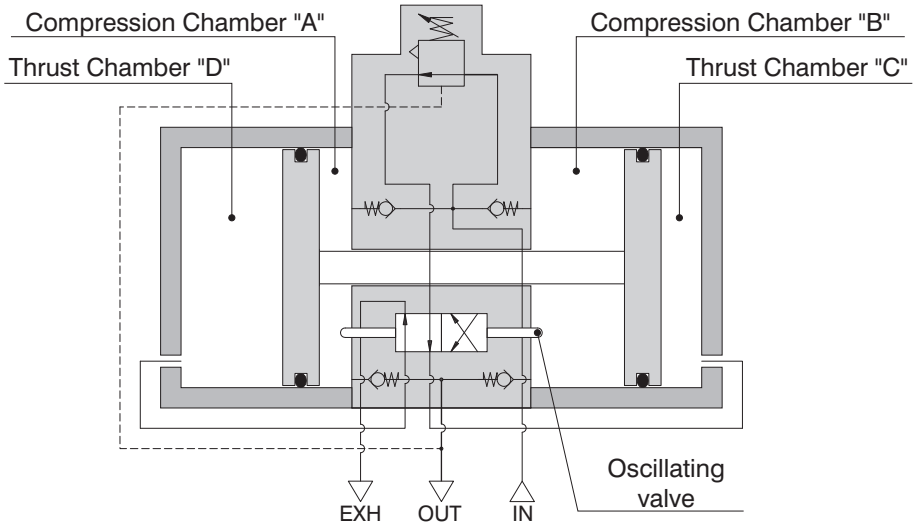
Basic Information

In some cases the force generated by a pneumatic actuator is not sufficient to carry out its required function. To overcome this problem it is then necessary, where possible, to either increase the working pressure or use a larger bore actuator providing it will fit within the structure of the machine.
If you cannot fit a larger actuator, the solution is to use a pressure booster to increase the air pressure to that portion of the pneumatic circuit. The booster operates using the same compressed air used by the pneumatic system and does not require an external power supply. It is easy to install and can increase the working pressure in any part of the system where ever its needed, maintaining the normal working pressure in the rest of the system.
The new pressure booster **P+** is lightweight with a new compact and linear design, **P+** has an integrated pressure regulator that adjusts the setting of the output pressure P2 which is also fitted with a pressure relief valve. The design of the internal circuit provides high flow rates and fast filling times whilst the two G1/8" manometer connections built into the body of the booster allow monitoring of the input and output pressures.

Operation

The operating principle of the device is based on a four chamber pump in which with a reciprocating movement, two chambers compress the air in the compression chamber whilst the fourth chamber is in the discharge phase. The incoming air passes through the non-return valves and supplies the compression chambers "A" and "B" at the same time.
Meanwhile, the integrated pressure regulator feeds the thrust chamber "C" via the oscillating valve which in turn compresses the air in compression chamber "B", the air is then pushed through the non-return valve and exits through the outlet connection.
When the piston reaches the end of stroke the oscillating valve changes over and feeds chamber "D" putting chamber "C" into the discharge position, thus reversing the piston and compressing the air in compression chamber "A", pushing it through the non-return valve and out through the outlet connection.
The oscillating motion of the piston allows the pressure booster to pump intensified air into the downstream circuit until the chambers reach a state of equilibrium; this in turn stops the booster.
When the downstream pressure decays the booster restarts oscillating until the state of equilibrium is re-established.

Pneumatic Circuit



Specifications may be subject to change without prior notice

General Warning

It is recommended you follow the instructions below in order to prevent personal injury or damage to the booster.

- The pressure booster is supplied as standard with the regulating spring completely unwand. in this condition it is possible to detect a leak of air from below the regulating knob or through the exhaust port. this conditions is standard for the unit. When the spring is completely unwand the downstream pressure and the inlet pressure are the same. in order to increase the downstream pressure it is necessary to operate th regulation knob increasing the sping compression.
- Please apply the necessary safety measures to ensure that the booster only operates within the specified pressure range. Exceeding the maximum output pressure is dangerous.
- The Booster is fitted with a non-return valve on the output which prevents discharge of the downstream pressure, It is recommended that a 3/2 valve be installed in the OUT connection if it is necessary to rapidly discharge the downstream pressure.
- When the booster is not in use it is recommended that the inlet pressure is removed to let the booster stop, thus avoiding unexpected operation or malfunction.
- If there is not downstream air consumption it is possible to register a leak through the exhaust port of the unit. this condition is normal and is the conseguence of the internal designed aimed at discharging any pressure building up in the unit in the rest condition.

Use and maintenance

The pressure booster must always be used in accordance with the operating parameters and instruction; any improper use may cause injury or malfunction. The pressure booster is not an alternative to a compressor because continuous uninterrupted operation will greatly reduce the life of the unit.

- The operating life of the device depends mainly on the operational duty cycle. Prolonged uninterrupted use without pause may reduce the operating life of the booster.
- Ensure the unit is supplied with a suitable compressed air supply, please note: appropriate filtration and lubrication may help to increase the durability of the product.
- **The input flow value must be equal or greater than double the output flow value (Q1/Q2>2).**
- **Ensure that the value of the output pressure is at least 1bar higher than the input pressure (P2>P1+1).**
- To avoid pulsation of the output pressure during operation, it is recommended that an accumulation tank (reservoir) is installed in the downstream circuit.
- Protect the booster exhaust ports from the ingress of dust or debris.
- To reduce the noise generated by the unit, install silencers into the exhaust ports.
- Pressure booster has an average life of about 20 millions of valve cycles, depending on working conditions (every back stroke corresponds to one valve cycles).

Regolazione della pressione

The booster is fitted with an internal pressure regulator which allows regulation of the output pressure P2 and is also fitted with pressure relief valve. For correct operation of the booster, please consider the following instructions:

- Air leaking from under the adjusting knob when the spring is decompressed is not a defect but a sign that the device is working correctly.
- In order to increase the regulated pressure, pull the knob upwards to unlock, then rotate the knob in the direction indicated by the arrow (+).
- To lock the knob after the adjustment has been made, push the knob downwards until it detents in the locked position.
- To reduce the output pressure, pull the knob upwards, rotate the knob indicated by the arrow (-), the built in pressure relief valve will discharge the excess pressure from under the adjusting knob.
- Always regulate the rising pressure.

Method of calculation of the time necessary to increase the pressure in a tank of a given volume using a pressure booster.

DATA:
P1 = Inlet pressure
P2' = Initial tank pressure
P2" = Final tank pressure
V = Tank volume

PROCEDURE:

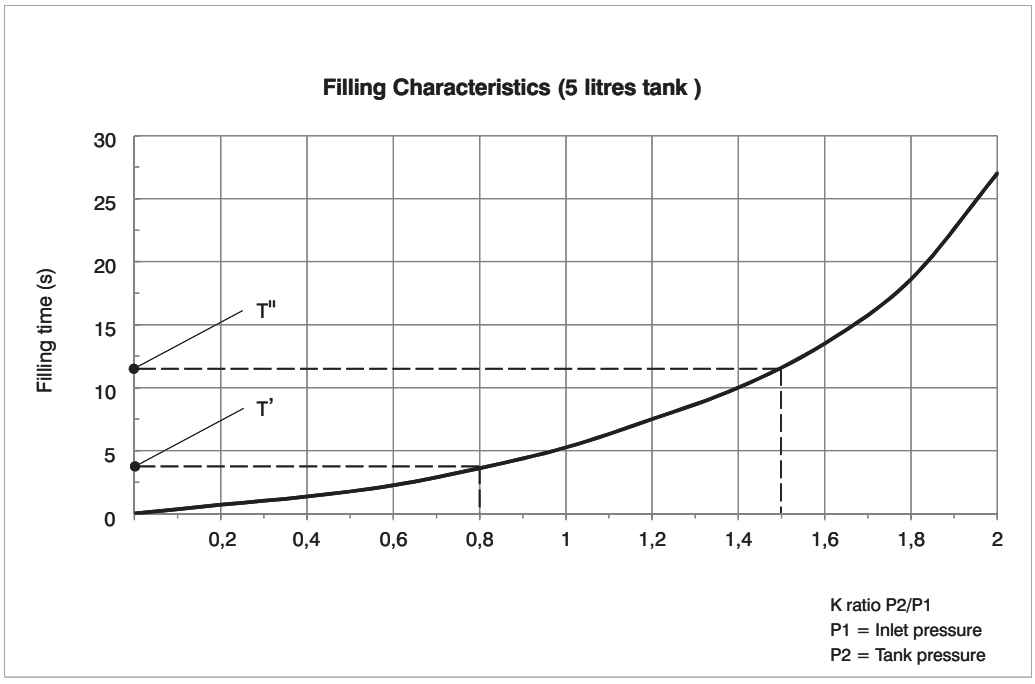
1) Calculate the K' ratio between the initial tank pressure and the inlet booster pressure (P2'/ P1).
2) Calculate the K" ratio between the final tank pressure and the inlet booster pressure (P2"/ P1).
3) Locate, on the chart illustrating, the booster filling time, the intersection point between the K' ratio and the curve, then trace a vertical line from the intersection point to the vertical axis and read the correspondent value T' (in the example chart, to a ratio of 0.8 corresponds a time value of about 3.6 seconds).
4) Repeat the operation for the K'' ratio, obtaining the T" time.

5) Apply the formula $T = \frac{V}{10} \cdot (T" - T')$
to obtain the total time needed to take the tank of volume V from the pressure value P2' to the pressure value P2'.

Example of calculation of the necessary time to take a 10L tank from the pressure value P2' to the value P2"

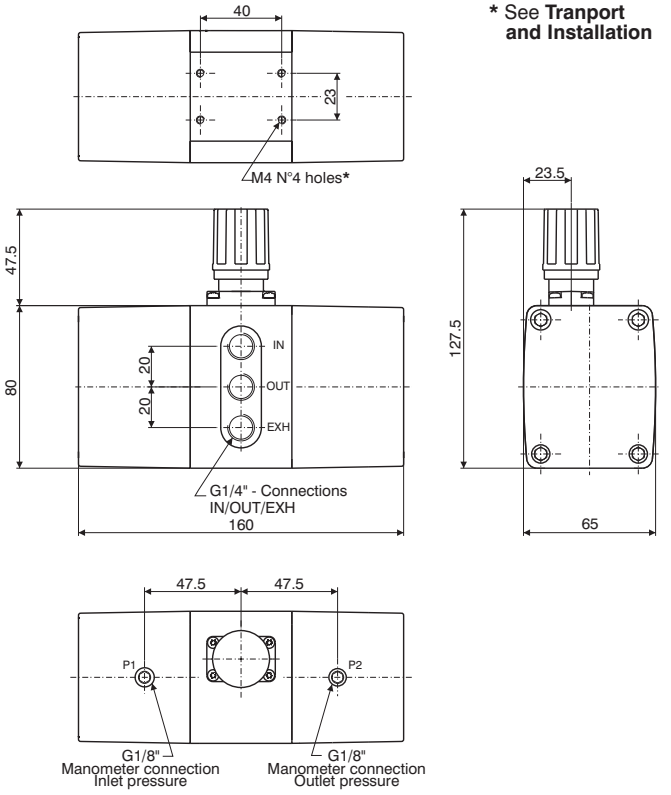
K' = 0,8 T' = 3,6 sec. V = 10L.
K" = 1,5 T" = 12 sec.

$T = \frac{5}{5} \cdot (12-3,6) = 8,4$ sec.



Specifications may be subject to change without prior notice

Pressure booster in Technopolymer Ø40



* See **Tranport and Installation**

Ordering code
MDPT40.2R.◉

◉	MANOMETER OPTIONS
	Without options = Standard without manometer
	A = Manometer P1 0-12 bar Manometer P2 0-20 bar
	B = Manometer P1 0-12 bar Manometer P2 0-16 bar
	C = Manometer P1 0-12 bar Manometer P2 0-12 bar

3

Operational characteristics

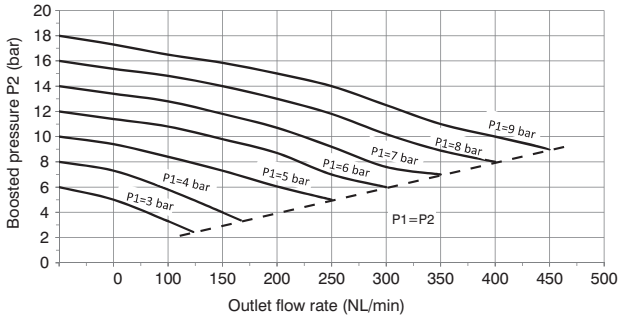
- Pressure Booster with max. 2:1 Compression ratio
- Automatic operation for use with compressed air only
- Maintains downstream air when the supply pressure fails (Providing the circuit has no leakage)
- Integrated regulator for output pressure control, with overpressure relief valve
- IN,OUT and EXH connections – G1/4" on the same side
- Manometer connections G1/8" to monitor and control the input and output pressures
- Body and cover in technopolymer
- Connections in technopolymer

Technical characteristics

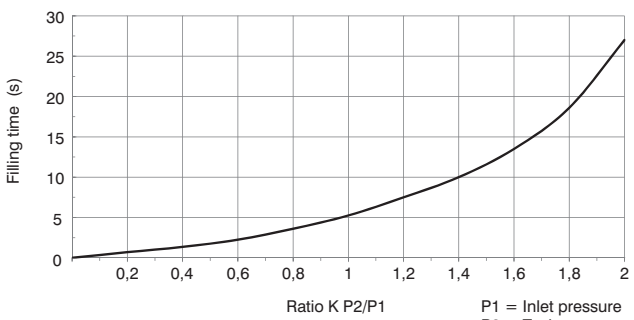
Connections (IN / OUT / EXT)	G1/4"
Manometer connections P1/P2	G1/8"
Working pressure (bar) [Min. - Max.]	2,5 ÷ 10
Working temperature (°C) [Min. - Max.]	-5 ÷ + 50
Moltiplication ratio max.	2 : 1
Assembly position	Any
Pressure regulation	Manual with relieving
Weight	905 gr.
Max. fittings torque	G1/8 = 4 N/m G1/4 = 9 N/m

Characteristics curves

Flow rate characteristics



Filling characteristics (5 liters tank)



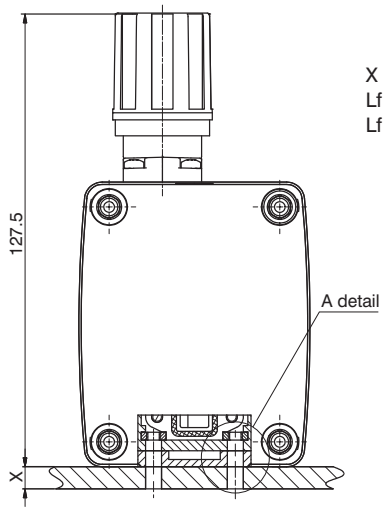
Transport and Installation:

The installation and implementation of the device must be done by skilled personnel. Respecting the safety requirements specified in the UNI norm **UNI EN 983-97 Machinery Safety – Safety Requirements concerning oleo-hydraulic and pneumatic systems** and their components.

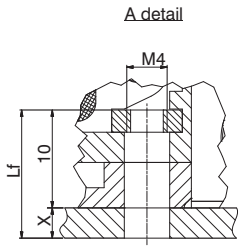
The following instructions are essential for a correct installation:

- Do not use the green knob to lift and transport the device, because it could rip off causing injuries or damaging objects..
- Install the booster by fixing it through the threaded M4 holes on the body of the machine or using the special accessories (see the “Accessories” chapter).

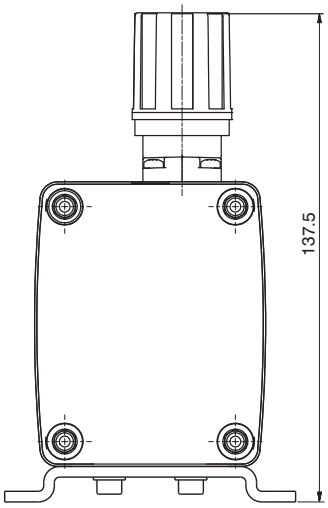
Direct Wall Fixing



X = Thickness of the support surface
Lf = Fixing screw thread lenght
Lf = X + 10

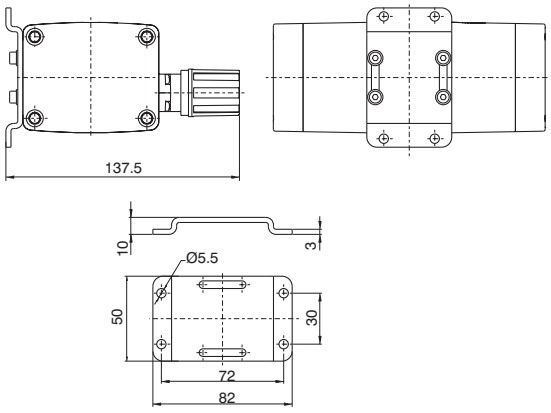


Fixing with a steel plate fixing clamp.



