When SAFETY matters most!

Lifesaving products for compressed air

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Protect-Air

Quick product overview






The Protect-Air® products in this brochure enable plant managers to comply easily and cost effectively with increasingly stringent Guidelines on the safe usage of pneumatic equipment from industry association such as ISO, OSHA, RoHs, OHSAS, machine Directive, H&S , Puwer etc.

Mission

The Protect-Air® product range does provide a range of niche products developed for compressed air systems – protection - units to tackle H&S (Health & Safety) issues where compressed air is concerned to increase effeciency and ensure cost saving production. Our number one consideration is to offer customers added value through broad and deep product lines, knowledge and processing. The increased pressure placed on companies to comply with Health and Safety Legislation, has resulted in a marked increase in safety enclosures and barrier type guarding being implemented into machinery.

Don’t take risks – act now!

Facts and Figures:

Globally*

- Every day, more than 12 workers die on the job – over 4,000 a year.
- Every year, more than 4.1 million workers suffer a serious job related injury or illness.
- Implementing injury and illness prevention programs could:
  - Reduce injuries by 15 to 35 %
  - Save $9 billion to $23 billion per year in workers‘ compensation costs
  - reduce indirect costs
- approx 10 % relate to compressed air

Danger lurks everywhere!

* According to European Agency for Safety and Health at Work / www.osha.europe.eu

Don’t take risks – act now!

Ignorance of the law is no excuse

Safety Regulations

ISO Standard
ISO 4414-11.2010-§5.4.5.11.1 states:
When failure of a hose assembly or plastic piping constitutes whiplash hazard, it shall be restrained or shielded by suitable means and/or an air fuse for compressed air shall be mounted.

OHSAS 18001 – Assessment and Risk Control ensures safe working environments

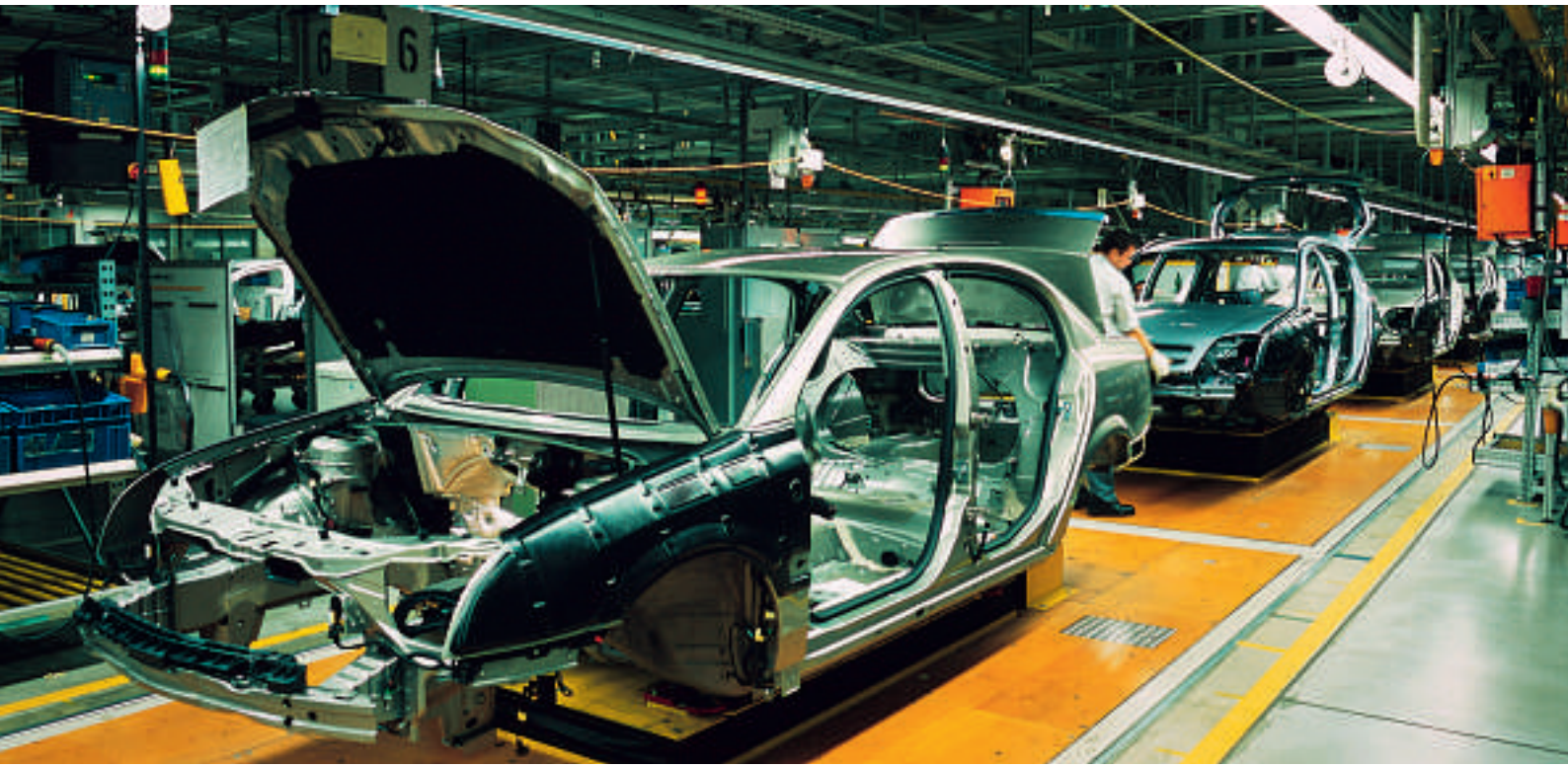
MSHA (Mine Safety and Health Administration) Regulations
30 CFR section §56.13021 and 57.13021 High-pressure hose connection:
Except where automatic shut-off valves are used. Safety chains or other suitable locking devices shall be used at connections to machines of high pressure hose line of ¾" inside diameter or larger, and between high pressure hose lines ¾" inside diameter or larger, where a connection failure would create a hazard.

30 CFR section §57.1730 Compressed air; general: compressed air systems states:
(e) Safety chains, suitable locking devices, or automatic cut-off valves shall be used at connections to machines of high pressure hose lines of ¾" insidediameter or larger, and between high pressure hose lines of ¾" inside diameter or larger, where a connection failure would create a hazard. For purpose of this paragraph, high pressure means pressure of 100 psi or more.

OSHA Regulations
Standards - 29 CFR, 1926.302 (partial) states:
(b) (7) All hoses exceeding ½"inside diameter shall have a safety device at the source of supply or branch line to reduce pressure in case of hose failure.

Risk Assessment

Working accidents and illness at work costs money and ruins lives. Good health and safety is good business – and it is the law.



The Protect-Air products in this brochure enable plant managers to comply easily and cost effectively with increasingly stringent Guidelines on the safe usage of pneumatic equipment from industry association such as ISO, OSHA, RoHs, OHSAS, machine Directive, H&S , Puwer etc.

- As an employer, the law requires that you assess and manage the health and safety risks of your business.
- A risk assessment is simply a careful examination of what, in your work, could cause harm to people.
- It enables you to decide if you have taken enough precautions, or if you should do more to prevent injury.
- European and International legislations, directives, Regulations, Standard etc. require the consideration of all possible risks by the designers, manufacturers and end users of machine and equipment for industrial and commercial use, so that potential injuries are minimised.

Risk Assessment Analysis ensures Safe Working Environments

Key to Symbols

The Protect-Air® products help plant managers to easily and cost effectively comply with increasingly stringent directives on the safe usage of pneumatic equipment issued by indus-trial standards organizations such as the ISO, OSHA, RoHs, OHSAS, machine Directive, H&S , Puwer and others.

The following symbols indicate the safety device or protection products required to conform with regulations. Every product listed complies with one or more safety requirements, laws or regulations. The round symbols indicate the primary type of protection offered by the appropriate product.

Does your workplace include hazards and risks that may lead to an incident? If so, you need to install WARNING/HAZARD SIGNS that indicate that precautions must be taken.

Safety

General safety symbols. Placed on the first page of the appropriate product range, this draws attiention to the safety features

- Maintenance Equipment
- Safety couplings
- Pressure regulators
- Tamperproof
- Line burst fuses – Airfuse (HoseGuards®)
- Safety ball valves
- Safety air guns
- Lines
- Manometers
- Safety Valves
- Sound absorbers

Injury Protection

The risk of personal injury is reduced by the usage of special materials and technical safety features of the products.

- Maintenance Equipment
- Pressure regulators
- Tamperproof
- Line burst fuses – Airfuse (HoseGuards®)
- Safety couplings
- Lines
- Safety air guns
- Safety Valves
- Manometers

Line Burst Protection

Use of line burst protectors prevents the feared «whipping effect» and helps prevent injuries.

- Line burst fuses – Airfuse (HoseGuards®)

Compressed Air

This symbol always appears on the «Laws and Regulations» pages and highlights the importance and significance of the laws.

- Maintenance Equipment
- Safety couplings
- Pressure regulators
- Tamperproof
- Line burst fuses – Airfuse (HoseGuards®)
- Safety ball valves
- Safety air guns
- Lines
- Manometers
- Safety Valves
- Sound absorbers

Eye Protection

The risk of eye injury is reduced by use of special materials and technical Safety features of the products.

- Maintenance Equipment
- Line burst fuses – Airfuse (HoseGuards®)
- Safety couplings
- Manometers
- Safety nozzles

Setting Locker

These products prevent intentional and unintentional changes in settings, since they include a setting lock.

- Maintenance Equipment
- Pressure regulators
- Tamperproof
- Safety ball valves
- Safety valves

Worth knowing

Calculating the return

- The ideal pressure for pneumatic tools is Generally 6,3 bar (90 psig)
- Every bar (15 psig) of excess pressure essentially wastes 10 % of the energy
- For safety reasons, pneumatic guns should not be operated at pressures exceeding 2 bar (30 psig)
- The expense for energy amounts to 80 – 90 % of the cost required to produce compressed air
- Around 10 KW of electrical energy is required to generate 1 KW of mechanical energy from compressed air
- Use of pre-set regulators is an economical way to maintain ideal working pressure in the tool

Cost savings with an additional controller (In-line pre-set tamperproof regulator)

Due to the perceived expense of an additional decentralized In-line regulator, many tools, systems and machines are operated using the existing line pressure (for example, 8-10 bar). Unfortunately the increased costs due to excessive air consumption and the reduced service life of the equipment are often overlooked.

Time in operation (air tools) in hours/year
220 workdays x 8 hours x 10 % rate of use = **176 h / year**

Costs for compressed air per 1 Nm^3/h
1 Nm/h = **1,25 cent**

Air consumption of air tools at a line pressure of approx. 8 – 10 bars
Air consumption of 58.4 Nm/h x 176 h/year x 1.25 cents per Nm/h = **128,48 € / year**

Compressed air consumption of air tools with 6 bar line regulator
Air consumption of 46.7 Nm x 176 h/year x 1.25 cents per Nm/h = **102,74 € /yea**r

The result of the calculations:
In this case an In-line regulator leads to a **total savings of 25,74 € / year per tool**, while prolonging the service life of the tools and protecting the tools from tampering.

In-line

Philosophy and overview

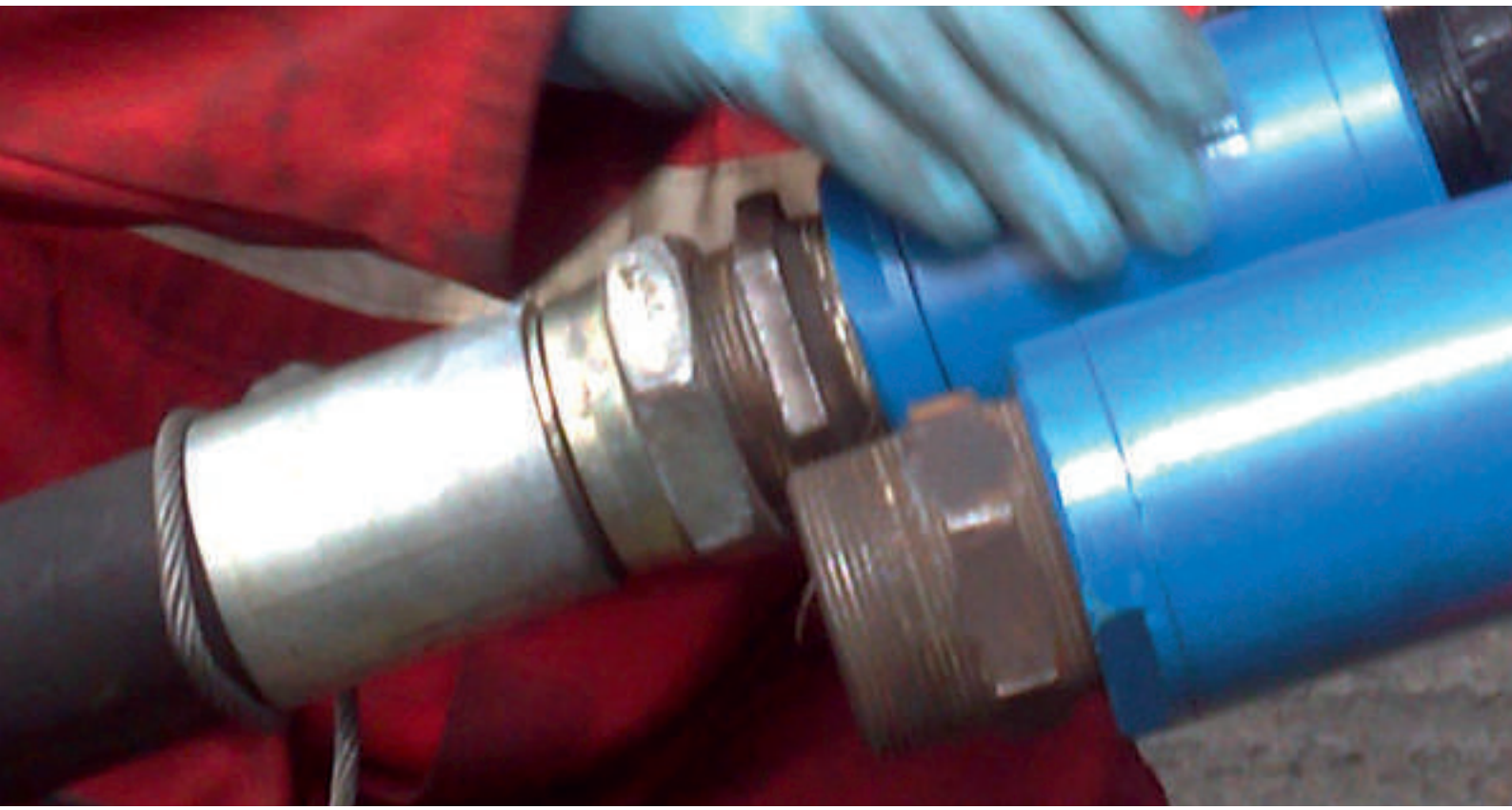
With Protect-Air's In-line series, use of compressed air becomes simpler, more effective and more economical. The In-line series enables the user to supply any compressed air tool with the ideal air pressure in terms of both purity and quality to provide optimal performance, energy efficiency and economy. The series is directly installed in the piping systems, pressure hoses or tools at the user's installation.

