Specialty Gas Equipment Catalogue

HARRIS®
SPECIALTY GAS
Equipment

THE HARRIS PRODUCTS GROUP

A LINCOLN ELECTRIC COMPANY

The Harris Products Group was formed by combining two strong names in the welding business - Harris Calorific and J.W. Harris. The Harris Products Group is a world leader in metalworking products used in the brazing, soldering, welding, cutting and gas distribution industries. The combined company offers excellence in the manufacture of:

- Gas welding and cutting equipment
- Industrial and specialty gas regulation equipment
- Brazing and soldering alloys
- Welding alloys
- Pre-formed bends, rings and return bends

THE WELDING EXPERTS®

The Harris Products Group is a wholly-owned subsidiary of The Lincoln Electric Company. Lincoln has more than 63 manufacturing locations, including operations and joint ventures in 23 countries and a worldwide network of distributors and sales offices covering more than 160 countries.

SPECIALTY GAS EQUIPMENT

Harris Specialty Gas Equipment Division was founded to provide complete solutions to customer's special gas handling requirements. The breadth of the product line is used in analytical labs, chemical processing, research and development, as well as biotech and pharmaceuticals. Our products bring it all together – proven safety features, quality manufacturing processes, consistency in performance and the best overall value.

THE HARRIS PRODUCTS GROUP HISTORY

1889
John Harris, founder, invents the first flame-cutting torch.

1904
Harris exhibits his invention at the World's Fair in St. Louis, Missouri (USA).

1926
U.S. Welding Co. of Minnesota purchases Harris Calorific and becomes part of Emerson Electric Co. in 1973.

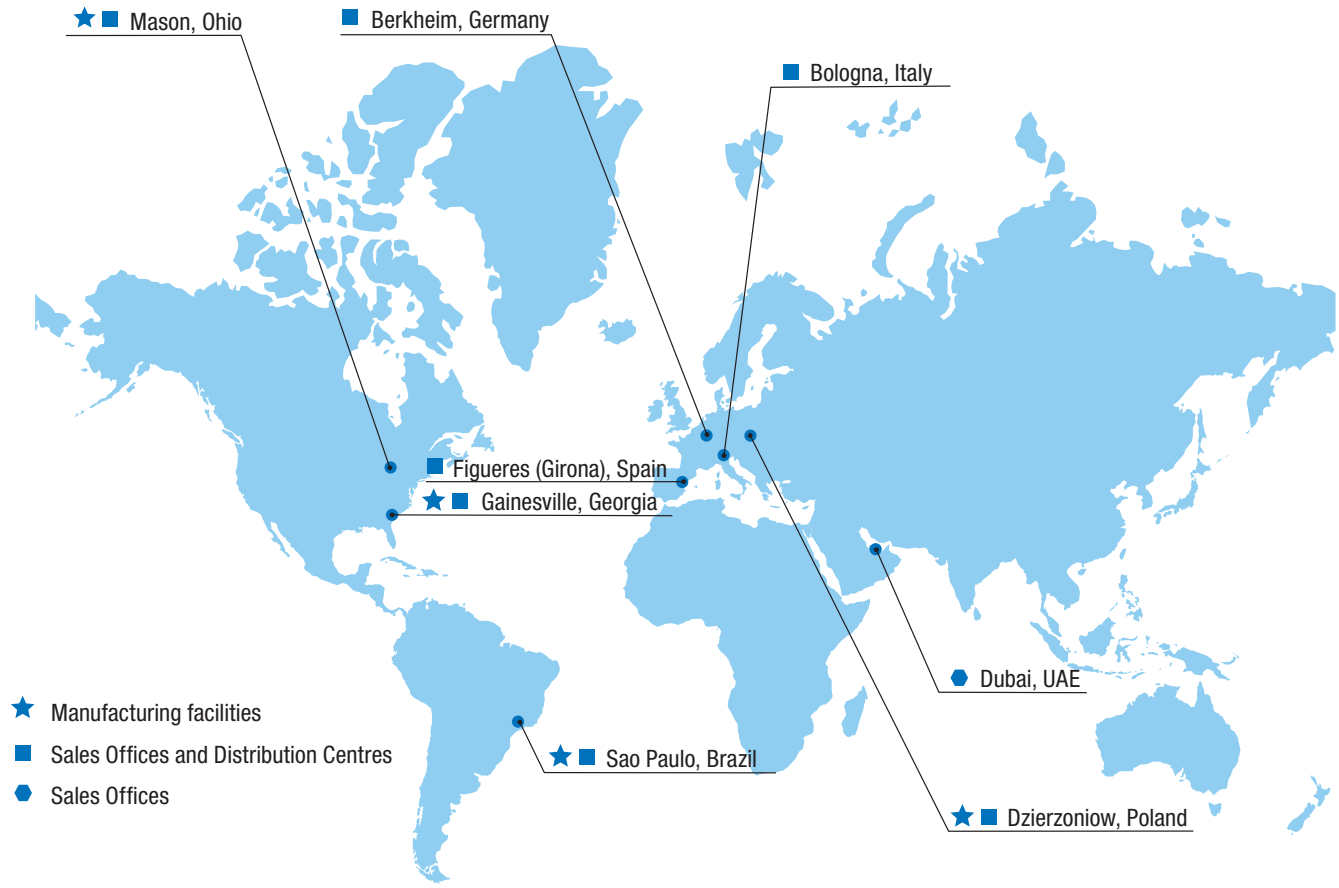
1890 1900 1910 1920 1930 1940 1950

1905
John Harris establishes The Harris Calorific Company. Harris continues to refine its gas torches and starts manufacturing related accessories, including gas pressure regulators.

1914
Joseph W. Harris founds the J.W. Harris Company, specializing in the distribution and repair of specialized parts for automotive and farm vehicles. The company later expands into welding alloys and accessories.

MANUFACTURING FACILITIES

Based in Mason, Ohio, The Harris Products Group has four manufacturing locations in three countries and a worldwide network of distributors and sales offices covering more than 90 countries. All Harris® manufacturing facilities are certified to ISO 9001 and ISO 14000 standards.



1960-1980
Both Harris companies expand around the world.

1990
Lincoln Electric purchases Harris Calorific from Emerson Electric.

1998
Harris Calorific founds the Specialty Gas Division.

2005
Lincoln Electric purchases the privately-held J.W. Harris Company.

2006
Harris Calorific and J.W. Harris combine, creating The Harris Products Group.

2008
The Harris Products Group purchases Brastak in Brazil.

2012
Harris expands their equipment offerings to include new innovative products specifically designed for production brazing including new Perfect Flame™ technology. Harris introduces the 7-Year Warranty Plan.

2017
Harris opens the new clean room in Poland build accordingly to ISO class 7 standards. International launch of the new Specialty Gases equipment range.

1960 1970 1980 1990 2000 2010

HARRIS SPECIALTY GAS Equipment

THE HARRIS PRODUCTS GROUP,
a Lincoln Electric Company, is one of the largest independent manufacturers of pressure and flow control equipment in the world.

HARRIS® products are sold and used in over 90 countries. Harris Specialty Gas Equipment Division was founded to provide complete solutions to customer's special gas handling requirements. The breadth of the product line is used in analytical labs, chemical processing, research and development, as well as biotech and pharmaceuticals. In addition to pressure control equipment, HARRIS® offers complete gas management products for flow control, gas purification, cylinder storage and audio / visual pressure indication.

Quality

The Harris Products Group is certified to ISO 9001:2000. Quality is an integral part in all processes of the company from development, planning, design and manufacturing to sales and service activities. Our quality system is regularly audited on both an internal and external basis to ensure that consistent business processes are applied. Harris equipment is 100% tested, 100% of the time for both workmanship and performance.

All Harris Specialty Gases Equipment are assembled and tested in a cleanroom according to ISO7 standards.

Contents

Laboratories

Chemical Industry

Food Processing

Electronics

Specialty Gases

High Pressure

Laser Cutting

Chromatography

High Purity Production

Regulators are designed to control pressure. Proper selection is critical for a safe and effective transfer of the gas from the gas supply to the instrument.

Gases can be supplied as compressed gas in high-pressure cylinders, low-pressure cryogenic cylinders or pipeline installations. The pressure from the supply source must be reduced to the desired working pressure for the application, to accomplish this a pressure reducing valve commonly referred to a regulator needs to be selected.

Regulators will not measure or control flow. An external device such as a flowmeter or metering valve specifically designed for flow control should be used for that purpose. Selection of the correct regulator involves many variables. All items must be considered in making the proper regulator selection.

How regulator works?

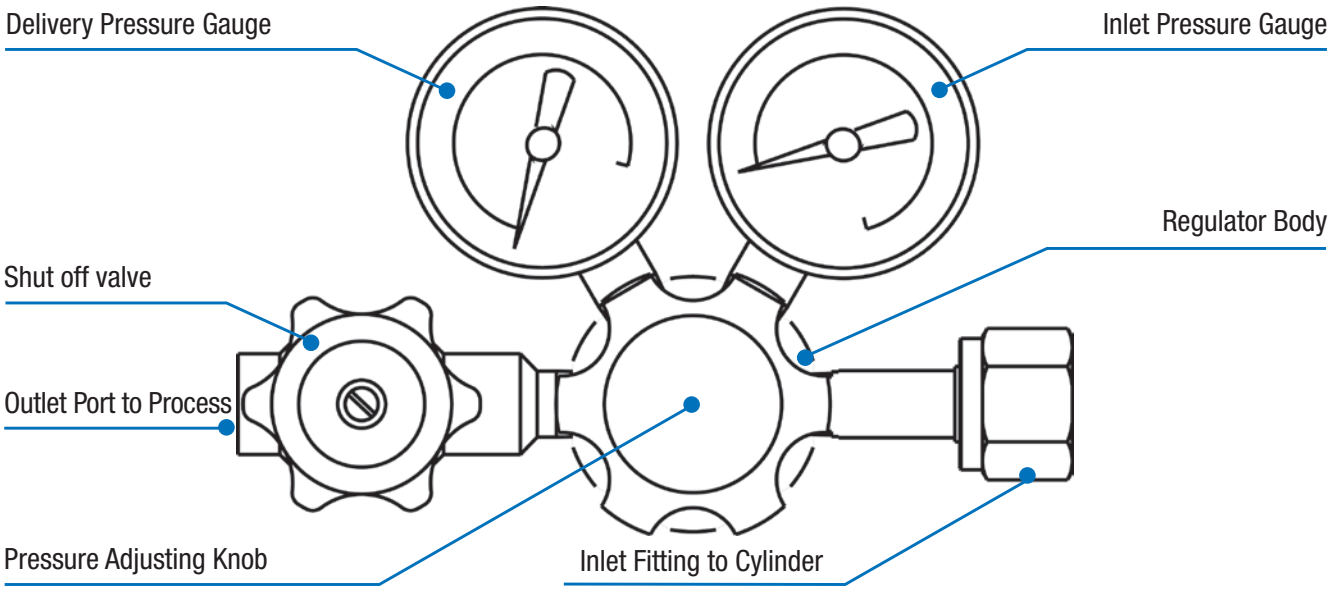
Gas enters the inlet (high-pressure) chamber and its pressure is indicated on the inlet pressure gauge. When the pressure adjusting knob is turned counterclockwise and completely backed out to the stop, a valve and seat assembly located between the inlet chamber and the delivery (low pressure) chamber prevents gas from moving any further.

A filter located at the inlet to the valve and seat assembly, removes particulate matter from the gas stream to help protect the seat area. Turning the pressure-adjusting knob clockwise causes the adjusting screw to push against a spring button that compresses the pressure adjusting spring. The force of the compressed spring, in turn, causes the diaphragm to flex and push against the valve. This opens the regulator allowing gas to flow from the inlet chamber to the delivery chamber of the regulator.

Gas entering the delivery pressure chamber begins to build pressure and creates a counter-force (counter to the pressure adjusting spring) on the diaphragm. This pressure is indicated on the delivery pressure gauge attached to the delivery chamber.

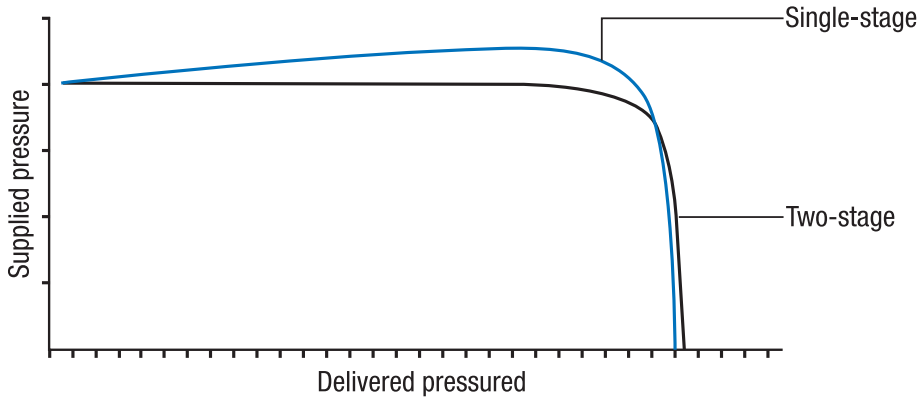
When pressure builds sufficiently to counteract the spring tension, it pushes the diaphragm away from the poppet allowing the regulator valve to close. In this manner, pressure in the delivery chamber is controlled or regulated by the amount of spring tension placed on the diaphragm and is selectable by turning the pressure adjusting knob until desired pressure is indicated on the delivery pressure gauge.

When gas from the delivery pressure chamber is sent to the end process, the resulting decrease in gas volume in the delivery chamber causes a pressure reduction in the chamber. When this occurs, the spring tension again causes the diaphragm to push the valve open, allowing additional gas to enter the delivery chamber.

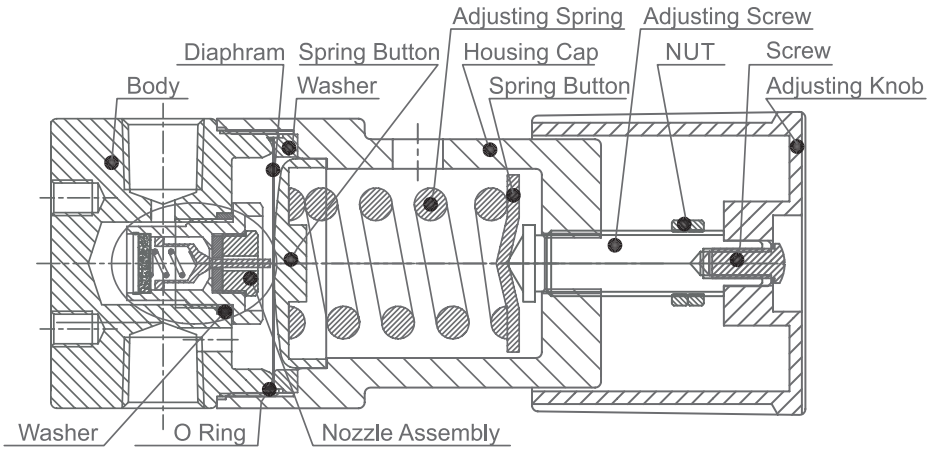


Pressure regulation, single-stage or two-stage design

All regulators are designed to reduce the inlet pressure to a desired working pressure. The regulator can reduce the pressure in either one step or two steps.

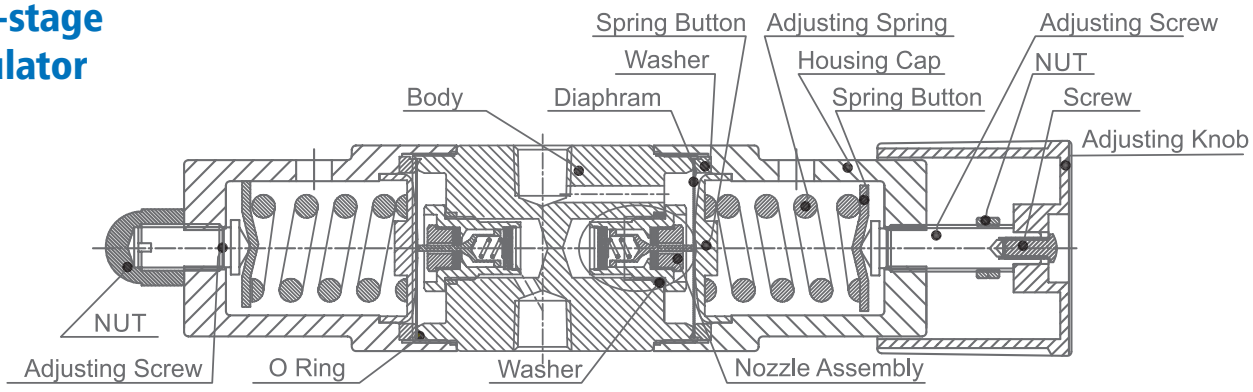


Single-stage regulator



A single-stage regulator reduces the pressure in one step. Single-stage regulators are best suited for applications where small pressure rise and manual periodic adjustment of the delivery pressure settings is not a problem. The inlet pressure remains constant, such as the case in gas withdrawal from liquid cylinders.

Two-stage regulator



A two-stage regulator reduces the pressure in two steps, either may be suitable for the application based on the desired pressure control. Two-stage regulators are two regulators built into a single regulator body. The first stage is not user adjustable with the pressure adjusting spring “pre-compressed” at the factory. The second stage then performs in a manner similar to that of a single-stage regulator, except that the inlet pressure to the second stage is relatively constant. The two-stage regulator allows for steady delivery pressure without periodic adjustment, well suited for applications requiring constant pressure from full to nearly empty cylinder.

Materials compatibility

Materials used to construct the pressure regulator need to be compatible with the intended gas service. All the wetted areas (parts of the regulator in contact with the gas) must be selected to avoid any reaction with the gas that can cause contamination in the gas stream or deterioration of the regulator components. Refer to Gas Materials Compatibility Table on pages 82-83.
All pressure regulators are available in stainless steel 316L and chrome plated brass versions.

Stainless steel 316L regulators

APPLICATIONS:

- For corrosive gases and high-purity applications
- Compatible with most gas types and low-velocity oxygen applications

FEATURES:

- Superior resistance
- Non-reactivity
- Exceptional durability and corrosive resistance (against acid sulfates and alkaline chlorides, sulfuric, hydrochloric, acetic, formic and tartaric acids etc.)
- High-surface finish properties

Chrome plated brass regulators

APPLICATIONS:

- For non-corrosive gases and mixture up to 6.0

FEATURES:

- Made of barstock
- Good strength
- Cost effective solution
- Smooth, resistant surface

Inlet Pressure Rating

Inlet pressures can range from low pressure in pipeline usage to high pressure from compressed gas cylinders. Regulators used in a pipeline will normally have only one gauge to indicate delivery pressure while a cylinder regulator will have two gauges; one to show inlet pressure and the other to show delivery pressure. An exception to this would be the use of regulators for liquid gas cylinders. In this application, only the delivery pressure gauge would be required since the supply pressure is generally constant. When selecting the regulator it must be capable of handling the incoming inlet pressure.

Delivery Pressure Range

The desired working pressure for the operation may range from low pressure up to 2 bar to a much higher working pressure up to 200 bar. The regulator selected must be able to supply the proper working pressure consistent with the requirements of the process.

Gas Purity

Maintaining the purity level of the gas is of primary importance in the selection of the regulator. The selected regulator must be resistant to any introduction of contaminants that can be detrimental to the process. In addition to the proper selection of materials for gas compatibility, the design, assembly and testing of the regulator are critical items to consider in the selection process. Clean room assembly and helium leak testing are our common procedures used to ensure the integrity of the regulator.

Cylinder regulators

HPI 100
High purity single-stage barstock regulator

Model HPI 100 is a single-stage cylinder regulator available in chrome-plated brass (HPI 100C) or stainless steel (HPI 100S) barstock. Designed for applications where a slight rise in delivery pressure from full to empty cylinder can be tolerated.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- High purity gas applications
- Research sample systems gases
- Gas chromatography
- Calibration gas
- Process analyzer gases
- Emission monitoring systems

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999)**
- Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- HPI 100C - chrome-plated body, bonnet and fittings
- HPI 100S - 316L stainless steel body, bonnet and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- 6 ports flexible configuration, 3 high pressure and 3 low pressure
- 1/8" NPT thread on the bonnet venting for safety in 316L SS version
- Maximum inlet pressure 300 bar (4350 psig)
- **Cleaned for oxygen service**

TECHNICAL DATA:

Type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 300 bar (4350 psi)
Outlet pressure	2/4/10/20 bar (29/58/145/290 psi)
Flow capacity	Kv = 0,0602 (Cv = 0,07)
Oxygen use	Suitable

MATERIALS:

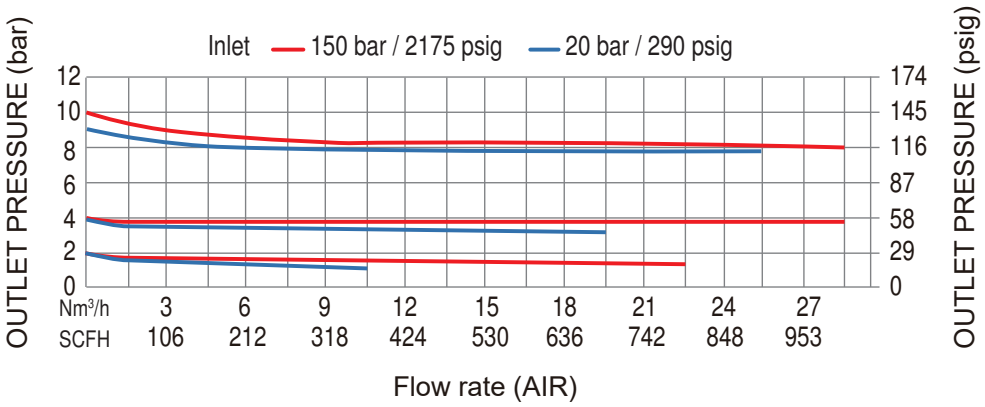
Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm	Hastelloy®*C276
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®** (FKM)
Filter	SS 316L
Adjusting Knob	ABS plastic

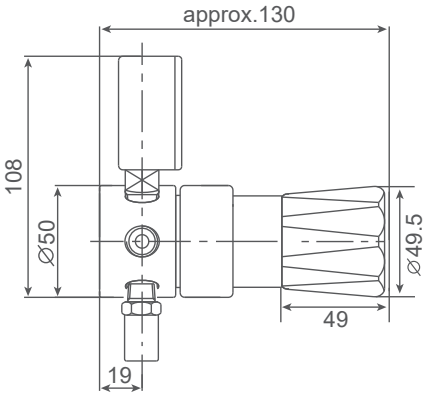
** Hastelloy® is a registered trademark name of Haynes International, Inc*
*** Viton® is a registered trademark of The Chemours Company*

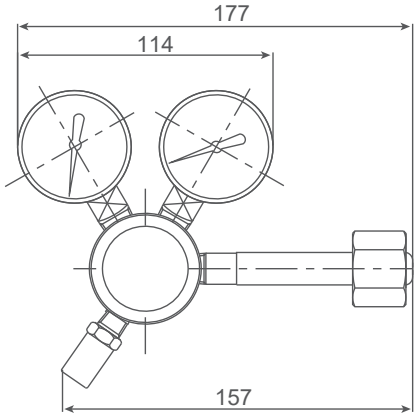
SPECIFICATIONS:

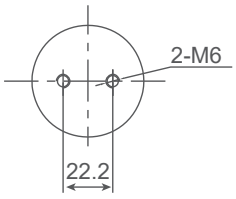
Inlet / outlet ports	1/4" FNPT
Weight	1,3 kg

FLOW CHART: HPI 100









ORDERING INFORMATION:

MODEL	MATERIAL	INLET CONFIGURATION		OUTLET PRESSURE		INLET CONNECTION*		OUTLET CONFIGURATION		OPTIONS		GAS TYPE
HPI 100C	Chrome-plated brass	Right	R	0 - 2 bar 0 - 29 psig	029	1/4" FNPT	000	1/4" FNPT	A	He leak cert. (inboard)	2	Please specify
HPI 100S	Stainless steel	Left	L	0 - 4 bar 0 - 58 psig	058	DIN 477	D...	1/4" FNPT diaph. valve	B	No gauges	3	
				0 - 10 bar 0 - 145 psig	145	CGA	C...	1/4" MNPT nipple	C	With relief valve	4	
				0 - 20 bar 0 - 290 psig	290	AFNOR	NF...	1/4" tube fitting	D	He leak cert. (outboard)	5	
						BS341	BS...	1/8" tube fitting	E	60 bar inlet gauge	6	
						UNI	U...	6 mm tube fitting	F			
						NBN		8 mm tube fitting	G			
						NEN 3268	N...					
						ISO 5145	I...					