Bracket

Ordering code
T1740.01

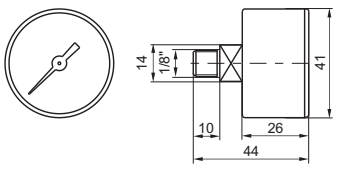


Weight gr. 94,5
Complete with booster fixing screws

Manometer D.40

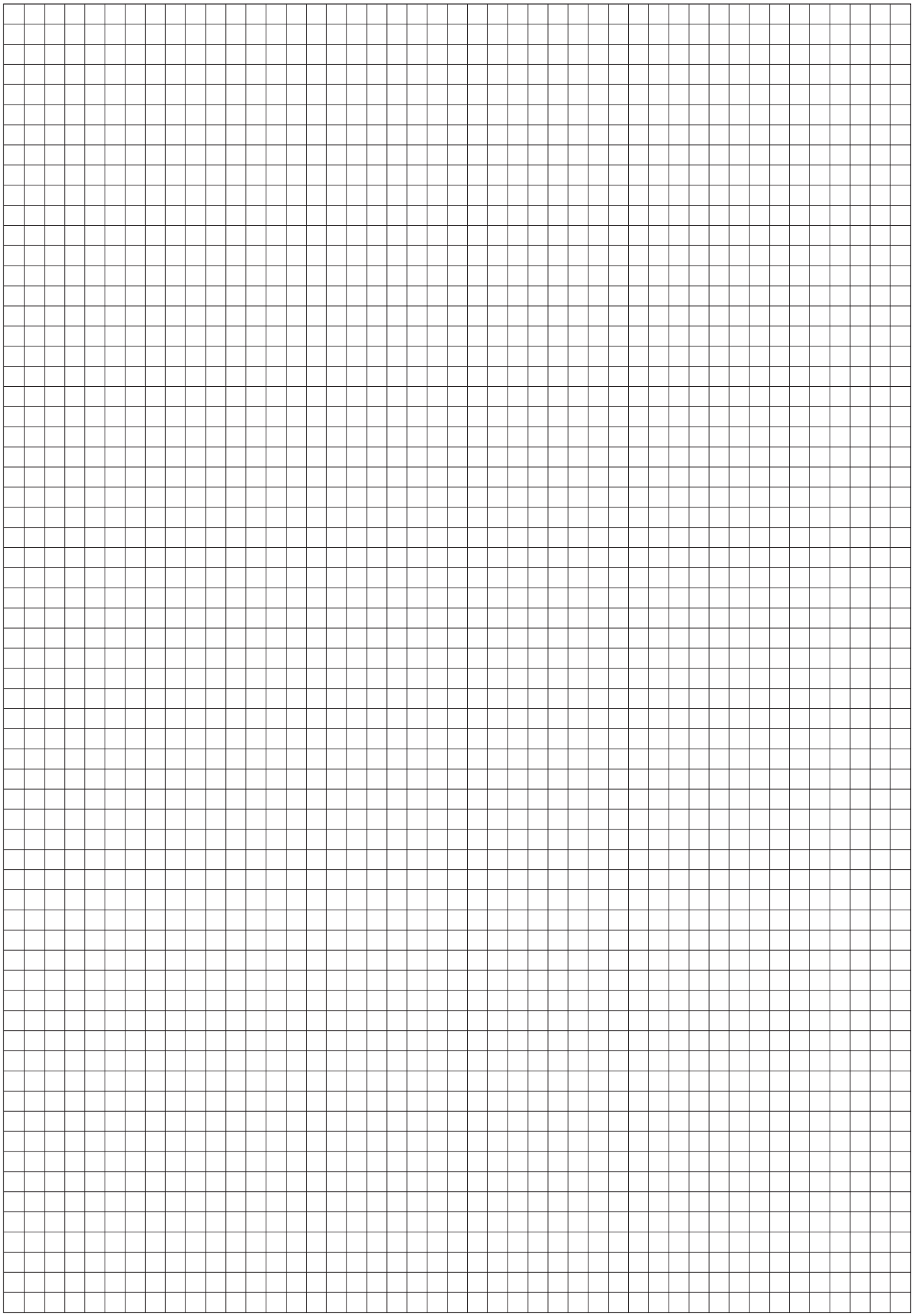
Ordering code
17070A.Ⓢ

	SCALE
Ⓢ	A = 0-4 bar
	B = 0-6 bar
	C = 0-12 bar
	D = 0-16 bar
	E = 0-20 bar



Weight gr. 85

Specifications may be subject to change without prior notice



Specifications may be subject to change without prior notice

General

The operational safety and durability of a pneumatic circuit depends on the quality of the compressed air. The compressed air and the moisture increase the rate of wear of the surfaces and seals, reducing the efficiency and the life of the pneumatic components. Furthermore the pressure fluctuation due to a discontinuous demand of air, adversely effect the correct operation of the circuit. To eliminate these disadvantages it is essential to install the service unit: filter, presure regulator and lubricator.

Construction and working characteristics

The new FRL units AIRPLUS series represents the evolution of the well known and consolidated 1700 series.
The main features are increased performances, reliability, easy and fast assembly and the introduction of the latest technical features.
With the exception of the air intake module and the pressure switch module all elements are available in two configurations: with technopolimer connections (IN and OUT) , (T series), or with metal threaded inserts , (N series).
Bowls made of transparent polycarbonate (PC) are fitted with a bowl protection guard which is assembled on the body via a quick coupling mechanism provided with a safety button. The filter, available with three filtration grades (5μm, 20μm and 50μm) is fitted as standard with a drain mechanism which can be operated manually or semi-automatically. The regulator is based on the rolling diaphragm technology with low hysteresis and the system is balanced. The unit can be fitted with integrated flush mounting pressure gauge (0 to 12 bar range).
4 pressure ranges are available going from 0 to 12 bar and the regulating knob can be blocked in position simply by pressing it down. A dedicated version is available for battery mounting , up to a maximum of 6 units. The lubricator is based on the Venturi principle and the oil quantity is regulated via the adjusting screw positioned don the transparent polycarbonate (PC) regulating dome which also ensure clear visibility of the oil flow and regulation. The oil suction pipe is fitted as standard with a sintered filter which ensures that any contaminant that should be present in the oil will reach the down stream circuit. Shoot off valve is available in two versions, one manually operated and one solenoid operated. In both cases the unit is fitted with a threaded connection for depressurising the downstream circuit. On the manually operated version, in the lock position, it is possible to fit up to three locks in order to prevent the accidental pressurization of the pneumatic circuit avoiding accidents or damages.
The solenoid operated version is available with a 15mm or with a 22mm solenoid valve. The soft start valve ensure a progressive pressurization of the down stream circuit avoiding sudden pressure surges which could be dangerous for the devices fitted on the down stream circuit. The filling time can be easily adjusted via a built in flow regulator. The full flow rate is allowed only once the down stream pressure has reached 50% of the value of the inlet pressure. The pressure switch module which can be set between 2 and 10 bar and the air intake module complete the range. The elements are joint together via dedicated quick coupling technopolimer flanges which allows for the units to be panel mounted moreover ensure the possibility to replace any component without disassembling the FRL group from its position.
90° mounting brackets and standard gauges are also available.

Instruction for installation and operation

The FRL unit must be installed as close as possible to the application.
The air flow direction must follow the directions indicated on the single units in correspondence of the threaded connections.(IN and OUT)
Units provided with bowl must be mounted vertically with the bawl facing down. Single units or groups can be panel mounted via the Y type flanges, regulators and filter-regulators can be mounted via the 90° zinc plated steel bracket. In order to mount the 90° bracket it is necessary to remove the regulating knob and then the locking ring before positioning the bracket. All units must be operated according to the specified pressure and temperature ranges; fittings must be mounted without exciding the maximum torque allowed. Ensure that the units cover plates are in position before pressure is applied. The cover plates are needed to lock in position the top part of the unit. The condense level in filer and filter-regulators bowls must never exceed the maximum level indicated on the bowls. With manual or semi automatic drain the condense can be discharged via a 6/4mm tube directly connected to the drain tap. On the pressure regulator the pressure value must always set wile pressure is rising and ideally the unit pressure range should be chosen based on the pressure value to be regulated. Lubricators must be filled with class FD22 and HG32 oils. Ensure, both on the inlet and on the outlet , that the flow rate is above the minimum flow rate required to operate the unit. Below this value the units does not operate.
The oil quantity can be regulated via the regulating screw on the transparent polycarbonate dome through which it is also clearly visible the oil flow. A drop every 300-600 litres should be allowed. The oil refill can take place only with the bowl not under pressure.This size does not have the dedicated oil re-fill plug.
The manual shot off valve needs, to be operated, a push and turn action (clockwise) in order to close it and discharge the down stream circuit it is necessary to turn anti clock wise the knob. The soft start valve is used to slowly and progressively pressurize the down stream circuit, the time needed to do so can be set by means of the built in flow regulator. The soft start valve on its own does not allow for the down stream circuit to be discharged, in order to do so it is necessary to combine it with a shot off valve (to be mounted upstream).

Maintenance

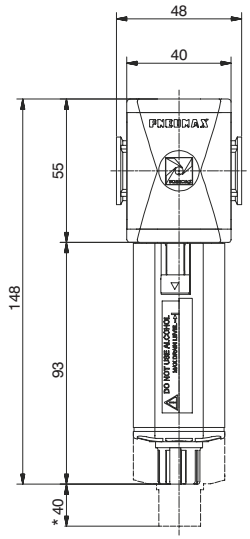
For any maintenance which requires the removal of the top plugs/ supports from the body it is necessary to preventively remove the sides cover plates. If the top plugs\supports are removed with the sides plates still in their position the unit could be permanently damaged.

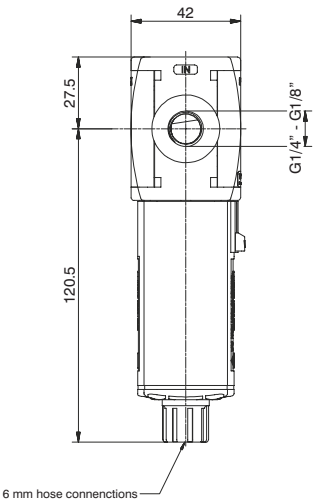
Bowls , plugs and supports are assembled with a bayonet type mechanism. In order to remove them rotate anti clockwise until the mechanical stop is reached and than remove from the body (for the bowls firstly press down the green safety button).
Bowls and transparent parts can be cleaned with water and neutral soap. Do not use solvents or alcohol.
Filtering elements (from filters and filter regulators) made of HDPE can be regenerated by washing and blowing them. In order to remove them it is necessary to remove the bowl unscrew the filter element and replace it with a new one or clean it.
The oil refill process can take place only if the bowl in not pressurized. The oil refill plug is not available on this size.
Should the pressure regulator not perform properly or should present a constant leackage from the relieving replaced the diaphragm by unloading completely the regulating spring before removing the regulation support.
Any other maintenance operation, in consideration of the complexity of the assembly, and the need of a through test according to the Pneumax spa specification, should be carried out by the manufacturer.

Fittings maximum recommended torque applicable

THREAD	Technopolymer version (T)	Metal version (N)
G1/8"	4 Nm	15 Nm
G1/4"	9 Nm	20 Nm
G3/8"	16 Nm	25 Nm
G1/2"	22 Nm	30 Nm

Filter (F)



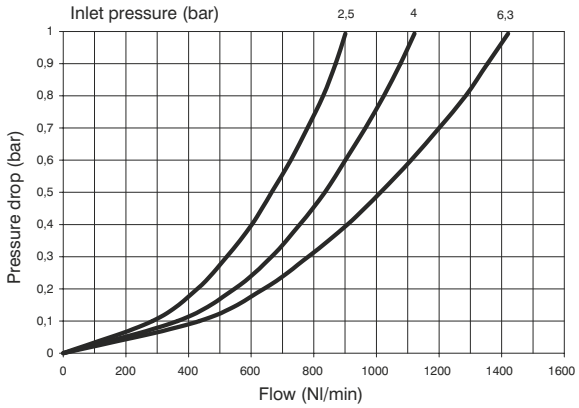


*Bowl removal maximum height

Example: T171BFB : size 1, Filter with Technopolymer threads, G1/4" connections, 20 μm filter pore size

3

Flow rate curves



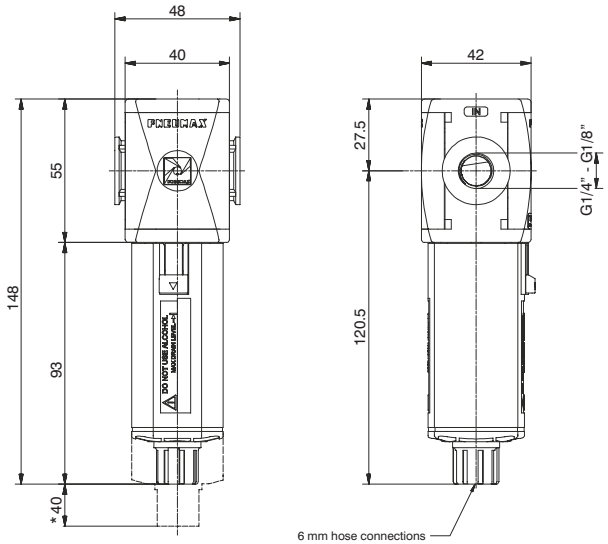
Operational characteristics	Technical characteristics		
- Double filtering action: air flow centrifugation and filter element	Connections	G 1/8" - G 1/4"	Ordering code
- Filtering element made of HDPE (high density polyethylene) available in three different filtration grades (5μm, 20μm and 50μm) can be regenerated by washing it or replaced.	Max. inlet pressure	13 bar	**Ⓥ171ⒸFⓈⓄ**
	Minimum working pressure with automatic drain	0,5 bar	
- Transparent bowl made off polycarbonate with bowl protection guard.	Maximum working pressure with automatic drain	10 bar	
- Bowl assembly via bayonet type quick coupling mechanism with safety button.	Working temperature	-5°C +50°C	
	Weight with Technopolymer threads	gr. 120	
- Semi-automatic drain mounted as standard; automatic drain upon request	Weight with threaded inserts	gr. 130	
	Filter pore size	5 μm - 20 μm - 50 μm	
Note	Bowl capacity	18 cm^3	
In order to ensure adequate flow on the auto drain version it is recommended to use minimum a 6mm fitting.	Assembly positions	Vertical	
	Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm	
	Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm	

Ⓥ	VERSION
	N = Metal inserts
	T = Technopolymer thread
Ⓒ	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)
Ⓢ	FILTER PORE SIZE
	A = 5 μm
	B = 20 μm
	C = 50 μm
Ⓞ	OPTIONS
	= Standard *
	S = Automatic drain

* no additional letter required

Specifications may be subject to change without prior notice

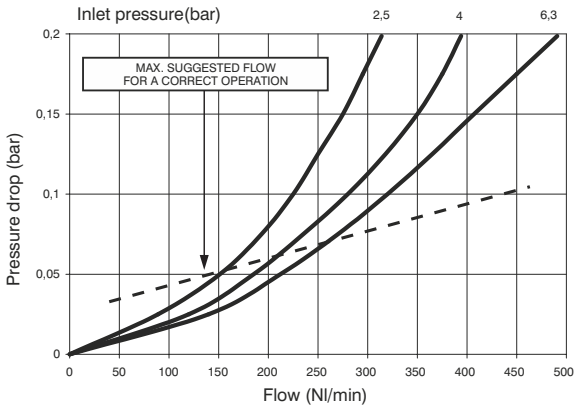
Coalescing filter (D)



*Bowl removal maximum height

Example : T171BDA : Coalescing size 1, Filter with Technopolymer threads, G1/4" connections, filter efficency 99,97%

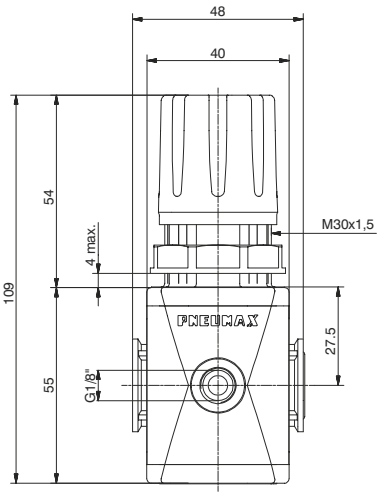
Flow rate curves

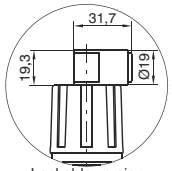


Operational characteristics	Technical characteristics		
- Coelesing filter element with filtration grade of 0.01μm	Connections	G 1/8" - G 1/4"	Ordering code
- Transparent bowl made off polycarbonate with bowl protection guard.	Max. inlet pressure	13 bar	ⓋT171ⒸDⒺⓄ
- Bowl assembly via bayonet type quick coupling mechanism with safety button.	Minimum working pressure with automatic drain	0,5 bar	Ⓥ VERSION: N = Metal inserts; T = Technopolymer thread
- Semi-automatic drain mounted as standard; automatic drain upon request	Maximum working pressure with automatic drain	10 bar	Ⓒ CONNECTIONS: A = G1/8" (only for "N" version); B = G1/4"; C = G1/4" NPT (only for "N" version)
Note	Working temperature	-5°C +50°C	
In order to ensure a better grade of filtration it is recommended to use a 5 μm filter before the coalescing filter. In order to ensure adequate flow on the auto drain version it is recommended to use minimum a 6mm fitting.	Weight with Technopolymer threads	gr. 125	
	Weight with threaded inserts	gr. 135	Ⓔ FILTER EFFICIENCY: A = 99,97%
	Filter efficiency with 0,01 μm particle	99,97%	
	Bowl capacity	18cm^3	Ⓞ OPTIONS: = Standard *; S = Automatic drain
	Assembly positions	Vertical	
	Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm	
	Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm	

* no additional letter required

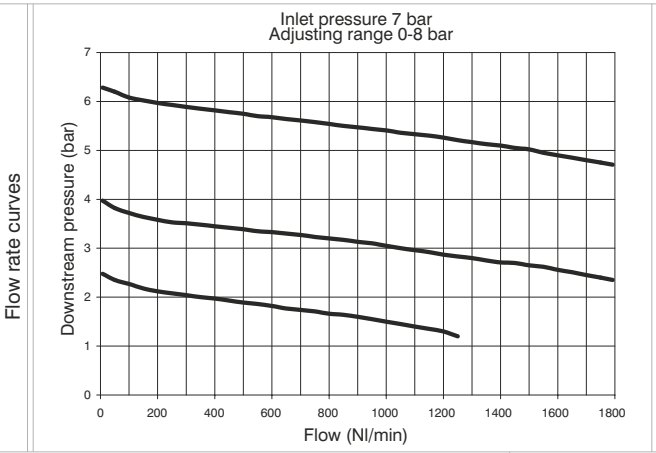
Regulator (R)

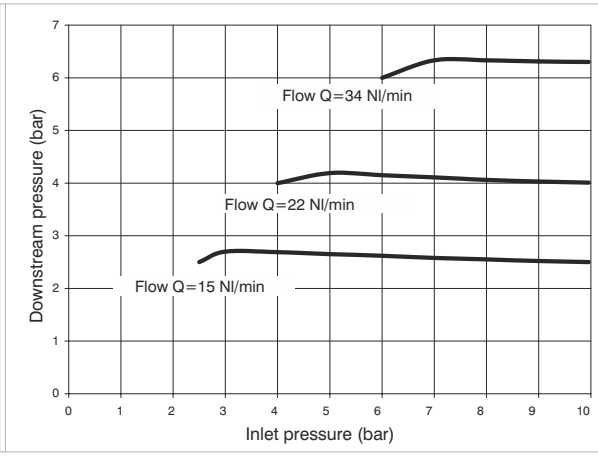




Lockable version
Detail

Example: T171BRC : size 1, Regulator with Technopolymer threads, G1/4" connections, 0 to 8 bar adjusting range





Operational characteristics

- Diaphragm pressure regulator with relieving.
- Low hysteresis rolling diaphragm.
- Balanced system.
- Available in four pressure ranges up to 12 bar.
- Operating knob can be locked in position by pressing it down once the desired P2 (regulated pressure) pressure value is achieved.
- Fitted with panel mounting locking ring.

Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

Technical characteristics

Connections	G 1/8" - G 1/4"
Max. inlet pressure	13 bar
Working temperature	-5°C +50°C
Pressure gauge connections	G 1/8"
Weight with Technopolymer threads	gr. 130
Weight with threaded inserts	gr. 140
Pressure range	0-2 bar / 0-4 bar 0-8 bar / 0-12 bar
Assembly positions	Indifferent
Max. fitting torque (with Technopolymer threads)	G1/8" = 4 Nm G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm

Ordering code

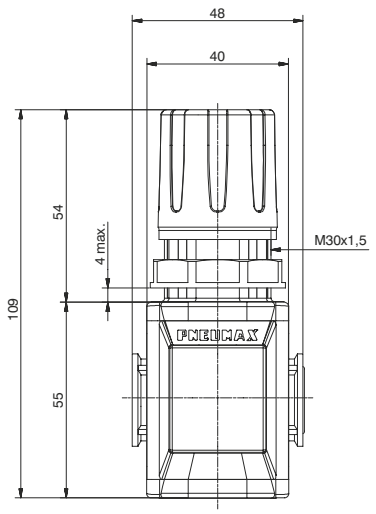
V171CRGTO

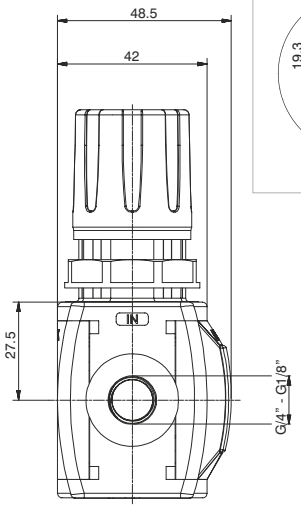
V	VERSION
	N = Metal inserts
	T = Technopolymer thread
C	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)
G	ADJUSTING RANGE
	A = 0-2 bar
	B = 0-4 bar
	C = 0-8 bar
	D = 0-12 bar
T	TYPE
	= Standard *
	F = Controlled refiel + improved relieving
	L = no relieving
	R = Improved relieving
O	OPTIONS
	= Standard *
	K = Lockable version

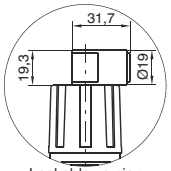
* no additional letter required

Specifications may be subject to change without prior notice

Regulator including gauge (RM)(RW)

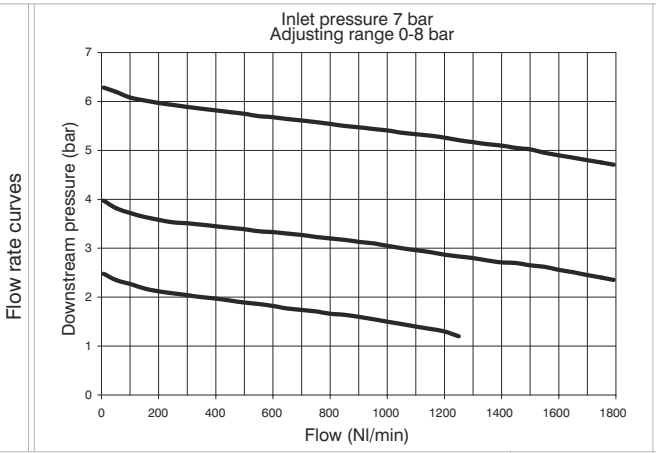


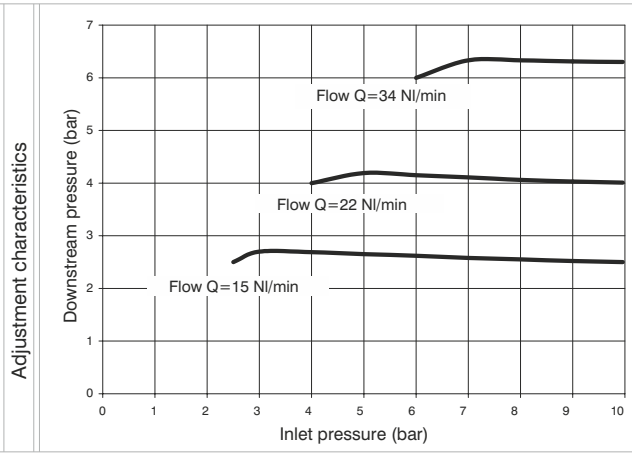




Lockable version
Detail

Example : T171BRMC : size 1, Regulator including gauge with Technopolymer threads, G1/4" connections, 0 to 8 bar adjusting range





Operational characteristics

- Diaphragm pressure regulator with relieving.
- Low hysteresis rolling diaphragm.
- Balanced system.
- Available in four pressure ranges up to 12 bar.
- Operating knob can be locked in position by pressing it down once the desired P2 (regulated pressure) pressure value is achieved.
- Fitted with panel mounting locking ring.
- Integrated manometer 0-12 bar as standard (for 0-8 and 0-12 bar range) and 0-4 bar (for 0-2 and 0-4 range)

Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

Technical characteristics

Connections	G 1/8" - G 1/4"
Max. inlet pressure	13 bar
Working temperature	-5°C +50°C
Weight with Technopolymer threads	gr. 140
Weight with threaded inserts	gr. 150
Pressure range	0-2 bar / 0-4 bar 0-8 bar / 0-12 bar
Assembly positions	Indifferent
Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm

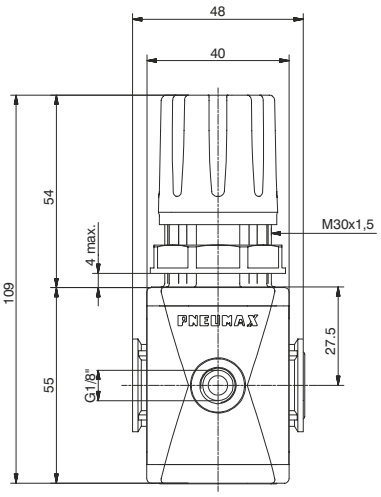
Ordering code

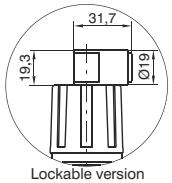
V171CRDGTO

V	VERSION
	N = Metal inserts
	T = Technopolymer thread
C	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)
D	FLOW DIRECTION
	M = from left to right
	W = from right to left
G	ADJUSTING RANGE
	A = 0-2 bar
	B = 0-4 bar
	C = 0-8 bar
	D = 0-12 bar
T	TYPE
	= Standard *
	F = Controlled refiel + improved relieving
	L = no relieving
	R = Improved relieving
O	OPTIONS
	= Standard *
	K = Lockable version

* no additional letter required

Modular pressure regulator (B)



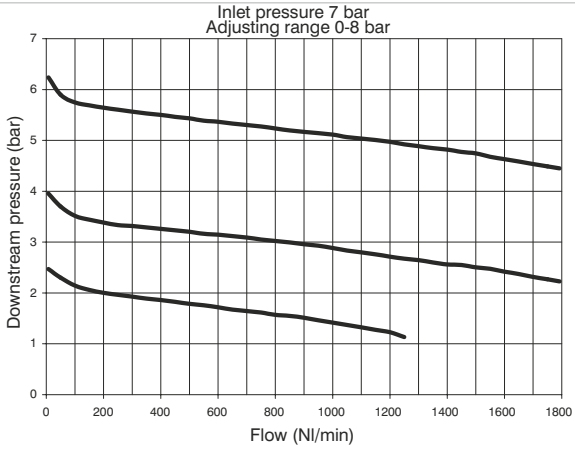


Lockable version
Detail

Example: T171BBC : size 1, Regulator with Technopolymer threads, G1/4" connections, 0 to 8 bar adjusting range

3

Flow rate curves



Operational characteristics

- Diaphragm pressure regulator with relieving.
- Low hysteresis rolling diaphragm.
- Balanced system.
- Available in four pressure ranges up to 12 bar.
- Operating knob can be locked in position by pressing it down once the desired P2 (regulated pressure) pressure value is achieved.
- G1/8" output front connection.
- Air supply can be applied by both directions.

Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

Technical characteristics

Connections	G 1/8" - G 1/4"
Max. inlet pressure	13 bar
Working temperature	-5°C +50°C
Pressure gauge connections	G 1/8"
Weight with Technopolymer threads	gr. 130
Weight with threaded inserts	gr. 140
Pressure range	0-2 bar / 0-4 bar 0-8 bar / 0-12 bar
Assembly positions	Indifferent
Max. fitting torque (with Technopolymer threads)	G1/8" = 4 Nm G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm

Ordering code

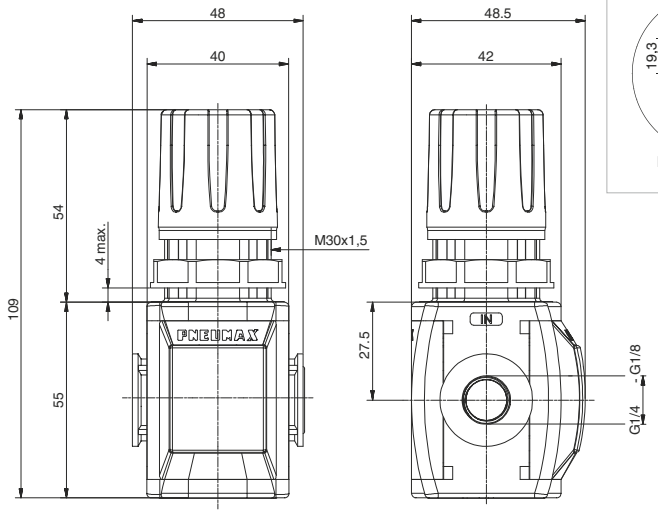
Ⓥ171ⒸBⒼⓉⓄ

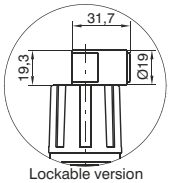
Ⓥ	VERSION
	N = Metal inserts
	T = Technopolymer thread
Ⓒ	CONNECTIONS
	A = G1/8"(only for "N" version)
	B = G1/4"
	C = G1/4" NPT(only for "N" version)
Ⓖ	ADJUSTING RANGE
	A = 0-2 bar
	B = 0-4 bar
	C = 0-8 bar
	D = 0-12 bar
Ⓣ	TYPE
	= Standard *
	F = Controlled refiel + improved relieving
	L = no relieving
	R = Improved relieving
Ⓞ	OPTIONS
	= Standard *
	K = Lockable version

* no additional letter required

Specifications may be subject to change without prior notice

Modular pressure regulator including manometer (M)

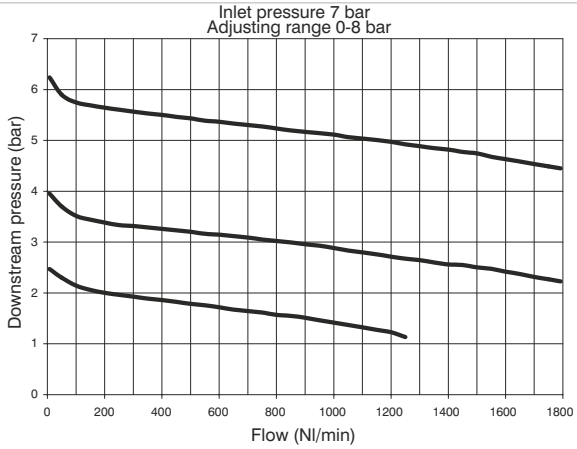




Lockable version
Detail

Example : T171BMC : size 1, Regulator including gauge with Technopolymer threads, G1/4" connections, 0 to 8 bar adjusting range

Flow rate curves



Operational characteristics

- Diaphragm pressure regulator with relieving.
- Low hysteresis rolling diaphragm.
- Balanced system.
- Available in four pressure ranges up to 12 bar.
- Operating knob can be locked in position by pressing it down once the desired P2 (regulated pressure) pressure value is achieved.
- G 1/8" output connection positioned on the opposite side of the built in gauge.
- Air supply can be applied by both directions.
- Integrated manometer 0-12 bar as standard (for 0-8 and 0-12 bar range) and 0-4 bar (for 0-2 and 0-12 bar range)

Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

Technical characteristics

Connections	G 1/8" - G 1/4"
Max. inlet pressure	13 bar
Working temperature	-5°C +50°C
Weight with Technopolymer threads	gr. 140
Weight with threaded inserts	gr. 150
Pressure range	0-2 bar / 0-4 bar 0-8 bar / 0-12 bar
Assembly positions	Indifferent
Max. fitting torque (with Technopolymer threads)	G1/8" = 4 Nm G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm

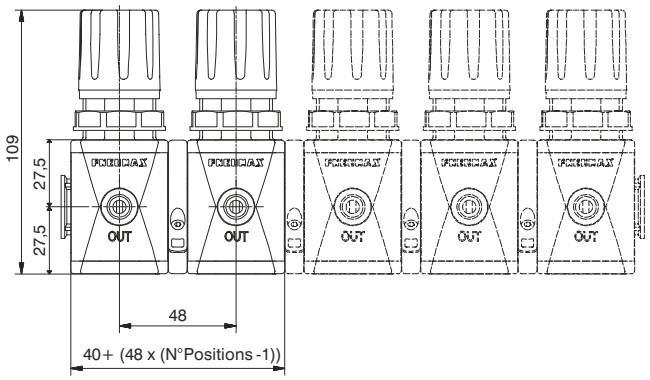
Ordering code

Ⓥ171ⒸMⒼⓉⓄ

Ⓥ	VERSION
	N = Metal inserts
	T = Technopolymer thread
Ⓒ	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)
Ⓖ	ADJUSTING RANGE
	A = 0-2 bar
	B = 0-4 bar
	C = 0-8 bar
	D = 0-12 bar
Ⓣ	TYPE
	= Standard *
	F = Controlled refiel + improved relieving
	L = no relieving
	R = Improved relieving
Ⓞ	OPTIONS
	= Standard *
	K = Lockable version

* no additional letter required

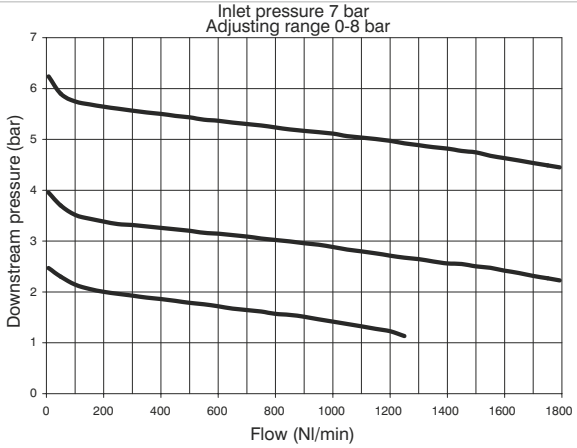
Manifold pressure regulators



Example: GT171BB4CCCC : Combined group comprising 4 size 1 Regulators Technopolymer threads, G1/4" connections and 0 to 8 bar adjusting range

3

Flow rate curves



Operational characteristics

- Inlet pressure common for the whole manifold of regulator.
- A maximum of 6 regulators can be mounted
- Air supply can be applied by both directions.

Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

Technical characteristics

Connections	G 1/8" - G 1/4"
Max. inlet pressure	13 bar
Working temperature	-5°C +50°C
Pressure range	0-2 bar / 0-4 bar 0-8 bar / 0-12 bar
Assembly positions	indifferent
Max. fitting torque (with Technopolymer threads)	G1/8" = 4 Nm G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm

Ordering code

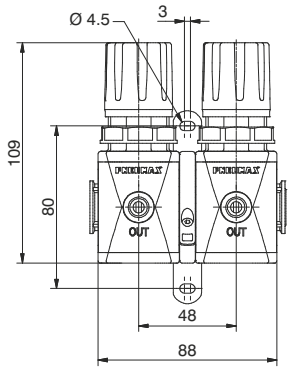
GV171CTNGGGGGG

V	VERSION
	N = Metal inserts
	T = Technopolymer thread
C	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)
T	TYPE
	B = Standard with flanges X
	M = Manometer included with flanges X
	W = Standard with flanges Y
	Z = Manometer included with flanges Y
N	NUMBER REGULATORS
	2 = 2 regulators
	3 = 3 regulators
	4 = 4 regulators
	5 = 5 regulators
	6 = 6 regulators
G	ADJUSTING RANGE 1
	A = 0-2 bar
	B = 0-4 bar
	C = 0-8 bar
	D = 0-12 bar
G	ADJUSTING RANGE 2
	A = 0-2 bar
	B = 0-4 bar
	C = 0-8 bar
	D = 0-12 bar
G	ADJUSTING RANGE 3
	A = 0-2 bar
	B = 0-4 bar
	C = 0-8 bar
	D = 0-12 bar
G	ADJUSTING RANGE 4
	A = 0-2 bar
	B = 0-4 bar
	C = 0-8 bar
	D = 0-12 bar
G	ADJUSTING RANGE 5
	A = 0-2 bar
	B = 0-4 bar
	C = 0-8 bar
	D = 0-12 bar
G	ADJUSTING RANGE 6
	A = 0-2 bar
	B = 0-4 bar
	C = 0-8 bar
	D = 0-12 bar

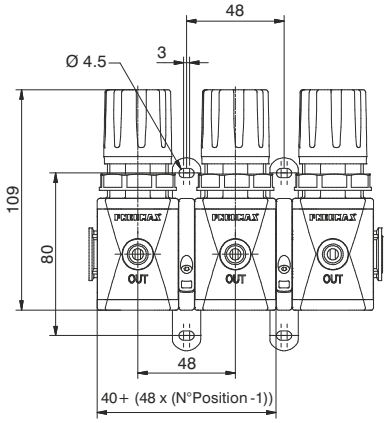
Specifications may be subject to change without prior notice

Dimensions with Y type flanges

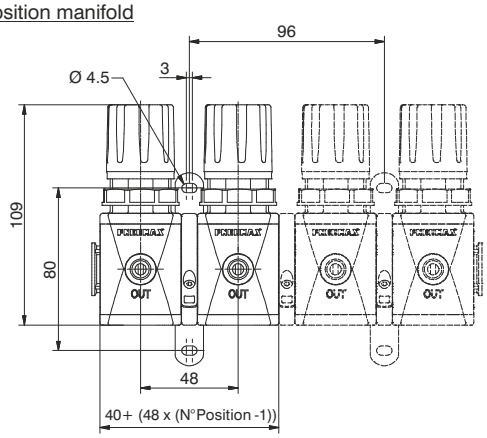
2 position manifold



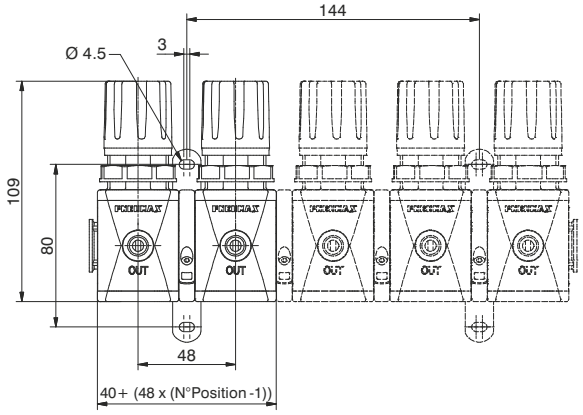
3 position manifold



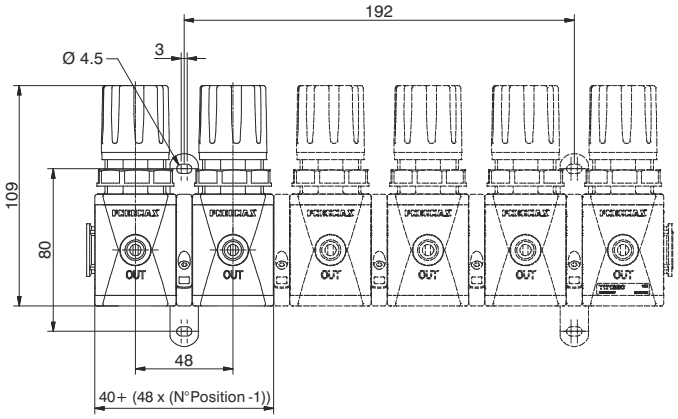
4 position manifold



5 position manifold

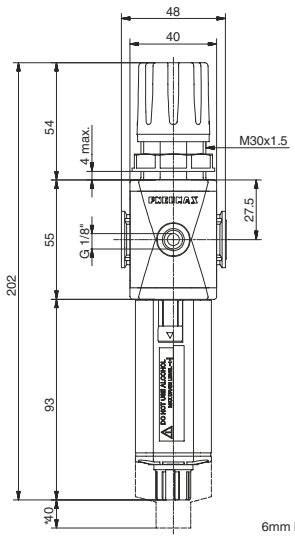


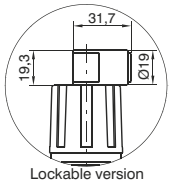
6 position manifold



3

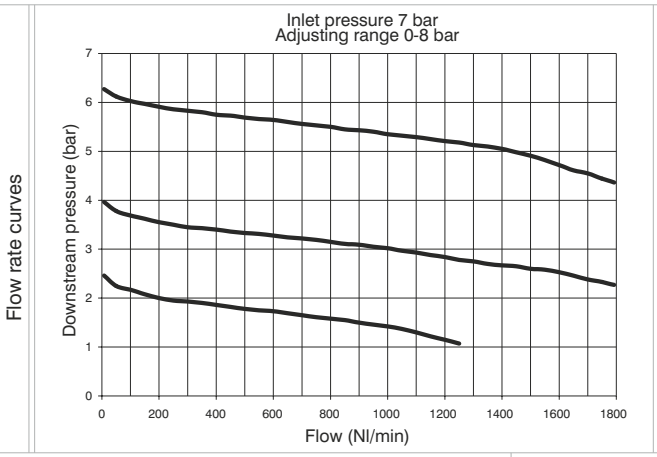
Filter-Regulator (E)

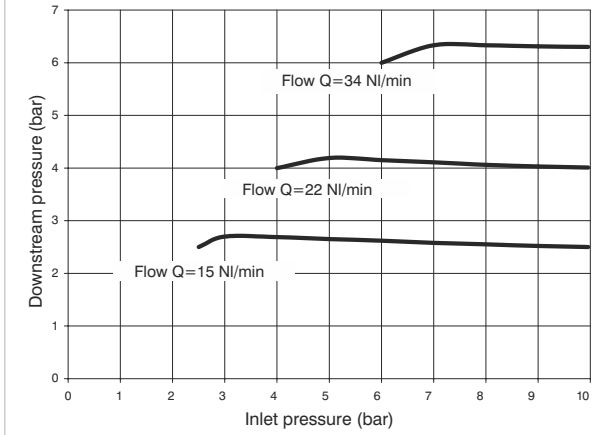




*Bowl removal maximum height

Example : T171BEBC : size 1, Filter-regulator with Technopolymer threads, G1/4" connections, 20 μm filtering pore size, 0 to 8 bar adjusting range





Operational characteristics

- Filter - diaphragm pressure regulator with relieving.
- Low hysteresis rolling diaphragm.
- Balanced system.
- Double filtering action: air flow centrifugation and filter element.
- Filtering element made of HDPE (high density polyethylene) available in three different filtration grades (5μm, 20μm and 50μm) can be regenerated by washing it or replaced.
- Transparent bowl made of polycarbonate with bowl protection guard.
- Bowl assembly via bayonet type quick coupling mechanism with safety button.
- Semi-automatic drain mounted as standard; automatic drain upon request
- Available in four pressure ranges up to 12 bar.
- Operating knob can be locked in position by pressing it down once the desired P2 (regulated pressure) pressure value is achieved.
- Fitted with panel mounting locking ring.

Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended. In order to ensure adequate flow on the auto drain version it is recommended to use minimum a 6mm fitting.

Technical characteristics

Connections	G 1/8" - G 1/4"
Max. inlet pressure	13 bar
Minimum working pressure with automatic drain	0,5 bar
Maximum working pressure with automatic drain	10 bar
Working temperature	-5°C +50°C
Pressure gauge connections	G 1/8"
Weight with Technopolymer threads	gr. 190
Weight with threaded inserts	gr. 200
Pressure range	0-2 bar / 0-4 bar 0-8 bar / 0-12 bar
Filter pore size	5 μm - 20 μm - 50 μm
Bowl capacity	18 cm^3
Assembly positions	Vertical
Max. fitting torque (with Technopolymer threads)	G1/8" = 4 Nm G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm

Ordering code

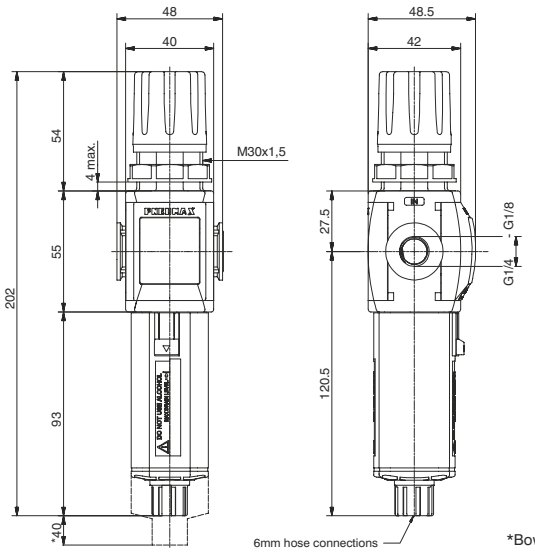
V171CESGTO

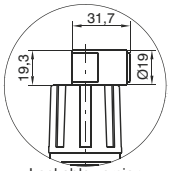
V	VERSION
	N = Metal inserts
	T = Technopolymer thread
C	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)
S	FILTER PORE SIZE
	A = 5 μm
	B = 20 μm
	C = 50 μm
G	ADJUSTING RANGE
	A = 0-2 bar
	B = 0-4 bar
	C = 0-8 bar
	D = 0-12 bar
T	TYPE
	= Standard *
	S = Automatic drain
O	OPTIONS
	= Standard *
	K = Lockable version

* no additional letter required

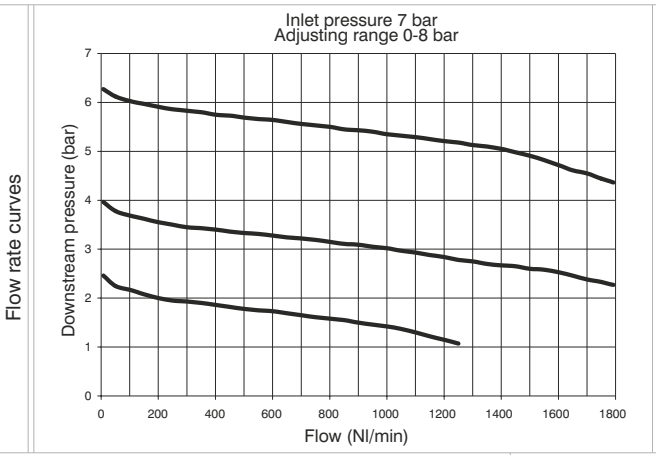
Specifications may be subject to change without prior notice

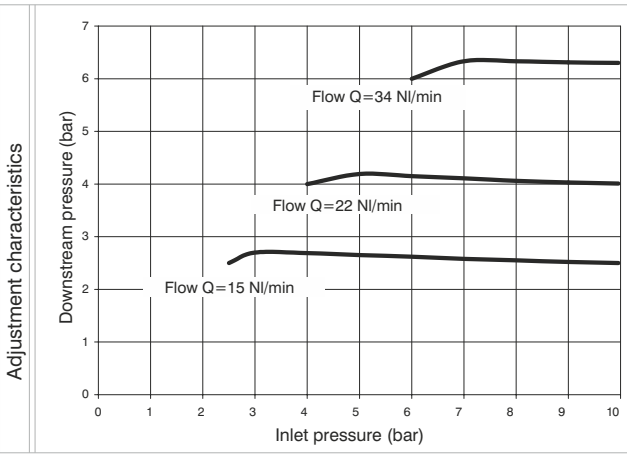
Filter-regulator including gauge (EM)(EW)





Example: T171BEMBC : size 1, Filter-Regulator including gauge with Technopolymer threads, G1/4" connections, with 20 μm filtering pore size, 0 to 8 bar adjusting range





Operational characteristics

- Filter - diaphragm pressure regulator with relieving.
- Low hysteresis rolling diaphragm.
- Balanced system.
- Double filtering action: air flow centrifugation and filter element.
- Filtering element made of HDPE (high density polyethylene) available in three different filtration grades (5μm, 20μm and 50μm) can be regenerated by washing it or replaced.
- Transparent bowl made off polycarbonate with bowl protection guard.
- Bowl assembly via bayonet type quick coupling mechanism with safety button.
- Semi-automatic drain mounted as standard; automatic drain upon request
- Available in four pressure ranges up to 12 bar.
- Operating knob can be locked in position by pressing it down once the desired P2 (regulated pressure) pressure value is achieved.
- Fitted with panel mounting locking ring.
- Integrated manometer 0-12 bar as standard (for 0-8 and 0-12 bar range) and 0-4 bar (for 0-2 and 0-4 range)

Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended. In order to ensure adequate flow on the auto drain version it is recommended to use minimum a 6mm fitting.

Technical characteristics

Connections	G 1/8" - G 1/4"
Max. inlet pressure	13 bar
Minimum working pressure with automatic drain	0,5 bar
Maximum working pressure with automatic drain	10 bar
Working temperature	-5°C +50°C
Weight with Technopolymer threads	gr. 200
Weight with threaded inserts	gr. 210
Pressure range	0-2 bar / 0-4 bar 0-8 bar / 0-12 bar
Filter pore size	5 μm - 20 μm - 50 μm
Bowl capacity	18 cm^3
Assembly positions	Vertical
Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm

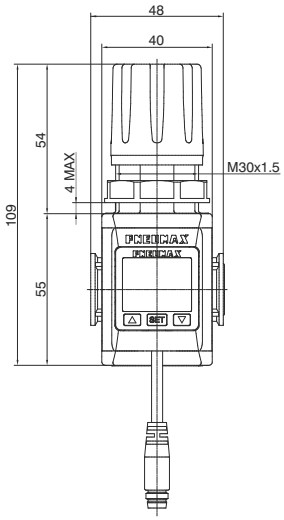
Ordering code

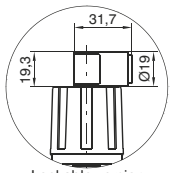
V171CEDSGTO

V	VERSION
	N = Metal inserts
	T = Technopolymer thread
C	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)
D	FLOW DIRECTION
	M = from left to right
	W = from right to left
S	FILTER PORE SIZE
	A = 5 μm
	B = 20 μm
	C = 50 μm
G	ADJUSTING RANGE
	A = 0-2 bar
	B = 0-4 bar
	C = 0-8 bar
	D = 0-12 bar
T	TYPE
	= Standard *
	S = Automatic drain
O	OPTIONS
	= Standard *
	K = Lockable version

* no additional letter required

Regulator with pressure switch (RP)(RZ)



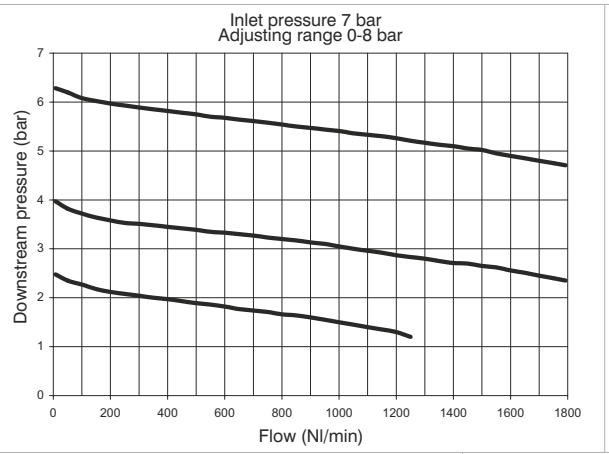


Lockable version
Detail

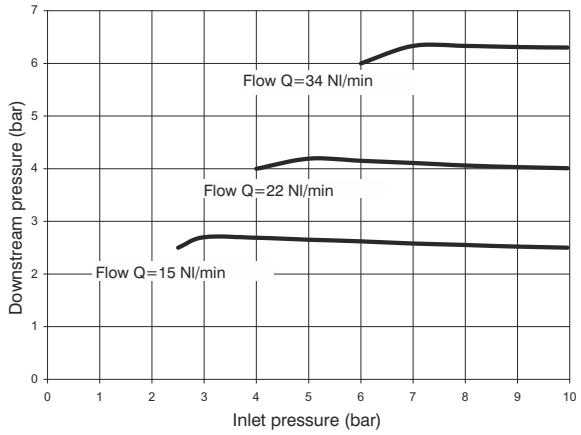
Example : T171BRPCA : size 1, Regulator with Technopolymer threads, G1/4" connections, 0 to 8 bar adjusting range, with pressure switch with M8 connector PNP

3

Flow rate curves



Adjustment characteristics



Operational characteristics

- Diaphragm pressure regulator with relieving.
- Low hysteresis rolling diaphragm.
- Balanced system.
- Available in four pressure ranges up to 12 bar.
- Operating knob can be locked in position by pressing it down once the desired P2 (regulated pressure) pressure value is achieved.
- Fitted with panel mounting locking ring.
- Pressure switch as standard

Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

Technical characteristics

Connections	G 1/8" - G 1/4"
Max. inlet pressure	13 bar
Working temperature	0°C +50°C
Weight with Technopolymer threads	gr. 140
Weight with threaded inserts	gr. 150
Pressure range	0-2 bar / 0-4 bar 0-8 bar / 0-12 bar
Assembly positions	Indifferent
Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm

Ordering code

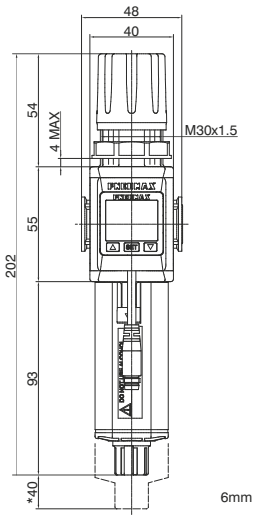
Ⓥ171ⒸⓇⒹⒼⓉⓄⓅ

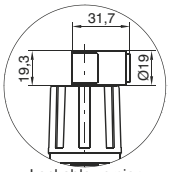
Ⓥ	VERSION
	N = Metal inserts
	T = Technopolymer thread
Ⓒ	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)
Ⓓ	FLOW DIRECTION
	P = from left to right
	Z = from right to left
Ⓖ	ADJUSTING RANGE
	A = 0-2 bar
	B = 0-4 bar
	C = 0-8 bar
	D = 0-12 bar
Ⓣ	TYPE
	= Standard *
	F = Controlled refiel + improved relieving
	L = no relieving
	R = Improved relieving
Ⓞ	OPTIONS
	= Standard *
	K = Lockable version
Ⓟ	PRESSURE SWITCH OPTION
	A = Cable 150 mm+M8 PNP
	B = Cable 150 mm+M8 NPN
	C = Cable 2 mt. PNP
	D = Cable 2 mt. NPN

* no additional letter required

Specifications may be subject to change without prior notice

Filter regulator with pressure switch (EP)(EZ)



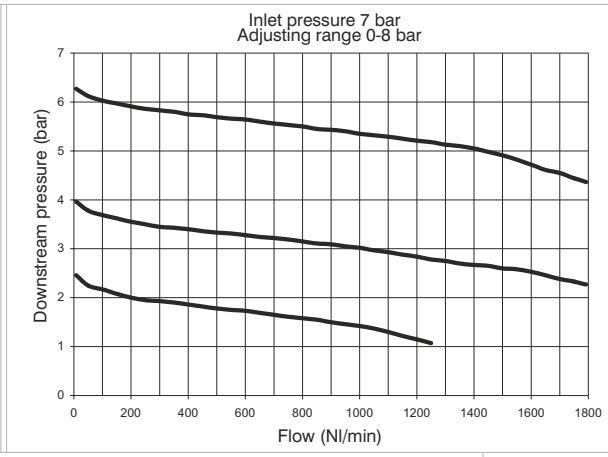


Lockable version
Detail

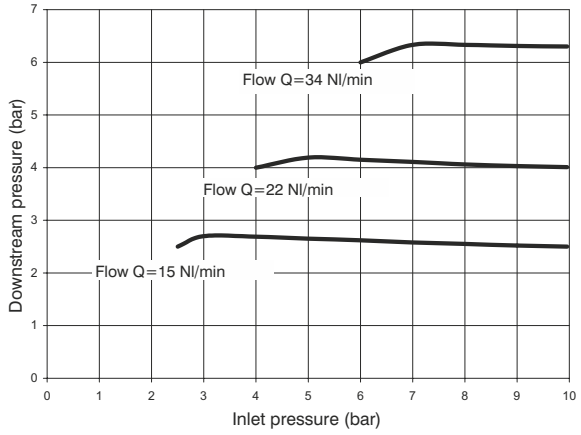
* Bowl removal maximum height

Example: T171BEPBCA : size 1, Filter-regulator with Technopolymer threads, G1/4" connections, 20 μm filtering pore size, 0 to 8 bar adjusting range, with pressure switch with M8 connector PNP

Flow rate curves



Adjustment characteristics



Operational characteristics

- Filter - diaphragm pressure regulator with relieving.
- Low hysteresis rolling diaphragm.
- Balanced system.
- Double filtering action: air flow centrifugation and filter element.
- Filtering element made of HDPE (high density polyethylene) available in three different filtration grades (5μm, 20μm and 50μm) can be regenerated by washing it or replaced.
- Transparent bowl made off polycarbonate with bowl protection guard.
- Bowl assembly via bayonet type quick coupling mechanism with safety button.
- Semi-automatic drain mounted as standard; automatic drain upon request
- Available in four pressure ranges up to 12 bar.
- Operating knob can be locked in position by pressing it down once the desired P2 (regulated pressure) pressure value is achieved.
- Fitted with panel mounting locking ring.
- Pressure switch as standard

Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended. In order to ensure adequate flow on the auto drain version it is recommended to use minimum a 6mm fitting.

