

PROPORTIONAL PRESSURE REGULATOR AND PROPORTIONAL FLOW VALVE

SERIES MX-PRO

Regulator and valve ports (Single and Manifold): G1/2
 Regulator: with built-in pressure gauge or G1/8 threaded ports
 Valve: without pressure gauge



- High precision
- Low electric consumption
- High exhaust flow
- Modular with Series MX
- MANIFOLD and external servo pilot supply versions available
- Compatible 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. Compatible to work with Oxygen	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. Compatible to work with Oxygen
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	± 5% FS
Hysteresis	± 0,5% FS	± 8% FS
Repeatability	± 0,5% FS	± 0,5% FS
Sensibility	0,3% FS	0,5% FS
Protection class	IP51	IP51

PROPORTIONAL PRESSURE REGULATOR AND PROPORTIONAL FLOW VALVE
SERIES MX-PRO - CODING EXAMPLE
CODING EXAMPLE

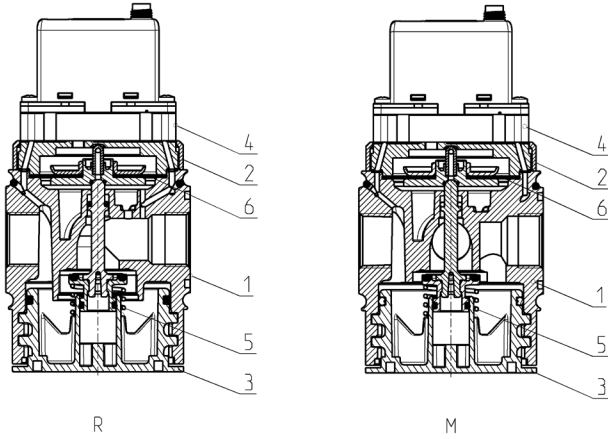
MX	2	-	1/2	-	R	CV	2	0	4	-	LH	-	OX1
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MX	SERIES	
2	SIZE: 2 = G1/2	
1/2	PORTS: 1/2 = G1/2	
R	FUNCTIONING: R = pressure regulator M = Manifold pressure regulator	V = flow valve W = Manifold flow valve
CV	COMMAND: CV = electrical command 0-10 V DC (regulator only) CA = electrical command 4-20 mA (regulator only)	XV = electrical command 0-10 V DC with external servo pilot supply XA = electrical command 4-20 mA DC with external servo pilot supply EV = electrical command 0-10 V DC with external servo pilot supply EA = electrical command 4-20 mA with external servo pilot supply
2	REGULATOR SETTING RANGE: 1 = working pressure 0,15 ÷ 3 bar 2 = working pressure 0,5 ÷ 10 bar * 3 = working pressure 0,05 ÷ 1 bar 4 = working pressure 0,35 ÷ 7 bar	VALVE SETTING RANGE: 7 = flow valve
0	DESIGN TYPE: 0 = relieving (regulator only) 1 = without relieving	
4	PRESSURE GAUGE: 0 = without pressure gauge, with threaded port for gauges (for OX1 version) 2 = with built-in pressure gauge 0-6 bar (regulator only)	3 = with built-in pressure gauge 0-10 bar (regulator only) 4 = with built-in pressure gauge 0-12 bar (regulator only)
LH	FLOW DIRECTION: = from left to right (standard) LH = from right to left	
OX1	= suitable for use with oxygen	

* For the configurations with the pressure regulation range of 10 bar in the OX1 version, the version with external servo pilot air supply is mandatory.
 Further details about the assembly of a single component with fixing flanges or wall-mounting can be found in the AIR TREATMENT catalogue, section SERIES MX ASSEMBLED FRL.

Series MX-PRO proportional pressure regulator - materials

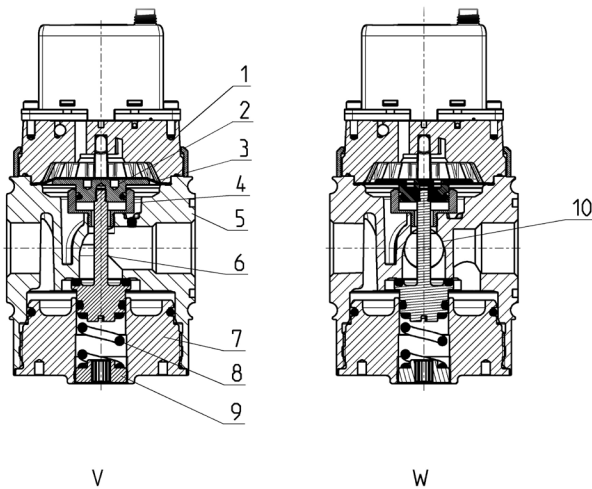
R = Proportional pressure regulator
 M = Manifold proportional pressure regulator



PARTS	MATERIALS, Single and manifold version
1 = Body	Aluminium
2 = Covering	Polyacetal
3 = Valve holder plug	Polyacetal
4 = Upper base	Polyamide
5 = Lower spring	Stainless steel
6 = Diaphragm (EPDM for version OX1)	NBR
Seals (FKM for version OX1)	NBR