Other options upon request, please contact us

For example:

HPI 100C	R	145	D 6	BF	2	Ar

** To indicate the requested inlet connection please see pages 83 - 85*

HPI 120
High purity two-stage barstock regulator

3 YEAR WARRANTY FOR REGULATORS WITH NON-CORROSIVE GASES

Model HPI 120 is a two-stage cylinder regulator available in chrome-plated brass (HPI 120C) or stainless steel (HPI 120S) barstock. Designed for constant delivery pressure from full to near empty cylinder conditions.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- High purity gas applications
- Research sample systems gases
- Gas chromatography
- Calibration gas
- Process analyzer gases
- Emission monitoring systems
- Laser applications

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999)**
- Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- HPI 120C - chrome-plated body, bonnet and fittings
- HPI 120S - 316L stainless steel body, bonnet and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- 1/8" NPT thread on the bonnet venting for safety in 316L SS version
- Maximum inlet pressure 300 bar (4350 psig)
- **Cleaned for oxygen service**

TECHNICAL DATA:

Type	Two-stage
Purity	Up to 6.0
Inlet pressure	Max. 300 bar (4350 psi)
Outlet pressure	2/4/10/20 bar (29/58/145/290 psi)
Flow capacity	Kv = 0,0602 (Cv = 0,07)
Oxygen use	Suitable

MATERIALS:

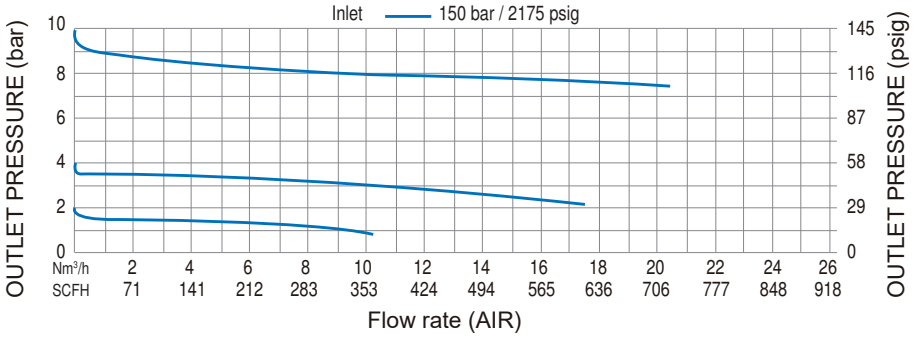
Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm	Hastelloy®*C276
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®** (FKM)
Filter	SS 316L
Adjusting Knob	ABS plastic

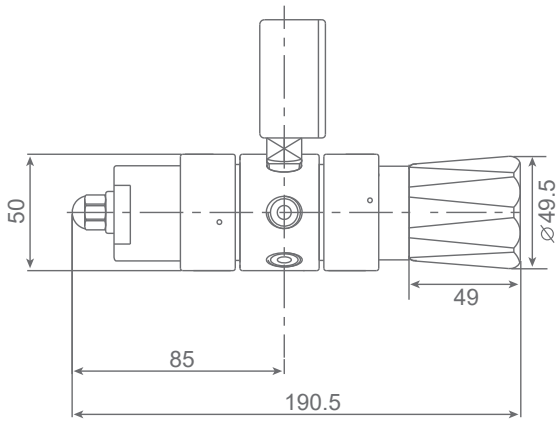
** Hastelloy® is a registered trademark name of Haynes International, Inc*
*** Viton® is a registered trademark of The Chemours Company*

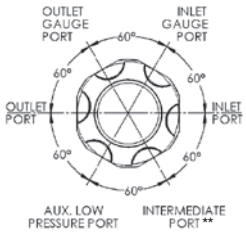
SPECIFICATIONS:

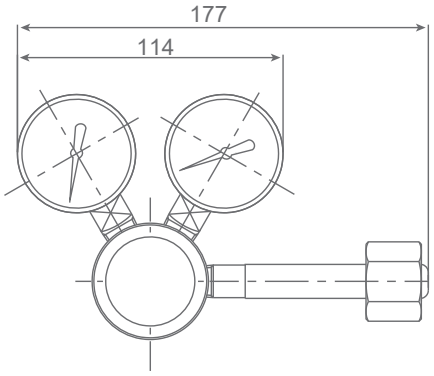
Inlet / outlet ports	1/4" FNPT
Weight	2,1 kg

FLOW CHART: HPI 120









ORDERING INFORMATION:

MODEL	MATERIAL	INLET CONFIGURATION		OUTLET PRESSURE		INLET CONNECTION*		OUTLET CONFIGURATION		OPTIONS		GAS TYPE
HPI 120C	Chrome-plated brass	Right (only)	R	0 - 2 bar 0 - 29 psig	029	1/4" FNPT	000	1/4" FNPT	A	With relief valve (intermediate port)	1	Please specify
HPI 120S	Stainless steel			0 - 4 bar 0 - 58 psig	058	DIN 477	D...	1/4" FNPT diaph. valve	B	He leak cert. (inboard)	2	
				0 - 10 bar 0 - 145 psig	145	CGA	C...	1/4" MNPT nipple	C	No gauges	3	
				0 - 20 bar 0 - 290 psig	290	AFNOR	NF...	1/4" tube fitting	D	With relief valve (at low pressure side)	4	
						BS341	BS...	1/8" tube fitting	E	He leak cert. (outboard)	5	
						UNI	U...	6 mm tube fitting	F			
						NBN		8 mm tube fitting	G			
						NEN 3268	N...					
						ISO 5145	I...					

Other options upon request, please contact us

For example:

HPI 120C	R	058	000	BE	2	Ar

** To indicate the requested inlet connection please see pages 83 - 85*

*** Between 1 and 2 stage*

HPI 300

High purity and high flow single-stage barstock cylinder regulator

Model HPI 300 is cylinder regulator available in chrome-plated brass (HPI 300C) or stainless steel (HPI 300S) barstock gases up to 300 bar (4350 psig) inlet pressure.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- Non-corrosive high flow gas applications
- Research sample systems gases
- Petrochemical industry
- Process analyzer gases
- Emission monitoring systems

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999) and delivery pressures up to 35 bar (508 psig)**
- Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- HPI 300C - chrome-plated body, bonnet and fittings
- HPI 300S - 316L stainless steel body, bonnet and fittings
- 1x10^{-9} mbar l/s He inboard helium leak rate to maintain gas purity levels
- 6 ports flexible configuration, 3 high pressure and 3 low pressure
- 1/8" NPT thread on the bonnet venting for safety in 316L SS version
- Maximum inlet pressure 300 bar (4350 psig)
- **Cleaned for oxygen service**

TECHNICAL DATA:

Type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 300 bar (4350 psi)
Outlet pressure	2/4/10/20/35 bar (29/58/145/290/508 psi)
Flow capacity	Kv = 0,86 (Cv = 1,0)
Oxygen use	Suitable

MATERIALS:

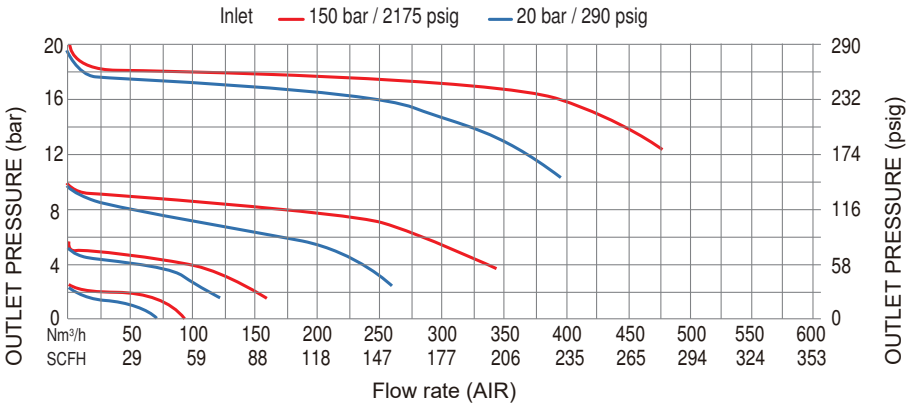
Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm	Hastelloy®*C276
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®** (FKM)
Filter	SS 316L
Adjusting Knob	ABS plastic

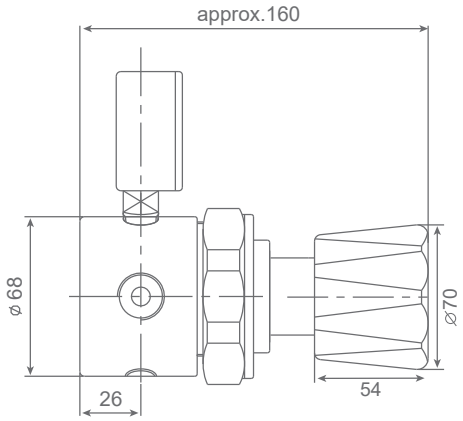
** Hastelloy® is a registered trademark name of Haynes International, Inc*
*** Viton® is a registered trademark of The Chemours Company*

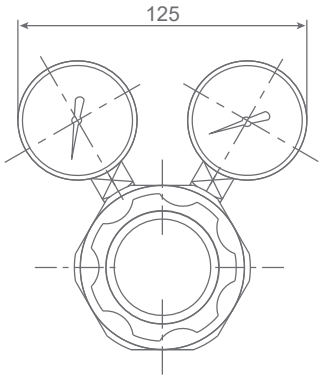
SPECIFICATIONS:

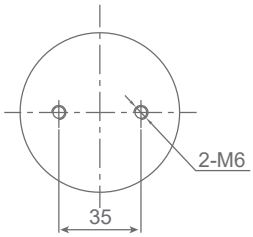
Inlet port	1/4" FNPT
Outlet port	1/2" FNPT
Gauges/Relief valve port	1/4" FNPT
Weight	2,7 kg

FLOW CHART: HPI 300









ORDERING INFORMATION:

MODEL	MATERIAL	INLET CONFIGURATION		OUTLET PRESSURE		INLET CONNECTION*		OUTLET CONFIGURATION		OPTIONS		GAS TYPE
HPI 300C	Chrome-plated brass	Right	R	0 - 2 bar 0 - 29 psig	029	1/4" FNPT	000	1/2" FNPT	A	He leak cert. (inboard)	2	Please specify
HPI 300S	Stainless steel	Left	L	0 - 4 bar 0 - 58 psig	058	DIN 477	D...			No gauges	3	
				0 - 10 bar 0 - 145 psig	145	CGA	C...			He leak cert. (outboard)	5	
				0 - 20 bar 0 - 290 psig	290	AFNOR	NF...					
				0 - 35 bar 0 - 508 psig	508	BS341	BS...					
						UNI	U...					
						NBN						
						NEN 3268	N...					
						ISO 5145	I...					

Other options upon request, please contact us

For example:

HPI 300C	R	145	000	A	2	N_2

** To indicate the requested inlet connection please see pages 83 - 85*

HPI 600

High purity and high pressure single-stage cylinder regulator

The Model HPI 600 is a single-stage barstock high pressure regulator that is designed to deliver high outlet pressure when used on high pressure cylinders up to 300 bar (4350 psig). Regulator is available in chrome-plated brass (HPI 600C) or stainless steel (HPI 600S).

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- High pressure gas applications
- High pressure testing
- Charging accumulators
- Pressurizing aircraft struts

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999)**
- Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- HPI 600C - chrome-plated body, bonnet and fittings
- HPI 600S - 316L stainless steel body, bonnet and fittings
- 1x10^{-9} mbar l/s He inboard helium leak rate to maintain gas purity levels
- 6 ports flexible configuration, 3 high pressure and 3 low pressure
- 1/8" NPT thread on the bonnet venting for safety in 316L SS version
- Maximum inlet pressure 300 bar (4350 psig)
- Cleaned for oxygen service

TECHNICAL DATA:

Type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 300 bar (4350 psi)
Outlet pressure	50/100/200 bar (720/1450/2900 psi)
Flow capacity	Kv = 0,129 (Cv = 0,15)
Oxygen use	Suitable

MATERIALS:

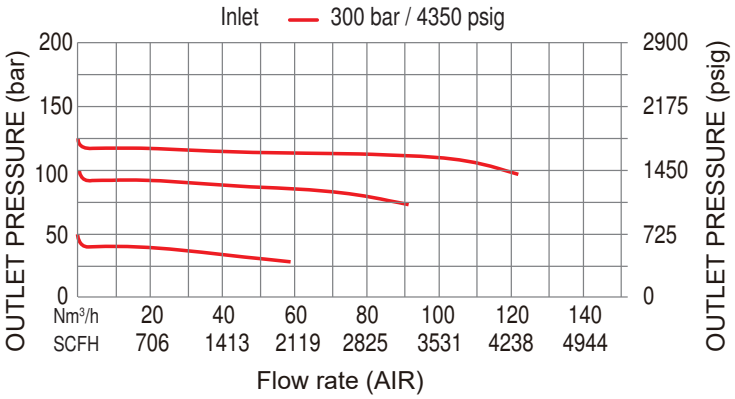
Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm	Hastelloy®*C276
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®** (FKM)
Filter	SS 316L
Adjusting Knob	ABS plastic

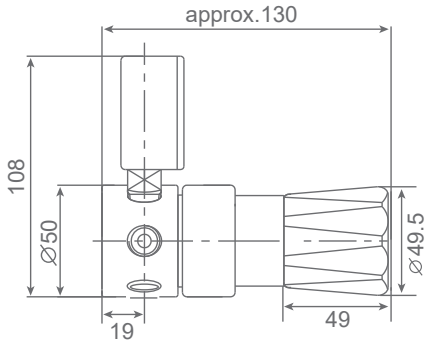
** Hastelloy® is a registered trademark name of Haynes International, Inc*
*** Viton® is a registered trademark of The Chemours Company*

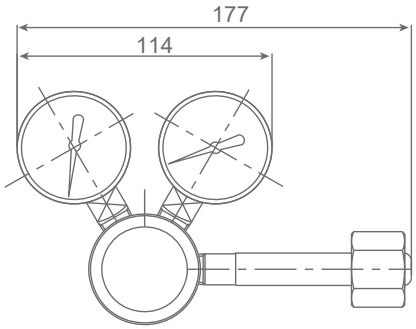
SPECIFICATIONS:

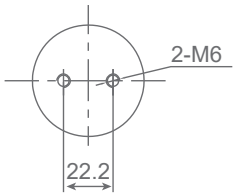
Inlet port / outlet ports	1/4" FNPT
Weight	1,2 kg

FLOW CHART: HPI 600









ORDERING INFORMATION:

MODEL	MATERIAL	INLET CONFIGURATION		OUTLET PRESSURE		INLET CONNECTION*		OUTLET CONFIGURATION		OPTIONS		GAS TYPE
HPI 600C	Chrome-plated brass	Right (standard)	R	0 - 50 bar 0 - 720 psig	720	1/4" FNPT	000	1/4" FNPT	A	He leak cert. (inboard)	2	Please specify
HPI 600S	Stainless steel	Left	L	0 - 100 bar 0 - 1450 psig	1450	DIN 477	D...	1/4" tube fitting	D	No gauges	3	
				0 - 200 bar 0 - 2900 psig	2900	CGA	C...	6 mm tube fitting	F	He leak cert. (outboard)	5	
						AFNOR	NF...					
						BS341	BS...					
						UNI	U...					
						NBN						
						NEN 3268	N...					
						ISO 5145	I...					

Other options upon request, please contact us

For example:

HPI 600C	R	720	000	A	2	Ar

** To indicate the requested inlet connection please see pages 83 - 85*

HP 701
High purity chrome-plated brass regulator

Model HP 701 is a chrome-plated single-stage cylinder regulator with a stainless steel diaphragm for general laboratory use. The HP 701 can be used when a slight pressure rise from full to empty cylinder can be tolerated.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- Non-corrosive gases
- Vacuum control
- Purging
- Pressure testing
- Blanketing

FEATURES:

- **Recommended for gas purity up to grade 5.0 (99.999)**
- Applicable for corrosive gases after prior confirmation of the material's compatibility
- 302L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- One-piece encapsulated seat design to protect seat from particulate contamination
- Chrome-plated bonnet, body and fittings
- $1x10^{-8}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- Maximum inlet pressure 210 bar (3000 psig)

TECHNICAL DATA:

Type	Single-stage
Purity	Up to 5.0
Inlet pressure	Max. 210 bar (3000 psig)
Outlet pressure	0-1/3,5/8,5/17 bar (15/50/125/250 psig)
Flow capacity	Kv = 0,1462 (Cv = 0,17)
Oxygen use	Suitable

MATERIALS:

Body	Chrome-plated brass
Bonnet	Chrome-plated die cast
Diaphragm	302 stainless steel
Nozzle	Brass
Seat	PTFE Teflon®*
Seals	PTFE Teflon®*
Filter	Nickel-plated sintered bronze - 10 micron
Seat	PH-17 stainless steel
Adjusting Knob	ABS plastic

SPECIFICATIONS:

Inlet / outlet ports	1/4" FNPT
Weight	1,6 kg

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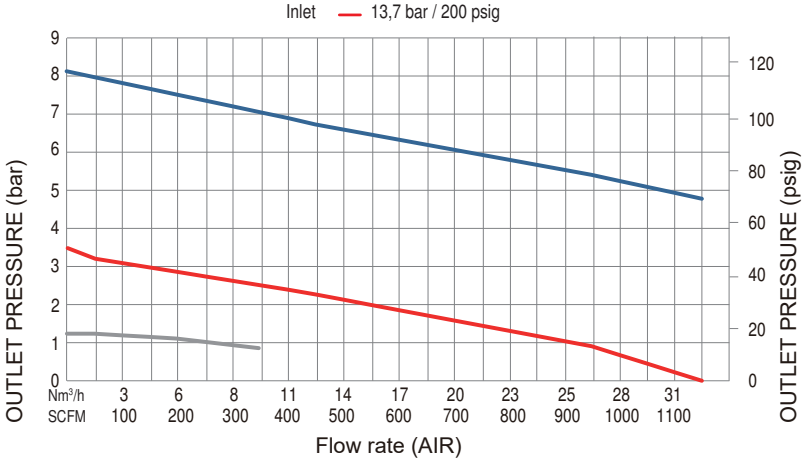
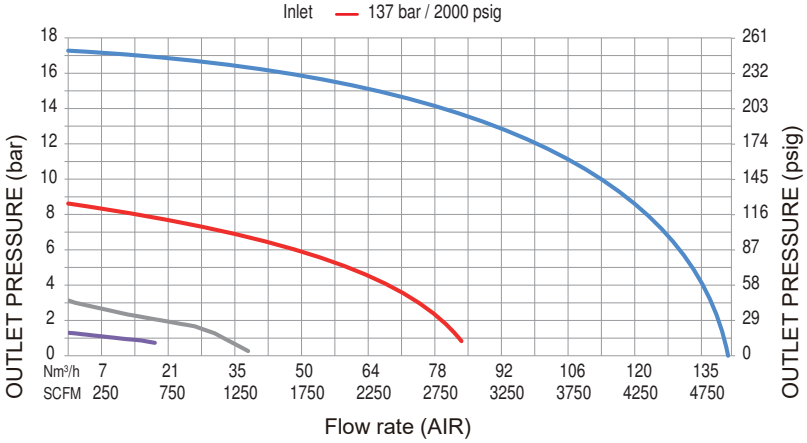
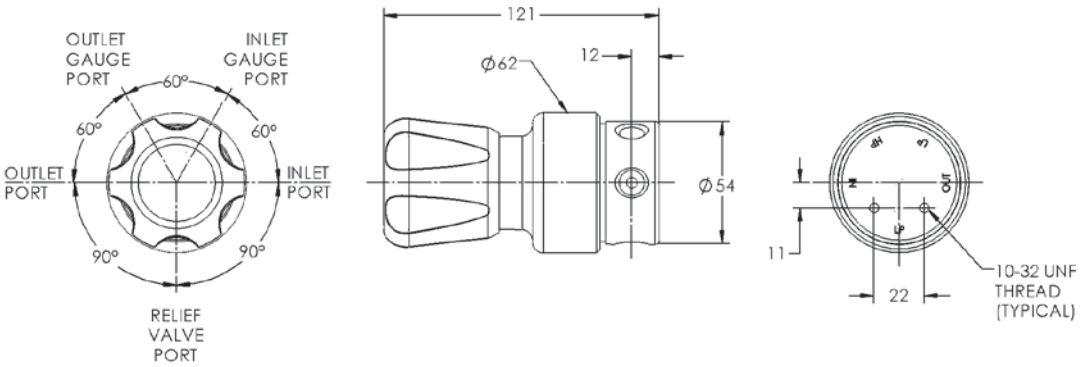
FLOW CHART:

HP 701







ORDERING INFORMATION:

MODEL	INLET CONFIGURATION	OUTLET PRESSURE		INLET CONNECTION*		OUTLET CONFIGURATION		OPTIONS		GAS TYPE
HP 701	Right	0 - 1 bar 0 - 15 psig	015	1/4" FNPT	000	1/4" FNPT	A	He leak cert. (inboard)	2	Please specify
		0 - 3,5 bar 0 - 50 psig	050	DIN 477	D...	1/4" FNPT diaph. valve	B	No gauges	3	
		0 - 8,5 bar 0 - 125 psig	125	CGA	C...	1/4" MNPT nipple	C	With relief valve	4	
		0 - 17 bar 0 - 250 psig	250	AFNOR	NF...	1/4" tube fitting	D	He leak cert. (outboard)	5	
				BS341	BS...	1/8" tube fitting	E	60 bar inlet gauge	6	
				UNI	U...	6 mm tube fitting	F			
Other options upon request, please contact us				NBN		8 mm tube fitting	G			
				NEN 3268	N...					
				ISO 5145	I...					
For example: HP 701			015	D 6			BF		2	Ar

** To indicate the requested inlet connection please see pages 83 - 85*

HP 741
High purity stainless steel barstock regulator

Model HP 741 is a single-stage stainless steel cylinder regulator for applications where a slight rise in delivery pressure from full to empty cylinder can be tolerated.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- Corrosive gas applications
- High purity gas applications
- Research sample systems gases
- Process analyzer gases
- Gas chromatography
- EPA protocol gases
- Laser gas systems
- Emission monitoring systems

FEATURES:

- **Recommended for corrosive gases or purity levels of grade 6.0 (99.9999) and higher***
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- One piece encapsulated seat design includes a sintered filter to protect the seat from particulate contamination
- Chrome-plated bonnet, 316L SS body and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- The 1/8" NPT thread on the bonnet venting for safety
- **Maximum inlet pressure 210 bar (3000 psig)**

TECHNICAL DATA:

Type	Single-stage
Purity	6.0 and higher
Inlet pressure	Max. 210 bar (3000 psig)
Outlet pressure	0-1/3,5/8,5/17/35 bar (15/50/125/250/500 psig)
Flow capacity	Kv = 0,0688 (Cv = 0,08)
Oxygen use	Suitable

MATERIALS:

Body	316L stainless steel barstock
Bonnet	Chrome-plated brass barstock
Diaphragm	316L stainless steel
Nozzle	316L stainless steel
Seat	PTFE Teflon®**
Seals	PTFE Teflon®**
Filter	Sintered stainless steel - 10 micron
Seat	Return spring 316L stainless steel
Adjusting Knob	ABS plastic

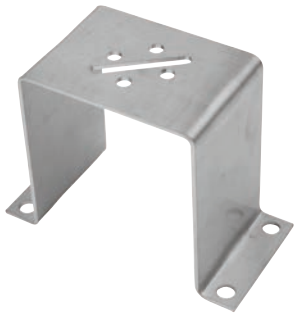
SPECIFICATIONS:

Inlet / outlet ports	1/4" FNPT
Weight	1,32 kg

RELATED OPTIONS:

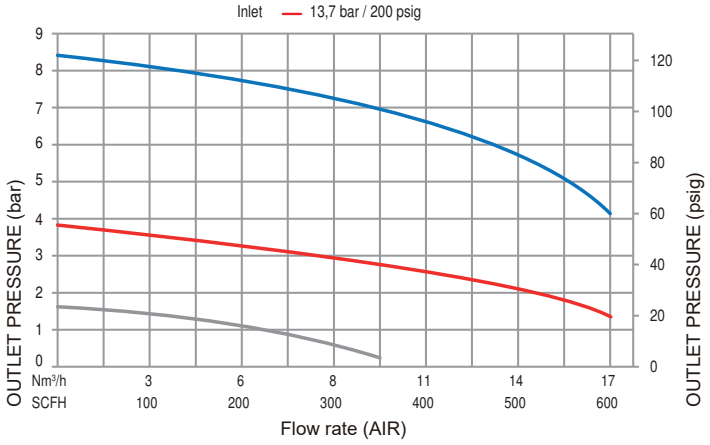
Front Panel Mount Kit P/N: 9100871

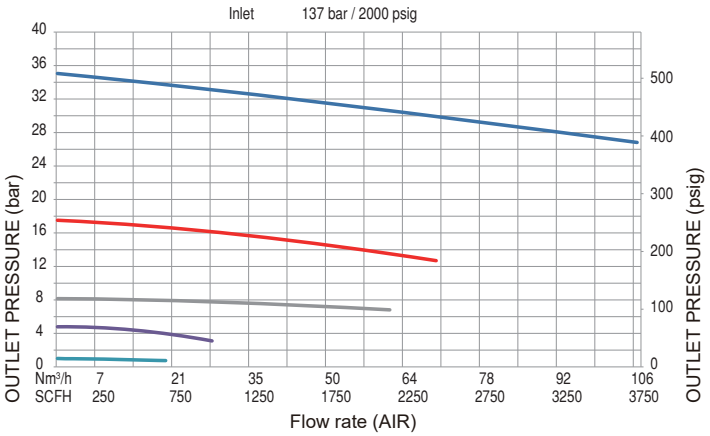
Wall mounting Bracket P/N: 9101242

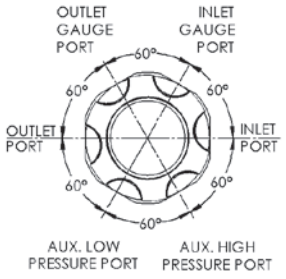


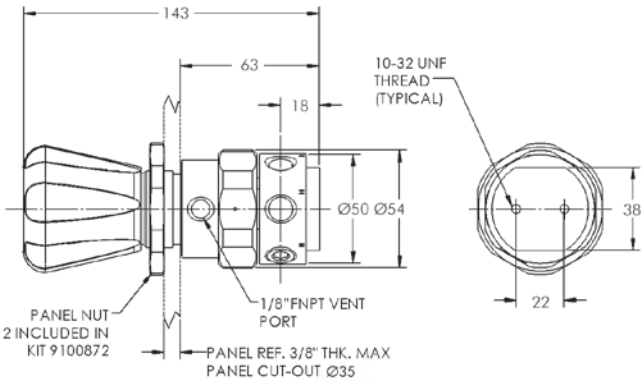
** Please check the material's compatibility*
*** Teflon® is a registered trademark of The Chemours Company*

FLOW CHART: HP 741









ORDERING INFORMATION:

MODEL	INLET CONFIGURATION	OUTLET PRESSURE		INLET CONNECTION*		OUTLET CONFIGURATION		OPTIONS		GAS TYPE
HP 741	Right	0 - 1 bar 0 - 15 psig	015	1/4" FNPT	000	1/4" FNPT	A	He leak cert. (inboard)	2	Please specify
		0 - 3,5 bar 0 - 50 psig	050	DIN 477	D...	1/4" FNPT diaph. valve	B	No gauges	3	
		0 - 8,5 bar 0 - 125 psig	125	CGA	C...	1/4" MNPT nipple	C	With relief valve	4	
		0 - 17 bar 0 - 250 psig	250	AFNOR	NF...	1/4" tube fitting	D	He leak cert. (outboard)	5	
		0 - 34 bar 0 - 500 psig	500	BS341	BS...	1/8" tube fitting	E	60 bar inlet gauge	6	
				UNI	U...	6 mm tube fitting	F			
Other options upon request, please contact us				NBN		8 mm tube fitting	G			
				NEN 3268	N...					
				ISO 5145	I...					

For example:

HP 741	015	D 6	BF	2	Ar

** To indicate the requested inlet connection please see pages 83 - 85*

HP 742

High purity stainless steel barstock regulator

Model HP 742 is a two-stage stainless steel cylinder regulator for constant delivery pressure from full to near empty cylinder conditions.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- Corrosive gas applications
- High purity gas applications
- Research sample systems gases
- Process analyzer gases
- Gas chromatography
- EPA protocol gases
- Laser gas systems
- Emission monitoring systems

FEATURES:

- **Recommended for corrosive gases or purity levels of grade 6.0 (99.9999) and higher***
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- One-piece encapsulated seat design includes a sintered filter to protect the seat from particulate contamination
- Chrome-plated bonnet, 316L SS body and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- 1/8” NPT thread on the bonnet venting for safety
- **Maximum inlet pressure 210 bar (3000 psig)**

TECHNICAL DATA:

Type	Two-stage
Purity	6.0 and higher
Inlet pressure	Max. 210 bar (3000 psig)
Outlet pressure	0-1/3,5/8,5/17/35 bar (15/50/125/250/500 psig)
Flow capacity	Cv = 0,06
Oxygen use	Suitable

MATERIALS:

Body	316L stainless steel barstock
Bonnet	Chrome-plated brass barstock
Diaphragm	316L stainless steel
Nozzle	316L stainless steel
Seat	PTFE Teflon®**
Seals	PTFE Teflon®**
Filter	Sintered stainless steel - 10 micron
Seat	Return spring 316L stainless steel
Adjusting Knob	ABS plastic

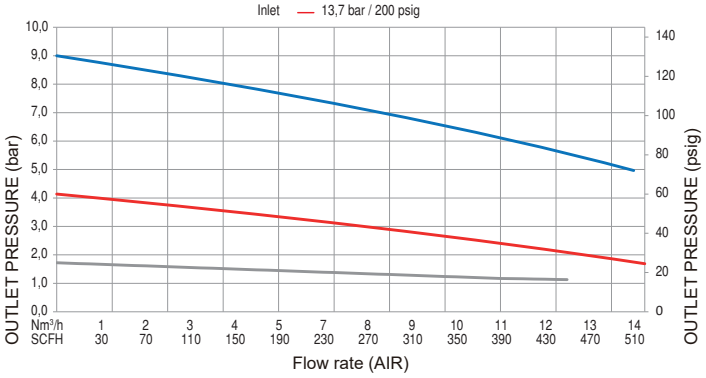
SPECIFICATIONS:

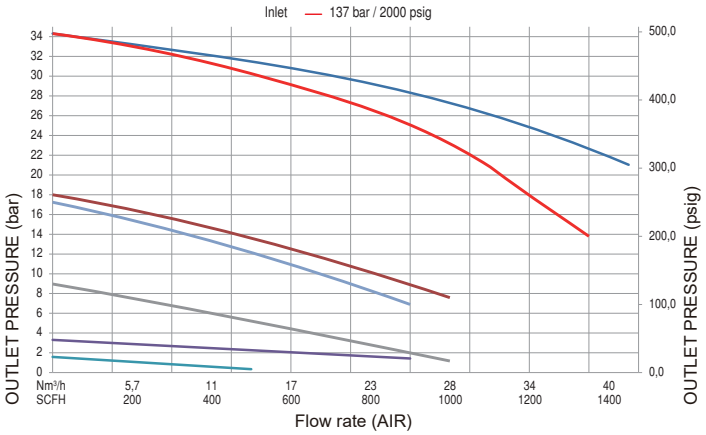
Inlet / outlet ports	1/4" FNPT
Weight	2,01 kg

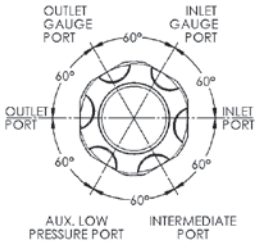
** Please check the material's compatibility*
*** Teflon® is a registered trademark of The Chemours Company*

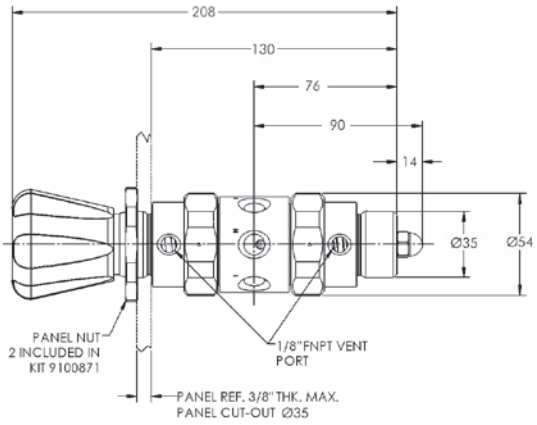
FLOW CHART:

HP 742









ORDERING INFORMATION:

MODEL	INLET CONFIGURATION	OUTLET PRESSURE		INLET CONNECTION*		OUTLET CONFIGURATION		OPTIONS		GAS TYPE
HP 742	Right	0 - 1 bar 0 - 15 psig	015	1/4" FNPT	000	1/4" FNPT	A	He leak cert. (inboard)	2	Please specify
		0 - 3,5 bar 0 - 50 psig	050	DIN 477	D...	1/4" FNPT diaph. valve	B	No gauges	3	
		0 - 8,5 bar 0 - 125 psig	125	CGA	C...	1/4" MNPT nipple	C	With relief valve	4	
		0 - 17 bar 0 - 250 psig	250	AFNOR	NF...	1/4" tube fitting	D	He leak cert. (outboard)	5	
		0 - 34 bar 0 - 500 psig	500	BS341	BS...	1/8" tube fitting	E			
				UNI	U...	6 mm tube fitting	F			
				NBN		8 mm tube fitting	G			
				NEN 3268	N...					
				ISO 5145	I...					

Other options upon request, please contact us

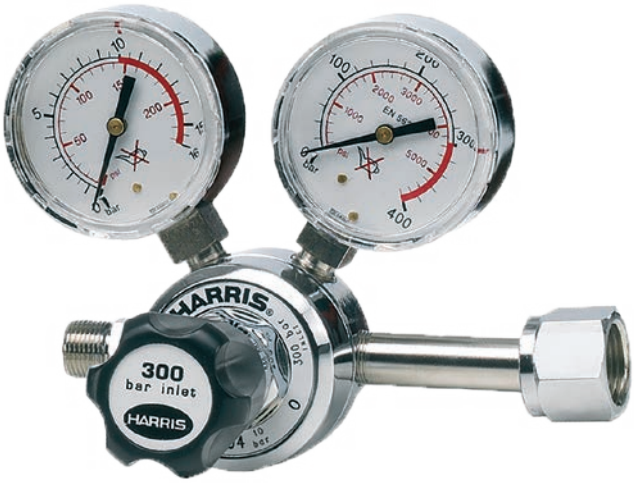
For example:

HP 742	050	D 6		BF	24	Ar

** To indicate the requested inlet connection please see pages 83 - 85*

904
High purity single-stage gas regulator

Model 904 is a chrome-plated single stage cylinder regulator with a stainless steel diaphragm for general purposes application where high purity gas is required. The 904 can be used when a slight pressure rise from full to empty cylinder can be tolerated.



Model shown with additional accessories to be ordered separately

APPLICATIONS:

- Non-corrosive gases
- Purging
- Pressure testing
- Blanketing

FEATURES:

- **Recommended for gases purity levels up to grade 5.0 (99.999%)**
- External safety relief valve with 1/4" NPT female thread for external release hose connection
- 302 stainless steel diaphragm eliminates contamination from diffusion or outgassing
- One-piece encapsulated seat design includes a sintered filter to protect the seat from particulate contamination
- Forged brass body fully chromed
- Chrome-plated bonnet and fittings
- Capsule seat with Kel-F (CTFE) sealing surface
- **Maximum inlet pressure 300 bar (4350 psig)**

TECHNICAL DATA:

Type	Single-stage
Purity	Up to 5.0
Inlet pressure	Max. 300 bar (4350 psig)
Outlet pressure	0-1,5/4/10 bar (21,75/58/145 psig)
Oxygen use	Suitable

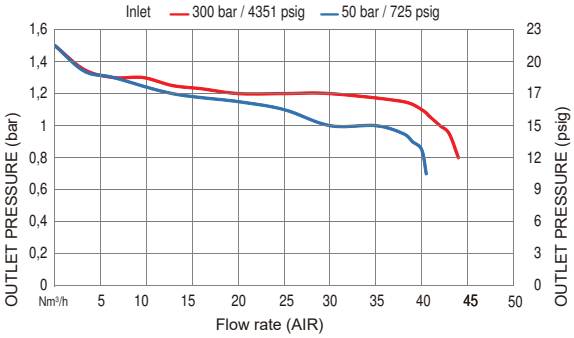
MATERIALS:

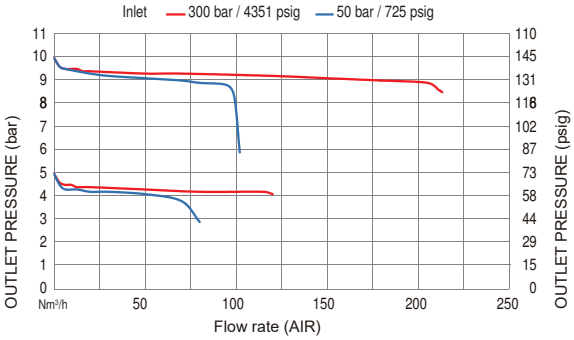
Body	Chrome-plated brass
Bonnet	Chrome-plated ZnAl
Diaphragm	302 stainless steel
Nozzle	Brass
Seat	Brass
Seals	Kel-F (CTFE)
Filter	Sintered bronze - 10 micron
Adjusting Knob	ABS plastic

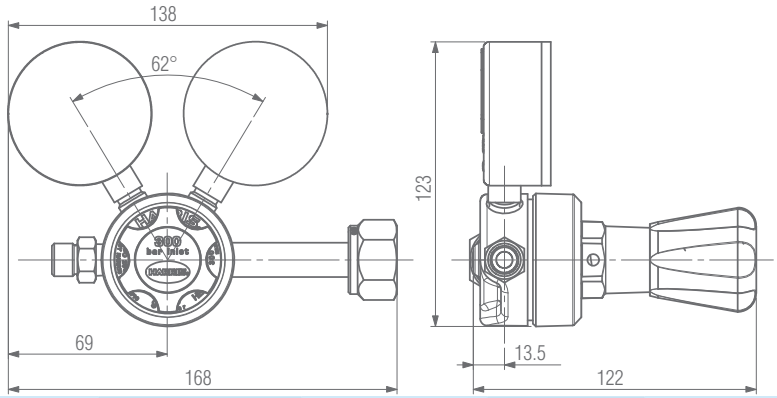
SPECIFICATIONS:

Inlet / outlet ports	1/4" FNPT
Weight	1,32 kg

FLOW CHART: 904







MODEL NO.	GAS	MAX INLET PRESSURE (bar)	DELIVERY PRESSURE (bar)	MAX (AIR) FLOW (m^3/h)	DELIVERY PRESSURE GAUGE (bar)	SUPPLY PRESSURE GAUGE (bar)
904D-1.5	Argon, CO_2, nitrogen, air, helium, hydrogen, oxygen, methane	300	0-1,5	24	0-2,5	0-400
904D-4			0-4	48	0-6	
904D-10			0-10	100	0-16	
904R-1.5			0-1,5	24	0-2,5	
904R-4			0-4	48	0-6	
904R-10			0-10	100	0-16	

ORDERING INFORMATION:

MODEL	INLET CONFIGURATION	OUTLET PRESSURE		INLET CONNECTION*		OUTLET CONFIGURATION		OPTIONS		GAS TYPE
904	Right	0 - 1,5 bar 0 - 21,75 psig	021	1/4" FNPT	000	1/4" FNPT	A	IRV Diaphragm safety relief valve	D	Please specify
		0 - 4 bar 0 - 58 psig	058	DIN 477	D...	1/4" FNPT diaph. valve	B	External safety relief valve	R	
		0 - 10 bar 0 - 145 psig	145	CGA	C...	1/4" MNPT nipple	C	He leak cert. (inboard)	2	
				AFNOR	NF...	1/4" tube fitting	D	He leak cert. (outboard)	5	
				BS341	BS...	1/8" tube fitting	E			
				UNI	U...	6 mm tube fitting	F			
				NBN		8 mm tube fitting	G			
				NEN 3268	N...					
				ISO 5145	I...					

Other options upon request, please contact us

For example:

904	058	DIN 6	A		2	Ar

** To indicate the requested inlet connection please see pages 83 - 85*

HPI 100L
High purity single-stage line regulator

Model HPI 100L is a line regulator available in chrome-plated brass (HPI 100LC) or stainless steel (HPI 100LS) barstock, for pipeline and other applications up to 40 bar (580 psig) inlet pressure.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- High purity gas applications
- Research sample systems gases
- Gas chromatography
- Calibration gas
- Process analyzer gases
- Emission monitoring systems

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999)**
- Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- HPI 100LC - chrome-plated body, bonnet and fittings
- HPI 100LS - 316L stainless steel body, bonnet and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- 4 ports flexible configuration
- 1/8" NPT thread on the bonnet venting for safety in 316L SS version
- Maximum inlet pressure 40 bar (580 psig)
- **Cleaned for oxygen service**

TECHNICAL DATA:

Type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 40 bar (580 psi)
Outlet pressure	2/4/10/20 bar (29/58/145/290 psi)
Flow capacity	Kv = 0,1548 (Cv = 0,18)
Oxygen use	Suitable

MATERIALS:

Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm	Hastelloy®*C276
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®** (FKM)
Filter	SS 316L
Adjusting Knob	ABS plastic

RELATED OPTIONS:

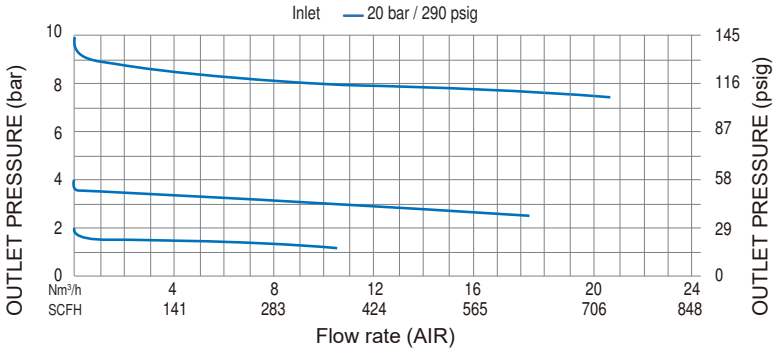
Wall mounting bracket: HPI-L-BPB

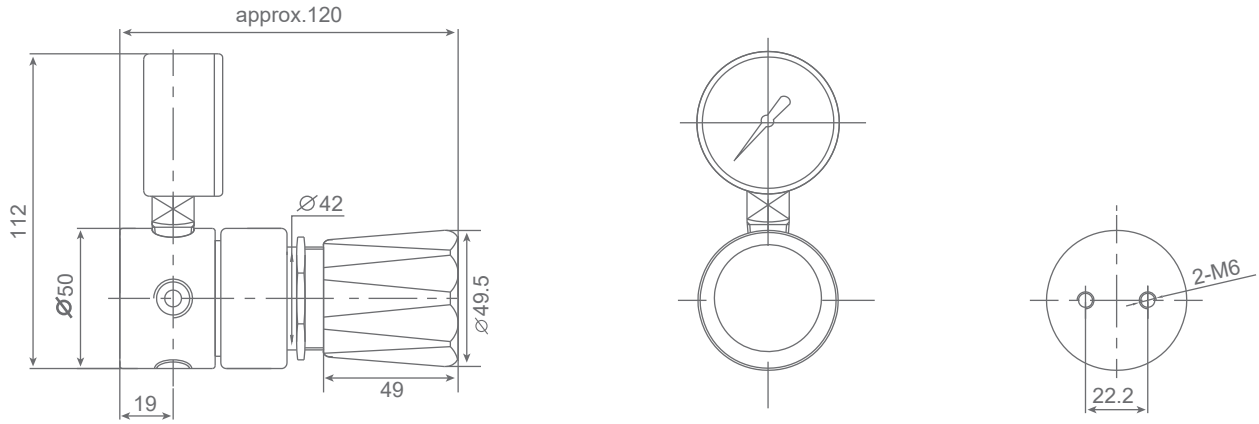
** Hastelloy® is a registered trademark name of Haynes International, Inc*
*** Viton® is a registered trademark of The Chemours Company*

SPECIFICATIONS:

Inlet / outlet ports	1/4" FNPT
Weight	1,04 kg

FLOW CHART: HPI 100L





ORDERING INFORMATION:

MODEL	MATERIAL	INLET CONFIGURATION		OUTLET PRESSURE		INLET CONNECTION		OUTLET CONFIGURATION		OPTIONS		GAS TYPE
HPI 100LC	Chrome-plated brass	Right	R	0 - 2 bar 0 - 29 psig	029	1/4” FNPT	000	1/4" FNPT	A	He leak cert. (inboard)	2	Please specify
HPI 100LS	Stainless steel	Left	L	0 - 4 bar 0 - 58 psig	058	1/4” MNPT	001	1/4" FNPT diaph. valve	B	No gauges	3	
				0 - 10 bar 0 - 145 psig	145	1/4" tube fitting	002	1/4" MNPT nipple	C	With relief valve	4	
				0 - 20 bar 0 - 290 psig	290	6 mm tube fitting	003	1/4" tube fitting	D	He leak cert. (outboard)	5	
						8 mm tube fitting	004	1/8" tube fitting	E	Wall mounting Bracket	P	
								6 mm tube fitting	F			
								8 mm tube fitting	G			

