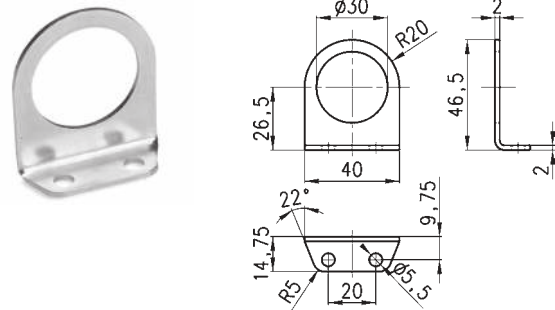


Mod. (dimensions in mm)

C114-ST

## Mounting bracket, Series MC-M-N-T

Mounting bracket for Regulators and Filter-Regulators (1/8 & 1/4) - zinc-plated steel bracket

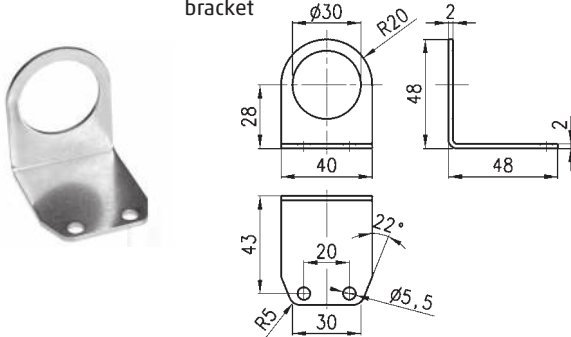


Mod. (dimensions in mm)

C114-ST/1

## Mounting bracket Series MC-M-N-T

Mounting bracket for Regulators and Filter-Regulators, (1/8 & 1/4) - zinc-plated steel bracket

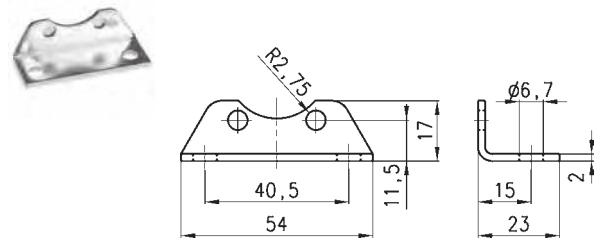


Mod. (dimensions in mm)

C114-ST/2

## Mounting bracket Series Series N

Mounting bracket (for N204 Filters and Lubricators) (complete with 2 screws M5x6 and bracket, zinc-plated steel).



Mod. (dimensions in mm)

N204-ST

# Adjustable Pressure Relief Valve Series VMR

5

## Valve with adjustable exhaust Mod. VMR



» Mod. VMR: maintains system pressure at a constant set point. In case of system, tank or line over-pressure state, will rapidly exhaust to atmosphere until set point is reached thereby closing off exhaust flow from the VMR relief valve

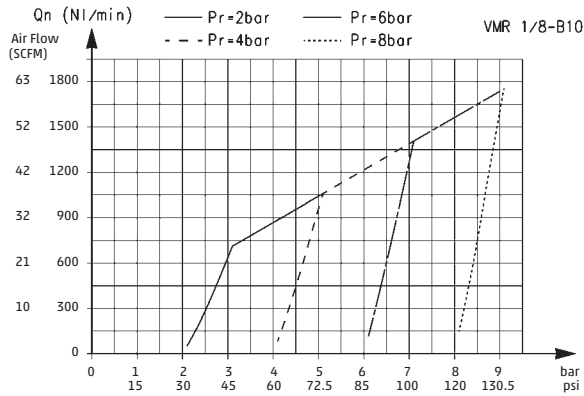
REGULATORS

The adjustable valves Mod. VMR 1/8-B10 allow to maintain tank/capacity at a constant pressure value and thus enable a quick exhaust to atmosphere in case of an internal overpressure.

### GENERAL DATA

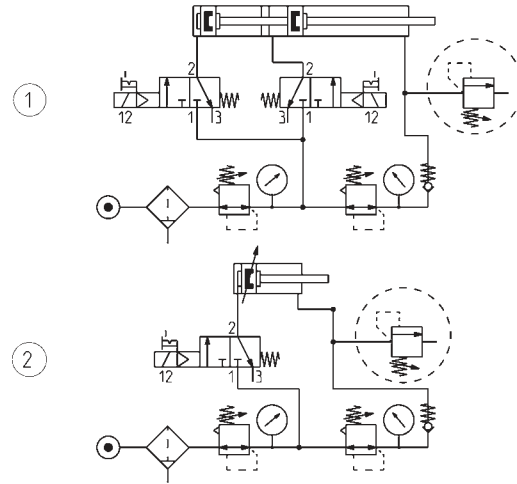
Valve group	automatic valves
Construction	Mod. VMR: diaphragm type
Materials	Mod. VMR: brass body - zinc-plated steel spring - NBR seals
Mounting	in any position
Ports	1/8" G ( BSPP ), NPTF available upon special order
Operating temperature	Mod. VMR: -5°C - 50°C ( 23 deg F - 122 deg F ), with Dew Point of air at least 2° C ( 4° F ) below the min working temperature
Fluid	filtered air, without lubrication. If lubricated air is used, it is recommended to use ISO VG32 oil. Once applied the lubrication should never be interrupted.

VALVE Mod. VMR 1/8-B10 - FLOW DIAGRAM and FUNCTIONING SCHEMES



FLOW DIAGRAM

Pa = Inlet pressure (i.e line pressure from cylinder or tank)  
 Pr = Regulated pressure (i.e. set point for desired exhaust limit)  
 Qn = Flow (i.e. exhaust that develops as system line pressure exceeds set point maximum desired)

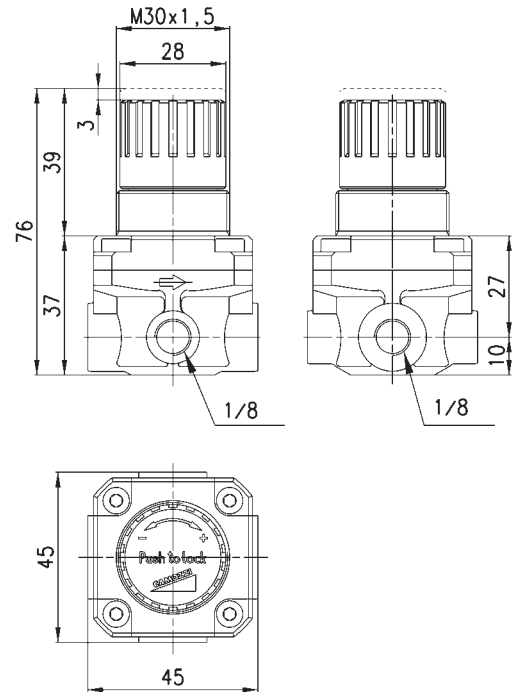
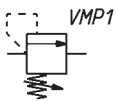


FUNCTIONING SCHEME 1: overpressure exhaust in a cylinder chamber or in a tank when the set value has been exceeded.

FUNCTIONING SCHEME 2: VMR valve with maximum adjustable pressure allows pressure in a cylinder chamber or in tank to exhaust in the atmosphere every time the set regulation value is exceeded.

Valve with maximum adjustable pressure Mod. VMR 1/8-B10

Working pressure: 1 bar - 8 bar



Mod.  
VMR 1/8-B10

# Precision Regulators with Manual Override Series PR

New

5

Ports: G1/4 and G3/8



- » High precision
- » 35% higher flow
- » Triple diaphragm construction
- » Compact dimensions
- » Adjustment lock
- » Removable adjustment knob
- » Four ranges of pressure

REGULATORS

Series PR precision pressure regulators work on a three diaphragms force-balance principle which allows them to react even to the smallest changes in pressure that can occur during operation.

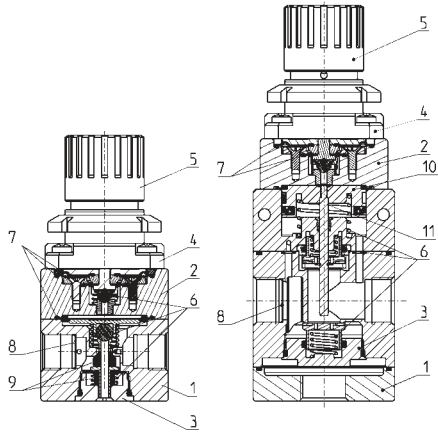
## GENERAL DATA

Construction	compact, multi-diaphragm type
Materials	see the following page
Ports	Size 1: G1/4, Size 2: G1/4, G3/8
Mounting	vertical in-line, wall or panel mounting (in any position)
Working temperature	from 0°C to 50°C (32°F - 122°F)
Inlet pressure	0.1 - 12 bar (1.45 - 174 psi)
Outlet pressure	0.05 - 10 bar (0.7 - 145 psi) 0.05 - 2 bar (0.7 - 29 psi) 0.05 - 4 bar (0.7 - 58 psi) 0.05 - 7 bar (0.7 - 101.5) standard
Overpressure exhaust	with relieving (standard)
Nominal flow	see flow diagrams (following pages)
Media	filtered and not lubricated compressed air according to DIN ISO 8573-1 Classes 1-3-2
Hysteresis	20mbar (0.29 psi)
Repeatability	±0.2% FS
Bleed air consumption	≤ 5 l/min

## CODING EXAMPLE

PR	1	04	-	M	07	TF
<b>PR</b>	SERIES					
<b>1</b>	SIZE: 1 = Size 1 2 = Size 2					
<b>04</b>	PORTS: 04 = G1/4 38 = G3/8 (size 2 only)					
<b>M</b>	TYPE OF ADJUSTMENT: M = manual					
<b>07</b>	OPERATING PRESSURE (1 bar = 14.5 psi): 00 = 0.05 - 10 bar (0.7 - 145 psi) 02 = 0.05 - 2 bar (0.7 - 29 psi) 04 = 0.05 - 4 bar (0.7 - 58 psi) 07 = 0.05 - 7 bar (0.7 - 101.5)					
<b>TF</b>	PORT TF = NPTF Blank = BSP thread ports					

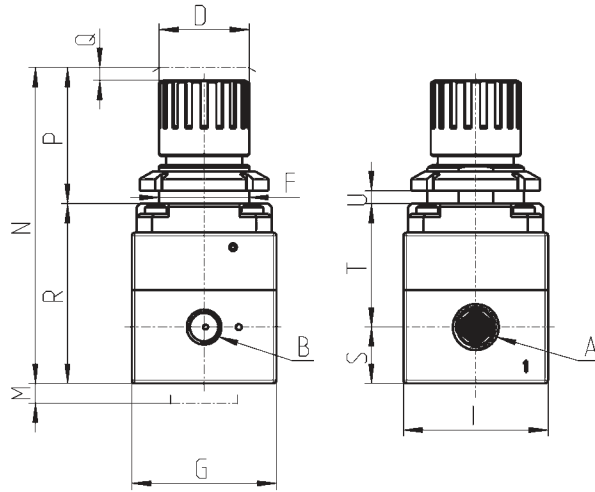
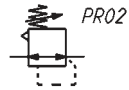
## Series PR precision regulators - materials



PARTS	MATERIALS
1 = Body	Anodized aluminium
2 = Intermediate body	Aluminium
3 = Valve holder plug	Brass
4 = Bell	Polyamide
5 = Regulator knob	Polyamide
6 = Springs	Stainless steel
7 = Diaphragms	NBR
8 = Filters	Stainless steel
9 = Seals	NBR
10 = Piston	Aluminum
11 = Stem	Stainless Steel
O-ring	NBR



Series PR precision regulators - Size 1 dimensions

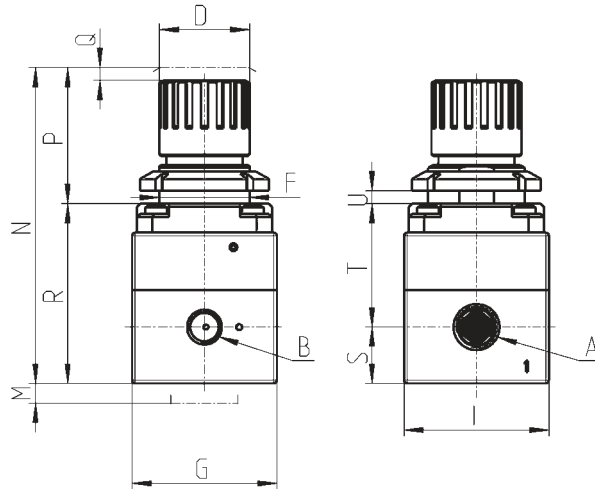


DIMENSIONS

Mod.	A	B	D	F	G	I	M	N	P	Q	R	S	T	U	Weight (Kg)
PR104-M*	G1/4	G1/8	28	30	45	45	25	96	40	2	56	17.5	38.5	0-6	0.35

\* to complete part number, add operating pressure per coding example

Series PR precision regulators - Size 2 dimensions

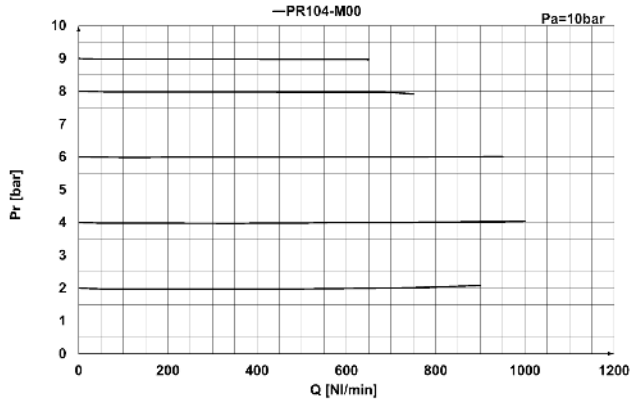


DIMENSIONS

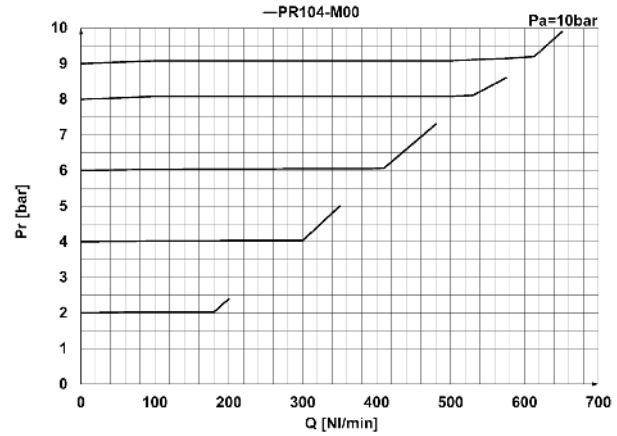
Mod.	A	B	D	F	G	I	M	N	P	Q	R	S	T	U	Weight (Kg)
PR204-M*	G1/4	G1/8	28	30	50	50	25	140	40	2	101.8	35.5	66.3	0-6	0.645
PR238-M*	G3/8	G1/8	28	30	50	50	25	140	40	2	101.8	35.5	66.3	0-6	0.645

\* to complete part number, add operating pressure per coding example

**FLOW DIAGRAMS Mod. PR104-M00**

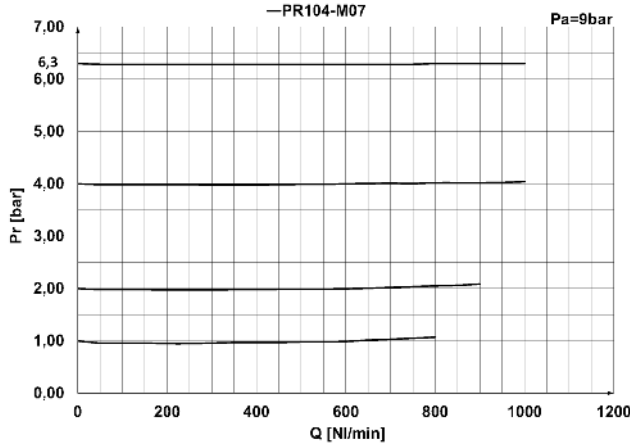


Pr = Regulated pressure (bar)  
 Q = Flow (NL/min)  
 Pa = Inlet pressure (bar)

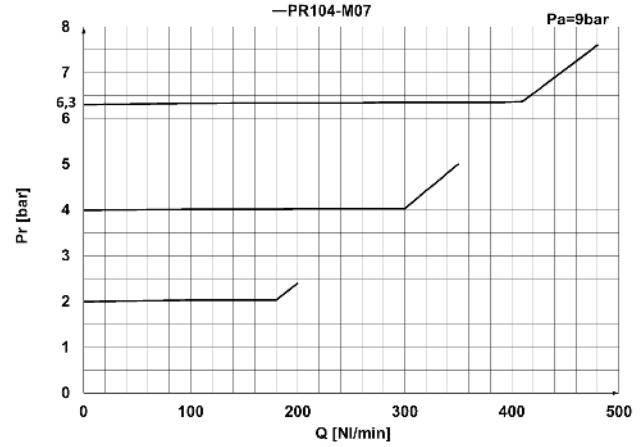


**EXHAUST FLOW**  
 Pr = Regulated pressure (bar)  
 Q = Flow (NL/min)  
 Pa = Inlet pressure (bar)

**FLOW DIAGRAMS Mod. PR104-M07**

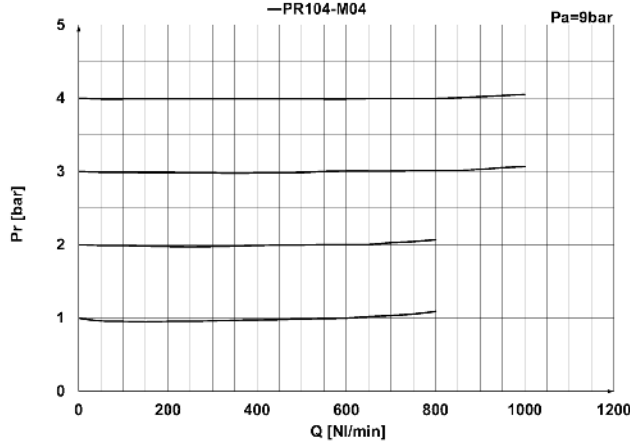


Pr = Regulated pressure (bar)  
 Q = Flow (NL/min)  
 Pa = Inlet pressure (bar)

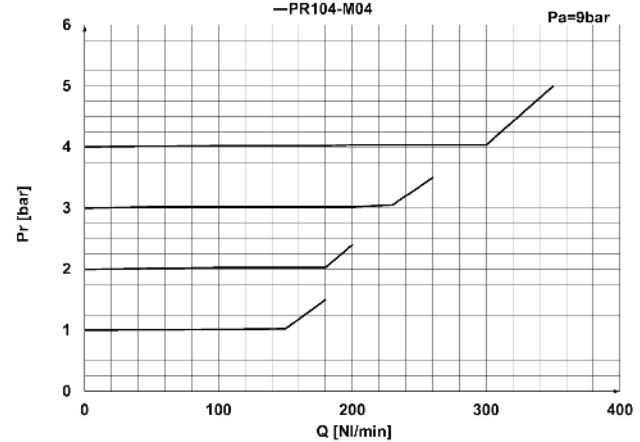


**EXHAUST FLOW**  
 Pr = Regulated pressure (bar)  
 Q = Flow (NL/min)  
 Pa = Inlet pressure (bar)

**FLOW DIAGRAMS Mod. PR104-M04**

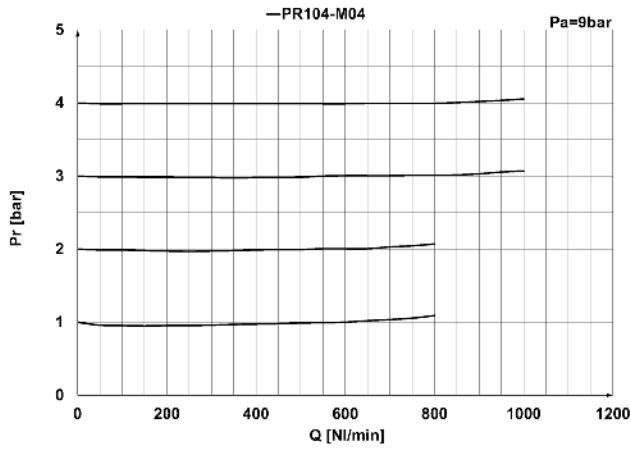


Pr = Regulated pressure (bar)  
 Q = Flow (NL/min)  
 Pa = Inlet pressure (bar)

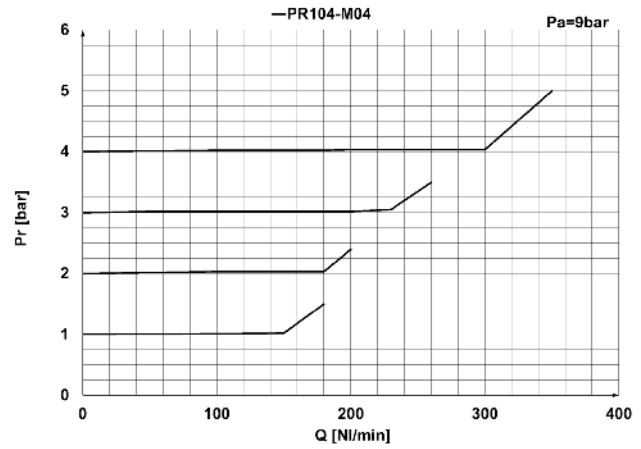


**EXHAUST FLOW**  
 Pr = Regulated pressure (bar)  
 Q = Flow (NL/min)  
 Pa = Inlet pressure (bar)

FLOW DIAGRAMS Mod. PR104-M02

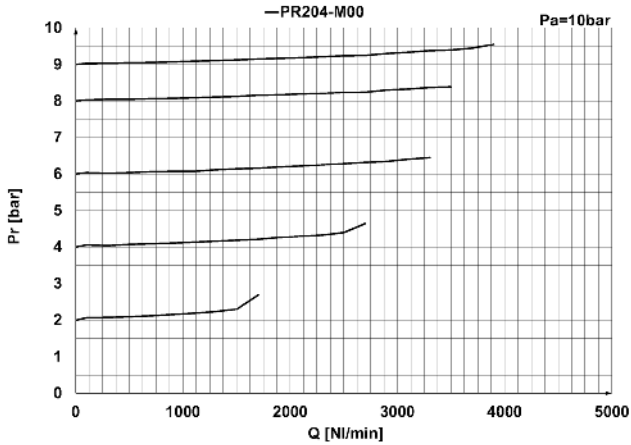


Pr = Regulated pressure (bar)  
 Q = Flow (NL/min)  
 Pa = Inlet pressure (bar)

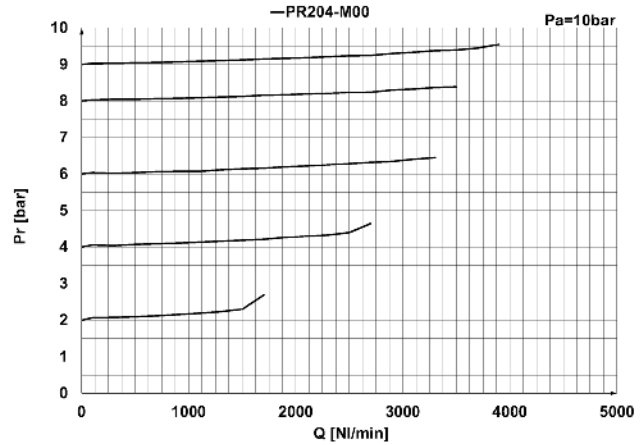


EXHAUST FLOW  
 Pr = Regulated pressure (bar)  
 Q = Flow (NL/min)  
 Pa = Inlet pressure (bar)

FLOW DIAGRAMS Mod. PR204-M00

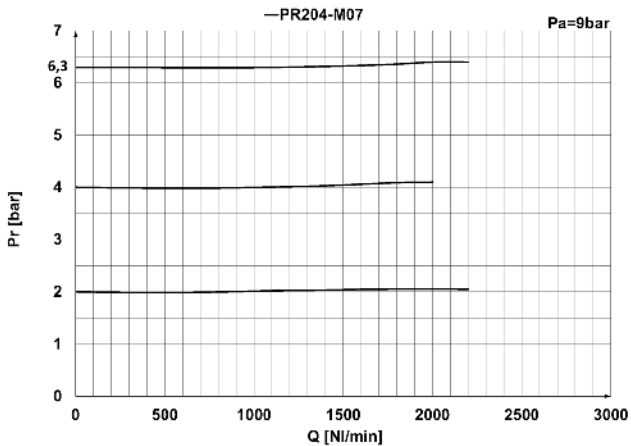


Pr = Regulated pressure (bar)  
 Q = Flow (NL/min)  
 Pa = Inlet pressure (bar)

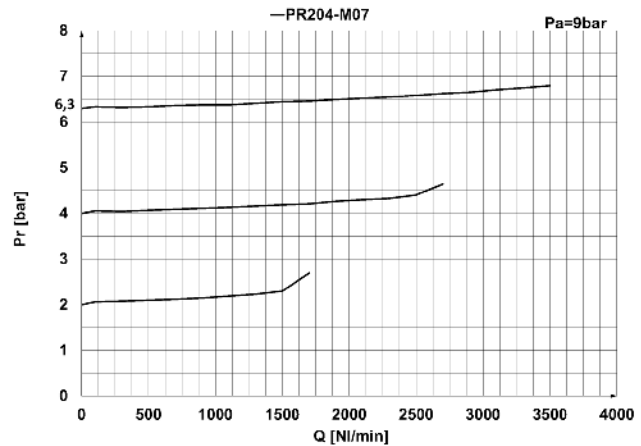


EXHAUST FLOW  
 Pr = Regulated pressure (bar)  
 Q = Flow (NL/min)  
 Pa = Inlet pressure (bar)

FLOW DIAGRAMS Mod. PR204-M07

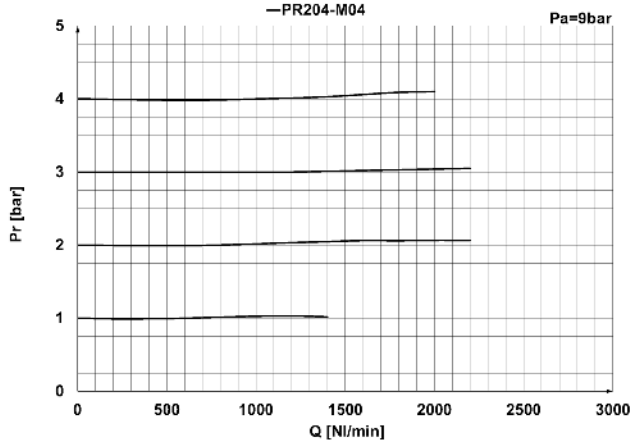


Pr = Regulated pressure (bar)  
 Q = Flow (NL/min)  
 Pa = Inlet pressure (bar)

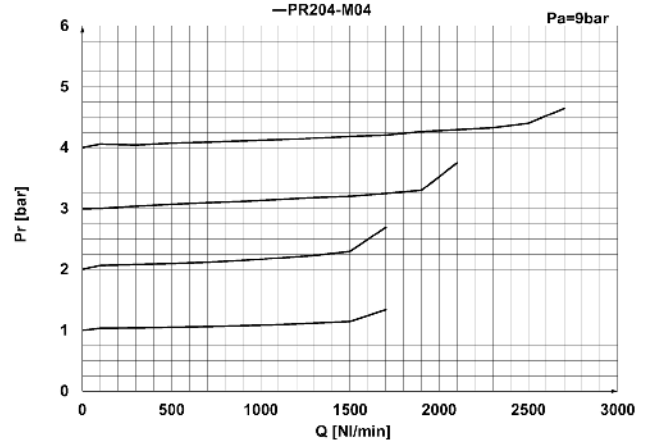


EXHAUST FLOW  
 Pr = Regulated pressure (bar)  
 Q = Flow (NL/min)  
 Pa = Inlet pressure (bar)

**FLOW DIAGRAMS Mod. PR204-M04**

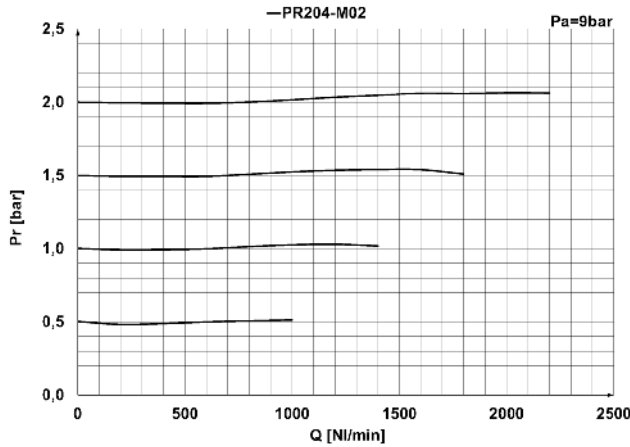


Pr = Regulated pressure (bar)  
 Q = Flow (NL/min)  
 Pa = Inlet pressure (bar)

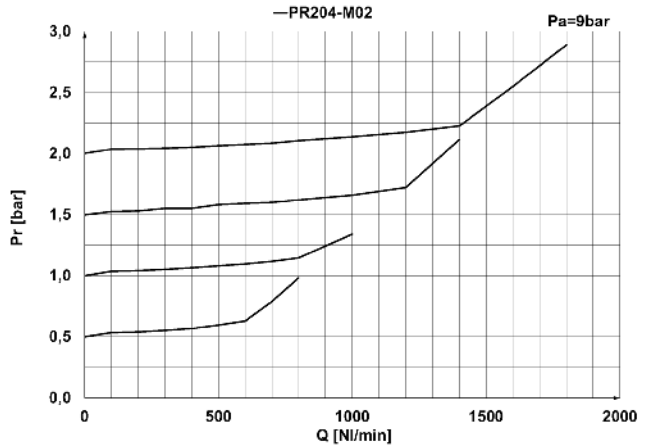


**EXHAUST FLOW**  
 Pr = Regulated pressure (bar)  
 Q = Flow (NL/min)  
 Pa = Inlet pressure (bar)

**FLOW DIAGRAMS Mod. PR204-M02**

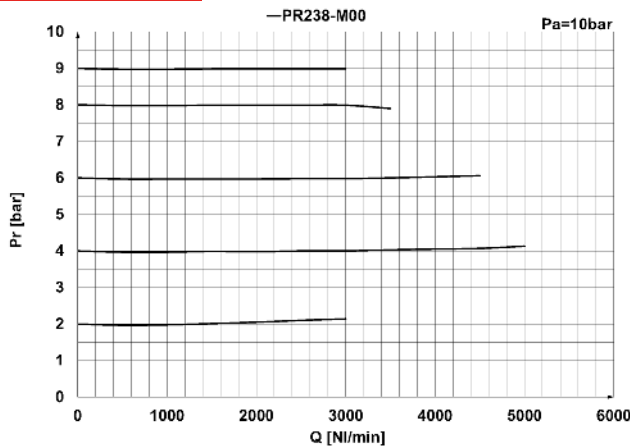


Pr = Regulated pressure (bar)  
 Q = Flow (NL/min)  
 Pa = Inlet pressure (bar)

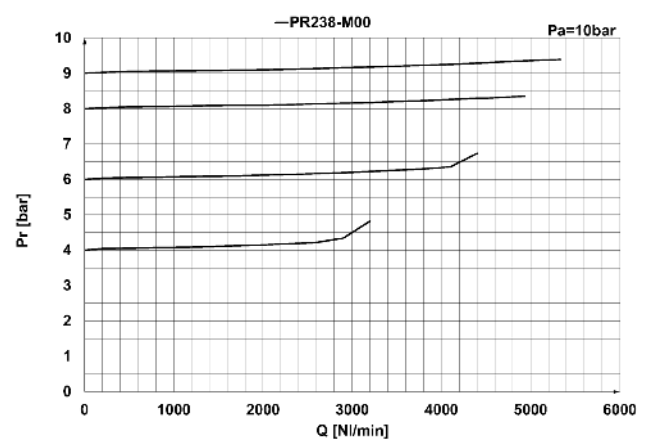


**EXHAUST FLOW**  
 Pr = Regulated pressure (bar)  
 Q = Flow (NL/min)  
 Pa = Inlet pressure (bar)

**FLOW DIAGRAMS Mod. PR238-M00**

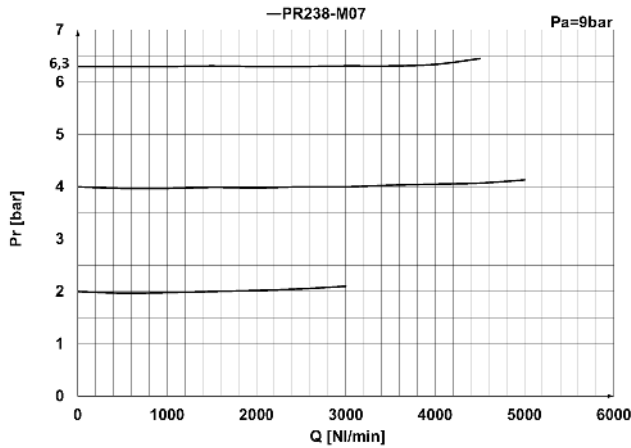


Pr = Regulated pressure (bar)  
 Q = Flow (NL/min)  
 Pa = Inlet pressure (bar)

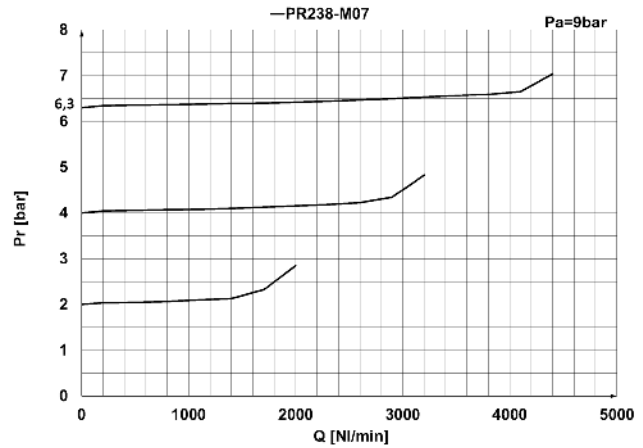


**EXHAUST FLOW**  
 Pr = Regulated pressure (bar)  
 Q = Flow (NL/min)  
 Pa = Inlet pressure (bar)

**FLOW DIAGRAMS Mod. PR238-M07**

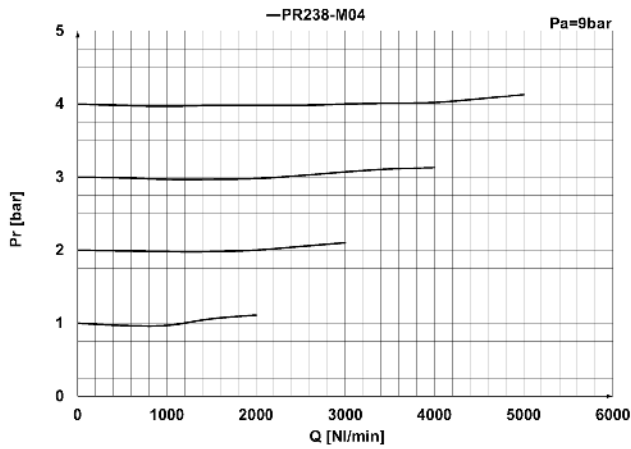


Pr = Regulated pressure (bar)  
Q = Flow (NL/min)  
Pa = Inlet pressure (bar)

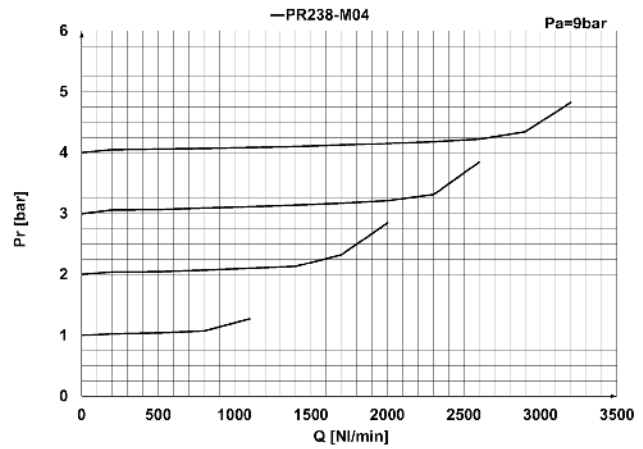


EXHAUST FLOW  
Pr = Regulated pressure (bar)  
Q = Flow (NL/min)  
Pa = Inlet pressure (bar)

**FLOW DIAGRAMS Mod. PR238-M04**

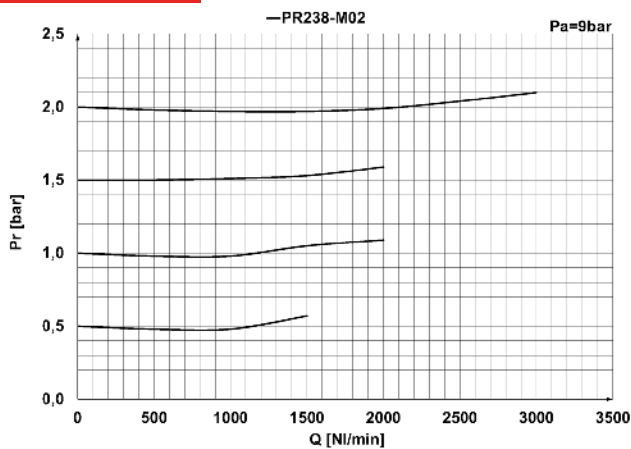


Pr = Regulated pressure (bar)  
Q = Flow (NL/min)  
Pa = Inlet pressure (bar)

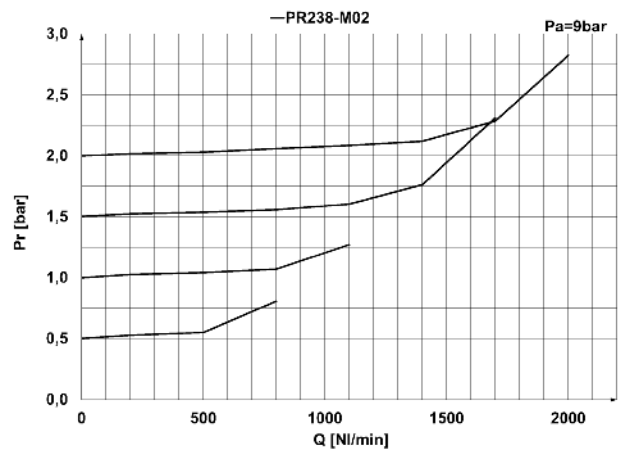


EXHAUST FLOW  
Pr = Regulated pressure (bar)  
Q = Flow (NL/min)  
Pa = Inlet pressure (bar)

**FLOW DIAGRAMS Mod. PR238-M02**



Pr = Regulated pressure (bar)  
Q = Flow (NL/min)  
Pa = Inlet pressure (bar)



EXHAUST FLOW  
Pr = Regulated pressure (bar)  
Q = Flow (NL/min)  
Pa = Inlet pressure (bar)

# ACCESSORIES FOR SERIES M AND T MICROREGULATORS



Mounting bracket  
Mod. C114-ST



Mounting bracket  
Mod. C114-ST/1



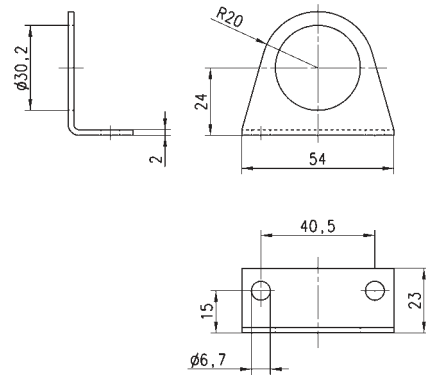
Mounting bracket  
Mod. C114-ST/2



Systems of rapid connections designed to make mounting easier.

**Mounting bracket Mod. C114-ST**

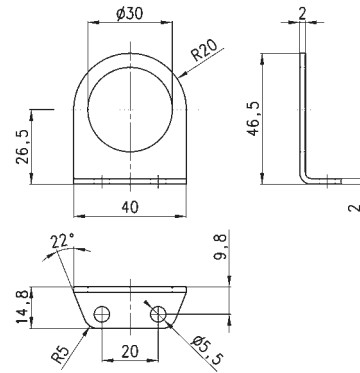
The kit is supplied with:  
1x zinc-plated steel bracket.



Mod.
C114-ST

**Mounting bracket Mod. C114-ST/1**

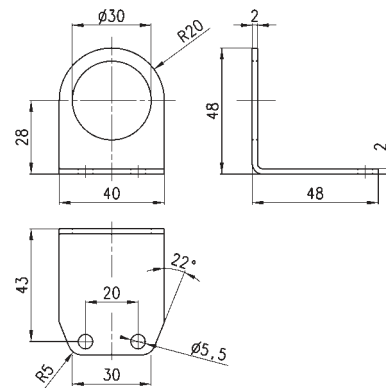
The kit is supplied with 1 zinc-plated steel bracket.



Mod.
C114-ST/1

**Mounting bracket Mod. C114-ST/2**

The kit is supplied with 1 zinc-plated steel bracket.







Mod.
C114-ST/2





# 6 Proportional Technology

Page

<p>Series K8P <b>NEW</b></p>		<p>Electronic Proportional Micro Regulators</p>	<p><b>229</b></p>
<p>Series PRE <b>NEW</b></p>		<p>Proportional Pressure Regulator with CoilVision technology</p>	<p><b>235</b></p>
<p>Series LR <b>NEW</b></p>		<p>Digital Proportional Servo Valves</p>	<p><b>249</b></p>
<p>Series MX Pro <b>NEW</b></p>		<p>Electronic Proportional Regulators</p>	<p><b>258</b></p>

PROPORTIONAL TECHNOLOGY

# Electronic Proportional Micro Regulator Series K8P


 New

Proportional regulator for pressure control



- » High precision
- » Reduced response times
- » Minimum consumption
- » Self-regulation function
- » Flexibility of use
- » Compact design

The K8P regulator adjusts the outlet pressure through the operation of two K8 monostable valves according to the inlet signal and to the retroactivity of the internal pressure sensor. A self-adjusting function has been integrated into the regulator control algorithm to guarantee the highest levels of performance apart from the volume connected.