Series MX-PRO proportional flow valve - materials

V = Proportional flow valve
 W = Manifold proportional flow valve



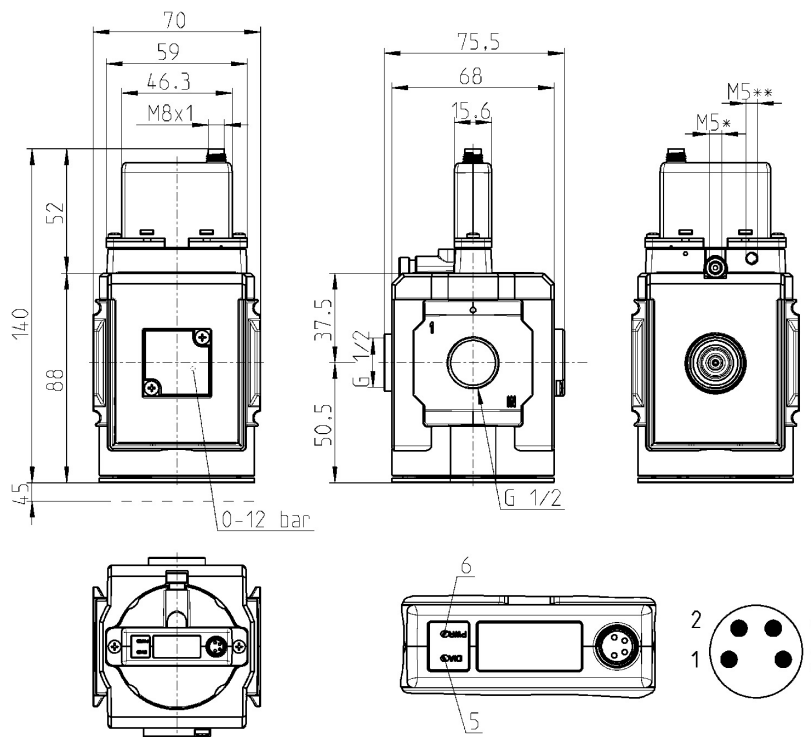
PARTS	MATERIALS, Single and manifold version
1 = Upper base	Polyamide
2 = Piston	Brass
3 = Diaphragm	NBR (EPDM version XV and XA)
4 = Valve guide	Brass
5 = Body	Aluminium
6 = Poppet	Brass
7 = Plug	Anodised aluminium
8 = Spring	Steel
9 = Spring guide	Brass
10 = Manifold output connection	Nickel-plated brass
Seals	FKM/NBR

PROPORTIONAL PRESSURE REGULATOR AND PROPORTIONAL FLOW VALVE
SERIES MX-PRO - DIMENSIONAL CHARACTERISTICS
Series MX-PRO proportional pressure regulator - Single version

M8 4-POLE MALE CONNECTOR



- 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).

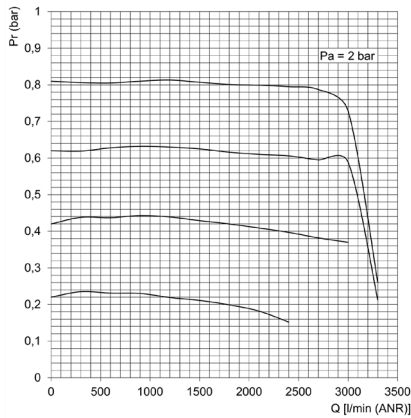
 5 Red LED
 6 Green LED


DRAWING NOTES:
 *** = in the versions with external servo pilot supply only (MX2-1/2-REV... and MX2-1/2-REA...)
 * = only in the OX1 versions with relieving

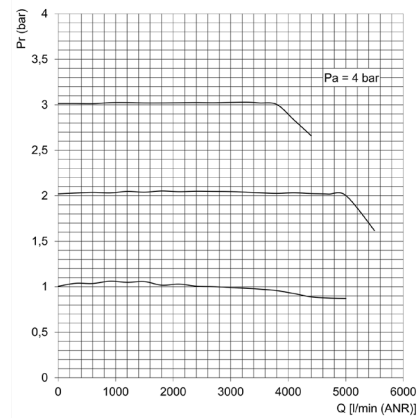
Mod.	Electrical command	Setting range	Pressure gauge
MX2-1/2-R**100OX1	0-10 V DC/4-20 mA	0,15 ÷ 3 bar	without pressure gauge
MX2-1/2-R**1#2	0-10 V DC/4-20 mA	0,15 ÷ 3 bar	with built-in pressure gauge 0-6
MX2-1/2-R**2#0	0-10 V DC/4-20 mA	0,5 ÷ 10 bar	without pressure gauge
MX2-1/2-R**2#4	0-10 V DC/4-20 mA	0,5 ÷ 10 bar	with built-in pressure gauge 0-12
MX2-1/2-R**3#0	0-10 V DC/4-20 mA	0,05 ÷ 1 bar	without pressure gauge
MX2-1/2-R**4#0	0-10 V DC/4-20 mA	0,35 ÷ 7 bar	without pressure gauge
MX2-1/2-R**4#3	0-10 V DC/4-20 mA	0,15 ÷ 3 bar	with built-in pressure gauge 0-10
MX2-1/2-R**100OX1	0-10 V DC/4-20 mA	0,15 ÷ 3 bar	without pressure gauge
MX2-1/2-R**300OX1	0-10 V DC/4-20 mA	0,05 ÷ 1 bar	without pressure gauge
MX2-1/2-R**400OX1	0-10 V DC/4-20 mA	0,35 ÷ 7 bar	without pressure gauge
MX2-1/2-RE*200OX1	0-10 V DC/4-20 mA	0,5 ÷ 10 bar	without pressure gauge

TABLE NOTES:
 * = versions with or without external pilot supply
 # = versions with or without relieving
 LH = add LH at the end of the code for air inlet from the right to the left

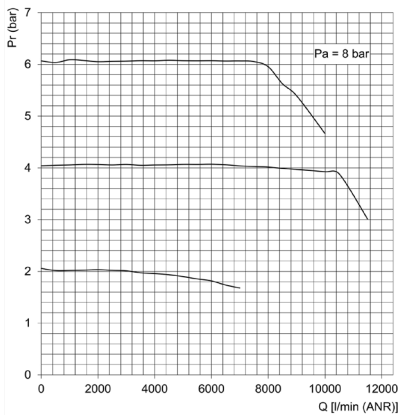
PRESSURE REGULATOR FLOW DIAGRAMS - SINGLE VERSION



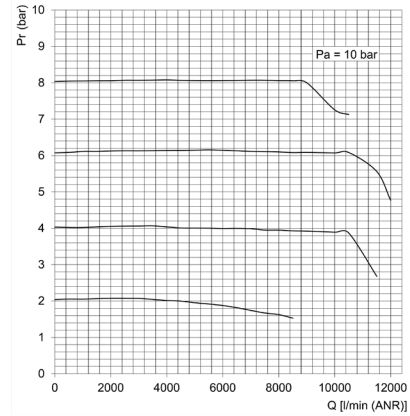
Pr = Regulated pressure
 Q = Flow
 Pa = Inlet pressure