Technical characteristics

Connections	G 1/8" - G 1/4"
Max. inlet pressure	13 bar
Minimum working pressure with automatic drain	0,5 bar
Maximum working pressure with automatic drain	10 bar
Working temperature	0°C +50°C
Weight with Technopolymer threads	gr. 200
Weight with threaded inserts	gr. 210
Pressure range	0-2 bar / 0-4 bar 0-8 bar / 0-12 bar
Filter pore size	5 μm - 20 μm - 50 μm
Bowl capacity	18 cm^3
Assembly positions	Vertical
Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm

Ordering code

V171CEDSGTOP

V	VERSION
	N = Metal inserts
	T = Technopolymer thread
C	CONNECTIONS
	A = G1/8"(only for "N" version)
	B = G1/4"
	C = G1/4" NPT(only for "N" version)
D	FLOW DIRECTION
	P = from left to right
	Z = from right to left
S	FILTER PORE SIZE
	A = 5 μm
	B = 20 μm
	C = 50 μm
G	ADJUSTING RANGE
	A = 0-2 bar
	B = 0-4 bar
	C = 0-8 bar
	D = 0-12 bar
T	TYPE
	= Standard *
	S = Automatic drain
O	OPTIONS
	= Standard *
	K = Lockable version
P	PRESSURE SWITCH OPTION
	A = Cable 150 mm+M8 PNP
	B = Cable 150 mm+M8 NPN
	C = Cable 2 mt. PNP
	D = Cable 2 mt. NPN

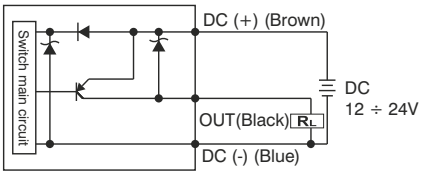
* no additional letter required

CHARACTERISTICS

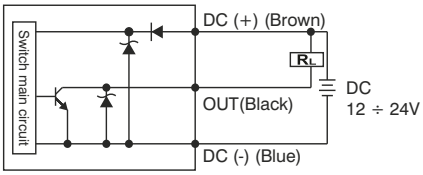
- 3 color digital LCD display, easy readout
- 4 units of measurement for pressure indication
- PNP and NPN output
- N.O. and N.C. output contact
- Not available individually, but only with a Regulator or a Filter-regulator

OUTPUT CIRCUIT WIRING DIAGRAMS

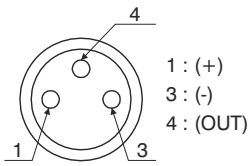
PNP output



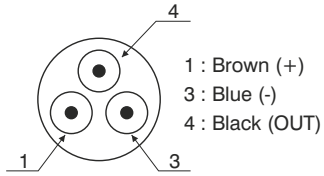
NPN output



M8 CONNECTOR PIN LAY OUT



3 WIRES CABLE LAY OUT



Cable ordering code

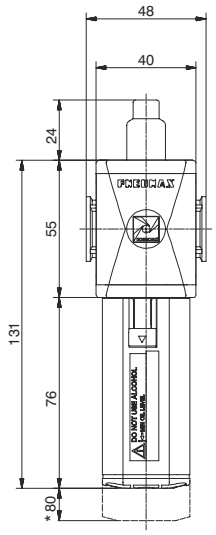
MCH1	cable 3 wires l=2,5m with M8 connector
MCH2	cable 3 wires l=5m with M8 connector
MCH3	cable 3 wires l=10m with M8 connector

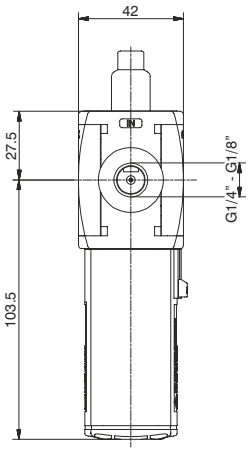
Connector

TECHNICAL CHARACTERISTICS	
Adjusting range	0 ÷ 10 bar / 0 ÷ 1MPa
Max. inlet pressure	15 bar / 1,5 MPa
Fluid	Filtered and dehumidified air
Display unit of measurement	MPa - kgf/cm² - bar - psi
Supply voltage	12 ÷ 24 VDC
Current consumption	≤40mA (without load)
Digital output type	NPN - PNP
Type of contact	Normally Open - Normally Closed
Max. load current	125 mA
Digital output activation mode	single threshold with fixed hysteresis - window with fixed hysteresis - window without hysteresis
Digital output activation time	0.05s - 0.25s - 0.5s - 1s - 2s - 3s (selections for chattering-proof function)
Display characteristics	Double 3 1/2 digit display Digital output status indication Three-pushbuttons touchpad
Indicator accuracy	≤±2% F.S. ± 1 digit
Protection grade	IP 40
Temperature	0 ÷ 50 °C
Cable section	3 x 0,129mm², Ø4 mm, PVC

Specifications may be subject to change without prior notice

Lubricator (L)

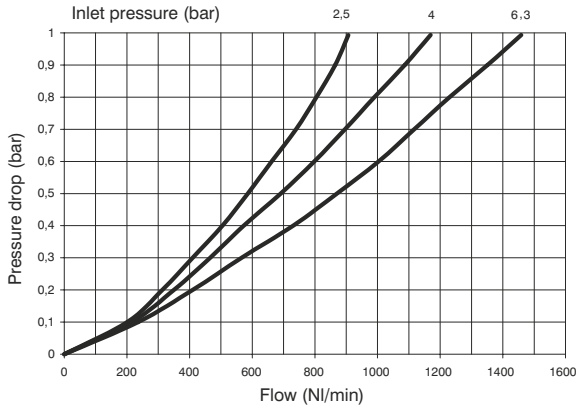




*Bowl removal maximum height

Example : T171BL : size 1, Lubricator with Technopolymer threads, G1/4" connections

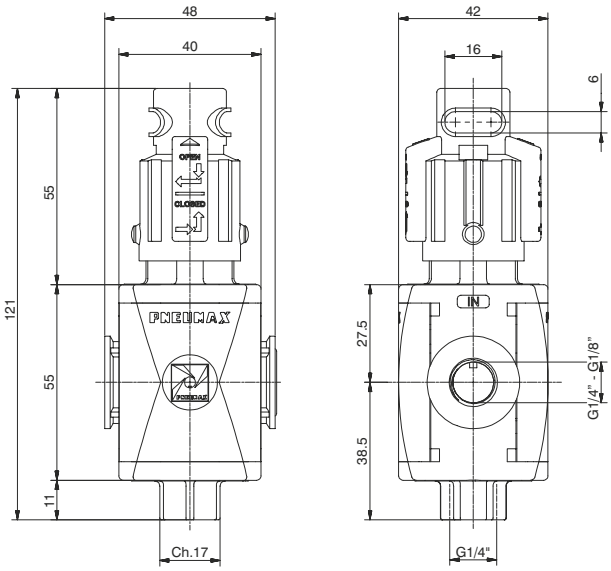
Flow rate curves



Operational characteristics	Technical characteristics		
- Oil mist lubrication with variable orifice size in function of the flow rate - Oil quantity regulation mechanism and oil quantity visualization dome made of polycarbonate. - Transparent bowl made off polycarbonate with bowl protection guard. - Bowl assembly via bayonet type quick coupling mechanism with safety button.	Connections	G 1/8" - G 1/4"	Ordering code
	Max. inlet pressure	13 bar	**Ⓥ171Ⓒ L**
	Working temperature	-5°C +50°C	
	Weight with Technopolymer threads	gr. 110	
	Weight with threaded inserts	gr. 120	
	Indicative oil drip rate	1 drop every 300/600 Nl	
	Oil type	FD22 - HG32	
Note Install as close as possible to the point o fuse Do not use alcohol , deterging oils or solvents.	Bowl capacity	36 cm^3	
	Assembly positions	Vertical	
	Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm	
	Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm	
	Min. operational flow at 6,3 bar	40 Nl/min.	

Ⓥ	VERSION
	N = Metal inserts
	T = Technopolymer thread
Ⓒ	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)

Shut-off valve (VL)



Example: T171BVL : size 1, Shut-off valve with Technopolymer threads, G1/4" connections

3

Operational characteristics	Technical characteristics		
- Manual operated 3 ways poppet valve. - Double handle action for valve opening: pushing and rotating (clockwise). - The valve can be closed and the down stream circuit depressurized by rotating anticlockwise the knob. - Knob lockable with three padlocks.	Connections	G 1/8" - G 1/4"	
	Max. inlet pressure	13 bar	
	Discharge connection	G1/4"	
	Working temperature	-5°C +50°C	
	Weight with Technopolymer threads	gr. 100	
	Weight with threaded inserts	gr. 110	
	Assembly positions	Indifferent	
	Handle opening and closing angle	90°	
	Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm	
	Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm	
	Nominal flow rate at 6 bar with Δp=1	1400 Nl/min.	
	Exhaust nominal flow rate at 6 bar with Δp=1	550 Nl/min.	

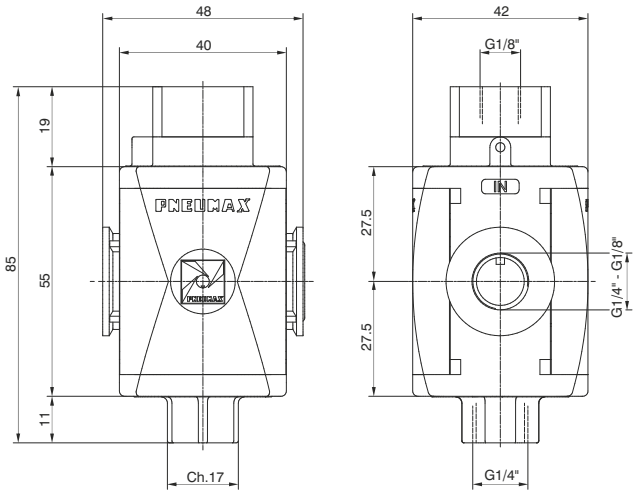
Ordering code

Ⓥ171Ⓒ VL

Ⓥ	VERSION
	N = Metal inserts
	T = Technopolymer thread
Ⓒ	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)

Specifications may be subject to change without prior notice

Pneumatic shut-off valve (VP)



Example: T171BVP : size 1, Pneumatic shut-off valve with Technopolymer threads, G1/4" connections

Operational characteristics	Technical characteristics	
- Pneumatic operated 3 ways poppet valve. - When the pneumatic signal is removed the valves exhaust the pneumatic circuit	Connections	G 1/8" - G 1/4"
	Discharge connection	G1/4"
	Pilot port size	G1/8"
	Working temperature	-5°C +50°C
	Weight with technopolymer threads	gr. 94
	Weight with threaded inserts	gr. 99
	Assembly positions	Indifferent
	Min. pressure working	3 bar
	Max. pressure working	10 bar
	Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm
	Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm
	Nominal flow rate at 6 bar with Δp=1	1400 Nl/min.
	Exhaust nominal flow rate at 6 bar with Δp=1	550 Nl/min.

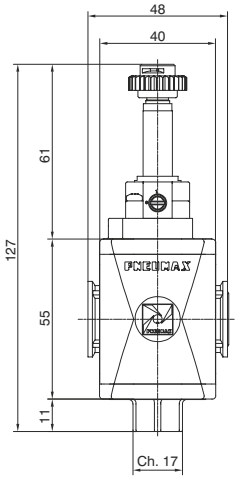
Ordering code

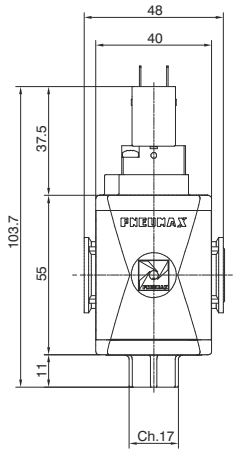
Ⓥ171ⒸVP

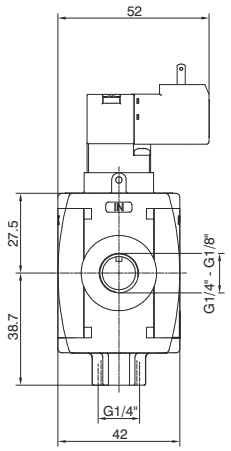
Ⓥ	VERSION
	N = Metal inserts
	T = Technopolymer thread
Ⓒ	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)

3

Electric shut-off valve (VE)







Example : T171BVEB2 : size 1, Electric shut-off valve, with M2 pilot without coil, Technopolymer threads, G1/4" connections

Operational characteristics

- Solenoid operated 3 ways poppet valve.
- The model fitted with 15 mm pilots uses pilots series N33_0A and N33_0E (1 Watt)

Technical characteristics

Supply and operating connections	G 1/8" - G 1/4"
Discharge connections	G 1/4"
Working temperature	-5°C +50°C
Weight with Technopolymer threads	130 g
Weight with threaded inserts	140 g
Assembly positions	Indifferent
Min. Pressure working	3 bar
Max. Pressure working	10 bar
Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm
Nominal flow rate at 6 bar with Δp=1	1400 Nl/min.
Exhaust nominal flow rate at 6 bar with Δp=1	550 Nl/min.

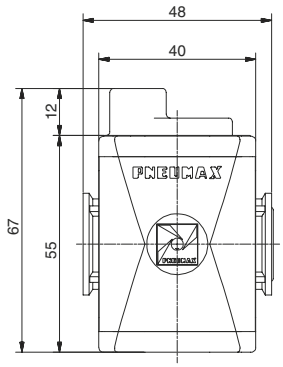
Ordering code

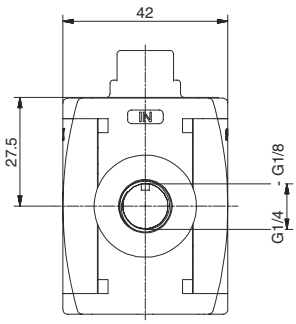
Ⓥ171ⒸVEⒶ

Ⓥ	VERSION
	N = Metal inserts
	T = Technopolymer thread
Ⓒ	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)
Ⓐ	15 mm COIL VOLTAGE
	A4 = 12 V DC
	A5 = 24 V DC
	A6 = 24 V AC (50-60 Hz)
	A7 = 110 V AC (50-60 Hz)
	A8 = 220 V AC (50-60 Hz)
	A9 = 24 V DC (1 Watt)
	22 mm COIL VOLTAGE
	B2 = Without coil M2 mechanic
	B4 = 12 V DC
	B5 = 24 V DC
	B6 = 24 V AC (50-60 Hz)
	B7 = 110 V AC (50-60 Hz)
	B8 = 220 V AC (50-60 Hz)
	B9 = 24 V DC (2 Watt)
	30 mm COIL VOLTAGE
	C5 = 24 V DC
	C6 = 24 V AC (50-60 Hz)
	C7 = 110 V AC (50-60 Hz)
	C8 = 230 V AC (50-60 Hz)
	C9 = 24 V DC (2 Watt)

Specifications may be subject to change without prior notice

Progressive start-up valve (AP)





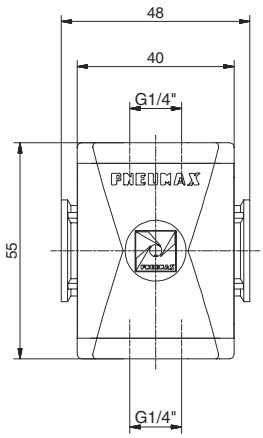
Example : T171BAP : size 1, Progressive start-up valve with Technopolymer threads, G1/4" connections

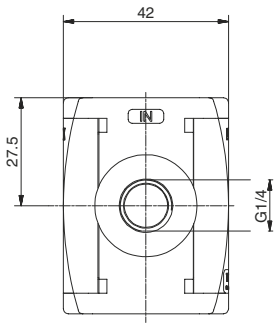
Operational characteristics	Technical characteristics		Ordering code
- Down stream circuit filling time regulated via a built in flow regulator. - Full pressure is allowed once the down stream circuit pressure reaches 50% of the inlet pressure.	Connections	G 1/8" - G 1/4"	**Ⓥ171ⒸAP**
	Max. inlet pressure	13 bar	
	Working temperature	-5°C +50°C	
	Weight with Technopolymer threads	gr. 70	
	Weight with threaded inserts	gr. 80	
	Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm	
	Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm	
	Assembly positions	Indifferent	
	Min. pressure working	2,5 bar	
	Nominal flow rate at 6 bar with Δp=1	1400 Nl/min.	
	Fully open built in flow regulator flow rate	75 Nl/min.	