Series K8P electronic proportional micro regulators have evolved from our Series K8 mini-solenoid valves. Series K8P regulators guarantee excellent pressure regulation, fast response times, self-regulation and low energy consumption.

Series K8P is a high performance proportional pressure regulator which is suitable for use in all applications where high precision, quick response times and low consumption are required.

## GENERAL DATA

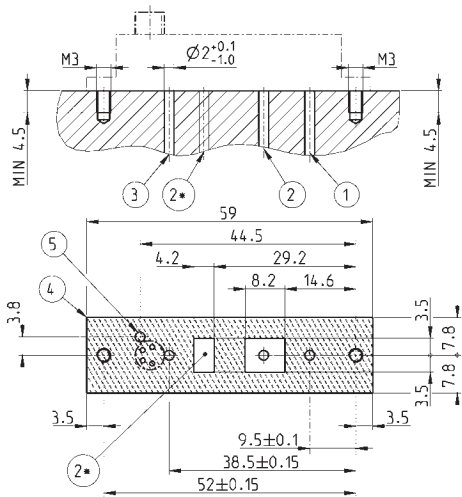
Fluids	filtered and unlubricated compressed air according to ISO 8573-1 class 7.4.4; inert gas; oxygen
Max inlet pressure (Range of regulated pressure)	11 bar inlet (0.5 - 10 bar regulated) 8 bar inlet (0.35 - bar regulated) 4 bar inlet (0.15 - 3 bar regulated) 1.5 bar inlet (0.05 - 1 bar regulated)
Operating Temperature	0 - +50°C
Analogical input	0 - 10 V DC    4 - 20 mA    Ripple ≤ 0.2%
Analogical output	0.5 - 9.5 V [ Feedback ]
Analog input impedance	20,000 Ω for versions 0 - 10V; 250 Ω for versions 4 - 20 mA
Maximum flow	12 l/min with regulated pressure = 6 bar (IN Pres. 10 bar) 6 l/min with regulated pressure = 3 bar (IN Pres. 4 bar) 8 l/min with regulated pressure = 7 bar (IN Pres. 8 bar) 2 l/min with regulated pressure = 1 bar (IN Pres. 1.5 bar)
Supply / Use	24 V - ~1 W
Function	3/2 NC
Linearity	≤ ± 1% FS
Hysteresis	±0.5% FS
Resolution	±0.5% FS (referred to the command signal)
Repeatability	±0.5% FS
Minimal set point change	50mV => 50mB ( 10 bar ); 100mV = 30mB ( 3 bar )
Electrical connection	M8 4 Pin ( Male )
Protection Class	IP65 (with standard sub-base or for stand-alone) IP51 (with light sub-base or with pressure remote reading)

**CODING EXAMPLE**

**K8P - 0 - - D 5 2 2 - 0**

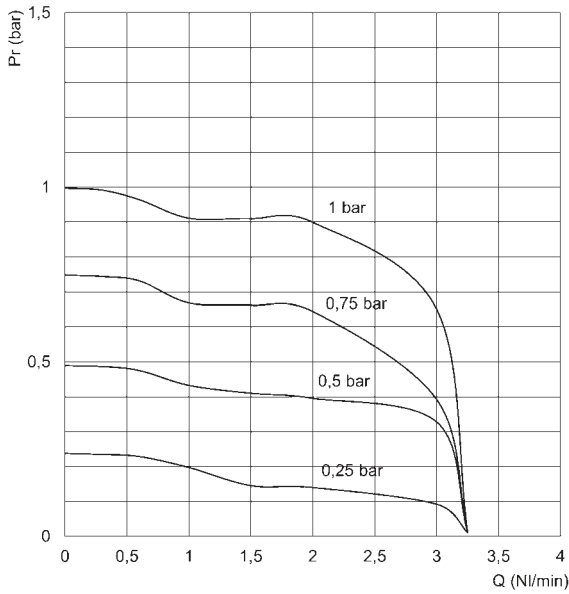
<b>K8P</b>	SERIES
<b>0</b>	BODY DESIGN: 0 = Stand alone S = Standard Sub-base L = Light Sub-base T = Light Sub-base for the pressure remote reading
<b>D</b>	WORKING PRESSURE: D = 0 -10 bar E = 0 - 3 bar F = 0 -7 bar B = 0 - 1 bar
<b>5</b>	VALVE FUNCTIONS: 5 = 3/2-way NC
<b>2</b>	COMMAND: 2 = 0-10 V DC 3 = 4-20 mA
<b>2</b>	OUTPUT SIGNAL: 2 = 0-10 V
<b>0</b>	CABLE LENGTH: 0 = without cable 2F = straight cable, 2 m 2R = right angle cable (90 degrees), 2 m 5F = straight cable, 5 m 5R = right angle cable (90 degrees), 5 m
	VERSIONS: blank = standard OX1 = with use for oxygen (in compliance with ASTM G93-03 Level E)
	APPLICATIONS  The K8P proportional regulator can be used as a pilot valve to control the opening of high flow valves or to check the high flow pressure regulators proportionally (version with sub-base for the pressure remote reading). It enables proportional control of power in lifting systems and can be used with inert gas to maintain a constant pressure in pneumatic cylinders or expansion valve chambers. It has also been designed to maintain a constant pressure during the pulling power applied to the wires in winding machines, to modulate pressure during the smoothing process in woodworking machines or to adjust the opening of diaphragm valves.

**Interface for single use without sub-base**



DRAWING LEGEND	
1 = Supply	Pneumatic connection
2 = Outlet	Pneumatic connection
2* = area for possible positioning of outlet port 2	Do not exceed the indicated outline
3 = Exhaust	Pneumatic connection
4 = OUTLET DIMENSION	
5 = VENT PORT FOR IP65	Optional when a OR seal is mounted

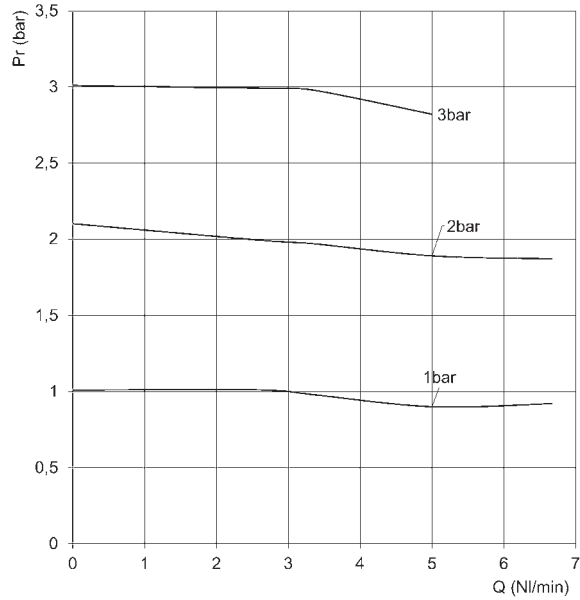
FLOW DIAGRAMS



0-1 bar version

Pr = Outlet pressure (bar)\*  
Q = Flow (NL/min)\*

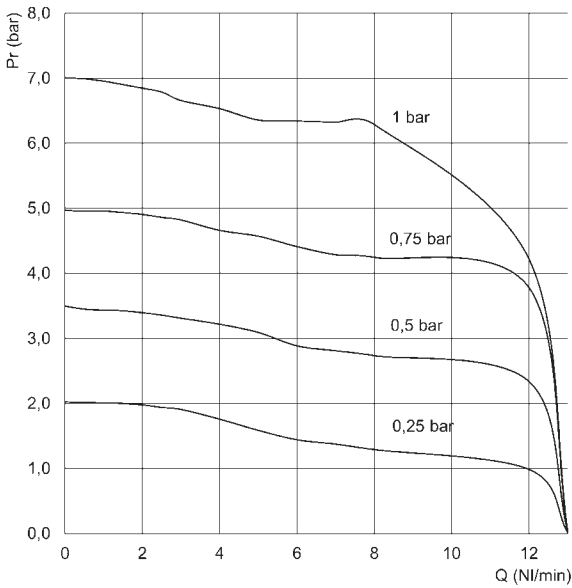
\* = Inlet pressure 2 bar



0-3 bar version

Pr = Outlet pressure (bar)\*  
Q = Flow (NL/min)\*

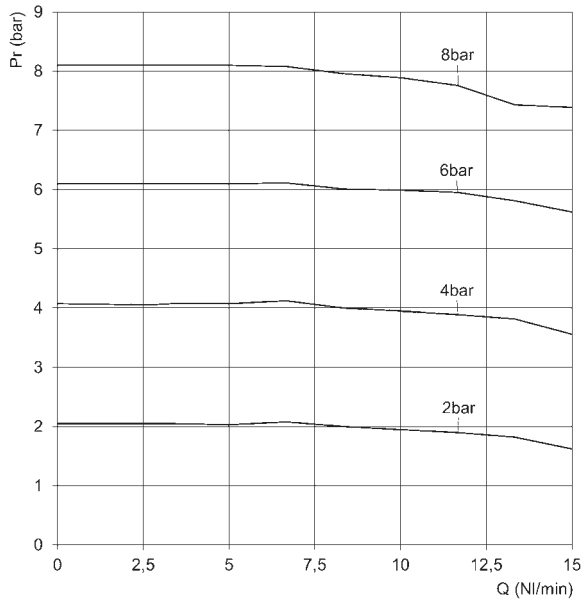
\* = Inlet pressure 4 bar



0-7 bar version

Pr = Outlet pressure (bar)\*  
Q = Flow (NL/min)\*

\* = Inlet pressure 8 bar



0-10 bar version

Pr = Outlet pressure (bar)\*  
Q = Flow (NL/min)\*

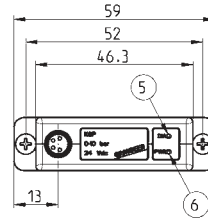
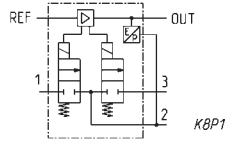
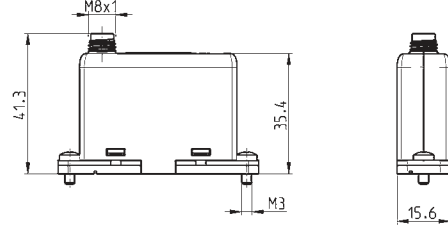
\* = Inlet pressure 10 bar

Electronic proportional micro regulator Series K8P - dimensions



MALE CONNECTOR M8 4 POLES  
 Pin 1: +24 V DC (Power supply)  
 Pin 2: Command analogical signal 0-10 V DC  
 or 4-20 mA  
 Pin 3: 0 V (Ground) common also for the  
 command signal  
 Pin 4: Output analogical signal  
 (according to the regulated pressure)

5 red LED  
 6 green LED



PROPORTIONAL TECHNOLOGY

Mod.	Working pressure	Use with oxygen	Command
K8P- <sup>*</sup> -D522- <sup>**</sup>	0-10 bar	no	0-10 V DC
K8P- <sup>*</sup> -E522- <sup>**</sup>	0-3 bar	no	0-10 V DC
K8P- <sup>*</sup> -D532- <sup>**</sup>	0-10 bar	no	4-20 mA
K8P- <sup>*</sup> -E532- <sup>**</sup>	0-3 bar	no	4-20 mA
K8P- <sup>*</sup> -B522- <sup>**</sup>	0-1 bar	no	0-10 V DC
K8P- <sup>*</sup> -F522- <sup>**</sup>	0-7 bar	no	0-10 V DC
K8P- <sup>*</sup> -B532- <sup>**</sup>	0-1 bar	no	4-20 mA
K8P- <sup>*</sup> -F532- <sup>**</sup>	0-7 bar	no	4-20 mA
K8P- <sup>*</sup> -B522- <sup>**</sup> OX1	0-1 bar	yes	0-10 V DC
K8P- <sup>*</sup> -F522- <sup>**</sup> OX1	0-7 bar	yes	0-10 V DC
K8P- <sup>*</sup> -E522- <sup>**</sup> OX1	0-3 bar	yes	0-10 V DC
K8P- <sup>*</sup> -B532- <sup>**</sup> OX1	0-1 bar	yes	4-20 mA
K8P- <sup>*</sup> -F532- <sup>**</sup> OX1	0-7 bar	yes	4-20 mA
K8P- <sup>*</sup> -E532- <sup>**</sup> OX1	0-3 bar	yes	4-20 mA

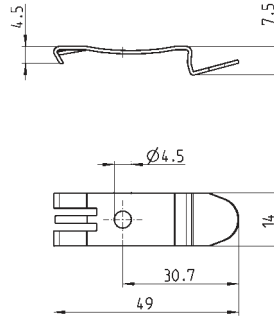


**Mounting bracket for DIN rail**



Supplied with:  
1x plates  
1x screws M4x6 UNI 5931

Note: this accessory cannot be used with the Light sub-base version.

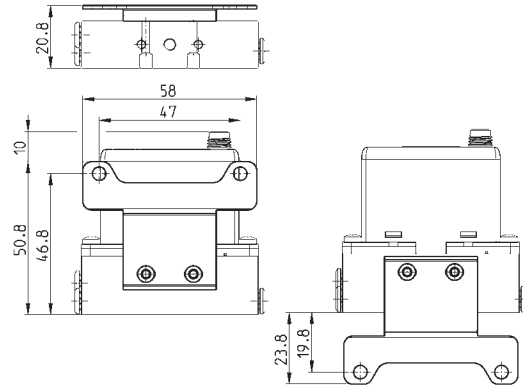


Mod.  
PCF-K8P

**Bracket for horizontal mounting, for standard sub-base**



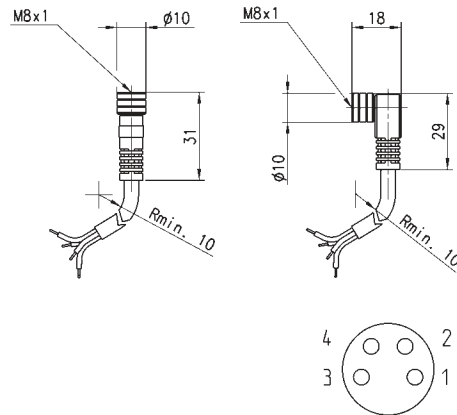
Supplied with:  
1x mounting bracket  
2x screws M3x8 UNI 5931



Mod.  
K8P-B1

**Circular connectors M8, 4 Pin Female**

With PU sheathing, non shielded cable.  
Protection class: IP65



Mod.	Type of connector	Length
CS-DF04EG-E200	straight	2 m
CS-DF04EG-E500	straight	5 m
CS-DR04EG-E200	right angle (90 degrees)	2 m
CS-DR04EG-E500	right angle (90 degrees)	5 m

# Series PRE proportional pressure regulator with CoilVision technology

New Series



COILVISION  
TECHNOLOGY



Two sizes available  
PRE1 and PRE2  
Ports G1/4 - G3/8 - 1/4NPTF

- » "CoilVision technology" for diagnostics and health status analysis
- » Compatible with OXYGEN
- » Control parameters can be customised
- » Configuration flexibility
- » IO-Link version
- » Version with and without display
- » Manifold version
- » Version with integrated exhaust valve
- » ATEX - UL CSA certificate
- » 5 bit PreSet version for a maximum of 32 different pressures
- » Modular with Series MD

The Series PRE proportional pressure regulator is equipped with a new technology, CoilVision, which constantly monitors the operation of the solenoids in the regulator to assess their health status. All data generated by the regulator can be transmitted wirelessly, for logging, aggregation and analysis and can be viewed through the UVIX software, downloadable from the Camozzi Catalog website.

The Series PRE is available in two sizes and in different configurations, including IO-Link connectivity. As well as the standard options with and without display, there is a version with an integral exhaust valve, which enables the system to exhaust even without a power supply.

A manifold version enables the control of several outlets with only one inlet, while a version with an additional external sensor connection enables pressure control at any point in the system.

Standard of reference	CE; Rosh; ATEX; UL- CSA		
Controlled quantity	Pressure		
Number of ways	3 ways		
Flow (Qn)	PRE104 - 1100 NI/min	PRE238 - 4600 NI/min	
Media	Filtered and non-lubricated compressed air of class 7.4.4 according to ISO 8573.1. Inert gases and oxygen		
Min & max regulated pressure (bar)	0 - 1 bar (0-14,5 PSI)(B) 0,03 - 4 bar (0,43-58 PSI) (E)	0,05 - 10,3 bar (0,72-150 PSI)(D) 0,05 - 7 bar (0,72-101,5 PSI) (G)	0,05 - 6 bar (0,72-87 PSI)(F)
Maximum inlet pressure	2 bar (B)      5 bar (E)	11 bar (D); (G) and (F)	
External sensor (optional)	input signal 0-10 V DC or 4-20 mA		
Resolution (% FS)	0,3 (Size 1) 0,6 (Size 2)		
Fluid temperature (min and max °C)	0 - 50 °C		
Environmental temperature (min and max °C)	0 - 50 °C		
Pneumatic ports	G1/4 - G3/8 - 1/4NPTF		
Materials	body: aluminium - cover: technopolymer - seals: NBR or FKM		
Supply voltage (V)	24 V DC		
Command signal	0-10V (2); 4-20 mA (4); 5 bit Digital (D); IO-Link (I)		
Hysteresis (% FS)	0,5% (Size 1) 0,7% (Size 2)		
Power consumption	Max 0,5A (Envisage a power supply of at least 1A)		
Type of electrical connection	M12 5 Pin Male (IO-Link) M12 8 Pin Male (Analog and PreSet) M12 12 Pin Male (version with external sensor)		
IP protection class	IP65		
Repeatability (% FS)	0,4		
Linearity (% FS)	0,4		
Modularity	With Series MD		
PRE in IO-Link version	V1.1 according to standard IEC 61131-9 / 61131-2		
Feedback signal	0-5 V DC and 4-20 mA (always present in the version with analog command signal (2) (4))		



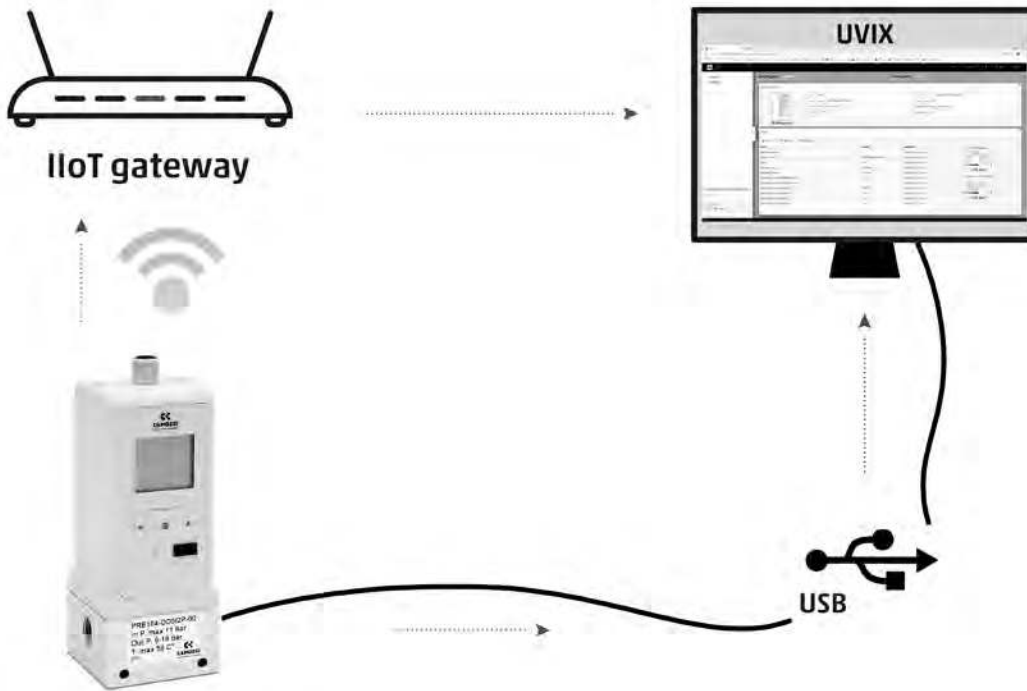
PRE	1	04	-	D	D	5	I	2	E	-	00		
-----	---	----	---	---	---	---	---	---	---	---	----	--	--

<b>PRE</b>	SERIES
<b>1</b>	Size: 1 = Size 1 2 = Size 2
<b>04</b>	CONNECTION PORTS: 04 = G1/4 38 = G3/8 (only size 2) M4 = G1/4 Manifold 14 = NPTF 1/4 (only size 1) N4 = 1/4 NPTF Manifold
<b>D</b>	DISPLAY: E = without display D = with display
<b>D</b>	WORKING PRESSURE (1 bar = 14,5 psi): B = 0-1 bar E = 0-4 bar F = 0-6 bar (standard for OX1 version with internal servo pilot supply) G = 0-7 bar D = 0-10,3 bar 2 = external sensor 0-10 or 4-20 mA (only with command signal 2 or 4) The external sensor is not included with the regulator. It must be bought separately.
<b>5</b>	VALVE FUNCTIONS: 5 = 3 ways (standard) 6 = integrated exhaust valve (maximum working pressure B, E or G) 7 = 3 ways (connection 3 conveyable, optional for size 1, standard for size 2) 8 = integrated exhaust valve (connection 3 conveyable, optional for size 1, standard for size 2. Maximum working pressure B, E or G)
<b>I</b>	PILOT SUPPLY: I = Internal E = External
<b>2</b>	COMMAND SIGNAL: 2 = 0-10 V 4 = 4-20 mA D = 5 bit Preset for 32 different pressure values I = IO-Link
<b>E</b>	DIGITAL FEEDBACK SIGNAL: E = error signal (only with command signal 2, 4, D) P = pressure switch (only with command signal 2, 4, D) W = window (only with command signal 2, 4, D) N = no digital output (only with IO-Link version)
<b>00</b>	CABLE LENGTH: 00 = no cable 2F = 2 mt straight 2R = 2 mt 90° 5F = 5 mt straight 5R = 5 mt 90°
	ACCESSORY DIAGNOSTICS: = without diagnostics (only with command signal 2, 4, D) 0D = with Basic diagnostics (only with command signal 2, 4, D) 0W = Wireless connection (only with command signal 2, 4, D) DW = Wireless connection+ CoilVision diagnostics (only with command signal 2, 4, D) 1D = IO-Link + CoilVision diagnostics (only with IO-Link version)
	CERTIFICATIONS: = no certification OX1 = compatible with oxygen EX = ATEX version



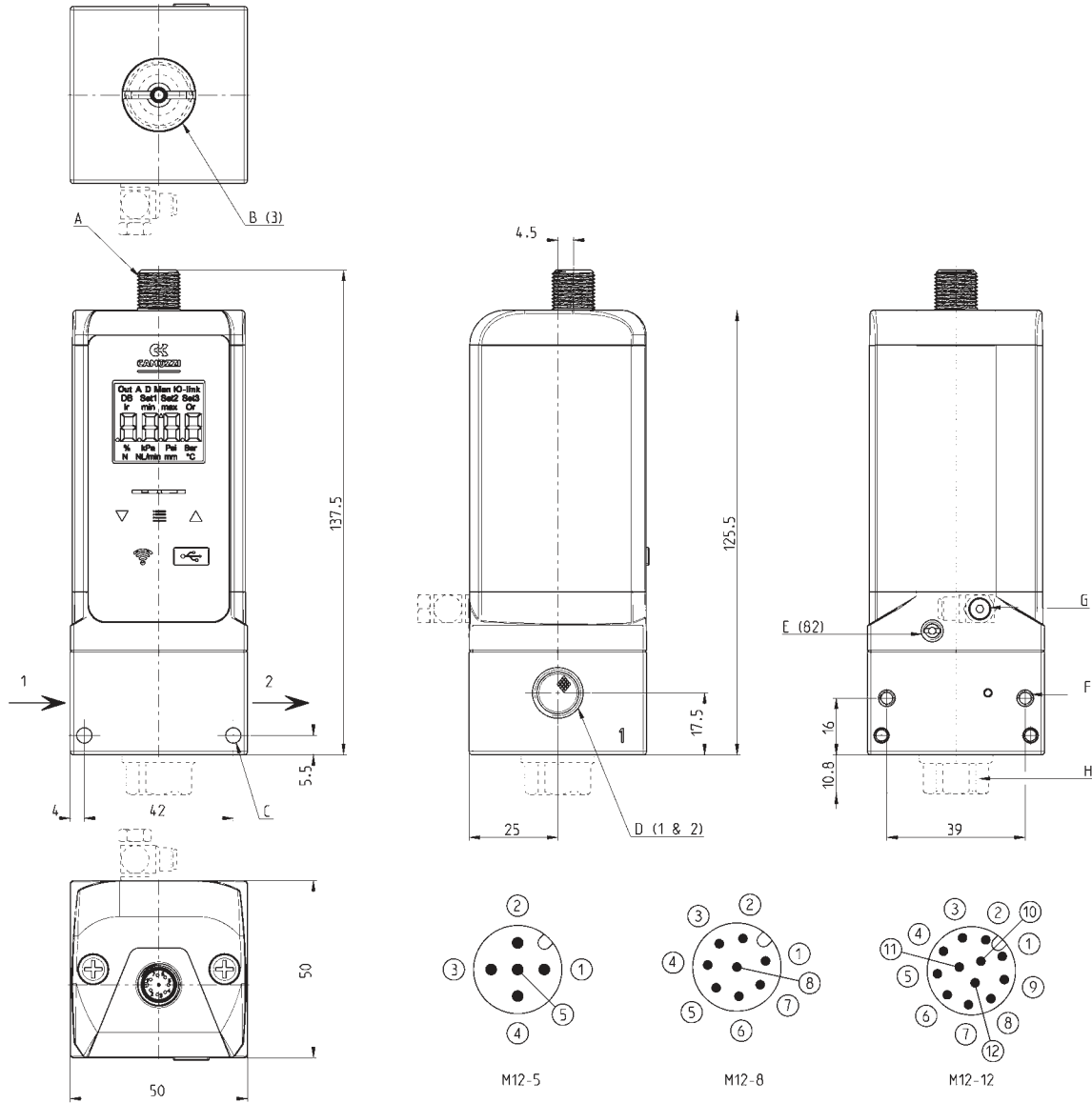
The CoilVision function, (optional in the Series PRE proportional regulators), has the aim to constantly monitor the operation of the individual solenoids in the regulator, this is possible thanks to specific electronics and algorithms patented by Camozzi.

This option allows to monitor the health and operating status of the pilot solenoids, indicating any discrepancies compared to the ideal operating conditions. The information obtained allows the user to plan, in advance, any interventions on the most essential devices.



Through this function, you also have control over the internal temperature and the actual working hours of the regulator. All these indications can be read by the "UVIX" supervisor software, that can be downloaded free of charge from the Camozzi website in the products section.

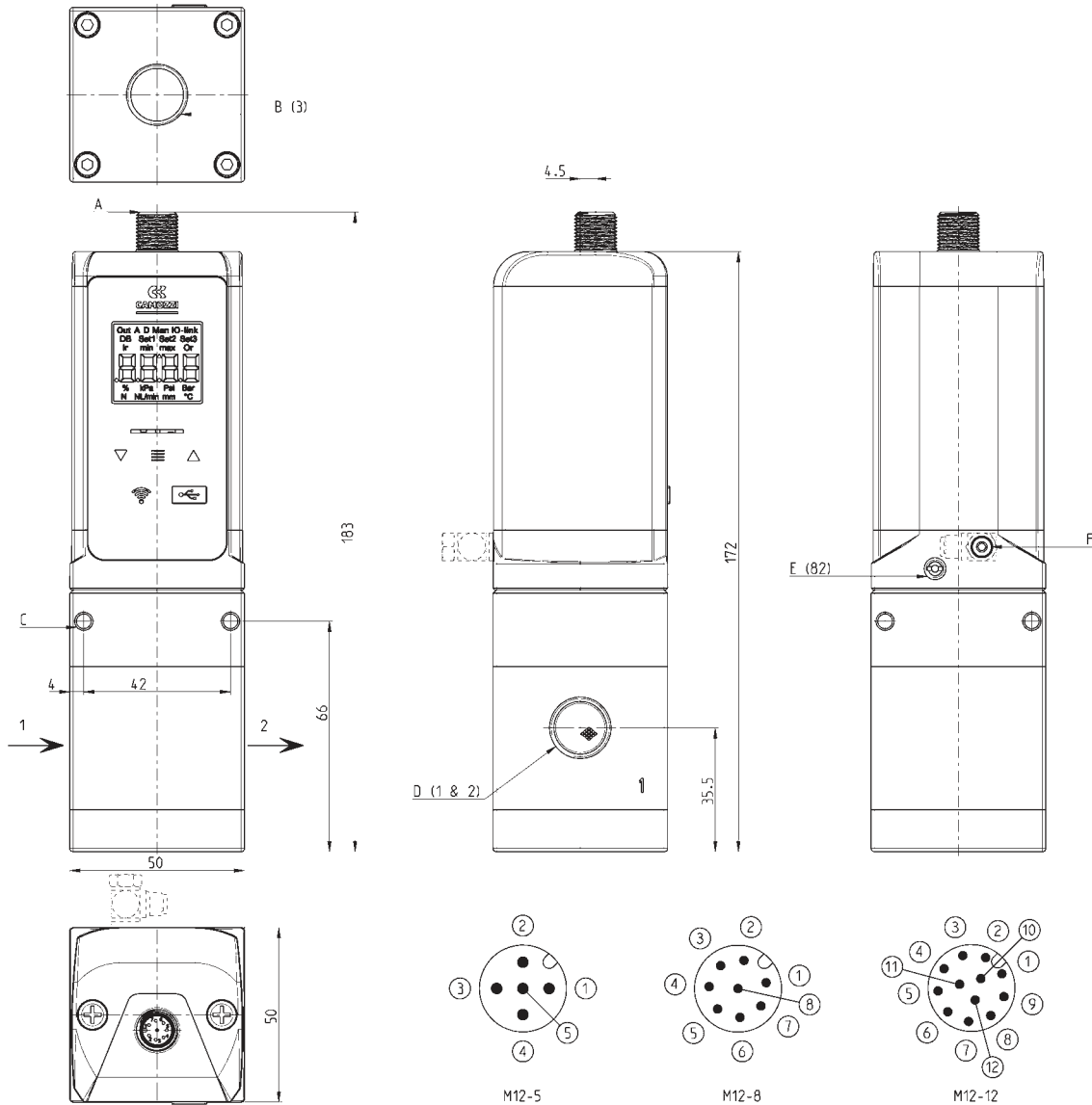
Thanks to UVIX, data can be read via USB port or via wireless connection, where present. Devices equipped with an IO-Link connection can also make the data available to the PLC through the IO-Link master.



Mod.	A	B (3)	C	D (1 & 2)	E (82)	F	G	H
PRE1	Electrical connection M12	Regulator exhaust	Fixing holes Ø4,3	Port 1/4 (GAS or NPTF)	Exhaust of pilot solenoids M5	Fixing holes M4	External servo-pilot M5	Valve function (7 - 8) G 1/4

	M12 - 5 (pin male)	M12 - 8 (pin male)	M12 - 12 (pin male)
	for I/O Link version	for analog version	for version with external sensor connection

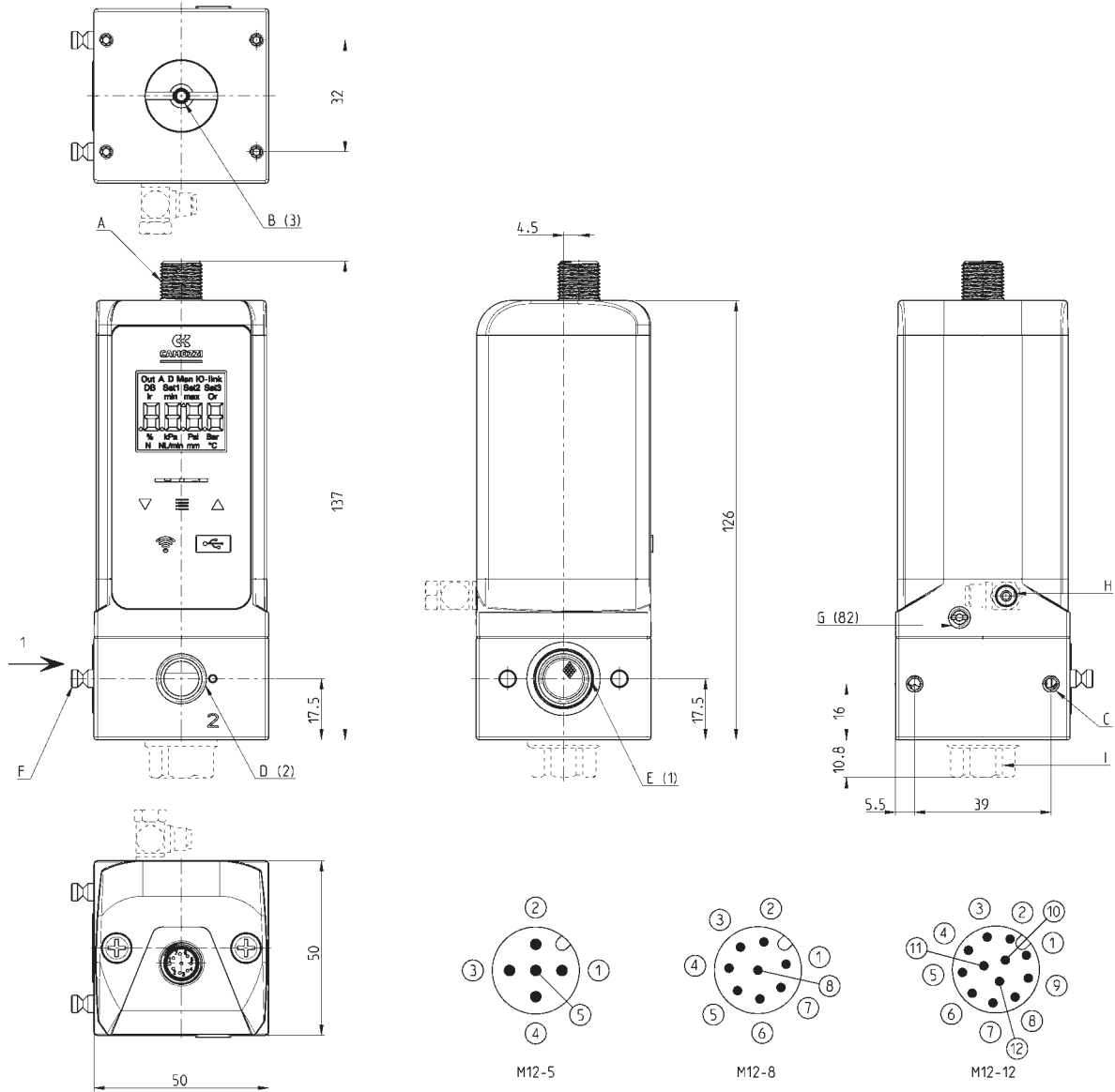
DIMENSIONAL CHARACTERISTICS SERIES PRE SIZE 2



Mod.	A	B (3)	C	D (1 & 2)	E (82)	F
PRE2	Electrical Connection M12	Regulator exhaust G3/8	Fixing holes Ø4,3	Ports G 3/8 or G 1/4	Exhaust of pilot solenoids M5	External servo-pilot M5

M12 - 5 (pin male)	M12 - 8 (pin male)	M12 - 12 (pin male)
for I/O Link version	for analog version	for version with external sensor connection

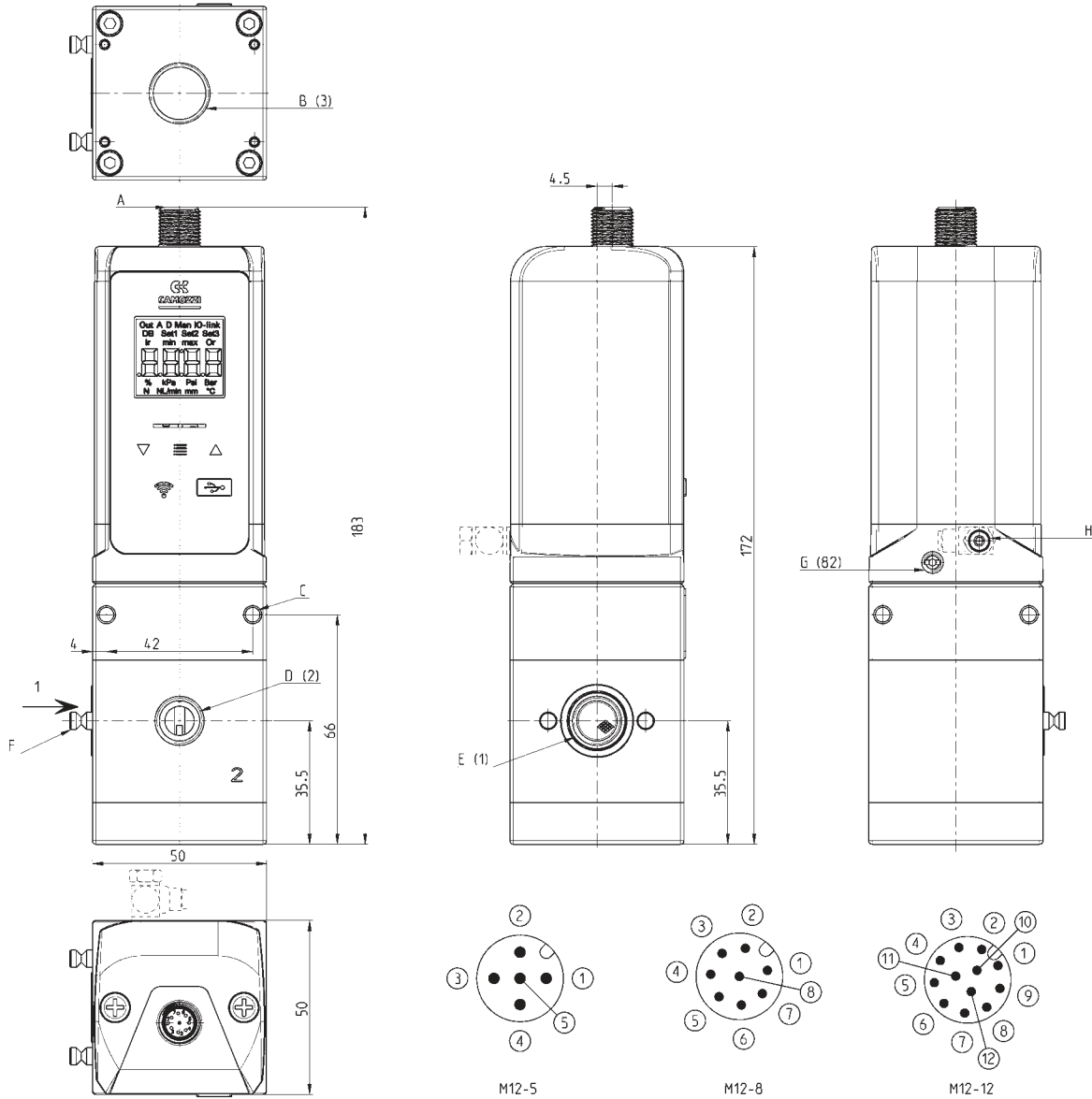
**DIMENSIONAL CHARACTERISTICS SERIES PRE SIZE 1 MANIFOLD**



Mod.	A	B (3)	C	D (2)	E (1)	F	G (82)	H	I
PRE1	Electrical Connection M12	Regulator exhaust	Fixing holes M3	Outlet 1/4 (GAS or NPTF)	Ports 1/4 (GAS or NPTF)	Connection pin	Exhaust of pilot solenoids M5	External servo-pilot M5	Valve function (7 - 8) G 1/4

M12 - 5 (pin male)	M12 - 8 (pin male)	M12 - 12 (pin male)
for I/O Link version	for analog version	for version with external sensor connection

DIMENSIONAL CHARACTERISTICS SERIES PRE SIZE 2 MANIFOLD

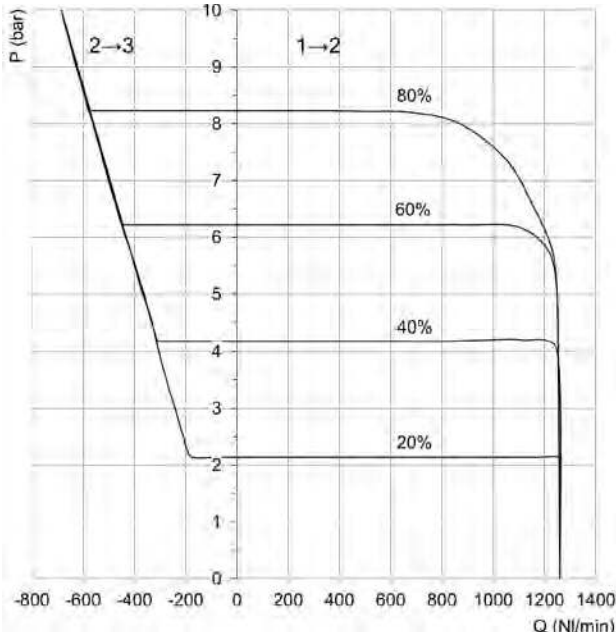


Mod.	A	B (3)	C	D (2)	E (1)	F	G (82)	H
PRE2	Electrical connection M12	Regulator exhaust G3/8	Fixing holes Ø4.3	Outlet G 1/4	Ports G 1/4	Connection pin	Exhaust of pilot solenoids M5	External servo-pilot M5

M12 - 5 (pin male) for I/O Link version	M12 - 8 (pin male) for analog version	M12 - 12 (pin male) for version with external sensor connection