Pr = Regulated pressure
 Q = Flow
 Pa = Inlet pressure



Pr = Regulated pressure
 Q = Flow
 Pa = Inlet pressure



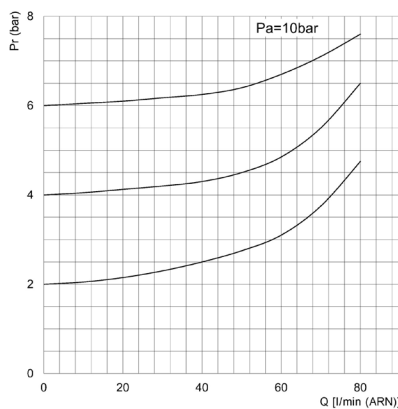
Pr = Regulated pressure
 Q = Flow
 Pa = Inlet pressure

PROPORTIONAL TECHNOLOGY

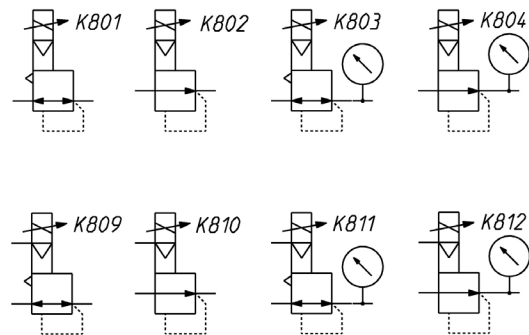
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PNEUMATIC SYMBOLS - SINGLE VERSION

EXHAUST FLOW DIAGRAM AND PNEUMATIC SYMBOLS - SINGLE VERSION



Pr = Regulated pressure
 Q = Flow
 Pa = Inlet pressure

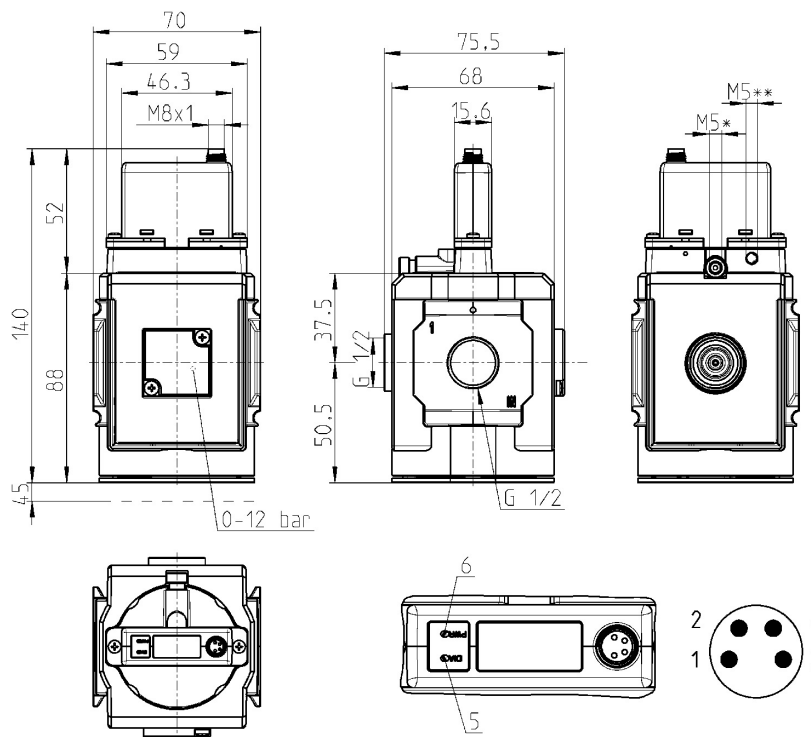


- K801 = relieving, electrical command
- K802 = NO relieving, electrical command
- K803 = relieving, electrical command, built-in pressure gauge
- K804 = NO relieving, electrical command, built-in pressure gauge
- K809 = relieving, electrical command, ext. servo pilot supply
- K810 = NO reliev., electrical command, ext. servo pilot supply
- K811 = reliev., el. com., built-in pr. gauge, ext. servo pilot supply
- K812 = NO reliev., el. com., built-in pr. gauge, ext. servo pilot sup.

Series MX-PRO proportional pressure regulator - Manifold version
M8 4-POLE MALE CONNECTOR


- 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

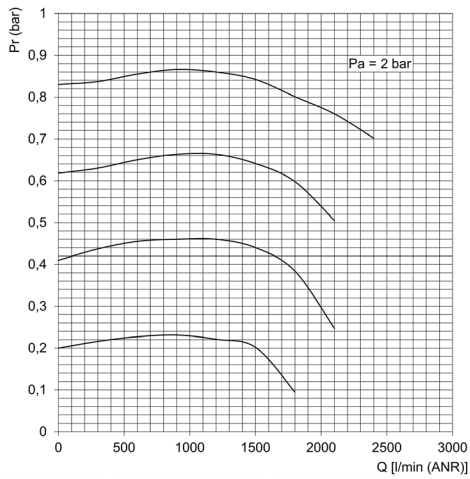


DRAWING NOTES:
 ** = in the versions with external servo pilot supply only (MX2-1/2-REV... and MX2-1/2-REA...)
 * = only in the OX1 versions with relieving