Other options upon request, please contact us

For example:

HPI 100LC	R	058	001	BE	2	Ar

HP 743
High purity stainless steel barstock regulator

Model HP 743 is a stainless steel pipeline regulator for pipeline and other applications up to 210 bar (3000 psig) inlet pressure.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- Corrosive gas applications
- High purity gas applications
- Research sample systems gases
- Process analyzer gases
- Gas chromatography
- EPA protocol gases
- Laser gas systems
- Emission monitoring systems

FEATURES:

- **Recommended for corrosive gases or purity levels of grade 6.0 (99.9999) and higher***
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- One piece encapsulated seat design includes a sintered filter to protect the seat from particulate contamination
- Chrome-plated bonnet, 316L SS body and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- The 1/8" NPT thread on the bonnet venting for safety
- **Maximum inlet pressure 210 bar (3000 psig)**

TECHNICAL DATA:

Type	Single-stage
Purity	6.0 and higher
Inlet pressure	Max. 210 bar (3000 psig)
Outlet pressure	0-1/3,5/8,5/17/35 bar (15/50/125/250/500 psig)
Flow capacity	Kv = 0,0688 (Cv = 0,08)
Oxygen use	Suitable

MATERIALS:

Body	316L stainless steel barstock
Bonnet	Chrome-plated brass barstock
Diaphragm	316L stainless steel
Nozzle	316L stainless steel
Seat	PTFE Teflon®**
Seals	PTFE Teflon®**
Filter	Sintered stainless steel - 10 micron
Seat	Return spring 316L stainless steel
Adjusting Knob	ABS plastic

SPECIFICATIONS:

Inlet / outlet ports	1/4" FNPT
Weight	1,22 kg

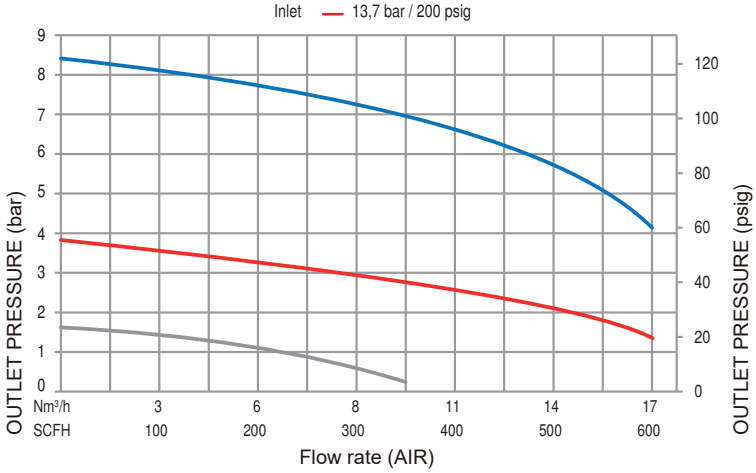
RELATED OPTIONS:

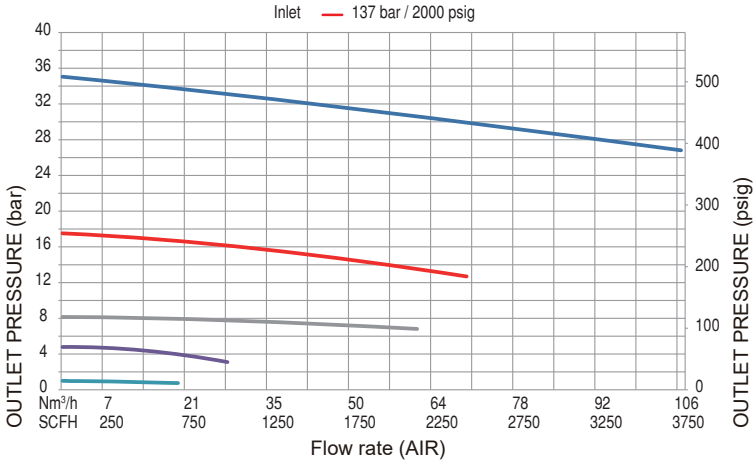
Front Panel Mount Kit P/N: 9100871

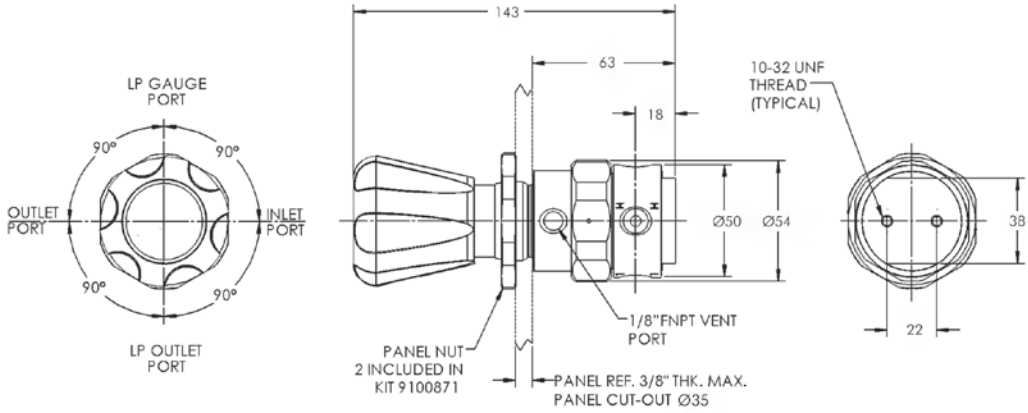
Wall mounting Bracket P/N: 9101242

** Please check the material's compatibility*
*** Teflon® is a registered trademark of The Chemours Company*

FLOW CHART: HP 743







ORDERING INFORMATION:

MODEL	OUTLET PRESSURE		INLET CONNECTION		OUTLET CONFIGURATION		OPTIONS		GAS TYPE
HP 743	0 - 1 bar 0 - 15 psig	015	1/4" FNPT	000	1/4" FNPT	A	Without relief valve	1	Please specify
	0 - 3,5 bar 0 - 50 psig	050	1/4" MNPT	001	1/4" FNPT diaph. valve	B	He leak cert. (inboard)	2	
	0 - 8,5 bar 0 - 125 psig	125	1/4" tube fitting	002	1/4" MNPT nipple	C	No gauges	3	
	0 - 17 bar 0 - 250 psig	250	6 mm tube fitting	003	1/4" tube fitting	D	With relief valve	4	
	0 - 34 bar 0 - 500 psig	500	8 mm tube fitting	004	1/8" tube fitting	E	He leak cert. (outboard)	5	
					6 mm tube fitting	F	60 bar inlet gauge	6	
Other options upon request, please contact us					8 mm tube fitting	G			
For example:									
HP 743		050		003		E		1	Ar

HPI 300L

High purity and high flow single-stage barstock line regulator

Model HPI 300L is in-line manifold regulator available in chrome-plated brass (HPI 300LC) or stainless steel (HPI 300LS) barstock, for pipeline and other application up to 100 bar (1450 psig) inlet pressure.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- High flow gas applications
- High purity gas applications
- Bulk gas distribution systems
- Laser gas systems
- Process analyzer gases
- Research sample systems gases
- Petrochemical industry
- Emission monitoring systems

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999) and delivery pressures up to 50 bar (725 psig)**
- Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- HPI 300LC - chrome-plated body, bonnet and fittings
- HPI 300LS - 316L stainless steel body, bonnet and fittings
- 1x10^{-9} mbar l/s He inboard helium leak rate to maintain gas purity levels
- 1/8" NPT thread on the bonnet venting for safety in 316L SS version
- Maximum inlet pressure 100 bar (1450 psig)
- **Cleaned for oxygen service**

TECHNICAL DATA:

Type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 100 bar (1450 psi)
Outlet pressure	2/4/10/20/35/50 bar (29/58/145/290/507/725 psi)
Flow capacity	Kv = 1,462 (Cv = 1,7)
Oxygen use	Suitable

MATERIALS:

Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm	Hastelloy®*C276
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®** (FKM)
Filter	SS 316L
Adjusting Knob	ABS plastic

SPECIFICATIONS:

Inlet / outlet ports	1/2" FNPT
Other ports	1/4" FNPT
Weight	2,8 kg
Temperature range	-30°C to +74°C

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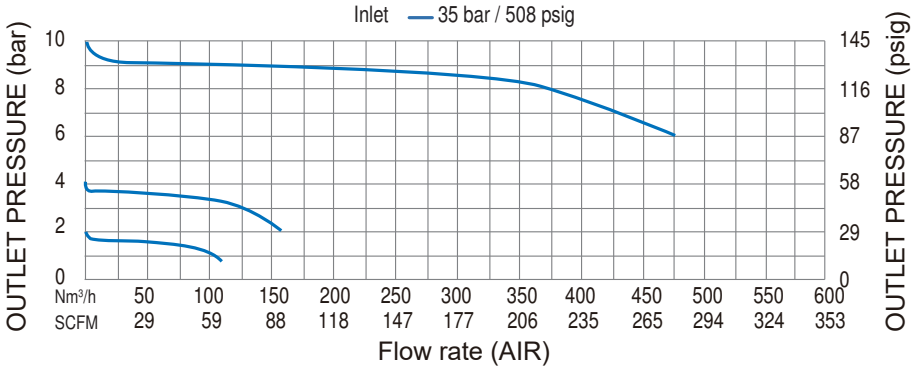
*** Viton® is a registered trademark of The Chemours Company*

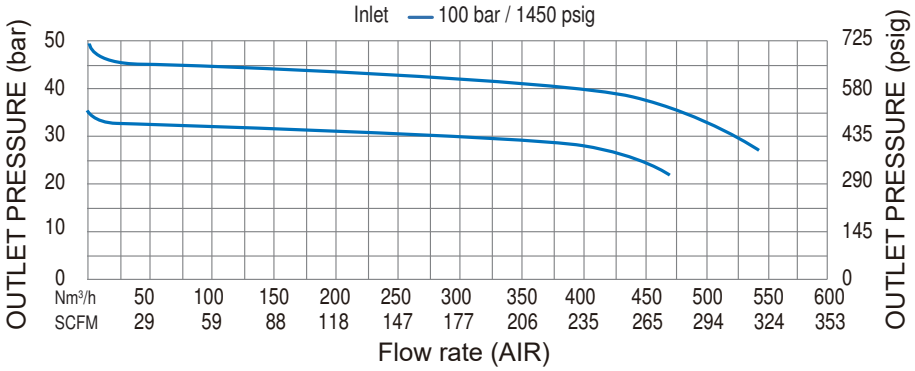
RELATED OPTIONS:

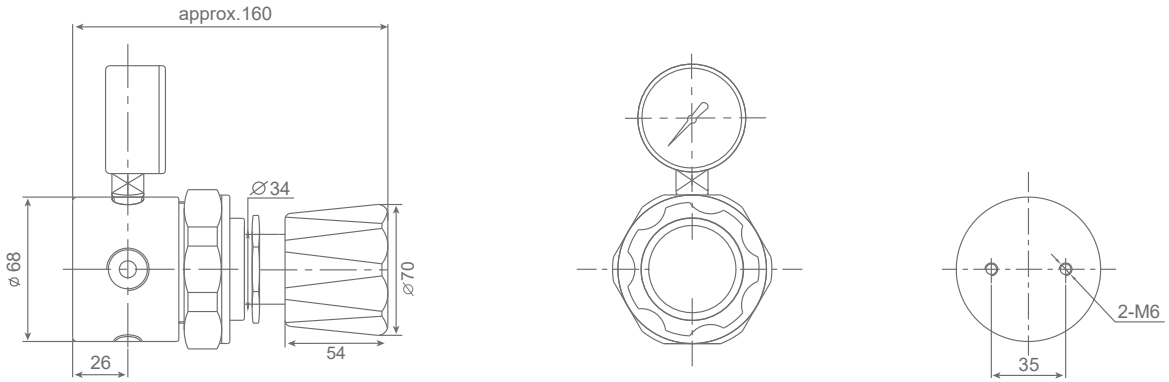
Wall mounting Bracket: HPI-L-BPB

FLOW CHART:

HPI 300L







ORDERING INFORMATION:

MODEL	MATERIAL	INLET CONFIGURATION		OUTLET PRESSURE		INLET CONNECTION		OUTLET CONFIGURATION		OPTIONS		GAS TYPE
HPI 300LC	Chrome-plated brass	Right	R	0 - 2 bar 0 - 29 psig	029	1/2" FNPT	000	1/2" FNPT	A	He leak cert. (inboard)	2	Please specify
HPI 300LS	Stainless steel	Left	L	0 - 4 bar 0 - 58 psig	058					No gauges	3	
				0 - 10 bar 0 - 145 psig	145					He leak cert. (outboard)	5	
				0 - 20 bar 0 - 290 psig	290					Wall mounting Bracket	P	
Other options upon request, please contact us				0 - 35 bar 0 - 507 psig	507							
				0 - 50 bar 0 - 725 psig	725							

For example:

HPI 300LC	R	507	000	A	2	N_2

HPI 600L

High purity and high pressure single-stage barstock line regulator

The Model HPI 600L is a single-stage high pressure line regulator that is designed to deliver high outlet pressures when used on high pressure cylinders up to 300 bar (4350 psig).
Regulator is available in chrome-plated brass (HPI 600LC) or stainless steel (HPI 600LS) barstock.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- High pressure gas applications
- High pressure testing
- Charging accumulators
- Pressurizing aircraft struts

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999)**
- Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- HPI 600LC - chrome-plated body, bonnet and fittings
- HPI 600LS - 316L stainless steel body, bonnet and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- 4 ports flexible configuration, one high pressure and three low pressure
- 1/8" NPT thread on the bonnet venting for safety in 316L SS version
- Maximum inlet pressure 300 bar (4350 psig)
- **Cleaned for oxygen service**

TECHNICAL DATA:

Type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 300 bar (4350 psi)
Outlet pressure	50/100/200 bar (725/1450/2900 psi)
Flow capacity	Kv = 0,129 (Cv = 0,15)
Oxygen use	Suitable

MATERIALS:

Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm	Hastelloy®*C276
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®** (FKM)
Filter	SS 316L
Adjusting Knob	ABS plastic

RELATED OPTIONS:

Wall mounting bracket: HPI-L-BPB

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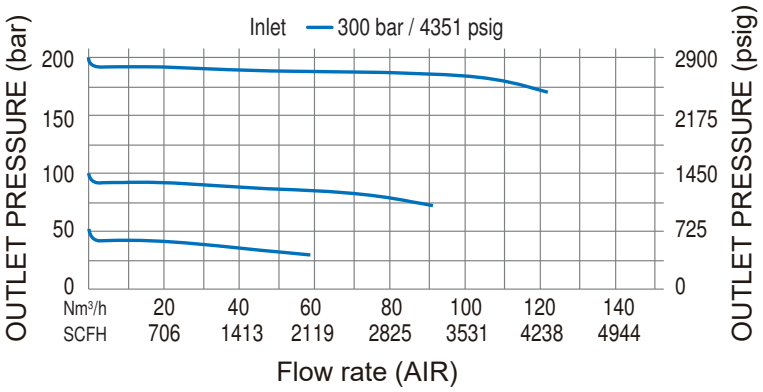
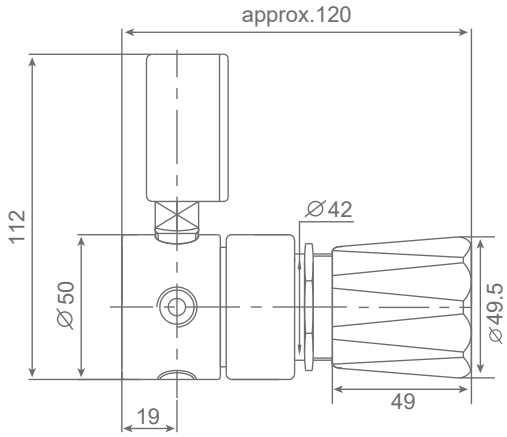
*** Viton® is a registered trademark of The Chemours Company*

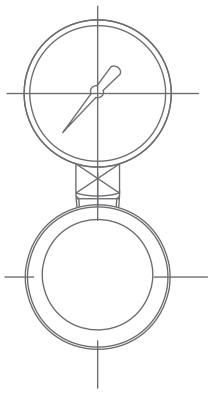
SPECIFICATIONS:

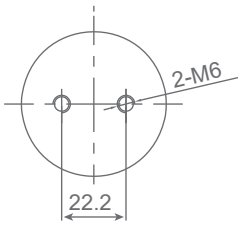
Inlet / outlet ports	1/4" FNPT
Weight	1,13 kg

FLOW CHART: HPI 600L









ORDERING INFORMATION:

MODEL	MATERIAL	INLET CONFIGURATION		OUTLET PRESSURE		INLET CONNECTION		OUTLET CONFIGURATION		OPTIONS		GAS TYPE
HPI 600LC	Chrome-plated brass	Right	R	0 - 50 bar 0 - 725 psig	725	1/4" FNPT	000	1/4" FNPT	A	He leak cert. (inboard)	2	Please specify
HPI 600LS	Stainless steel	Left	L	0 - 100 bar 0 - 1450 psig	1450	1/4" tube fitting	002	1/4" tube fitting	D	No gauges	3	
				0 - 200 bar 0 - 2900 psig	2900	6 mm tube fitting	003	6 mm tube fitting	F	He leak cert. (outboard)	5	
										Wall mounting Bracket	P	

Other options upon request, please contact us

For example:

HPI 600LC	R	720	000	A	2	N_2

HPI 400L

High purity and ultra-high flow single-stage barstock regulator

Model HPI 400L is a high flow in-line manifold regulator available in chrome-plated brass (HPI 400LC) or stainless steel (HPI 400LS) barstock for pipeline and other applications up to 40 bar (580 psig) inlet pressure.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- High flow gas applications
- Laser assist gases
- Pressure transfer
- Blanketing & high flow manifolds
- Bulk gas distribution systems
- Pharmacy industry
- Food industry
- Petrochemical industry

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999) and delivery pressures up to 20 bar (290 psig)**
- Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility
- Low pressure and high flow regulator
- Nylon reinforced diaphragm
- HPI 400LC - chrome-plated body, bonnet and fittings
- HPI 400LS - 316L stainless steel body, bonnet and fittings
- $1x10^{-4}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- 1/8" NPT thread on the bonnet venting for safety in 316L SS version
- Maximum inlet pressure 40 bar (290 psig)
- **Cleaned for oxygen service**

TECHNICAL DATA:

Type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 40 bar (580 psi)
Outlet pressure	2/4/10/20 bar (29/58/145/290 psi)
Flow capacity	Kv = 4,386 (Cv = 5,1)
Oxygen use	Suitable

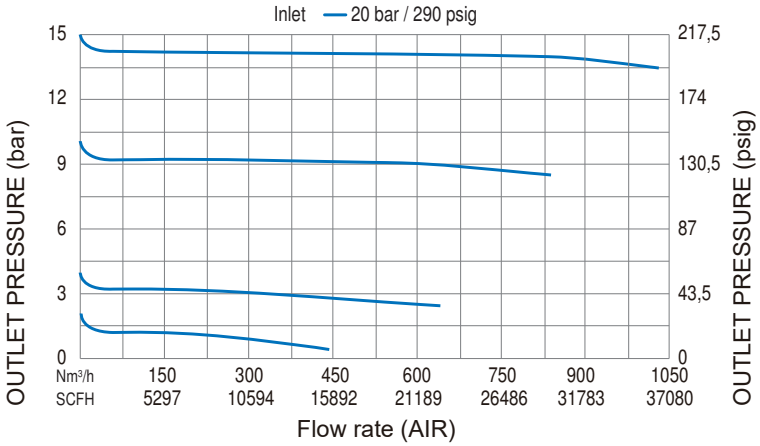
MATERIALS:

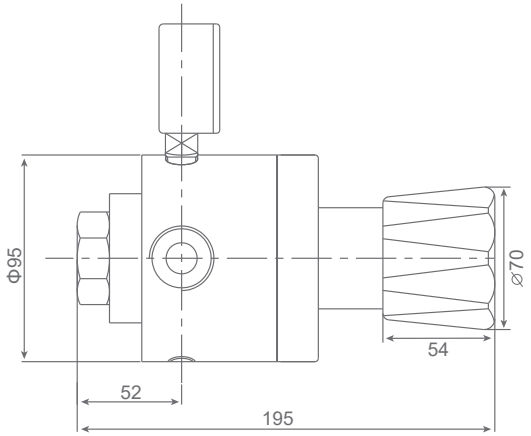
Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm	Nylon reinforced
Nozzle	316L stainless steel
Seat	Buna-N
Adjusting Knob	Aluminium

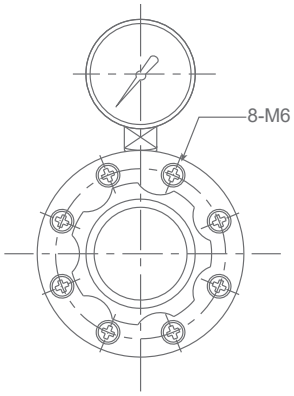
SPECIFICATIONS:

Inlet / outlet ports	1" FNPT
Other ports	1/4" FNPT
Weight	4,1 kg

FLOW CHART: HPI 400L







ORDERING INFORMATION:

MODEL	MATERIAL	INLET CONFIGURATION		OUTLET PRESSURE		INLET CONNECTION		OUTLET CONFIGURATION		OPTIONS		GAS TYPE
HPI 400LC	Chrome-plated brass	Right	R	0 - 2 bar 0 - 29 psig	029	1" FNPT	000	1" FNPT	A	He leak cert. (inboard)	2	Please specify
HPI 400LS	Stainless steel	Left	L	0 - 4 bar 0 - 58 psig	058					No gauges	3	
				0 - 10 bar 0 - 145 psig	145					He leak cert. (outboard)	5	
				0 - 20 bar 0 - 290 psig	290							

Other options upon request, please contact us

For example:

HPI 400LC	R	145	000	A	2	N_2

HPI 500L
High purity back pressure line regulator

Model HPI 500L is a line regulator available in chrome-plated brass (HPI 500LC) or stainless steel (HPI 500LS) barstock for protection pipeline against high pressure (function similar to relief valve).