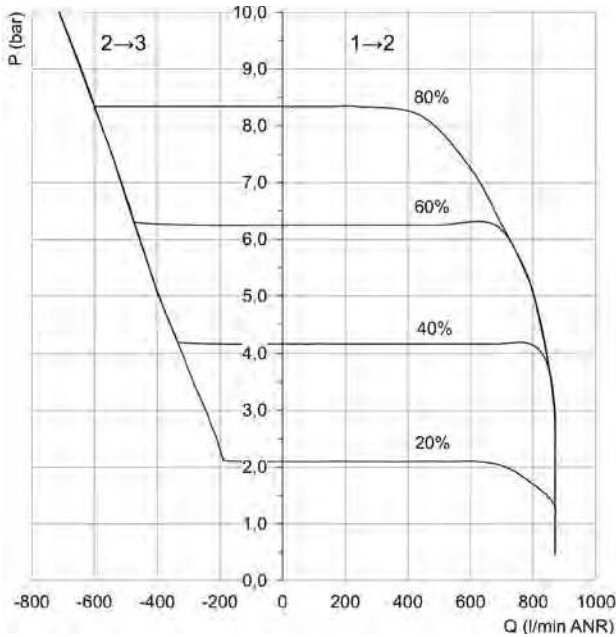
FLOW DIAGRAMS Size 1

PRE 1: Standard  
Inlet Pressure 10 bar



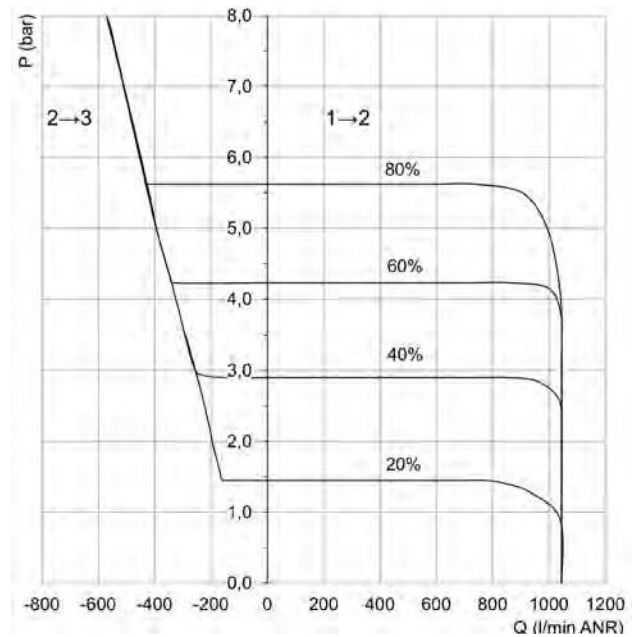
P = Regulated outlet pressure and exhaust pressure  
Q = Flow  
% = Percentage of the command signal

PRE 1 manifold  
Inlet Pressure 10 bar



P = Regulated outlet pressure and exhaust  
Q = Flow  
% = Percentage of the command signal

PRE 1 Manifold with integrated exhaust valve  
Inlet Pressure 8 bar

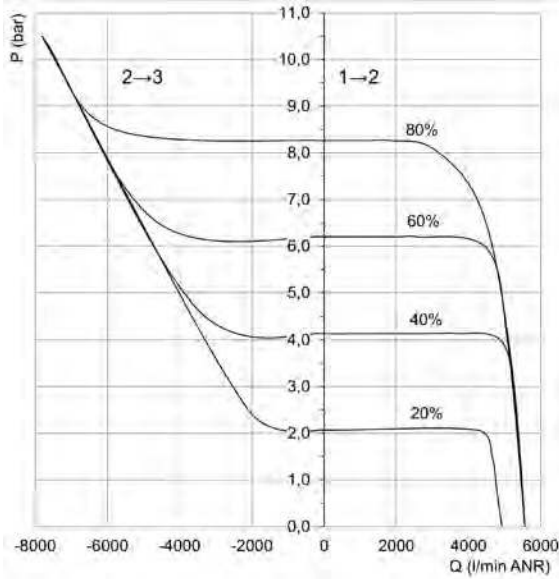


P = Regulated outlet pressure and exhaust  
Q = Flow  
% = Percentage of the command signal

FLOW DIAGRAMS Size 2

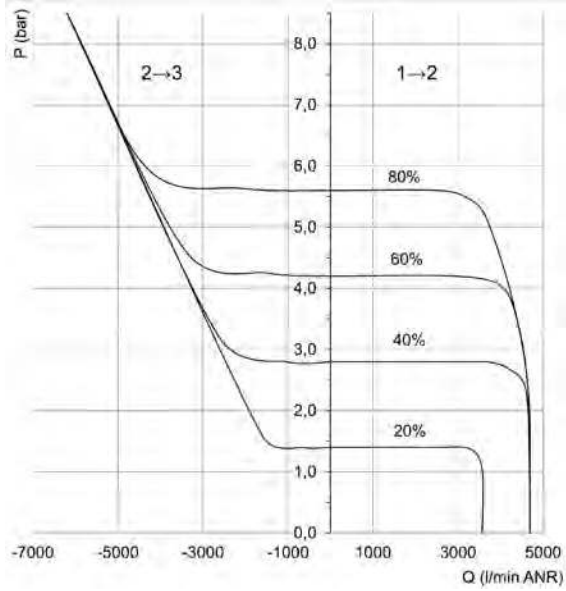
6

PRE 2 Standard  
Inlet Pressure 10 bar



P = Regulated outlet pressure and exhaust pressure  
Q = Flow  
% = Percentage of the command signal

PRE 2 with integrated exhaust valve  
Inlet Pressure 8 bar

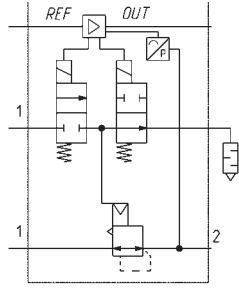


P = Regulated outlet pressure and exhaust pressure  
Q = Flow  
% = Percentage of the command signal

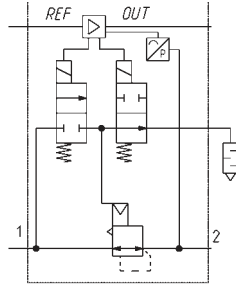
PROPORTIONAL TECHNOLOGY



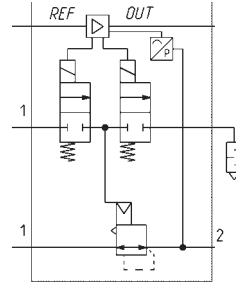
**PNEUMATIC SYMBOLS**



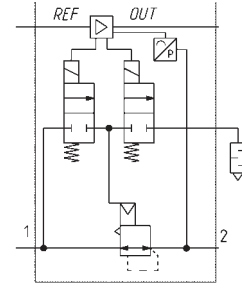
Version with integrated exhaust valve and external servo-pilot supply



Version with integrated exhaust valve and internal servo-pilot supply



3 ways N.C. version with external servo-pilot supply

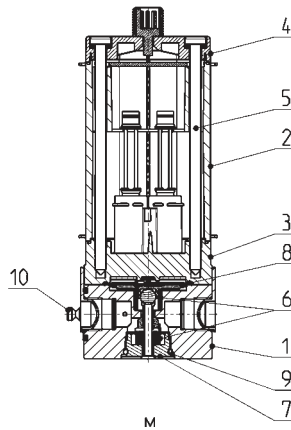
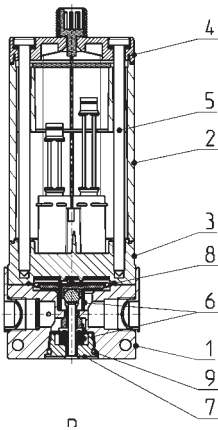


3 ways N.C. version with internal servo-pilot supply

**SIZE 1 - MATERIALS**

R = Proportional regulator

M = Proportional regulator - manifold version

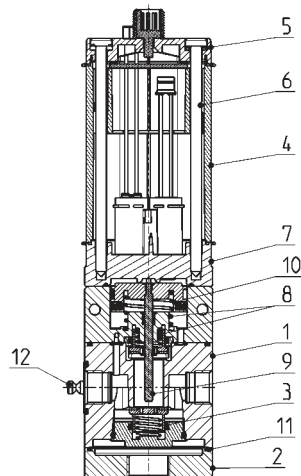
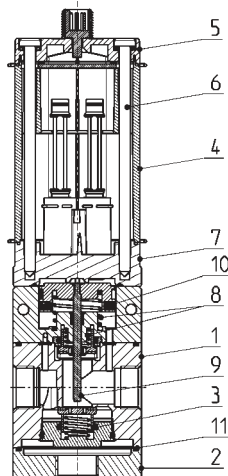


PARTS	MATERIALS, standard version	MATERIALS, oxygen version
1 = body	Anodised aluminium	Anodised aluminium
2 = cover	PA6 CM 30%	PA6 CM 30%
3 = valve body	PARA GF50%	PARA GF50%
4 = cap	PA6 CM 30%	PA6 CM 30%
5 = screws	stainless steel	stainless steel
6 = springs	stainless steel	stainless steel
7 = plug	nickel-plated brass	nickel-plated brass
8 = diaphragm	NBR	FKM
9 = seals and O-Ring	NBR	FKM
10 = pin for manifold version	stainless steel only for manifold version	stainless steel only for manifold version

**SIZE 2 - MATERIALS**

R = Proportional regulator

M = Proportional regulator - manifold version



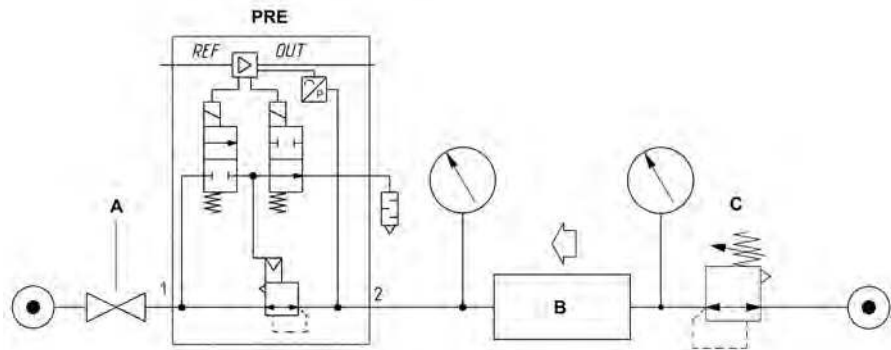
PARTS	MATERIALS, standard version	MATERIALS, oxygen version
1 = body	Anodised aluminium	Anodised aluminium
2 = end cover	Anodised aluminium	Anodised aluminium
3 = plug	brass	brass
4 = cover	PA6 CM 30%	PA6 CM 30%
5 = cap	PA6 CM 30%	PA6 CM 30%
6 = screws	stainless steel	stainless steel
7 = valve body	PARA GF50%	PARA GF50%
8 = springs	stainless steel	stainless steel
9 = piston rod	stainless steel	stainless steel
10 = piston seal	NBR	NBR
11 = seals and O-Ring	NBR	FKM
12 = pin for manifold version	stainless steel only for manifold version	stainless steel only for manifold version

The company reserves the right to vary models and dimensions without notice. M These products are designed for industrial applications and are not suitable for sale to the general public.

MEASURING THE EXHAUST FLOW RATE OF SERIES PRE REGULATOR

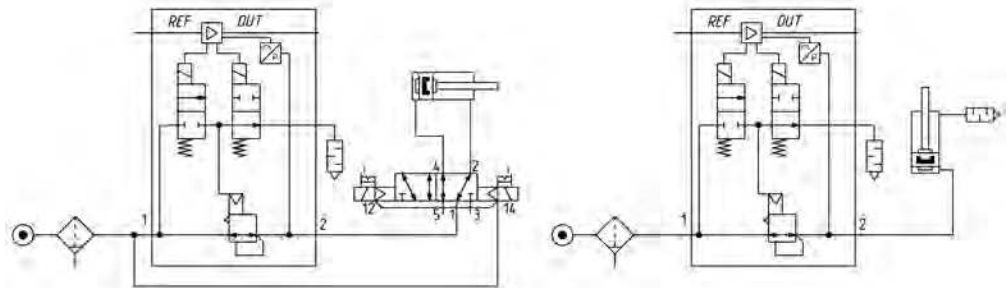
Measuring the exhaust flow rate: inlet pressure 9 bar, outlet pressure 4 bar. With the pressure regulator opposite the PRE (C), connected as shown in the diagram, the pressure rises progressively from a minimum value of 4 bar and with the flowmeter (B) the exhaust flow rate is measured from the exhaust port.

- A = Ball valve
- B = Flowmeter
- C = Back pressure regulator



PNEUMATIC DIAGRAM FOR INSTALLATION

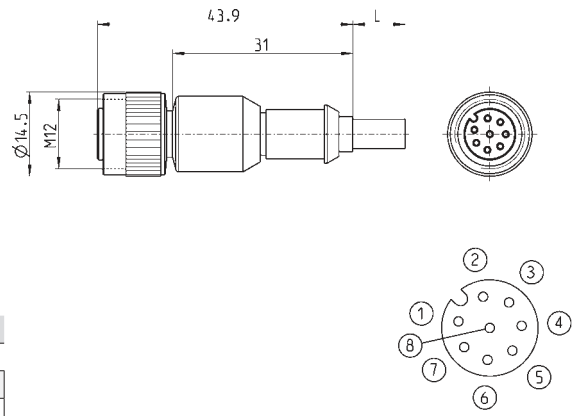
PRE version with integrated exhaust valve. We suggest to make a pneumatic diagram in order to create a pneumatic circuit that allows to discharge the regulated pressure in absence of power supply.



**Cable with M12 8 pin straight connector, female, not shielded**



For power supply, analog command signal and PreSet

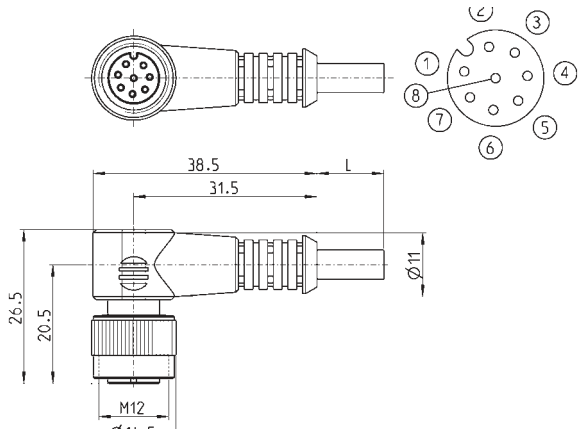


Mod.	Cable length (m)
CS-LF08HB-C200	2
CS-LF08HB-C500	5

**Cable with M12 8 pin connector, 90°, female, not shielded**



For power supply, analog command signal and PreSet

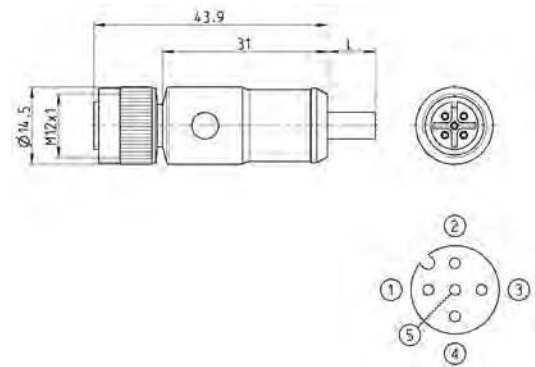


Mod.	Cable length (m)
CS-LR08HB-C200	2
CS-LR08HB-C500	5

**Cable with M12 5 pin connector, 90°, female, not shielded**



For power supply and IO-Link command signal

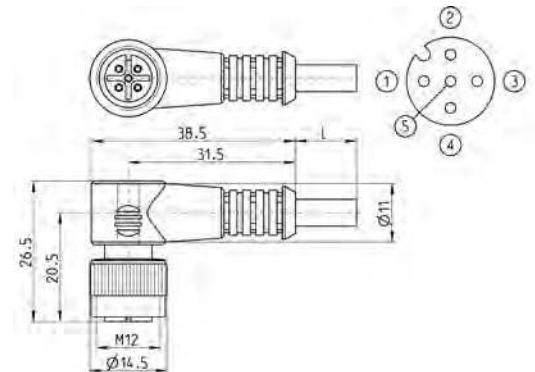


Mod.	Cable length (m)
CS-LF05HB-D200	2
CS-LF05HB-D500	5

**Cable with M12 5 pin connector, 90°, female, not shielded**



For power supply and IO-Link command signal

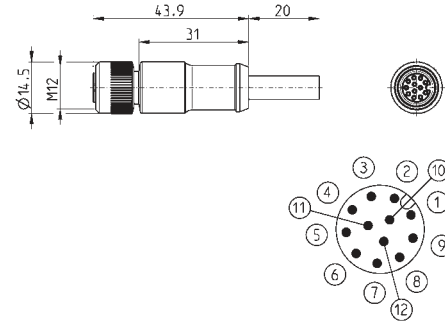


Mod.	Cable length (m)
CS-LR05HB-D200	2
CS-LR05HB-D500	5

Cable with M12, 12 pin connector, straight, female, not shielded



For power supply and analog command signal with external sensor

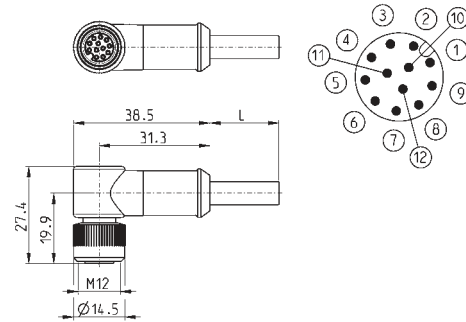


Mod.	Cable length (m)
CS-LF12HB-D200	2
CS-LF12HB-D500	5

Cable with M12 12 pin connector, 90°, female, not shielded



For power supply and analog command signal with external sensor

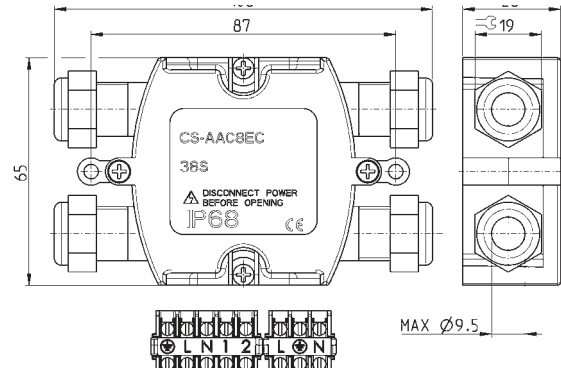


Mod.	Cable length (m)
CS-LR12HB-D200	2
CS-LR12HB-D500	5

Mod. CS-AA08EC Electrical Tee Box



To connect the external transducer, power supply and command signal



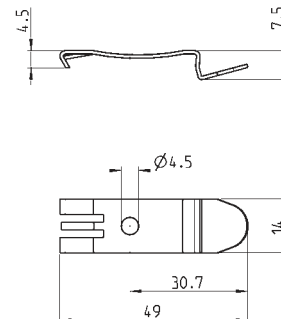
Mod.
CS-AA08EC

Mounting bracket for DIN rail Mod. PCF-EN531



DIN EN 50022 (7.5x35 mm - width 1)

The supply includes:  
2 fixing elements  
2 M4x6 screws UNI 5931  
2 nuts



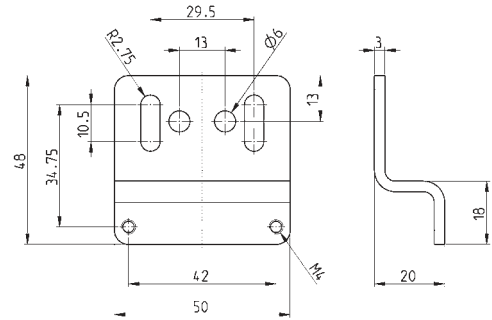
Mod.
PCF-EN531

Rear bracket Mod. PRE-ST



The kit includes

- 1 zinc-plated bracket
- 2 M4x55 white zinc-plated screws

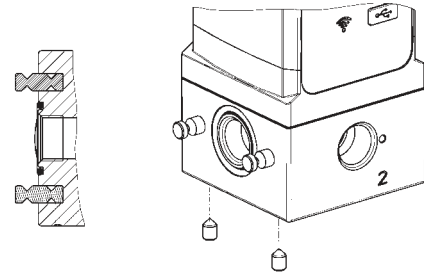


Mod.	PRE-ST
------	--------

Fixing kit for manifold version: PRE-M-PIN-1-2



- The kit includes:
- 2 shaped steel pins
- 4 steel grub screws
- 1 O-Ring

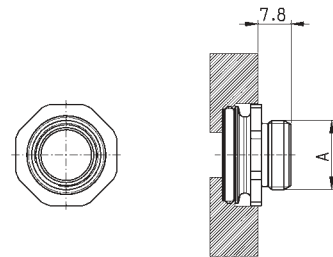


Mod.	PRE-M-PIN-1-2
------	---------------

Fixing kit for Series MD: PRE

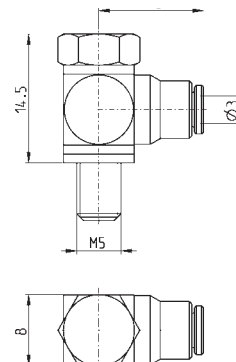


- The kit includes:
- 1 bushing
- 1 O-Ring
- 2 special Ø4.5x34 white zinc-plated screws



Mod.	A
PRE-1/4-C	G1/4
PRE-3/8-C	G3/8

Fittings for external pilot supply



Mod.	6625 3-M5
------	-----------

# Digital Proportional Servo Valves Series LR

New

3/3-way directly operated servo valves for the flow (LRWD2), pressure (LRPD2) and position (LRXD2) control



- » Digital version which is completely configurable through USB
- » Rotating spool system with a metal to metal seal
- » High flow rate
- » Electronic control to ensure high precision in the flow control
- » 3-way-function with 4 - 6 mm nominal diameters
- » Compact version for cabinet mounting on DIN-rail
- » Position control version

Series LR digital proportional servo valves are direct driven 3/3-way valves with a patented rotating spool system with closed loop control circuit. The electronic board is integrated into the valve's body ready to connect.

Series LR\*D2 digital proportional servo valve has been designed to be as compact as possible in order to save space and to be mounted on a DIN-rail. Thanks to this new digital version, the valve can be configured through a USB connection according to different requirements.

## GENERAL DATA

Power supply	24 V DC +/- 10%, max absorption 1.5 A
Command signal	+/- 10 V 0-10 V 4-20 mA
Hysteresis	1% FS LRWD2 - 0,2% FS LRPD2
Linearity	1% FS LRWD2 - 0.3% FS LRPD2
Switching time	see the following pages
Working temperature	from 0 to 50° C
Relative humidity of air	max. 90%
Direction of assembly	any
Maximum flow	see the diagrams on the following pages
Medium	filtered compressed air, unlubricated, according to ISO 8573-1 class 3.4.3, inert gas
Supply pressure	-0.9 to 10 bar
Leakage	< 1% of maximum flow rate
Electrical connection	male connector M12 8 poles

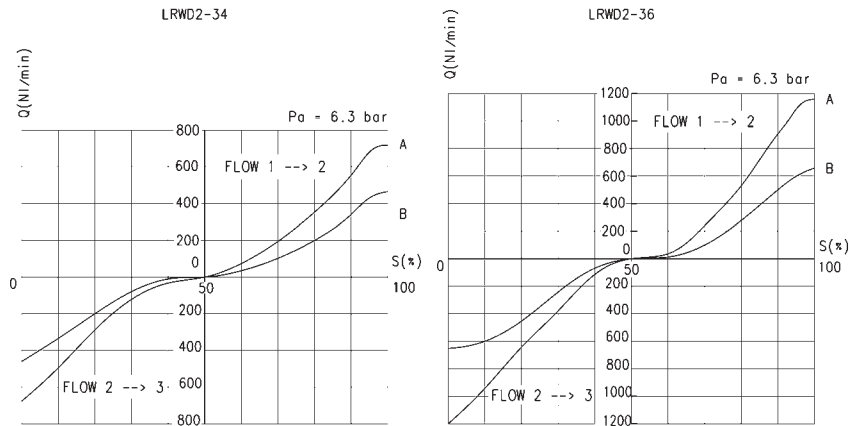
**CODING EXAMPLE**

L	R	W	D	2	-	3	4	-	1	-	A	-	00
<b>L</b>	SERIES: L = proportional servo valves												
<b>R</b>	TECHNOLOGY: R = rotating spool												
<b>W</b>	VERSION: W = flow control P = pressure control X = position control												
<b>D</b>	ELECTRONICS: D = digital												
<b>2</b>	MODEL: 2 = compact DIN-RAIL												
<b>3</b>	FUNCTION: 3 = 3/3-way												
<b>4</b>	NOMINAL DIAMETER: 4 = 4 mm 6 = 6 mm												
<b>1</b>	COMMAND SIGNAL (Setpoint): 1 = +/- 10 V 2 = 0 - 10 V 4 = 4 - 20 mA												
<b>A</b>	INPUT SIGNAL: 2 = 0 - 10 V (LRPD2 and LRXD2 only) 4 = 0 - 5V (LRPD2 and LRXD2 only) 5 = 4 - 20mA (LRPD2 and LRXD2 only)  A = internal encoder (LRWD2 only) B = 1 bar (internal sensor - LRPD2 only) D = 10 bar (internal sensor - LRPD2 only) E = 250 mbar (internal sensor - LRPD2 only) F = +1/-1 bar (internal sensor - LRPD2 only)												
<b>00</b>	CABLE: 00 = no cable  2F = straight cable of 2 m 2R = 90° cable of 2 m 5F = straight cable of 5 m 5R = 90° cable of 5 m												

**FLOW DIAGRAMS FOR VALVES LRWD2-34 AND LRWD2-36**

**LEGEND:**

- A = free flow
- B = ΔP1
- Q = flow (NI/min)
- S = set point (%)
- Pa = inlet pressure (bar)



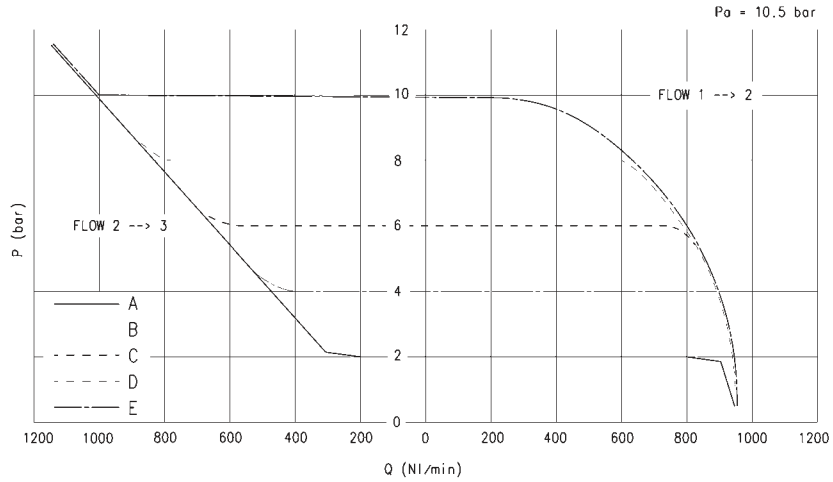
**RESPONSE TIMES ACCORDING TO THE COMMAND SIGNAL IN COMPLIANCE WITH THE ISO 10094-2 STANDARD**

COMMAND SIGNAL	-5% - +5%	+5% - -5%	-25% - +25%	+25% - -25%	-90% - +90%	+90% - -90%
Time [ms] LRWD2-34	4	5	6	9	10	10
Time [ms] LRWD2-36	5	5	6	6	10	10

\* closed valve with SET POINT = 0  
loaded valve with SET POINT = +  
exhaust valve with SET POINT = -

FLOW DIAGRAMS FOR VALVE LRPD2-34

LEGEND:  
 P = regulated pressure (bar)  
 F = flow (NI/min)  
 Pa = inlet pressure (bar)

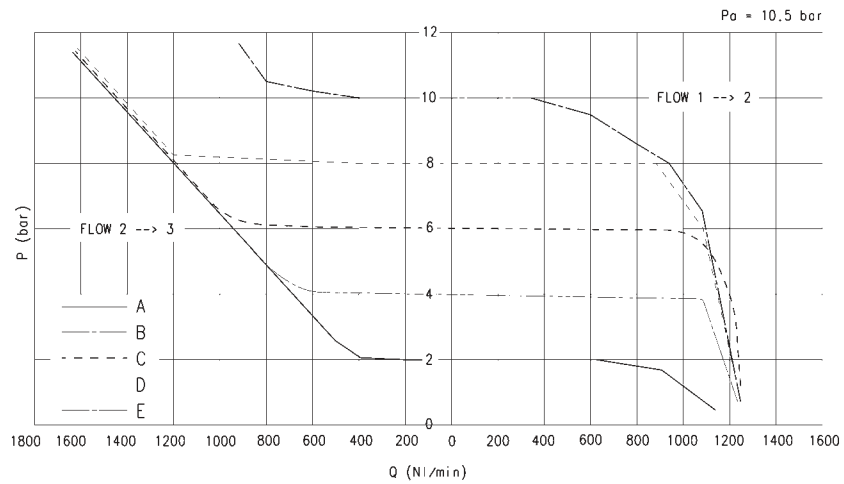


RESPONSE TIMES WITH COMMAND SIGNAL BETWEEN 0% AND 100% IN COMPLIANCE WITH ISO 10094-2 STANDARD

	Without volume	Volume 0.5 l	Volume 2 l
Filling [ms]	24	313	1841
Exhaust [ms]	35	663	3640
valve with SET POINT = 0% and regulated pressure = 0 bar			
valve with SET POINT = 100% and regulated pressure = maximum pressure (example: 10 - 1 bar or 250 mbar)			

FLOW DIAGRAMS FOR VALVE LRPD2-36

LEGEND:  
 P = regulated pressure (bar)  
 F = flow (NI/min)  
 Pa = inlet pressure (bar)



RESPONSE TIMES WITH COMMAND SIGNAL BETWEEN 0% AND 100% IN COMPLIANCE WITH ISO 10094-2 STANDARD

	Without volume	Volume 0.5 l	Volume 2 l
Filling [ms]	20	263	1560
Exhaust [ms]	32	357	1905
valve with SET POINT = 0% and regulated pressure = 0 bar			
valve with SET POINT = 100% and regulated pressure = maximum pressure (example: 10 - 1 bar or 250 mbar)			



Series LRXD2 - pneumatic and electrical schemes for the installation

The LRXD2 servo valves are proportional valves with a high-precision integrated control for the positioning of pneumatic cylinders. The valves include a patented 3-way system based on the rotating spool principle with electronic control of the spool position. The servo pneumatic closed loop system allows the control of the position through the feedback of the external positioning sensor or of the Camozzi 6PF cylinder with the integrated linear transducer.

The electronic board which is integrated in the valve body manages speed and acceleration directly.

The Master valve Mod. LRXD2 is equipped with a proper signal to command a LRXD2 valve that will work as a slave-valve.

Configuration for the position control with two valves (Fig. 1)

A = Slave LRXD2-3\*-2-A-00 - B = Master LRXD2-3\*-4-00 - C = 6PF cylinder...

Configuration for the position control with a LRXD2 valve (Fig. 2)

A = Master LRXD2-3\*-4-00 - B = PR104-... - C = 6PF cylinder...

Fig.1

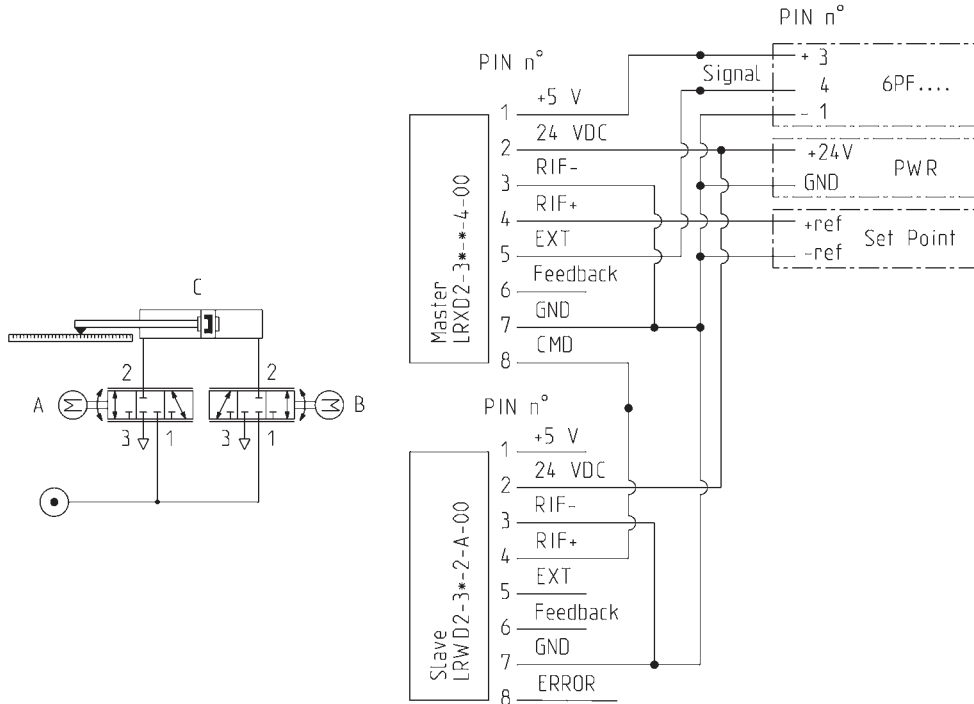
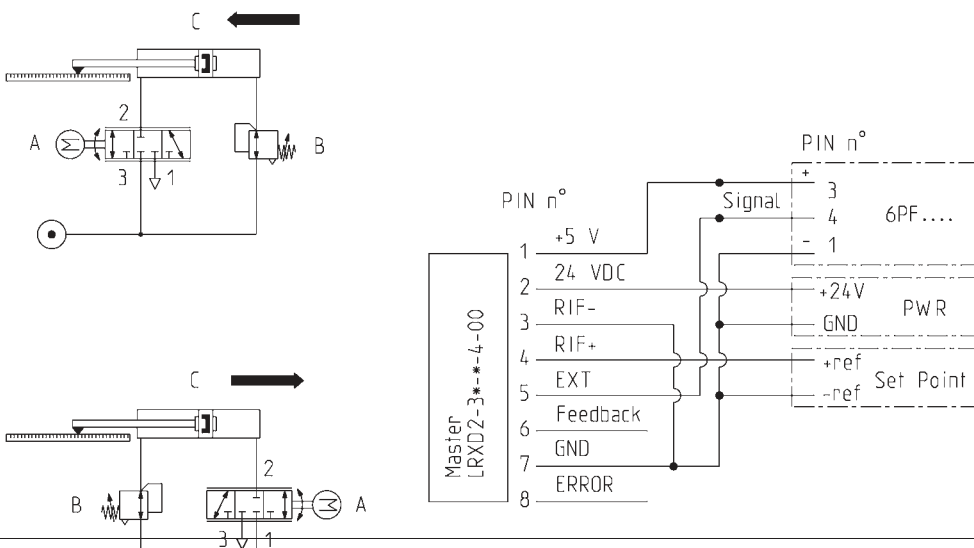
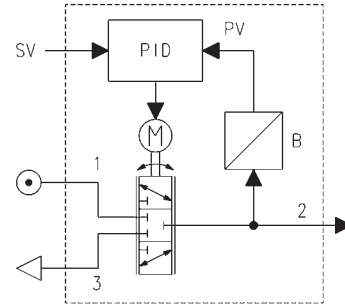
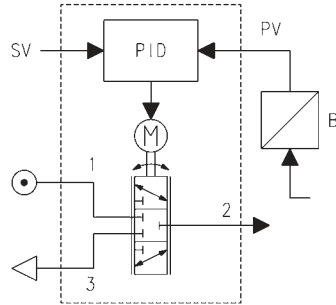


Fig.2



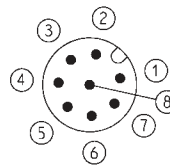
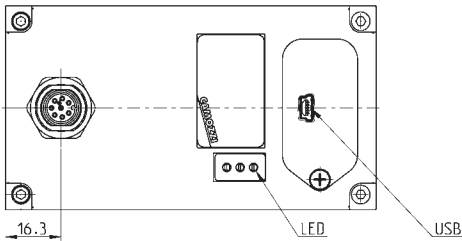
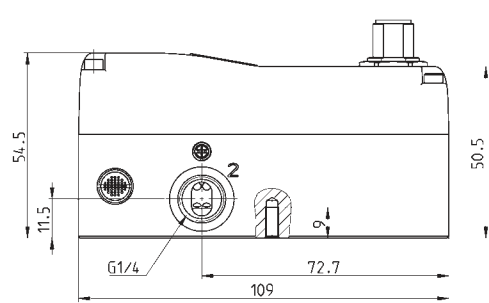
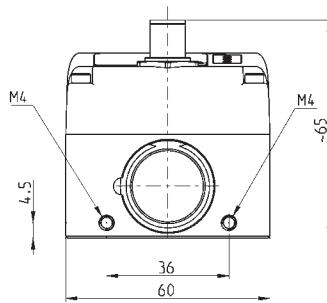
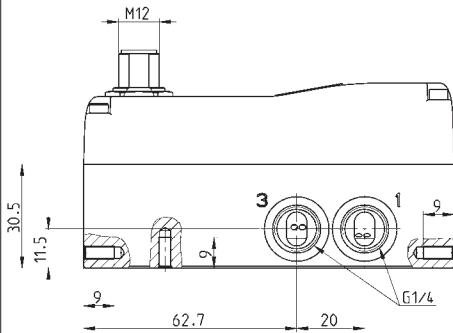
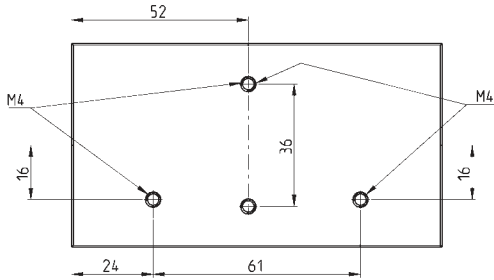
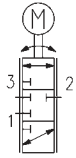
Series LRPD2 - pneumatic scheme for the installation

SV = setpoint value  
 PV = process value  
 B = sensor  
 PID = proportional control, integrative,  
 derivative



Series LR digital proportional servo valves - dimensions

The detailed user and maintenance manual and the Hardware configuration Software of the valve is available online at <http://catalogue.camozzi.com>.



PIN	SIGNAL		DESCRIPTION
1	+5V		+5V power supply for external potentiometer transducer (ref. GND). If used, it is necessary to connect RIF- with GND.
2	24 V DC		24V DC power supply (logic and motor): connect to the positive pole of the 24V DC power supply (ref. GND)
3	RIF-		GND reference or NEGATIVE pole of the command signal (0-10V / 4-20mA / ±10V)
4	RIF+		POSITIVE reference of the command signal (0-10V / 4-20mA / ±10V)
5	EXT	for LRWD valve: for LRXD valve: for LRPD valve:	not used feedback signal of the external transducer 0-5V / 0-10V / 4-20mA (ref. RIF-) feedback signal of the external transducer 0-5V / 0-10V / 4-20mA (ref. RIF-). To be used only with LRPD2 valve versions with external sensor.
6	FBK		feedback signal 0-10V / 4-20mA (ref. GND)
7	GND		common (reference pin 1 and 2): connect to the negative pole of the 24V DC power supply (compulsory)
8	ERR	for LRWD and LRPD valve: for LRXD valve:	error signal (output) 0-24V (ref. GND) command signal 0-10V for slave valve (ref. GND)

Series LR digital proportional servo valves - technical characteristics

\* To order the complete code, please replace the asterisk with 4 or 6 according to the desired nominal diameter.