Ⓥ VERSION
N = Metal inserts
T = Technopolymer thread

Ⓒ CONNECTIONS
A = G1/8" (only for "N" version)
B = G1/4"
C = G1/4" NPT (only for "N" version)

Air intake (PA)

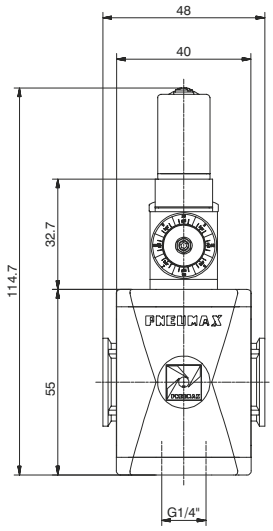


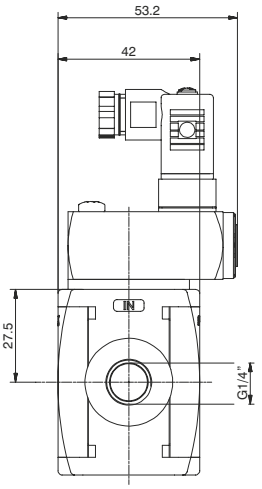


Example : T171BPA : size 1, Air intake with Technopolymer threads, G1/4" connections

Operational characteristics	Technical characteristics		Ordering code
- Available with two G1/4" threaded connections. **Attenction** For this product are available only Technopolymer connections	Connections	G 1/4"	**T171BPA**
	Max. inlet pressure	13 bar	
	Working temperature	-5°C +50°C	
	Weight	gr. 52	
	Assembly positions	Indifferent	
	Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm	

Pressure switch (PP)





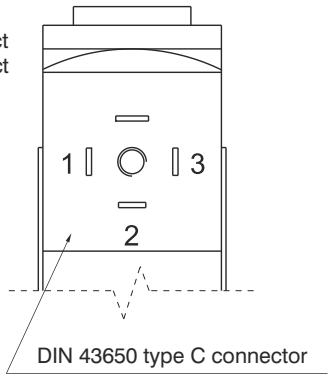
Example: T171BPP : Size 1, Pressure switch with Technopolymer threads, G1/4" connections

3

Operational characteristics	Technical characteristics		
- Built in adjustable pressure switch (2 to 10 bar) with electrical connection. - G1/4" threaded connection on the bottom face. - The electrical connection is made by mean of a 15 mm connector DIN 43650 type C. The microswitch contact could be normally closed or open (change overswitch). **Attenction** For this product are available only Technopolymer connections	Connections	G 1/4"	Ordering code
	Max. inlet pressure	13 bar	
	Working temperature	-5°C +50°C	**T171BPP**
	Weight	gr. 138	
	Microswitch capacity	1A	
	Grade of protection (with connector assembled)	IP 65	
	Adjusting range	2 -10 bar	
	Assembly positions	Indifferent	
	Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm	
	Microswitch maximum tension	250 VAC	

Connection

1 = neutral
2 = N.C. contact
3 = N.O. contact

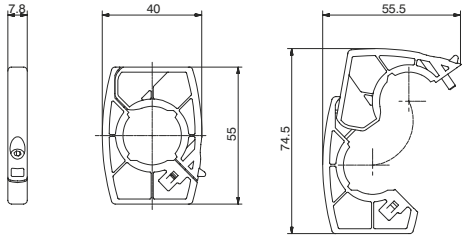


Specifications may be subject to change without prior notice

Flange X

Ordering code

T171X

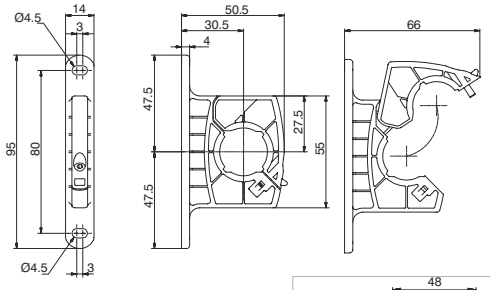


Weight 12 gr.
Example : T171X : Size 1 coupling flange
-Enables the quick connnection of two functions

Flange Y

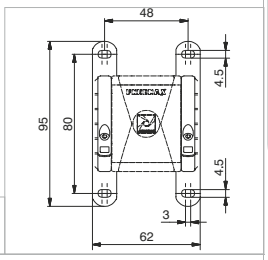
Ordering code

T171Y



Weight 18 gr.
Example : T171Y : Size 1 coupling flange with mounting holes
- Used to couple together two elements and
  to panel mount them.
- Used to panel mount one single element.

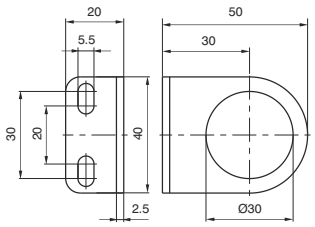
Single unit panel mounting dimensions



Fixing bracket

Ordering code

17150



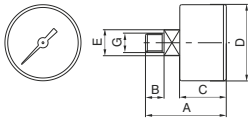
Weight 32 gr.
- Allows for regulators and filter regulators to be panel mounted.

Pressure gauge

Ordering code

17070Ⓥ.Ⓢ

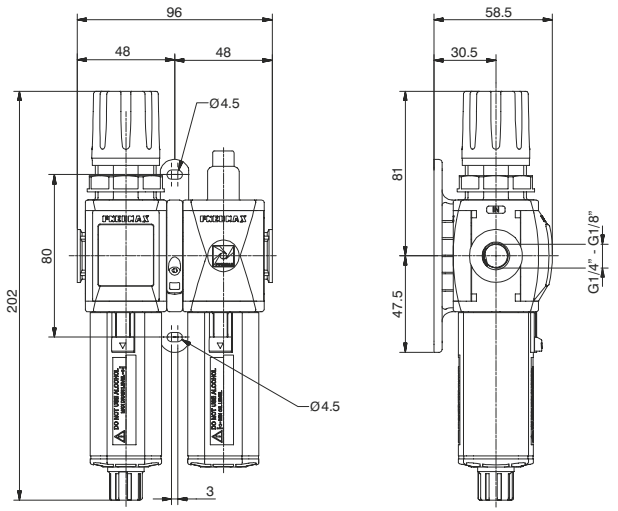
	VERSION
Ⓥ	A = Dial Ø40
	B = Dial Ø50
	SCALE
Ⓢ	A = Scale 0-4 bar
	B = Scale 0-6 bar
	C = Scale 0-12 bar



DIMENSIONS

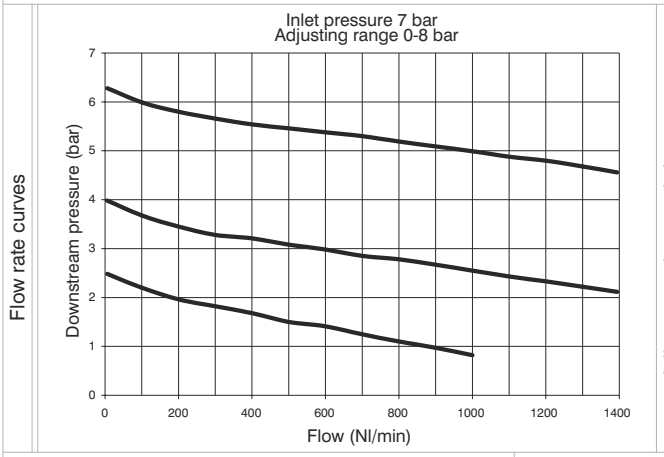
CODE	A	B	C	D	E	G	Weight gr.
17070A	44	10	26	41	14	1/8"	60
17070B	45	10	27	49	14	1/8"	80

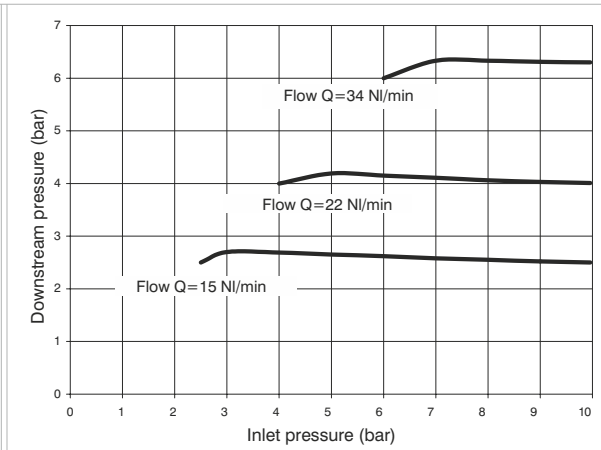
Service unit assembled (EM+L) (E+L) (EW+L)



Example : GT171BHG : size 1, combined group comprising Filter-regulator and Lubricator, Technopolymer threads, G1/4" connections, 0 to 8 bar adjusting range and 20 μm filter pore size

3





Operational characteristics

Combined group comprising Filter-regulator with built in manometer and Lubricator assembled with a (Y) type coupling kit for panel mounting.
Integrated manometer 0-12 bar as standard (for 0-8 and 0-12 bar range) and 0-4 bar (for 0-2 and 0-4 range)

Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

Technical characteristics

Connections	G 1/8" - G 1/4"
Max. inlet pressure	13 bar
Working temperature	-5°C +50°C
Weight with Technopolymer threads	gr. 328
Weight with threaded inserts	gr. 348
Pressure range	0-2 bar / 0-4 bar 0-8 bar / 0-12 bar
Filter pore size	5 μm - 20 μm - 50 μm
Bowl capacity	18 cm^3
Indicative oil drip rate	1 drop every 300/600 Nl
Oil type	FD22 - HG32
Bowl capacity	36 cm^3
Assembly positions	Vertical
Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm
Min. operational flow at 6,3 bar	40 Nl/min.

Ordering code

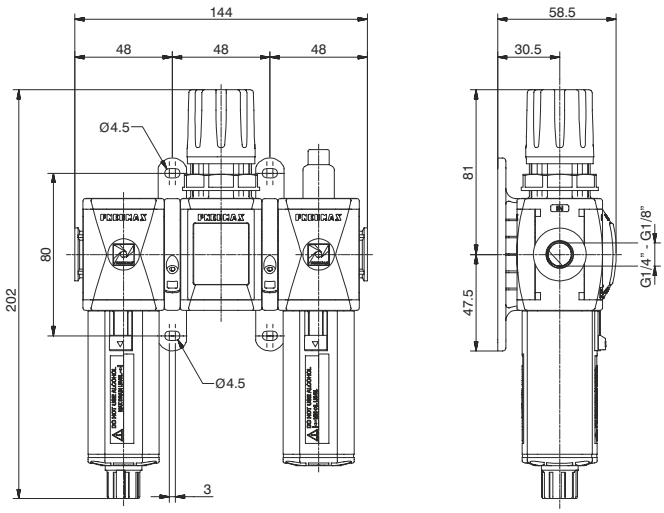
GV171CTSOD

V	VERSION
	N = Metal inserts
	T = Technopolymer thread
C	CONNECTIONS
	A = G1/8"(only for "N" version)
	B = G1/4"
	C = G1/4" NPT(only for "N" version)
T	TYPE
	H = Built in gauge
	J = G1/8" gauge connection
S	FILTER PORE SIZE ADJUSTING RANGE
	C = 5 μm / 0-8 bar
	D = 5 μm / 0-12 bar
	G = 20 μm / 0-8 bar
	H = 20 μm / 0-12 bar
	N = 50 μm / 0-8 bar
	P = 50 μm / 0-12 bar
O	OPTIONS
	= Standard *
	S = Automatic drain
D	FLOW DIRECTION
	= Standard * (from left to right)
	W = from right to left

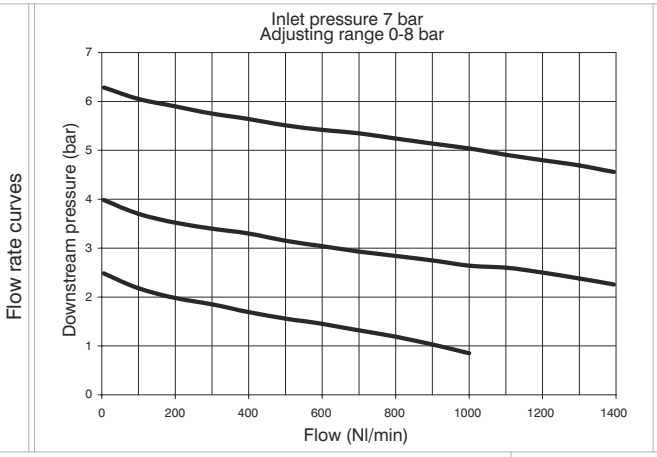
* no additional letter required

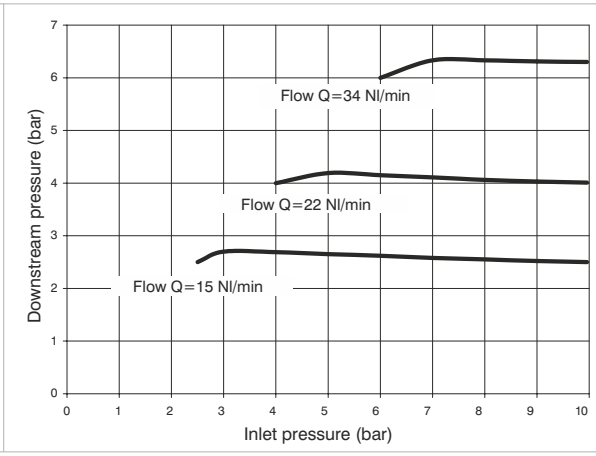
Specifications may be subject to change without prior notice

Service unit assembled (F+RM+L) (F+R+L) (F+RW+L)



Example : GT171BKG : size 1 combined group comprising Filter, Regulator and Lubricator Technopolymer threads, G1/4" connections, 0 to 8 bar adjusting range and 20 μm filter pore size





Operational characteristics

Combined group comprising Filter, Regulator with built in manometer and Lubricator assembled with two (Y) type coupling kits for panel mounting.
Integrated manometer 0-12 bar as standard (for 0-8 and 0-12 bar range) and 0-4 bar (for 0-2 and 0-4 range)

Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

Technical characteristics

Connections	G 1/8" - G 1/4"
Max. inlet pressure	13 bar
Working temperature	-5°C +50°C
Weight with Technopolymer threads	gr. 406
Weight with threaded inserts	gr. 436
Pressure range	0-2 bar / 0-4 bar 0-8 bar / 0-12 bar
Filter pore size	5 μm - 20 μm - 50 μm
Bowl capacity	18 cm^3
Indicative oil drip rate	1 drop every 300/600 Nl
Oil type	FD22 - HG32
Bowl capacity	36 cm^3
Assembly positions	Vertical
Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm
Min. operational flow at 6,3 bar	40 Nl/min.

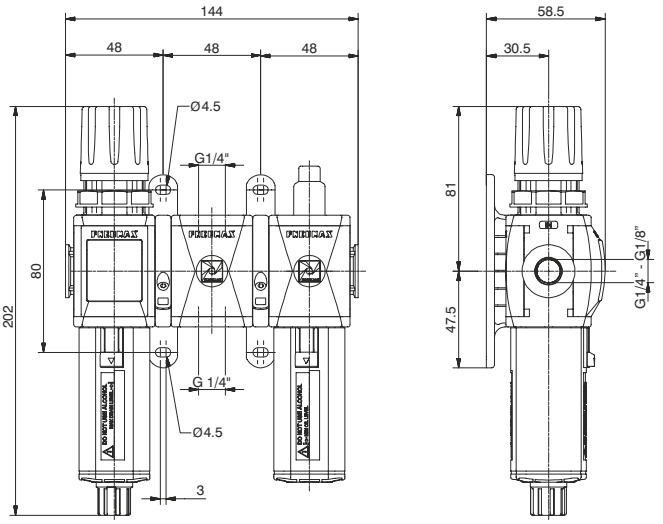
Ordering code

GⓋ171ⒸⓉⓈⓄⒹ

Ⓥ	VERSION
	N = Metal inserts
	T = Technopolymer thread
Ⓒ	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)
Ⓣ	TYPE
	K = Built in gauge
	T = G1/8" gauge connection
Ⓢ	FILTER PORE SIZE ADJUSTING RANGE
	C = 5 μm / 0-8 bar
	D = 5 μm / 0-12 bar
	G = 20 μm / 0-8 bar
	H = 20 μm / 0-12 bar
	N = 50 μm / 0-8 bar
	P = 50 μm / 0-12 bar
Ⓞ	OPTIONS
	= Standard *
	S = Automatic drain
Ⓓ	FLOW DIRECTION
	= Standard (from left to right)
	W = from right to left

* no additional letter required

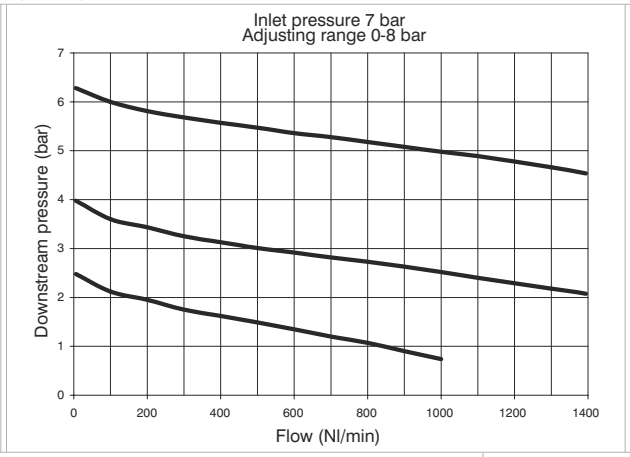
Service unit assembled (EM+PA+L) (E+PA+L) (EW+PA+L)



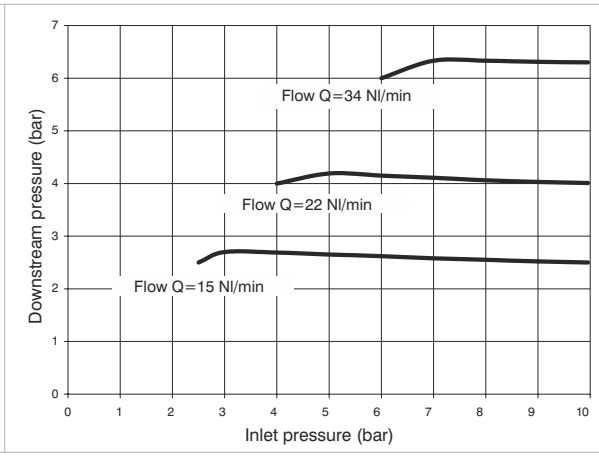
Example : GT171BNG : size 1 combined group comprising Filter-regulator, Air intake and Lubricator Technopolymer threads, G1/4" connections, 0 to 8 bar adjusting range and 20 μm filter pore size

3

Flow rate curves



Adjustment characteristics



Operational characteristics

Combined group comprising Filter-regulator with built in manometer, Air intake and Lubricator assembled with two (Y) type coupling kits for panel mounting.
Integrated manometer 0-12 bar as standard (for 0-8 and 0-12 bar range) and 0-4 bar (for 0-2 and 0-4 range)

Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

Technical characteristics

Connections	G 1/8" - G 1/4"
Max. inlet pressure	13 bar
Working temperature	-5°C +50°C
Weight with Technopolymer threads	gr. 398
Weight with threaded inserts	gr. 418
Pressure range	0-2 bar / 0-4 bar 0-8 bar / 0-12 bar
Filter pore size	5 μm - 20 μm - 50 μm
Bowl capacity	18 cm^3
Indicative oil drip rate	1 drop every 300/600 Nl
Oil type	FD22 - HG32
Bowl capacity	36 cm^3
Assembly positions	Vertical
Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm
Min. operational flow at 6,3 bar	40 Nl/min.