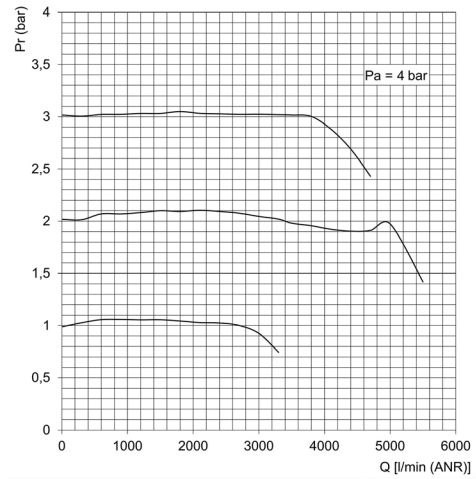
Mod.	Electrical command	Setting range	Pressure gauge
MX2-1/2-M**1#0	0-10 V DC	0,15 ÷ 3 bar	without pressure gauge
MX2-1/2-M**1#2	0-10 V DC	0,15 ÷ 3 bar	with built-in pressure gauge 0-6
MX2-1/2-M**2#0	0-10 V DC	0,5 ÷ 10 bar	without pressure gauge
MX2-1/2-M**2#4	0-10 V DC	0,5 ÷ 10 bar	with built-in pressure gauge 0-12
MX2-1/2-M**3#0	0-10 V DC	0,05 ÷ 1 bar	without pressure gauge
MX2-1/2-M**4#0	0-10 V DC	0,35 ÷ 7 bar	without pressure gauge
MX2-1/2-M**1000X1	0-10 V DC/4-20 mA	0,15 ÷ 3 bar	without pressure gauge
MX2-1/2-M**3000X1	0-10 V DC/4-20 mA	0,05 ÷ 1 bar	without pressure gauge
MX2-1/2-M**4000X1	0-10 V DC/4-20 mA	0,35 ÷ 7 bar	without pressure gauge
MX2-1/2-ME**2000X1	0-10 V DC/4-20 mA	0,5 ÷ 10 bar	without pressure gauge

TABLE NOTES:
 * = versions with or without external pilot supply
 # = versions with or without relieving
 LH = add LH at the end of the code for air inlet from the right to the left

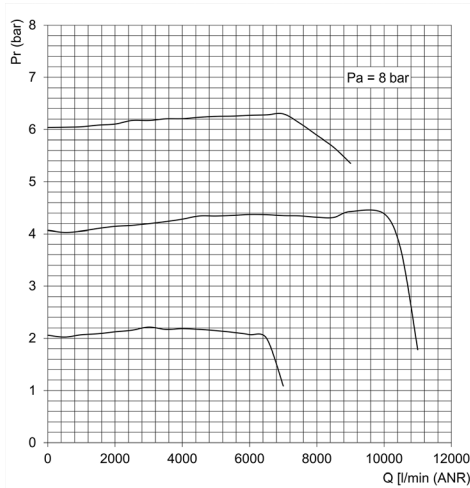
PRESSURE REGULATOR FLOW DIAGRAMS - MANIFOLD VERSION



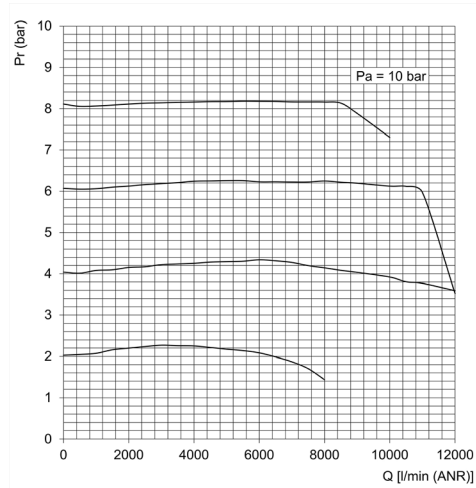
Pr = Regulated pressure
 Q = Flow
 Pa = Inlet pressure