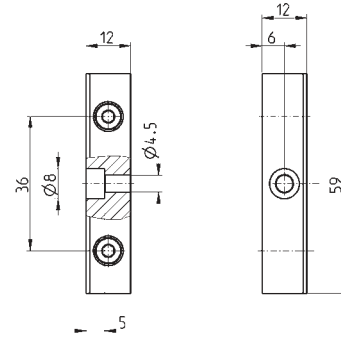


Mod.	Control	Command/Input signal	Sensor/External signal	
LRWD2-3*-1-A-00	flow	+/- 10 V	-	
LRWD2-3*-2-A-00	flow	0-10 V	-	
LRWD2-3*-5-A-00	flow	4..20 mA	-	
LRPD2-3*-1-2-00	pressure	+/- 10 V	0..10 V	
LRPD2-3*-2-2-00	pressure	0-10 V	0..10 V	
LRPD2-3*-5-2-00	pressure	4..20 mA	0..10 V	
LRPD2-3*-1-4-00	pressure	+/- 10 V	0 - 5 V	
LRPD2-3*-2-4-00	pressure	0-10 V	0 - 5 V	
LRPD2-3*-5-4-00	pressure	4..20 mA	0 - 5 V	
LRPD2-3*-1-5-00	pressure	+/- 10 V	4..20 mA	
LRPD2-3*-2-5-00	pressure	0-10 V	4..20 mA	
LRPD2-3*-5-5-00	pressure	4..20 mA	4..20 mA	
LRPD2-3*-1-B-00	pressure	+/- 10 V	1 bar internal	
LRPD2-3*-2-B-00	pressure	0-10 V	1 bar internal	
LRPD2-3*-5-B-00	pressure	4..20 mA	1 bar internal	
LRPD2-3*-1-D-00	pressure	+/- 10 V	10 bar internal	
LRPD2-3*-2-D-00	pressure	0-10 V	10 bar internal	
LRPD2-3*-5-D-00	pressure	4..20 mA	10 bar internal	
LRPD2-3*-1-E-00	pressure	+/- 10 V	250 mbar internal	
LRPD2-3*-2-E-00	pressure	0-10 V	250 mbar internal	
LRPD2-3*-5-E-00	pressure	4..20 mA	250 mbar internal	
LRPD2-3*-1-F-00	pressure	+/- 10 V	+1/-1 bar internal	
LRPD2-3*-2-F-00	pressure	0-10 V	+1/-1 bar internal	
LRPD2-3*-5-F-00	pressure	4..20 mA	+1/-1 bar internal	
LRXD2-3*-1-4-00	position	+/- 10 V	0-5 V	suitable to work with the 6PF cylinder
LRXD2-3*-2-4-00	position	0-10 V	0-5 V	suitable to work with the 6PF cylinder
LRXD2-3*-5-4-00	position	4..20 mA	0-5 V	suitable to work with the 6PF cylinder
LRXD2-3*-1-2-00	position	+/- 10 V	0-10 V	
LRXD2-3*-2-2-00	position	0-10 V	0-10 V	
LRXD2-3*-5-2-00	position	4..20 mA	0-10 V	
LRXD2-3*-1-5-00	position	+/- 10 V	4..20mA	
LRXD2-3*-2-5-00	position	0-10 V	4..20mA	
LRXD2-3*-5-5-00	position	4..20mA	4..20mA	

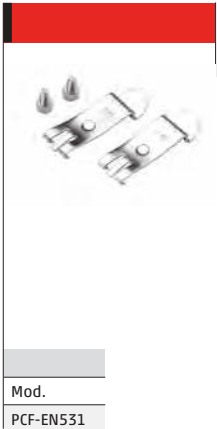


**Fixing foot Mod. LRADB**

Supplied with:  
2x feet  
4x screws



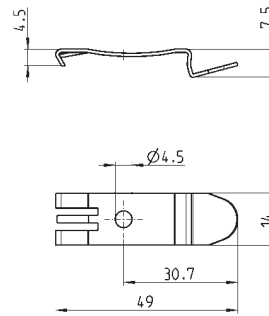
Mod.  
LRADB



**Mounting brackets for DIN-rail Mod. PCF-EN531**

DIN EN 50022 (7,5mm x 35mm - width 1)

Supplied with:  
2x mounting brackets  
2x screws M4x6 UNI 5931  
2x nuts

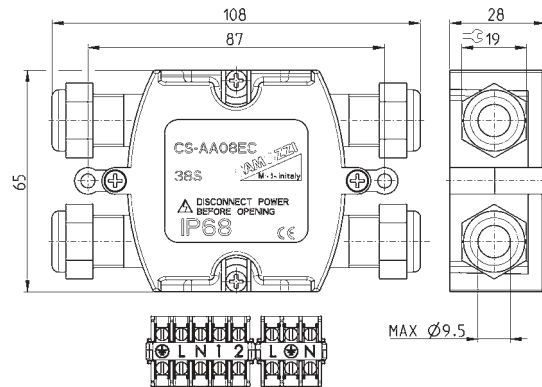


Mod.  
PCF-EN531



**Electrical tee box Mod. CS-AA08EC**

Connection valve-PLC-external transducer

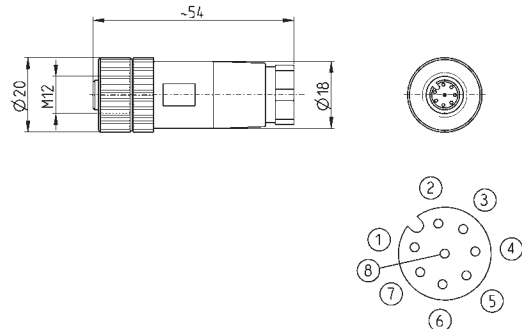


CS-AA08EC



**Straight female connector M12 8 poles**

For electric supply and commands

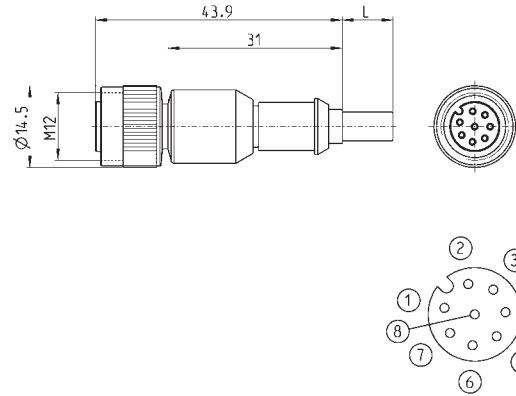


CS-LF08HC



**Cable with straight female connector M12 8 poles**

For electrical supply and commands

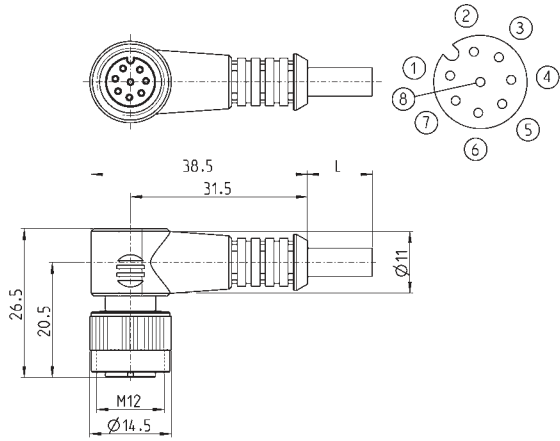


Mod.	Cable length (m)
CS-LF08HB-C200	2
CS-LF08HB-C500	5



**Cable with angular (90°) female connector M12 8 poles**

For electric supply and commands

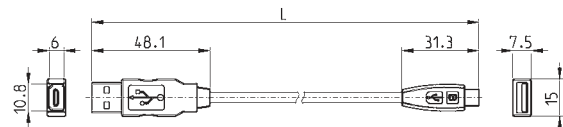


Mod.	Cable length (m)
CS-LR08HB-C200	2
CS-LR08HB-C500	5



**USB to Micro USB cable Mod. G11W-G12W-2**

For the hardware configuration of the Camozzi products



Mod.	description	connections	material for outer		cable length "L" (m)
			sheath		
G11W-G12W-2	black shielded cable 28 AWG	standard USB to Micro USB	PVC		2

# Electronic Proportional Regulator Series MX-PRO

New

Ports: G1/2

Manifold ports: G1/2

Modular - Available with built-in pressure gauges or ports for gauges

Valve: without pressure gauge



- » High precision
- » Low electric consumption
- » High exhaust flow
- » Modular with Series MX2
- » Available also in the MANIFOLD and external servo pilot supply versions
- » Suitable for use with oxygen

Series MX-PRO electronic proportional pressure regulator is the result of combining advanced technology of Series K8P electronic proportional micro regulator, with reliability and high performance of Series MX2 modular regulators. This new regulator ensures high precision in pressure regulation, high flow rate and low consumption. Moreover, it can take the most of Series MX ease of assembly to provide particularly compact Manifolds.

## GENERAL DATA

	PROPORTIONAL PRESSURE REGULATOR	PROPORTIONAL FLOW VALVE
Construction	modular, compact, diaphragm type	modular, piston type
Materials	see material tables on the following pages	see material tables on the following pages
Ports	G1/2	G1/2
Mounting	vertical in-line, wall-mounting (by means of clamps)	vertical in-line, wall-mounting (by means of clamps)
Working pressure	0°C ÷ 50°C	0°C ÷ 50°C
Max inlet pressure	11 bar (10 bar), 4 bar (3 bar), 1.5 bar (1 bar), 8 bar (7 bar)	6 bar
Regulated pressure	0.5 ÷ 10 bar, 0.15 ÷ 3 bar, 0.05 ÷ 1 bar, 0.35 ÷ 7	-
Max servo-pilot pressure	4 bar (3 bar), 11 bar (10 bar), 1.5 bar (1 bar), 8 bar (7 bar)	4 bar (essential for the proper functioning)
Overpressure exhaust	with Relieving (standard) or without Relieving	NO
Nominal flow	see flow diagrams on the following pages	see flow diagrams on the following pages
Air specifications	filtered compressed air, non lubricated, class 7.4.4 according to ISO 8573.1 standard. If lubrication is necessary, please use only oils with maximum viscosity of 32 Cst and the version with external servo-pilot supply. The servo-pilot supply air quality class must be 7.4.4 according to ISO 8573.1 standard.	filtered compressed air, non lubricated, class 7.4.4 according to ISO 8573.1 standard. If lubrication is necessary, please use only oils with maximum viscosity of 32 Cst and the version with external servo-pilot supply. The servo-pilot supply air quality class must be 7.4.4 according to ISO 8573.1 standard.
Pressure gauge	with built-in pressure gauge (standard) with G1/8 port	without pressure gauge
Analogical input	0-10 V DC Ripple ≤ 0.2%; 4 – 20 mA	0-10 V DC Ripple ≤ 0.2%; 4 – 20 mA
Analogical output	0.5 - 9.5 V DC [ Feedback ]	not relevant
Electrical supply	24 V DC ±10%	24 V DC ±10%
Electrical connection	M8 4 Pin (Male)	M8 4 Pin (Male)
Linearity	≤ ± 1% FS	±4% FS
Hysteresis	±0.5% FS	±8% FS
Repeatability	±0.5% FS	±0.35% FS
Sensibility	0.3% FS	5% FS
Protection class	IP51	IP51

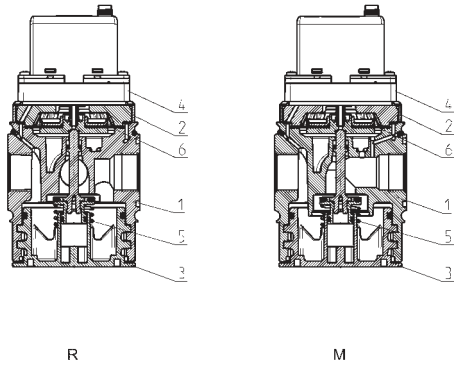
**CODING EXAMPLE**

<b>MX</b>	<b>2</b>	<b>-</b>	<b>1/2</b>	<b>-</b>	<b>R</b>	<b>CV</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>-</b>	<b>LH</b>
<b>MX</b>	SERIES										
<b>2</b>	SIZE: 2 = G1/2										
<b>1/2</b>	PORTS: 1/2 = G1/2										
<b>R</b>	TYPE OF REGULATOR: R = pressure regulator M = Manifold pressure regulator (G1/2 only) V = flow valve W = Manifold flow valve										
<b>CV</b>	COMMAND: CV = electrical command 0-10 V DC CA = electrical command 4-20 mA EV = electrical command 0-10 V DC with external servo pilot supply EA = electrical command 4-20 mA with external servo pilot supply										
<b>2</b>	REGULATOR OPERATING PRESSURE (1 bar = 14.5 psi): 1 = 0.15 - 3 bar 2 = 0.5 - 10 bar (standard) 3 = 0 - 1 bar 4 = 0 - 7 bar VALVE FLOW RANGE: 8 = low flow 9 = high flow										
<b>0</b>	DESIGN TYPE: 0 = relieving (standard) (regulator only) 1 = without relieving										
<b>4</b>	PRESSURE GAUGE: 0 = without pressure gauge (with threaded port for gauges) 2 = with built-in pressure gauge 0-6 and working pressure 0.15 - 3 bar (regulator only) 4 = with built-in pressure gauge 0-12 and working pressure 0.5 - 10 bar (standard) (regulator only)										
<b>LH</b>	FLOW DIRECTION: = from left to right (standard) LH = from right to left										
<b>OX1</b>	Versions: = standard OX1 = for use with oxygen (in compliance with ASTM G93-03 Level E), FKM seals										

For the assembly of a single component with fixing flanges or wall-mounting, see the Series MX catalog

**Series MX-PRO electronic proportional regulators - materials**

R = pressure regulator  
M = Manifold pressure regulator



PARTS	MATERIALS, standard version		Materials, oxygen version
1 = Body	Aluminium		Aluminium
2 = Covering	Polyacetal		PBT
3 = Valve holder plug	Polyacetal		PBT
4 = Upper base	Aluminum		Aluminum
5 = Lower spring	Stainless Steel		Stainless Steel
6 = Diaphragm	NBR		FKM
Seals	NBR		FKM



Series MX-PRO electronic proportional regulators



- Male connector M8 4 poles
- Pin 1: +24 V DC (Power supply)
- Pin 2: Command analogical signal  
0-10 V DC or 4-20 mA
- Pin 3: 0 V (Ground) common also  
for the command signal
- Pin 4: Output analogical signal  
(according to the  
regulated pressure)
- 5 red LED
- 6 green LED

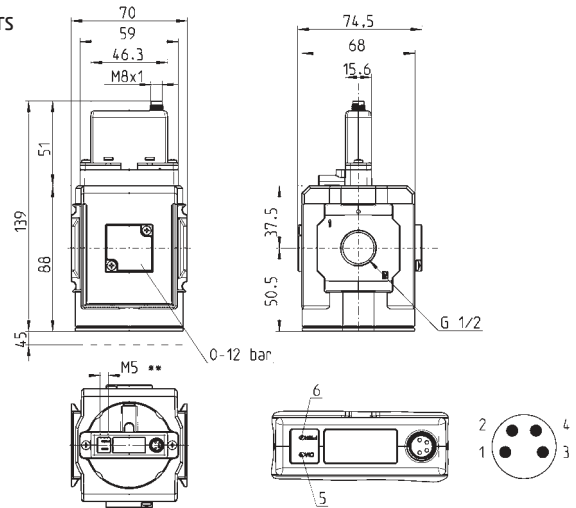
Accessories:  
see MX accessories

Assembled FRL:  
see Series MX

Connection cables:  
see Series K8P

DRAWING NOTE

\*\* = in the versions with external  
servo pilot supply only  
(MX2-1/2-REV... and MX2-1/2-REA...)

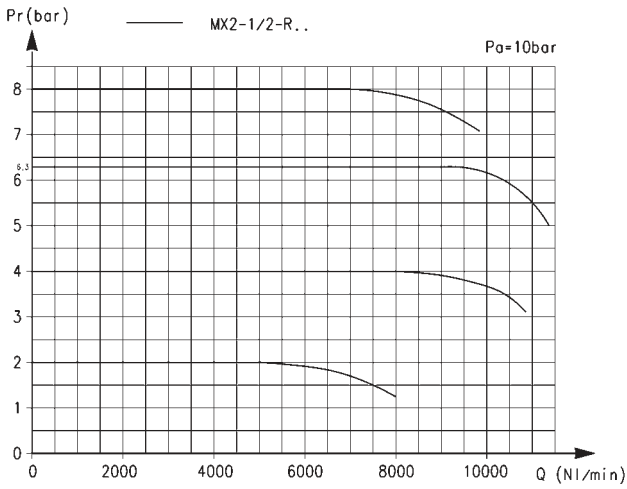


Mod.	Electrical command	Setting Range (1 bar = 14.5 psi)	Pressure gauge
MX2-1/2-R*V1**0	0-10 V DC	0 ÷ 3 bar	without pressure gauge
MX2-1/2-R*V1**2	0-10 V DC	0 ÷ 3 bar	with built-in pressure gauge 0-6
MX2-1/2-R*V1**4	0-10 V DC	0 ÷ 3 bar	with built-in pressure gauge 0-12
MX2-1/2-R*V2**0	0-10 V DC	0 ÷ 10 bar	without pressure gauge
MX2-1/2-R*V2**2	0-10 V DC	0 ÷ 10 bar	with built-in pressure gauge 0-6
MX2-1/2-R*V2**4	0-10 V DC	0 ÷ 10 bar	with built-in pressure gauge 0-12
MX2-1/2-R*V3**0	0-10 V DC	0 ÷ 1 bar	without pressure gauge
MX2-1/2-R*V3**2	0-10 V DC	0 ÷ 1 bar	with built-in pressure gauge 0-6
MX2-1/2-R*V3**4	0-10 V DC	0 ÷ 1 bar	with built-in pressure gauge 0-12
MX2-1/2-R*V4**0	0-10 V DC	0 ÷ 7 bar	without pressure gauge
MX2-1/2-R*V4**2	0-10 V DC	0 ÷ 7 bar	with built-in pressure gauge 0-6
MX2-1/2-R*V4**4	0-10 V DC	0 ÷ 7 bar	with built-in pressure gauge 0-12
MX2-1/2-R*A1**0	4-20 mA	0 ÷ 3 bar	without pressure gauge
MX2-1/2-R*A1**2	4-20 mA	0 ÷ 3 bar	with built-in pressure gauge 0-6
MX2-1/2-R*A1**4	4-20 mA	0 ÷ 3 bar	with built-in pressure gauge 0-12
MX2-1/2-R*A2**0	4-20 mA	0 ÷ 10 bar	without pressure gauge
MX2-1/2-R*A2**2	4-20 mA	0 ÷ 10 bar	with built-in pressure gauge 0-6
MX2-1/2-R*A2**4	4-20 mA	0 ÷ 10 bar	with built-in pressure gauge 0-12
MX2-1/2-R*A3**0	4-20 mA	0 ÷ 1 bar	without pressure gauge
MX2-1/2-R*A3**2	4-20 mA	0 ÷ 1 bar	with built-in pressure gauge 0-6
MX2-1/2-R*A3**4	4-20 mA	0 ÷ 1 bar	with built-in pressure gauge 0-12
MX2-1/2-R*A4**0	4-20 mA	0 ÷ 7 bar	without pressure gauge
MX2-1/2-R*A4**2	4-20 mA	0 ÷ 7 bar	with built-in pressure gauge 0-6
MX2-1/2-R*A4**4	4-20 mA	0 ÷ 7 bar	with built-in pressure gauge 0-12
MX2-1/2-R*V1**0-OX1	0-10 V DC	0 ÷ 3 bar	without pressure gauge
MX2-1/2-R*V1**2-OX1	0-10 V DC	0 ÷ 3 bar	with built-in pressure gauge 0-6
MX2-1/2-R*V1**4-OX1	0-10 V DC	0 ÷ 3 bar	with built-in pressure gauge 0-12
MX2-1/2-R*V3**0-OX1	0-10 V DC	0 ÷ 1 bar	without pressure gauge
MX2-1/2-R*V3**2-OX1	0-10 V DC	0 ÷ 1 bar	with built-in pressure gauge 0-6
MX2-1/2-R*V3**4-OX1	0-10 V DC	0 ÷ 1 bar	with built-in pressure gauge 0-12
MX2-1/2-R*V4**0-OX1	0-10 V DC	0 ÷ 7 bar	without pressure gauge
MX2-1/2-R*V4**2-OX1	0-10 V DC	0 ÷ 7 bar	with built-in pressure gauge 0-6
MX2-1/2-R*V4**4-OX1	0-10 V DC	0 ÷ 7 bar	with built-in pressure gauge 0-12
MX2-1/2-R*A1**0-OX1	4-20 mA	0 ÷ 3 bar	without pressure gauge
MX2-1/2-R*A1**2-OX1	4-20 mA	0 ÷ 3 bar	with built-in pressure gauge 0-6
MX2-1/2-R*A1**4-OX1	4-20 mA	0 ÷ 3 bar	with built-in pressure gauge 0-12
MX2-1/2-R*A3**0-OX1	4-20 mA	0 ÷ 1 bar	without pressure gauge
MX2-1/2-R*A3**2-OX1	4-20 mA	0 ÷ 1 bar	with built-in pressure gauge 0-6
MX2-1/2-R*A3**4-OX1	4-20 mA	0 ÷ 1 bar	with built-in pressure gauge 0-12
MX2-1/2-R*A4**0-OX1	4-20 mA	0 ÷ 7 bar	without pressure gauge
MX2-1/2-R*A4**2-OX1	4-20 mA	0 ÷ 7 bar	with built-in pressure gauge 0-6
MX2-1/2-R*A4**4-OX1	4-20 mA	0 ÷ 7 bar	with built-in pressure gauge 0-12

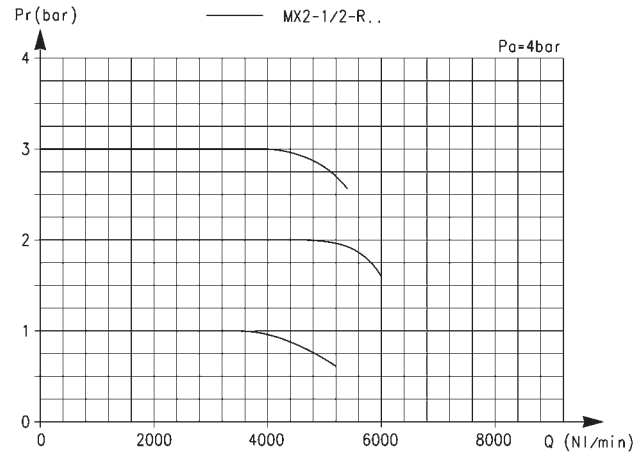
TABLE NOTES:

- \* = versions with or without external pilot supply
- \*\* = versions with our without relieving
- LH = add LH at the end of the code for air inlet from the right to the left

PRESSURE REGULATOR FLOW DIAGRAMS - STANDARD VERSION

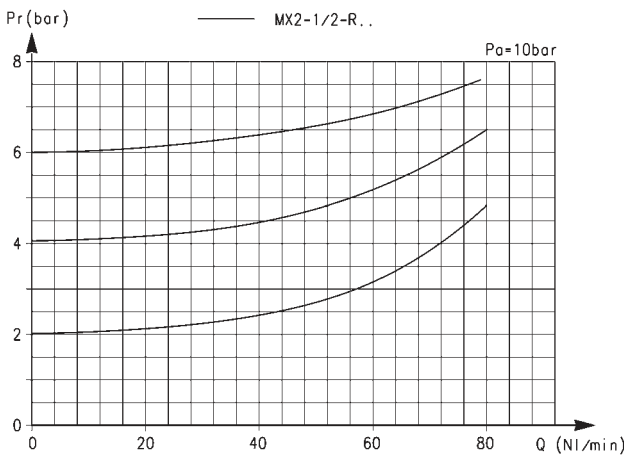


Pr = Regulated pressure  
Q = Flow  
Pa = Inlet pressure

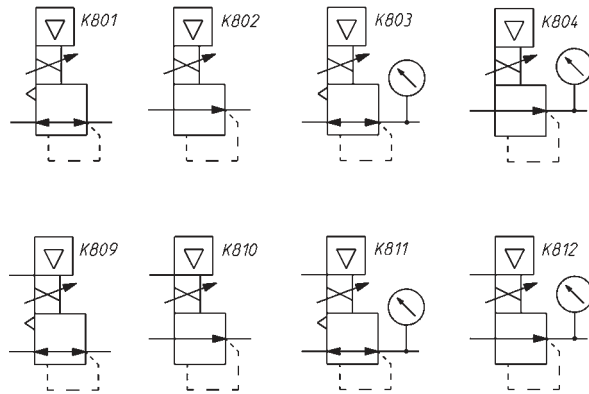


Pr = Regulated pressure  
Q = Flow  
Pa = Inlet pressure

EXHAUST FLOW DIAGRAM AND PNEUMATIC SYMBOLS



Exhaust flow diagram  
Pr = Regulated pressure  
Q = Flow  
Pa = Inlet pressure

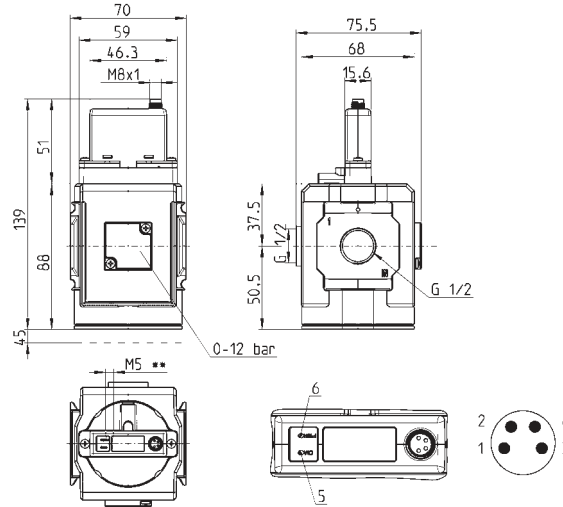


K801 = relieving, electrical command  
K802 = NO relieving, electrical command  
K803 = relieving, electrical command, built-in pressure gauge  
K804 = NO relieving, electrical command, built-in pressure gauge  
K809 = relieving, electrical command, ext. servo pilot supply  
K810 = NO relieving, electrical command, ext. servo pilot supply  
K811 = relieving, el. com., built-in pr. gauge, ext. servo pilot supply  
K812 = NO relieving, el. com., built-in pr. gauge, ext. servo pilot supply

Series MX-PRO Manifold regulators - dimensions



- Male connector M8 4 poles
- Pin 1: +24 V DC (Power supply)
- Pin 2: Command analogical signal  
0-10 V DC or 4-20 mA
- Pin 3: 0 V (Ground) common also  
for the command signal
- Pin 4: Output analogical signal  
(according to the  
regulated pressure)
- 5 red LED
- 6 green LED



DRAWING NOTE

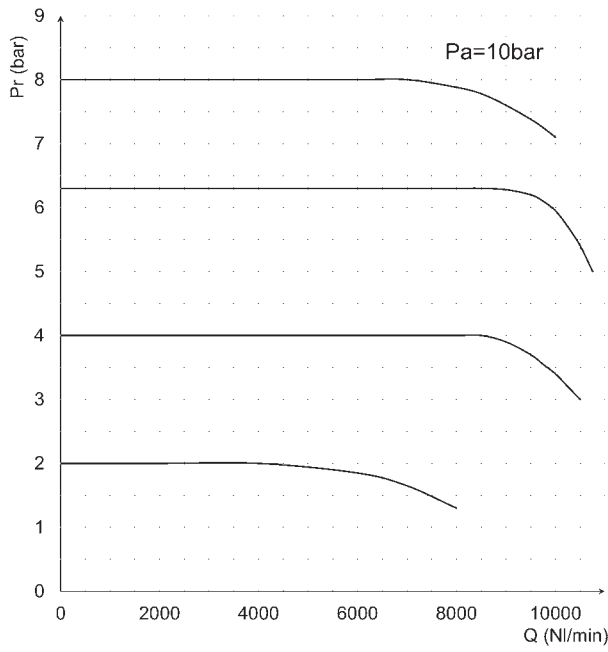
\*\* = in the versions with external servo pilot supply only (MX2-1/2-REV... and MX2-1/2-REA...)

Accessories:  
see MX accessories

Assembled FRL:  
see Series MX

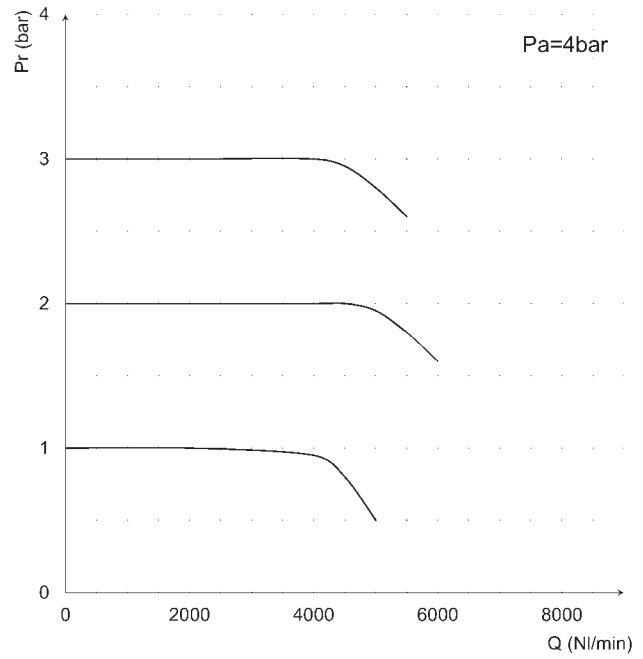
Connection cables:  
see Series K8P

Mod.	Electrical command	Setting range (1 bar = 14.5 psi)	Pressure gauge
MX2-1/2-M*V1**0	0-10 V DC	0 ÷ 3 bar	without pressure gauge
MX2-1/2-M*V1**2	0-10 V DC	0 ÷ 3 bar	with built-in pressure gauge 0-6
MX2-1/2-M*V1**4	0-10 V DC	0 ÷ 3 bar	with built-in pressure gauge 0-12
MX2-1/2-M*V2**0	0-10 V DC	0 ÷ 10 bar	without pressure gauge
MX2-1/2-M*V2**2	0-10 V DC	0 ÷ 10 bar	with built-in pressure gauge 0-6
MX2-1/2-M*V2**4	0-10 V DC	0 ÷ 10 bar	with built-in pressure gauge 0-12
MX2-1/2-M*V3**0	0-10 V DC	0 ÷ 1 bar	without pressure gauge
MX2-1/2-M*V3**2	0-10 V DC	0 ÷ 1 bar	with built-in pressure gauge 0-6
MX2-1/2-M*V3**4	0-10 V DC	0 ÷ 1 bar	with built-in pressure gauge 0-12
MX2-1/2-M*V4**0	0-10 V DC	0 ÷ 7 bar	without pressure gauge
MX2-1/2-M*V4**2	0-10 V DC	0 ÷ 7 bar	with built-in pressure gauge 0-6
MX2-1/2-M*V4**4	0-10 V DC	0 ÷ 7 bar	with built-in pressure gauge 0-12
MX2-1/2-M*A1**0	4-20 mA	0 ÷ 3 bar	without pressure gauge
MX2-1/2-M*A1**2	4-20 mA	0 ÷ 3 bar	with built-in pressure gauge 0-6
MX2-1/2-M*A1**4	4-20 mA	0 ÷ 3 bar	with built-in pressure gauge 0-12
MX2-1/2-M*A2**0	4-20 mA	0 ÷ 10 bar	without pressure gauge
MX2-1/2-M*A2**2	4-20 mA	0 ÷ 10 bar	with built-in pressure gauge 0-6
MX2-1/2-M*A2**4	4-20 mA	0 ÷ 10 bar	with built-in pressure gauge 0-12
MX2-1/2-M*A3**0	4-20 mA	0 ÷ 1 bar	without pressure gauge
MX2-1/2-M*A3**2	4-20 mA	0 ÷ 1 bar	with built-in pressure gauge 0-6
MX2-1/2-M*A3**4	4-20 mA	0 ÷ 1 bar	with built-in pressure gauge 0-12
MX2-1/2-M*A4**0	4-20 mA	0 ÷ 7 bar	without pressure gauge
MX2-1/2-M*A4**2	4-20 mA	0 ÷ 7 bar	with built-in pressure gauge 0-6
MX2-1/2-M*A4**4	4-20 mA	0 ÷ 7 bar	with built-in pressure gauge 0-12
MX2-1/2-M*V1**0-OX1	0-10 V DC	0 ÷ 3 bar	without pressure gauge
MX2-1/2-M*V1**2-OX1	0-10 V DC	0 ÷ 3 bar	with built-in pressure gauge 0-6
MX2-1/2-M*V1**4-OX1	0-10 V DC	0 ÷ 3 bar	with built-in pressure gauge 0-12
MX2-1/2-M*V3**0-OX1	0-10 V DC	0 ÷ 1 bar	without pressure gauge
MX2-1/2-M*V3**2-OX1	0-10 V DC	0 ÷ 1 bar	with built-in pressure gauge 0-6
MX2-1/2-M*V3**4-OX1	0-10 V DC	0 ÷ 1 bar	with built-in pressure gauge 0-12
MX2-1/2-M*V4**0-OX1	0-10 V DC	0 ÷ 7 bar	without pressure gauge
MX2-1/2-M*V4**2-OX1	0-10 V DC	0 ÷ 7 bar	with built-in pressure gauge 0-6
MX2-1/2-M*V4**4-OX1	0-10 V DC	0 ÷ 7 bar	with built-in pressure gauge 0-12
MX2-1/2-M*A1**0-OX1	4-20 mA	0 ÷ 3 bar	without pressure gauge
MX2-1/2-M*A1**2-OX1	4-20 mA	0 ÷ 3 bar	with built-in pressure gauge 0-6
MX2-1/2-M*A1**4-OX1	4-20 mA	0 ÷ 3 bar	with built-in pressure gauge 0-12
MX2-1/2-M*A3**0-OX1	4-20 mA	0 ÷ 1 bar	without pressure gauge
MX2-1/2-M*A3**2-OX1	4-20 mA	0 ÷ 1 bar	with built-in pressure gauge 0-6
MX2-1/2-M*A3**4-OX1	4-20 mA	0 ÷ 1 bar	with built-in pressure gauge 0-12
MX2-1/2-M*A4**0-OX1	4-20 mA	0 ÷ 7 bar	without pressure gauge
MX2-1/2-M*A4**2-OX1	4-20 mA	0 ÷ 7 bar	with built-in pressure gauge 0-6
MX2-1/2-M*A4**4-OX1	4-20 mA	0 ÷ 7 bar	with built-in pressure gauge 0-12



Pr = Regulated pressure  
Q = Flow

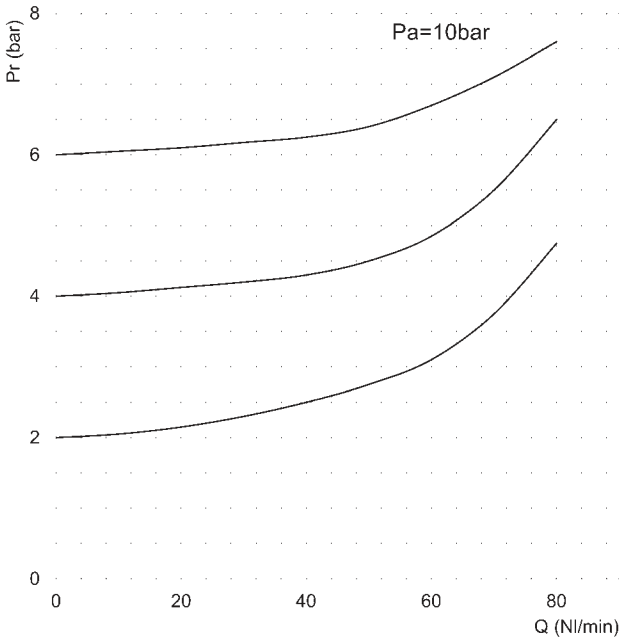
Pa = Inlet pressure



Pr = Regulated pressure  
Q = Flow

Pa = Inlet pressure

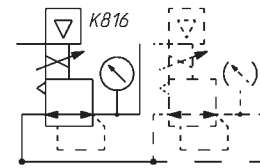
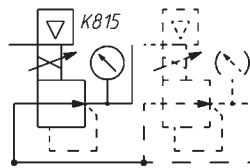
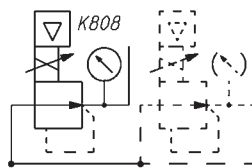
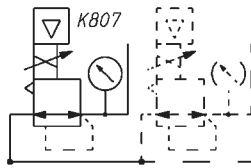
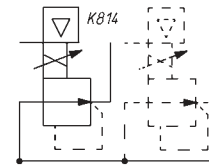
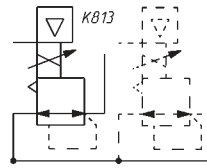
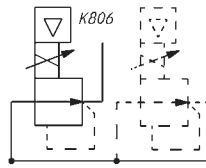
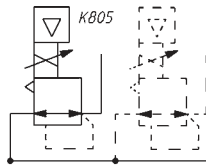
EXHAUST FLOW DIAGRAM - MANIFOLD VERSION



Pr = Regulated pressure  
Q = Flow

Pa = Inlet pressure

PNEUMATIC SYMBOLS - MANIFOLD VERSION



- K805 = MANIFOLD reg., relieving, electrical command
- K806 = MANIFOLD reg., NO relieving, electrical command
- K807 = MANIFOLD reg., relieving, electrical command and built-in pressure gauge
- K808 = MANIFOLD reg., NO relieving, electrical command and built-in pressure gauge

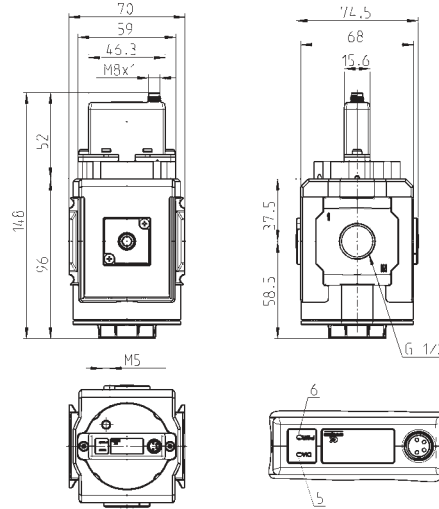
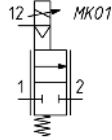
- K813 = MANIFOLD reg., relieving, electrical command, and external servo pilot supply
- K814 = MANIFOLD reg., NO relieving, electrical command, and external servo pilot supply
- K815 = MANIFOLD reg., relieving, electrical command, built-in pressure gauge and external servo pilot supply
- K816 = MANIFOLD reg., NO relieving, electrical command, built-in pressure gauge and external servo pilot supply

Series MX-PRO proportional flow valve



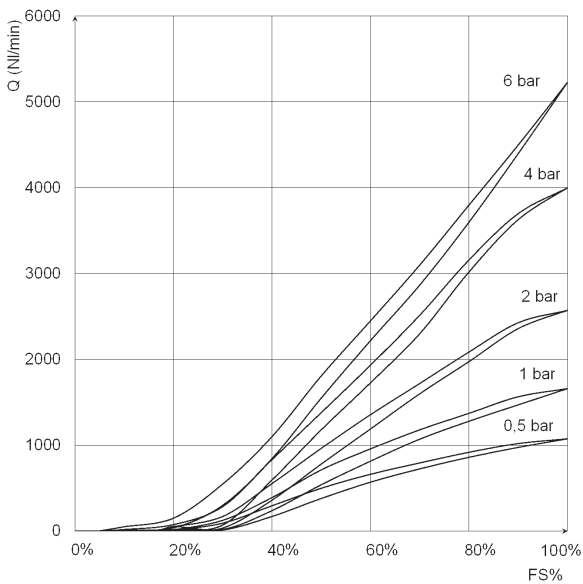
Male connector M8 4 poles  
 Pin 1: +24 V DC (Power supply)  
 Pin 2: Command analogical signal  
 0-10 V DC or 4-20 mA  
 Pin 3: 0 V (Ground) common also for  
 the command signal  
 Pin 4: Output analogical signal  
 (according to the regulated  
 pressure)

5 red LED  
 6 green LED



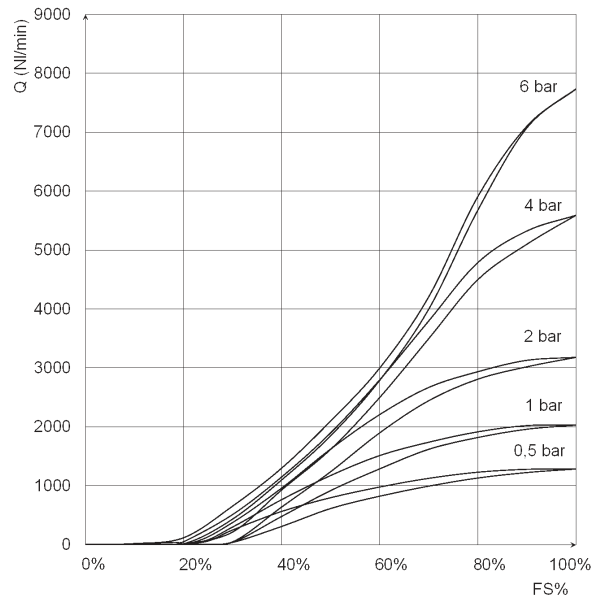
Mod.	Electrical command	Setting range
MX2-1/2-VEV810	0-10 V DC, external servo pilot supply	low flow
MX2-1/2-VEA810	4-20 mA, external servo pilot supply	low flow
MX2-1/2-VEV910	0-10 V DC, external servo pilot supply	high flow
MX2-1/2-VEA910	4-20 mA, external servo pilot supply	high flow
MX2-1/2-VEV810-LH	0-10 V DC, external servo pilot supply	low flow
MX2-1/2-VEA810-LH	4-20 mA, external servo pilot supply	low flow
MX2-1/2-VEV910-LH	0-10 V DC, external servo pilot supply	high flow
MX2-1/2-VEA910-LH	4-20 mA, external servo pilot supply	high flow
MX2-1/2-VEV810-OX1	0-10 V DC, external servo pilot supply	low flow
MX2-1/2-VEA810-OX1	4-20 mA, external servo pilot supply	low flow
MX2-1/2-VEV910-OX1	0-10 V DC, external servo pilot supply	high flow
MX2-1/2-VEA910-OX1	4-20 mA, external servo pilot supply	high flow
MX2-1/2-VEV810-LHOX1	0-10 V DC, external servo pilot supply	low flow
MX2-1/2-VEA810-LHOX1	4-20 mA, external servo pilot supply	low flow
MX2-1/2-VEV910-LHOX1	0-10 V DC, external servo pilot supply	high flow
MX2-1/2-VEA910-LHOX1	4-20 mA, external servo pilot supply	high flow

VALVE FLOW DIAGRAMS



Low flow version

Q (NL/min) = flow  
 FS% = full scale command signal



High flow

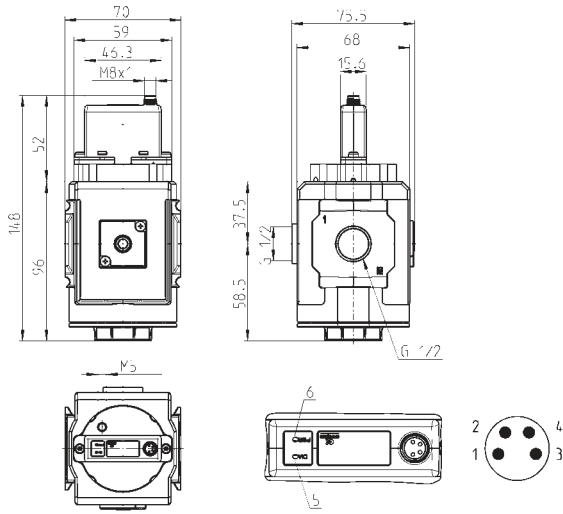
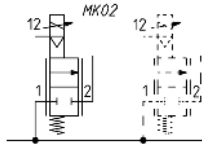
Q (NL/min) = flow  
 FS% = full scale command signal

Series MX-PRO Manifold proportional flow valve



Male connector M8 4 poles  
 Pin 1: +24 V DC (Power supply)  
 Pin 2: Command analogical signal  
 0-10 V DC or 4-20 mA  
 Pin 3: 0 V (Ground) common also for  
 the command signal  
 Pin 4: Output analogical signal  
 (according to the regulated  
 pressure)