Ordering code

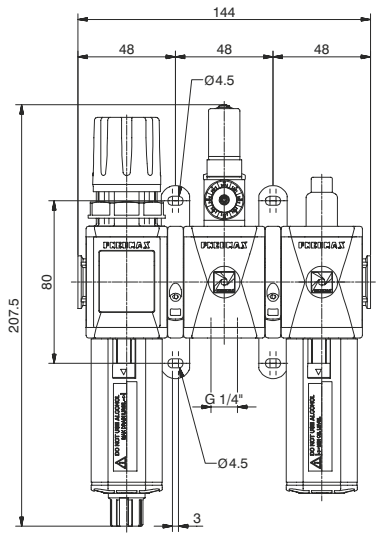
GV171CTSOD

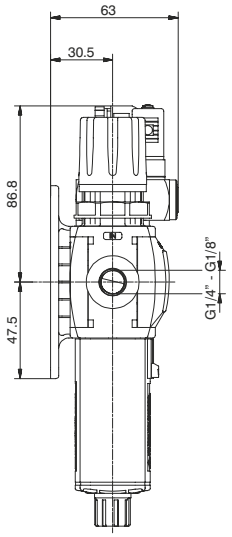
V	VERSION
	N = Metal inserts
	T = Technopolymer thread
C	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)
T	TYPE
	N = Built in gauge
	P = G1/8" gauge connection
S	FILTER PORE SIZE ADJUSTING RANGE
	C = 5 μm / 0-8 bar
	D = 5 μm / 0-12 bar
	G = 20 μm / 0-8 bar
	H = 20 μm / 0-12 bar
	N = 50 μm / 0-8 bar
	P = 50 μm / 0-12 bar
O	OPTIONS
	= Standard *
	S = Automatic drain
D	FLOW DIRECTION
	= Standard (from left to right)
	W = from right to left

* no additional letter required

Specifications may be subject to change without prior notice

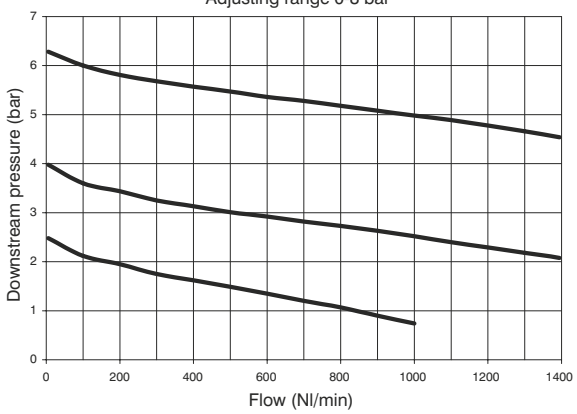
Service unit assembled (EM+PP+L) (E+PP+L) (EW+PP+L)



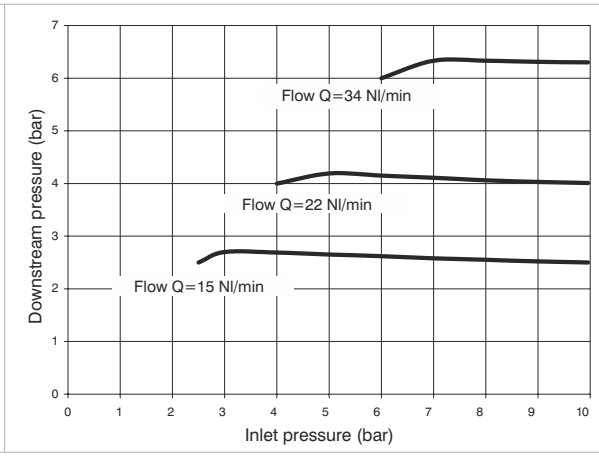


Example : GT171BRG : size 1 combined group comprising Filter-Regulator, Pressure switch and Lubricator Technopolymer threads, G1/4" connections 0 to 8 bar adjusting range and 20 μm filter pore size

Flow rate curves



Adjustment characteristics



Operational characteristics

Combined group comprising Filter-regulator with built in manometer, Pressure switch and Lubricator assembled with two (Y) type coupling kits for panel mountings.
Integrated manometer 0-12 bar as standard (for 0-8 and 0-12 bar range) and 0-4 bar (for 0-2 and 0-4 range)

Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

Technical characteristics

Connections	G 1/8" - G 1/4"
Max. inlet pressure	13 bar
Working temperature	-5°C +50°C
Weight with Technopolymer threads	gr. 484
Weight with threaded inserts	gr. 504
Pressure range	0-2 bar / 0-4 bar 0-8 bar / 0-12 bar
Filter pore size	5 μm - 20 μm - 50 μm
Bowl capacity	18 cm^3
Indicative oil drip rate	1 drop every 300/600 Nl
Oil type	FD22 - HG32
Bowl capacity	36 cm^3
Assembly positions	Vertical
Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm
Min. operational flow at 6,3 bar	40 Nl/min.

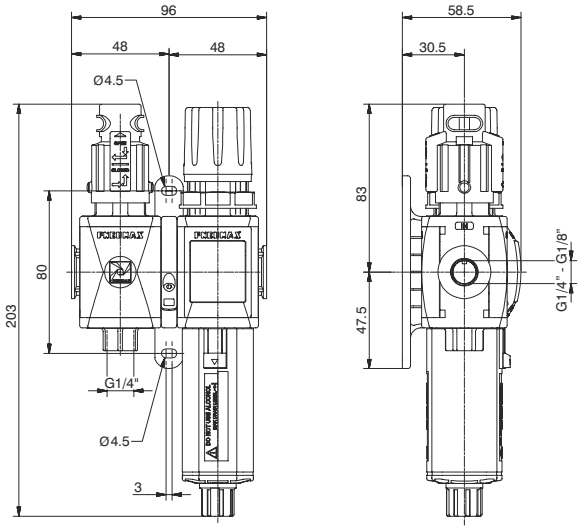
Ordering code

GⓋ171ⒸⓉⓈⓄⒹ

Ⓥ	VERSION
	N = Metal inserts
	T = Technopolymer thread
Ⓒ	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)
Ⓣ	TYPE
	R = Built in gauge
	C = G1/8" gauge connection
Ⓢ	FILTER PORE SIZE ADJUSTING RANGE
	C = 5 μm / 0-8 bar
	D = 5 μm / 0-12 bar
	G = 20 μm / 0-8 bar
	H = 20 μm / 0-12 bar
	N = 50 μm / 0-8 bar
	P = 50 μm / 0-12 bar
Ⓞ	OPTIONS
	= Standard *
	S = Automatic drain
Ⓓ	FLOW DIRECTION
	= Standard (from left to right)
	W = from right to left

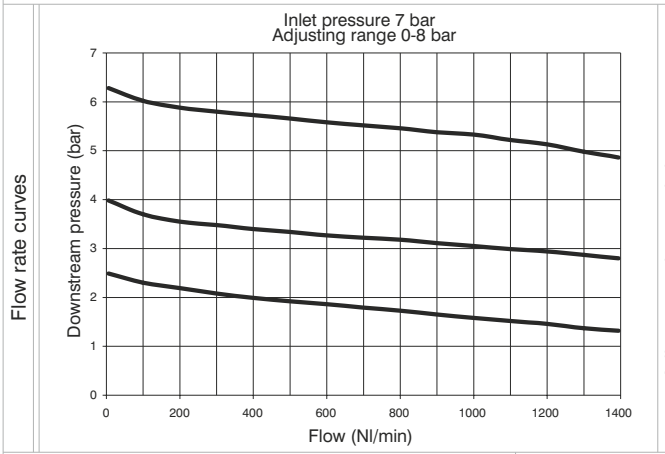
* no additional letter required

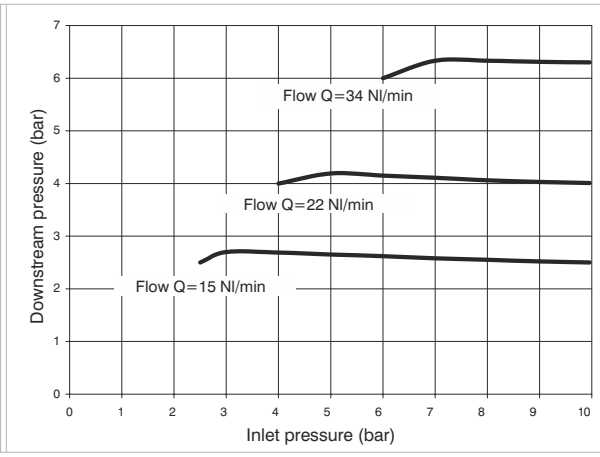
Service unit assembled (VL+EM) (VL+E) (VL+EW)



Example : GT171BVGG : size 1 combined group comprising Shut-off valve, Filter-regulator Technopolymer threads, G1/4" connections 0 to 8 bar adjusting range and 20 μm filter pore size

3





Operational characteristics

Combined group comprising manual shut-off valve, Filter - regulator with built in manometer, assembled with one (Y) type coupling kit for panel mountings.
Integrated manometer 0-12 bar as standard (for 0-8 and 0-12 bar range) and 0-4 bar (for 0-2 and 0-4 range)

Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

Technical characteristics

Connections	G 1/8" - G 1/4"
Max. inlet pressure	13 bar
Working temperature	-5°C +50°C
Weight with Technopolymer threads	gr. 318
Weight with threaded inserts	gr. 338
Pressure range	0-2 bar / 0-4 bar 0-8 bar / 0-12 bar
Filter pore size	5 μm - 20 μm - 50 μm
Bowl capacity	18 cm^3
Indicative oil drip rate	1 drop every 300/600 Nl
Oil type	FD22 - HG32
Bowl capacity	36 cm^3
Assembly positions	Vertical
Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm
Min. operational flow at 6,3 bar	40 Nl/min.

Ordering code

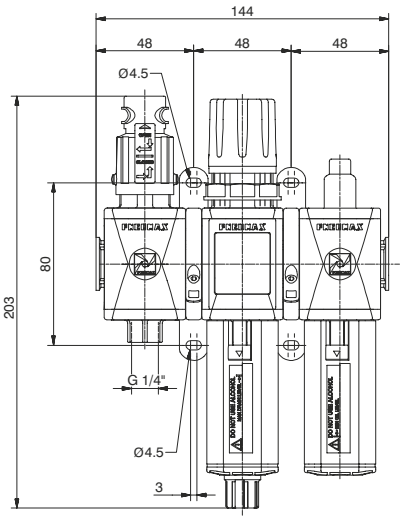
GV171CTSOD

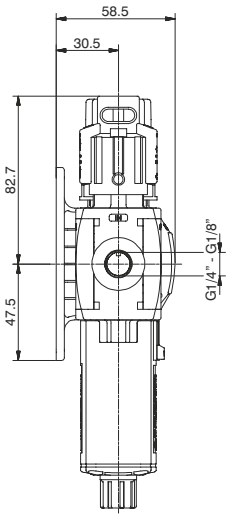
V	VERSION
	N = Metal inserts
	T = Technopolymer thread
C	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)
T	TYPE
	VG = Built in gauge
	VU = G1/8" gauge connection
S	FILTER PORE SIZE ADJUSTING RANGE
	C = 5 μm / 0-8 bar
	D = 5 μm / 0-12 bar
	G = 20 μm / 0-8 bar
	H = 20 μm / 0-12 bar
	N = 50 μm / 0-8 bar
	P = 50 μm / 0-12 bar
O	OPTIONS
	= Standard *
	S = Automatic drain
D	FLOW DIRECTION
	= Standard (from left to right)
	W = from right to left

* no additional letter required

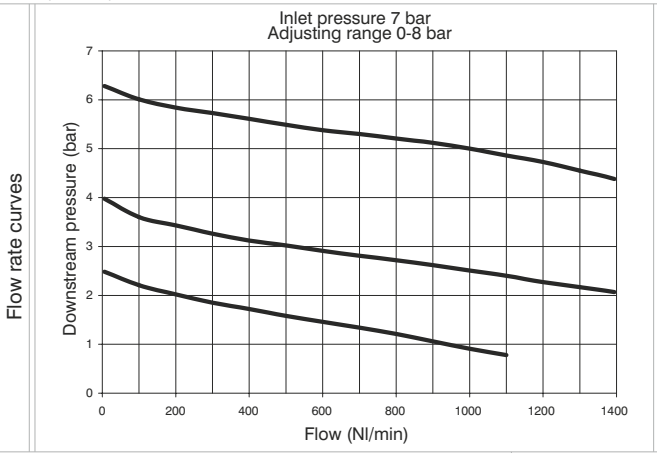
Specifications may be subject to change without prior notice

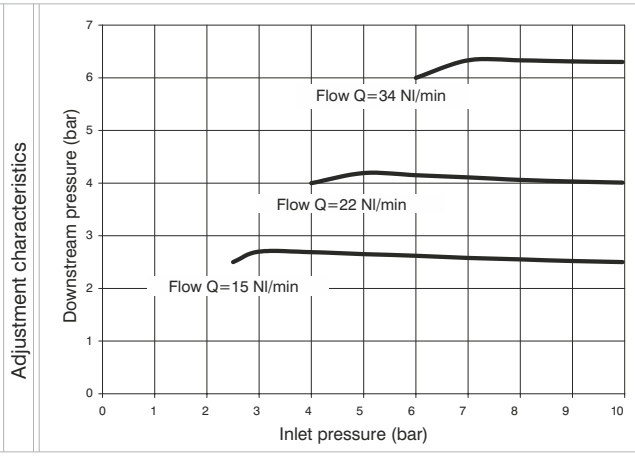
Service unit assembled (VL+EM+L) (VL+E+L) (VL+EW+L)





Example : GT171BVHG : size 1 combined group comprising Shut-off valve, Filter-regulator and Lubricator Technopolymer threads, G1/4" connections 0 to 8 bar adjusting range and 20 μm filter pore size





Operational characteristics

Combined group comprising manual shut-off valve, Filter - regulator with built in manometer and Lubricator assembled with two(Y) type coupling kits for panel mountings.
Integrated manometer 0-12 bar as standard (for 0-8 and 0-12 bar range) and 0-4 bar (for 0-2 and 0-4 range)

Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

Technical characteristics

Connections	G 1/8" - G 1/4"
Max. inlet pressure	13 bar
Working temperature	-5°C +50°C
Weight with Technopolymer threads	gr. 446
Weight with threaded inserts	gr. 476
Pressure range	0-2 bar / 0-4 bar 0-8 bar / 0-12 bar
Filter pore size	5 μm - 20 μm - 50 μm
Bowl capacity	18 cm^3
Indicative oil drip rate	1 drop every 300/600 Nl
Oil type	FD22 - HG32
Bowl capacity	36 cm^3
Assembly positions	Vertical
Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm
Min. operational flow at 6,3 bar	40 Nl/min.