Pr = Regulated pressure
 Q = Flow
 Pa = Inlet pressure

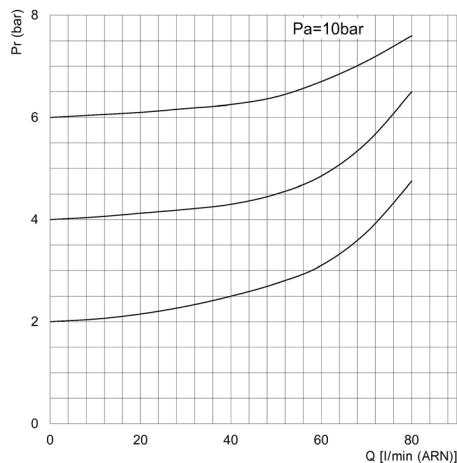


Pr = Regulated pressure
 Q = Flow
 Pa = Inlet pressure



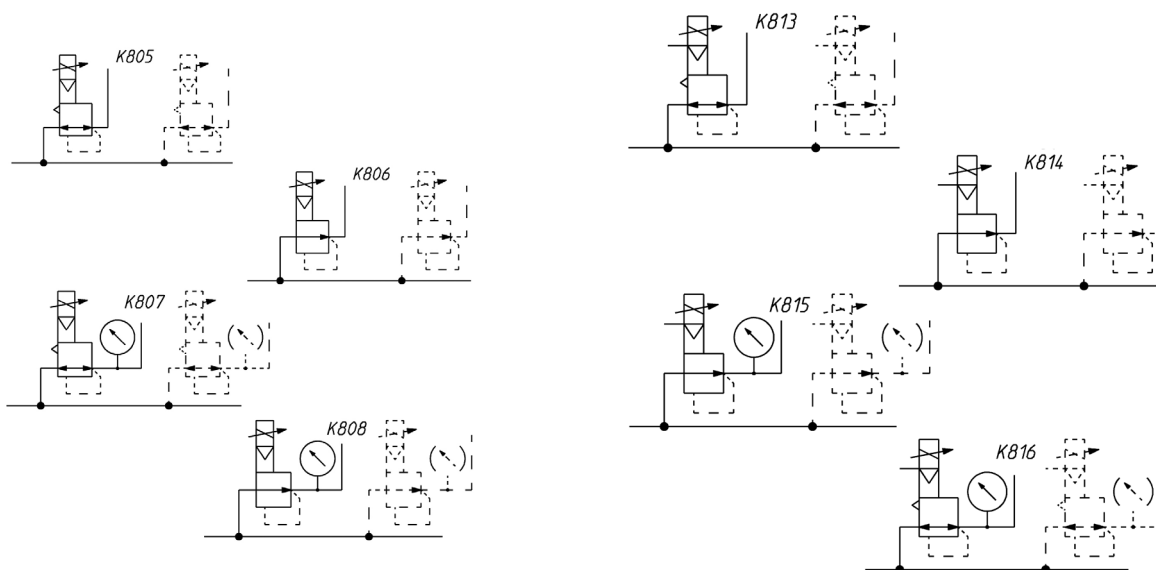
Pr = Regulated pressure
 Q = Flow
 Pa = Inlet pressure

EXHAUST FLOW DIAGRAM AND PNEUMATIC SYMBOLS - SINGLE VERSION



Pr = Regulated pressure
 l/min = 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

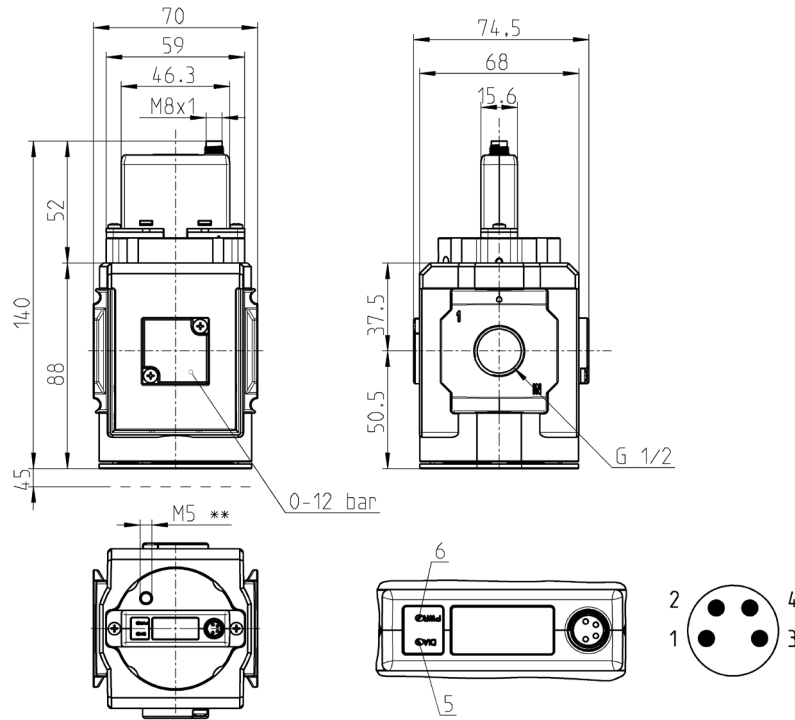
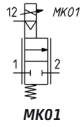
Series MX-PRO proportional flow valve - Single version

M8 4-POLE MALE CONNECTOR



- 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

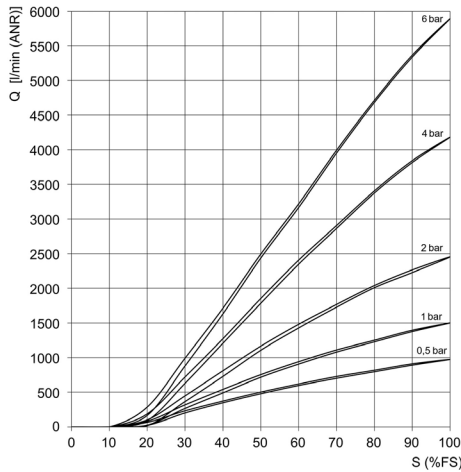


PROPORTIONAL TECHNOLOGY

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Mod.	Electrical command	Setting range
MX2-1/2-VEV710	0-10 V DC	0-6500 l/min (ARN)
MX2-1/2-VEA710	4-20 mA	0-6500 l/min (ARN)
MX2-1/2-VEV710-LH	0-10 V DC	0-6500 l/min (ARN)
MX2-1/2-VEA710-LH	4-20 mA	0-6500 l/min (ARN)
MX2-1/2-VEV710OX1	0-10 V DC	0-6500 l/min (ARN)
MX2-1/2-VEA710OX1	4-20 mA	0-6500 l/min (ARN)
MX2-1/2-VEV710-LHOX1	0-10 V DC	0-6500 l/min (ARN)
MX2-1/2-VEA710-LHOX1	4-20 mA	0-6500 l/min (ARN)
MX2-1/2-VXV710OX1	0-10 V DC	0-6500 l/min (ARN)
MX2-1/2-VXA710OX1	4-20 mA	0-6500 l/min (ARN)
MX2-1/2-VXV710-LHOX1	0-10 V DC	0-6500 l/min (ARN)
MX2-1/2-VXA710-LHOX1	4-20 mA	0-6500 l/min (ARN)

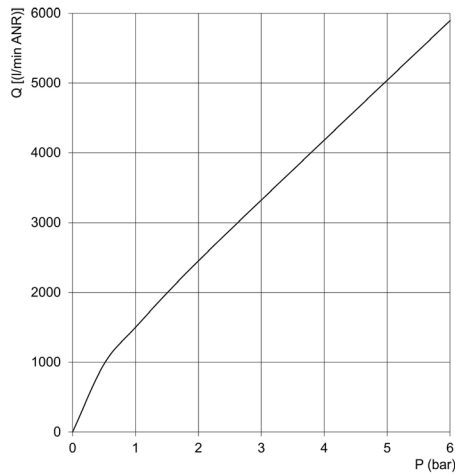
VALVE FLOW DIAGRAMS - SINGLE VERSION



Q = flow
 S = full scale command signal

Valve maximum flow and response times - Single version

Maximum flow according to the inlet pressure.