In-line regulator	SaveAir®	FluidReg®	EcoReg® - made of EcoBrass®/Cuphin®
Type of regulator	Diaphragm regulator	Diaphragm regulator	Diaphragm regulator
Application field	Compressed air systems and hoses	Various Fluids: Water, compressed air systems, other fluids. Also available for oxygen, nitrogen etc.	Conforms to the DIN 50930-6/FDA/EU Drinking Water Directive, food industry, medical industry, etc.
Mode of operation	Reduces air consumption and thus energy costs	Reduces air respectively water consumption and thus energy	Reduces air respectively water consumption and thus energy
Tamperproof	Yes	Yes	Yes
Pressure accuracy	Comparably high pressure accuracy	Comparably high pressure accuracy	Comparably high pressure accuracy
Automatic pressure relief	No	No	No

In-line regulator	ToolReg®	CartReg®
Type of regulator	Piston regulator	Piston regulator
Application field	Compressed air tools, especially nail-guns, tackers etc.	Compressed air tools, especially air blow guns
Mode of operation	Protection against accidents: no residual pressure remainsin the tool	Reduces air consumption and thus energy costs: prevents pressure surges
Tamperproof	Yes	Yes
Automatic pressure relief	Yes	No
Installation location	Suitable for use with valves and cylinders	Directly attached to tool

HoseGuard®

Airfuse-protection of personnel, machinery and equipment.



Protect your most important assets: your employees and their equipment.

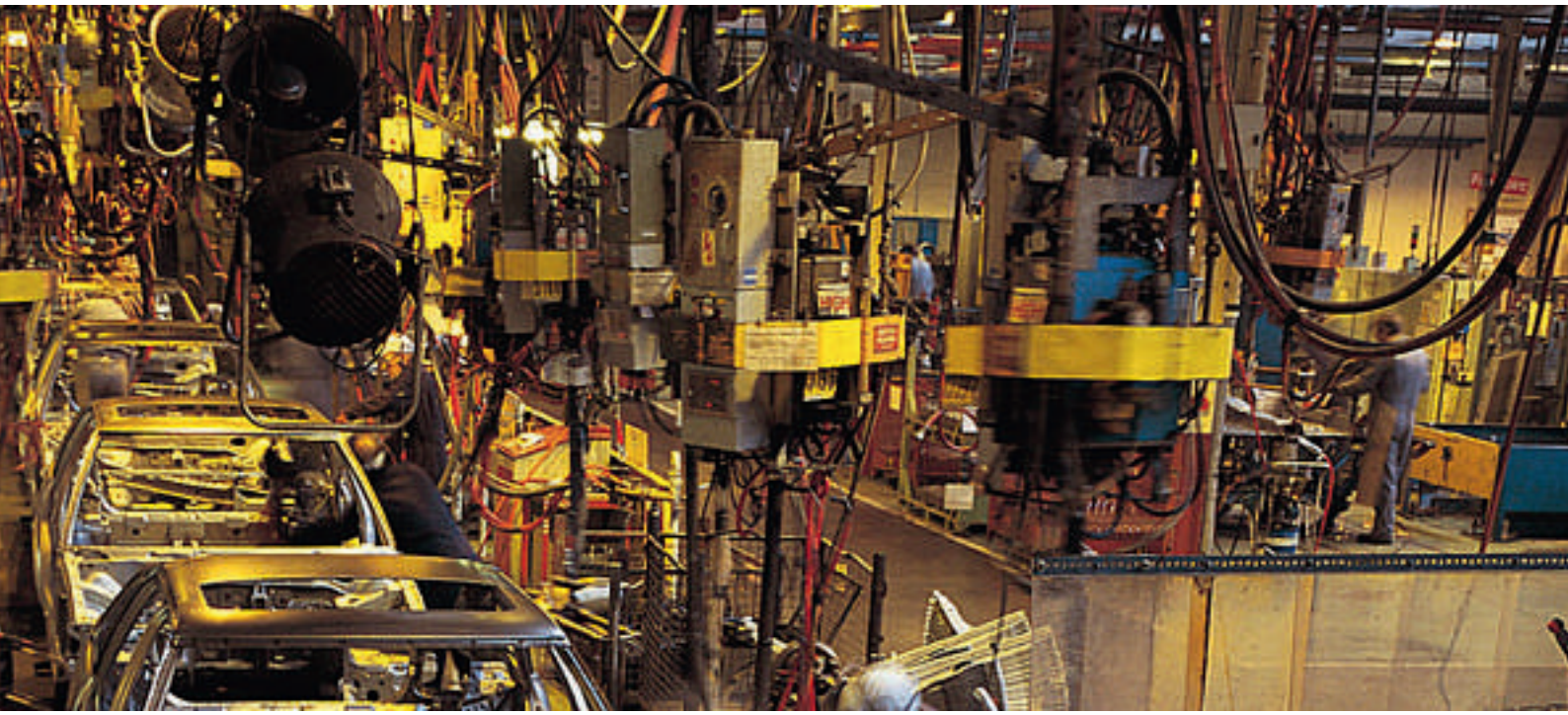
The HoseGuard® offers simple but efficient Protection to pneumatic systems in the event of a broken compressed air hose or pipe. The air supply is immediately shut off by the HoseGuard®, should the volume of air exceed a set value. This value is factory preset and is set to allow normal air consumption when using air tools.

Should the air consumption exceed the set value, e.g. the air line is severed, then the internal piston instantly shuts off the main flow. An integral bleed hole allows some air to flow though. This enables the line pressure to automatically reset the HoseGuard® once the main break is repaired.

* TÜV PROOF 12-0145
TÜV Food and Drug Approval: AZ 77318-2

HoseGuard®

Airfuse-protection of personnel, machinery and equipment.



Product Features:

- Protects personnel, machinery and plant
- Maintenance friendly – repair possible while plant is still working
- Economic: competitive pricing, no unnecessary repairs
- *Complies with EN ISO 4414-11.2010-§ 5.4.5.11.1 Machine Directive 2006/42/EG
- Complies with OSHA USA: 1926 Safety & Health Regulations for Construction Power-operated hand tools - 1926.302/b.7 OSHA regulations (Standards - 29 CFR)
- MSHA (Mine Safety and Health Administration) Regulations: 30 CFR Sections §56.13021 and 57.13021 High-pressure hose connection: 30 CFR Sections §57.1730 Compressed air; general; compressed air systems
- OHSAS 18001 – Occupational Health and Safety Standard
- Reliable and tamperproof, no adjustment necessary
- Light weight – compact size
- Compatible with all pneumatic systems
- Can be used as a flow blocker
- TÜV Approval No. 01-02-0145
- EU Registered Utility Model No. 0025 73 525
- USA/US Design Patent D 475, 126

Applications:

- Suitable for every application where compressed air is used
- Compressed air hoses and systems in chemical and pharmaceutical industries
- Cleanrooms
- Off - and On-Shore
- Medical Industries

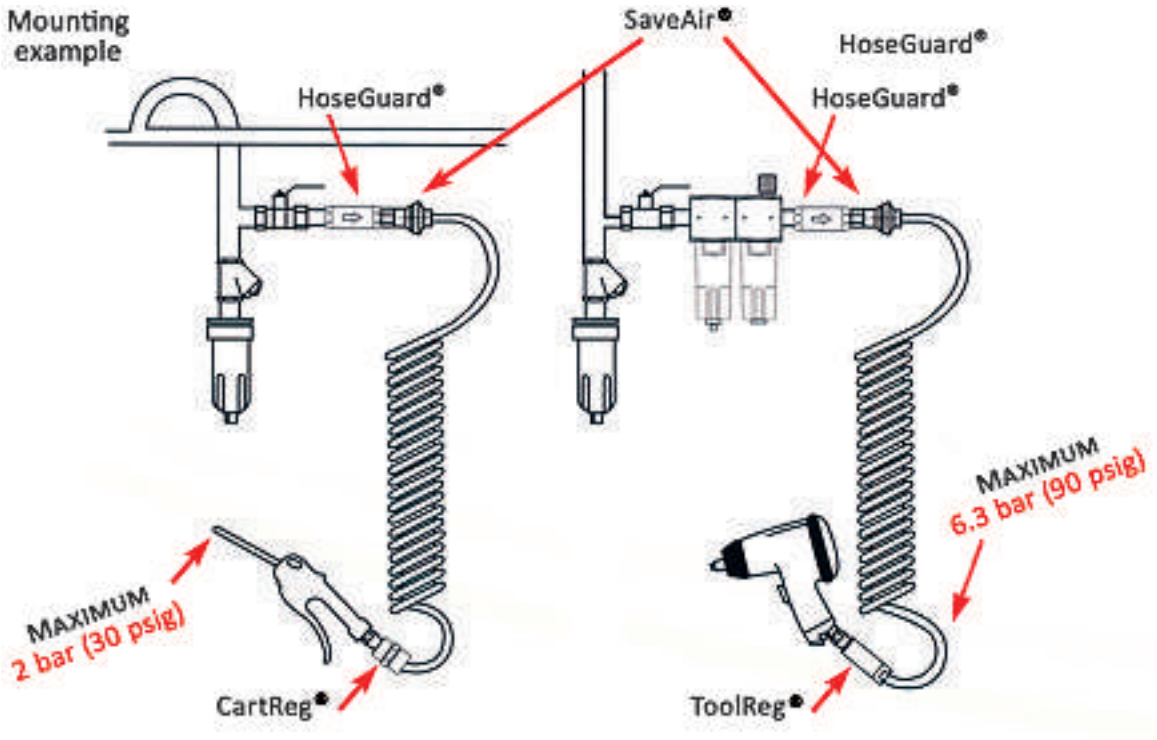
***) EN ISO 4414-11.2010-§5.4.5.11.1:**
Failure of hose assemblies and plastic piping:
When failure of a hose assembly or plastic piping constitutes a whiplash hazard, it shall be restrained or shielded by suitable means.

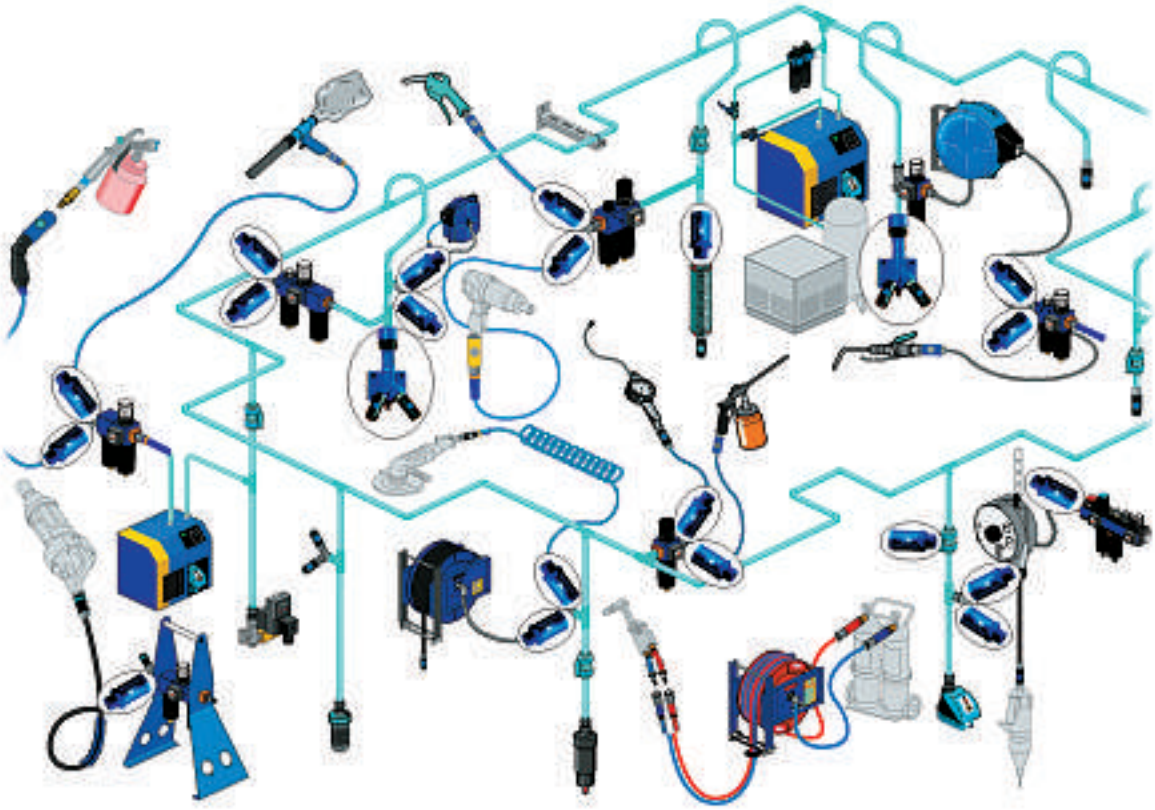
In addition an air fuse for compressed air shall be mounted

HoseGuard®

Airfuse-protection of personnel, machinery and equipment.