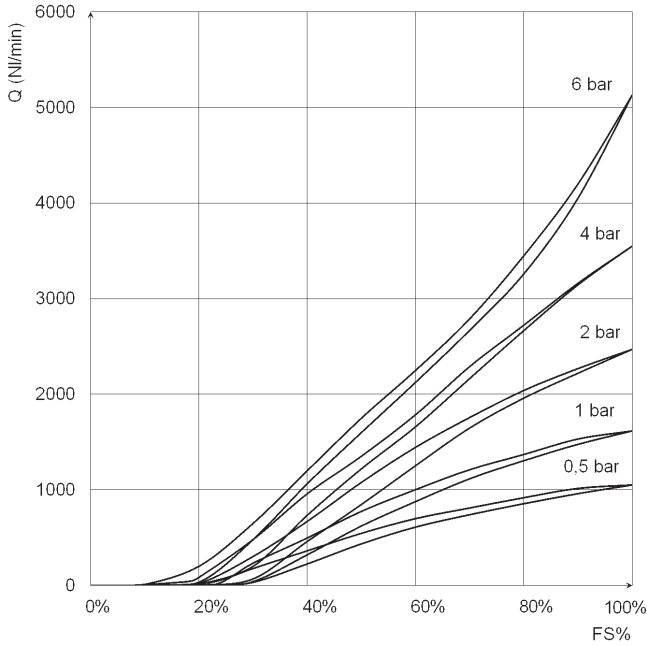
5 red LED  
 6 green LED



Mod.	Electrical command	Setting range
MX2-1/2-WEV810	0-10 V DC, external servo pilot supply	low flow
MX2-1/2-WEA810	4-20 mA, external servo pilot supply	low flow
MX2-1/2-WEV910	0-10 V DC, external servo pilot supply	high flow
MX2-1/2-WEA910	4-20 mA, external servo pilot supply	high flow
MX2-1/2-WEV810-LH	0-10 V DC, external servo pilot supply	low flow
MX2-1/2-WEA810-LH	4-20 mA, external servo pilot supply	low flow
MX2-1/2-WEV910-LH	0-10 V DC, external servo pilot supply	high flow
MX2-1/2-WEA910-LH	4-20 mA, external servo pilot supply	high flow
MX2-1/2-WEV810-OX1	0-10 V DC, external servo pilot supply	low flow
MX2-1/2-WEA810-OX1	4-20 mA, external servo pilot supply	low flow
MX2-1/2-WEV910-OX1	0-10 V DC, external servo pilot supply	high flow
MX2-1/2-WEA910-OX1	4-20 mA, external servo pilot supply	high flow
MX2-1/2-WEV810-LHOX1	0-10 V DC, external servo pilot supply	low flow
MX2-1/2-WEA810-LHOX1	4-20 mA, external servo pilot supply	low flow
MX2-1/2-WEV910-LHOX1	0-10 V DC, external servo pilot supply	high flow
MX2-1/2-WEA910-LHOX1	4-20 mA, external servo pilot supply	high flow

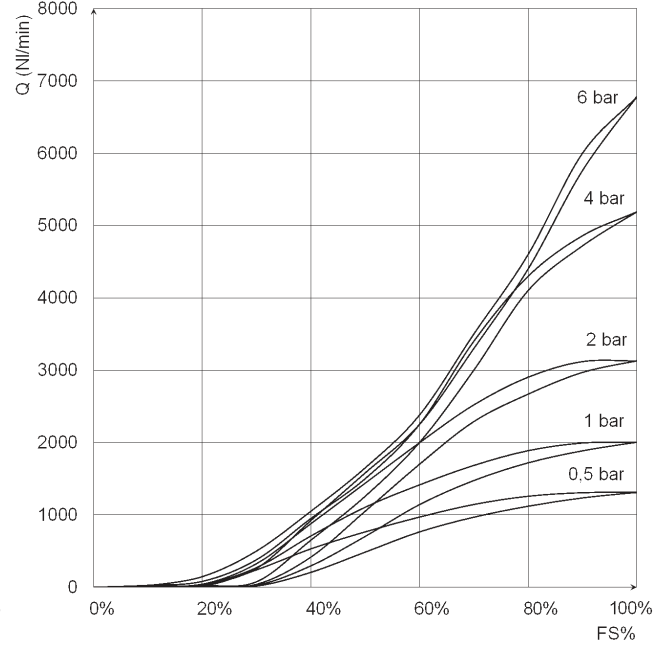
PROPORTIONAL TECHNOLOGY

VALVE FLOW DIAGRAMS - MANIFOLD VERSION



Low flow version

Q (NL/min) = flow  
FS% = full scale command signal

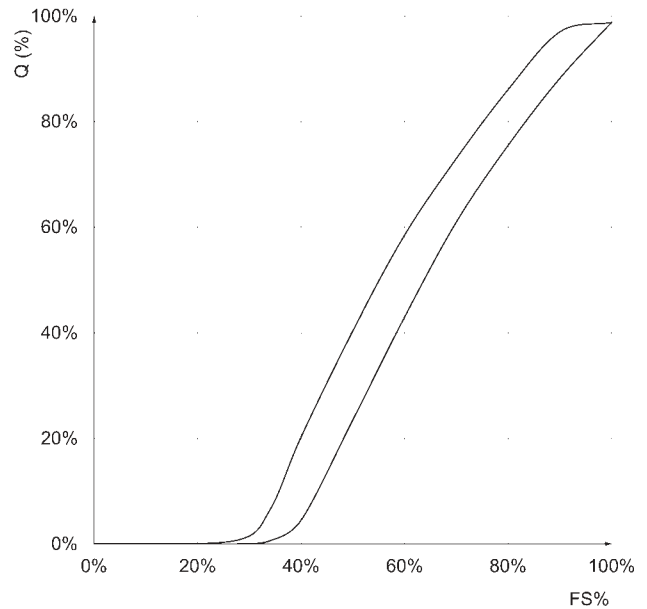


High flow version

Q (NL/min) = flow  
FS% = full scale command signal

Flow characteristic curve of a proportional valve

Q% = flow  
FS% = full scale command signal



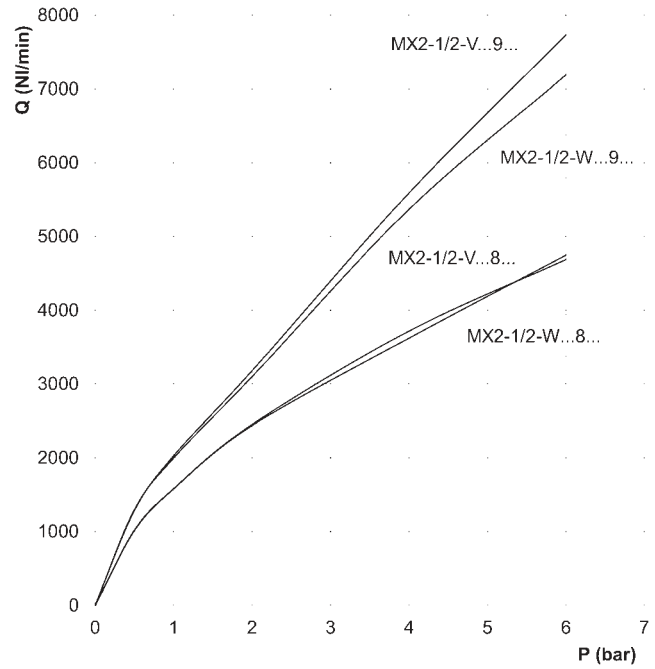


Valve maximum flow and response times

Maximum flow according to the inlet pressure

DIAGRAM LEGEND:

Q = flow (NL/min)  
P = inlet pressure (bar)



Pin	Type	Flow at steady speed [NL/min]	Command [V]	Load response time (ms)				Exhaust response time (ms)				
				0-10%	0-50%	0-90%	0-99%	0-10%	0-50%	0-90%	0-99%	
2 bar	Low flow	Standard	915	6	351	452.4	967.2	6240	171.6	284.7	487.5	624
		Manifold	1000	6.3	327.6	421.2	951.6	6162	249.6	366.6	577.2	780
	High flow	Standard	960	4.7	331.5	444.6	1279.2	6942	245.7	329.16	526.5	702
		Manifold	960	4.2	313	420	1156	9700	200	340	540	800
4 bar	Low flow	Standard	952	5.4	319.8	436.8	1029.6	7410	187.2	304.2	491.4	624
		Manifold	925	5.3	284.7	408.72	1474.2	6240	237.9	370.5	557.7	897
	High flow	Standard	970	4.4	279.24	429	1177.8	7878	225	351	526.5	741
		Manifold	940	3.8	230	400	1680	8500	175	360	580	900
				Set flow: about 1000 NL/min								

**Rapid clamp kit Mod. MX2-...**

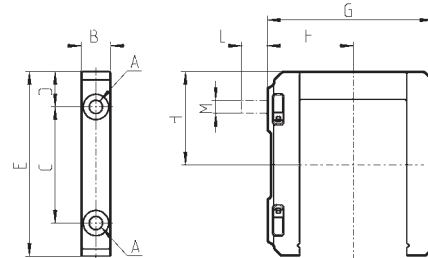


The kit MX2-X is supplied with:  
 1 rapid clamp, 1 O-ring OR 3125 \*,  
 2 exagonal nuts M5, 2 screws M5x69.

The kit MX2-Z is supplied with:  
 1 rapid clamp, 1 O-ring OR 3125 \*,  
 1 exagonal nut M5, 1 screw M5x69,  
 1 screw M5x85 for wall fixing.

\* it can be ordered separately (cod. 160-39-11/19)

Materials: technopolymer clamp, NBR O-ring,  
 zinc-plated steel nuts and screws.



DIMENSIONS											
Mod.	A	B	C	D	E	F	G	H	L	M	Notes
MX2-X	5.2	12	46	14	73.5	37.5	70.5	37	-	-	
MX2-Z	5.2	12	46	14	73.5	37.5	70.5	37	14	M5	kit with wall fixing screw

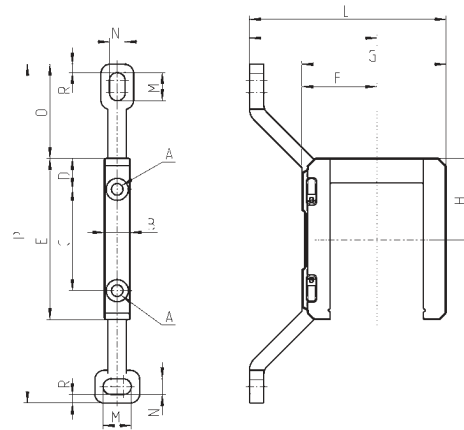
**Rapid clamp kit with wall fixing brackets**



The kit MX2-Y is supplied with:  
 1 wall rapid clamp, 1 O-ring OR 3125 \*\*, 2 exagonal nuts,  
 2 screws M5x69.

\*\* it can be separately ordered (cod. 160-39-11/19)

Materials: technopolymer clamp, NBR O-ring,  
 zinc-plated steel nuts and screws.



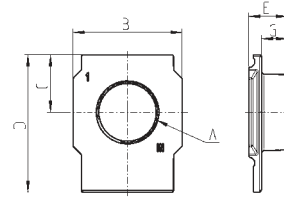
Mod.	A	B	C	D	E	F	G	H	I	L	M	N	O	P	R
MX2-Y	5,2	12	46	14	73,5	32,5	70,5	37	70,5	103	12	6,5	42	152	4

**Terminal flanges (IN/OUT)**



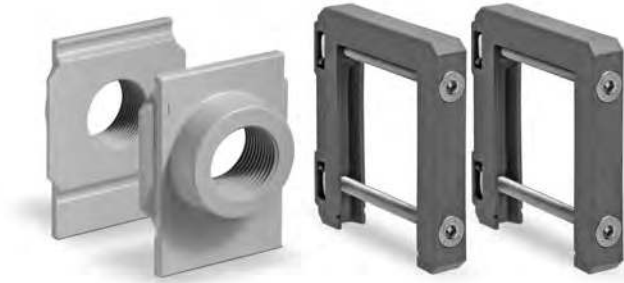
The kit is supplied with:  
 - 1 flange INLET side  
 - 1 flange OUTLET side

Materials: painted aluminium flanges.



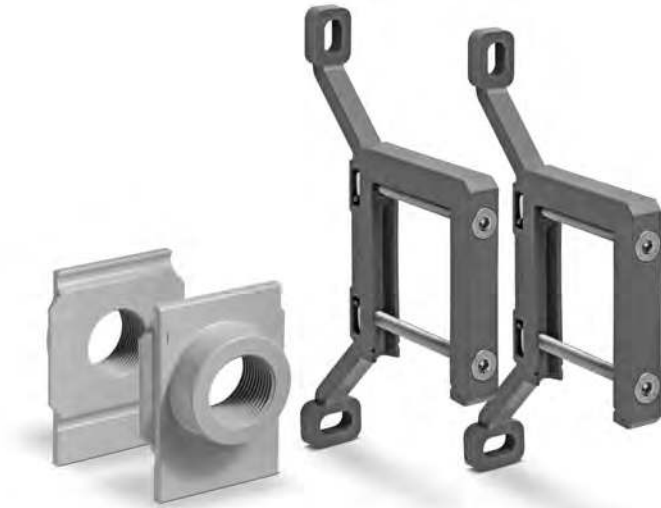
Mod.	A	B	C	D	E	G
MX2-1/2-FL	G1/2	50	26,5	63,5	17	11

**Rapid clamps kit + flanges**



Mod.	The kit is supplied with:
MX2-1/2-HH	1x MX2-1/2-FL + 2x MX2-X
MX2-1/2-JJ	1x MX2-1/2-FL + 2x MX2-Z

Rapid clamps kit with wall fixing brackets + flanges

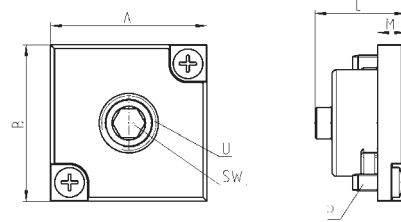


Mod.	The kit is supplied with:
MX2-1/2-KK	1x MX2-1/2-FL + 2x MX2-Y

Threaded block for mounting external gauge

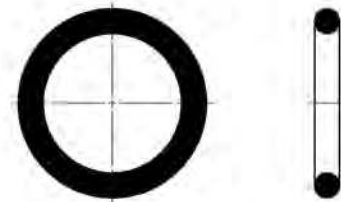


The kit is supplied with:  
 1 block  
 1 plug  
 2 screws  
 1 seal



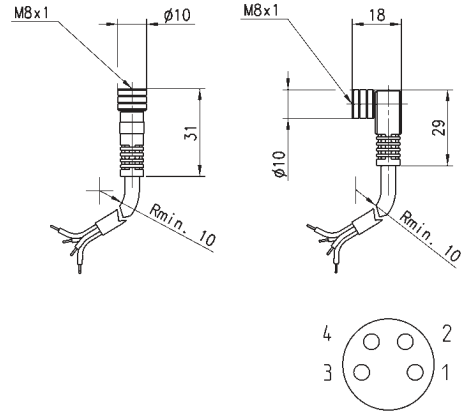
DIMENSIONS							
Mod.	A	B	L	M	P	U	SW
MX2-R26/1-P	28	28	16.5	5	M3X7	1/8	5

O-ring for assembling



Mod.	O-ring	For assembly
160-39-11/19	OR 3125	MX2

Circular M8 4-pole connectors, Female  
 With PU sheathing, non shielded cable.  
 Protection class: IP65










Mod.	Type of connector	Cable length (m)
CS-DF04EG-E200	straight	2
CS-DF04EG-E500	straight	5
CS-DR04EG-E200	right angle (90 degrees)	2
CS-DR04EG-E500	right angle (90 degrees)	5



## 7 Additional Products & Accessories

Page

Series WS <b>NEW</b>		Water Separator	<b>275</b>
Series M, N, T, MC, and MX		Pressure Gauges	<b>276</b>
Series PG <b>NEW</b>		Digital Pressure Gauges	<b>279</b>
		Solenoids U7* - U7*EX - G7* - A8* - H8*	<b>283</b>
Series SWMN <b>NEW</b>		Electronic Vacuum/Pressure Switches in mini format	<b>290</b>
Series SWDN <b>NEW</b>		Electronic Vacuum/Pressure Switches	<b>295</b>
Series SWCN <b>NEW</b>		Electronic Vacuum/Pressure Switches	<b>299</b>

7

ADDITIONAL PRODUCTS AND ACCESSORIES

# Water Separator Series WS


  
New

Ports 3/8" - 1" NPTF



- » Wide flow range
- » Air quality according to ISO Class 3 particulate
- » Heavy duty water removal
- » Aluminum Bowl
- » High performance in cold weather

Inverse flow filter-dryer with all stainless steel mesh filter packing. Excellent water & dirt capture to 3 microns. ISO Class 3 Particulate.

Generally used in main lines and in heavy duty service where water removal is needed.

## General Data

Port Sizes	3/8", 1/2", 3/4", 1"
Thread Styles	NPT, BSPT, BSPP
Materials	Heads & Clamping Rings: Zinc Bowls: Aluminum
Flow Capacity	60, 120, or 175 scfm @ 100 PSI
Filter	3.0 Micron & larger, ISO Class 3 Particulate
Differential Pressure	< 1.5 PSID at rated flow
Max Pressure	200 PSIG
Operating Temperature	32°F - 175°F
Bowl Condensate Capacity	12 oz.

## DIMENSIONS (in inches)

Model	Flow	Port Size	Drain Type	Height	Width	Depth	Approx.Weight
CM-WS060-3ADTF	60	3/8"	Auto	10	3.9	3.9	3.5 lbs.
CM-WS060-4ADTF	60	1/2"	Auto	10	3.9	3.9	3.5 lbs.
CM-WS120-4ADTF	120	1/2"	Auto	17	4.6	4.8	6 lbs.
CM-WS120-6ADTF	120	3/4"	Auto	17	4.6	4.8	6 lbs.
CM-WS120-8ADTF	120	1"	Auto	17	4.6	4.8	6 lbs.
CM-WS175-4ADTF	175	1/2"	Auto	17	4.6	4.8	6 lbs.
CM-WS175-6ADTF	175	3/4"	Auto	17	4.6	4.8	6 lbs.
CM-WS175-8ADTF	175	1"	Auto	17	4.6	4.8	6 lbs.
CM-WS060-3MDTF	60	3/8"	Manual	10	3.9	4.8	3.5 lbs.
CM-WS060-4MDTF	60	1/2"	Manual	10	3.9	4.8	3.5 lbs.
CM-WS120-4MDTF	120	1/2"	Manual	17	4.6	4.8	6 lbs.
CM-WS120-6MDTF	120	3/4"	Manual	17	4.6	4.8	6 lbs.
CM-WS120-8MDTF	120	1"	Manual	17	4.6	4.8	6 lbs.
CM-WS175-4MDTF	175	1/2"	Manual	17	4.6	4.8	6 lbs.
CM-WS175-6MDTF	175	3/4"	Manual	17	4.6	4.8	6 lbs.
CM-WS175-8MDTF	175	1"	Manual	17	4.6	4.8	6 lbs.



# Pressure Gauges

7

Various pressure ranges

Various connections: radial, rear, for panel mounting

Precision classes: CL1.6 and CL2.5 (maximum permissible error as percentage of full span)



- » Precision class CL1,6 (+/- 1.6% of full span)  
(mod. M063...)
- » Precision class CL2,5 (+/- 2.5% of full span)  
(mod. M043... and M053...)
- » NPTF Gauges have accuracy of 3-2-3%, conforming to ASME/ASNI B40.1 Grade B

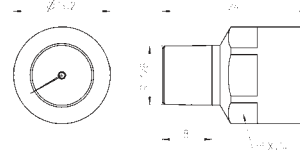
ADDITIONAL PRODUCTS AND ACCESSORIES

**To select the most suitable pressure gauge, the measurement range should be chosen considering the type of application according to the following criteria:**

- 1. Constant pressure or pressure with slow fluctuations should be within 75% of the maximum scale value.**
- 2. Pulsing pressure or rapid fluctuations should be within 65% of the maximum scale value.**
- 3. Pressure peaks should never exceed the maximum scale value.**

Miniature pressure gauge

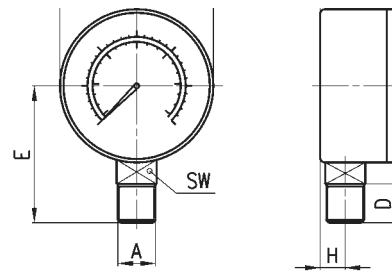
New model



Mod.	Range
M015-P08	0 ÷ 8 bar

Pressure gauges with radial connection

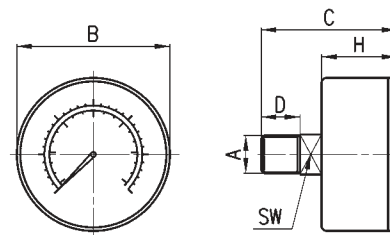
Precision class CL1,6



DIMENSIONS (in inches)						
Mod.	A	B	C	D	E	Range
M043-R06	R1/8	Ø 1.595	0.965	0.394	2.244	0-85 psi
M043-R12	R1/8	Ø 1.595	0.965	0.394	2.244	0-175 psi
M053-R12	R1/8	Ø 2.067	1.142	0.394	2.756	0-175 psi
M063-R12	R1/4	Ø 2.480	1.102	0.472	3.268	0-175 psi

Pressure gauges with rear connection

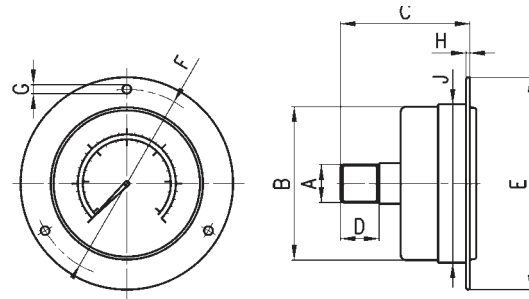
Precision class CL1,6



DIMENSIONS (in inches)					
Mod.	A	B	C	D	Range
M043-P02,5	R1/8	Ø 1.595	1.555	0.394	0-25 psi
M043-P04	R1/8	Ø 1.595	1.555	0.394	0-60 psi
M043-P06	R1/8	Ø 1.595	1.555	0.394	0-85 psi
M043-P10	R1/8	Ø 1.595	1.555	0.394	0-145 psi
M043-P12	R1/8	Ø 1.595	1.555	0.394	0-175 psi
M053-P04	R1/8	Ø 2.067	1.772	0.394	0-60 psi
M053-P06	R1/8	Ø 2.067	1.772	0.394	0-85 psi
M053-P10	R1/8	Ø 2.067	1.772	0.394	0-145 psi
M053-P12	R1/8	Ø 2.067	1.772	0.394	0-175 psi
M063-P04	R1/4	Ø 2.480	1.791	0.472	0-60 psi
M063-P06	R1/4	Ø 2.480	1.791	0.472	0-85 psi
M063-P12	R1/4	Ø 2.480	1.791	0.472	0-175 psi

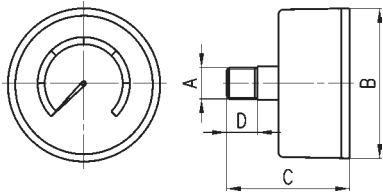
Pressure gauges for panel mounting

Materials: painted aluminum



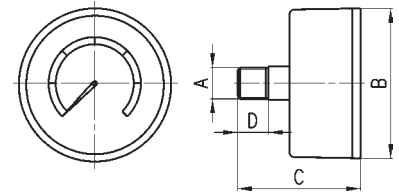
DIMENSIONS (in inches)										
Mod.	A	B	C	D	E	F	G	H	J	Range
M043-F04	R1/8	Ø 1.595	1.496	0.394	Ø 2.382	2.087	Ø 0.138	0.472	1.673	0-60 psi
M043-F06	R1/8	Ø 1.595	1.496	0.394	Ø 2.382	2.087	Ø 0.138	0.472	1.673	0-85 psi
M043-F10	R1/8	Ø 1.595	1.496	0.394	Ø 2.382	2.087	Ø 0.138	0.472	1.673	0-145 psi
M043-F12	R1/8	Ø 1.595	1.496	0.394	Ø 2.382	2.087	Ø 0.138	0.472	1.673	0-175 psi
M063-F12	R1/4	Ø 2.480	1.693	0.472	Ø 3.307	2.933	Ø 0.138	0.472	2.500	0-175 psi

Pressure gauges  
Mod. M043-P04TF (0 - 60 psi)  
Nominal face size 1 1/2"



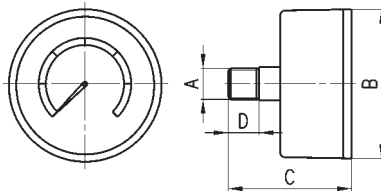
DIMENSIONS (in inches)				
Mod.	A	B	C	D
M043-P04TF	1/8" NPTF	1.655	1.600	0.950

Pressure gauges  
Mod. M043-P10TF (0 - 160 psi)  
Nominal face size 1 1/2"



DIMENSIONS (in inches)				
Mod.	A	B	C	D
M043-P10TF	1/8" NPTF	1.655	1.600	0.950

Pressure gauges  
Mod. M063-P10TF (0 - 160 psi)  
Nominal face size 2"



DIMENSIONS (in inches)				
Mod.	A	B	C	D
M063-P10TF	1/4" NPTF	2.180	1.878	0.900

NPTF Gauges have accuracy of 3-2-3%, conforming to ASME/ASNI B40.1 Grade B

# Digital Pressure Gauges Series PG



New

7

Direct mounting with rear or panel connection



- » Pressure unit on display
- » Battery-powered or with power cable
- » Easy and fast read out with digital display
- » 4 user programmable pressure units available
- » Power saving mode
- » Back light
- » Dust-proof and splash-proof (IP65 protection class)

The new Series PG digital pressure gauges meet the need of an even more precise pressure adjustment, above all in proportional control.  
Due to the IP65 protection class these pressure gauges are particularly suitable for applications where the highest environmental protection is required.

**TECHNICAL DATA**

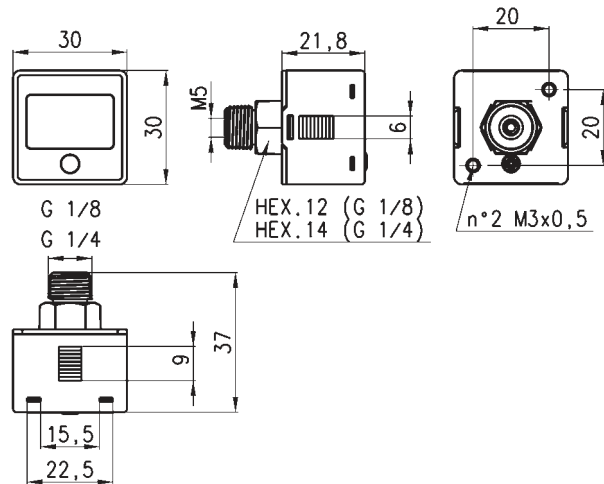
CHARACTERISTICS				
	Vacuum PG...-VB...	Pressure PG...-PB...		
Pressure units	psi, bar, mmHg, kPa programmable by the user	psi, bar, kgf/cm <sup>2</sup> , MPa programmable by the user		
Rated pressure range	0 - -1 bar	0 - 10 bar		
Display pressure range	0.1 - -1 bar	-0.1 - 10 bar		
Withstand pressure	3 bar	15 bar		
Repeatability	≤ ± 1% F.S. ± 1 digit	≤ ± 0,2% F.S. ± 1 digit		
Resolution: kPa MPa kgf/cm <sup>2</sup> bar psi	1 - 0.01 0.01 0.1	- 0.001 0.01 0.01 0.1		
Indicator accuracy	≤ ± 2% F.S. ± 1 digit (ambient temperature: 25 ± 3°C)			
Medium	Filtered air, incombustible and non-corrosive gases			
Back light	Yes			
Sample rate	2 Hz (2 times/second)			
LCD display	3 ½ digit, 7 segment			
Environment: Protection class	IP65 (an air tube must be installed to maintain this grade)			
Temperature	Operation: 0 - 50°C Storage: -10 - 60°C (no condensation or freezing)			
Relative humidity	Operation/storage: 35 - 85% RH (no condensation)			
Vibrations	Total amplitude 1.5mm or 10G 10Hz-55Hz-10Hz scan for 1 minute 2 hours for each direction of X, Y and Z			
Shock	100 m/s <sup>2</sup> (10G) 3 times for each direction of X, Y and Z			
Changes due to temperature	≤ ± 2% F.S. of detected pressure (25°C) within the operating temperature range			
Pneumatic connections ports	G1/4 - M5 or G1/8 - M5			
<b>FOR BATTERY-POWERED PRESSURE GAUGES ONLY</b>				
Battery: Type	CR 2032 lithium			
Life	1 year (5 times/day)			
Low-power indicator	Yes			
Replacement	Yes			
Turn-on interval	Display turns off after 60 seconds			
<b>FOR PRESSURE GAUGES WITH POWER SUPPLY CABLE ONLY</b>				
Supply voltage	from 12 to 28 V DC±10% Ripple			
Power consumption	10 mA			
Maximum voltage	1000V AC in 1-min (between the casing and the cables)			
Isolation resistance	50 Mohm min (at 500 V DC, between the casing and the cables)			
Electrical connection: for pressure gauges PG...-2 for pressure gauges PG...-M	Unshielded 2-pole cable, length 2 m Connection with M8 4-pole connector			

**CODING EXAMPLE**

PG	010	-	P	B	-	1/8	-	2
----	-----	---	---	---	---	-----	---	---

<b>PG</b>	SERIES
<b>010</b>	BOTTOM SCALE: 010 = 145 psi 001 = -14 psi
<b>P</b>	PRESSURE RANGE: P = pressure V = vacuum
<b>B</b>	LIGHTING: B = back light
<b>1/8</b>	PNEUMATIC CONNECTIONS: 1/8 = G 1/8 BSPP; M5 1/4 = G 1/4 BSPP; M5 (for battery-powered version only)
<b>2</b>	ELECTRICAL CONNECTION (for version with cable only): 2 = with unshielded 2-pole cable of 2 m M = with cable of 150 mm and M8 4-pole connector

**Series PG digital pressure gauges - battery-powered**



Mod.

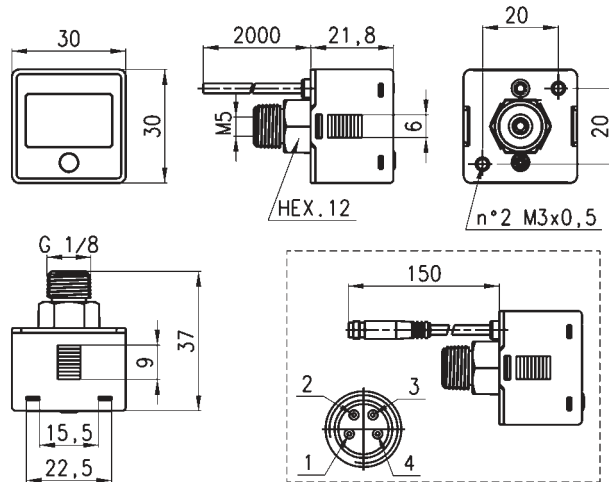
PG010-PB-1/8

PG001-VB-1/8

PG010-PB-1/4

PG001-VB-1/4

Series PG digital pressure gauges - with cable



Mod.

PG010-PB-1/8-2

PG001-VB-1/8-2

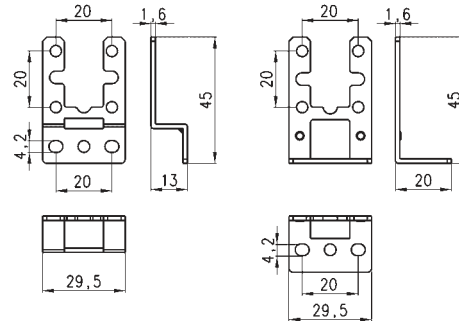
PG010-PB-1/8-M

PG001-VB-1/8-M

Mounting brackets Mod. PG-B



Supplied with:  
 1x bracket type A  
 1x bracket type B  
 2x screws M3x6



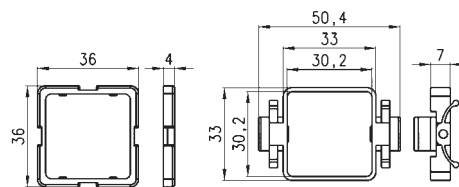
Mod.

PG-B

Panel mounting adapter Mod. PG-F



Supplied with:  
 1x adapter type A  
 1x adapter type B



Mod.

PG-F

# Solenoids U7\* - U7\*EX - G7\* - A8\* - H8\*

7

Version A and B

Connection according to DIN EN 175 301-803



The mechanical part of the tube in the solenoid Shut-Off valves - V16, Series A, 3, 4, 9 and NA allows the mounting of various types of solenoids.

Mod. H8...: explosion-proof solenoids suitable for potentially explosive ambients (ATEX).

Mod. U7...: standard solenoids are certified by UL as Recognized Component for USA and Canada. Model U7 solenoids are also available with ATEX certification.

## GENERAL DATA

Wire insulation	U7... / G7... / G93 = class F (155° C) A8... = class H (180° C) B... / H8... = class H (200° C)
Protection class	U7... / G7... / G93 = IP54 - DIN 40050 IP65 (with connector Mod. 122-800 and Mod. 122-800EX) A8... / B... = IP54 - DIN 40050 IP65 (with connector Mod. 124-800) H8... = IP64
Operation	ED 100%
Tolerance V AC	Mod. A and U: -15% / +10%
Tolerance V DC	Mod. A and U: ±10%

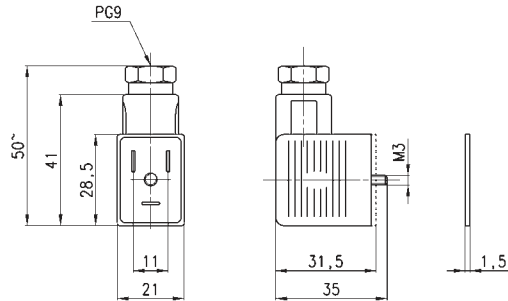


Connectors Mod. 122-... DIN EN 175 301-803-B



For solenoids Mod. U7/U7\*EX, G7 and B7

Mod. 122-800EX:  
for ATEX certified solenoids mod. U7\*EX, with anti-screwing off screw mod. TORX.

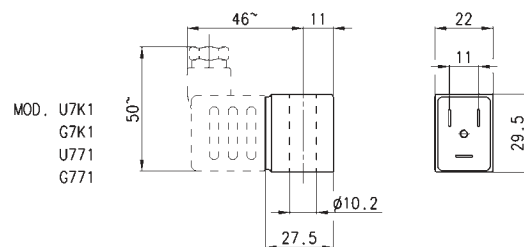
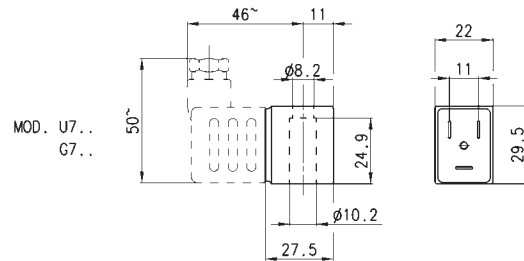


Mod.	description	colour	working voltage	cable holding	tightening torque
122-601	connector, diode + Led	transparent	10/50 V DC	PG9	0.5 Nm
122-701	connector, varistor + Led	transparent	24 V AC/DC	PG9	0.5 Nm
122-702	connector, varistor + Led	transparent	110 V AC/DC	PG9	0.5 Nm
122-703	connector, varistor + Led	transparent	230 V AC/DC	PG9	0.5 Nm
122-800	connector, without electronics	black	-	PG9	0.5 Nm
122-800EX	connector, without electronics	black	-	PG9	0.5 Nm

Solenoids Mod. U7... / U7\*EX and Mod. G7...



Electrical connection: bipolar plus earth  
Norm: DIN EN 175 301-803-B  
Solenoid material: U7\* = PET: G7\* = PA  
To order the ATEX version of Mod. U7 (not available for Mod. U7F, U7K1 with voltage 125V 50/60Hz) it is necessary to add EX at the end of the code.  
Mod. U7\*EX marked:  
II 3G Ex nA IIC T4 Gc X IP65  
II 3D Ex tc IIIC 130°C Dc X



Mod.	Sol. volt. (1)	Pow. abs. (1)	Sol. volt. (2)	Pow. abs. (2)	Sol. volt. (3)	Pow. abs. (3)
U7H	12 V DC	3.1 W	24V - 50/60 Hz	3.5 VA		
G7H	12 V DC	3.1 W	24V - 50/60Hz	3.5 VA		
U7K	110V - 50/60Hz	3.8 VA	125V - 50/60Hz	5.5 VA	72 V DC	4.8 W
U7K1	110V - 50/60Hz	5.8 VA	125V - 50/60Hz	8.3 VA	72 V DC	5.6 W
G7K	110V - 50/60Hz	3.8 VA	125V - 50/60Hz	5.5 VA	72 V DC	4.8 W
G7K1	110V - 50/60Hz	5.8 VA	125V - 50/60Hz	8.3 VA	72 V DC	5.6 W
U71	230V - 50/60Hz	3.5 VA	240V - 50/60Hz	4 VA		
G71	230V - 50/60Hz	3.5 VA	240V - 50/60Hz	4 VA		
U79	48 V DC	3.1 W				
G79	48 V DC	3.1 W				
U710	110 V DC	3.2 W				
G710	110 V DC	3.2 W				
U77	24 V DC	3.1 W	48V - 50/60Hz	3.8 VA		
U771	24 V DC	3.1 W	48V - 50/60Hz	3.8 VA		
G77	24 V DC	3.1 W	48V - 50/60Hz	3.8 VA		
G771	24 V DC	3.1 W	48V - 50/60Hz	3.8 VA		
U7F	380V - 50/60Hz	7 VA				
U72	12 V DC	5 W				
G72	12 V DC	5 W				
U73	24 V DC	5 W				
G73	24 V DC	5 W				

Notes on the table:  
Sol. volt. = Solenoid voltage  
Pow. abs. = Power absorption

Mod. U7K1, G7K1, U771 and G771 are to be used only with sol. valves series A, NO in line.

Dimensions in millimeters (mm)

**Solenoid Mod. H8.. for potentially explosive ambients**

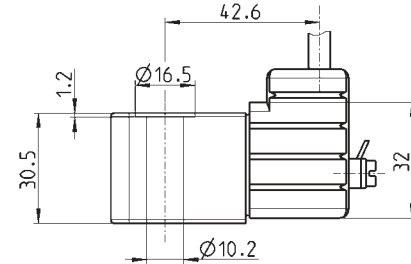
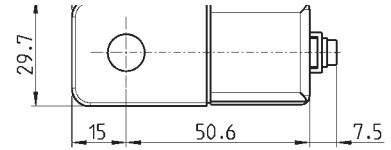
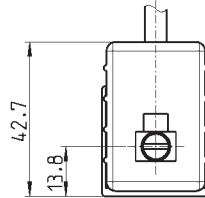


Certification in compliance with  
EN 60079-0 EN 60079-18

ATEX :  
II 2G Ex mb IIC T4 Gb  
II 2D Ex mb IIIC T135°C Db  
I M2 Ex mb I Mb  
INERIS 06ATEX0002X

IECEX :  
Ex mb IIC T4 Gb  
Ex mb IIIC T135°C Db  
Ex mb I Mb  
IECEX INE 15.0053X

For Series NA use plate mod. NA54-PC.



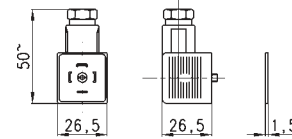
Mod.	Solenoid voltage	Power absorption
H83I	24 V - DC	5.3 W
H8B1	24 V - 50/60 Hz	5.3 W
H8C1	48 V - 50/60 Hz	5.3 W
H8D1	110 V - 50/60 Hz	5.3 W
H8E1	230 V - 50/60 Hz	5.3 W

Temperature class/Max surface temperature: T4/135°C  
Environment temperature: -20°C + 40°C  
Connection: tripolar cable 3 m (other lengths on request)  
Incapsulating material: self-extinguishing PA.

**Connector Mod. 124-... DIN EN 175 301-803-A**

For solenoids Mod. A8 and Mod. B8/B9

Protection class IP65

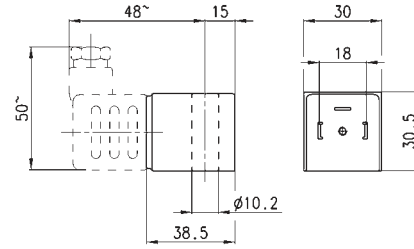


Mod.	description	color	working voltage	cable holding	tightening torque
124-800	connector, without electronics	black	-	PG9/PG11	0.5 Nm
124-702	connector, varistor + Led	black	110 V AC/DC	PG9/PG11	0.5 Nm
124-701	connector, varistor + Led	black	24 V AC/DC	PG9/PG11	0.5 Nm
124-703	connector, varistor + Led	black	230 V AC/DC	PG9/PG11	0.5 Nm

Solenoids Mod. A8...



Electrical connection: bipolar plus earth  
Norm: DIN EN 175 301-803-A

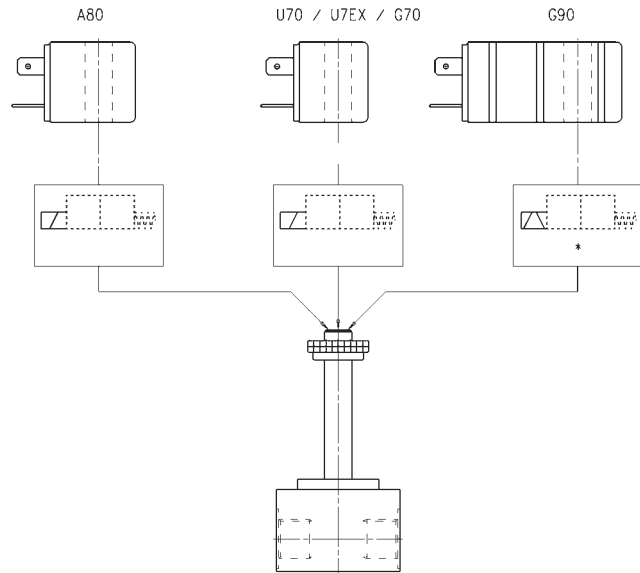


Mod.	Solenoid voltage	Power absorption
A8B	24V - 50/60Hz	5VA
A8D	110V - 50/60Hz	5VA
A8E	220V - 50/60Hz	5VA
A83	24V DC	4W

Solenoids for solenoid valves Series A, 3, 4, 9 and NA

All solenoids presented can be mounted on the following solenoid valves: Series A - 3 - 4 - 9 - NA

**NB:**  
For the tightening of the solenoids' nut we recommend to do it manually, avoiding the use of any equipment.



# Pressure switches, Transducers and Pressure Indicators

7

Series PM: adjustable-diaphragm pressure switches, with visual scale, with exchange contacts (SPST, SPDT)

Series TRP: electro-pneumatic transducers

Series 2950: pressure indicators, ports M5



Series PM diaphragm pressure switches are available with NC (normally closed) contacts and with NO (normally open) contacts.