Q = flow
 P = inlet pressure

RESPONSE TIME measured with the maximum flow at the operating pressure [Elettromechanical response time: 90 ms]

Pin [bar]	Opening response time [ms]		Closing response time [ms]	
	0%-10%	10%-90%	100%-90%	100%-10%
6	117	266	106	553

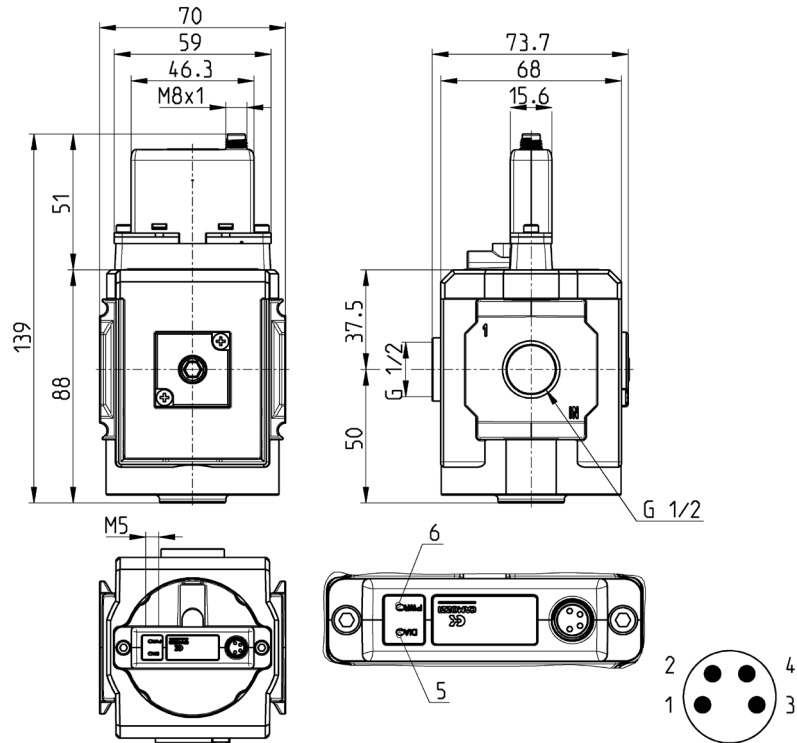
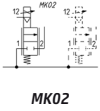
Series MX-PRO Manifold proportional flow valve - Manifold version

M8 4-POLE MALE CONNECTOR



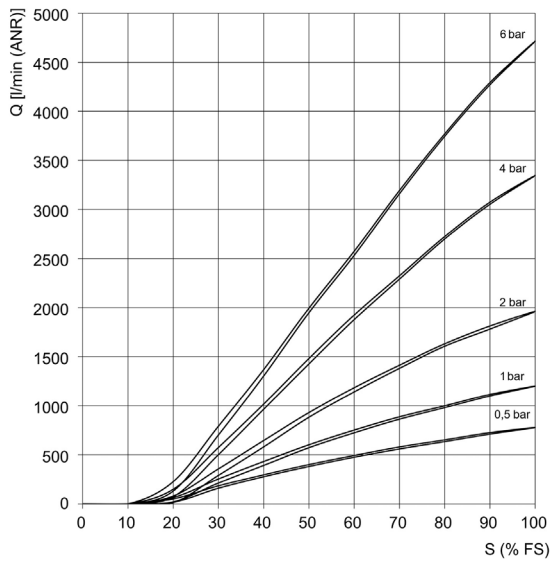
- Pin 1: +24 V DC (Power supply);
- Pin 2: Command analogical signal 0-10 V DC or 4-20 mA;
- Pin 3: 0 V (Ground) common also for the command signal;
- Pin 4: Output analogical signal (according to the regulated pressure).

5 Red LED
 6 Green LED

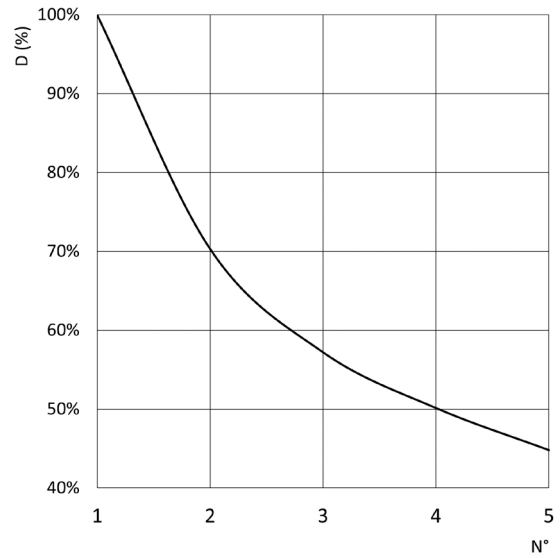


** = in the versions with external servo pilot supply only (MX2-1/2-REV... and MX2-1/2-REA...)
 * = only in the OX1 versions with relieving