Installations example:





Technical Data and Ordering Information

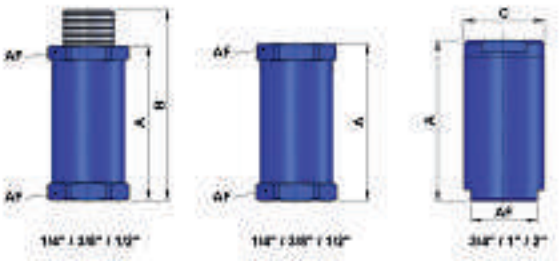
HoseGuard®

The HoseGuard® offers simple but effective protections to pneumatic systems in the event of a brocken compressed air hose or pipe. The air supply is immediately shut off by the HoseGuard®, should the volume of air exceed a set value. This value is factory preset and is set to allow normal air consumption when using air tools. Should the air consumption exceed a set value, e.g. the air is severed, then the internal piston instantly shuts off the main flow. An integral bleed hole allows some air to flow though. This enables the line pres-sure to automatically reset the HoseGuard® once the main break is repaired.

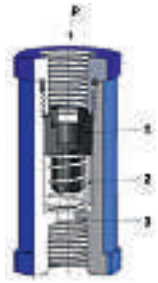
Thread Connection	Desription	Closing Point	Dimensions (mm)				Weight Gram	Maximum Inlet Pressure	Temperature Range	Material	Inlet Thread	Outlet Thread	Order Code	
		at 8 bar / 116 psig	A	B	C	AF							BSP	NPT
BSP/NPT	HoseGuard® Air Fuse Standard Aluminium													
1/4"	Standard	Approx. 660 Ltrs./Min (23 scfm/min)	49	-	-	22	33	18 bar 255 psig	-20 °C to 80°C (-4°F to 176°F)	Housing: Aluminium Other Parts: Nitrile Rubber, plastic, stainless steel	Female	Female	281A0211	281A1211
1/4"	Standard	Approx. 660 Ltrs./Min (23 scfm/min)	59	49	-	22	40				Male	Female	281A0221	281A1221
1/4"	Low Flow	Approx. 52 Ltrs./Min (1.8 scfm/min)	49	-	-	22	33				Female	Female	281Z0211-7-50	281Z1211-7-50
1/4"	Low Flow	Approx. 52 Ltrs./Min (1.8 scfm/min)	59	49	-	22	40				Male	Female	281Z0221-7-50	281Z1221-7-50
1/4"	High Flow	Approx. 1095 Ltrs./Min (38.6 scfm/min)	49	-	-	22	33				Female	Female	281Z0211-7-900	281Z1211-7-900
1/4"	High Flow	Approx. 1095 Ltrs./Min (38.6 scfm/min)	59	49	-	22	40				Male	Female	281Z0221-7-900	281Z1221-7-900
3/8"	Standard	Approx. 1380 Ltrs./Min (49 scfm/min)	58	-	-	27	60				Female	Female	281A0311	281A1311
3/8"	Standard	Approx. 1380 Ltrs./Min (49 scfm/min)	70	58	-	27	67				Male	Female	281A0321	281A1321
1/2"	Standard	Approx. 3180 Ltrs./Min (112 scfm/min)	65	-	-	30	78				Female	Female	281A0411	281A1411
1/2"	Standard	Approx. 3180 Ltrs./Min (112 scfm/min)	79	64	-	30	85				Male	Female	281A0421	281A1421
3/4"	Standard	Approx. 3992 Ltrs./Min (141 scfm/min)	76	-	36	30	107		-20 °C to 120°C (-4°F to 248°F)	Housing: Aluminium Other Parts: Nitrile Rubber, plastic, stainless steel	Female	Female	281A0511	281A1511
3/4"	High Flow	Approx. 5190 Ltrs./Min (183 scfm/min	76	-	36	30	107				Female	Female	281Z0511 High Flow	281Z1511 High Flow
1"	Standard	Approx. 5185 Ltrs./Min (182 scfm/min)	100	-	50	41	320	35 bar 500 psig			Female	Female	281A0611	281A1611
1"	High Flow	Approx. 7588 Ltrs./Min (268 scfm/min)	100	-	50	41	320				Female	Female	281Z0611 High Flow	281Z1611 High Flow
2"	Standard	Approx. 12915 Ltrs./Min (456 scfm/min)	130	-	80	70	830				Female	Female	281A0911	281A1911

Technical Data:

Pressure drop: Open: 0,05 01 bar / 07 - 1,5 psig
By closing: 0,3 bar / 5 psig



How the HoseGuard works:



P is the inlet.
The air passes the piston 1 and continues through the seat.
The air flow, passing the piston, is slowed down by means of some lengthwise grooves 3 on the outer side of the piston.
If the flow is too high, the air cannot pass the piston quickly enough, and the piston will be pressed against the spring 2 towards the seat.
If the value indicated is exceeded, e.g. if the hose suddenly breaks, the air supply is automatically shut off.

Technical Data and Ordering Information

HoseGuard® – Stainless Steel

Thread Connection	Desription	Closing Point	Dimensions (mm)				Weight Gram	Maximum Inlet Pressure	Temperature Range	Material	Inlet Thread	Outlet Thread	Order Code	
		at 8 bar / 116 psig	A	B	C	AF							BSP	NPT
BSP/NPT	HoseGuard® Air Fuse Stainless Steel - 316L Available on request, only													
1/4"	Standard	Approx. 660 Ltrs./Min (23 scfm/min)	50	-	19.5	16	67	18 bar 255 psig	-20 °C to 80°C (-4°F to 176°F)	Housing: Stainless Steel DIN 17440 Material No. 1.4404 Piston:POM-Polyoxymethylene, Kepital F20-03, Spring: Stainless Steel DIN 17224 Material No. 1.4310, O-Ring: Nitrile Rubber (NBR) / viton (FKM) Optional: Piston: Stainless Steel	Female	Female	281R0211	281R1211
1/4"	Standard	Approx. 660 Ltrs./Min (23 scfm/min)									Male	Female	281R0221	281R1221
1/4"	Low Flow	Approx. 52 Ltrs./Min (1.8 scfm/min)	50	-	19.5	16	67						281RZ0211-7-50	281RZ1211-7-50
1/4"	Low Flow	Approx. 52 Ltrs./Min (1.8 scfm/min)											281RZ0221-7-50	281RZ1221-7-50
1/4"	High Flow	Approx. 1095 Ltrs./Min (38.6 scfm/min)	50	-	19.5	16	67						281RZ0211-7-970	281RZ1211-7-970
1/4"	High Flow	Approx. 1095 Ltrs./Min (38.6 scfm/min)											281RZ0221-7-970	281RZ1221-7-970
3/8"	Standard	Approx. 1380 Ltrs./Min (49 scfm/min)		-							Female	Female	281R0311	281R1311
3/8"	Standard	Approx. 1380 Ltrs./Min (49 scfm/min)									Male	Female	281R0321	281R1321
1/2"	Standard	Approx. 3180 Ltrs./Min (112 scfm/min)	67		30	25	192				Female	Female	281R0411	281R1411
1/2"	Standard	Approx. 3180 Ltrs./Min (112 scfm/min)									Male	Female	281R0421	281R1421
3/4"	Standard	Approx. 3992 Ltrs./Min (141 scfm/min)							-20 °C to 120°C (-4°F to 248°F)	Housing: Stainless Steel 316 L Piston:Stainless Steel 316L	Female	Female	281R0511	281R1511
3/4"	High Flow	Approx. 5190 Ltrs./Min (183 scfm/min									Female	Female	281RZ0511 High Flow	281RZ1511 High Flow
1"	Standard	Approx. 5185 Ltrs./Min (182 scfm/min)	100	-	50	41	912	35 bar 500 psig			Female	Female	281R0611	281R1611
1"	High Flow	Approx. 7588 Ltrs./Min (268 scfm/min)	100	-	50	41	912				Female	Female	281RZ0611 High Flow	281RZ1611 High Flow
2"	Standard	Approx. 12915 Ltrs./Min (456 scfm/min)	130	-	80	70	2215				Female	Female	281R0911	281R1911

Technical Data:

Pressure drop: Open: 0,05 01 bar / 07 - 1,5 psig
By closing: 0,3 bar / 5 psig

Important Information:

All the following measurement values (flow for closing function) apply for a HoseGuard® (hose breakage safety device) charged with the appropriate pressure P1 and with a free Pa outlet.
If a component is fitted after the HoseGuard® which reduces the flow performance (e.g. linkage, screw fitting, hose etc.), it is possible that the required flow for the de-fined closing point is no longer attained and that the HoseGuard® will not close.
In this case the application must be appropriately tested. It is possible that another component may have to be selected after the HoseGuard®, or a smaller HoseGuard®, depending on the test result.

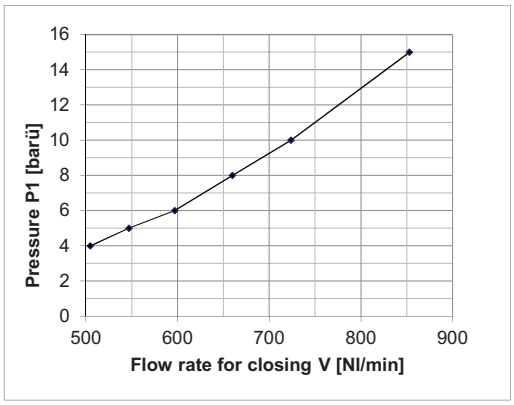
Important Information

All the following measurement values (flow for closing function) apply for a HoseGuard® (hose breakage safety device) charged with the appropriate pressure P1 and with a free Pa outlet.
If a component is fitted after the HoseGuard® which reduces the flow performance (e.g. linkage, screw fitting, hose etc.), it is possible that the required flow for the defined closing point is no longer attained and that the HoseGuard® will not close.
In this case the application must be appropriately tested. It is possible that another component may have to be selected after the HoseGuard®, or a smaller HoseGuard®, depending on the test result.

HoseGuard 1/4"

Flow measurement according to DIN EN 60534
Air flow rate for closing

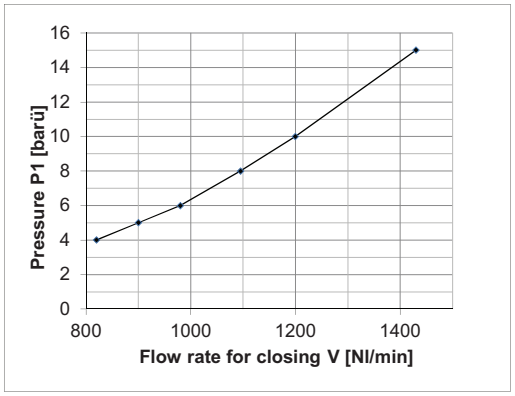
p1	Dp	T	V
(barü)	(bar)	(K)	(Nl/min)
15	0.24	287	853
10	0.24	287	724
8	0.24	287	660
6	0.23	288	597
5	0.23	288	547
4	0.23	288	505



HoseGuard 1/4" High Flow

Flow measurement according to DIN EN 60534
Air flow rate for closing

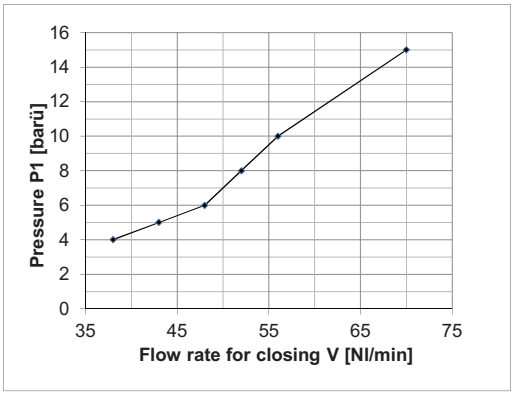
p1	Dp	T	V
(barü)	(bar)	(K)	(Nl/min)
15	0.7	291	1430
10	0.7	291	1200
8	0.7	291	1095
6	0.7	291	980
5	0.6	292	900
4	0.6	292	820