Series PM681 pressure switches with setting visual scale comply with EN60730 standards and are suitable for signalling pressure through a normally open Reed contact.

A regulating screw, which can be adjusted using a small screwdriver, allows the switch to be set to the required pressure. The calibrated diaphragm enables an electrical signal to be generated or inhibited depending on the pressure set.

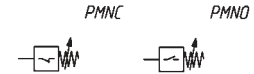
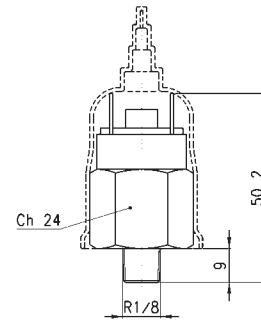
## GENERAL DATA

Construction	with adjustable diaphragm
Mounting	using thread in body
Ports	R1/8, G1/4 (serie PM) - tube 4/2 (series TRP) - M5 (series 2950)
Operating temperature	-5° - +60°C, (23 - 140 deg F)
Pressure	1 - 10 bar max.
Voltage	220 V
Max. power	100 VA
Protection class	IP40 (Mod. PM681-1, PM681-3) IP54 (Mod. PM11-NC, PM11-NA) IP65 (Mod. PM11-SC)
Max. nr. of pulses per 1'	200
Max current	0.5 A
Isolation voltage	1500 V

Series PM - adjustable-diaphragm pressure switches



Supplied with a rubber cap providing protection class IP54.



Mod.	Function	Max Voltage	Max Power	Service Type	Insulation voltage	Symbol
PM11-NC	NC = normally closed	48 V AC DC	24 VA	Heavy	500 V	PMNC
PM11-NA	NA = normally open	48 V AC DC	24 VA	Heavy	500 V	PMNO

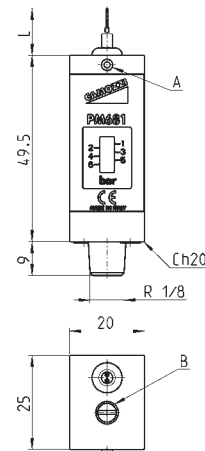
PMNC = normally closed  
PMNO = normally open

Series PM681-... - pressure switches with setting visual scale

New



In compliance with EN60730 standards  
Protection class IP40  
Electric connection: PVC cable 2 x 0.22 mm  
Electric contact: Reed SPST Normally Open Contact  
Body in anodized aluminium and threaded fitting in brass  
Hysteresis: 0.8 bar max



A = LOCKING SET SCREW

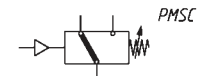
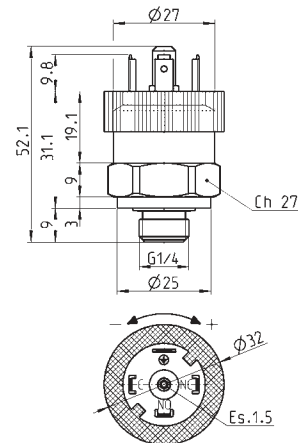
B = PRESSURE ADJUSTMENT SCREW

Mod.	L	Max switch voltage	Max switch current	Max switch capacity	Max fluid temperature	Max pressure	Setting range	Weight
PM681-1	1 m	48 V	0.5 A	10 W	60°C	20 bar	1 - 6 bar	95 g
PM681-3	3 m	48 V	0.5 A	10 W	60°C	20 bar	1 - 6 bar	95 g

Series PM - pressure switch with exchange contacts (SPDT contacts)



Protection class IP65  
(with connector Mod. 124-830)



(\*) SC = exchange contacts

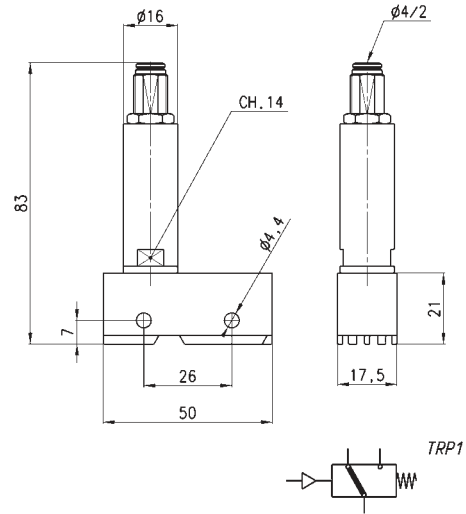
DIMENSIONS						
Mod.	Function	Max Voltage	Operating Temperature	Actuation time	Setting range	Max Hysteresis
PM11-SC	SC (*)	250 V AC 30 V DC	- 25 C° + 85 C°	> 0,1 ms	2 - 10 bar	0.8 bar

Dimensions in millimeters (mm)

**Electro-pneumatic transducer Series TRP**



The TRP Series transducer is specially designed to convert a pneumatic signal into an electrical signal. The contacts are NC (normally closed) or NO (normally open), thus making it possible to generate or eliminate current when the pneumatic signal is present. Minimum operating pressure 2,5 bar.

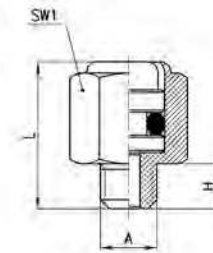


Mod.	
TRP-8	

**Pressure indicators Series 2950**



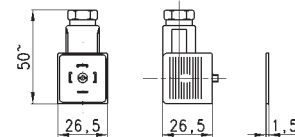
The pressure indicator Mod. 2950-M5 is passive element (no spring, red colour). It is useful for detecting pressure manually without having to remove the connections.



Mod.	A	H	L	SW1
2950 M5	M5	4	13.5	8



**3-pole connector Mod. 124-830 for pressure switch Mod. PM11-SC**



Mod.	description	colour	working voltage	cable holding	tightening torque
124-830	three-pole connector without electronics	black	-	PG9/PG11	0.5 Nm
124-830EX	three-pole ATEX connector without electronics	black	-	PG9/PG11	0.5 Nm

# Series SWMN electronic vacuum/pressure switches in mini format

New

7

Ports: G1/8, M5 thread or Ø 4, 6 mm plug-in tube  
Measuring range: 0 ÷ -1 bar, 0 ÷ 1 bar with analog output,  
0 ÷ -1 bar, 0 ÷ 6 bar with digital PNP output



The Series SWMN vacuum/pressure switches can be installed directly at the measuring point or pressure/vacuum determination point in handling systems, thanks to its highly compact dimensions.

Its reduced weight (only 50 grams with a 2 meter cable) and robust construction allow its installation on applications with high accelerations.

The four types of connection enable a high flexibility and an easy installation inside machines or pneumatic cabinets.

- » Minimum dimensions
- » Reduced weight
- » Available with analog or digital output
- » High measuring precision

ADDITIONAL PRODUCTS AND ACCESSORIES

## GENERAL DATA

Operating pressure range	-1 ÷ 0 bar; 0 ÷ 10 bar; -1 ÷ 10 bar
Medium	filtered air and inert gases
Supply voltage	12 ÷ 24 V DC
Maximum load	80 mA (SWMN-AP/AV/PN/PP) 40 mA (SWMN-NO/NC)
Voltage drop	0.8 V (SWMN-AP/AV/PN/PP) 5 V (SWMN-NO/NC)
Short circuit protection	models SWMN-AP/AV/PN/PP
Response time	about 1 msec
Repeatability	±1% F.S.
Hysteresis	3% F.S. (SWMN-AP/AV/PN/PP) 4% F.S. (SWMN-NO/NC)
Protection class	IP40
Operating temperature	0 ÷ 50°C
Connection cable	oil resistant, 2 or 3-wire cable (according to the model), outer sheath Ø 2.6 mm

<b>SWMN</b>	<b>-</b>	<b>AP</b>	<b>-</b>	<b>T</b>	<b>-</b>	<b>2</b>
-------------	----------	-----------	----------	----------	----------	----------

<b>SWMN</b>	SERIES
<b>AP</b>	<p>OUTPUT SIGNAL:                  AV = analog output signal - vacuum                  AP = analog output signal - pressure                  NO = normally open                  NC = normally closed                  PN = PNP output - vacuum                  PP = PNP output - pressure</p>
<b>T</b>	<p>TYPE OF CONNECTION:                  T = Ø 6 tube                  U = Ø 4 tube                  G = G1/8 thread                  M = M5 thread</p>
<b>2</b>	<p>ELECTRIC CONNECTION:                  2 = cable of 2 meters                  M = M8 3 pin connector</p>

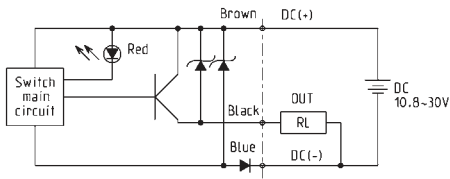
**TECHNICAL DATA**

Mod.	SWMN-PN	SWMN-PP	SWMN-AV	SWMN-AP	SWMN-NO	SWMN-NC
Medium	air, non-corrosive and non-flammable gases	air, non-corrosive and non-flammable gases	air, non-corrosive and non-flammable gases	air, non-corrosive and non-flammable gases	air, non-corrosive and non-flammable gases	air, non-corrosive and non-flammable gases
Operating pressure range	-1 ÷ 0 bar	0 ÷ 6 bar	-1 ÷ 0 bar	0 ÷ 10 bar	-1 ÷ 4 bar	-1 ÷ 4 bar
Precision	±1% operating range	±1% operating range	±1% operating range	±1% operating range	±1% operating range	±1% operating range
Max overpressure	6 bar	15 bar	2 bar	15 bar	10 bar	10 bar
Output signal	PNP	PNP	1 ÷ 5 V ≤ ±1% F.S. Linearity ≤ ±0.5% F.S.	1 ÷ 5 V ≤ ±1% F.S. Linearity ≤ ±0.5% F.S.	NO	NC
Hysteresis	3% F.S.	3% F.S.	-	-	≤4% F.S.	≤4% F.S.
Maximum output current	80 mA	80 mA	-	-	5 ÷ 40 mA	5 ÷ 40 mA
Voltage	10.8 ÷ 30 V DC	10.8 ÷ 30 V DC	12 ÷ 24 V DC	12 ÷ 24 V DC	12 ÷ 24 V DC	12 ÷ 24 V DC
Voltage drop	≤0.8 V	≤0.8 V	≤0.8 V	≤0.8 V	≤5 V	≤5 V
Protection class	IP40	IP40	IP40	IP40	IP40	IP40
Short circuit protection	yes	yes	yes	yes	-	-
Temperature effect (temperature range between 0 and 50°C)	±3% F.S.	±3% F.S.	±2% F.S.	±2% F.S.	±2% F.S.	±2% F.S.
Response time	1 ms	1 ms	-	-	1 ms	1 ms
Environmental temperature	0 ÷ 60°C	0 ÷ 60°C	0 ÷ 50°C	0 ÷ 50°C	0 ÷ 60°C	0 ÷ 60°C
Repeatability	≤±1% F.S.	≤±1% F.S.	-	-	≤±1% F.S.	≤±1% F.S.
Indication	LED	LED	-	-	LED	LED
Electric connection	cable or M8 3 pin female connector	cable or M8 3 pin female connector	cable or M8 3 pin female connector	cable or M8 3 pin female connector	cable or M8 3 pin female connector	cable or M8 3 pin female connector
Cable (oil resistant)	3 wires 0.28 mm <sup>2</sup> , Ø 2.6 mm	3 wires 0.28 mm <sup>2</sup> , Ø 2.6 mm	3 wires 0.28 mm <sup>2</sup> , Ø 2.6 mm	3 wires 0.28 mm <sup>2</sup> , Ø 2.6 mm	2 wires 0.28 mm <sup>2</sup> , Ø 2.6 mm	2 wires 0.28 mm <sup>2</sup> , Ø 2.6 mm
Weight (with 3-meter cable)	50 g	50 g	50 g	50 g	38 g	38 g

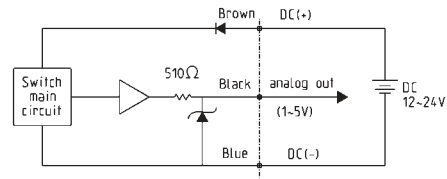


CONNECTION CIRCUIT

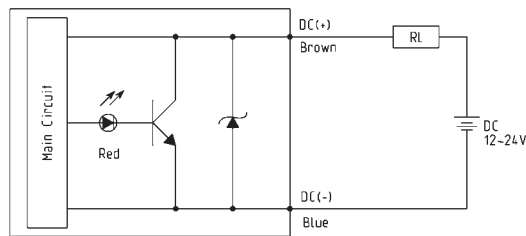
SWMN-PN / SWMN-PP



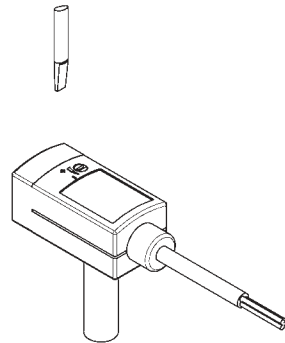
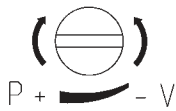
SWMN-AV / SWMN-AP



SWMN-NO / SWMN-NC

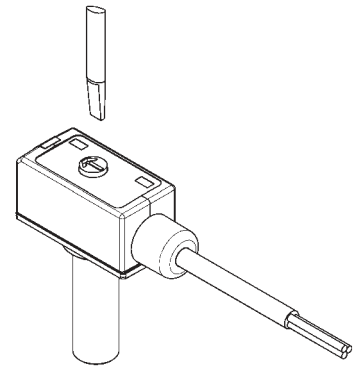


PRESSURE ADJUSTMENT



For models SWMN-NO and SWMN-NC

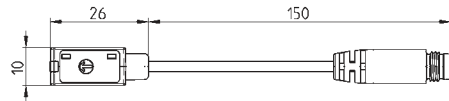
Rotate clockwise to increase the opening pressure of the contact for NC versions and the closing for NO versions.



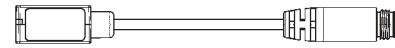
For models SWMN-PN and SWMN-PP

Rotate clockwise to increase the opening pressure of the contact for NC versions and the closing for NO versions.

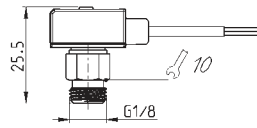
Vacuum/pressure switches Mod. SWMN-AV/AP/PN/PP



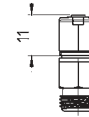
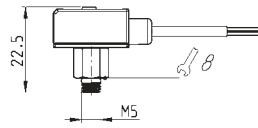
SW MN-AP/AV-■



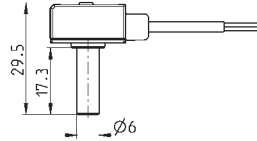
SW MN-PP/PN-G-■



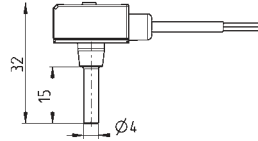
SW MN-PP/PN-M-■



SW MN-PP/PN-T-■

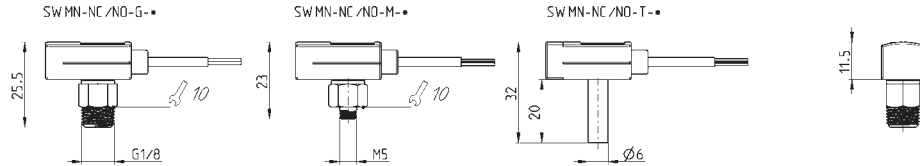
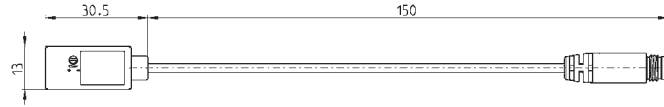


SW MN-PP/PN-U-■



Mod.	Output signal	Type of connection	Electric connection
SWMN-AV-T-2	analog output signal - vacuum	Ø 6 tube	cable of 2 meters
SWMN-AV-M-2	analog output signal - vacuum	M5 thread	cable of 2 meters
SWMN-AV-U-2	analog output signal - vacuum	Ø 4 tube	cable of 2 meters
SWMN-AV-G-2	analog output signal - vacuum	G1/8 thread	cable of 2 meters
SWMN-AV-T-M	analog output signal - vacuum	Ø 6 tube	M8 3 pin connector
SWMN-AV-M-M	analog output signal - vacuum	M5 thread	M8 3 pin connector
SWMN-AV-U-M	analog output signal - vacuum	Ø 4 tube	M8 3 pin connector
SWMN-AV-G-M	analog output signal - vacuum	G1/8 thread	M8 3 pin connector
SWMN-AP-T-2	analog output signal - pressure	Ø 6 tube	cable of 2 meters
SWMN-AP-M-2	analog output signal - pressure	M5 thread	cable of 2 meters
SWMN-AP-U-2	analog output signal - pressure	Ø 4 tube	cable of 2 meters
SWMN-AP-G-2	analog output signal - pressure	G1/8 thread	cable of 2 meters
SWMN-AP-T-M	analog output signal - pressure	Ø 6 tube	M8 3 pin connector
SWMN-AP-M-M	analog output signal - pressure	M5 thread	M8 3 pin connector
SWMN-AP-U-M	analog output signal - pressure	Ø 4 tube	M8 3 pin connector
SWMN-AP-G-M	analog output signal - pressure	G1/8 thread	M8 3 pin connector
SWMN-PN-T-2	PNP output - vacuum	Ø 6 tube	cable of 2 meters
SWMN-PN-M-2	PNP output - vacuum	M5 thread	cable of 2 meters
SWMN-PN-U-2	PNP output - vacuum	Ø 4 tube	cable of 2 meters
SWMN-PN-G-2	PNP output - vacuum	G1/8 thread	cable of 2 meters
SWMN-PN-T-M	PNP output - vacuum	Ø 6 tube	M8 3 pin connector
SWMN-PN-M-M	PNP output - vacuum	M5 thread	M8 3 pin connector
SWMN-PN-U-M	PNP output - vacuum	Ø 4 tube	M8 3 pin connector
SWMN-PN-G-M	PNP output - vacuum	G1/8 thread	M8 3 pin connector
SWMN-PP-T-2	PNP output - pressure	Ø 6 tube	cable of 2 meters
SWMN-PP-M-2	PNP output - pressure	M5 thread	cable of 2 meters
SWMN-PP-U-2	PNP output - pressure	Ø 4 tube	cable of 2 meters
SWMN-PP-G-2	PNP output - pressure	G1/8 thread	cable of 2 meters
SWMN-PP-T-M	PNP output - pressure	Ø 6 tube	M8 3 pin connector
SWMN-PP-M-M	PNP output - pressure	M5 thread	M8 3 pin connector
SWMN-PP-U-M	PNP output - pressure	Ø 4 tube	M8 3 pin connector
SWMN-PP-G-M	PNP output - pressure	G1/8 thread	M8 3 pin connector

Vacuum/pressure switches Mod. SWMN-NO/NC



Mod.	Output signal	Type of connection	Electrical connection	Operating pressure range	Range of adjustment
SWMN-NO-T-2	NO	Ø 6 tube	cable of 2 meters	-1 ÷ 10 bar	-1 ÷ 4 bar
SWMN-NO-M-2	NO	M5 thread	cable of 2 meters	-1 ÷ 10 bar	-1 ÷ 4 bar
SWMN-NO-G-2	NO	G1/8 thread	cable of 2 meters	-1 ÷ 10 bar	-1 ÷ 4 bar
SWMN-NO-T-M	NO	Ø 6 tube	M8 3 pin connector	-1 ÷ 10 bar	-1 ÷ 4 bar
SWMN-NO-M-M	NO	M5 thread	M8 3 pin connector	-1 ÷ 10 bar	-1 ÷ 4 bar
SWMN-NO-G-M	NO	G1/8 thread	M8 3 pin connector	-1 ÷ 10 bar	-1 ÷ 4 bar
SWMN-NC-T-2	NC	Ø 6 tube	cable of 2 meters	-1 ÷ 10 bar	-1 ÷ 4 bar
SWMN-NC-M-2	NC	M5 thread	cable of 2 meters	-1 ÷ 10 bar	-1 ÷ 4 bar
SWMN-NC-G-2	NC	G1/8 thread	cable of 2 meters	-1 ÷ 10 bar	-1 ÷ 4 bar
SWMN-NC-T-M	NC	Ø 6 tube	M8 3 pin connector	-1 ÷ 10 bar	-1 ÷ 4 bar
SWMN-NC-M-M	NC	M5 thread	M8 3 pin connector	-1 ÷ 10 bar	-1 ÷ 4 bar
SWMN-NC-G-M	NC	G1/8 thread	M8 3 pin connector	-1 ÷ 10 bar	-1 ÷ 4 bar

# Series SWDN electronic vacuum/pressure switches



New

With digital display  
High precision, easy to use



- » Compact and lightweight
- » Digital indicator: precision electronic insertion with two separated switch outputs
- » Switching point and hysteresis can be programmed with a membrane keypad.

#### APPLICATIONS:

- electronic vacuum/pressure switch for safety monitoring, optimization of cycle times or energy saving devices;
- it can be installed directly on the gripping point of a handling system;
- setting of the limit vacuum value and continuous vacuum control;
- perfectly suitable for customer needs.

#### ELECTRIC CONNECTION:

the device is available with hardwired cable of 2 meters or can be supplied with M8 connector. Accessories and extensions have to be ordered separately. Codes can be found at the end of this section.

#### GENERAL DATA

Type of pressure/vacuum switch	electronic with polycarbonate housing
Port	with external thread G1/8 and internal thread M5
Display	3 digit display with membrane keypad for the values set up
LED	integrated LED indicators for switching state
Electric connection	with M8 4-pole connector or pre-wired cable of 2 meters

**CODING EXAMPLE**

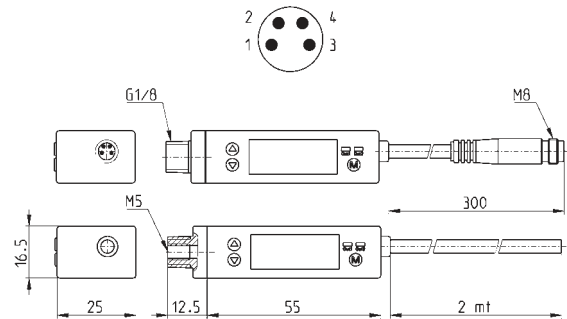
SWDN	-	V01	-	P3	-	2
------	---	-----	---	----	---	---

<b>SWDN</b>	SERIES
<b>V01</b>	SET PRESSURE RANGE: V01 = from -1 bar to 1 bar P10 = from 0 bar to 10 bar
<b>P3</b>	TYPE OF ELECTRIC CONNECTION: P3 = 2 PNP outputs + 1 analog output 1 - 5 V DC (this version is available with 5-pole cable only) P4 = 2 PNP outputs
<b>2</b>	ELECTRIC CONNECTION: 2 = cable of 2 meters M = M8 4 pin connector

**Vacuum/Pressure switch Series SWDN**



- 1 = brown (+)
- 2 = white (OUT 2)
- 3 = blue (-)
- 4 = black (OUT 1)
- Analogic output = orange



Mod.

SWDN-V01-P3-2

SWDN-V01-P4-2

SWDN-V01-P4-M

SWDN-P10-P3-2

SWDN-P10-P4-2

SWDN-P10-P4-M

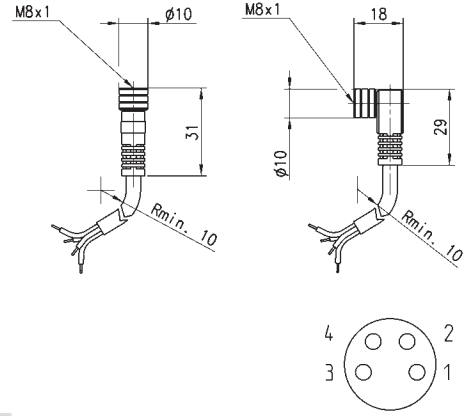
## TECHNICAL DATA

## CHARACTERISTICS

	SWDN-V01-...	SWDN-P10-...
Rated pressure range (set-value)	-1 ± 1 bar	0 ± 10 bar
Setting pressure range (it can be displayed on the screen)	-1 ± 1 bar	-1 ± 10 bar
Withstand (Maximum) pressure	3 bar	15 bar
Fluid	Air, non-corrosive gases, incombustible gases	
Set pressure resolution:	0,1	-
kPa	-	0,001
MPa	0,001	0,01
Kgf/cm <sup>2</sup>	0,001	0,01
bar	0,01	0,1
Psi	0,1	-
InHg	1	-
mmHg	0,1	-
mmH <sub>2</sub> O		
Power supply voltage	12-24 VDC ± 10%, ripple (P-P) 10% or less	
Current consumption	≤ 55mA	
PNP switch output	2 outputs with open collector max. load current of 100mA max. power supply voltage of 24VDC residual voltage ≤ 1V (with load current of 80mA)	
Repeatability (switch output)	≤ ± 0,2% F.S. ± 1 digit	
Analog output (where foreseen)	1 - 5V ± 5% F.S. (within the linear range: ≤ ± 1% F.S.)	1 - 5V ± 2,5% F.S.
Hysteresis: Hysteresis mode	Adjustable	
Window comparator mode	Fixed (3 digits)	
Response time	≤ 2,5ms (chattering-proof function: 24ms, 192ms and 768ms)	
Output short circuit protection	YES	
7 segment LED display	3 ½ digit (sampling rate of 5 times/sec)	
Indicator accuracy	≤ ± 2% F.S. ± 1 digit (ambient temperature: 25 ± 3°C)	
Indicator	green LED (OUT1), red LED (OUT2)	
Environment: Protection class	IP40	
Temperature	Operation: 0 ÷ 50°C Storage: -20 ÷ 60°C (without condensation or freezing)	
Relative humidity	Operation/Storage: 35 ÷ 85% (without condensation)	
Withstand (Max.) voltage	1000 VAC in 1 min (between case and lead wire)	
Insulation resistance	50MΩ min. (at 500VDC between case and lead wire)	
Vibration	Total amplitude 1.5 mm 10Hz-55Hz-10Hz scan for 1 minute 2 hours each direction of X, Y and Z	
Shock	980 m/s <sup>2</sup> (100G) 3 times each direction of X, Y and Z	
Changes due to temperature	≤ ± 2% F.S. of detected pressure (25°C) within the operating temperature range	
Port size	G1/8 - M5	
Lead wire	Oil-resistance cable (0,15 mm <sup>2</sup> )	
Weight	About 67 g for the version with 2-meter lead wire About 35 g for the version with male connector	

**Circular M8 4-pole connectors, Female**

Protection class: IP65  
Materials: PU non shielded cable



Mod.	Type of connector	Cable length (m)
CS-DF04EG-E200	straight	2
CS-DF04EG-E500	straight	5
CS-DR04EG-E200	90°	2
CS-DR04EG-E500	90°	5

# Series SWCN electronic vacuum/pressure switches

New

With digital display  
High precision, easy to use



- » Compact and lightweight
- » Digital indicator: precised electronic insertion with two separated switch outputs
- » Switching point and hysteresis can be programmed with a membrane keypad
- » Upper and lower limit values can be programmed through two PNP switch outputs

#### APPLICATIONS:

- electronic vacuum/pressure switch for safety monitoring, optimization of cycle times or energy saving devices;
- it can be installed directly on the gripping point of a handling system;
- setting of the limit vacuum value and continuous vacuum control;
- perfectly suitable for customer needs.

#### ELECTRIC CONNECTION:

the device is available with hardwired cable of 2 meters or can be supplied with M8 connector.  
Accessories and extensions have to be ordered separately. Codes can be found at the end of this section.

#### GENERAL DATA

Type of pressure/vacuum switch	electronic with polycarbonate housing
Port	with external thread G1/8 and internal thread M5
Display	3 digit display with membrane keypad for the values set up
LED	integrated LED indicators for switching state
Electric connection	with M8 4-pole connector or pre-wired cable of 2 meters

#### CODING EXAMPLE

SWCN	-	V01	-	P3	-	2
------	---	-----	---	----	---	---

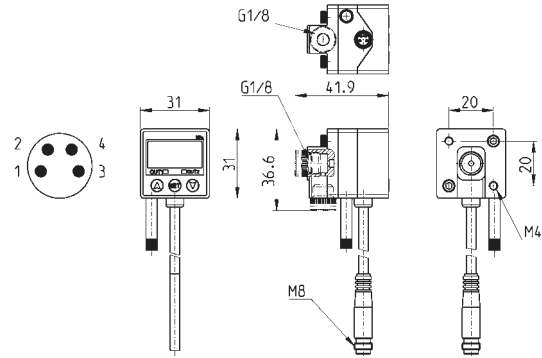
SWCN	SERIES
V01	SET PRESSURE RANGE: V01 = from -1 bar to 1 bar P10 = from 0 bar to 10 bar
P3	TYPE OF ELECTRIC CONNECTION: P3 = 2 PNP outputs + 1 analog output 1 - 5 V DC (this version is available with 5-pole cable only) P4 = 2 PNP outputs
2	ELECTRIC CONNECTION: 2 = cable of 2 meters M = M8 4 pin connector



Vacuum/Pressure switch Series SWCN



- 1 = brown (+)
- 2 = white (OUT 2)
- 3 = blue (-)
- 4 = black (OUT 1)
- Analogic output = orange



Mod.
SWCN-V01-P3-2
SWCN-V01-P4-2
SWCN-V01-P4-M
SWCN-P10-P3-2
SWCN-P10-P4-2
SWCN-P10-P4-M

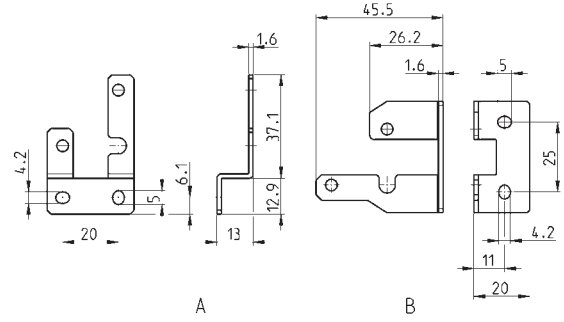
TECHNICAL DATA

CHARACTERISTICS		
	SWCN-V01-...	SWCN-P10-...
Rated pressure range (set-value)	-1 ÷ 1 bar	0 ÷ 10 bar
Setting pressure range (it can be displayed on the screen)	-1 ÷ 1 bar	-1 ÷ 10 bar
Withstand (Maximum) pressure	3 bar	15 bar
Fluid	Air, non-corrosive gases, incombustible gases	
Set pressure resolution:		
kPa	0,1	-
MPa	-	0,001
Kgf/cm <sup>2</sup>	0,001	0,01
bar	0,001	0,01
Psi	0,01	0,1
InHg	0,1	-
mmHg	1	-
mmH2O	0,1	-
Power supply voltage	12-24 VDC ± 10%, ripple (P-P) 10% or less	
Current consumption	≤ 55mA	
PNP switch output	2 outputs with open collector max. load current of 80mA max. power supply voltage of 24VDC residual voltage ≤ 1V (with load current of 80mA)	
Repeatability (switch output)	≤ ± 0,2% F.S. ± 1 digit	
Analog output (where foreseen)	1 - 5V ± 5% F.S. ((within the linearity range: ≤ ± 1% F.S.))	1 - 5V ± 2,5% F.S.
Hysteresis: Hysteresis mode Window comparator mode	Adjustable Fixed (3 digits)	
Response time	≤ 2,5ms (chattering-proof function: 24ms, 192ms and 768ms)	
Output short circuit protection	YES	
7 segment LED display	3 ½ digit (sampling rate of 5 times/sec)	
Indicator accuracy	≤ ± 2% F.S. ± 1 digit (ambient temperature: 25 ± 3°C)	
Indicator	green LED (OUT1), red LED (OUT2)	
Environment: Protection class	IP65	
Temperature	Operation: 0 ÷ 50°C Storage: -20 ÷ 60°C (without condensation or freezing)	
Relative humidity	Operation/Storage: 35 ÷ 85% (without condensation)	
Withstand (Max.) voltage	1000 VAC in 1 min ((between case and lead wire)	
Insulation resistance	50MΩ min. (at 500VDC between case and lead wire)	
Vibration	Total amplitude 1.5 mm 10Hz-55Hz-10Hz scan for 1 minute 2 hours each direction of X, Y and Z	
Shock	980 m/s <sup>2</sup> (100G) 3 times each direction of X, Y and Z	
Changes due to temperature	≤ ± 2% F.S. of detected pressure (25°C) within the operating temperature range	
Port size	G1/8 - M5	
Lead wire	Oil-resistance cable(0,15 mm <sup>2</sup> )	
Weight	About 105 g for the version with 2-meter lead wire About 71 g for the version with male connector	

**Mounting bracket Mod. SWCN-B**



- Supplied with:
- 4 mounting screws M4x5 ISO 724 (fine pitch)
  - 1 mounting bracket for surface mounting (A)
  - 1 mounting bracket for wall mounting (B)

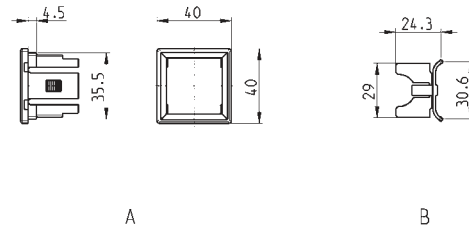


Mod.	
SWCN-B	

**Panel mounting set Mod. SWCN-F**



- Supplied with:
- 1 pressure switch holder (A)
  - 2 panel mounting brackets (B)

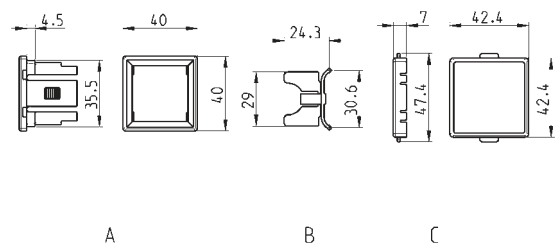


Mod.	
SWCN-F	

**Panel mounting set + transparent cover Mod. SWCN-FP**



- Supplied with:
- 1 pressure switch holder (A)
  - 2 panel mounting brackets (B)
  - 1 transparent cover (C)

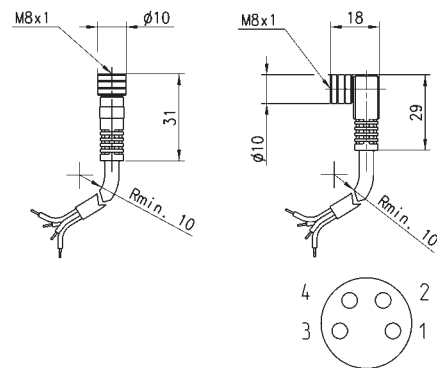


Mod.	
SWCN-FP	

**Circular M8 4-pole connectors, Female**



With PU sheathing, non shielded cable.  
Protection class: IP65



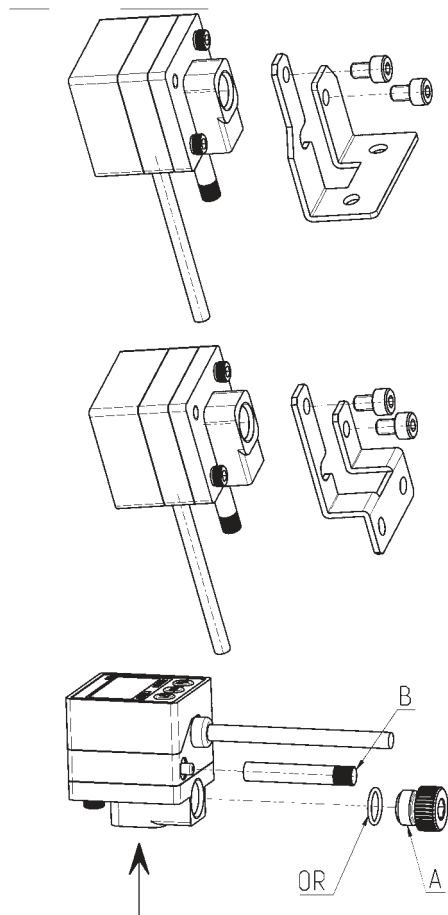
Mod.	Type of connector	Cable length (m)
CS-DF04EG-E200	straight	2
CS-DF04EG-E500	straight	5
CS-DR04EG-E200	right angle (90 degrees)	2
CS-DR04EG-E500	right angle (90 degrees)	5

Example of mounting with bracket Mod. SWCN-B and standard accessories

**A: ADDITIONAL POWER SUPPLY**

In case of use, please unscrew plug A from one side and mount it on the other one.

B: Use of the AIR FILTER TUBE to reach the IP 65 protection class.

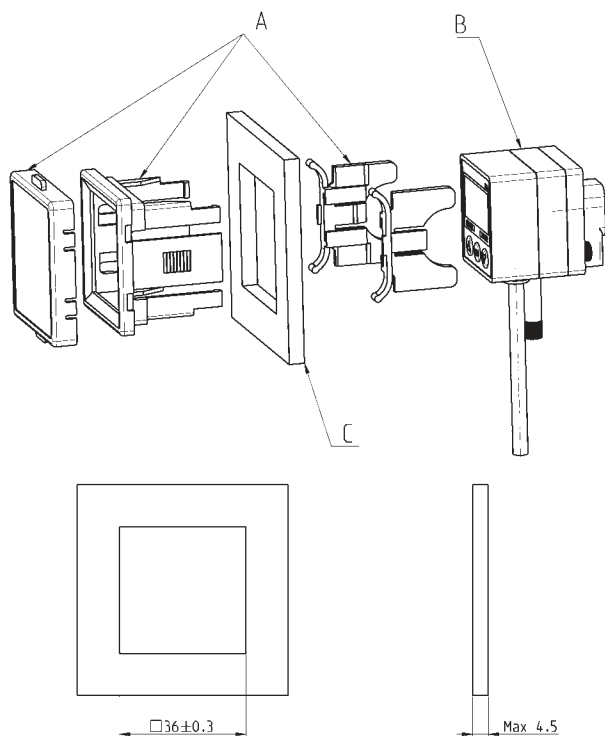


Example of mounting with panel mounting set Mod. SWCN-F

A = PANEL MOUNTING SET MOD. SWCN-F

B = PRESSURE SWITCH MOD. SWCN-...

C = PANEL





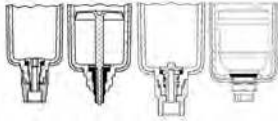
## 8 Drain Styles & Filtering Elements

Page



Filter Elements

**305**



Filter Drain Styles

**307**

# Condensate drains Filtering elements

Semi-automatic manual drain; Automatic drain;  
Depressurisation drain; Depressurisation drain, protected  
Ports: 1/8 (without drain)



**The filters are used to remove impurities in the compressed air, which must then be removed from the pneumatic circuit. The filters can be equipped with different types of drainings of condensate, both automatic and manual. The correct combination and the functioning is reported in the table and in the descriptions on the following pages.**

Different requirements of the air quality determine the use of different types of filtering elements, which retain the impurities during their working, thus clogging and reducing the amount of air in the passage. For this reason it is suggested to replace them once a year at least.

**TABLE TO MATCH FILTERS - DRAININGS OF CONDENSATE /CARTRIDGES**

\* for Series MD the "bowl with drain" is supplied complete with the filtering element

Mod. filter	bowl with semi-automatic manual drain	bowl with automatic drain	bowl with depressurization drain	bowl with depressurization drain, protected	bowl without drain (1/8 port)	closed bowl	filtering element 25 μ	filtering element 5 μ	filtering element 1 μ	filtering element 0.01 μ	activated carbon
N10...-F	N1-F71				N1-F71-1/8		C104-F20/3	C104-F21/3			
N10...-D	N1-F71				N1-F71-1/8		C104-F20/3	C104-F21/3			
N10...-FB	N1-F71				N1-F71-1/8					MX1-F10	
N20...-F	N2-F71		N2-F71/2	N2-F71/1	N2-F71-1/8		C104-F20/3	C104-F21/3			
N20...-D	N2-F71		N2-F71/2	N2-F71/1	N2-F71-1/8		C104-F20/3	C104-F21/3			
N20...-FB	N2-F71		N2-F71/2	N2-F71/1	N2-F71-1/8					MX1-F10	
N20...-FCA						N2-L71					MX1-F11
MC104-F	MC1-F71		MC1-F71/2	MC1-F71/1	MC1-F71-1/8		C104-F20/3	C104-F21/3			
MC104-D	MC1-F71		MC1-F71/2	MC1-F71/1	MC1-F71-1/8		C104-F20/3	C104-F21/3			
MC104-FB	MC1-F71		MC1-F71/2	MC1-F71/1	MC1-F71-1/8					MX1-F10	
MC104-FCA						MC1-L71					MX1-F11
MC202-F	MC2-F71	MC2-F71/3		MC2-F71/1	MC2-F71-1/8		C238-F11/3	C238-F12/3			
MC202-D	MC2-F71	MC2-F71/3		MC2-F71/1	MC2-F71-1/8		C238-F11/3	C238-F12/3			
MC202-FB	MC2-F71	MC2-F71/3		MC2-F71/1	MC2-F71-1/8					MX2-F10	
MC202-FCA						MC2-L71					MX2-F11
MC238-F	MC2-F71	MC2-F71/3		MC2-F71/1	MC2-F71-1/8		C238-F11/3	C238-F12/3			
MC238-D	MC2-F71	MC2-F71/3		MC2-F71/1	MC2-F71-1/8		C238-F11/3	C238-F12/3			
MC238-FB	MC2-F71	MC2-F71/3		MC2-F71/1	MC2-F71-1/8					MX2-F10	
MC238-FCA						MC2-L71					MX2-F11
MX2...-F	MX2-F2-P	MX2-F2/1-P		MX2-F2/3-P	MX2-F2/2-P		C238-F11/3	C238-F12/3			
MX2...-FR	MX2-F2-P	MX2-F2/1-P		MX2-F2/3-P	MX2-F2/2-P		C238-F11/3	C238-F12/3			
MX2...-FC	MX2-F2-P	MX2-F2/1-P		MX2-F2/3-P	MX2-F2/2-P				MX2-F9	MX2-F10	
MX2...-FCA						MX2-L2-P					MX2-F11
MX3...-F	MX3-F2-P	MX3-F2/1-P		MX3-F2/3-P	MX3-F2/2-P		MX3-F7	MX3-F8			
MX3...-FR	MX3-F2-P	MX3-F2/1-P		MX3-F2/3-P	MX3-F2/2-P		MX3-F7	MX3-F8			
MX3...-FC	MX3-F2-P	MX3-F2/1-P		MX3-F2/3-P	MX3-F2/2-P				MX3-F9	MX3-F10	
MX3...-FCA						MX3-L2-P					MX3-F11
MD1-F0..*	MD1-FSP01			MD1-FSP03	MD1-FSP02		C104-F20/3				
MD1-F1..*	MD1-FSP04			MD1-FSP06	MD1-FSP05			C104-F21/3			
MD1-FR0..*	MD1-FSP01			MD1-FSP03	MD1-FSP02		C104-F20/3				
MD1-FR1..*	MD1-FSP04			MD1-FSP06	MD1-FSP05			C104-F21/3			
MD1-FC0..*	MD1-FCSP01			MD1-FCSP03	MD1-FCSP02					MD1-F10	
MD1-FC1..*	MD1-FCSP04			MD1-FCSP06	MD1-FCSP05				MD1-F9		
MD1-FCA..*						MD1-FCASP01					MD1-F11

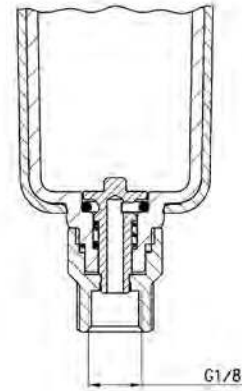
### Semi-automatic manual drain (Type 0 and 1)

Functioning:

Normally Open at 0 psi, ( Closes at 4 psi). Then manually push to relieve or turn to close.