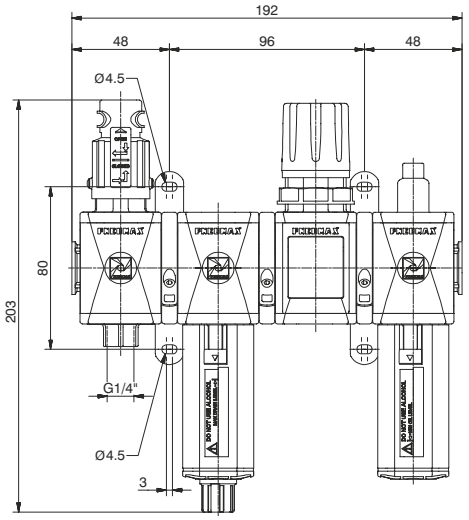
Ordering code

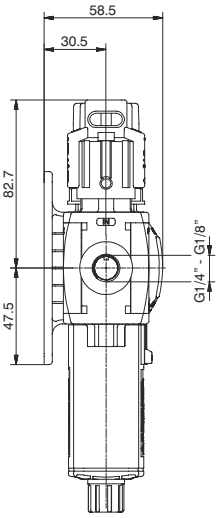
GⓋ171ⒸⓉⓈⓄⒹ

Ⓥ	VERSION
	N = Metal inserts
	T = Technopolymer thread
Ⓒ	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)
Ⓣ	TYPE
	VH = Built in gauge
	VJ = G1/8" gauge connection
Ⓢ	FILTER PORE SIZE ADJUSTING RANGE
	C = 5 μm / 0-8 bar
	D = 5 μm / 0-12 bar
	G = 20 μm / 0-8 bar
	H = 20 μm / 0-12 bar
	N = 50 μm / 0-8 bar
	P = 50 μm / 0-12 bar
Ⓞ	OPTIONS
	= Standard *
	S = Automatic drain
Ⓓ	FLOW DIRECTION
	= Standard (from left to right)
	W = from right to left

* no additional letter required

Service unit assembled (VL+F+RM+L) (VL+F+R+L) (VL+F+RW+L)

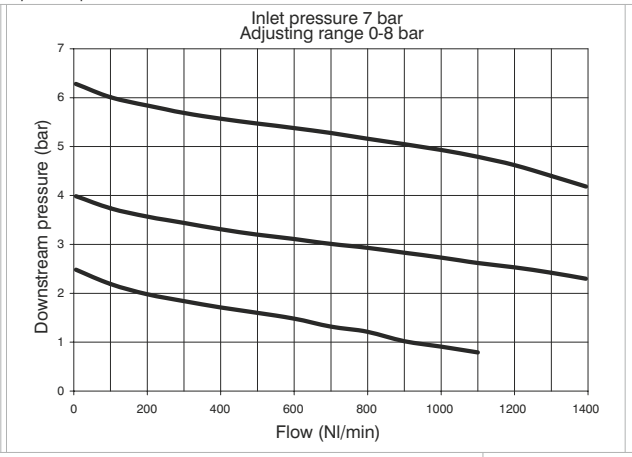




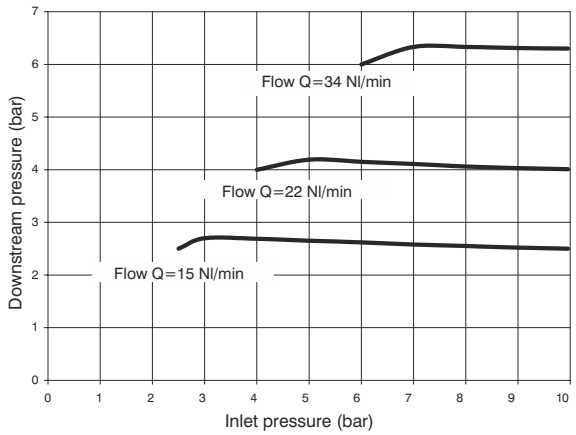
Example : GT171BVKG : size 1 combined group comprising Shut-off valve, Filter, Regulator and Lubricator Technopolymer threads, G1/4" connections 0 to 8 bar adjusting range and 20 μm filter pore size

3

Flow rate curves



Adjustment characteristics



Operational characteristics

Combined group comprising manual shut - off valve, Filter, Regulator with built in manometer and Lubricator , assembled with two (Y) type coupling kits for panel mounting and one (X) type coupling kit.
Integrated manometer 0-12 bar as standard (for 0-8 and 0-12 bar range) and 0-4 bar (for 0-2 and 0-4 bar range)

Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

Technical characteristics

Connections	G 1/8" - G 1/4"
Max. inlet pressure	13 bar
Working temperature	-5°C +50°C
Weight with Technopolymer threads	gr. 518
Weight with threaded inserts	gr. 558
Pressure range	0-2 bar / 0-4 bar 0-8 bar / 0-12 bar
Filter pore size	5 μm - 20 μm - 50 μm
Bowl capacity	18 cm^3
Indicative oil drip rate	1 drop every 300/600 Nl
Oil type	FD22 - HG32
Bowl capacity	36 cm^3
Assembly positions	Vertical
Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm
Min. operational flow at 6,3 bar	40 Nl/min.

Ordering code

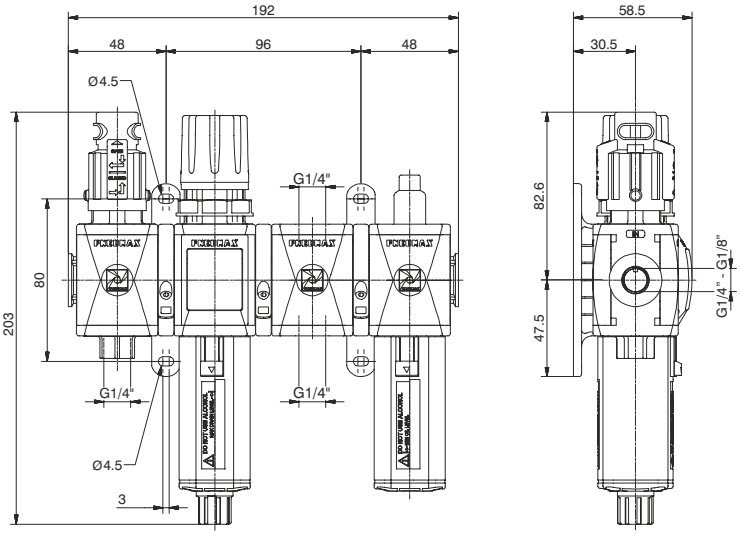
GV171CTSOD

V	VERSION
	N = Metal inserts
	T = Technopolymer thread
C	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)
T	TYPE
	VK = Built in gauge
	VT = G1/8" gauge connection
S	FILTER PORE SIZE ADJUSTING RANGE
	C = 5 μm / 0-8 bar
	D = 5 μm / 0-12 bar
	G = 20 μm / 0-8 bar
	H = 20 μm / 0-12 bar
	N = 50 μm / 0-8 bar
	P = 50 μm / 0-12 bar
O	OPTIONS
	= Standard *
	S = Automatic drain
D	FLOW DIRECTION
	= Standard (from left to right)
	W = from right to left

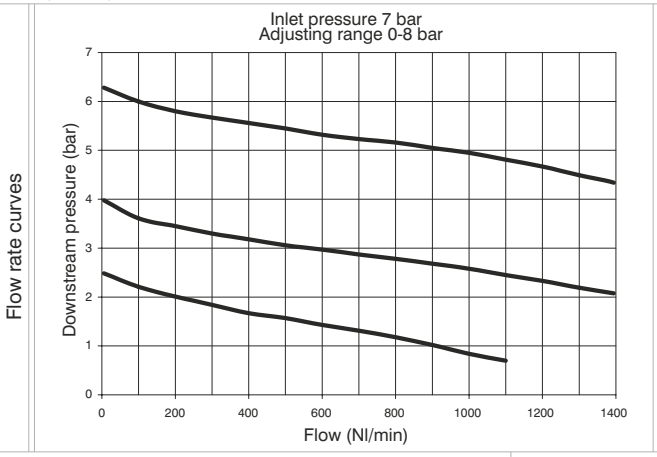
* no additional letter required

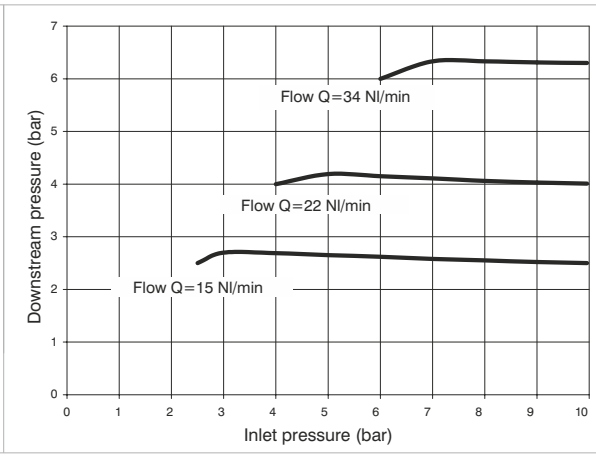
Specifications may be subject to change without prior notice

Service unit assembled (VL+EM+PA+L) (VL+E+PA+L) (VL+EW+PA+L)



Example : GT171BVNG : size 1 combined group comprising Shut-off valve, Filter-regulator, Air intake and Lubricator Technopolymer threads, G1/4" connections 0 to 8 bar adjusting range and 20 μm filter pore size





Operational characteristics

Combined group comprising manual shut-off valve, Filter - regulator with built in manometer, Air intake and Lubricator, assembled with two (Y) type coupling kits for panel mounting and one (X) type coupling kit.
Integrated manometer 0-12 bar as standard (for 0-8 and 0-12 bar range) and 0-4 bar (for 0-2 and 0-4 range)

Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

Technical characteristics

Connections	G 1/8" - G 1/4"
Max. inlet pressure	13 bar
Working temperature	-5°C +50°C
Weight with Technopolymer threads	gr. 510
Weight with threaded inserts	gr. 540
Pressure range	0-2 bar / 0-4 bar 0-8 bar / 0-12 bar
Filter pore size	5 μm - 20 μm - 50 μm
Bowl capacity	18 cm^3
Indicative oil drip rate	1 drop every 300/600 Nl
Oil type	FD22 - HG32
Bowl capacity	36 cm^3
Assembly positions	Vertical
Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm
Min. operational flow at 6,3 bar	40 Nl/min.

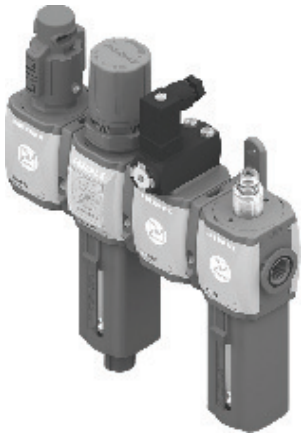
Ordering code

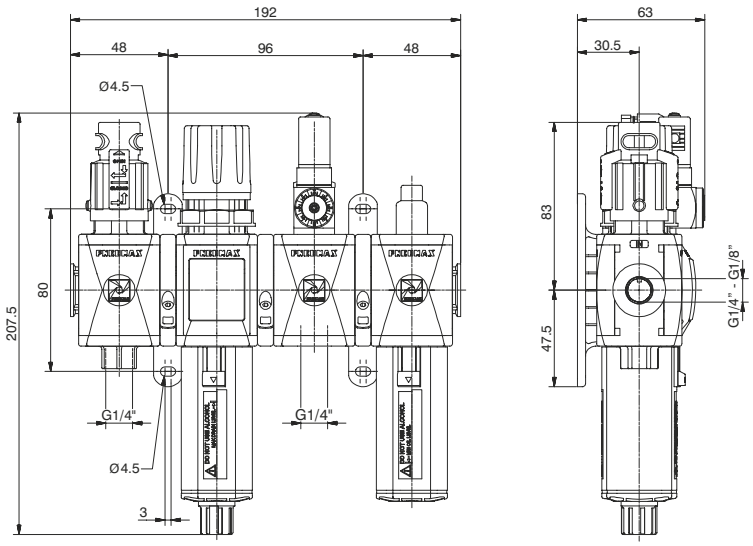
GⓋ171ⒸⓉⓈⓄⒹ

Ⓥ	VERSION
	N = Metal inserts
	T = Technopolymer thread
Ⓒ	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)
Ⓣ	TYPE
	VN = Built in gauge
	VP = G1/8" gauge connection
Ⓢ	FILTER PORE SIZE ADJUSTING RANGE
	C = 5 μm / 0-8 bar
	D = 5 μm / 0-12 bar
	G = 20 μm / 0-8 bar
	H = 20 μm / 0-12 bar
	N = 50 μm / 0-8 bar
	P = 50 μm / 0-12 bar
Ⓞ	OPTIONS
	= Standard *
	S = Automatic drain
Ⓓ	FLOW DIRECTION
	= Standard (from left to right)
	W = from right to left

* no additional letter required

Service unit assembled (VL+EM+PP+L) (VL+E+PP+L) (VL+EW+PP+L)

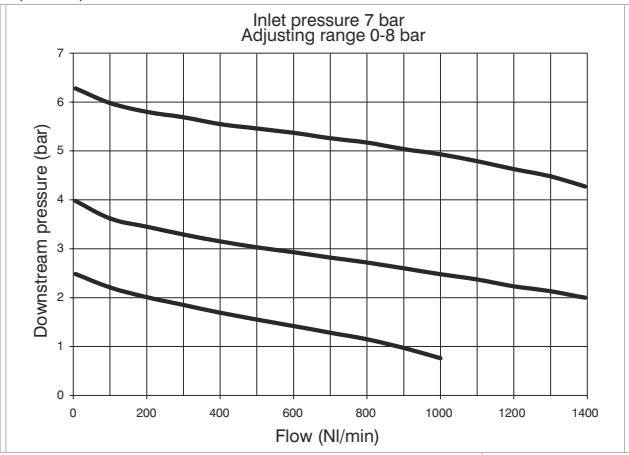




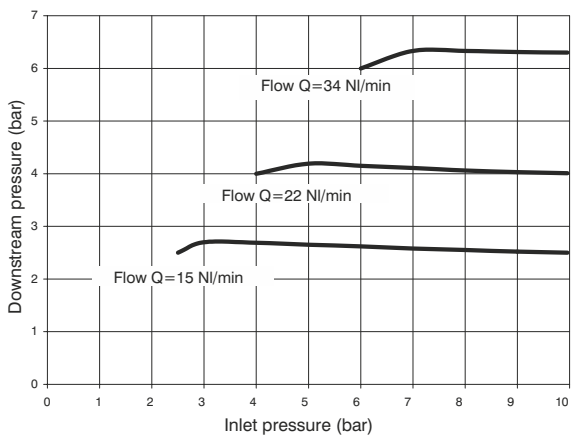
Example : GT171BVRG : size 1 combined group comprising Shut-off valve, Filter-regulator, Pressure switch and Lubricator Technopolymer threads, G1/4" connections adjusting range 0 to 8 bar and 20 μm filter pore size

3

Flow rate curves



Adjustment characteristics



Operational characteristics

Combined group comprising manual shut-off valve, Filter - regulator with built in manometer, Pressure switch and Lubricator, assembled with two (Y) type coupling kits for panel mounting and one (X) type coupling kit.
Integrated manometer 0-12 bar as standard (for 0-8 and 0-12 bar range) and 0-4 bar (for 0-2 and 0-4 range)

Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

Technical characteristics

Connections	G 1/8" - G 1/4"
Max. inlet pressure	13 bar
Working temperature	-5°C +50°C
Weight with Technopolymer threads	gr. 596
Weight with threaded inserts	gr. 626
Pressure range	0-2 bar / 0-4 bar 0-8 bar / 0-12 bar
Filter pore size	5 μm - 20 μm - 50 μm
Bowl capacity	18 cm^3
Indicative oil drip rate	1 drop every 300/600 Nl
Oil type	FD22 - HG32
Bowl capacity	36 cm^3
Assembly positions	Vertical
Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm
Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm
Min. operational flow at 6,3 bar	40 Nl/min.

Ordering code

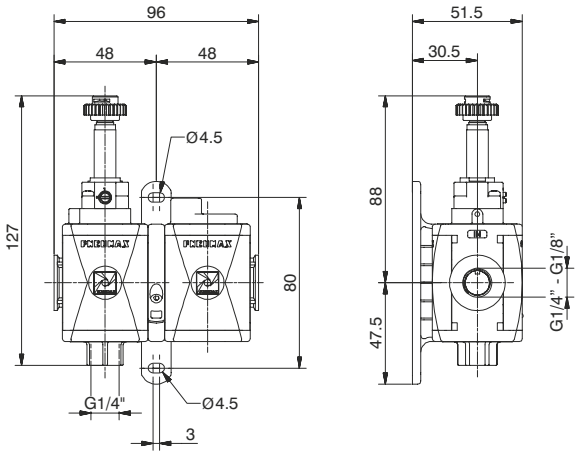
GV171CTSOD

V	VERSION
	N = Metal inserts
	T = Technopolymer thread
C	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)
T	TYPE
	VR = Built in gauge
	VC = G1/8" gauge connection
S	FILTER PORE SIZE ADJUSTING RANGE
	C = 5 μm / 0-8 bar
	D = 5 μm / 0-12 bar
	G = 20 μm / 0-8 bar
	H = 20 μm / 0-12 bar
	N = 50 μm / 0-8 bar
	P = 50 μm / 0-12 bar
O	OPTIONS
	= Standard *
	S = Automatic drain
D	FLOW DIRECTION
	= Standard (from left to right)
	W = from right to left

* no additional letter required

Specifications may be subject to change without prior notice

Service unit assembled (VE+AP)



Example : GT171BSB2 : size 1 combined group comprising Electric shut-off valve, Progressive start-up valve without coil with M2 pilot Technopolymer threads, G1/4" connections

Operational characteristics	Technical characteristics		
Combined group comprising Electric shut-off valve and Progressive start-up valve assembled with a (Y) type coupling kit for panel mounting.	Connections	G 1/8" - G 1/4"	
	Max. inlet pressure	10 bar	
	Min. inlet pressure	3 bar	
	Working temperature	-5°C +50°C	
	Weight with Technopolymer threads	gr. 218	
	Weight with threaded inserts	gr. 238	
	Assembly positions	Indifferent	
	Max. fitting torque (with Technopolymer threads)	G1/4" = 9 Nm	
	Max. fitting torque (with threaded inserts)	G1/8" = 15 Nm G1/4" = 20 Nm	
	Flow at 6 bar with Δp=1	1200 Nl/min.	

Ordering code	
GⓋ171ⓒSⒶ	
Ⓥ	VERSION
	N = Metal inserts
	T = Technopolymer thread
ⓒ	CONNECTIONS
	A = G1/8" (only for "N" version)
	B = G1/4"
	C = G1/4" NPT (only for "N" version)
Ⓐ	15 mm COIL VOLTAGE
	A4 = 12 V DC
	A5 = 24 V DC
	A6 = 24 V AC (50-60 Hz)
	A7 = 110 V AC (50-60 Hz)
	A8 = 220 V AC (50-60 Hz)
	A9 = 24 V DC (1 Watt)
	22 mm COIL VOLTAGE
	B2 = Without coil M2 mechanic
	B4 = 12 V DC
	B5 = 24 V DC
	B6 = 24 V AC (50-60 Hz)
	B7 = 110 V AC (50-60 Hz)
	B8 = 220 V AC (50-60 Hz)
	B9 = 24 V DC (2 Watt)
	30 mm COIL VOLTAGE
	C5 = 24 V DC
	C6 = 24 V AC (50-60 Hz)
	C7 = 110 V AC (50-60 Hz)
	C8 = 230 V AC (50-60 Hz)
	C9 = 24 V DC (2 Watt)