HoseGuard 1/4" Low Flow

Flow measurement according to DIN EN 60534
Air flow rate for closing

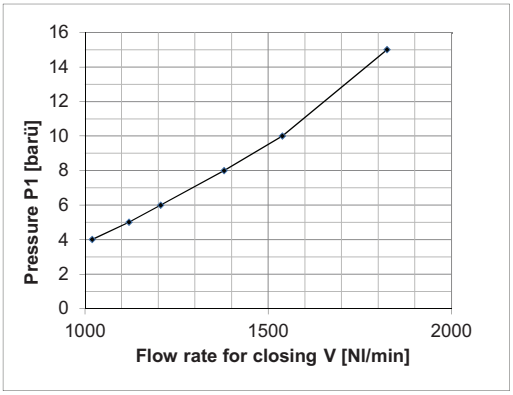
p1	Dp	T	V
(barü)	(bar)	(K)	(Nl/min)
15	0	289	70
10	0	289	56
8	0	289	52
6	0	289	48
5	0	289	43
4	0	289	38



HoseGuard 3/8"

Flow measurement according to DIN EN 60534
Air flow rate for closing

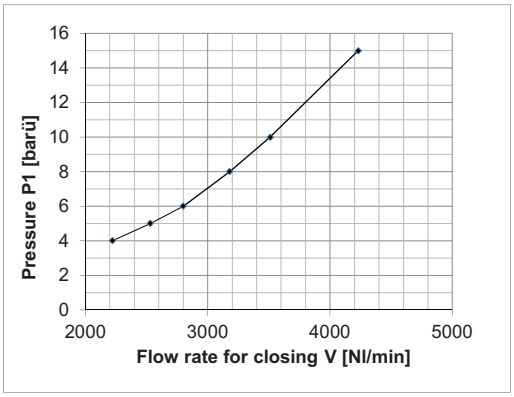
p1	Dp	T	V
(barü)	(bar)	(K)	(Nl/min)
15	0.2	287	1824
10	0.21	287	1539
8	0.21	287	1380
6	0.22	288	1207
5	0.21	288	1120
4	0.21	288	1020



HoseGuard 1/2"

Flow measurement according to DIN EN 60534
Air flow rate for closing

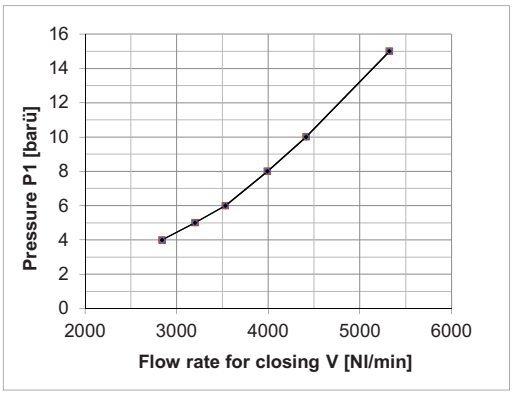
p1	Dp	T	V
(barü)	(bar)	(K)	(Nl/min)
15	0.41	287	4230
10	0.42	287	3510
8	0.42	287	3180
6	0.44	287	2800
5	0.44	287	2530
4	0.42	287	2220



HoseGuard 3/4"

Flow measurement according to DIN EN 60534
Air flow rate for closing

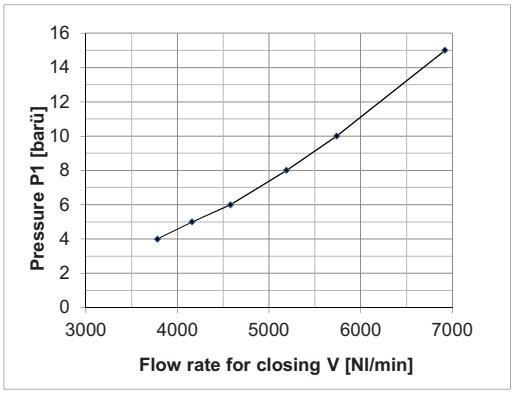
p1	Dp	T	V
(barü)	(bar)	(K)	(Nl/min)
15	0.2	287	5322
10	0.2	287	4412
8	0.2	287	3992
6	0.2	287	3533
5	0.2	287	3200
4	0.21	287	2840



HoseGuard 3/4" High Flow

Flow measurement according to DIN EN 60534
Air flow rate for closing

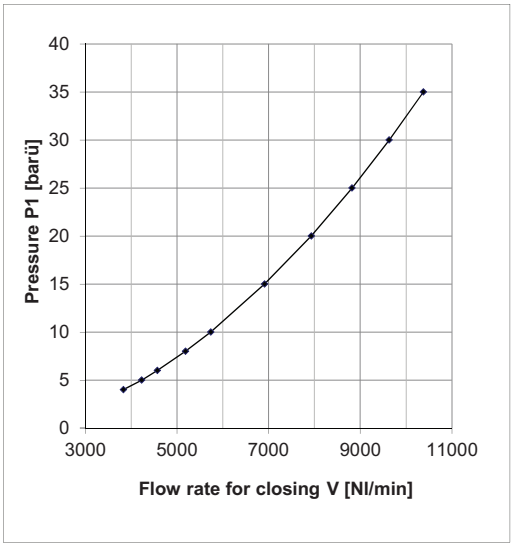
p1	Dp	T	V
(barü)	(bar)	(K)	(Nl/min)
15	0.27	284	6920
10	0.27	284	5738
8	0.27	284	5190
6	0.27	284	4580
5	0.26	284	4160
4	0.27	284	3780



HoseGuard 1"

Flow measurement according to DIN EN 60534
Air flow rate for closing

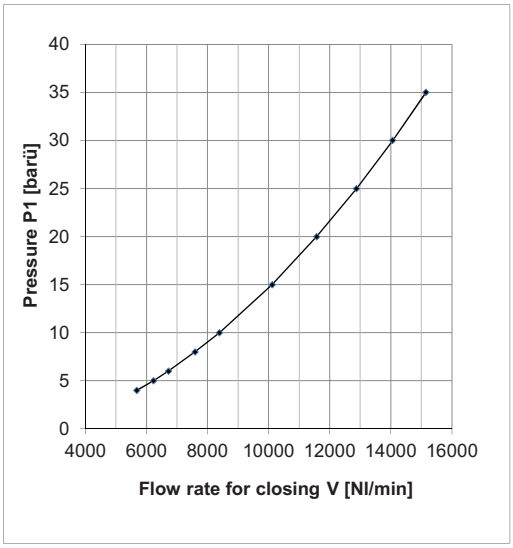
p1	Dp	T	V
(barü)	(bar)	(K)	(Nl/min)
35	0.17	286	10380
30	0.17	286	9632
25	0.17	286	8821
20	0.17	286	7928
15	0.17	286	6910
10	0.17	286	5735
8	0.17	286	5185
6	0.17	286	4570
5	0.17	286	4230
4	0.17	286	3830



HoseGuard 1" High Flow

Flow measurement according to DIN EN 60534
Air flow rate for closing

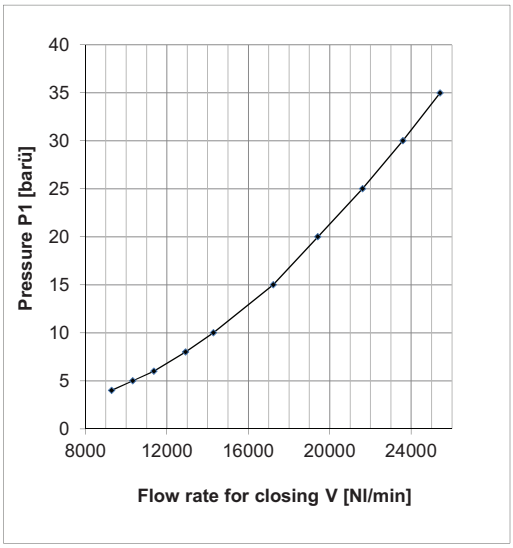
p1	Dp	T	V
(barü)	(bar)	(K)	(Nl/min)
35	0.28	286	15151
30	0.28	286	14060
25	0.28	286	12876
20	0.28	286	11572
15	0.28	285	10118
10	0.28	285	8390
8	0.28	285	7588
6	0.27	285	6720
5	0.28	285	6230
4	0.28	284	5680



HoseGuard 2"

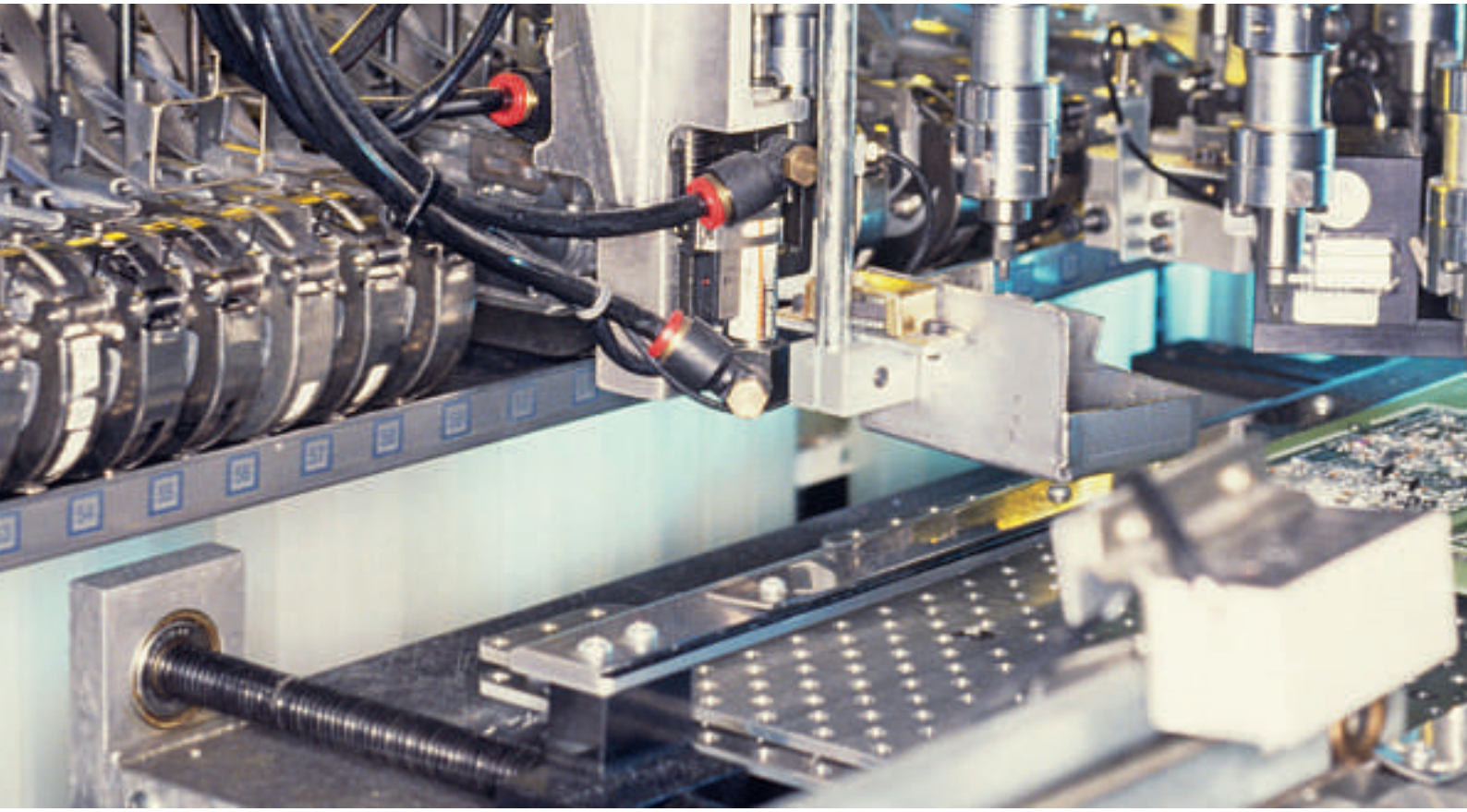
Flow measurement according to DIN EN 60534
Air flow rate for closing

p1	Dp	T	V
(barü)	(bar)	(K)	(Nl/min)
35	0.13	286	25420
30	0.13	286	23588
25	0.13	286	21603
20	0.13	286	19415
15	0.13	277	17219
10	0.13	277	14278
8	0.13	277	12915
6	0.13	277	11360
5	0.13	275	10320
4	0.13	272	9290



SaveAir®

In-line pre-set energy-saving miniature regulator.



The SaveAir® regulator is an independent diaphragm regulator that can be installed in every compressed air system. It supplies a constant, exact outlet pressure regardless of the input pressure. The pressure is factory-set and cannot be changed.

SaveAir® prevents *dynamic pressure waste*. This arises when the pressure and flow at the withdrawal point are unnecessarily higher than those specified by the manufacturer to achieve the desired function. *Dynamic pressure waste* is extremely costly, a waste of energy that may be found throughout industry.

SaveAir®

In-line pre-set energy-saving miniature regulator.