Mod.	Electrical command	Setting range
MX2-1/2-WEV710	0-10 V DC	0-6100 l/min (ANR)
MX2-1/2-WEA710	4-20 mA	0-6100 l/min (ANR)
MX2-1/2-WEV710-LH	0-10 V DC	0-6100 l/min (ANR)
MX2-1/2-WEA710-LH	4-20 mA	0-6100 l/min (ANR)
MX2-1/2-WEV710OX1	0-10 V DC	0-6100 l/min (ARN)
MX2-1/2-WEA710OX1	4-20 mA	0-6100 l/min (ARN)
MX2-1/2-WEV710-LHOX1	0-10 V DC	0-6100 l/min (ARN)
MX2-1/2-WEA710-LHOX1	4-20 mA	0-6100 l/min (ARN)
MX2-1/2-WXV710OX1	0-10 V DC	0-6100 l/min (ANR)
MX2-1/2-WXA710OX1	4-20 mA	0-6100 l/min (ANR)
MX2-1/2-WXV710-LHOX1	0-10 V DC	0-6100 l/min (ANR)
MX2-1/2-WXA710-LHOX1	4-20 mA	0-6100 l/min (ANR)

PNEUMATIC SYMBOLS - MANIFOLD VERSION
VALVE FLOW DIAGRAMS - MANIFOLD VERSION


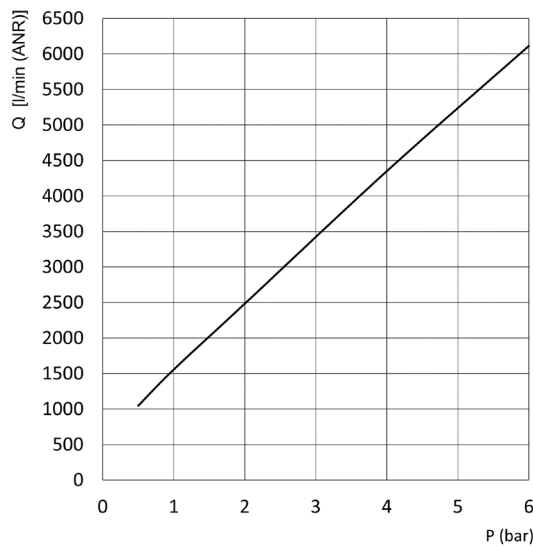
Q = flow
S = full scale command signal

DECAY FACTOR - MANIFOLD VERSION


N° = number of valves in manifold configuration
D(%) = relative percentage decay of the maximum flow rate
Note: the air inlet is only from one side, in case it should be on the right and on the left, only consider the positions as from 1 ÷ 3.

Valve maximum flow and response times - Manifold version

Maximum flow according to the inlet pressure.


DIAGRAM LEGEND:

Q = flow
P = inlet pressure

RESPONSE TIME measured with the maximum flow at the operating pressure [Elettromechanical response time: 90 ms]

Pin [bar]	Opening response time [ms]		Closing response time [ms]	
	0%-10%	10%-90%	100%-90%	100%-10%
6	130	290	116	605

Rapid clamp kit

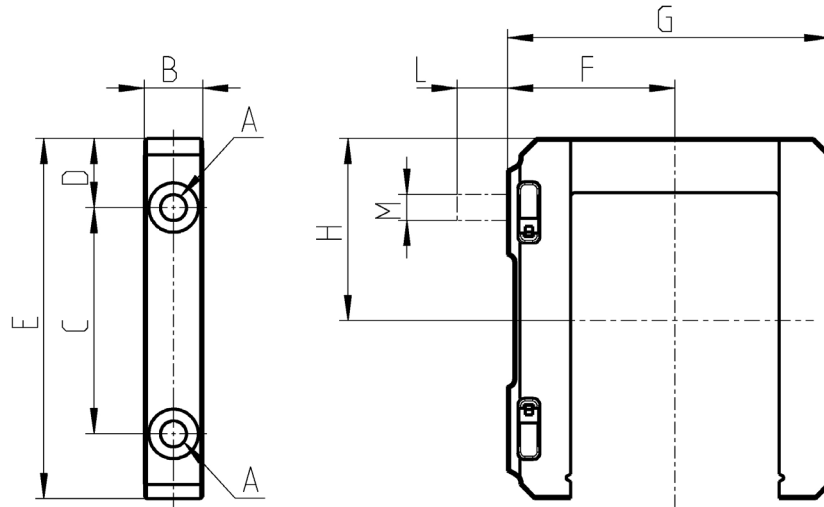


Materials:
 technopolymer clamp, NBR
 O-ring, zinc-plated steel
 nuts and screws.

The kit MX2-X is supplied
 with:
 1x rapid clamp;
 1x O-ring OR 3125 *;
 2x exagonal nuts M5;
 2x screws M5x69

The kit MX2-Z is supplied
 with:
 1x rapid clamp;
 1x O-ring OR 3125 *;
 1x exagonal nut M5;
 1x screw M5x69;
 1x screw M5x85 for wall
 fixing.

* it can be ordered
 separately (cod. 160-39-
 11/19)



See the positioning scheme in the section "Series MX assembled FRL"

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

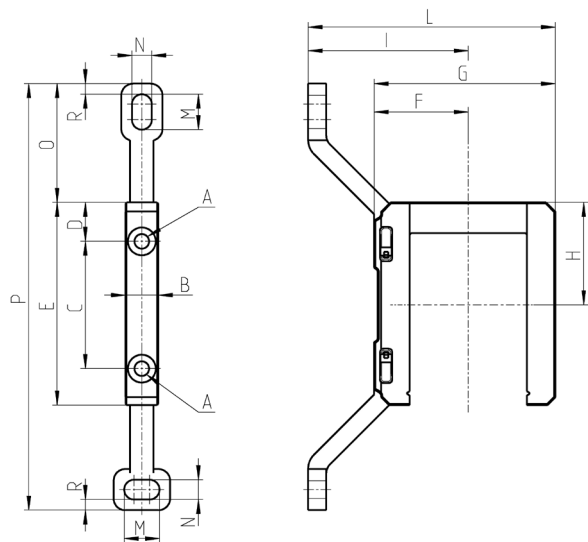
Rapid clamp kit with wall fixing brackets



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

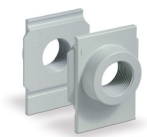
The kit MX2-Y is supplied
 with:
 1x wall rapid clamp;
 1x O-ring OR 3125 **;
 2x exagonal nuts;
 2x screws M5x69.