1. With the operator mechanism turned counter-clockwise, each time the pressure falls below 0,3 bar, [4.35 psi] the condensate will be released; when resetting the pressure, the drain will close again.
2. The release can also be carried out manually; when the bowl is pressurized, the operator mechanism is pushed upwards.

To stop the discharge of condensate, the operator mechanism is turned clockwise to completely close the drain.



To avoid the discharge of condensate, the operator mechanism should be turned

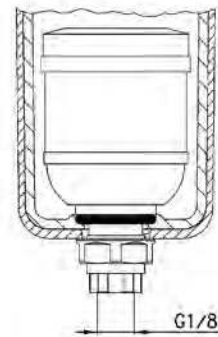
clockwise to completely close the drain.

### Automatic drain (Type 3)

Functioning:

The automatic drain model discharges the condensate each time the maximum permissible level in the bowl is reached. This version should be used where there is likely to be a large amount of condensate or where the system is always pressurized and the semi-automatic drain would not be used.

Normally Open at 0 psi, (Closes at 3 psi), Then Opens by liquid level to drain so long as within operating pressure range (22 psi - 220 psi)

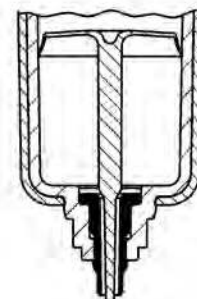


### Depressurisation drain (Type 4)

Functioning:

The depressurization drain allows the rapid removal of condensate at each air consumption of the system. A pressure drop of 0,1 bar (2 psi) is sufficient to obtain the release of a small quantity of air or condensate present at the bottom of the reservoir, after which the drain is closed.

Normally Closed at 0 psi, Opens by Pressure-Drop > 2 psi, ( $\Delta p=0.1$  bar), so long as within operating pressure limits of 4.5 - 145 psi



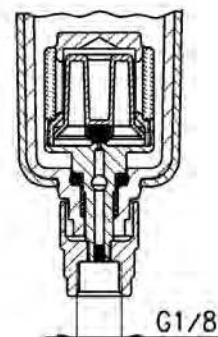


**Depressurisation drain (Type 5)****Functioning:**

The depressurization drain allows the rapid removal of condensate at each air consumption of the system. A pressure drop of 1 bar (14.5 psi) is sufficient to obtain the release of a small quantity of air or condensate present at the bottom of the reservoir, after which the drain is closed.

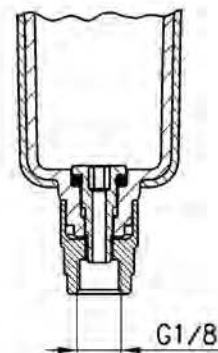
This version has a filtering element which protects the outlet holes from any impurity.

Normally Open at 0 psi, (Closes at 4.5 psi). Then opens with Pressure-Drop > 14.5 psi, ( $\Delta p = 1 \text{ bar}$ ).

**Without drain (Type 8)****Functioning:**

This version permits connection of external items to the bowl via a through hole of  $\varnothing 3 \text{ mm}$  and a threaded port 1/8".

Example of application: Mounted mini valve Series A, (or Ball Valve) for remotely operated drain.





## 9 Spare Parts & Seal Kits

Page










Series M	Spare Parts Series M	<b>311</b>
Series N	Spare Parts Series N	<b>312</b>
Series MD	Spare Parts Series MD	<b>315</b>
Series MC	Spare Parts Series MC	<b>318</b>
Series MX	Spare Parts Series MX	<b>324</b>
Series T	Spare Parts Series T	<b>326</b>

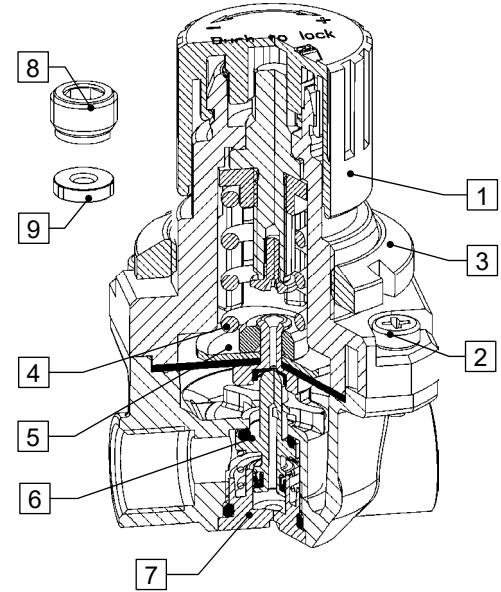
9

SPARE PARTS AND SEAL KITS

# Spare Parts and Seal Kits

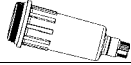




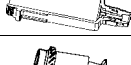




## Spare Parts REGULATORS Series M

Pos.	Drawing	Description	M008 / M004
1		Complete bell with regulation screw	MC1-R2
2		Bell fixing screw	C104-R28
3		Panel nut	MC104-R22
4		Spring 1 bar	C104-R16/2
		Spring 2 bar	C104-R16/1
		Spring 4 bar	C104-R16
		Spring 7 bar	C104-R16/5
		Spring 10 bar	C104-R17
5		Complete standard diaphragm	C1-R27
		Complete diaphragm non-relieving	C1-R28
		Complete diaphragm with controlled leak	C1-R27/S
6		Complete standard poppet valve	M0-R32/4
		Complete poppet-valve with exhaust	M0-R32/5
7		Complete valve bearing tap	M0-R9/1
8		Rear screw for pressure gauge connection	MC104-R9
9		Special O-ring seal	C104-F30/1



SPARE PARTS AND SEAL KITS

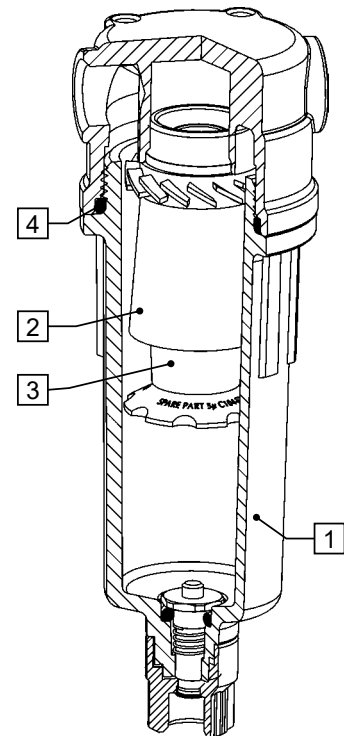
## Spare Parts FILTERS and COALESCING-FILTERS Series N

Pos.	Drawing	Description	N103 / N104	N 208 / N204
1		Complete bowl with semiautomatic-manual drain	N1-F71	N2-F71
-		Complete bowl with depressurization drain	N/A	N2-F71/2
-		Seal for depressurization drain	N/A	C104-F76
-		Shutter for depressurization drain	N/A	C104-F73
-		Complete bowl with protected depressurization drain	N/A	N2-F71/1
-		Complete bowl with port 1/8 (without drain)	N1-F71-1/8	N2-F71-1/8
2		Complete filtering element 25µ	C1-F20/3	C1-F20/3
		Complete filtering element 5µ	C1-F21/3	C1-F21/3
3		Filtering element 25µ	C104-F20/3	C104-F20/3
		Filtering element 5µ	C104-F21/3	C104-F21/3
-		Filtering element 0,01µ	C104-F26	C104-F26
4		Standard bowl O-ring	N204-F25	N204-F25










= solo per filtro / for filter only

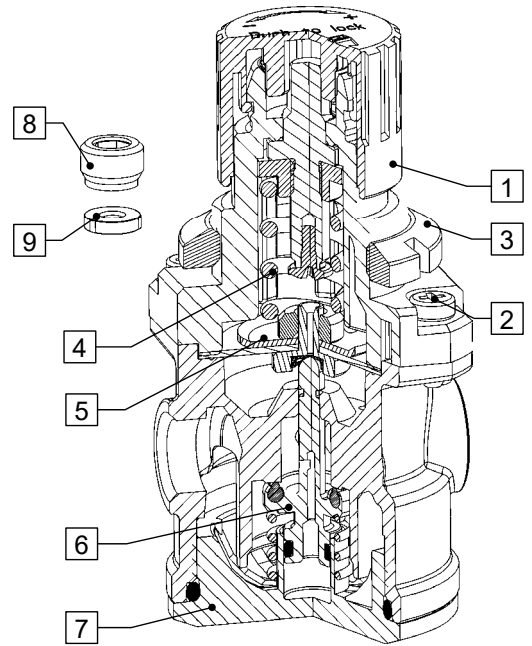
\*

\*\* = solo per filtro-disoleatore / for coalescing-filter only

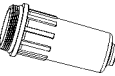






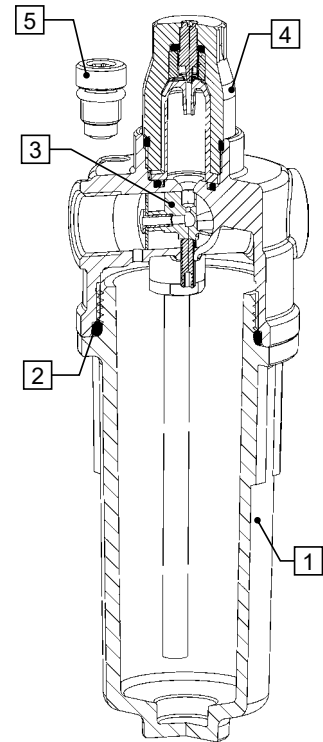
Spare Parts REGULATORS Series N

Pos.	Drawing	Description	N1208 / N1204
1		Complete bell with regulation screw	MC1-R2
2		Bell fixing screw	C104-R28
3		Panel nut	MC104-R22
4		Spring 1 bar	C104-R16/2
		Spring 2 bar	C104-R16/1
		Spring 4 bar	C104-R16
		Spring 7 bar	C104-R16/5
5		Complete standard diaphragm	C1-R27
		Complete diaphragm non-relieving	C1-R28
		Complete diaphragm with controlled leak	C1-R27/S
6		Complete standard poppet valve	N2-R32
7		Complete valve bearing tap	N204-R3/3
8		Rear screw for pressure gauge connection	MC104-R9
9		Special O-ring seal	C104-F30/1



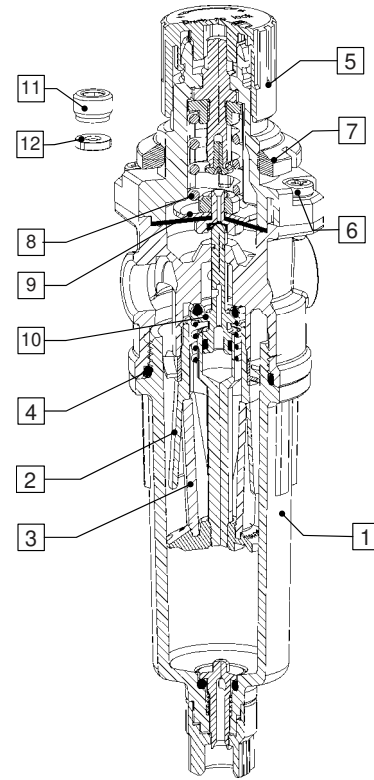
Spare Parts LUBRICATORS Series N

Pos.	Drawing	Description	N108	N104	N208	N204
1		Complete bowl	N1-L71	N1-L71	N2-L71	N2-L71
2		Standard bowl O-ring	N204-F25	N204-F25	N204-F25	N204-F25
3		Complete Venturi system	NA	MC1-L8	NA	MC1-L8
4		Complete lubricator cap	MC1-L24	MC1-L24	MC1-L24	MC1-L24
5		Complete oil refilling tap	C1-L34	C1-L34	C1-L34	C1-L34



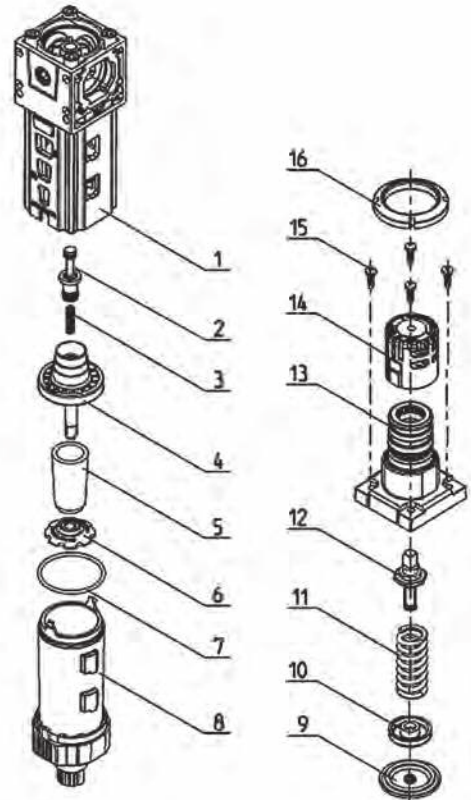
Spare Parts FILTER-REGULATORS Series N

1		Complete bowl with semiautomatic-manual drain	N1-F71	N2-F71
-		Complete bowl with depressuration drain	NA	N2-F71/2
-		Seal for depressuration drain	NA	C104-F76
-		Shutter poppet for depressuration drain	NA	C104-F73
-		Complete bowl with filter-protected depressuration drain	NA	N2-F71/1
-		Complete bowl with port 1/8, without drain	N1-F71-1/8	N2-F71-1/8
2		Complete filtering element 25µ	C1-F20/3	C1-F20/3
		Complete filtering element 5µ	C1-F21/3	C1-F21/3
3		Filtering element 25µ	C104-F20/3	C104-F20/3
		Filtering element 5µ	C104-F21/3	C104-F21/3
4		Standard bowl O-ring	N204-F25	N204-F25
5		Complete bell with regulation screw	MC1-R2	MC1-R2
6		Bell fixing screw	C104-R28	C104-R28
7		Panel nut	MC104-R22	MC104-R22



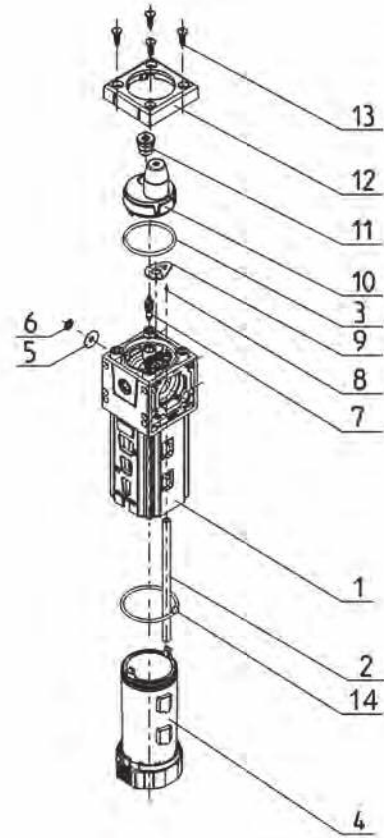
Spare Parts FILTER-REGULATORS Series MD

Pos.	Description	Parent Reference Part Number	Spare Part Number
1	Body		MD1-FR1-P
2	Poppet Valve Relieving & Non-Relieving	MD1-FR(01/2/3)XXX-X	MD1-R31/1-P
	Poppet Valve Fast Relieving (VS)	MD1-FR(4/5/6/7)XXX-X	MD1-R32/1-P
3	Lower Spring		MD1-R15
4	Valve Guide		MD1-F5
5	Filtering Element 5µ	MD1-FR(1/3/5/7)XXX-X	C104-F21/3
	Filtering Element 25µ	MD1-FR(0/2/4/6)XXX-X	C104-F20/3
6	Baffle		C104-F19
7	Bowl O-ring		32-19-11/4
8	Bowl w/ semiautomatic-manual drain	MD1-FRX0XX-X	MD1-F2-P
	Bowl w/ protected depressurization drain	MD1-FRX5XX-X	MD1-F2/3-P
	Bowl w/ G1/8 port	MD1-FRX8XX-X	MD1-F2/2-P
9	Diaphragm		MD1-R10
10	Diaphragm Plate - Relieving	MD1-FR(0/1/4/5)XXX-X	MD1-R18
	Diaphragm Plate - Non-Relieving	MD1-FR(2/3/6/7)XXX-X	MD1-R19
11	Upper Spring (7.25 - 145 psi)	MD1-FRXX0X-X	MD1-R17
	Upper Spring (0 - 29 psi)	MD1-FRXX2X-X	MD1-R13
	Upper Spring (0 - 58 psi)	MD1-FRXX4X-X	MD1-R14
	Upper Spring (7.25 - 101 psi)	MD1-FRXX7X-X	MD1-R16
12	Regulation Screw		MD1-R20-P
13	Bell		MD1-R2
14	Bell Housing		MD1-R5
15	Bell Housing Screws		MD1-R28
16	Panel Mounting Nut		MC104-R22



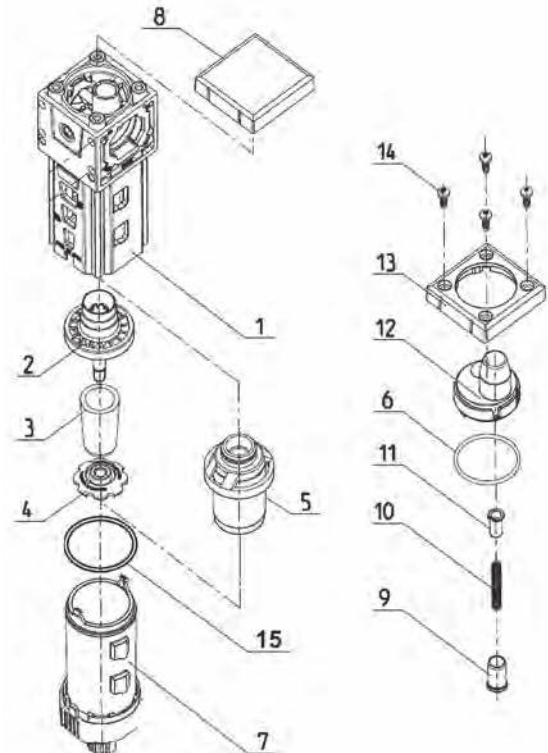
Spare Parts Lubricators Series MD

Pos.	Description	Parent Reference Part Number	Spare Part Number
1	Body		MD1-FR1-P
2	Tube		MD1-L18
4	Bowl		MD1-L2-P
5	Diaphragm		MD1-L6
6	C-clip Retainer Ring		MD1-L7
7	Valve		C238-L2
8	Bearing		70-5703-0002
9	Seal		MD1-L8
10	Indicator		MD1-L9-P
11	Complete Oil Refilling Tap		MD1-L3-P
12	Upper Cover		MD1-L4
13	Cover Screw		MD1-R28
14	Bowl O-ring		32-19-11/4



Spare Parts FILTERS AND COALESCING-FILTERS Series MD

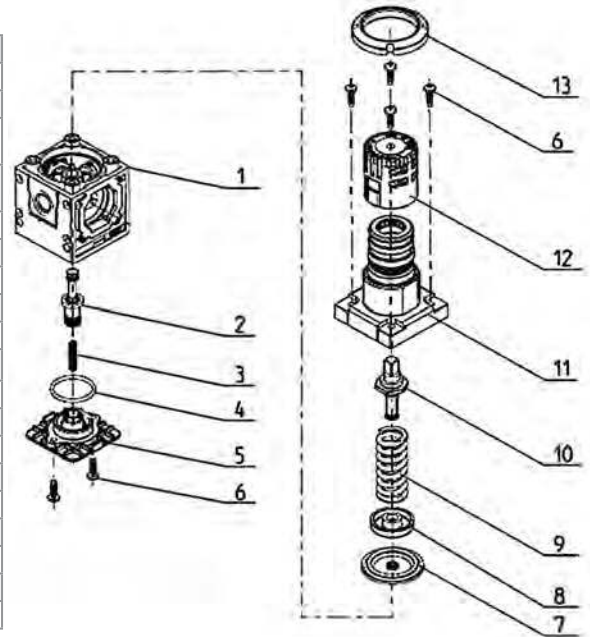
Pos.	Description	Parent Reference Part Number	Spare Part Number
1	Body		MD1-FR1-P
2	Valve Guide		MD1-F5
3	Filtering Element 5µ	MD1-FR(1/3/5/7)XXX-X	C104-F21/3
	Filtering Element 25µ	MD1-FR(0/2/4/6)XXX-X	C104-F20/3
4	Coalescing Filter Element		MD1-F10
5	Baffle		C104-F19
6	Clog Indicator O-ring		OR 2118 NBR
7	Bowl w/ semiautomatic-manual drain	MD1-FRX0XX-X	MD1-F2-P
	Bowl w/ protected depressurization drain	MD1-FRX5XX-X	MD1-F2/3-P
	Bowl w/ G1/8 port	MD1-FRX8XX-X	MD1-F2/2-P
8	Upper Cover (standard body)		MD1-F4
9	Piston		MD1-F15-P
10	Indicator Spring		MD1-F16
11	Indicator Insert		MD1-F17
12	Clog Indicator		MD1-F14
13	Upper Cover (for use with clog indicator)		MD1-L4
14	Screws		MD1-R28
15	Bowl O-ring		32-19-11/4





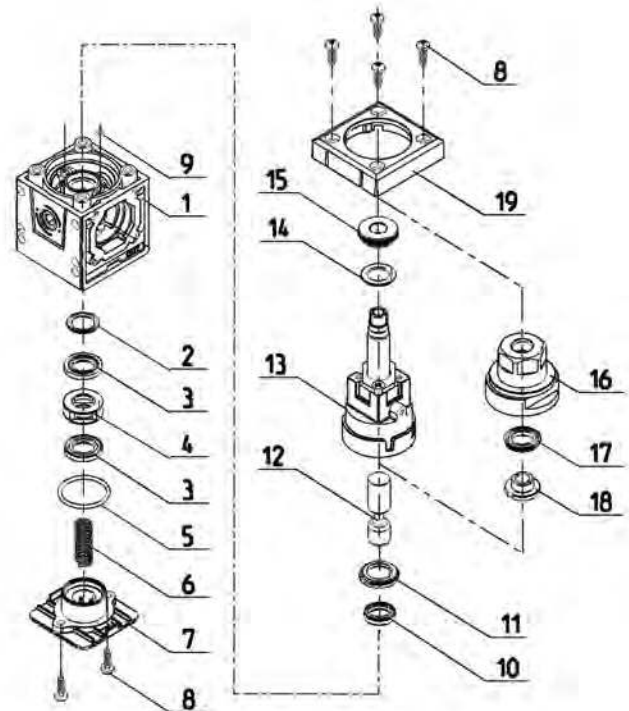
Spare Parts REGULATORS Series MD

Pos.	Description	Parent Reference Part Number	Spare Part Number
1	Body		MD1-R1-P
2	Poppet Valve Relieving & Non-Relieving	MD1-RXX(0/1)X-X	MD1-R31/1-P
	Poppet Valve Fast Relieving (VS)	MD1-RXX(2/3)X-X	MD1-R32/1-P
3	Lower Spring		MD1-R15
4	O-ring		600-450/6
5	Lower Interior Cap		MD1-R6
6	Screws		MD1-R28
7	Diaphragm		MD1-R10
8	Diaphragm Plate - Relieving	MD1-RXX(0/2)X-X	MD1-R18
	Diaphragm Plate - Non-Relieving	MD1-RXX(1/3)X-X	MD1-R19
9	Upper Spring (7.25 - 145 psi)	MD1-R0XX-X	MD1-R17
	Upper Spring (0 - 29 psi)	MD1-R2XX-X	MD1-R13
	Upper Spring (0 - 58 psi)	MD1-R4XX-X	MD1-R14
	Upper Spring (7.25 - 101 psi)	MD1-R7XX-X	MD1-R16
10	Regulation Screw		MD1-R20-P
11	Bell		MD1-R2
12	Bell Housing		MD1-R5
13	Panel Mounting Nut		MC104-R22



Spare Parts ISOLATION VALVES Series MD

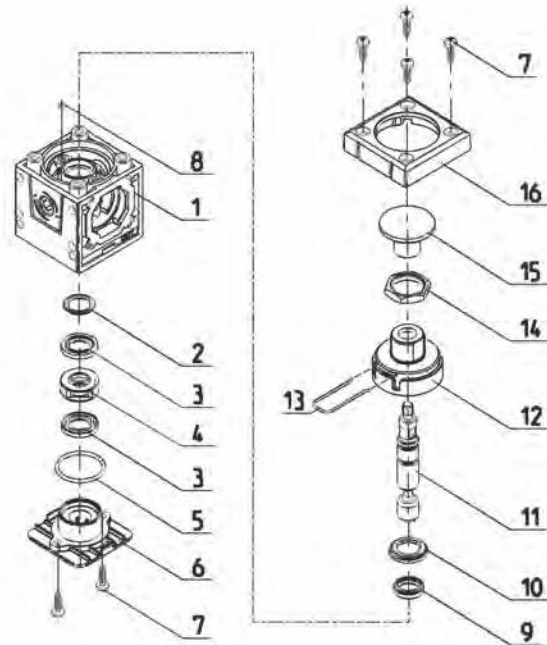
Pos.	Description	Spare Part Number
1	Body	MD1-V1-P
2	"Z" Seal Spacer	MD1-V31
3	"Z" Seal	454-33/8
4	Spacers	MD1-V6
5	O-ring	600-450/6
6	Spring	MC104-V6
7	Lower Interior Cap	MD1-V3
8	Screw	MD1-R28
9	O-ring	452-35/47
10	Seal	20-31/3
11	Ring Seal	MD1-V32
12	Spool	MD1-V7
13	Solenoid Valve	MD1-V10-P
14	Washer	A331-1C2-131
15	Nut	A331-1C2-132
16	Upper Cap	MD1-V11
17	Seal DE	16-QN1/3
18	Piston	308-011/14
19	Upper Cover	MD1-L4





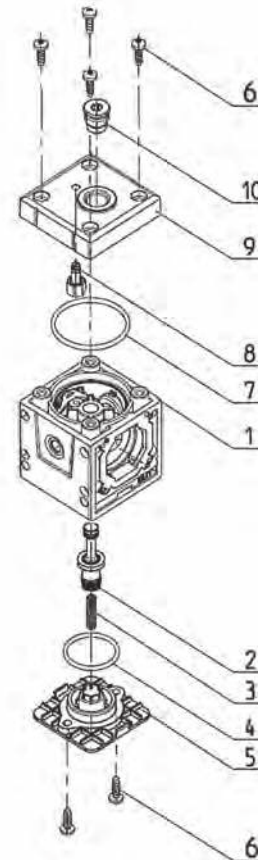
Spare Parts MANUAL LOCKABLE ISOLATION VALVES Series MD

Pos.	Description	Spare Part Number
1	Body	MD1-V1-P
2	"Z" Seal Spacer	MD1-V31
3	"Z" Seal	454-33/8
4	Spacers	MD1-V6
5	O-ring	600-450/6
6	Lower Interior Cap	MC104-V6
7	Screw	MD1-R28
8	O-ring	452-35/47
9	Seal	20-31/3
10	Ring Seal	MD1-V32
11	Spool	MD1-V8
12	Upper Cap	MD1-V9
13	Clip Ring	MD1-V13
14	Nut	1593 M16X1
15	Activating Element	MC104-V10
16	Upper Cover	MD1-L4



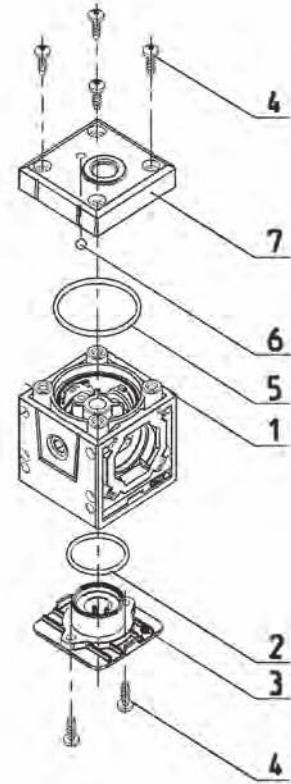
Spare Parts SOFT START VALVES Series MD

Pos.	Description	Spare Part Number
1	Body	MD1-V1-P
2	O-ring	600-450/6
3	Lower Interior Cap	MD1-V3TF
4	Screw	MD1-R28
5	O-ring	OR 2118 NBR
6	Bearing	70-5704-0006
7	Upper Cap	MD1-AV7



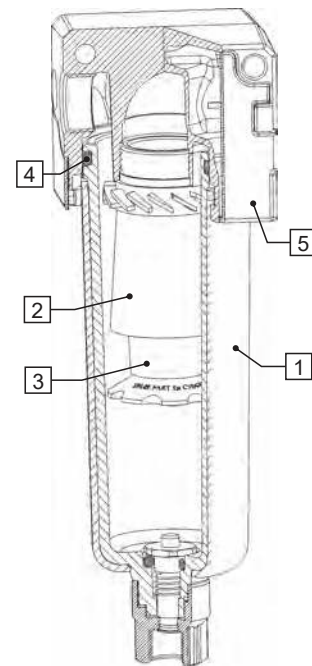
Spare Parts TAKEOFF BLOCKS MD

Pos.	Description	Spare Part Number
1	Body	MD1-V1-P
2	O-ring	600-450/6
3	Lower Interior Cap	MD1-V3TF
4	Screw	MD1-R28
5	O-ring	OR 2118 NBR
6	Bearing	70-5704-0006
7	Upper Cap	MD1-AV7













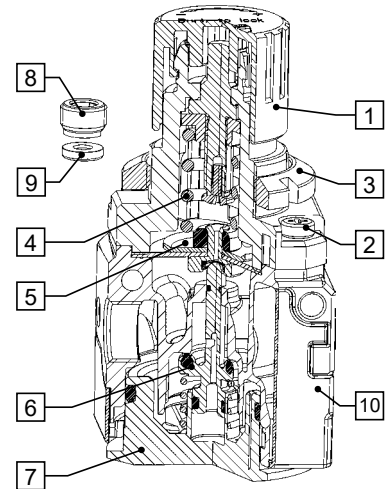
Spare Parts FILTERS and COALESCING-FILTERS Series MC

Pos.	Disegno / Drawing	Descrizione / Description	MC104	MC238 / MC202
1		Complete bowl with semiautomatic-manual drain	MC1-F71	MC2-F71
-		Complete bowl with automatic drain	N/A	MC2-F71/3
-		Automatic drain	N/A	C238-FSA2
-		Complete bowl with depressurization drain	MC1-F71/2	N/A
-		Seal for depressurization drain	C104-F76	N/A
-		Shutter for depressurization drain	C104-F73	N/A
-		Complete bowl with protected depressurization drain	MC1-F71/1	MC2-F71/1
-		Complete bowl with port 1/8, without drain	MC1-F71-1/8(TF)	MC2-F71-1/8(TF)
2	*	Complete filtering element 25µ	C1-F20/3	C2-F11/3
	*	Complete filtering element 5µ	C1-F21/3	C2-F12/3
3	*	Filtering element 25µ	C104-F20/3	C238-F11/3
	*	Filtering element 5µ	C104-F21/3	C238-F12/3
-	**	Filtering element 0,01µ	MX1-F10	MX2-F10
4		Standard bowl O-ring	C104-F9	C238-F4
5		Protection body without holes	MC104-F80	MC238-F80

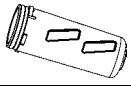








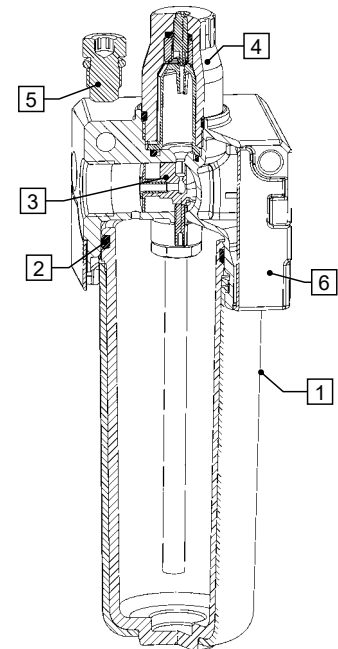
Spare Parts REGULATORS Series MC

Pos.	Disegno / Drawing	Descrizione / Description	MC104	MC238 / MC202
1		Complete bell with regulation screw	MC1-R2	MC2-R25/1
2		Bell fixing screw	C104-R28	C238-R28/1
3		Panel nut	MC104-R22	MC238-R27
4		Spring 1 bar	C104-R16/2	NA
		Spring 2 bar	C104-R16/1	NA
		Spring 4 bar	C104-R16	MC238-R18
		Spring 7 bar	C104-R16/5	NA
5		Complete standard diaphragm	C1-R27	C2-R33
		Complete diaphragm non-relieving	C1-R28	C2-R34
		Complete diaphragm with controlled leak	C1-R27/S	NA
6		Complete standard poppet valve	C1-R32	MC2-R32
7		Complete valve bearing tap	MC1-R3	MC2-R3
8		Rear screw for pressure gauge connection	MC104-R9	MC104-R9
9		Special O-ring seal	C104-F30/1	C104-F30/1
10		Protection body with holes	MC104-D80	MC238-D80



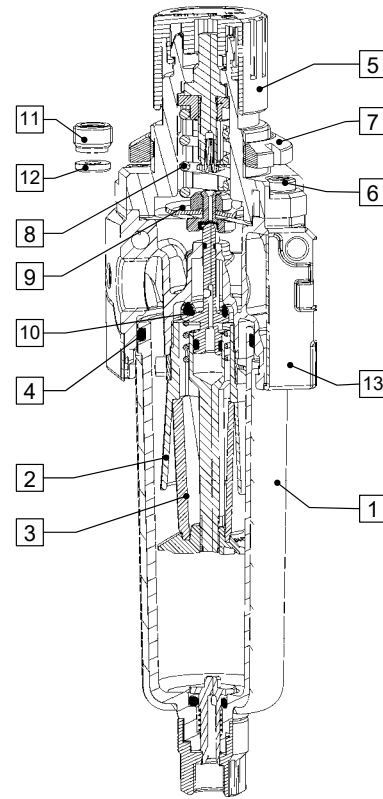
Spare Parts LUBRICATORS Series MC

Pos.	Disegno / Drawing	Descrizione / Description	MC104	MC238	MC202
1		Complete bowl	MC1-L71	MC2-L71	MC2-L71
2		Standard bowl O-ring	C104-F9	C238-F4	C238-F4
3		Complete Venturi system	MC1-L8	NA	NA
		Complete diaphragm	NA	MC2-L6	MC2-L6/1
		"L01" Low Flow diaphragm	NA	C202-L6/1	C202-L6/1
4		Complete lubricator cap	MC1-L24	MC1-L24	MC1-L24
5		Complete oil refilling tap	C1-L34	MC2-L3	MC2-L3
6		Protection body without holes	MC104-F80	MC238-F80	MC238-F80



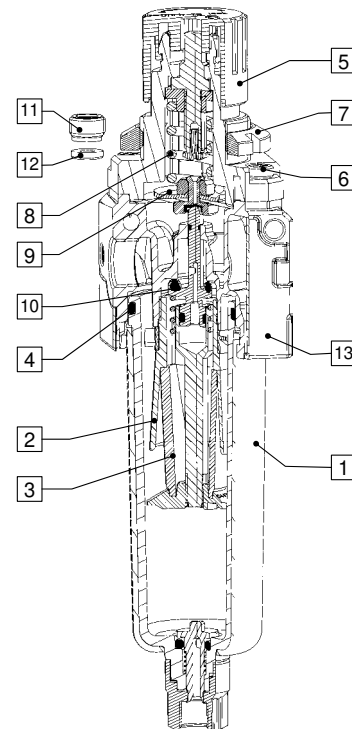
Spare Parts FILTER-REGULATORS Series MC

Pos.	Drawing	Description	MC104	MC238 / MC202
1		Complete bowl with semi-automatic-manual drain	MC-F71	MC2-F71
-		Complete bowl with automatic drain	NA	MC2-F71/3
-		Automatic drain	NA	C238-FSA2
-		Complete bowl with depressure drain	MC1-F71/3	NA
-		Seal for depressurization drain	C104-F76	NA
-		Shutter poppet for depressurization drain	C104-F73	NA
-		Complete bowl with protected depressurization drain	MC1-F71/1	MC2-F71/1
-		Complete bowl with port 1/8 (without drain)	MC1-F71-1/8 (TF)	MC2-F71-1/8 (TF)
2		Complete filtering element 25µ	C1-F20/3	C2-F11/3
		Complete filtering element 5µ	C1-F21/3	C2-F12/3
3		Filtering element 25µ	C104-F20/3	C238-F11/3
		Filtering element 5µ	C104-F21/3	C238-F12/3
4		Standard bowl O-ring	C104-F9	C238-F4
5		Complete bell with regulation screw	MC1-R2	MC2-R25/1











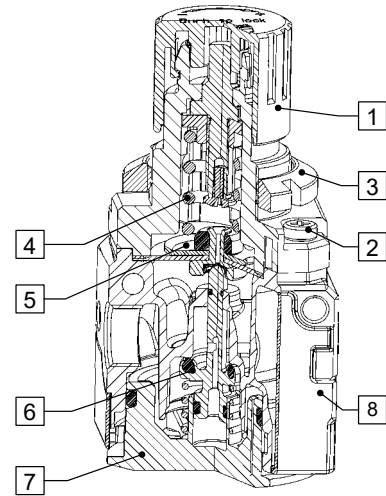
Spare Parts FILTER-REGULATORS Series MC cont.