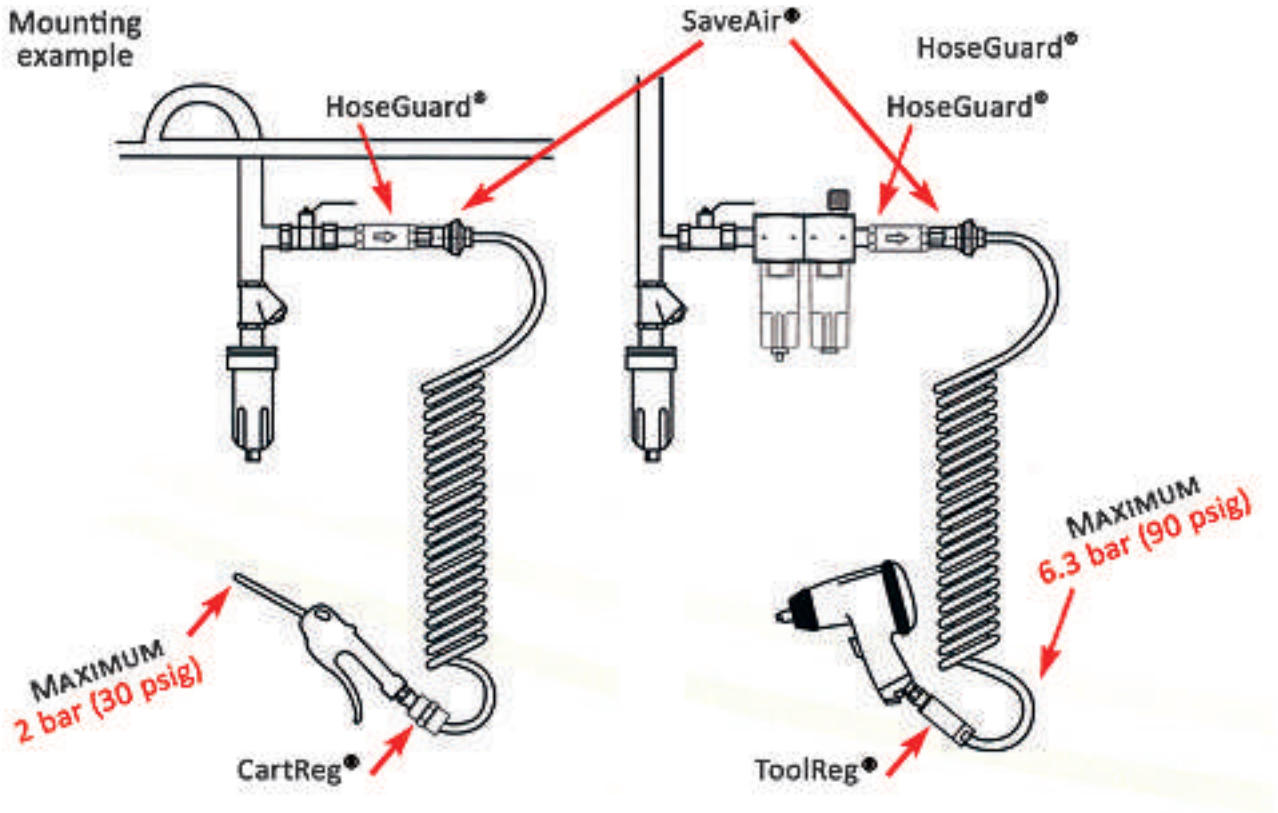
Product Benefits:

- Supplies tools exclusively with the specified pressure
- No pressure gauge needed
- Prevents compressed air wastage
- Saves energy – reduces costs
- Highly reliable
- Locked to prevent pressure change – tamper proof
- Small and compact
- Increases tool service life

Applications:

- Piping and compressed air systems
- Compressed air used in automation for actuation
- Control, feeding or transportation
- Pick and place units in automatic assembly systems

Installation example:



Technical Data and Ordering Information

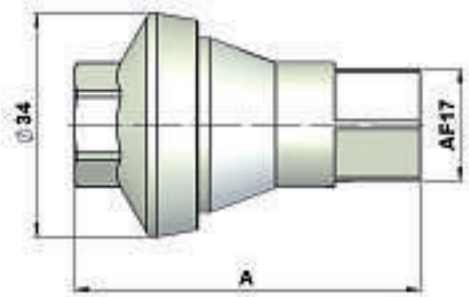
SaveAir®

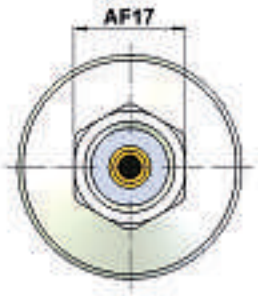
Installation: The regulator ensures that a constant pressure is always maintained, despite the normal pressure fluctuations in a system. To avoid unnecessary loss of pressure in long pipes or hoses, the regulator has to be mounted as close as possible to the point of consumption.

Medium: Compressed Air

Thread Connection	Outlet Pressure	Tolerances* (at 10 ltrs. Min)	Flow Ltrs./min - scfm At 12 bar/174 psig - Ltrs./Min. Δp:0,5 bar / 7 psig	Dimensions (mm) A	Dimensions (mm) Across Flat	Weight Gram	Maximum Inlet Pressure	Temperature Range	Material	Order Code
BSP	**1/4 BSP SaveAir female-female**									
1/4	1 bar	+/- 0,3 bar / 4.35 psig	400 / 14,2	52	17	80	18 bar 255 psig	0°C to 60°C 32°F to 140°F	Housing: Zinc Diaphragm: NBR Piston: Brass Spring: Stainless Steel, O-Ring: Nitrile Rubber, Valve Seat: PPH	231A0210
1/4	1.5 bar	+/- 0,3 bar / 4.35 psig	400 / 14,2							231A0215
1/4	2 bar	+/- 0,3 bar / 4.35 psig	600 / 21.3							231A0220
1/4	2.5 bar	+/- 0,3 bar / 4.35 psig	600 / 21.3							231A0225
1/4	3 bar	+/- 0,3 bar / 4.35 psig	700 / 24.7							231A0230
1/4	3.5 bar	+/- 10%	700 / 24.7							231A0235
1/4	4 bar	+/- 10%	700 / 24.7							231A0240
1/4	4.5 bar	+/- 10%	700 / 24.7							231A0245
1/4	5 bar	+/- 10%	700 / 24.7							231A0250
1/4	5.5 bar	+/- 10%	700 / 24.7							231A0255
1/4	6 bar	+/- 10%	800 / 28.3							231A0260
1/4	6,5 bar	+/- 10%	800 / 28.3							231A0265
1/4	7 bar	+/- 10%	800 / 28.3							231A0270
1/4	8 bar	+/- 10%	800 / 28.3							231A0280
NPT	**1/4" NPT SaveAir female-female**									
1/4"	15 psig	+/- 0,3 bar / 4.35 psig	400 / 14,2	52	17	80	18 bar 255 psig	0°C to 60°C 32°F to 140°F	Housing: Zinc Diaphragm: NBR Piston: Brass Spring: Stainless Steel, O-Ring: Nitrile Rubber, Valve Seat: PPH	231AS1215
1/4"	23 psig	+/- 0,3 bar / 4.35 psig	400 / 14,2							231AS1223
1/4"	30 psig	+/- 0,3 bar / 4.35 psig	600 / 21.3							231AS1230
1/4"	35 psig	+/- 0,3 bar / 4.35 psig	600 / 21.3							231AS1235
1/4"	45 psig	+/- 0,3 bar / 4.35 psig	700 / 24.7							231AS1245
1/4"	50 psig	+/- 10%	700 / 24.7							231AS1250
1/4"	60 psig	+/- 10%	700 / 24.7							231AS1260
1/4"	65 psig	+/- 10%	700 / 24.7							231AS1265
1/4"	75 psig	+/- 10%	700 / 24.7							231AS1275
1/4"	80 psig	+/- 10%	700 / 24.7							231AS1280
1/4"	90 psig	+/- 10%	800 / 28.3							231AS1290
1/4"	95 psig	+/- 10%	800 / 28.3							231AS1295
1/4"	100 psig	+/- 10%	800 / 28.3							231AS12100
1/4"	120 psig	+/- 10%	800 / 28.3							231AS12120
On request:	**Other pre-set pressures / FPM diaphragm**									

*Tolerances Test medium: Air, Pe = 6 bar/90 psig (at Pa <= 4 bar/60 psig), 10 Nl/Min / 0,35 scfm
Test medium: Air, Pe = 10 bar/150 psig (at Pa >= 4 bar/60 psig), 10 Nl/Min / 0,35 scfm





ToolReg®

In-line pre-set regulator with autom tic secondary ressure relief.

Don't let overpressure ruin your performance!

Overpressure in air tools leads to earlier wear and tear and break down. The result is expensive production stops and waste of energy.

The ToolReg® regulator is an independent piston regulator that can be mounted on any pneumatic tool or installed in every compressed air system. It supplies a constant, exact outlet pressure regardless of the inlet pressure. The pressure is factory-set and cannot be changed.

The ToolReg® prevents *dynamic pressure waste*. This arises when the pressure and flow at the withdrawal point are unnecessarily higher than those specified by the manufacturer to achieve the desired function. *Dynamic pressure waste* is extremely costly, a waste of energy that may be found throughout industry.

For pneumatic tools the ToolReg® must be mounted directly on the tool in order to ensure correct pressure, so that possible pressure drops in hoses, tubes etc. do not influence the pressure on the tool itself. Furthermore, the residual pressure in the tool is relieved when it is removed from the compressed air supply line, preventing unintentional actuation of the tool with disastrous consequences.

Pre-set regulators are an economical path to achieve the ideal pressure in the tool (please

ToolReg®

In-line pre-set regulator with automatic secondary pressure relief.

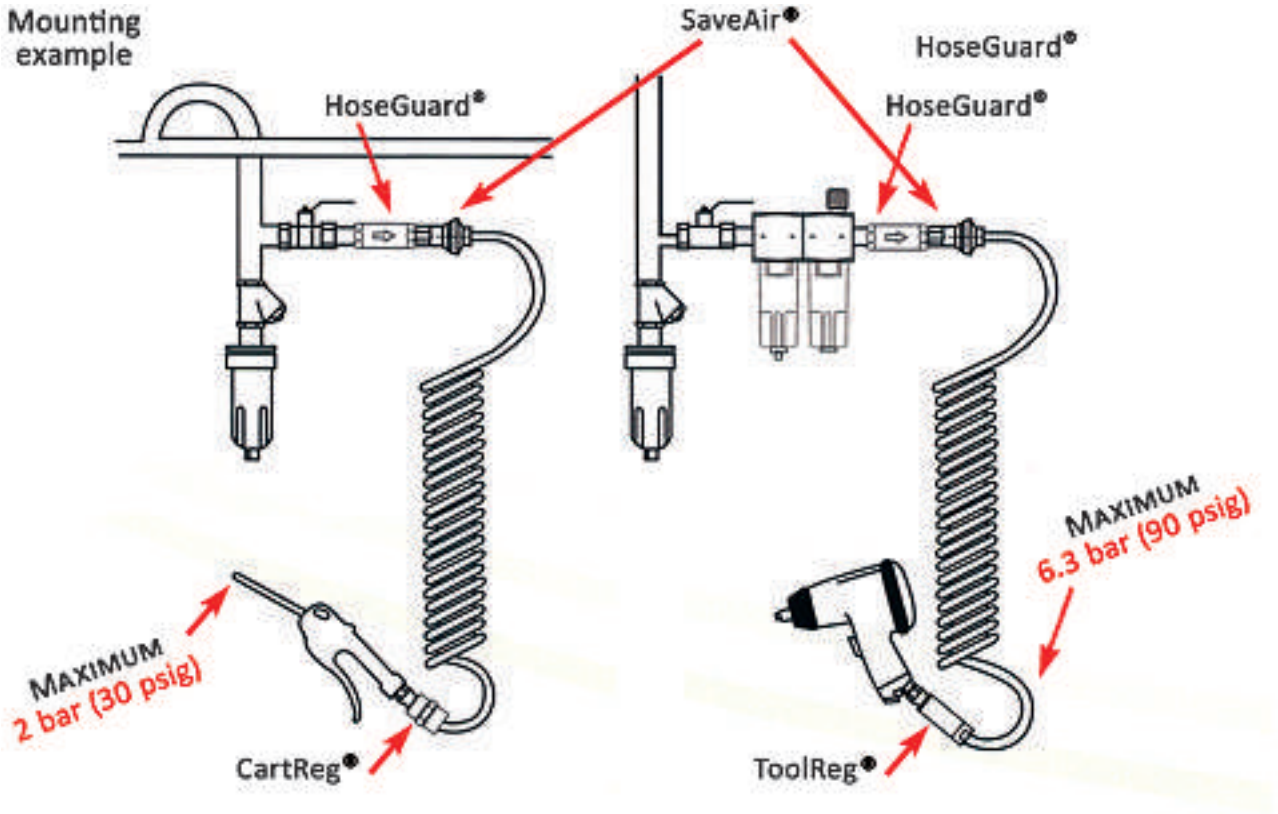
Product Benefits

- Automatic secondary pressure relief
- Protection guaranteed – no residual pressure in the tool
- High flow performance (0 – 3.000 Ltrs./Min/0 – 105 scfm)
- High pressure performance (P1 – inlet pressure up to 25 bar/355 psig)
- Corrosion resistant
- Supplies tools exclusively with the specified pressure
- No pressure gauge needed
- Prevents compressed air waste
- Saves energy – reduces costs
- Highly reliable
- Locked to prevent pressure change – tamper proof
- Light weight – small and compact size
- Increases tool service life

Applications:

- In situations where small amounts of compressed air are required but the pressure and flow must be stringently regulated
- Pneumatic tools
- Particular nailers, tackers etc.
- Furniture, construction and precision engineering trades
- Piping and compressed air systems
- Compressed air used in automation for actuation
- Control, feeding or transportation
- Pick and place units in automatic assembly systems

Installation example:



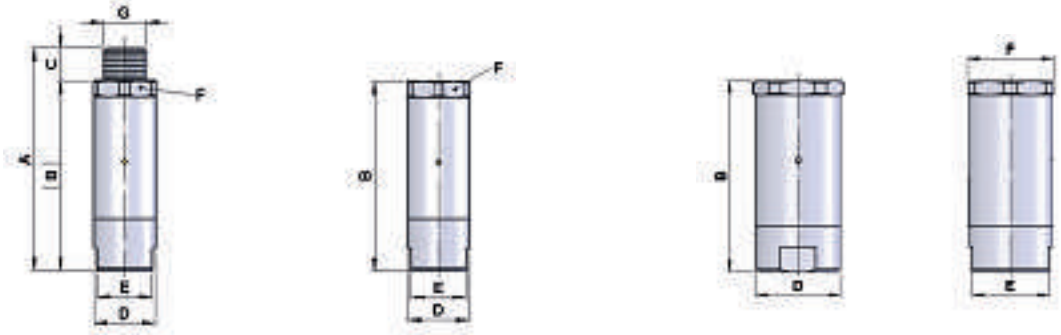
Technical Data and Ordering Information

ToolReg® – In-Line Pre Set Regulator

Installation: The regulator ensures that a constant pressure is always maintained, despite the normal pressure fluctuations in a system. The regulator is intended for use with compressed air or neutral gases. The ToolReg® must be mounted directly on the pneumatic tool in order to ensure correct pressure, so that possible pressure drops in hoses, tubes etc. do not influence the pressure on the tool it self. Furthermore, the residual pressure in the tools is relieved when it is removed from the compressed air supply line, pre-venting unintentional actuation of the tool with disastrous consequences.