** it can be separately
 ordered (cod. 160-39-
 11/19)



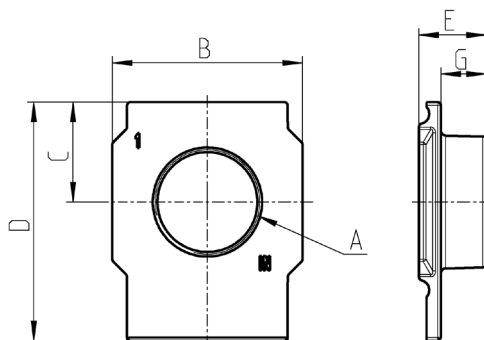
Mod.	A	B	C	D	E	F	G	H	I	L	M	N	O	P	R
MX2-Y	5,2	12	46	14	73,5	32,5	70,5	37	70,5	103	12	6,5	42	152	4

Terminal flanges (IN/OUT)



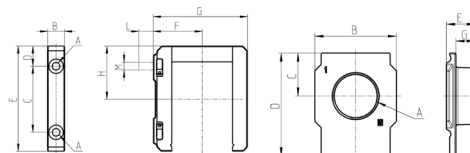
Materials:
painted aluminium flanges.

The kit is supplied with:
1x flange INLET side
1x flange OUTLET side



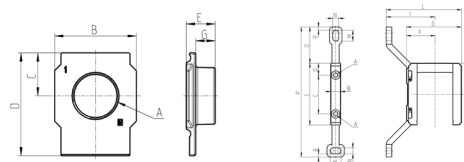
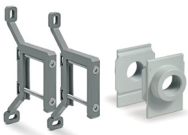
Mod.	A	B	C	D	E	G
MX2-1/2-FL	G1/2	50	26,5	63,5	17	11

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-JI	1x MX2-1/2-FL + 2x MX2-Z

Rapid clamps kit with wall fixing brackets + flanges

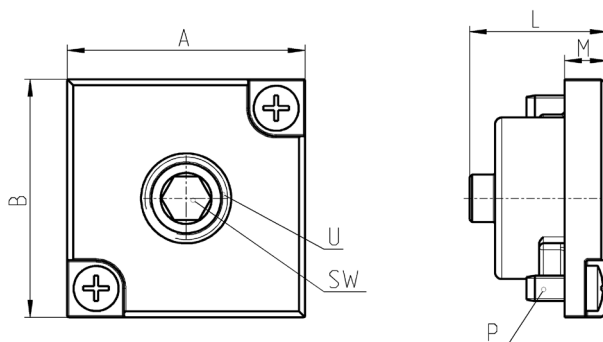


Mod.	The kit is supplied with:
MX2-1/2-KK	1x MX2-1/2-FL + 2x MX2-Y

Block for pressure gauge fixing

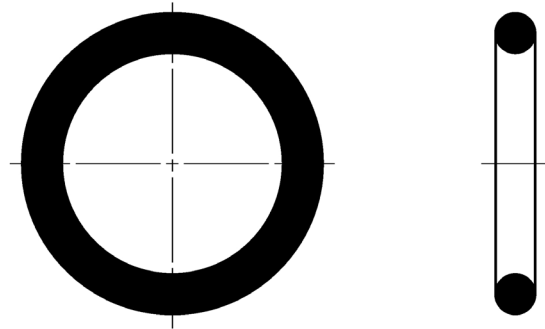


The kit is supplied with:
1x block
1x grain
2x screws
1x seal



Mod.	A	B	L	M	P	U	SW
MX2-R26/1-P	28	28	16,5	5	M3x7	1/8	5

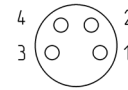
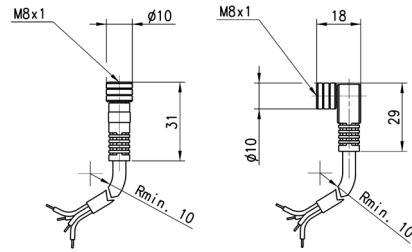
O-ring for assembling



Mod.		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	90°	2
CS-DR04EG-E500	90°	5

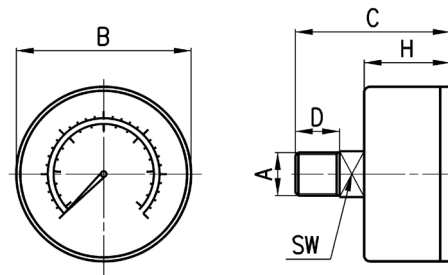
PROPORTIONAL TECHNOLOGY

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Pressure gauges with rear connection



Precision class CL2,5
 *Not compatible with oxygen



Mod.	A	B	C	D	H	SW	Range
M043-P02,5	R1/8	∅ 38,8	41	10	25	14	0 ÷ 2,5 bar
M043-P04	R1/8	∅ 38,8	41	10	25	14	0 ÷ 4 bar
M043-P06	R1/8	∅ 38,8	41	10	25	14	0 ÷ 6 bar
M043-P10	R1/8	∅ 38,8	41	10	25	14	0 ÷ 10 bar
M043-P12	R1/8	∅ 38,8	41	10	25	14	0 ÷ 12 bar
M053-P04	R1/8	∅ 50	41,5	10	25	14	0 ÷ 4 bar
M053-P06	R1/8	∅ 50	41,5	10	25	14	0 ÷ 6 bar
M053-P10	R1/8	∅ 50	41,5	10	25	14	0 ÷ 10 bar
M053-P12	R1/8	∅ 50	41,5	10	25	14	0 ÷ 12 bar