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- Line protection against high pressure
- Component testing
- Calibration systems
- Laboratory pressure control
- High pressure sampling systems
- Service & test equipment

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999)**
- Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility
- Available for air, nitrogen or hydrogen gas service
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- HPI 500LC - chrome-plated body, bonnet and fittings
- HPI 500LS - 316L stainless steel body, bonnet and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- 3 ports flexible configuration
- Maximum inlet pressure 80 bar (1160 psig)
- **Cleaned for oxygen service**

TECHNICAL DATA:

Type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 80 bar (1160 psi)
Outlet pressure	2,5 – 10 bar (36 – 145 psi) 10 – 50 bar (145 – 725 psi) 50 – 80 bar (725 – 1160 psi)
Flow capacity	Kv = 0,086 (Cv = 0,10)
Oxygen use	Suitable

MATERIALS:

Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm	Hastelloy®*C276
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®** (FKM)
Filter	SS 316L
Adjusting Knob	ABS plastic

RELATED OPTIONS:

Wall mounting bracket: HPI-L-BPB

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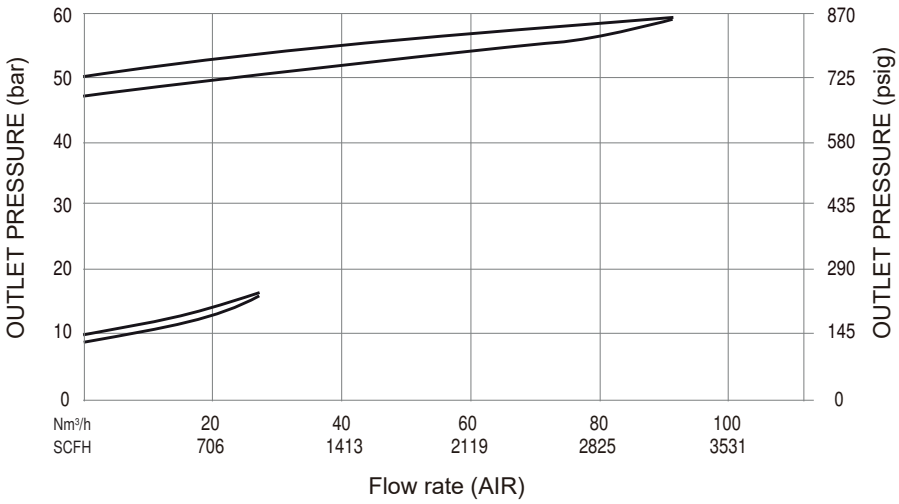
*** Viton® is a registered trademark of The Chemours Company*

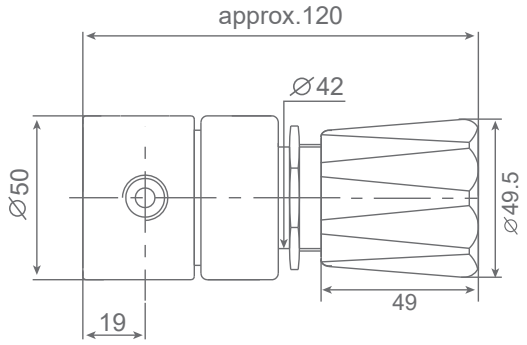
SPECIFICATIONS:

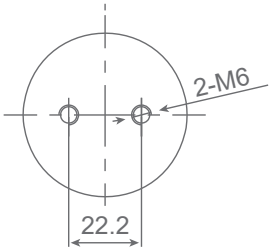
Inlet / outlet ports	1/4" FNPT
Weight	1,13 kg

FLOW CHART:

HPI 500L







ORDERING INFORMATION:

MODEL	MATERIAL	INLET CONFIGURATION		CONTROLLED PRESSURE RANGE		INLET CONNECTION		OUTLET CONFIGURATION		OPTIONS		GAS TYPE
HP 500LC	Chrome-plated brass	Right (standard)	R	2,5 - 10 bar 36,25 - 145 psig	145	1/4" FNPT	000	1/4" FNPT	A	He leak cert. (inboard)	2	Please specify
HP 500LS	Stainless steel			10 – 50 bar 145 – 725 psig	725					No gauges	3	
				50 – 80 bar 725– 1160 psig	1160					He leak cert. (outboard)	5	
										Wall mounting Bracket	P	

Other options upon request, please contact us

For example:

HPI 500LC	R	145	000	A	2	N_2

Gas Delivery Systems

When gases are used in significant volumes, a centralized gas delivery system is a practical necessity. A well-conceived delivery system will reduce operating costs, increase productivity and enhance safety.

A centralized system will allow the consolidation of all cylinders into one storage location. With all the cylinders in one place, inventory control will be streamlined and cylinder handling will be simplified and improved. Gases can be separated by type to enhance safety.

With gas delivery systems the frequency of cylinder changeouts are reduced. This reduction is achieved by connecting multiple cylinders to supply panels in banks in such a way that one bank can be safely vented, replenished and purged while a second bank provides continuous gas service. This type of system can supply gas to multiple applications and even entire facilities, eliminating the need for separate cylinders and regulators for each point of use.

Since cylinder switchover can be accomplished automatically by the supply panel, cylinders in a bank will be uniformly exhausted, resulting in improved gas utilization and lower costs. The integrity of the delivery system will be better protected since cylinder change-outs will be done in an isolated, controlled environment.

Purity

The level of gas purity required at each point of use is extremely important in designing a gas delivery system. Maintaining the gas purity is simplified with a centralized system as described above. Selection of materials for construction should be consistent throughout. For example, if a research grade gas is being utilized, all stainless steel construction and diaphragm packless shut-off valves should be used to eliminate contamination of the gas stream.

In general, three levels of purity are sufficient to describe nearly any application. The first level, usually described as a multi-purpose applications, has the least stringent purity requirement. Typical applications may include welding, cutting, laser assist, atomic absorption or ICP mass spectrometry. Gas supply panels for multipurpose applications are economically designed for safety and convenience. Acceptable materials for construction include brass, copper, Teflon®, Tefzel® and Viton®. Packed valves, such as needle valves and ball valves, are often used for flow shut-off. Gas distribution systems manufactured to this level should not be used with high purity or ultra-high purity gases.

The second level, called high-purity applications, requires a higher level of protection against contamination. Applications include laser resonator gases or chromatography where capillary columns are used and system integrity is important. Materials of construction are similar to multi-purpose manifolds, except flow shut-off valves are diaphragm packless to prevent diffusion of contaminants into the gas stream.

The third level is referred to as ultra-high purity applications. This level requires the highest level of purity for components in a gas delivery system. Trace measurement in gas chromatography is an example of an ultra-high purity application. Wetted materials for manifolds at this level must be selected to minimize trace components adsorption. These materials include 316L stainless steel, Teflon®, Tefzel® and Viton®*. All tubing should be 316SS cleaned and passivated. Flow shut-off valves must be diaphragm packless. It is particularly important to recognize that components that are suitable for multi-purpose applications may adversely affect results in high or ultra-high purity applications. For example, out-gassing from neoprene diaphragms in regulators can cause excessive baseline drift and unresolved peaks.

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Types of Gas Delivery Systems

SINGLE STATION SYSTEMS

In some applications, a gas is used only to calibrate instrumentation. For example, a continuous emissions monitoring system (CEMS) may only require calibration gases to flow for a few minutes each day. Such an application clearly does not require a large-scale automatic changeover manifold. However, the delivery system should be designed to protect against contamination of the calibration gas and to minimize costs associated with cylinder change-outs.

A single station supply panel with bracket is an ideal solution for this type of application. It provides a safe and cost-effective means of connecting and changing out cylinders by eliminating the need to struggle with the regulator. When the gas includes corrosive components such as HCl or NO, a purge assembly should be incorporated into the manifold to allow the regulator to be purged with an inert gas (usually nitrogen) to protect it from corrosion. The single station panel can also be equipped with a second pigtail. This arrangement allows an additional cylinder to be connected and held in reserve. Switchover is accomplished manually using the cylinder shut-off valves. This configuration is usually desirable with calibration gases since the precise mix of components generally varies somewhat from cylinder to cylinder. A cylinder change may require resetting the instrument.

SEMI-AUTOMATIC SWITCHOVER SYSTEMS

Many applications require continuous use and/or larger volumes of gases beyond what is practical for a single station manifold. Any pause in the gas supply results in lost or ruined experiments, a loss of productivity and even downtime for an entire facility. Semi-automatic switchover systems provide the capability to switch from a primary to a reserve cylinder or bank without interrupting the gas supply, thus minimizing costly downtime. Once the primary cylinder or bank is depleted, the system automatically switches to the reserve cylinder or bank for continuous gas flow. The user then changes the empty cylinders for new cylinders, while the gas is still flowing from the reserve side. A bi-directional valve is used to indicate the primary or reserve side during cylinder change-out.

FULLY AUTOMATIC PROGRAMABLE SWITCHOVER SYSTEMS

In some critical manufacturing and laboratory processes, an uninterrupted gas supply is an absolute necessity. Failure of the gas supply in these facilities can result in loss of an entire laboratory's in-process experiments or even shutdown of manufacturing production line or process. The potential cost of either of these events is so high that the installation of a gas delivery system, designed to provide an uninterrupted gas supply, is clearly justified. A fully automatic programmable switchover system is generally selected for these applications.

HPI 100P
High purity one-sided supply panel

The HPI 100P is a high purity gas supply panel. Manual adjustment of the regulator allow the user to set downstream pressure. The system includes purge function. Designed for applications where a slight rise in delivery pressure from full to empty cylinder can be tolerated or as first stage of pressure reduction.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- Laboratory pressure control
- Research sample systems gases
- Component testing
- Petrochemical industry
- Emission monitoring systems
- Controlled atmosphere
- Service & test equipment

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999)**
- **Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility**
- Wall mounting panel and brackets included
- Ready to install wall mounting panel
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- Purge function and diaphragm shut-off valves for the best results
- Possible to connect 2 gas cylinders or gas cylinder and a gas for purging operation
- HPI 100PC - chrome-plated body, bonnet and fittings
- HPI 100PS - 316L stainless steel body, bonnet and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- Inlet / outlet - 1/4" FNPT
- Maximum inlet pressure 300 bar (4350 psig)
- **External relief valve standard**
- **Cleaned for oxygen service**

TECHNICAL DATA:

Panel type	One-sided
Regulator type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 300 bar (4350 psi)
Outlet pressure	2/4/10/20 bar (29/58/145/290 psi) 50/100/200 bar (720/1450/2900 psig)
Purge function	Yes
Oxygen use	Suitable

MATERIALS:

Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm (regulator)	Hastelloy®*C276
Diaphragm (valve)	Elgiloy®**
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®*** (FKM)
Filter	SS 316L
Adjusting Knob	ABS plastic

** Hastelloy® is a registered trademark name of Haynes International, Inc*
***Elgiloy® a registered trademark of Elgiloy Specialty Metals*
**** Viton® is a registered trademark of The Chemours Company*

RELATED OPTIONS:

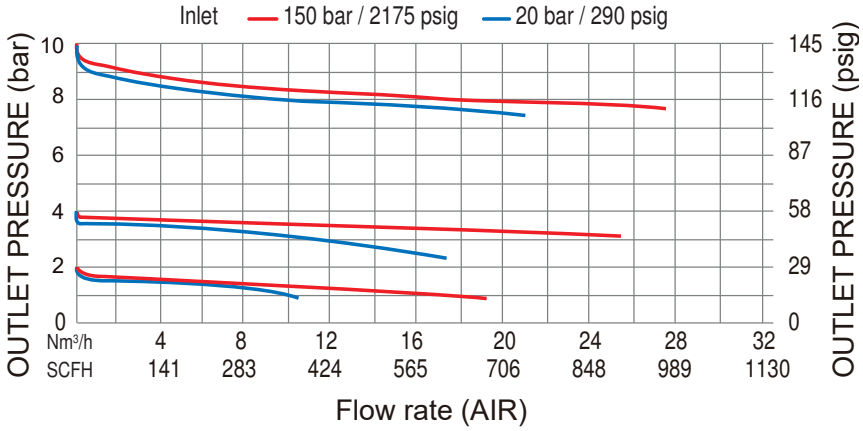
4302085	ALARM, 1 connection
4302086	ALARM, 2 connections
4302087	ALARM, 4 connections
4302088	ALARM, 6 connections
4302089	ALARM, 10 connections

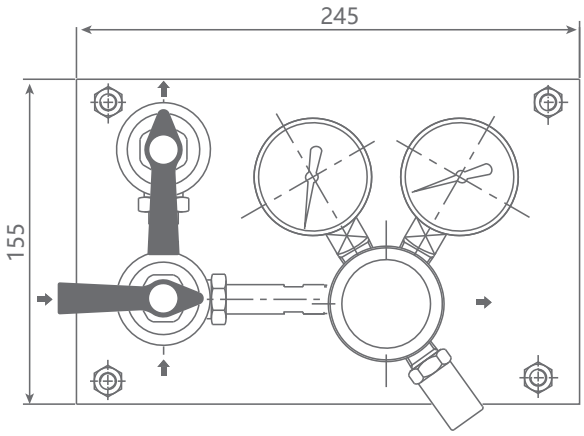
SPECIFICATIONS:

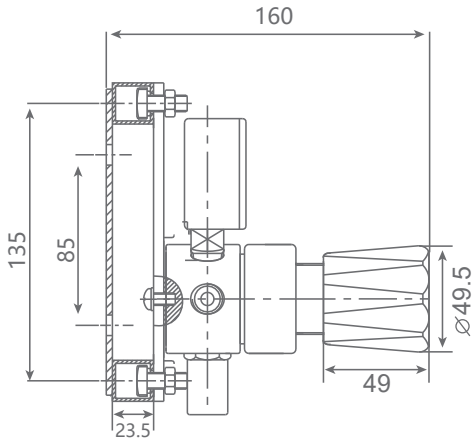
Inlet / outlet ports	1/4" FNPT
Weight	3,3 kg

FLOW CHART:

HPI 100P







ORDERING INFORMATION:

MODEL	MATERIAL	OUTLET PRESSURE		GAS TYPE
HPI 100PC	Chrome-plated brass	0 - 2 bar 0 - 29 psig	029	Please specify
HPI 100PS	Stainless steel	0 - 4 bar 0 - 58 psig	058	
		0 - 10 bar 0 - 145 psig	145	
		0 - 20 bar 0 - 290 psig	290	

For example:

HPI 100PC	290	N_2

HPI 200P
High purity manual switchover supply panel

The HPI 200P is a manual switchover high purity gas supply panel that prevents downtime by manually switching gas supply from the primary cylinder bank to the reserve cylinder bank. Manual adjustment of the individual regulator allow the user to set downstream pressure. The system includes purge function. Designed for applications where a slight rise in delivery pressure from full to empty cylinder can be tolerated or as first stage of pressure reduction.

Model shown with additional accessories to be ordered separately

APPLICATIONS:
- Laboratory pressure control
- Research sample systems gases
- Component testing
- Petrochemical industry
- Emission monitoring systems
- Controlled atmosphere
- Service & test equipment

FEATURES:
- **Recommended gases purity levels up to grade 6.0 (99.9999)**
- **Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility**
- Wall mounting panel and brackets included
- Ready to install wall mounting panel
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- Purge function and diaphragm shut-off valves for the best results
- Possible to connect 2 gas cylinders or gas cylinder and a gas for purging operation
- HPI 200PC - chrome-plated body, bonnet and fittings
- HPI 200PS - 316L ctainless steel body, bonnet and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- Inlet / outlet - 1/4" FNPT
- Maximum inlet pressure 300 bar (4350 psig)
- **External relief valve standard**
- **Cleaned for oxygen service**

TECHNICAL DATA:

Panel type	Manual switchover supply panel
Regulator type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 300 bar (4350 psi)
Outlet pressure	2/4/10/20 bar (29/58/145/290 psi) 50/100/200 bar (720/1450/2900 psig)
Purge function	Yes
Oxygen use	Suitable

MATERIALS:

Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm (regulator)	Hastelloy®*C276
Diaphragm (valve)	Elgiloy®**
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®*** (FKM)
Filter	SS 316L
Adjusting Knob	Aluminium

** Hastelloy® is a registered trademark name of Haynes International, Inc*
***Elgiloy® a registered trademark of Elgiloy Specialty Metals*
**** Viton® is a registered trademark of The Chemours Company*

RELATED OPTIONS:

4302085	ALARM, 1 connection
4302086	ALARM, 2 connections
4302087	ALARM, 4 connections
4302088	ALARM, 6 connections
4302089	ALARM, 10 connections

EXTENSIONS:

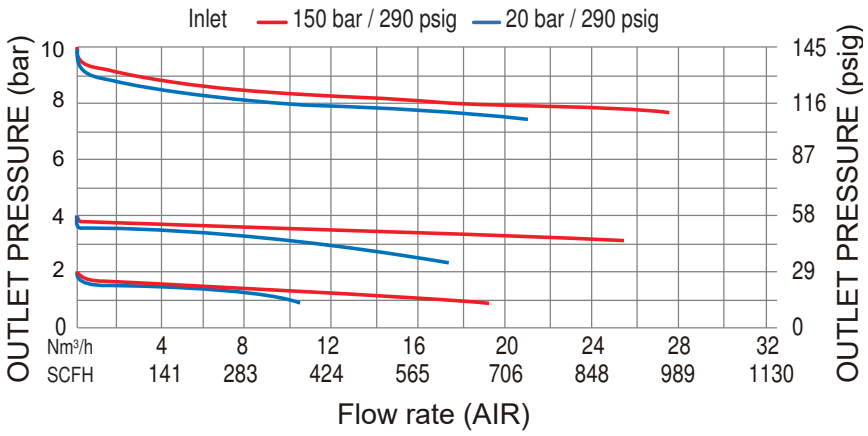
See page 70

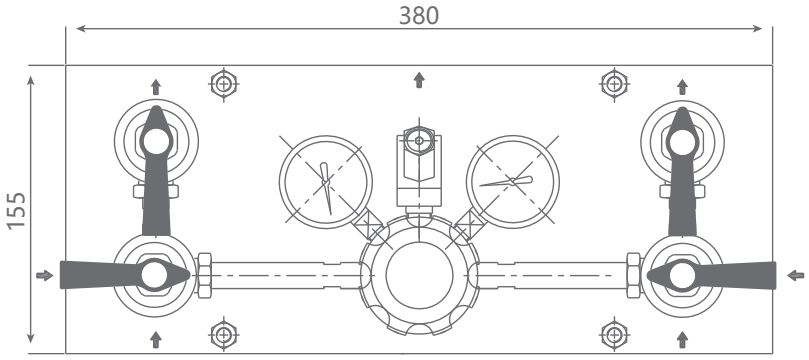
SPECIFICATIONS:

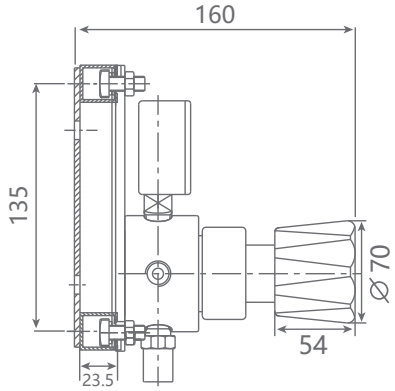
Inlet / outlet ports	1/4" FNPT
Weight	4,5 kg

FLOW CHART:

HPI 200P







ORDERING INFORMATION:

MODEL	MATERIAL	OUTLET PRESSURE		GAS TYPE
HPI 200PC	Chrome-plated brass	0 - 2 bar 0 - 29 psig	029	Please specify
HPI 200PS	Stainless steel	0 - 4 bar 0 - 58 psig	058	
		0 - 10 bar 0 - 145 psig	145	
		0 - 20 bar 0 - 290 psig	290	

For example:

HPI 200PC	145	Ar

HPI 300P

High purity semi-automatic switchover supply panel

3 YEAR WARRANTY FOR REGULATORS WITH NON-CORROSIVE GASES

The HPI 300P is a semi-automatic high purity switchover panel which prevents downtime by automatically switching gas supply from the primary cylinder bank to the reserve cylinder. The user resets the primary bank by turning the knob. Outlet pressure is factory pre-set.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- Laboratory pressure control
- Research sample systems gases
- Component testing
- Petrochemical industry
- Emission monitoring systems
- Controlled atmosphere
- Service & test equipment

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999)**
- Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility
- Wall mounting panel and brackets included
- Ready to install wall mounting panel
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- Purge function and diaphragm shut-off valves for the best results
- Possible to connect 2 gas cylinders or gas cylinder and a gas for purging operation
- HPI 300PC - chrome-plated body, bonnet and fittings
- HPI 300PS - 316L ctainless steel body, bonnet and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- Inlet / outlet - 1/4" FNPT
- Maximum inlet pressure 300 bar (4350 psig)
- **External relief valve standard**
- **Cleaned for oxygen service**

TECHNICAL DATA:

Panel type	Semi-automatic switchover supply panel
Regulator type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 300 bar (4350 psi)
Outlet pressure	2/4/10/20 bar (29/58/145/290 psi)
Purge function	Yes
Oxygen use	Suitable

MATERIALS:

Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm (regulator)	Hastelloy®*C276
Diaphragm (valve)	Elgiloy®**
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®*** (FKM)
Filter	SS 316L
Adjusting Knob	Aluminium

** Hastelloy® is a registered trademark name of Haynes International, Inc*
***Elgiloy® a registered trademark of Elgiloy Specialty Metals*
**** Viton® is a registered trademark of The Chemours Company*

RELATED OPTIONS:

4302085	ALARM, 1 connection
4302086	ALARM, 2 connections
4302087	ALARM, 4 connections
4302088	ALARM, 6 connections
4302089	ALARM, 10 connections

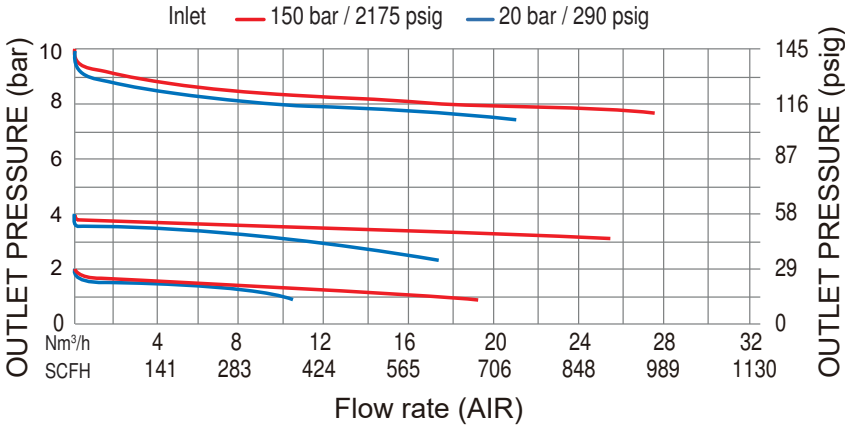
EXTENSIONS:

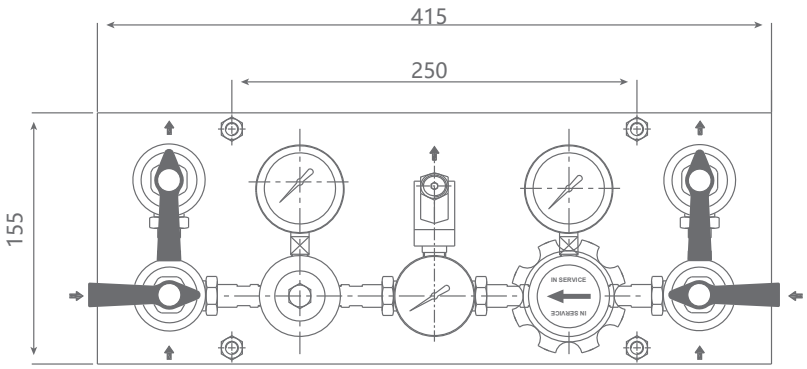
See page 70

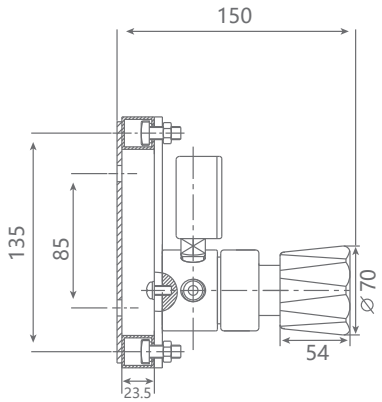
SPECIFICATIONS:

Inlet / outlet ports	1/4" FNPT
Weight	4,8 kg

FLOW CHART: HPI 300P







ORDERING INFORMATION:

MODEL	MATERIAL	OUTLET PRESSURE		GAS TYPE
HPI 300PC	Chrome-plated brass	2 bar 29 psig	029	Please specify
HPI 300PS	Stainless steel	4 bar 58 psig	058	
		10 bar 145 psig	145	
		20 bar 290 psig	290	
For example:				
HPI 300PC			290	N_2