Thread Connection	Outlet Pressure	Tolerances* (at 10 ltrs. Min)	Flow Ltrs./min - scfm (Pe = 12bar/180 psig, Δp 0.5 bar/7,5 psig)	Dimensions (mm)						Weight Gram	Maximum Inlet Pressure	Temperature Range	Material	Order Code
				A	B	C	D	E	F					
BSP	1/4" TOOLREG female-female													
1/4	2 bar	+/- 0,3 bar / 4.35 psig	500 / 17	-	59	-	19	16	19	33	25 bar 365psig	0 °C to 80°C -32°F to 176°F	Housing: Aluminium other parts: Stainless Steel, Nitrile Rubber, Brass, PPH	232A0220
1/4	3 bar	+/- 0,3 bar / 4.35 psig	550 / 19	-	59	-	19	16	19	33				232A0230
1/4	4 bar	+/- 10%	600 / 21	-	59	-	19	16	19	33				232A0240
1/4	5 bar	+/- 10%	650 / 23	-	59	-	19	16	19	33				232A0250
1/4	6 bar	+/- 10%	700 / 25	-	59	-	19	16	19	33				232A0260
1/4	7 bar	+/- 10%	700 / 25	-	59	-	19	16	19	33				232A0270
1/4	8 bar	+/- 10%	800 / 28	-	59	-	19	16	19	33				232A0280
NPT	1/4" TOOLREG female-female													
1/4"	2 bar / 30 psig	+/- 0,3 bar / 4.35 psig	500 / 17	-	59	-	19	16	19	33	25 bar 365psig	0 °C to 80°C -32°F to 176°F	Housing: Aluminium other parts: Stainless Steel, Nitrile Rubber, Brass, PPH	232AS1230
1/4"	3 bar / 45 psig	+/- 0,3 bar / 4.35 psig	550 / 19	-	59	-	19	16	19	33				232AS1245
1/4"	4 bar / 60 psig	+/- 10%	600 / 21	-	59	-	19	16	19	33				232AS1260
1/4"	5 bar / 75 psig	+/- 10%	650 / 23	-	59	-	19	16	19	33				232AS1275
1/4"	6 bar / 90 psig	+/- 10%	700 / 25	-	59	-	19	16	19	33				232AS1290
1/4"	7 bar / 105 psig	+/- 10%	700 / 25	-	59	-	19	16	19	33				232AS12105
1/4"	8 bar / 120 psig	+/- 10%	800 / 28	-	59	-	19	16	19	33				232AS12120
BSP	1/4" TOOLREG female-male													
1/4	2 bar	+/- 0,3 bar / 4.35 psig	500 / 17	69	59	10	19	16	19	40	25 bar 365psig	0 °C to 80°C -32°F to 176°F	Housing: Aluminium other parts: Stainless Steel, Nitrile Rubber, Brass, PPH	232F0220
1/4	3 bar	+/- 0,3 bar / 4.35 psig	550 / 19	69	59	10	19	16	19	40				232F0230
1/4	4 bar	+/- 10%	600 / 21	69	59	10	19	16	19	40				232F0240
1/4	5 bar	+/- 10%	650 / 23	69	59	10	19	16	19	40				232F0250
1/4	6 bar	+/- 10%	700 / 25	69	59	10	19	16	19	40				232F0260
1/4	7 bar	+/- 10%	700 / 25	69	59	10	19	16	19	40				232F0270
1/4	8 bar	+/- 10%	800 / 28	69	59	10	19	16	19	40				232F0280
NPT	1/4" TOOLREG female-male													
1/4"	2 bar / 30 psig	+/- 0,3 bar / 4.35 psig	500 / 17	69	59	-	19	16	19	40	25 bar 365psig	0 °C to 80°C -32°F to 176°F	Housing: Aluminium other parts: Stainless Steel, Nitrile Rubber, Brass, PPH	232FS1230
1/4"	3 bar / 45 psig	+/- 0,3 bar / 4.35 psig	550 / 19	69	59	-	19	16	19	40				232FS1245
1/4"	4 bar / 60 psig	+/- 10%	600 / 21	69	59	-	19	16	19	40				232FS1260
1/4"	5 bar / 75 psig	+/- 10%	650 / 23	69	59	-	19	16	19	40				232FS1275
1/4"	6 bar / 90 psig	+/- 10%	700 / 25	69	59	-	19	16	19	40				232FS1290
1/4"	7 bar / 105 psig	+/- 10%	700 / 25	69	59	-	19	16	19	40				232FS12105
1/4"	8 bar / 120 psig	+/- 10%	800 / 28	69	59	-	19	16	19	40				232FS12120
BSP	3/8" TOOLREG female-female													
3/8	2 bar	+/- 0,3 bar / 4.35 psig	1400 / 49	-	63	-	25	22	25	60	25 bar 365psig	- 0 °C to 80°C -32°F to 176°F	Housing: Aluminium other parts: Stainless Steel, Nitrile Rubber, Brass, PPH	232A0320
3/8	3 bar	+/- 0,3 bar / 4.35 psig	1400 / 49	-	63	-	25	22	25	60				232A0330
3/8	4 bar	+/- 10%	1800 / 63	-	63	-	25	22	25	60				232A0340
3/8	5 bar	+/- 10%	1800 / 63	-	63	-	25	22	25	60				232A0350
3/8	6 bar	+/- 10%	2200 / 77	-	63	-	25	22	25	60				232A0360
3/8	8 bar	+/- 10%	2600 / 92	-	63	-	25	22	25	60				232A0380
NPT	3/8" TOOLREG female-female													
3/8"	2 bar / 30 psig	+/- 0,3 bar / 4.35 psig	1400 / 49	-	63	-	25	22	25	60	25 bar 365psig	- 0 °C to 80°C -32°F to 176°F	Housing: Aluminium other parts: Stainless Steel, Nitrile Rubber, Brass, PPH	232AS1330
3/8"	3 bar / 45 psig	+/- 0,3 bar / 4.35 psig	1400 / 49	-	63	-	25	22	25	60				232AS1345
3/8"	4 bar / 60 psig	+/- 10%	1800 / 63	-	63	-	25	22	25	60				232AS1360
3/8"	5 bar / 75 psig	+/- 10%	1800 / 63	-	63	-	25	22	25	60				232AS1375
3/8"	6 bar / 90 psig	+/- 10%	2200 / 77	-	63	-	25	22	25	60				232AS1390
3/8"	8 bar / 120 psig	+/- 10%	2600 / 92	-	63	-	25	22	25	60				232AS13130
On request:	Version in stainless steel and other pre-set pressures													

*Tolerances Test medium: Air, Pe = 6 bar/90 psig (at Pa <= 4 bar/60 psig), 10 Nl/Min / 0,35 scfm
Test medium: Air, Pe = 10 bar/150 psig (at Pa >= 4 bar/60 psig), 10 Nl/Min / 0,35 scfm



Technical Data and Ordering Information

ToolReg® – In-Line Pre Set Regulator

Installation: The regulator ensures that a constant pressure is always maintained, despite the normal pressure fluctuations in a system. The regulator is intended for use with compressed air or neutral gases. The ToolReg® must be mounted directly on the pneumatic tool in order to ensure correct pressure, so that possible pressure drops in hoses, tubes etc. do not influence the pressure on the tool it self. Furthermore, the residual pressure in the tools is relieved when it is removed from the compressed air supply line, preventing unintentional actuation of the tool with disastrous consequences.

Thread Connection	Outlet Pressure	Tolerances* (at 10 ltrs. Min)	Flow Ltrs./min - scfm (Pe = 12bar/180 psig, Δp 0.5 bar/7.5 psig)	Dimensions (mm)						Weight Gram	Maximum Inlet Pressure	Temperature Range	Material	Order Code
				A	B	C	D	E	F					
BSP	**1/2" TOOLREG female-female**													
1/2	2 bar	+/- 0,3 bar / 4.35 psig	1400 /49	-	68	-	30	27	30	90	25 bar 365psig	- 0 °C to 80°C -32°F to 176°F	Housing: Aluminium other parts: Stainless Steel, Nitrile Rubber, Brass, PPH	232A0420
1/2	3 bar	+/- 0,3 bar / 4.35 psig	1400 /49	-	68	-	30	27	30	90				232A0430
1/2	4 bar	+/- 10%	1800 / 63	-	68	-	30	27	30	90				232A0440
1/2	5 bar	+/- 10%	1800 / 63	-	68	-	30	27	30	90				232A0450
1/2	6 bar	+/- 10%	2200 / 77	-	68	-	30	27	30	90				232A0460
1/2	8 bar	+/- 10%	2600 / 92	-	68	-	30	27	30	90				232A0480
NPT	**1/2" TOOLREG female-female**													
1/2"	2 bar / 30 psig	+/- 0,3 bar / 4.35 psig	1400 /49	-	68	-	30	27	30	90	25 bar 365psig	- 0 °C to 80°C -32°F to 176°F	Housing: Aluminium other parts: Stainless Steel, Nitrile Rubber, Brass, PPH	232AS1430
1/2"	3 bar / 45 psig	+/- 0,3 bar / 4.35 psig	1400 /49	-	68	-	30	27	30	90				232AS1445
1/2"	4 bar / 60 psig	+/- 10%	1800 / 63	-	68	-	30	27	30	90				232AS1460
1/2"	5 bar / 75 psig	+/- 10%	1800 / 63	-	68	-	30	27	30	90				232AS1475
1/2"	6 bar / 90 psig	+/- 10%	2200 / 77	-	68	-	30	27	30	90				232AS1490
1/2"	8 bar / 120 psig	+/- 10%	2600 / 92	-	68	-	30	27	30	90				232AS14140
BSP	**3/4" TOOLREG female-female**													
3/4	2 bar	+/- 0,3 bar / 4.35 psig		-	101.5	-	40	34	40	280	25 bar 365psig	- 0 °C to 80°C -32°F to 176°F	Housing: Aluminium other parts: Stainless Steel, Nitrile Rubber, Brass, PPH	232A0520
3/4	4 bar	+/- 10%		-	101.5	-	40	34	40	280				232A0540
3/4	6 bar	+/- 10%		-	101.5	-	40	34	40	280				232A0560
3/4	8 bar	+/- 10%		-	101.5	-	40	34	40	280				232A0580
NPT	**3/4" TOOLREG female-female**													
3/4"	2 bar / 30 psig	+/- 0,3 bar / 4.35 psig		-	101.5	-	40	34	40	280	25 bar 365psig	- 0 °C to 80°C -32°F to 176°F	Housing: Aluminium other parts: Stainless Steel, Nitrile Rubber, Brass, PPH	232AS1530
3/4"	4 bar / 60 psig	+/- 10%		-	101.5	-	40	34	40	280				232AS1560
3/4"	6 bar / 90 psig	+/- 10%		-	101.5	-	40	34	40	280				232AS1590
3/4"	8 bar / 120 psig	+/- 10%		-	101.5	-	40	34	40	280				232AS15120
BSP	**1" TOOLREG female-female AVAILABLE ON REQUEST ONLY**													
1	2 bar	+/- 0,3 bar / 4.35 psig									25 bar 365psig	- 0 °C to 80°C -32°F to 176°F	Housing: Aluminium other parts: Stainless Steel, Nitrile Rubber, Brass, PPH	232A0620
1	4 bar	+/- 10%												232A0640
1	6 bar	+/- 10%												232A0660
1	8 bar	+/- 10%												232A0680
NPT	**1" TOOLREG female-female AVAILABLE ON REQUEST ONLY**													
1"	2 bar / 30 psig	+/- 0,3 bar / 4.35 psig									25 bar 365psig	- 0 °C to 80°C -32°F to 176°F	Housing: Aluminium other parts: Stainless Steel, Nitrile Rubber, Brass, PPH	232AS1630
1"	4 bar / 60 psig	+/- 10%												232AS1660
1"	6 bar / 90 psig	+/- 10%												232AS1690
1"	8 bar / 120 psig	+/- 10%												232AS16120
On request:	**Version in stainless steel and other pre-set pressures**													

*Tolerances Test medium: Air, Pe = 6 bar/90 psig (at Pa <= 4 bar/60 psig), 10 Nl/Min / 0,35 scfm
Test medium: Air, Pe = 10 bar/150 psig (at Pa >= 4 bar/60 psig), 10 Nl/Min / 0,35 scfm

CartReg®

In-line pre-set regulator for air blow guns and pneumatic tools.