Pos.	Drawing	Description	MC104	MC238 / MC202
6		Bell fixing screw	C104-R28	C238-R28/1
7		Panel nut	MC104-R22	MC238-R27
8		Spring 1 bar	C104-R16/2	NA
		Spring 2 bar	C104-R16/1	NA
		Spring 4 bar	C104-R16	MC238-R18
		Spring 7 bar	C104-R16/5	NA
9		Complete standard diaphragm	C1-R27	C2-R33
		Complete diaphragm non-relieving	C1-R28	C2-R34
		Complete diaphragm with controlled leak	C1-R27/S	NA
10		Complete standard poppet valve	C1-R32	MC2-R32
11		Rear screw for pressure gauge connection	MC104-R9	MC104-R9
12		Special O-ring seal	C104-F30/1	C104-F30/1
13		Protection body with holes	MC104-D80	MC238-D80







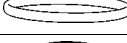






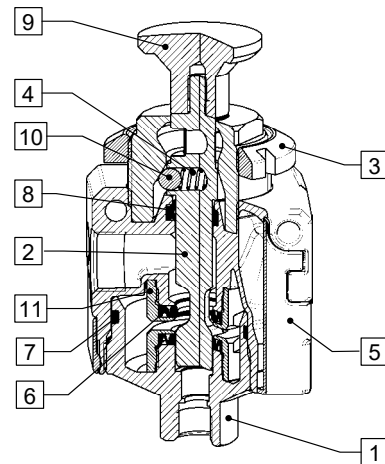
Spare Parts MANIFOLD REGULATORS Series MC

Pos.	Drawing	Description	MC104
1		Complete bell with regulation screw	MC1-R2
2		Bell fixing screw	C104-R28
3		Panel nut	MC104-R22
4		Spring 1 bar	C104-R16/2
		Spring 2 bar	C104-R16/1
		Spring 4 bar	C104-R16
		Spring 7 bar	C104-R16/5
5		Complete standard diaphragm	C1-R27
		Complete diaphragm non-relieving	C1-R28
		Complete diaphragm with controlled leak	C1-R27/S
6		Complete standard poppet valve	C1-R32
7		Complete valve bearing tap	MC1-R3
8		Protection body with holes	MC104-M80



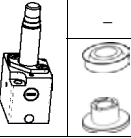






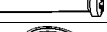





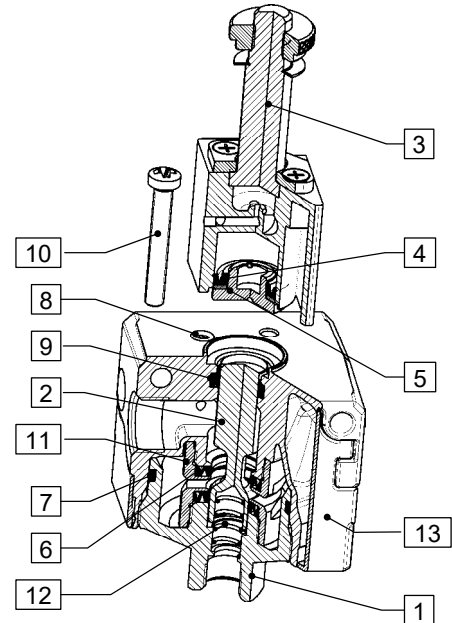
Spare Parts MANUAL LOCK-OUT VALVES Series MC

Pos.	Drawing	Description	MC104	MC238 / MC202
1		Complete valve bearing end-cover	MC1-V3/1 (TF)	MC2-V3/1 (TF)
2		Standard valve spool	MC104-V7/1-SPE01	MC238-V7/1-SPE02
3		Panel nut	MC104-R22	MC104-R22
4		Valve spring	MC104-V6/1	MC238-V6/1
5		Protection body without holes	MC104-F80	MC238-F80
6		Spool lip-seal 'airzet' seal	454-33/8	452-33/8
7		Standard valve bearing tap O-Ring	OR 32X2	C238-F4
8		Polyurethane piston rod screw	20-31/3	50-31/3
9		Grey Knob	MC104-V10	MC104-V10
10		Stainless steel ball bearing detent	SFERA D. 4,74	SFERA D. 4,74
11		Valve nut	MC104-V4	MC238-V4

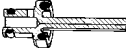










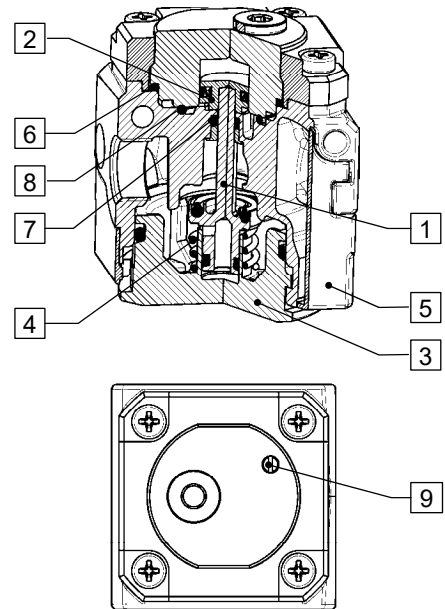
Spare Parts ELECTRONIC SHUT-OFF VALVES Series MC

Pos.	Drawing	Description	MC104	MC238 / MC202
1		Complete valve tap	MC1-V3/1 (TF)	MC2-V3/1 (TF)
2		Standard valve spool	MC104-V7	MC238-V7
3		Air-pilot end-cover	308-033/16	454-33/28
		Solenoid end-cover	338-015/4C	454-011/15C
4		DE pilot lip-seal	-	454-33/6
5		Pilot piston	-	454-33/23
6		Spool lip-seal 'airzet' Seal	454-33/8	454-33/8
7		Valve tap standard O-Ring	OR 32X2	C238-F4
8		Pilot end-cover seal	308-011/5	-
		Pilot end-cover seal	-	454-33/7
9		Polyurethane piston rod screw	20-31/3	50-31/3
10		Pilot end-cover assembly screw	308-015/22	308-015/22
11		Valve Nut	MC104-V4	MC104-V4
12		Valve spring	MX2-V10	MX2-V10
13		Protection body without holes	MC104-F80	MC238-F80



Spare Parts SOFT-START VALVES Series MC

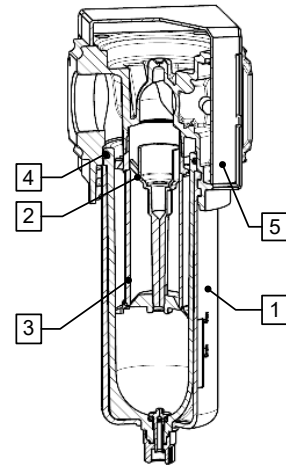
Pos.	Drawing	Description	MC104	MC238 / MC202
1		Complete Poppet Valve	MC1-AV7	MC2-AV7
2		Complete Piston	MC1-AV5	MC2-AV5
3		Complete Valve bearing end-cover	MC1-R3	MC2-R3
4		Poppet Spring	C104-R5	C238-R6
5		Protection body cover without holes	MC104-F80	MC238-F80
6		End cover O-Ring	OR 2112 NBR	OR 41X1,78 NBR
7		Poppet O-Ring	6702 4	OR 6,07X1,8 NBR
8		Soft start valve body O-Ring	OR 2068 NBR	OR 2112 NBR
9		Complete Regulation Screw	MC1-AV3	MC2-AV3





Spare Parts FILTERS and COALESCING FILTERS Series MX

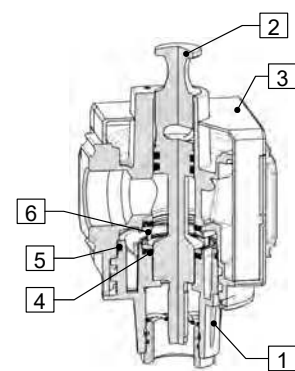
Pos.	Drawing	Description	MX2	MX3
1		Complete bowl with semiautomatic-manual drain	MX2-F2-P	MX3-F2-P
-		Complete bowl with automatic drain	MX2-F2/1-P	MX3-F2/1-P
-		Automatic drain	C238-FSA2	C238-FSA2
-		Complete bowl with depressuration drain	N/A	N/A
-		Seal for depressuration drain	N/A	N/A
-		Shutter for depressuration drain	N/A	N/A
-		Complete bowl with protected depressuration drain	MX2-F2/3-P	N/A
-		Complete bowl with port 1/8, without drain	MX2-F2/2-P	MX3-F2/2-P
2		* Complete filtering element 25µ	C2-F11/3	MX3-F7-P
		* Complete filtering element 5µ	C2-F12/3	MX3-F8-P
3		* Filtering element 25µ	C238-F11/3	MX3-F7
		* Filtering element 5µ	C238-F12/3	MX3-F8
-		** Filtering element 0,01µ	MX2-F10	MX3-F10
		*** Filtering element 1µ	MX2-F9	MX3-F9
		*** Active carbon filt. Elem.	MX2-F11	MX3-F11
4		Standard bowl O-ring	OR 3193 NBR	OR 3212 NBR
5		Protection body without holes	MX2-F4	MX3-F4



\* = for filter only  
 \*\* = for coalescing-filter only  
 \*\*\* = for active carbon filter only

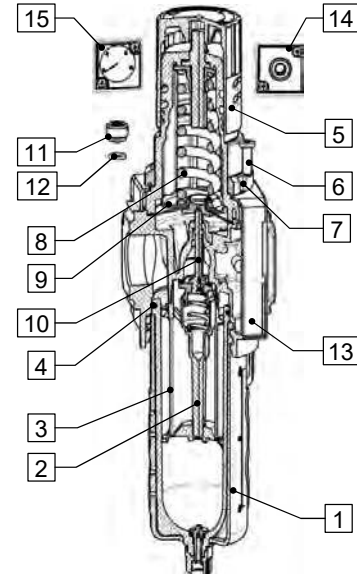
Spare Parts MANUAL LOCK-OUT VALVES Series MX

Pos.	Drawing	Description	MX2	MX3
1		GAS ISO-228	MX2-V3-P	MX3-V3/2-P
		NPTF	MX2-V3-P-TF	MX3-V3/2-P-TF
2		Complete spool	MX2-V8-P	MX3-V8-P
3		Protection body without holes	MX2-B4	MX3-V4
4		Spool lip seal "Z" profile seal	452-33/8	MX3-V7
5		Standard valve end cover O-Ring	OR 3193 NBR	OR 3212 NBR
6		Valve spacer	MX2-V6	MX3-V6



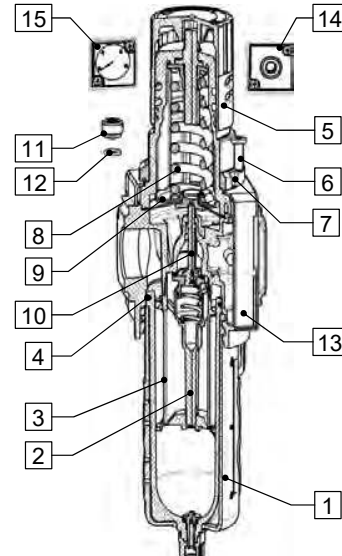
Spare Parts FILTER-REGULATORS Series MX

Pos.	Drawing	Description	MX2	MX3
1		Complete bowl with semiautomatic-manual drain	MX2-F2-P	MX3-F2-P
-		Complete bowl with automatic drain	MX2-F2/1-P	C238-FSA2
-		Automatic drain	C238-FSA2	C238-FSA2
-		Complete bowl with depressurization drain	NA	NA
-		Seal for depressurization drain	NA	NA
-		Shutter poppet for depressurization drain	NA	NA
-		Complete bowl with filter protected depressurization drain	MX2-F2/3-P	NA
-		Complete bowl with port 1/8 (without drain)	MX2-F2/2-P	MX3-F2/2-P
2		Complete filtering element 25µ	C2-F11/3	MX3-F7-P
		Complete filtering element 5µ	C2-F12/3	MX3-F8-P
3		Filtering element 25µ	C238-F11/3	MX3-F7
		Filtering element 5µ	C238-F12/3	MX3-F8
4		Standard bowl O-ring	OR 3193 NBR	OR 3212 NBR
5		Complete bell with regulation screw	MX2-R2-P	MX3-R2-P














Spare Parts FILTER-REGULATORS Series MX

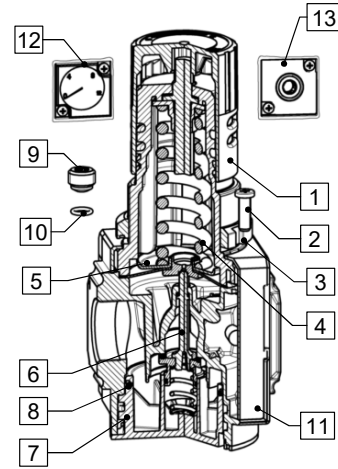
Pos.	Drawing	Description	MX2	MX3
6		Bell fixing screw	C238-R28/1	MX3-R28
7		Panel nut	MC238-R27	MX3-R6
8		Spring 1 bar	NA	NA
		Spring 2 bar	NA	NA
		Spring 4 bar	MX2-R16	MX3-R16
		Spring 7 bar	MX2-R16/1	NA
9		Complete standard diaphragm	MX2-R10-P	MX3-R10-P
		Complete diaphragm non-relieving	MX2-R10/1-P	MX3-R10/1-P
		Complete diaphragm with controlled leak	NA	NA
10		Complete standard poppet valve	MX2-R7/1-P	MX3-R7/1-P
11		Rear screw for pressure gauge connection	MC104-R9	MX3-R27
12		O-ring seal	C104-F30/1	558-33/2
13		Protection body with holes	MX2-R4	MX3-R4
14		Complete Block with plug	MX2-R26/1-P	MX3-R26/1-P
		Threaded block without plug	MX2-R26/2-P	MX3-R26/2-P
15		Complete 0-12 pressure gauge	MX3-R30-P	MX3-R30-P
		Complete 0-6 pressure gauge	MX3-R31-P	MX3-R31-P
		Complete 0-10 pressure gauge	MX3-R32-P	NA







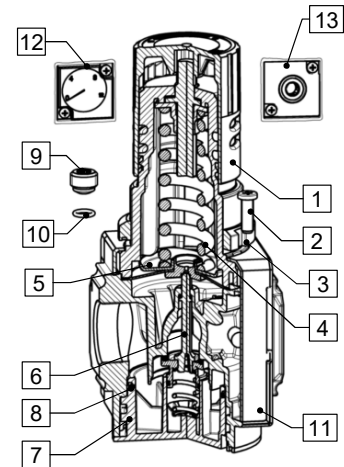
Spare Parts REGULATORS Series MX

Pos.	Drawing	Description	MX2	MX3
1		Complete bell with regulation screw	MX2-R2-P	MX3-R2-P
2		Bell fixing screw	C238-R28/1	MX3-R28
3		Panel nut	MC238-R27	MX3-R6
4		Spring 1 bar	NA	NA
		Spring 2 bar	NA	NA
		Spring 4 bar	MX2-R16	MX3-R16
		Spring 7 bar	MX2-R16/1	NA
5		Complete standard diaphragm	MX2-R10-P	MX3-R10-P
		Complete diaphragm non-relieving	MX2-R10/1-P	MX3-R10/1-P
		Complete diaphragm with controlled leak	NA	NA
6		Complete standard poppet valve	MX2-R7/1-P	MX3-R7/1-P
7		Complete valve bearing tap	MX2-R3-P	MX3-R3-P
8		Standard bowl O-Ring	OR 3193 NBR	OR 3212 NBR
9		Rear screw for pressure gauge connection	MC104-R9	MX3-R27
10		O-ring seal	C104-F30/1	558-33/2
11		Protection body with holes	MX2-R4	MX3-R4

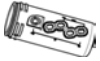




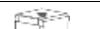


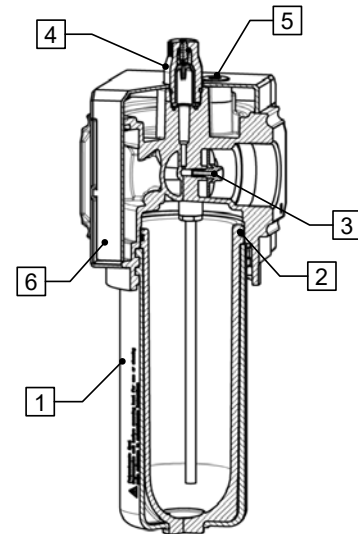
Spare Parts REGULATORS Series MX

12		Complete 0-12 pression gauge	MX3-R30-P	MX3-R30-P
		Complete 0-6 pression gauge	MX3-R31-P	MX3-R31-P
		Complete 0-10 pression gauge	MX3-R32-P	NA
13		Complete threaded block with plug	MX2-R26/1-P	MX3-R26/1-P
		Threaded block without plug	MX2-R26/2-P	MX3-R26/2-P






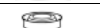




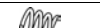




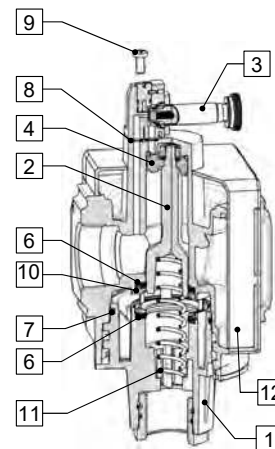
## Spare Parts LUBRICATORS Series MX

Pos.	Drawing	Description	MX2	MX3
1		Complete bowl	MX2-L2-P	MX3-L2-P
2		Standard bowl O-ring	OR 3193 NBR	OR 3212 NBR
3		Complete diaphragm	C202-L6	MX3-L5-P
4		Complete lubricator cap	MC1-L24	MC1-L24
5		Complete oil refilling tap	MC2-L3	MC2-L3
6		Protection body without holes	MX2-L4	MX2-L4









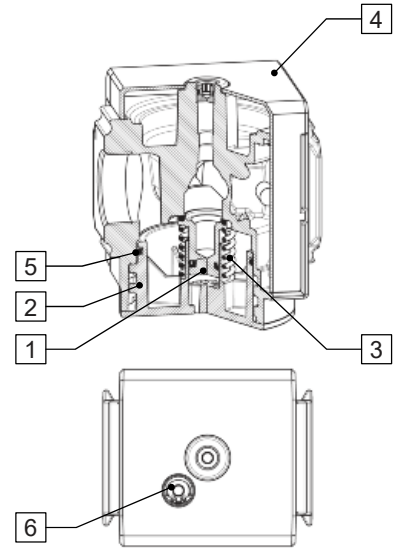
## Spare Parts ELECTRONIC SHUT-OFF VALVES Series MX

Pos.	Drawing	Description	MX2	MX3
1		GAS ISO-228	MX2-V3-P	MX3V3-P
		NPTF	MX2-V3-P-TF	MX3-V3-P-TF
2		V16 valve spool	MX2-V5	MX3-V5-P
3		Solenoid pilot End cover (Only for electropneumatic)	454-011/15C	A531-BC2-111C
		 Air-Pilot End cover	454-33/28	MX3-V12
4		Piston	454-33/6	25-31/2R
5		Piston DE lip seal	454-33/6	NA
6		Spool lip seal "Z" profile Seal	452-33/8	MX3-V7
7		Valve end cover standard O-Ring	OR 3193NBR	OR 3212 NBR
8		Pilot seal	454-33/7	600-400/5
9		Pilot assembly screw	C104-R28	458-33/9
10		Valve Spacer	MX2-V6	MX3-V6
11		Valve spring	MC238-V16	MX3-V10
12		Protection body without holes	MX2-V4	MX3-V4



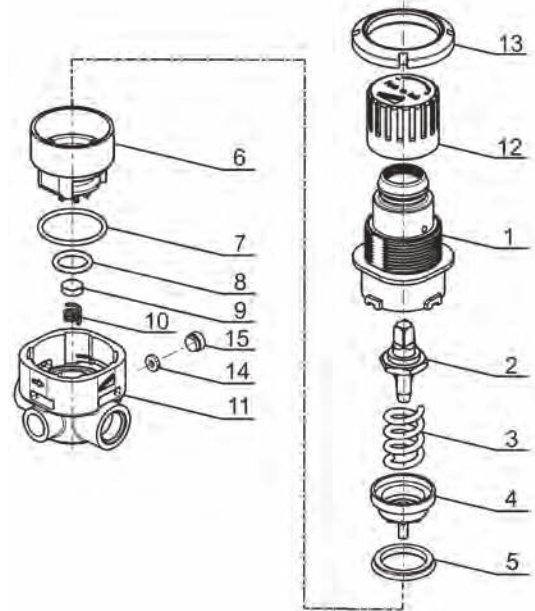
Spare Parts SOFT-START VALVES Series MX

Pos.	Drawing	Description	MX2	MX3
1		Complete Poppet Valve	MX2-AV2-P	MX3-AV2-P
2		Complete Valve bearing end cover	MX2-AV3-P	MX3-AV3-P
3		Soft start valve spring	MX2-AV5	MX3-AV5
4		Protection body cover without holes	MX2-L4	MX3-L4
5		Soft Start end cover O-Ring	OR 3193 NBR	OR 3212 NBR
6		Complete Regulation Screw	MX2-AV6-P	MX3-AV6-P



Spare Parts REGULATORS Series T

Pos.	Description	Parent Reference Part Number	Spare Part Number
1	Bell		T108-R2
2	Spring Guide		T1-R19
3	Upper Spring (7.25 - 145 psi)	T104-RQX	T108-R17
	Upper Spring (0 - 29 psi)	T104-R2X	T108-R16/1
	Upper Spring (0 - 58 psi)	T104-R1X	T108-R16
	Upper Spring (7.25 - 101 psi)	T104-RZX	T108-R16/2
4	Relieving Piston		T108-R26
5	Ring Seal		25-QN1/3P
6	Valve Guide		T108-D2
7	O-ring		OR 2093-NBR
8	O-ring		OR 11X2 NBR
9	Poppet Seal		T108-R7
10	Lower Spring		T108-R6
11	Regulator Body NPTF 1/8"	T108-RXXTE	T108-R1-NPTF
	Regulator Body NPTF 1/4"	T104-RXXTE	T104-R1-NPTF
	Regulator Body BSP 1/8"	T108-RXX	T108-R1
	Regulator Body BSP 1/4"	T104-RXX	T104-R1
12	Bell Housing		MC104-R24
13	Panel Mounting Nut		MC104-R22
14	O-ring		C104-F30/1
15	Rear Dowel		MC104-R9





# 10 Marketing Materials

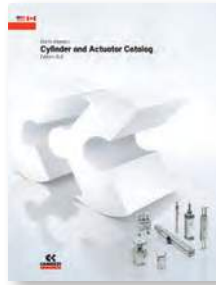
Page

	<p>Marketing Materials</p>	<p><b>329</b></p>
	<p>Camozzi Subsidiaries Worldwide</p>	<p><b>331</b></p>
	<p>Camozzi Distributors Worldwide</p>	<p><b>&lt;?&gt;</b></p>

# Marketing Materials



**Camozzi Overview Brochure**  
93-1500-0GB024



**North American Cylinder & Actuator Catalog Ed. 8.6**  
93-0517-USA001



**North American Fittings & Flow Control Valves Catalog**  
93-0515-USA001



**North American Valve Catalog Ed 8.5**  
93-0513-USA002



**Metric Master Catalog 8.8**  
93-0517-0GB001



**Short Form Metric Master Catalog 8.8**  
93-1009-0GB023



**C\_Electrics Catalog**  
93-1005-0GB079



**Series ND DOT Catalog**  
93-0519-USA001



**Wall Chart Fittings Poster USA NPTF**  
93-5000-USA003



**BSP Fittings Poster**  
93-5000-0GB005



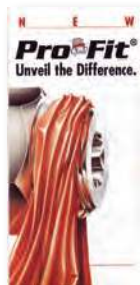
**Cylinder & Actuator Poster**  
93-5000-0GB008



**Fitting Selector Guide**  
93-1500-USA002



**Metric Fittings Bin Labels**  
SUS93-5500-0012



**Pro-Fit Fittings Brochure**  
93-1002-0GB004



**NPTF Fittings Bin Labels**  
SUS93-5500-0013



**Series ND Brochure**  
93-1005-USA010

10

MARKETING MATERIALS



Distributor Full Line  
Sample Case  
94-1160-0006



Assorted Fittings  
Sample Case  
94-1160-0009



DOT Fittings Sample Case  
94-1160-0010



Composite Fittings Sample Case  
Fittings Sample Case  
94-1160-0016



Modular Fittings Cabinet Deluxe  
94-1500-0004



DOT Fittings Sample Kit  
94-1160-0016



Series MD FRL Demo Unit  
42-8138-000001



## Camozzi Subsidiaries Worldwide

### Camozzi Automation S.p.A.

Società Unipersonale  
Via Eritrea, 20/1  
25126 Brescia  
**Italia**  
Tel. +39 030/37921  
Fax +39 030/2400464  
info@camozzi.com  
www.camozzi.com

### Camozzi Neumatica S.A.

Polo Industrial Ezeiza,  
Puente del Inca 2450,  
B1812DX, Carlos Spegazzini, Ezeiza  
Provincia de Buenos Aires  
**Argentina**  
Tel. +54 11/52639399  
info@camozzi.com.ar  
www.camozzi.com.ar

### Camozzi Automation GmbH

Löfflerweg 18  
A-6060 Hall in Tirol  
**Austria**  
Tel. +43 5223/52888-0  
Fax +43 5223/52888-500  
info@camozzi.at  
www.camozzi.at

### Camozzi Pneumatic

66-1, Perehodnaya str.,  
220070, Minsk  
**Belarus**  
Tel. +375 17/3961170 (71)  
Fax +375 17/3961170 (71)  
info@camozzi.by  
www.camozzi.by

### Camozzi do Brasil Ltda.

Rod. Adauto Campo Dall'Orto, 2.200  
Condomínio Techville  
CEP 13178-440 Sumaré S.P.  
**Brazil**  
Tel. +55 19/21374500  
sac@camozzi.com.br  
www.camozzi.com.br

### Shanghai Camozzi Automation Control Co, Ltd.

717 Shuang Dan Road, Malu  
Shanghai - 201801  
**China**  
Tel. +86 21/59100999  
Fax +86 21/59100333  
info@camozzi.com.cn  
www.camozzi.com.cn

### Camozzi S.r.o.

V Chotejně 700/7  
Praha - 102 00

**Czech Republic**  
Tel. +420 272/690 994  
Fax +420 272/700 485  
info@camozzi.cz  
www.camozzi.cz

### Camozzi Automation ApS

Metalvej 7 F  
4000 Roskilde  
**Denmark**  
Tel. +45 46/750202  
info@camozzi.dk  
www.camozzi.dk

### Camozzi Automation OÜ

Osmussaare 8  
13811 Tallinn  
**Estonia**  
Tel. +372 6119055  
Fax +372 6119055  
info@camozzi.ee  
www.camozzi.ee

### Camozzi Automation Sarl

5, Rue Louis Gattefossé  
Parc de la Bandonnière  
69800 Saint-Priest  
**France**  
Tel. +33 (0)478/213408  
Fax +33 (0)472/280136  
info@camozzi.fr  
www.camozzi.fr

### Camozzi Automation GmbH

Porschestraße 1  
D-73095 Albershausen  
**Germany**  
Tel. +49 7161/91010-0  
Fax +49 7161/91010-99  
info@camozzi.de  
www.camozzi.de

### Camozzi India Private Limited

D-44, Hosierey Complex,  
Phase II Extension,  
Noida - 201 305  
Uttar Pradesh  
**India**  
Tel. +91 120/4055252  
Fax +91 120/4055200  
info@camozzi-india.com  
www.camozzi.in

### Camozzi Pneumatic

**Kazakhstan LLP**  
Shevchenko/Radostovets,  
165b/72g, off. 615  
050009 Almaty  
**Kazakhstan**  
Tel. +7 727/3335334 - 3236250  
Fax +7 727/2377716 (17)  
info@camozzi.kz  
www.camozzi.kz

### Camozzi Malaysia SDN. BHD.

30 & 32, Jalan Industri USJ 1/3  
Taman Perindustrian USJ 1  
47600 Subang Jaya  
Selangor  
**Malaysia**  
Tel. +60 3/80238400  
Fax +60 3/80235626  
cammal@camozzi.com.my  
www.camozzi.com.my

### Camozzi Neumatica de Mexico S.A. de C.V.

Lago Tanganica 707  
Col. Ocho Cedros 2ª sección  
50170 Toluca  
**México**  
Tel. +52 722/2707880 - 2126283  
Fax +52 722/2707860  
camozzi@camozzi.com.mx  
www.camozzi.com.mx

### Camozzi Automation AS

Verkstedveien 8  
1400 Ski  
**Norway**  
Tel. +47 40644920  
info@camozzi.no  
www.camozzi.no

### Camozzi Pneumatic LLC

Chasnikovo,  
Solnechnogorskiy District  
Moscow 141592  
**Russian Federation**  
Tel. +7 495/786 65 85  
Fax +7 495/786 65 85  
info@camozzi.ru  
www.camozzi.ru

### Camozzi Iberica SL

Avda. Altos Hornos de Vizcaya, 33, C-1  
48901 Barakaldo - Vizcaya  
**Spain**  
Tel. +34 946 558 958  
info@camozzi.es

www.camozzi.es

### Camozzi Automation AB

Bronsyxegatan 7  
213 75 Malmö  
**Sweden**  
Tel. +46 40/6005800  
info@camozzi.se  
www.camozzi.se

### Camozzi Automation B.V.

De Vijf Boeken 1 A  
2911 BL Nieuwerkerk a/d IJssel  
**The Netherlands**  
Tel. +31 180/316677  
info@camozzi.nl  
www.camozzi.nl

### LLC Camozzi

Kirillovskaya Str, 1-3, section "D"  
Kiev - 04080  
**Ukraine**  
Tel. +38 044/5369520  
Fax +38 044/5369520  
info@camozzi.ua  
www.camozzi.ua

### Camozzi Automation Ltd.

The Fluid Power Centre  
Watling Street  
Nuneaton, Warwickshire  
CV11 6BQ  
**United Kingdom**  
Tel. +44 (0)24/76374114  
Fax +44 (0)24/76347520  
info@camozzi.co.uk  
www.camozzi.co.uk

### Camozzi Automation, Inc.

Street address:  
2160 Redbud Boulevard, Suite 101  
McKinney, TX 75069-8252  
Remittances:  
P.O. Box 678518  
Dallas, TX 75267-8518  
**USA**  
Tel. +1 972/5488885  
Fax +1 972/5482110  
info@camozzi-usa.com  
www.camozzi-usa.com

### Camozzi Venezuela S.A.

Calle 146 con Av. 62  
N°146-180  
P.O. Box 529  
Zona Industrial Maracaibo  
Edo. Zulia  
**Venezuela**  
Tel. +58 261/4116267  
info@camozzi.com.ve  
www.camozzi.com.ve

### Camozzi R.O.

in Hochiminh City  
6<sup>th</sup> Floor, Master Building,  
155 Hai Ba Trung St.,  
Ward 6, District 3  
Hochiminh City  
**Vietnam**  
Tel. +84 8/54477588  
Fax +84 8/54477877  
bhthien@camozzi.com.vn  
www.camozzi.com.vn



# Camozzi Distributors Worldwide

## Europe

### ZULEX d.o.o.

Safeta Zajke 115b  
Sarajevo

### Bosnia-Herzegovina

Tel. +387 33/776580  
Fax +387 33/776583  
zulex@bih.net.ba  
www.zulex.com.ba

### L.D. GmbH

Blvd Asen  
Yordanov 5  
1592 Sofia

### Bulgaria

Tel. +359 2/9269011  
Fax +359 2/9269025  
camozzi@ld-gmbh.com  
www.ld-gmbh.com

### Bibus Zagreb d.o.o.

Anina 91  
HR 10000 Zagreb

### Croatia

Tel. +385 1/3818004  
Fax +385 1/3818005  
bibus@bibus.hr  
www.bibus.hr

### TS Hydropower Ltd.

Industrial Area N°64  
Aglanzia 21-03

### Nicosia

### Cyprus

Tel. +357 22/332085  
Fax +357 22/338608  
tshydro@cytanet.com.cy

### AVS-Yhtiöt Oy

Rusthollarikatu 8  
02270 Espoo

### Finland

Tel. +358 10/6137100  
Fax +358 10/6137701  
info@avs-yhtiot.fi  
www.avs-yhtiot.fi

### TECHNOMATIC Group IKE

Esopou str, Kalochori Industrial Park  
57009, Thessaloniki

### Greece

Tel. +30 2310/752773  
Fax +30 2310/778732  
info@technomaticgroup.gr  
www.technomaticgroup.gr

### Tech-Con Hungária Kft

Véső u. 9-11 (entrance: Süllő u. 8.)  
1133 Budapest

### Hungary

Tel. +36 1/412 4161  
Fax +36 1/412 4171  
tech-con@tech-con.hu  
www.tech-con.hu

### Loft & Raftæki

Hjallabrekka 1  
200 Kópavogur

### Iceland

Tel. +354 564/3000  
Fax +354 564/0030  
loft@loft.is  
www.loft.is

### DBF TECHNIC SIA

Bauskas iela 20 - 302  
1004 Riga

### Latvia

Tel. +371 296 26916  
Fax +371 6 7808650  
info@pneimatika.lv  
www.pneimatika.lv

### Hidroteka Engineering UAB

Chemijos 29E  
LT-51333 Kaunas

### Lithuania

Tel. +370 37/452969  
Fax +370 37/760500  
hidroteka@hidroteka.lt  
www.hidroteka.lt

### Rayair Automation Ltd.

KW23G - Corradino Ind. Estate  
Paola, PLA3000

### Malta

Tel. +356 21/672497  
Fax +356 21/805181  
sales@rayair-automation.com  
www.rayair-automation.com

### Bibus Menos Sp. z o.o.

ul. Spadochroniarzy 18  
80-298 Gdańsk

### Poland

Tel. +48 58/6609570  
Fax +48 58/6617132  
info@bibusmenos.pl  
www.bibusmenos.pl

### Experts d.o.o.

Mitropolit Teodosij Gologanov, 149  
MK-1000 Skopje

### Rep. of Macedonia

Tel. +389 2/3081970  
experts@t.mk  
www.experts.com.mk

### Tech-Con Industry S.r.l.

Calea Crângasi N°60  
Sector 6, 060346 Bucharest

### Romania

Tel. +40 21/2219640  
Fax +40 21/2219766  
automatizari@tech-congroup.com  
www.tech-con.ro

### Tech-Con d.o.o. Beograd

Cara Dušana 205a  
11080 Zemun - Belgrade

### Serbia

Tel. +381 11/4142790  
Fax +381 11/3166760  
office.belgrade@tech-congroup.com  
www.tech-con.rs

### STAF Automation, s.r.o.

Kostiviarska 4944/5  
974 01 Banská Bystrica

### Slovakia

Tel. +421 48/4722777  
Fax +421 48/4722755  
staf@staf.sk  
www.staf.sk

### KOVIMEX d.o.o.

Podskrajnik 60,  
SI-1380 Cerknica

### Slovenia

Tel. +386 1/7096430  
Fax +386 1/7051930  
kovimex@kovimex.si  
www.kovimex.com

### BIBUS AG

Allmendstrasse 26  
CH-8320 Fehraltorf

### Switzerland

Tel. +41 44/8775011  
Fax +41 44/8775019  
info.bag@bibus.ch  
www.bibus.ch

### Hidrel Hidrolik Elemanlar San. Ve Tic. A.Ş.

Percemli Sok. No:7 Tunel Mevkii  
34420 Karakoy Istanbul

### Turkey

Tel. +90 212 251 73 18 - 249 48 81  
Fax +90 212 292 08 50  
info@hidrel.com.tr  
www.hidrel.com.tr

&gt;&gt;

## Camozzi Distributors Worldwide

### America

**LEVcorp S.A.**  
Av. Roma No. 7447  
Zona Obrajes  
La Paz  
**Bolivia**  
Tel. +591 2 2815658  
Fax +591 2 2815695  
info@levcorp.bo  
www.levcorp.bo

**NOMADA Ltda**  
Panamericana Norte 2998 unidad 3036  
Renca - Santiago  
**Chile**  
Tel. +56 2 2904 0032  
ventas@nomadachile.com  
www.nomadachile.com

**Eurotécnica de Costa Rica AYM, S.A.**  
150 m oeste del cruce de Llorente,  
hacia Epa Tibás  
**Costa Rica**  
Tel. +506 2241/4242 - 4230  
Fax +506 2241/4272  
eurotecnica@eurotecnicacr.com  
www.eurotecnicacr.com

**Fluidica Cia. Ltda.**  
Abelardo Moncayo Oe4-08 y Av. América  
170509 Quito, Pichincha  
**Ecuador**  
Tel. +593 2/2440848 - 2/5102004 -  
2/2254773  
Fax +593 2/2440848  
info@fluidica-ec.com  
www.fluidica-ec.com

**Aplitec S.A. de C.V.**  
75 Av. Nte,  
Residencial Escalon Norte II  
Pje Kl #3-C  
San Salvador  
**El Salvador**  
Tel. +503 2557/2666  
Fax +503 2557/2652  
info@aplitecsv.com  
www.aplitescsv.com

**Isotex de Panamá, S.A.**  
Plaza El Conquistador, Local #45  
Vía Tocúmen, Panamá City  
**Panamá**  
Tel. +507 217-0050  
Fax +507 217-0049  
info@isotexpty.com

**Eicepak S.A.C.**  
Av. Los Cipreses N° 484 Los Ficus  
Santa Anita - Lima  
**Perù**  
Tel. +51 1/3628484 - 3627127  
- 3628698  
ventas1@eicepak.com  
www.eicepak.com

**IT Industrial, SRL**  
Ave. Charles Summer #53, suite 24B  
Plaza Charles Summer  
Santo Domingo, Los Prados  
**Repubblica Dominicana**  
Tel. +1809-623-5156  
Fax +1829-956-7205  
info@itindustrialrd.com

**Cocles S.A.**  
BVAR Artigas 4543 P.O. Box 11800  
Montevideo  
**Uruguay**  
Telefax +598 22030307/22006428/  
22090446  
cocles@adinet.com.uy  
www.cocles.com.uy

### Middle East

**Compressed Air Technology Co.Saa**  
Cairo-Alexandria Desert Road Kilo 28  
Behind Gas Station Emirates  
Abu Rawash  
**Egypt**  
Tel. +20 35391986/35391987/35391985  
Fax +20 35391990  
neveen@elhaggarmisr.com  
info@elhaggarmisr.com  
www.elhaggarmisr.com

**Automation Yeruham & Co.**  
34, Hahofer st.  
PO Box 1844 Length 5811702 Holon  
**Israel**  
Tel. +972 73/2606401  
Fax +972 3/5596616  
office@ayeruham.com  
www.ayeruham.com

**Raymond Feghali Co.  
For Trade & Industry SARRL**  
Roumieh industrial zone - Lebanon  
P.O. BOX 90-723 Jdeideh  
**Lebanon**  
Tel. +961 1/893176 - 3/660287  
Fax +961 1/879500  
info@raymondfehalico.com  
www.raymondfehalico.com

**Techno-Line Trading & Services WLL**  
Ware House 05, Building 2189  
Road 1529, Block 115  
Hidd  
**Kingdom of Bahrain**  
Tel. +973 17783906  
Fax +973 17786906  
techline@batelco.com.bh  
sales@technoline.me

**AL-Maram National Co. For Buildings  
General Contracting W.L.L.**  
Shuwaikh Industrial Area Pl. Shop No. 9  
Shuwaikh  
**Kuwait**  
Tel./Fax +965 24828108  
Cell. +965 65615386  
almaramkuwait@gmail.com  
www.almaramgtc.com

**Al-Hawaiya for Industrial Solutions Co.**  
(ALHA)  
Kilo - 3, Makkah Road  
P.O. Box 11429  
Jeddah 21453  
**Saudi Arabia**  
Tel. +966 12/6576874  
Fax +966 12/6885061  
info@alha.com.sa  
www.alha.com.sa

**I.M.O.  
Industrial Machine Trd. Co. L.L.C.**  
P.O. Box 20376  
Sharjah  
**United Arab Emirates**  
Tel. +971 6/5437991 - 6/5437992  
Fax +971 6/5437994  
imo@eim.ae

### Asia

**PT. Golden Archy Sakti**  
Kompleks Prima Centre Blok B2 No.2  
Jl.Pool PPD - Peking Poglar No.11,  
Kedaung Kali Angke - Cengkareng,  
Jakarta Barat 11710  
**Indonesia**  
Tel. +62 21/54377888  
Fax +62 21/54377089  
sales@archy.co.id  
www.archy.co.id

**Seika Corporation**  
Aqua Dojima East Bldg.  
16F, 4-4, 1-Chome, Dojimahama,  
Kita-Ku Osaka  
**Japan**  
Tel. +81 6/63453175  
Fax +81 6/63443584  
konof@jp.seika.com

**Polytechnic Automation**  
Suite 604, 6th Floor, K. S.  
Trade Tower,  
New Challi,  
Shahrah-e-Liaquat,  
Karachi - 74000,  
**Pakistan**  
Tel. +9221 32426612  
Fax +9221 32426188  
polytech\_ent@yahoo.com

**Exceltec Automation Inc.**  
608-G, El-Al Building,  
Quezon Avenue, Tatalon  
Quezon City, 1113  
**Philippines**  
Tel. +632/4161143 - 4161141  
- 731 9015  
Fax +632/7121672  
sales.manila@extec.com

**Exceltec Enviro Pte Ltd**  
Block 3025 Ubi Road 3  
# 03-141  
408653  
**Singapore**  
Tel. +65/67436083  
Fax +65/67439286  
sales@extec.com

**Taewon-AP**  
Geomdanbuk-ro 40-gil, Buk-gu  
Daegu 41511  
**South Korea**  
Tel. +82 53 384 1058  
Fax +82 53 384 1057  
info@taewon-ap.com  
www.taewon-ap.com

**Korea Flutech Co. Ltd**  
No15-4, 101-gil Palgong-ro, Dong-gu,  
Daegu, 41005  
**South Korea**  
Tel. +82 53 213 9090  
Fax +82 53 353 5997  
info@kflutech.com  
www.kflutech.com

11

CAMOZZI DISTRIBUTORS &amp; SUBSIDIARIES

**Savikma Automation & Engineering Services (Pvt) Ltd.**

22, Wattegedara Road  
Maharagama

**Sri Lanka**

Tel. +94 115642164  
Hot line +94 777800070  
Fax +94 112844777  
saes@sltnet.lk

**Zenith Automation International Co., Ltd.**

1F, No.9, Aly. 1, Ln. 5,  
Sec. 3, Ren'ai Rd.,  
Da'an Dist., Taipei City 10651

**Taiwan (R.O.C.)**

Tel. +886 2/2781 1267  
Fax +886 2/3322 8973  
za-sales@z-auto.com.tw  
www.z-auto.com.tw

**Pneumax Co. Ltd.**

107/1 Chaloeam Phrakiat R.9 Rd.,  
Pravet - Bangkok 10250

**Thailand**

Tel. +66 2/7268000  
Fax +66 2/7268260  
import@pneumax.co.th  
www.pneumax.co.th

**Africa****Boudissa Technology Sarl**

25, Cité 20 Août 1955  
Oued Roumane El Achour  
Algiers - 16403

**Algeria**

Tel./Fax +213 (0) 23316751  
Tel./Fax +213 (0) 23316733  
contact@boudissatech.com  
www.boudissatech.com

**DISMATEC****Distribution de Matériels Techniques**

N° RCCM-CI-ABJ-2010B1882  
16 BP 236 ABIDJAN 16

**Ivory Coast**

Tel. +225 21267091  
Fax +225 21262367  
dismatec2002@yahoo.fr

**Hydramatics Control Equipment**

15 Village Crescent,  
Linbro Business Park,  
Sandton Johannesburg 2065

**South Africa**

Tel. +2711/6081340 - 1 - 2  
Fax +2786/5516311  
sales@hydramatics.co.za  
www.hydramatics.co.za

**A.T.C. Automatisme**

Avenue Habib Bourguiba  
Centra Said - BP 25 2033  
Megrine

**Tunisia**

Tel. +216 71/297328  
Fax +216 71/429084  
commercial@atc-automatisme.com  
www.atc-automatisme.com

**Oceania****Griffiths Components Pty Ltd**

605 Burwood Hwy  
Knoxfield Victoria  
Melbourne 3180

**Australia**

Tel. +61 3/9800 6500  
Fax +61 3/9801 8553  
enquiry@camozzi.com.au

## Contacts

**Camozzi Automation, Inc.**  
2160 Redbud Blvd., Suite 101  
McKinney, Texas 75069  
Tel. 972 548 8885 | Fax 972 548 2110  
support@camozzi-usa.com



Automation

**Edition 8.6 | 03/2023**  
**93-2013-USA001**

A Camozzi Group Company  
**[www.camozzi-usa.com](http://www.camozzi-usa.com)**