HPI 800P
High purity semi-automatic switchover supply panel

3 YEAR WARRANTY FOR REGULATORS WITH NON-CORROSIVE GASES

The HPI 800P is a semi-automatic high purity switchover panel which prevents downtime by automatically switching gas supply from the primary cylinder bank to the reserve cylinder. The user resets the primary bank by turning the knob. Outlet pressure is factory pre-set.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- Laboratory pressure control
- Research sample systems gases
- Component testing
- Petrochemical industry
- Emission monitoring systems
- Controlled atmosphere
- Service & test equipment

FEATURES:

- **Recommended for non-corrosive gases purity levels up to grade 6.0 (99.9999)**
- Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility
- Wall mounting panel and brackets included
- Ready to install wall mounting panel
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- Purge function and diaphragm shut-off valves for the best results
- Possible to connect 2 gas cylinders or gas cylinder and a gas for purging operation
- HPI 800PC - chrome-plated body, bonnet and fittings
- HPI 800PS - 316L ctainless steel body, bonnet and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- Inlet / outlet - 1/4" FNPT
- Maximum inlet pressure 300 bar (4350 psig)
- **Cleaned for oxygen service**

TECHNICAL DATA:

Panel type	Semi-automatic switchover supply panel
Regulator type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 300 bar (4350 psi)
Outlet pressure	2/4/10/20 bar (29/58/145/290 psi)
Purge function	Yes
Oxygen use	Suitable

MATERIALS:

Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm (regulator)	Hastelloy®*C276
Diaphragm (valve)	Elgiloy®**
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®*** (FKM)
Filter	SS 316L
Adjusting Knob	Aluminium

** Hastelloy® is a registered trademark name of Haynes International, Inc*
***Elgiloy® a registered trademark of Elgiloy Specialty Metals*
**** Viton® is a registered trademark of The Chemours Company*

RELATED OPTIONS:

4302085	ALARM, 1 connection
4302086	ALARM, 2 connections
4302087	ALARM, 4 connections
4302088	ALARM, 6 connections
4302089	ALARM, 10 connections

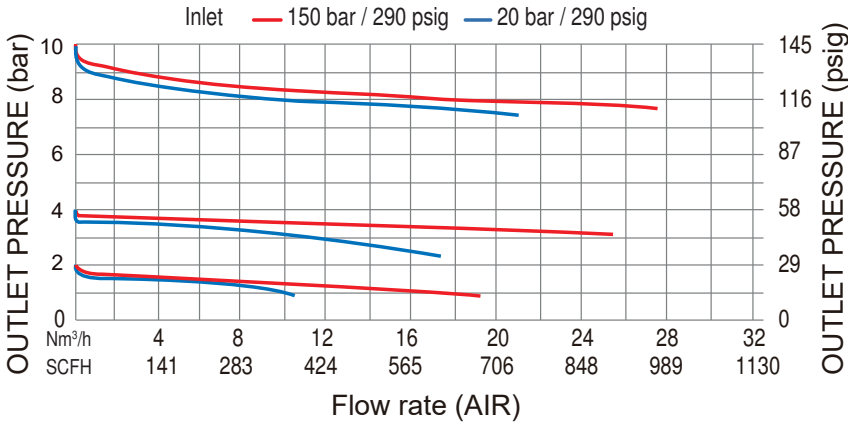
EXTENSIONS:

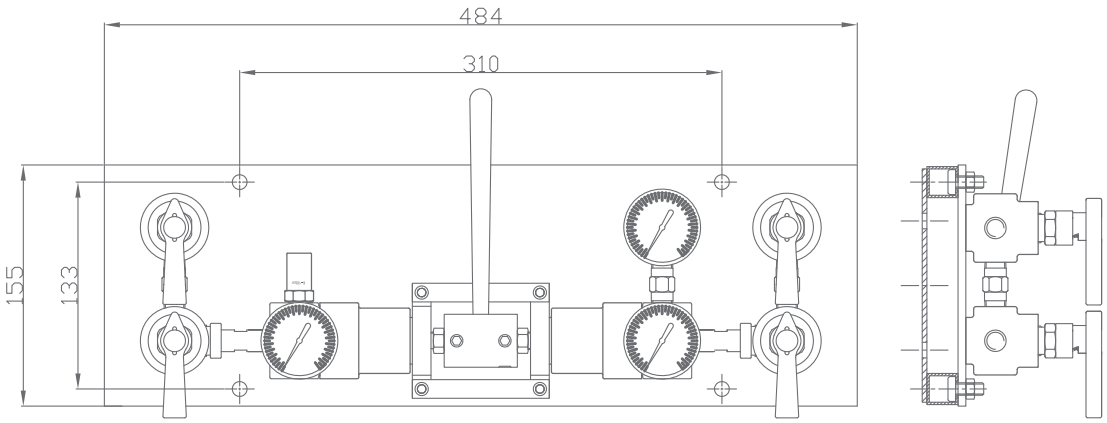
See page 70

SPECIFICATIONS:

Inlet / outlet ports	1/4" FNPT
Weight	4,8 kg

FLOW CHART: HPI 800P





ORDERING INFORMATION:

MODEL	MATERIAL	OUTLET PRESSURE		GAS TYPE
HPI 800PC	Chrome-plated brass	2 bar 29 psig	029	Please specify
HPI 800PS	Stainless steel	4 bar 58 psig	058	
		10 bar 145 psig	145	
		20 bar 290 psig	290	
For example:				
HPI 800PC			145	N_2

HPI 600P

High purity and high flow semi-automatic switchover supply panel

3 YEAR WARRANTY FOR REGULATORS WITH NON-CORROSIVE GASES

The HPI 600P is a high flow semi-automatic high purity switchover prevents downtime by automatically switching gas supply from the primary cylinder bank to the reserve cylinder. The user resets the primary bank by turning the knob. Outlet pressure is factory pre-set.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- Laboratory pressure control
- Research sample systems gases
- Component testing
- Petrochemical industry
- Emission monitoring systems
- Controlled atmosphere
- Service & test equipment

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999)**
- Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility
- Wall mounting panel and brackets included
- Ready to install wall mounting panel
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- Purge function and diaphragm shut-off valves for the best results
- Possible to connect 2 gas cylinders or gas cylinder and a gas for purging operation
- HPI 600PC - chrome-plated body, bonnet and fittings
- HPI 600PS - 316L ctainless steel body, bonnet and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- Inlet / outlet - 1/4" FNPT
- Maximum inlet pressure 300 bar (4350 psig)
- **Cleaned for oxygen service**

TECHNICAL DATA:

Panel type	Semi-automatic switchover supply panel
Regulator type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 300 bar (4350 psi)
Outlet pressure	2/4/10/20 bar (29/58/145/290 psi)
Purge function	Yes
Oxygen use	Suitable

MATERIALS:

Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm (regulator)	Hastelloy®*C276
Diaphragm (valve)	Elgiloy®**
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®*** (FKM)
Filter	SS 316L
Adjusting Knob	Aluminium

** Hastelloy® is a registered trademark name of Haynes International, Inc*
***Elgiloy® a registered trademark of Elgiloy Specialty Metals*
**** Viton® is a registered trademark of The Chemours Company*

RELATED OPTIONS:

4302085	ALARM, 1 connection
4302086	ALARM, 2 connections
4302087	ALARM, 4 connections
4302088	ALARM, 6 connections
4302089	ALARM, 10 connections

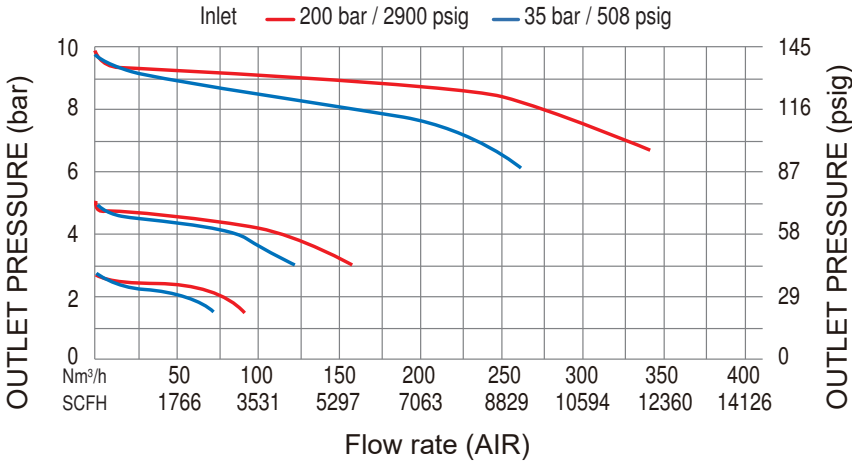
EXTENSIONS:

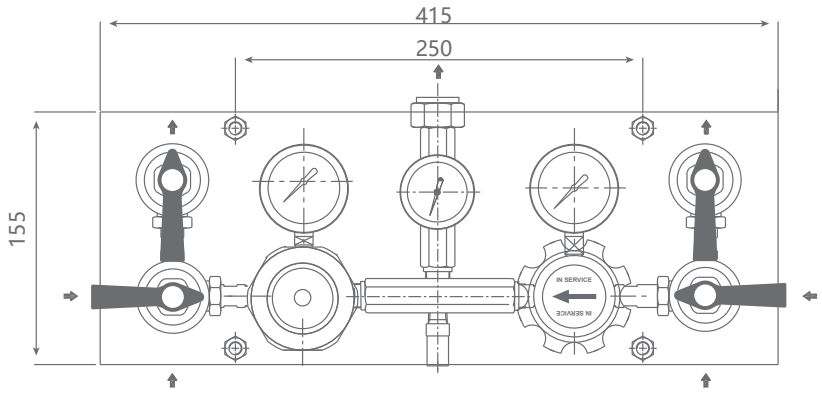
See page 70

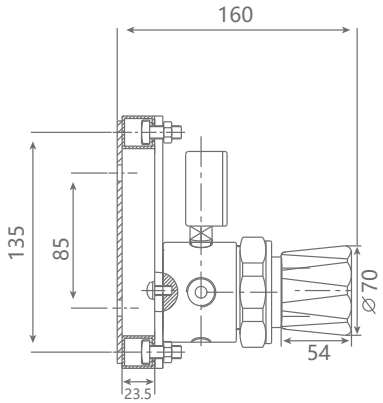
SPECIFICATIONS:

Inlet / outlet ports	1/4" FNPT
Weight	6,8 kg

FLOW CHART: HPI 600P







ORDERING INFORMATION:

MODEL	MATERIAL	OUTLET PRESSURE		GAS TYPE
HPI 600PC	Chrome-plated brass	2 bar 29 psig	029	Please specify
HPI 600PS	Stainless steel	4 bar 58 psig	058	
		10 bar 145 psig	145	
		20 bar 290 psig	290	
For example:				
HPI 600PC			145	N_2

HPI 130P

High purity one-sided supply panel with two-stage regulator

The HPI 130P is a high purity two-stage gas supply panel available in chrome-plated brass (HPI 130PC) or stainless steel (HPI 130PS) barstock. Manual adjustment of the regulator allow the user to set downstream pressure. The system includes purge function. Designed for constant delivery pressure from full to near empty cylinder conditions.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- High purity gas applications
- Research sample systems gases
- Gas chromatography
- Calibration gas
- Process analyzer gases
- Emission monitoring systems
- Laser applications

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999)**
- Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility
- Wall mounting panel and brackets included
- Ready to install wall mounting panel
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- Purge function and diaphragm shut-off valves for the best results
- Possible to connect 2 gas cylinders or gas cylinder and a gas for purging
- HPI 130PC - chrome-plated body, bonnet and fittings
- HPI 130PS - 316L stainless steel body, bonnet and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- Inlet / outlet - 1/4" FNPT
- Maximum inlet pressure 300 bar (4350 psig)
- **Cleaned for oxygen service**

TECHNICAL DATA:

Panel type	One-sided
Regulator type	Two-stage
Purity	Up to 6.0
Inlet pressure	Max. 300 bar (4350 psi)
Outlet pressure	2/4/10/20 bar (29/58/145/290 psi)
Purge function	Yes
Oxygen use	Suitable

MATERIALS:

Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm (regulator)	Hastelloy®*C276
Diaphragm (valve)	Elgiloy®**
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®*** (FKM)
Filter	SS 316L
Adjusting Knob	ABS plastic

** Hastelloy® is a registered trademark name of Haynes International, Inc*
***Elgiloy® a registered trademark of Elgiloy Specialty Metals*
**** Viton® is a registered trademark of The Chemours Company*

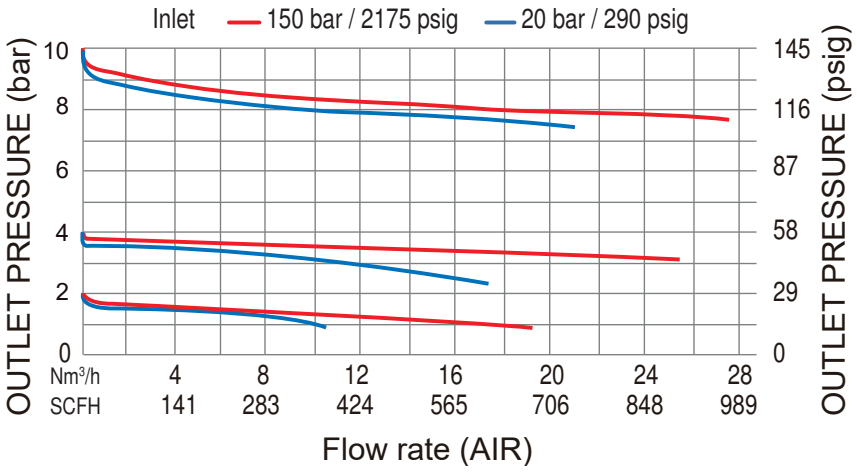
RELATED OPTIONS:

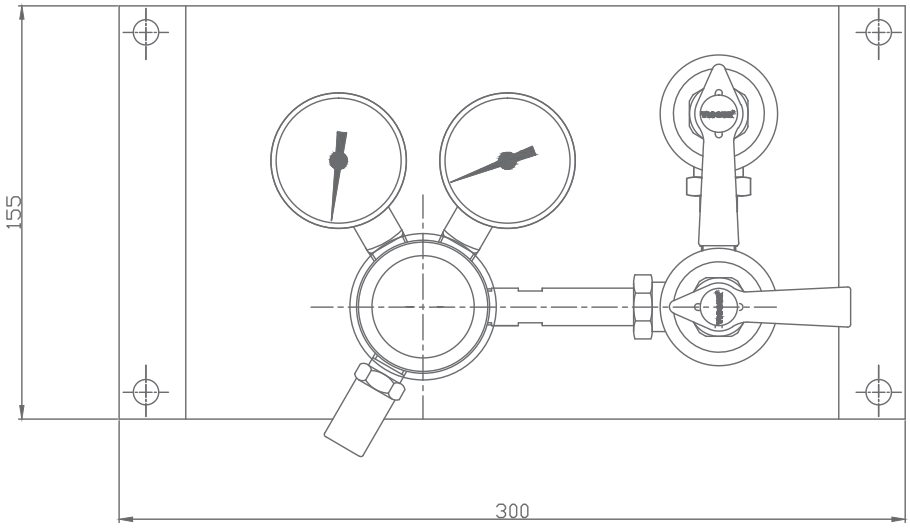
4302085	ALARM, 1 connection
4302086	ALARM, 2 connections
4302087	ALARM, 4 connections
4302088	ALARM, 6 connections
4302089	ALARM, 10 connections

SPECIFICATIONS:

Inlet / outlet ports	1/4" FNPT
Weight	4,4 kg

FLOW CHART: HPI 130P





ORDERING INFORMATION:

MODEL	MATERIAL	OUTLET PRESSURE		GAS TYPE
HPI 130PC	Chrome-plated brass	0 - 2 bar 0 - 29 psig	029	Please specify
HPI 130PS	Stainless steel	0 - 4 bar 0 - 58 psig	058	
		0 - 10 bar 0 - 145 psig	145	
		0 - 20 bar 0 - 290 psig	290	

For example:

HPI 130PC	145	N_2

HPI 120P

High purity two-stage manual switchover supply panel

The HPI 120P is a high purity two-stage manual switchover gas supply panel which prevents downtime by manually switching gas supply from the primary cylinder bank to the reserve cylinder bank. Gas supply panel is available in chrome-plated brass (HPI 120PC) or stainless steel (HPI 120PS) barstock. The system includes purge function. Designed for constant delivery pressure from full to near empty cylinder. Outlet pressure is factory pre-set.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- High purity gas applications
- Research sample systems gases
- Gas chromatography
- Calibration gas
- Process analyzer gases
- Emission monitoring systems
- Laser applications

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999)**
- Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility
- Wall mounting panel and brackets included
- Ready to install wall mounting panel
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- Purge function and diaphragm shut-off valves for the best results
- Possible to connect 2 gas cylinders or gas cylinder and a gas for purging operation
- HPI 120PC - chrome-plated body, bonnet and fittings
- HPI 120PS - 316L stainless steel body, bonnet and fittings
- 1x10^{-9} mbar l/s He inboard helium leak rate to maintain gas purity levels
- Inlet / outlet - 1/4" FNPT
- Maximum inlet pressure 300 bar (4350 psig)
- **Cleaned for oxygen service**

TECHNICAL DATA:

Panel type	Manual switchover supply panel
Regulator type	Two-stage
Purity	Up to 6.0
Inlet pressure	Max. 300 bar (4350 psi)
Outlet pressure	2/4/10/20 bar (29/58/145/290 psi)
Purge function	Yes
Oxygen use	Suitable

MATERIALS:

Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm (regulator)	Hastelloy®*C276
Diaphragm (valve)	Elgiloy®**
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®*** (FKM)
Filter	SS 316L
Adjusting Knob	Aluminium

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***Elgiloy® a registered trademark of Elgiloy Specialty Metals*
**** Viton® is a registered trademark of The Chemours Company*

RELATED OPTIONS:

4302085	ALARM, 1 connection
4302086	ALARM, 2 connections
4302087	ALARM, 4 connections
4302088	ALARM, 6 connections
4302089	ALARM, 10 connections

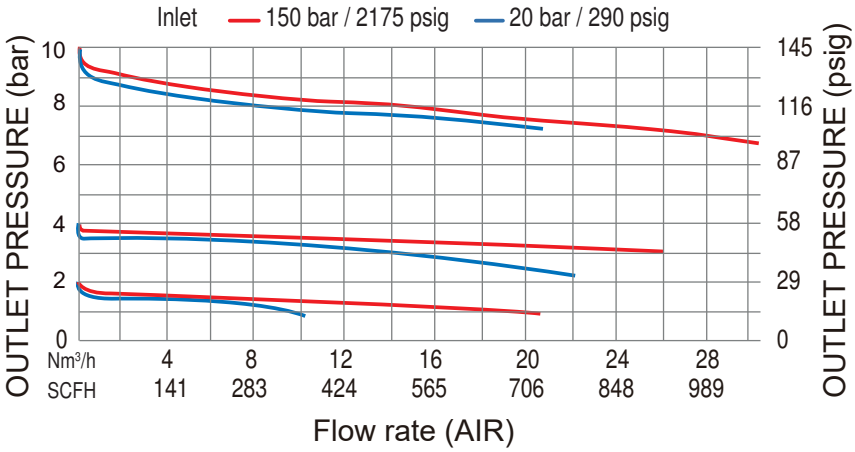
EXTENSIONS:

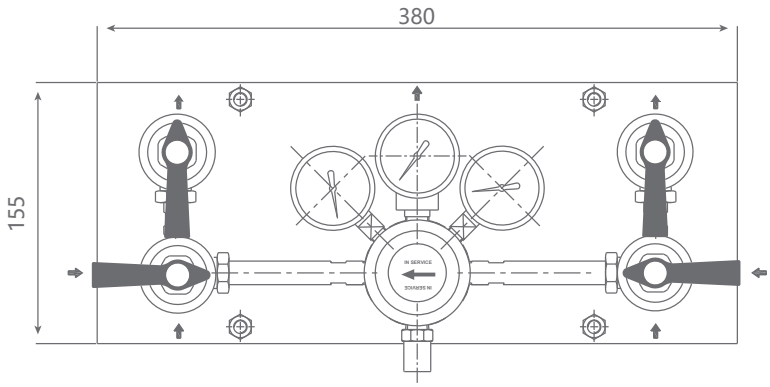
See page 70

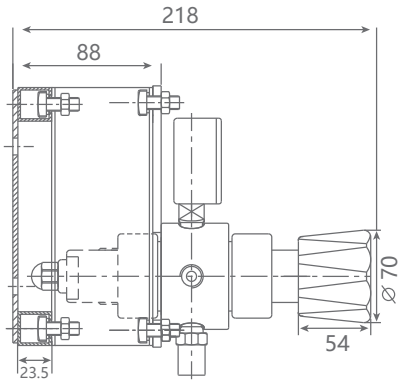
SPECIFICATIONS:

Inlet / outlet ports	1/4" FNPT
Weight	4,5 kg

FLOW CHART: HPI 120P







ORDERING INFORMATION:

MODEL	MATERIAL	OUTLET PRESSURE		GAS TYPE
HPI 120PC	Chrome-plated brass	2 bar 29 psig	029	Please specify
HPI 120PS	Stainless steel	4 bar 58 psig	058	
		10 bar 145 psig	145	
		20 bar 290 psig	290	

For example:

HPI 120PC	145	N_2

SG 905 SS

High purity single regulator mounting station

The SG 905 SS semi-automatic high purity switchover prevents downtime by automatically switching gas supply from the primary cylinder bank to the reserve cylinder bank. The user resets the primary bank by turning the knob. Manual adjustment of the individual regulators is not required.