The CartReg® pre-set miniature is installed in the compressed air supply line. It is designed to meet OSHA (Occupational Safety & Health administration, USA) and other safety agency requirements for 2 bar/30 psig maximum pressure for pneumatic air guns.

The CartReg® can easily be threaded into any ¼» air blow gun and pneumatic tool and is an economical means to maintain the ideal pressure requirements.

ATEX

CartReg®

In-line pre-set regulator for air blow guns and pneumatic tools.

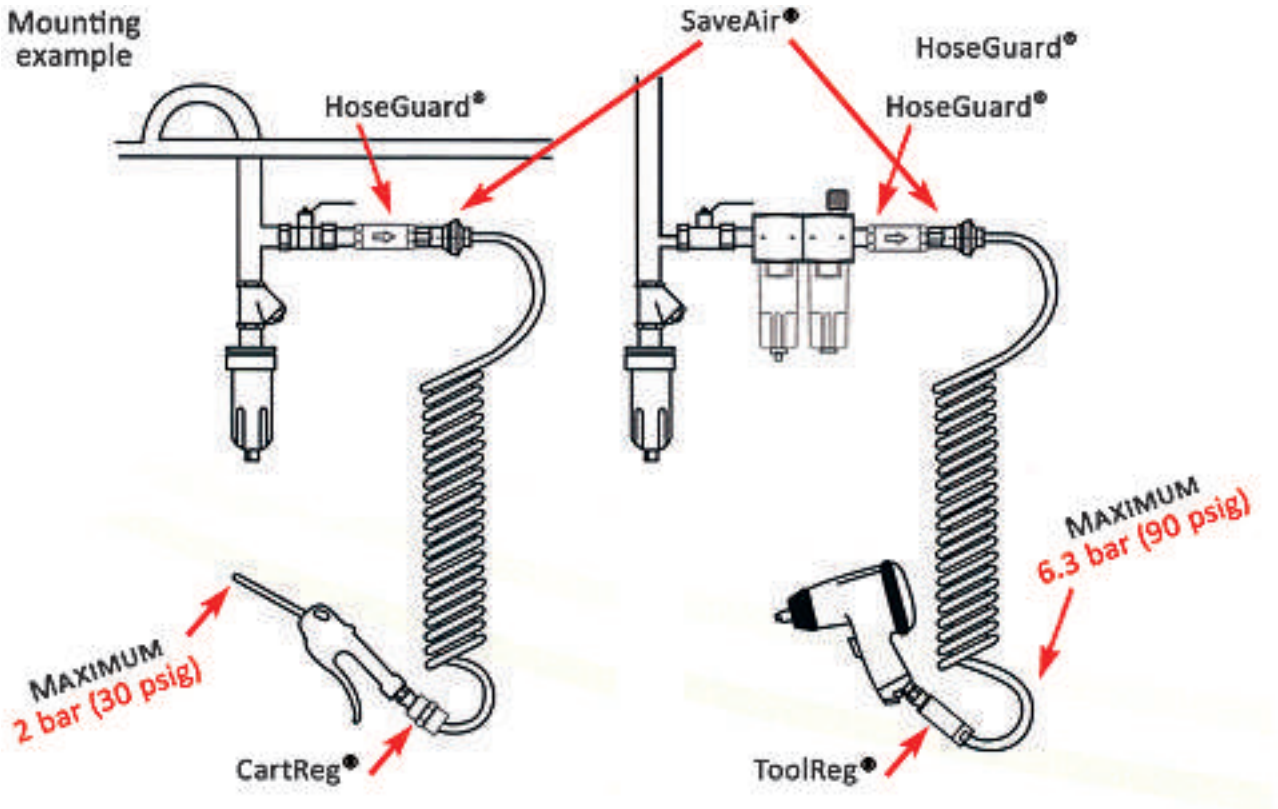
Product Benefits:

- Safety: protects personnel, machinery and plant by avoiding pressure surges
- Ensures optimal air tool efficiency by supplying a constant pre-set pressure
- Prevents compressed air waste limits excessive compressed air consumption = reducing energy costs
- Easy assembly: can be integrated into any ¼» pneumatic tool
- High-pressure performance (P1= inlet pressure up to 12 bar/174 psig Saves energy – reduces costs
- High flow performance (up to 350 Ltrs./ Min -12,5 scfm)
- Lightweight (14 g) and compact (Hexagon 14 mm, length 24 mm)
- Locked to prevent pressure change – tamper proof
- Competitively priced
- Increases tool service life

Applications:

- Pneumatic air guns
- Pneumatic tools
- Pick and place units in automatic assembly systems

Installation example:



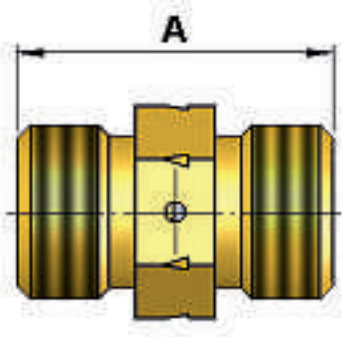
Technical Data and Ordering Information

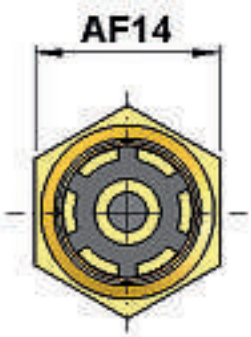
CartReg® – Miniature – In-Line pre set regulator

Installation: The regulator ensures that a constant pressure is always maintained, despite the normal pressure fluctuations in a system. The regulator is intended for use with compressed air or neutral gases. The CartReg® must be mounted directly on the pneumatic blow gun or tool in order to ensure correct pressure, so that possible pressure drops in hoses, tubes etc. do not influence the pressure on the tool it self.

Thread Connection	Outlet Pressure	Tolerances* (at 10 ltrs. Min)	Flow Ltrs./min - scfm (Pe = 12bar/174 psig Δp:0,5 bar / 7 psig)	Dimensions (mm)		Weight Gram	Maximum Inlet Pressure	Temperature Range	Material	Order Code
				A	Across Flat					
BSP	**1/4 BSP CartReg male-male**									
1/4	2 bar	+/- 0,6 bar (Pe 6 bar)	350 / 12.5	24 mm	14 mm	16	12 bar 174 psig	- 20 °C to + 60°C (-4°F to 140°F)	Housing: Brass other parts: Steel, Stainless Steel, NBR,	**233G0220**
1/4	4 bar	+/- 0,8 bar(Pe 6 bar)								**233G0240**
1/4	6 bar	+/- 1 bar (Pe 10 bar)								**233G0260**
NPT	**1/4" NPT CartReg male-male**									
1/4"	2 bar / 30 psig	+/- 8,7 psig (Pe 87 psig)	350 / 12.5	28 mm	14 mm	18	12 bar 174 psig	- 20 °C to + 60°C (-4°F to 140°F)	Housing: Brass other parts: Steel, Stainless Steel, NBR,	**233S1230**
1/4"	4 bar / 60 psig	+/- 11,6 psig (Pe 87 psig)								**233S1260**
1/4"	6 bar / 90 psig	+/- 14,5 psig (Pe 145 psig)								**233S1290**
On request:	**Other pre-set pressures**									

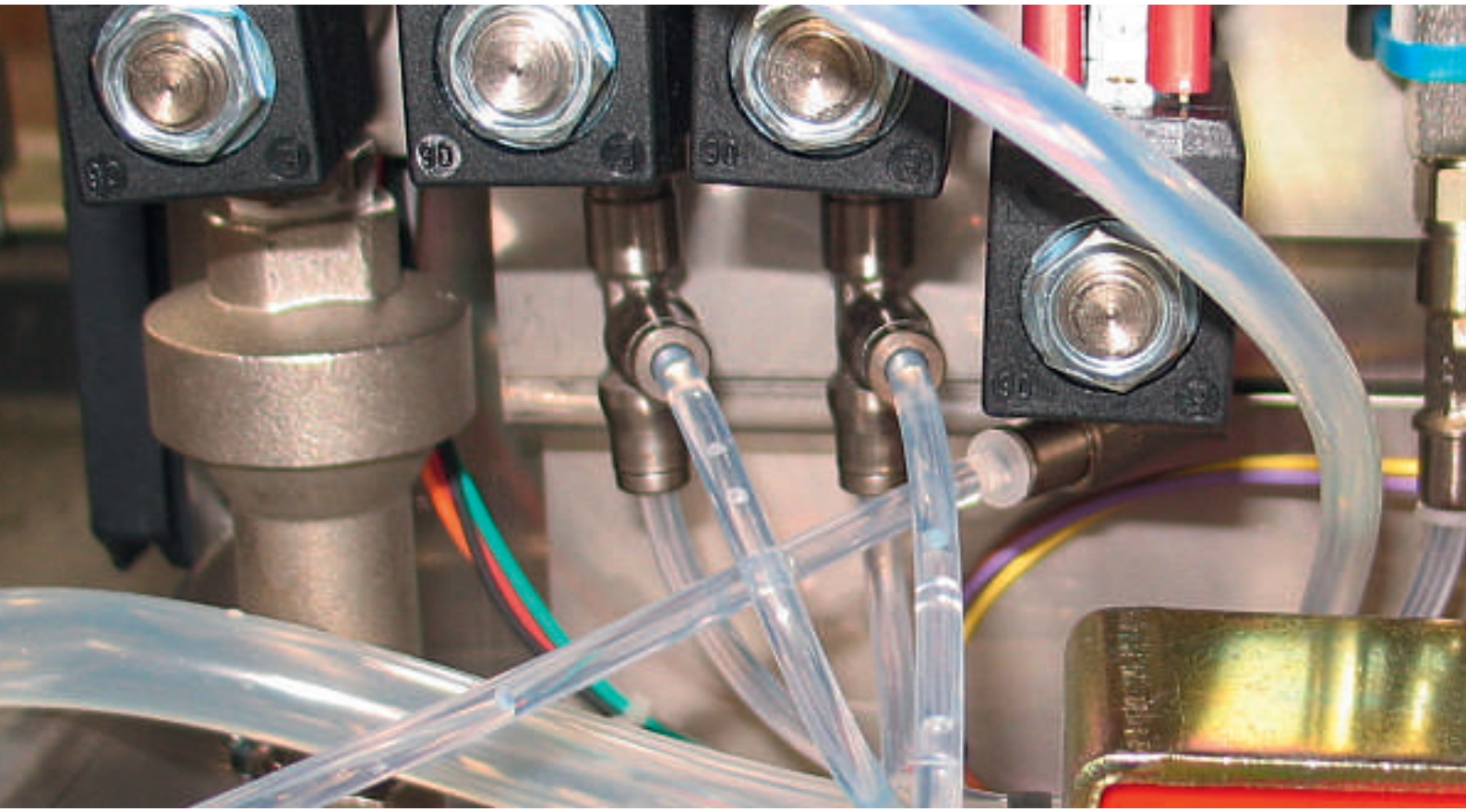
* Tolerances Test medium: Air, 10 Nl / Min / 0.35 scfm





FluidReg®

In-line pre-set regulator for water and other fluids also available on request for oxygen, nitrogen, N20 etc.



The FluidReg® is an independent diaphragm regulator that can be installed in every fluid- or compressed air pneumatic system. It supplies a constant, exact outlet pressure regardless of the input pressure. The pressure is factory-set and cannot be changed. This ensures that nobody can alter the specified pressure.

It is well known that the pressure of a water or fluid line normally is too high, fluctuates, and varies according to the height of the building. In that case the In-line FluidReg® protects all equipment and components placed after it, because thus they will only receive the correct pressure This is particularly important for all machinery/plants for/or with dosing of liquids, as this will prevent stops in production. Furthermore if the FluidReg® is combined with a sprinkler nozzle, the best basis for cooling/cleaning by means of-water spray or fog is created.

* TÜV PROOF 51257

FluidReg®

In-line pre-set regulator for water and other fluids also available on request for oxygen, nitrogen, N20 etc.

Product Benefits:

- Reduces energy consumption
- Reliability
- Service free: no adjustment needed
- Competitively priced
- Tamper proof
- Lightweight – compact construction
- Easy to mount in any water supply system
- Extension by sprinkler equipment
- Increases tool service life

Applications:

- Coffee and soft drinks machines
- Filling machines
- Laboratory dosing equipment
- Pharmacies
- Food industry
- Irrigation systems etc.

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Technical Data and Ordering Information

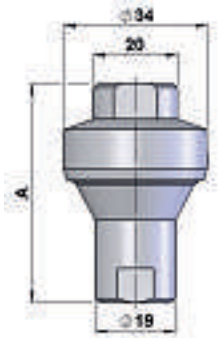
FluidReg®

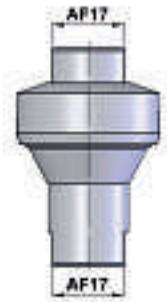
Installation: The regulator ensures that a constant pressure is always maintained, despite the normal pressure fluctuations in a system. The regulator is intended for use with various fluids such as Oxygen or other media or with compressed air. To avoid unnecessary loss of pressure in long pipes or hoses, the regulator has to be mounted as close as possible to the point of consumption.

Medium: Water, oxygen, nitrogen, N20, compressed air etc.

Thread Connection	Outlet Pressure	Tolerances* (at 10 ltrs. Min)	Flow water milli litres/Min At 10 bar/145 psig milli litres/Min. Δp:0,8 bar / 11.5 psig	Flow gases Ltrs./min - scfm At 12 bar/174 psig Ltrs./Min. Δp:0,5 bar / 7 psig	Dimensions (mm) A	Dimensions (mm) Across Flat	Weight Gram	Maximum Inlet Pressure	Temperature Range	Material	Order Code
BSP	**1/4 BSP FluidReg female-female**										
1/4	1 bar	+/- 0,3 bar / 4.35 psig	3000	400 / 14,2	52	17	125	Water: 10 bar / 145 psig Other Gases 18 bar / 260 psig	Water: 4°C to 60°C (39°F to 140°F) Other Gases: 0°C to 60°C (32°F to 140°F)	Housing: Brass nickel plated Diaphragm: Nitril / FPM Spring: Stainless Steel Valve Seat: PPH	**239A0210**
1/4	1.5 bar	+/- 0,3 bar / 4.35 psig	3500	400 / 14,2							**239A0215**
1/4	2 bar	+/- 0,3 bar / 4.35 psig	4000	600 / 21.3							**239A0220**
1/4	2.5 bar	+/- 0,3 bar / 4.35 psig	4000	600 / 21.3							**239A0225**
1/4	3 bar	+/- 0,3 bar / 4.35 psig	4000	700 / 24.7							**239A0230**
1/4	3.5 bar	+/- 10%	4000	700 / 24.7							**239A0235**
1/4	4 bar	+/- 10%	4000	700 / 24.7							**239A0240**
1/4	4.5 bar	+/- 10%	4000	700 / 24.7							**239A0245**
1/4	5 bar	+/- 10%	4000	700 / 24.7							**239A0250**
1/4	5.5 bar	+/- 10%	4000	700 / 24.7							**239A0255**
1/4	6 bar	+/- 10%	4000	800 / 28.3							**239A0260**
1/4	6,5 bar	+/- 10%	4000	800 / 28.3							**239A0265**
1/4	7 bar	+/- 10%	4000	800 / 28.3							**239A0270**
1/4	8 bar	+/- 10%	4000	800 / 28.3							**239A0280**
NPT	**1/4" NPT FluidReg female-female**										
1/4"	15 psig	+/- 0,3 bar / 4.35 psig	3000	400 / 14,2	52	17	125	Water: 10 bar / 145 psig Other Gases 18 bar / 260 psig	Water: 4°C to 60°C (39°F to 140°F) Other Gases: 0°C to 60°C (32°F to 140°F)	Housing: Brass nickel plated Diaphragm: Nitril / FPM Spring: Stainless Steel Valve Seat: PPH	**239AS1215**
1/4"	23 psig	+/- 0,3 bar / 4.35 psig	3500	400 / 14,2							**239AS1223**
1/4"	30 psig	+/- 0,3 bar / 4.35 psig	4000	600 / 21.3							**239AS1230**
1/4"	36 psig	+/- 0,3 bar / 4.35 psig	4000	600 / 21.3							**239AS1236**
1/4"	45 psig	+/- 0,3 bar / 4.35 psig	4000	700 / 24.7							**239AS1245**
1/4"	50 psig	+/- 10%	4000	700 / 24.7							**239AS1250**
1/4"	60 psig	+/- 10%	4000	700 / 24.7							**239AS1260**
1/4"	65 psig	+/- 10%	4000	700 / 24.7							**239AS1265**
1/4"	75 psig	+/- 10%	4000	700 / 24.7							**239AS1275**
1/4"	80 psig	+/- 10%	4000	700 / 24.7							**239AS1280**
1/4"	90 psig	+/- 10%	4000	800 / 28.3							**239AS1290**
1/4"	95 psig	+/- 10%	4000	800 / 28.3							**239AS1295**
1/4"	100 psig	+/- 10%	4000	800 / 28.3							**239AS12100**
1/4"	120 psig	+/- 10%	4000	800 / 28.3							**239AS12120**
On request:	**Other pre-set pressures**										

*Tolerances Test medium: Air, Pe = 6 bar/90 psig (at Pa <= 4 bar/60 psig), 10 Nl/Min / 0,35 scfm
Test medium: Air, Pe = 10 bar/150 psig (at Pa >= 4 bar/60 psig), 10 Nl/Min / 0,35 scfm





EcoReg®

Fluid regulator for drinking water, other fluids, oxygen, nitrogen, N20 etc.

Made of the lead-free brass material Ecobrass/Cuphin® ideal for critical application areas such as drinking water, food industry, medical industry, etc. Conforms to the DIN 50930-6/FDA/EU drinking water directives and other regulations.

The use of lead-free materials is growing in importance in particular as an alternative material for drinking water applications, where health standards are high. As an alternative material to conventional brass, Protect-Air offers a fluid regulator made of a lead-free brass material Ecobrass® (trade name CUPHIN).*

Drinking water is considered the most vital element for life next to air/oxygen. Since there is no alternative to this finite resource, protecting and securing the standard and quality of drinking water is a top priority for engineers, planners and Technicians as well as system operators.

The use of lead-free materials is an increasing priority in particular as an alternative material in the sanitation, food and medical sectors With their rigorous health standards. The EU drinking water directive plays an important role here. Its 2013 amendment will lower the lead Concentration limit from the current level of 25 microgram per litre of drinking water to 10 microgram.

Free of toxic additives, the Ecobrass/Cuphin® materials (*see page 31 below) conform to the requirements specified in DIN 50930-6. This makes them particularly suitable for critical applications.
The fluid regulators made of Ecobrass® are minimally susceptible to tension-crack corrosion and are dezincification-resistant, which makes an additional surface treatment unnecessary. This is environmentally friendly, saves cycle times, additional procedures and there by costs.

These are all good reasons to choose Protect-Air Ecobrass® fluid regulators that meet health and safety requirements and in areas that are constantly subject to corrosion risk.

EcoReg®

In-line pre-set regulator for water and other fluids also available on request for oxygen, nitrogen, N20 etc.




Product Benefits:

- Reduces consumption
- Reliability
- Service free: no adjustment needed
- Competitively priced
- Tamper proof
- Lightweight – compact construction
- Easy to mount in any water supply system
- Extension by sprinkler equipment
- In compliance with prevailing Food and Feed Code of Law (TÜV)
- Increases tool service life
- Medical Industry

The EcoReg® fluid regulator is an independent diaphragm pressure regulator that can be installed in all fluid systems. The pressure regulator ensures a constant and precise output pressure independent from the input pressure. The pressure value has been factory preset and cannot be changed. This ensures that no one can manipulate the specified pressure value.

It is generally known that the pressure of fluid lines is usually is too high, fluctuates or varies according to building height. In such cases, the Inline-EcoReg® fluid regulator protects all downstream installations, devices and components, because only the proper pressure is admitted. This is particularily important for all machines and plants dosing fluids because costly stops in production can be avoided.

If the EcoReg® fluid regulator is also combined with a sprinkler nozzle, optimal conditions are created for cooling/cleaning applications with sprayed water or sprayed mists.

***) Ecobrass / Cuphin:**
Materials for drinking water, etc., must meet increasingly rigorous mechanical and chemical corrosion requirements, in particular regarding hygiene safety. Free of toxic additives, the material Ecobrass/Cuphin® complies with the conditions specified in DIN 50930-6. Thanks to the selected combination of the alloying elements copper, zinc and silicium, Ecobrass/Cuphin® does not require the addition of lead. The material also promises high stability, even when expanded, permitting cold and hot forming; for instance, for processing with hot forging. As a result, Ecobrass/Cuphin® should be better to process than conventional brass materials that contain lead. The high stability and the very good resistance to corrosion of the material additionally offer ideal conditions for tight, wear-resistant connections in sanitation installations that are also subject to strong mechanical forces. The components made of Ecobrass/Cuphin® are minimally susceptible to tension-crack corrosion and are dezincification-resistant, which makes an additional surface treatment unnecessary.

Technical Data and Ordering Information

EcoReg®

Installation: Fluid regulator made of lead-free brass material Ecobrass / Cuphin® Ideal for critcal application areas such as drinking water, food industry, medical industry, etc. Conforms to the DIN 50930-6 / FDA / EU drinking water directives and other regulations. The regulator ensures that a constant pressure is always maintained, despite the normal pressure fluctuations in a system. To avoid unnecessary loss of pressure in long pipes or hoses, the regulator has to be mounted as close as possible to the point of consumption.

Medium: Water, oxygen, nitrogen, N20, compressed air, etc.

Thread Connection	Outlet Pressure	Tolerances* (at 10 ltrs. Min)	Flow water milli litres/Min	Flow gases Ltrs./min - scfm	Dimensions (mm)		Weight Gram	Maximum Inlet Pressure	Temperature Range	Material	Order Code
			At 10 bar/145 psig milli litres/Min. Δp:0,8 bar / 11.5	At 12 bar/174 psig Ltrs./Min. Δp:0,5 bar / 7 psig	A	Across Flat					
BSP	**1/4 BSP FluidReg female-female**										
1/4	1 bar	+/- 0,3 bar / 4.35 psig	3000	400 / 14,2	52	17	125	Water: 10 bar / 145 psig Other Gases 18bar / 260psig	Water: 4 °C to 60°C (39°F to 140°F) Other Gases: 0 °C to 60°C (32°F to 140°F)	Housing: Ecobrass/Cuphin Spindle: Ecobrass/Cuphin Diaphragm: Nitril / FPM Spring: Stainless Steel Valve Seat: PPH	**239C0210**
1/4	1.5 bar	+/- 0,3 bar / 4.35 psig	3500	400 / 14,2							**239C0215**
1/4	2 bar	+/- 0,3 bar / 4.35 psig	4000	600 / 21.3							**239C0220**
1/4	2.5 bar	+/- 0,3 bar / 4.35 psig	4000	600 / 21.3							**239C0225**
1/4	3 bar	+/- 0,3 bar / 4.35 psig	4000	700 / 24.7							**239C0230**
1/4	3.5 bar	+/- 10%	4000	700 / 24.7							**239C0235**
1/4	4 bar	+/- 10%	4000	700 / 24.7							**239C0240**
1/4	4.5 bar	+/- 10%	4000	700 / 24.7							**239C0245**
1/4	5 bar	+/- 10%	4000	700 / 24.7							**239C0250**
1/4	5.5 bar	+/- 10%	4000	700 / 24.7							**239C0255**
1/4	6 bar	+/- 10%	4000	800 / 28.3							**239C0260**
1/4	6,5 bar	+/- 10%	4000	800 / 28.3							**239C0265**
1/4	7 bar	+/- 10%	4000	800 / 28.3							**239C0270**
1/4	8 bar	+/- 10%	4000	800 / 28.3							**239C0280**
NPT	**1/4" NPT FluidReg female-female**										
1/4"	15 psig	+/- 0,3 bar / 4.35 psig	3000	400 / 14.2	52	17	125	Water: 10 bar / 145 psig Other Gases 18bar / 260psig	Water: 4 °C to 60°C (39°F to 140°F) Other Gases: 0 °C to 60°C (32°F to 140°F)	Housing: Ecobrass/Cuphin Spindle: Ecobrass/Cuphin Diaphragm: Nitril / FPM Spring: Stainless Steel Valve Seat: PPH	**239CS1215**
1/4"	23 psig	+/- 0,3 bar / 4.35 psig	3500	400 / 14.2							**239CS1223**
1/4"	30 psig	+/- 0,3 bar / 4.35 psig	4000	600 / 21.3							**239CS1230**
1/4"	36 psig	+/- 0,3 bar / 4.35 psig	4000	600 / 21.3							**239CS1236**
1/4"	45 psig	+/- 0,3 bar / 4.35 psig	4000	700 / 24.7							**239CS1245**
1/4"	50 psig	+/- 10%	4000	700 / 24.7							**239CS1250**
1/4"	60 psig	+/- 10%	4000	700 / 24.7							**239CS1260**
1/4"	65 psig	+/- 10%	4000	700 / 24.7							**239CS1265**
1/4"	75 psig	+/- 10%	4000	700 / 24.7							**239CS1275**
1/4"	80 psig	+/- 10%	4000	700 / 24.7							**239CS1280**
1/4"	90 psig	+/- 10%	4000	800 / 28.3							**239CS1290**
1/4"	95 psig	+/- 10%	4000	800 / 28.3							**239CS1295**
1/4"	100 psig	+/- 10%	4000	800 / 28.3							**239CS12100**
1/4"	120 psig	+/- 10%	4000	800 / 28.3							**239CS12120**
On request:	**Other pre-set pressures**										

*Tolerances Test medium: Air, Pe = 6 bar/90 psig (at Pa <= 4 bar/60 psig), 10 Nl/Min / 0,35 scfm
Test medium: Air, Pe = 10 bar/150 psig (at Pa >= 4 bar/60 psig), 10 Nl/Min / 0,35 scfm