All systems include a line control regulator.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- Semi-automatic switchover

FEATURES:

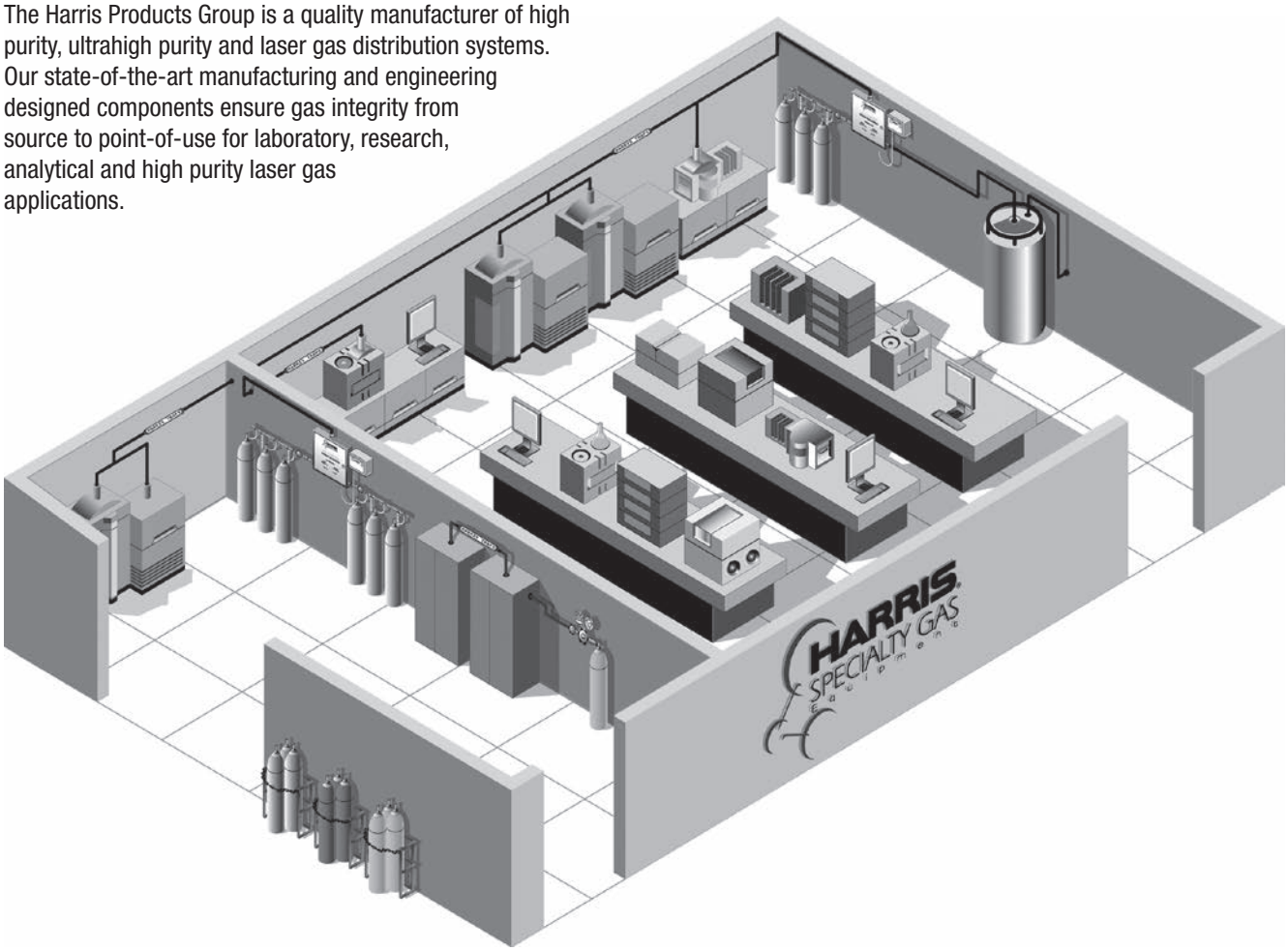
- Wall mounting panel and brackets included
- Maximum inlet pressure 210 bar 3000 psig
- Delivery pressure: 0-125 psig; except acetylene 0-15 psig
- Inlet / outlet - 1/4" NPT
- Headers include diaphragm-type shut-off valves
- All systems include stainless steel pigtails with check valves and stainless steel inner core
- Acetylene includes dry-type flash arrestors on pigtail end
- All pigtails have protective armour casing for added safety

SPECIFICATIONS:

MODEL	MAXIMUM INLET PRESSURE	MAXIMUM FLOW RATE	DELIVERY RANGE	
905 (Oxy/Inert)	210 bar 3000 psig	8,5 Nm^3/h 300 SCFH	0 - 8,5 bar 0 - 125 psig	125
905 (LPG)	27,5 bar 400 psig	5,66 Nm^3/h 200 SCFH	0 - 3,5 bar 0 - 50 psig	050
905 (Acetylene)	27,5 bar 400 psig	2,8 Nm^3/h 100 SCFH	0 - 1 bar 0 - 15 psig	015

SPECIALTY GAS / LASER GAS

The Harris Products Group is a quality manufacturer of high purity, ultrahigh purity and laser gas distribution systems. Our state-of-the-art manufacturing and engineering designed components ensure gas integrity from source to point-of-use for laboratory, research, analytical and high purity laser gas applications.



GAS PRESSURE CONTROL PANELS

POINT OF USE SYSTEMS

FOR GAS CHROMATOGRAHY

BACK-UP SYSTEM

FOR GAS GENERATORS

GAS SUPPLY PANELS

FOR LASER APPLICATIONS

HPI 100PB
High purity generator back-up panel

Model HPI 100PB provides a continuous backup supply of gas in case of generator failure or loss of power. The system automatically switches to a backup cylinder of gas when the generator supply pressure drops below a preset value. The process will automatically reverse when the gas supplied by the generator returns to a normal level.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- Back-up for gas generator
- Laboratory pressure control
- Research sample systems gases

FEATURES:

- Ready to install wall mounting panel
- Wall mounting panel and brackets included
- Includes 1000 mm flexible pigtail
- 1/4 turn isolation shut off valves included
- 1/4” FNPT outlet connection
- 1/4” FNPT inlet connection with reverse flow check valve
- Inlet / outlet tube fittings on request
- Maximum inlet pressure 300 bar (4350 psig)
- Recommended for air, nitrogen or hydrogen gas service

TECHNICAL DATA:

Regulator type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 300 bar (4350 psi)
Outlet pressure	10 bar (145 psi)
Flow capacity	Kv = 0,0688 (Cv = 0,08)
Purge function	Yes
Oxygen use	Suitable

MATERIALS:

Body, bonnet	Chrome-plated brass barstock
Diaphragm (regulator)	Hastelloy®*C276
Diaphragm (valve)	Elgiloy®**
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®*** (FKM)
Filter	SS 316L
Adjusting Knob	ABS plastic

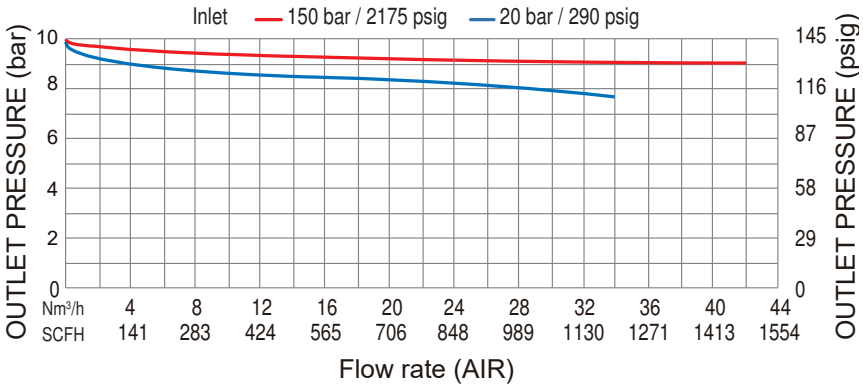
** Hastelloy® is a registered trademark name of Haynes International, Inc*
***Elgiloy® a registered trademark of Elgiloy Specialty Metals*
**** Viton® is a registered trademark of The Chemours Company*

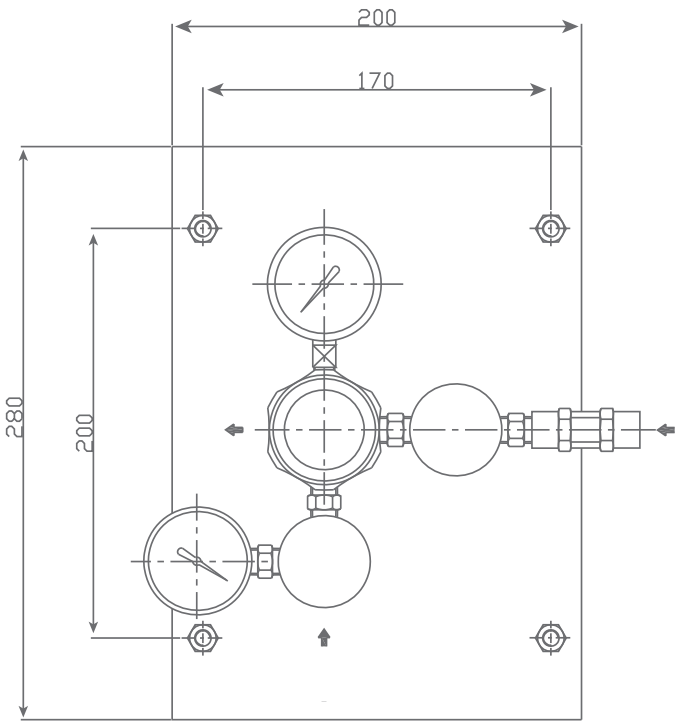
SPECIFICATIONS:

Inlet / outlet ports	1/4" FNPT
Weight	2,5 kg

FLOW CHART:

HPI 100PB





ORDERING INFORMATION:

MODEL	MATERIAL	OUTLET PRESSURE		GAS TYPE
HPI 100PB	Chrome-plated brass	0 - 10 bar 0 - 145 psig	145	Please specify
For example:				
HPI 100PB			145	Air

HPI 100TP
High purity wall mounted point of use

Model HPI 100TP is a wall mounted point of use regulator available in chrome-plated brass (HPI 100TPC) or stainless steel (HPI 100TPS) barstock.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- High purity gas applications
- Research sample systems gases
- Gas chromatography
- Calibration gas
- Process analyzer gases

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999)**
- Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility
- Wall mounting panel and brackets included
- Ready to install wall mounting panel
- Based on HPI 100L regulator
- 3 inlet port available configuration – top as a standard
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- Diaphragm inlet shut-off valves
- Modular design
- HPI 100TPC - chrome-plated body, bonnet and fittings
- HPI 100TPS - 316L stainless steel body, bonnet and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- Inlet / outlet - 1/4" FNPT
- Maximum inlet pressure 40 bar (580 psig)
- **Cleaned for oxygen service**

TECHNICAL DATA:

Regulator type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 40 bar (580 psi)
Outlet pressure	2/4/10 bar (29/58/145 psi) 20 bar (290 psig) on request
Flow capacity	Kv = 0,0602 (Cv = 0,07)
Oxygen use	Suitable

MATERIALS:

Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm (regulator)	Hastelloy®*C276
Diaphragm (valve)	Hastelloy®*C276
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®** (FKM)
Filter	SS 316L
Adjusting Knob	ABS plastic

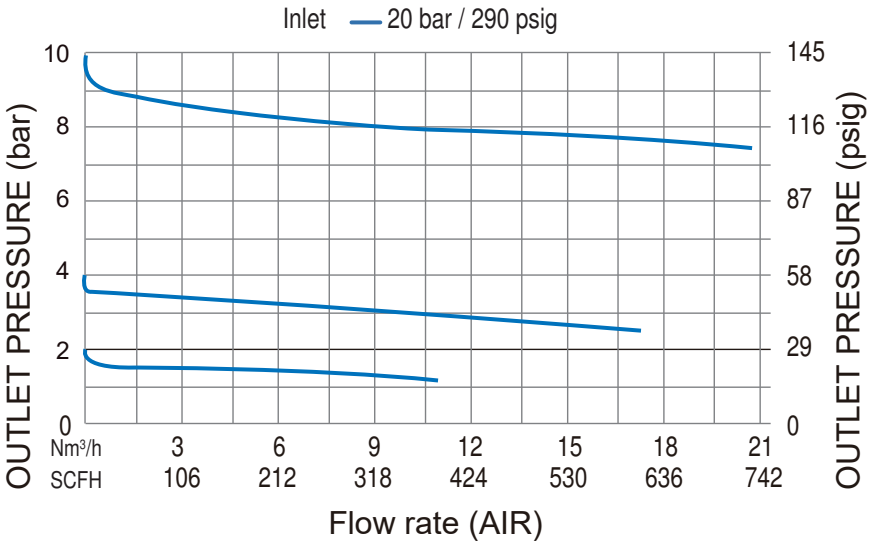
** Hastelloy® is a registered trademark name of Haynes International, Inc*
*** Viton® is a registered trademark of The Chemours Company*

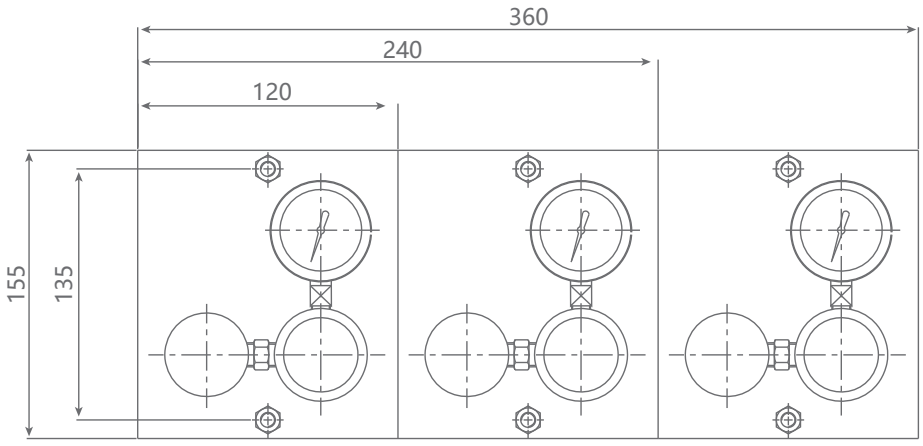
SPECIFICATIONS:

Inlet / outlet ports	1/4" FNPT
Weight	2,5 kg

FLOW CHART:

HPI 100TP





ORDERING INFORMATION:

MODEL	MATERIAL	OUTLET PRESSURE		INLET CONNECTION		OUTLET CONFIGURATION		INLET OPTIONS		GAS TYPE
HPI 100TPC	Chrome-plated brass	0 - 2 bar 0 - 29 psig	029	1/4" FNPT	000	1/4" FNPT	A	Top (standard)	A	Please specify
HPI 100TPS	Stainless steel	0 - 4 bar 0 - 58 psig	058	1/4" tube fitting	002	1/4" tube fitting	D	Bottom	B	
		0 - 10 bar 0 - 145 psig	145	6 mm tube fitting	003	1/8" tube fitting	E	Left side	C	
						6 mm tube fitting	F			

Other options upon request, please contact us

For example:

HPI 100TPC	145	000	E	A	N_2

HPI 101TP

High purity wall mounted point of use slim version

Model HPI 101TP is a wall mounted point of use regulator available in chrome-plated brass (HPI 101TPC) or stainless steel (HPI 101TPS) barstock.

APPLICATIONS:

- High purity gas applications
- Research sample systems gases
- Gas chromatography
- Calibration gas
- Process analyzer gases

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999)**
- Wall mounting panel and brackets included
- Ready to install wall mounting panel, modular design
- Ergonomic, slim design
- 1 inlet port available configuration – top as a standard
- 3 outlet port possible configuration – on request
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- Diaphragm inlet and outlet shut-off valves
- HPI 101TPC - chrome-plated body, bonnet and fittings
- HPI 101TPS - 316L stainless steel body, bonnet and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- Inlet / outlet - 1/4" FNPT
- Maximum inlet pressure 40 bar (580 psig)
- **Cleaned for oxygen service**

TECHNICAL DATA:

Regulator type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 40 bar (580 psi)
Outlet pressure	2/4/10 bar (29/58/145 psi) 20 bar (290 psig) upon request
Flow capacity	Kv = 0,0602 (Cv = 0,07)
Oxygen use	Suitable

MATERIALS:

Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm (regulator)	Hastelloy®*C276
Diaphragm (valve)	Hastelloy®*C276
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®** (FKM)
Filter	SS 316L
Adjusting Knob	ABS plastic

A

B

C

Models shown with additional accessories to be ordered separately

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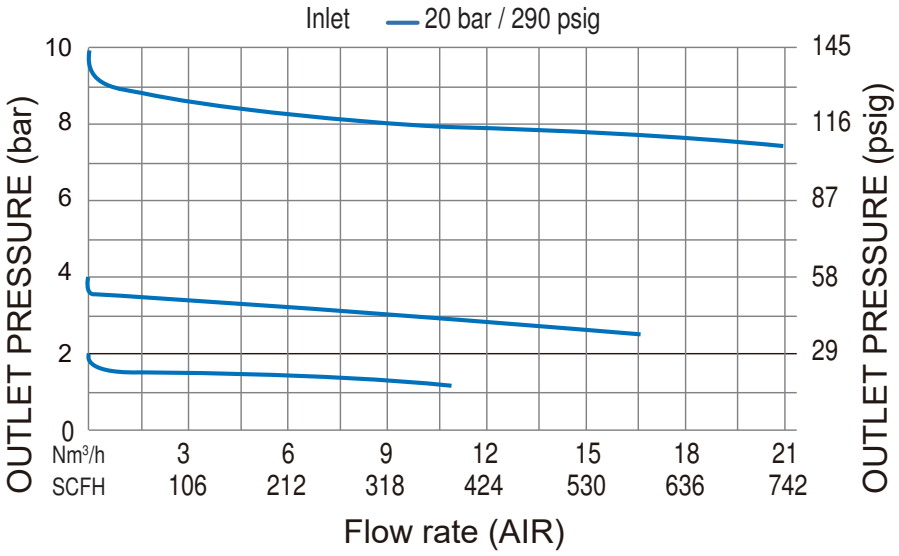
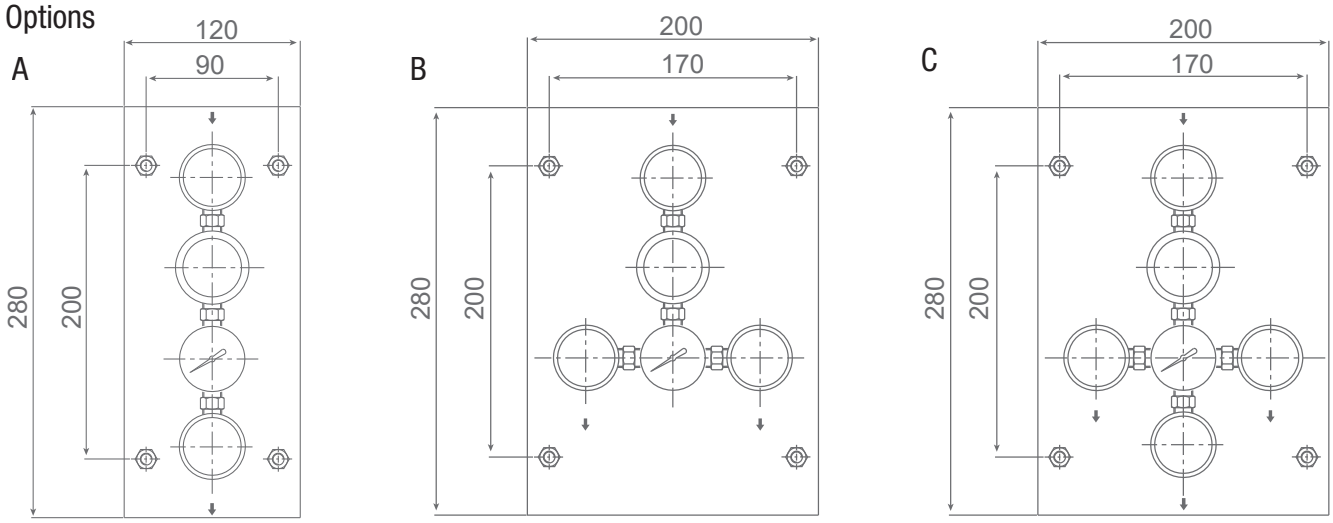
SPECIFICATIONS:

Inlet / outlet ports	1/4" FNPT
Weight	4,1 – 5,7 kg

FLOW CHART: HPI 101TP



Options



ORDERING INFORMATION:

MODEL	MATERIAL	OUTLET PRESSURE		INLET CONNECTION		OUTLET CONFIGURATION		OPTIONS		GAS TYPE
HPI 101TPC	Chrome-plated brass	0 - 2 bar 0 - 29 psig	029	1/4" FNPT	000	1/4" FNPT	A	Single	A	Please specify
HPI 101TPS	Stainless steel	0 - 4 bar 0 - 58 psig	058	1/4" tube fitting	002	1/4" tube fitting	D	Dual	B	
		0 - 10 bar 0 - 145 psig	145	6 mm tube fitting	003	1/8" tube fitting	E	Tripple	C	
						6 mm tube fitting	F			

Other options upon request, please contact us

For example:

HPI 101TPC	145	000	E	A	N_2

HPI 300TP
High purity bench mounted point of use

Model HPI 300TP is a bench mounted point of use regulator available in chrome-plated brass (HPI 300TPC) or stainless steel (HPI 300TPS) barstock.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- High purity gas applications
- Research sample systems gases
- Gas chromatography
- Calibration gas
- Process analyzer gases

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999)**
- Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility
- Ready to install bench mounting panel, modular design
- 1 inlet port configuration - bottom
- 1 outlet port configuration - bottom
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- Diaphragm inlet shut-off valves
- HPI 300TPC - chrome-plated body, bonnet and fittings
- HPI 300TPS - 316L stainless steel body, bonnet and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- Inlet / outlet - 1/4" FNPT
- Maximum inlet pressure 60 bar (870 psig)
- **Cleaned for oxygen service**

TECHNICAL DATA:

Regulator type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 60 bar (780 psi)
Outlet pressure	2/4/10 bar (29/58/145 psi) 20 bar (290 psig)
Flow capacity	Kv = 1,032 (Cv = 0,12)
Oxygen use	Suitable

MATERIALS:

Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm (regulator)	Hastelloy®*C276
Diaphragm (valve)	Hastelloy®*C276
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®** (FKM)
Filter	SS 316L
Adjusting Knob	ABS plastic

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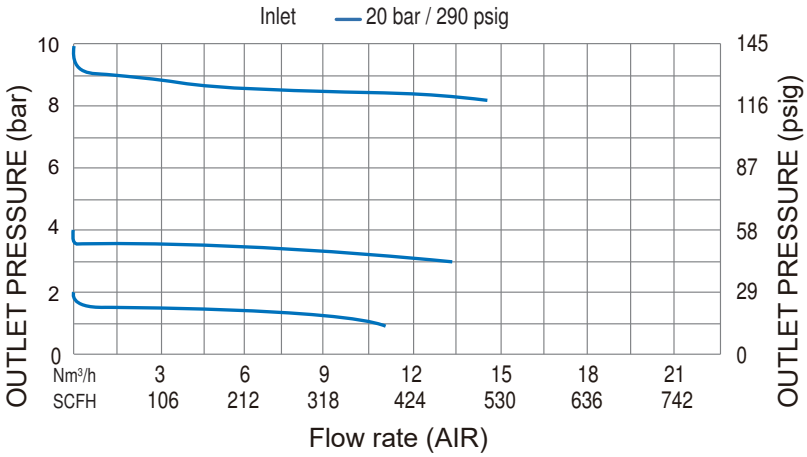
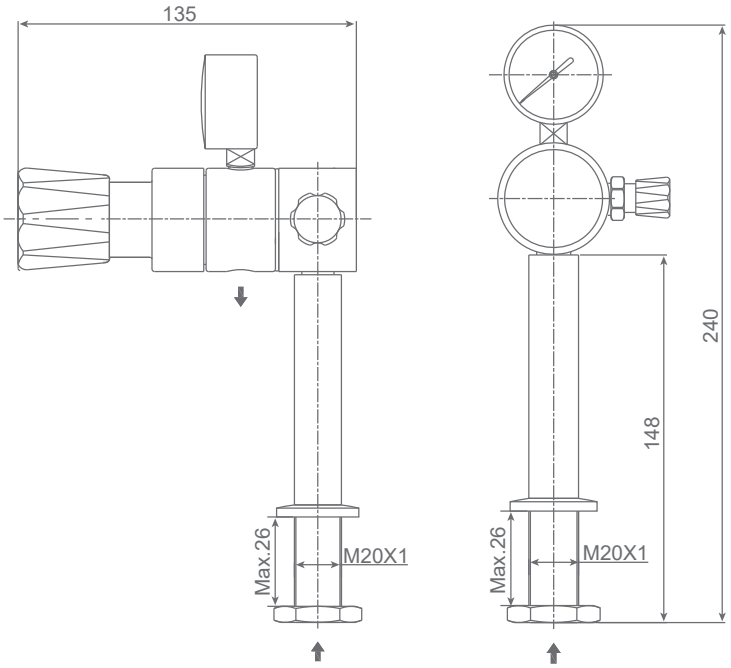
SPECIFICATIONS:

Inlet / outlet ports	1/4" FNPT
Weight	1,6 kg

FLOW CHART: HPI 300TP





ORDERING INFORMATION:

MODEL	MATERIAL	OUTLET PRESSURE		INLET CONNECTION		OUTLET CONFIGURATION		GAS TYPE
HPI 300TPC	Chrome-plated brass	0 - 2 bar 0 - 29 psig	029	1/4" FNPT	000	1/4" FNPT	A	Please specify
HPI 300TPS	Stainless steel	0 - 4 bar 0 - 58 psig	058	1/4" tube fitting	002	1/4" tube fitting	D	
		0 - 10 bar 0 - 145 psig	145	6 mm tube fitting	003	1/8" tube fitting	E	
						6 mm tube fitting	F	

Other options upon request, please contact us

For example:

HPI 300TPC	145	000	E	N_2

HPI 301TP

High purity wall mounted point of use

Model HPI 301TP is a wall mounted point of use regulator available in chrome-plated brass (HPI 301TPC) or stainless steel (HPI 301TPS) barstock.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- High purity gas applications
- Research sample systems gases
- Gas chromatography
- Calibration gas
- Process analyzer gases

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999)**
- Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility
- Ready to install wall mounting panel, modular design
- 1 inlet port configuration - top
- 1 outlet port configuration - bottom
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- Diaphragm inlet shut-off valves
- HPI 301TPC - chrome-plated body, bonnet and fittings
- HPI 301TPS - 316L stainless steel body, bonnet and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- Inlet / outlet - 1/4" FNPT
- Maximum inlet pressure 60 bar (870 psig)
- **Cleaned for oxygen service**

TECHNICAL DATA:

Regulator type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 60 bar (870 psi)
Outlet pressure	2/4/10 bar (29/58/145 psi) 20 bar (290 psig)
Flow capacity	Kv = 1,032 (Cv = 0,12)
Oxygen use	Suitable

MATERIALS:

Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm (regulator)	Hastelloy®*C276
Diaphragm (valve)	Hastelloy®*C276
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®** (FKM)
Filter	SS 316L
Adjusting Knob	ABS plastic

RELATED OPTIONS:

Wall mounting Bracket: HPI-L-BPB

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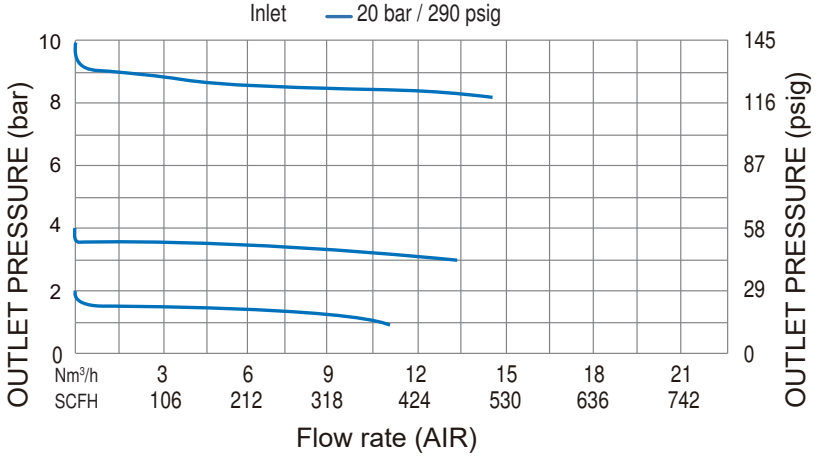
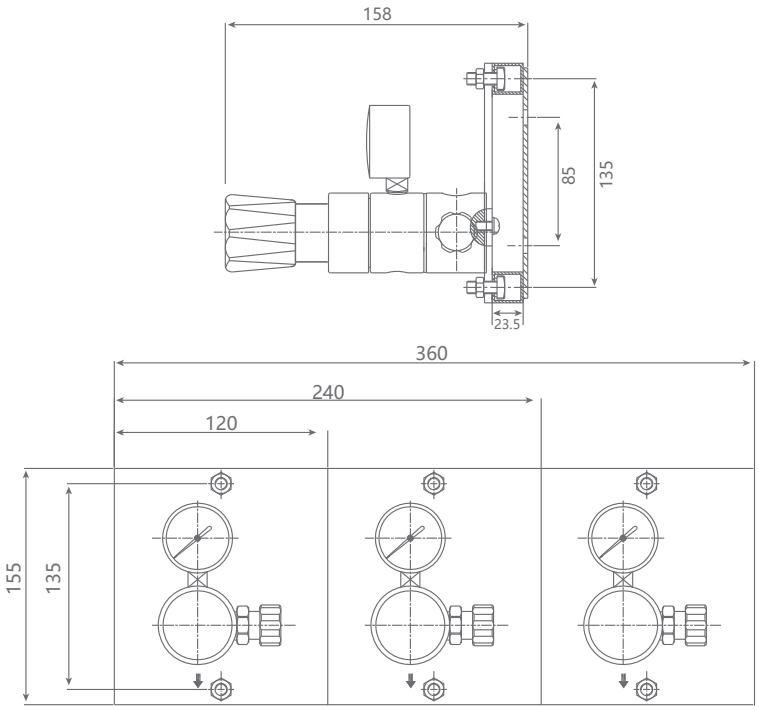
*** Viton® is a registered trademark of The Chemours Company*

SPECIFICATIONS:

Inlet / outlet ports	1/4" FNPT
Weight	1,16 kg

FLOW CHART: HPI 301TP





ORDERING INFORMATION:

MODEL	MATERIAL	OUTLET PRESSURE		INLET CONNECTION		OUTLET CONFIGURATION		GAS TYPE
HPI 301TPC	Chrome-plated brass	0 - 2 bar 0 - 29 psig	029	1/4" FNPT	000	1/4" FNPT	A	Please specify
HPI 301TPS	Stainless steel	0 - 4 bar 0 - 58 psig	058	1/4" tube fitting	002	1/4" tube fitting	D	
		0 - 10 bar 0 - 145 psig	145	6 mm tube fitting	003	1/8" tube fitting	E	
						6 mm tube fitting	F	
						Wall mounting Bracket	P	

Other options upon request, please contact us

For example:

HPI 301TPC	145	000	E	N_2

HPI 400TP

High purity plate mounted point of use

Model HPI 400TP is a plate mounted point of use regulator available in chrome-plated brass (HPI 400TPC) or stainless steel (HPI 400TPS) barstock.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- High purity gas applications
- Research sample systems gases
- Gas chromatography
- Calibration gas
- Process analyzer gases

FEATURES:

- **Recommended gases purity levels up to Grade 6.0 (99.9999)**
- Stainless steel version applicable also for corrosive gases after prior confirmation of the material's compatibility
- Ready to install plate mounting panel, modular design
- 1 inlet port configuration - back inlet
- 1 outlet port configuration - bottom
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- Diaphragm inlet shut-off valves
- HPI 400TPC - chrome-plated body, bonnet and fittings
- HPI 400TPS - 316L stainless steel body, bonnet and fittings
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- Inlet / outlet - 1/4" FNPT
- Maximum inlet pressure 60 bar (870 psig)
- **Cleaned for oxygen service**

TECHNICAL DATA:

Regulator type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 60 bar (870 psig)
Outlet pressure	2/4/10 bar (29/58/145 psi) 20 bar (290 psig)
Flow capacity	Kv = 1,032 (Cv = 0,12)
Oxygen use	Suitable

MATERIALS:

Body, bonnet	316L stainless steel barstock or chrome-plated brass barstock
Diaphragm (regulator)	Hastelloy®*C276
Diaphragm (valve)	Hastelloy®*C276
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®** (FKM)
Filter	SS 316L
Adjusting Knob	ABS plastic

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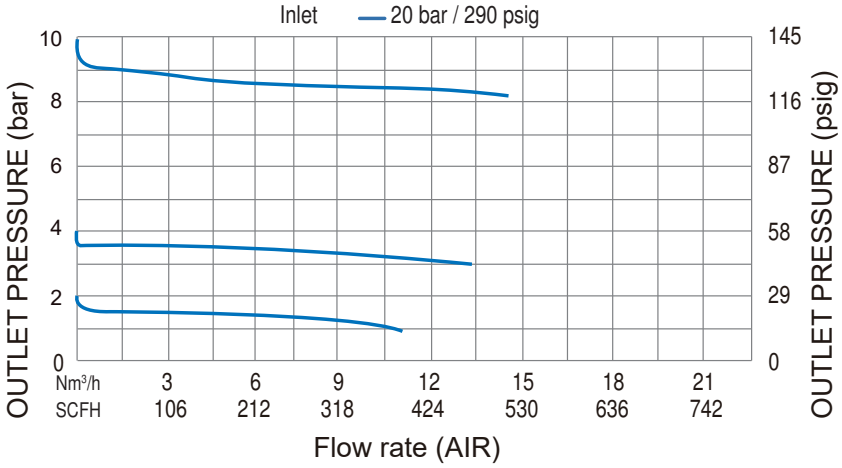
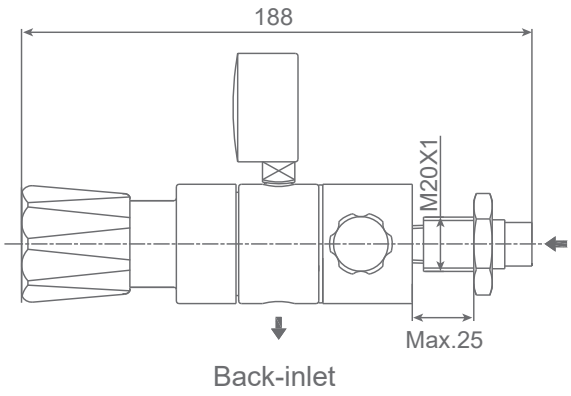
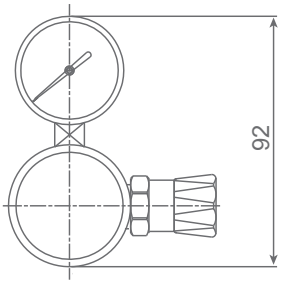
SPECIFICATIONS:

Inlet / outlet ports	1/4" FNPT
Weight	0,8 kg

FLOW CHART: HPI 400TP







ORDERING INFORMATION:

MODEL	MATERIAL	OUTLET PRESSURE		INLET CONNECTION		OUTLET CONFIGURATION		GAS TYPE
HPI 400TPC	Chrome-plated brass	0 - 2 bar 0 - 29 psig	029	1/4" FNPT	000	1/4" FNPT	A	Please specify
HPI 400TPS	Stainless steel	0 - 4 bar 0 - 58 psig	058			1/4" tube fitting	D	
		0 - 10 bar 0 - 145 psig	145			1/8" tube fitting	E	
						6 mm tube fitting	F	

Other options upon request, please contact us

For example:

HPI 400TPC	145	000	E	N_2

HPI 500TP

High purity compact point of use

Model HPI 500TP is a compact aluminium point of use regulator for pressure control.

Model shown with additional accessories to be ordered separately

APPLICATIONS:

- High purity gas applications
- Research sample systems gases
- Gas chromatography
- Calibration gas
- Process analyzer gases

FEATURES:

- **Recommended gases purity levels up to grade 6.0 (99.9999)**
- Ready to install wall mounting panel, modular design
- Two inlet and two outlet port configuration
- 316L stainless steel diaphragm eliminates contamination from diffusion or outgassing
- Diaphragm inlet shut-off valves
- $1x10^{-9}$ mbar l/s He inboard helium leak rate to maintain gas purity levels
- Inlet / outlet - 1/4" FNPT
- Maximum inlet pressure 60 bar (870 psig)

TECHNICAL DATA:

Regulator type	Single-stage
Purity	Up to 6.0
Inlet pressure	Max. 60 bar (870 psig)
Outlet pressure	2/4/10 bar (29/58/145 psi) 20 bar (290 psig)
Flow capacity	Kv = 1,032 (Cv = 0,12)
Oxygen use	Unsuitable

MATERIALS:

Body, bonnet	Aluminium barstock
Diaphragm (regulator)	Hastelloy®*C276
Diaphragm (valve)	Hastelloy®*C276
Nozzle	316L stainless steel
Seat	PEEK
Seals O-ring	Viton®** (FKM)
Filter	SS 316L
Adjusting Knob	ABS plastic

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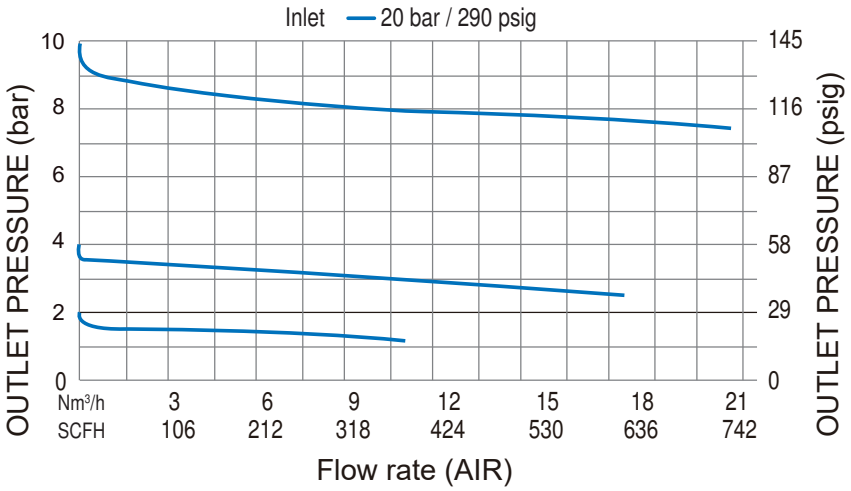
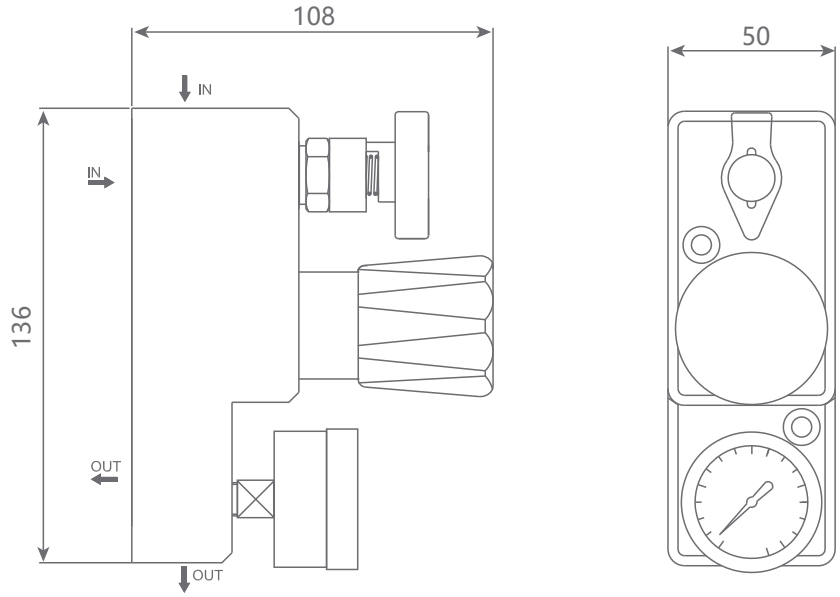
*** Viton® is a registered trademark of The Chemours Company*

SPECIFICATIONS:

Inlet / outlet ports	1/4" FNPT
Weight	1,1 kg

FLOW CHART: HPI 500TP





ORDERING INFORMATION:

MODEL	MATERIAL	OUTLET PRESSURE		INLET CONNECTION		OUTLET CONFIGURATION		GAS TYPE
HPI 500TP	Aluminium barstock	0 - 2 bar 0 - 29 psig	029	1/4" FNPT	000	1/4" FNPT	A	Please specify
		0 - 4 bar 0 - 58 psig	058	1/4" tube fitting	002	1/4" tube fitting	D	
		0 - 10 bar 0 - 145 psig	145	6 mm tube fitting	003	1/8" tube fitting	E	
						6 mm tube fitting	F	

Other options upon request, please contact us

For example:

HPI 500TP	145	000	E	N_2

Extensions

HPI E
High purity extensions

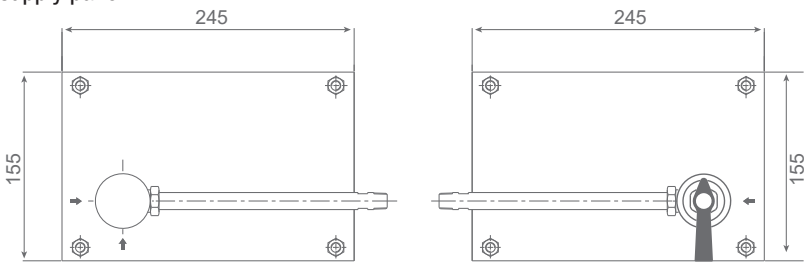
FEATURES:

- Max. inlet pressure 300 bar
- Pipe material stainless steel 316L (1.4404)
- Modular design
- Diaphragm inlet shut off valve option
- Easy to install
- Made of 316L stainless steel for corrosive gases
- Made of chrome-plated brass for non-corrosive gases and mixture up to 6.0

APPLICATIONS:

- To increase the number of connected cylinders to supply panel

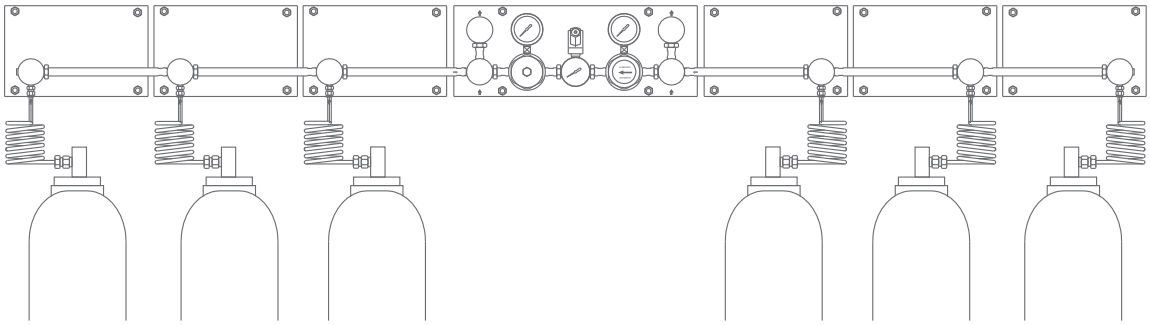
TECHNICAL DATA:



Purity	Up to 6.0
Inlet pressure	Max. 300 bar (4350 psig)
O-ring	Viton®* (FKM)
Oxygen use	Suitable

MATERIAL SPECIFICATIONS:

Shut-off valve seat	PCTFE
Diaphragm (valve)	Elgiloy®**
Inlet ports	1/4" NPT(F)
Weight	1,2 kg



ORDERING INFORMATION:

PART NO.	MATERIAL	EXTENSION SIDE	SHUT OFF VALVE VERSION
9013287	Chrome-plated brass	Right	No
9013288	Chrome-plated brass	Left	No
9013289	Stainless steel	Right	No
9013290	Stainless steel	Left	No
9013291	Chrome-plated brass	Right	Yes
9013292	Chrome-plated brass	Left	Yes
9013293	Stainless steel	Right	Yes
9013294	Stainless steel	Left	Yes

For example: 9013287

** Viton® is a registered trademark of The Chemours Company*
*** Elgiloy® a registered trademark of Elgiloy Specialty Metals*

Purge assemblies

HPI PA
High purity purge assemblies

FEATURES:
- Max. inlet pressure 300 bar
- Diaphragm shut-off valve
- Made of 316L stainless steel

Straight purge assemblies

Tee purge assemblies

APPLICATIONS:
- Purge assemblies

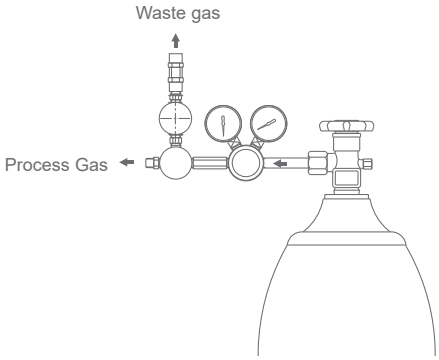
Cross purge assemblies

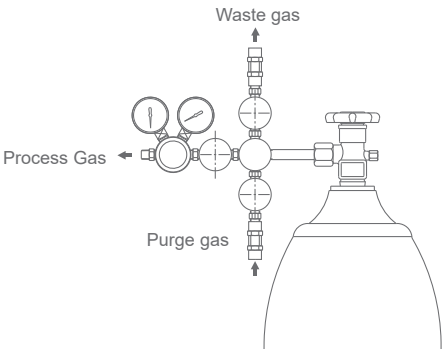
TECHNICAL DATA:

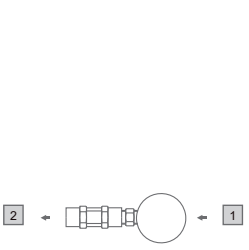
Purity	Up to 6.0
Inlet pressure	Max. 300 bar (4350 psig)
Oxygen use	Suitable

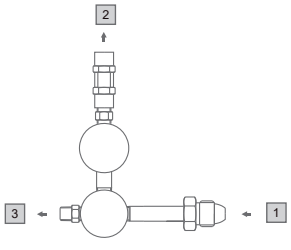
MATERIAL SPECIFICATIONS:

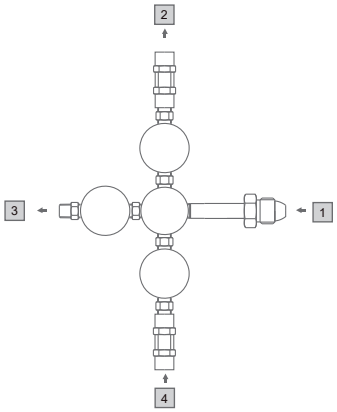
Diaphragm (valve)	Hastelloy®* C276
Ports	1/4" NPT(F)
Leak rate	$1x10^{-8}$ mbar l/s He
Orifice	Ø 3,2 mm











ORDERING INFORMATION:

PART NO.	DESCRIPTION	MATERIAL
9013277	Straight	Stainless steel
9013278	Tee	
9013279	Cross	

For example: 9013277

** Hastelloy® is a registered trademark name of Haynes International, Inc*

Valves

HPI DV300
High purity, high pressure diaphragm valve

FEATURES:

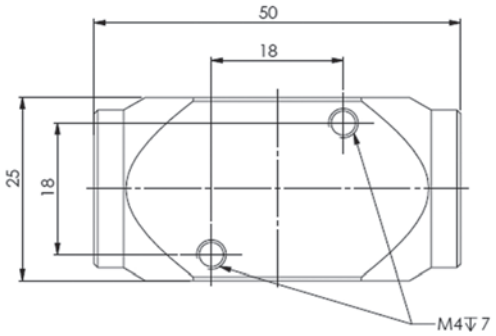
- Max. inlet pressure 300 bar (4350 psig)
- 3/4 turn
- Very high leak tightness
- Metal to metal sealing to atmosphere
- Made of 316L stainless steel for corrosive gases
- Made of chrome-plated brass for non-corrosive gases and mixture up to 6.0

TECHNICAL DATA:

Purity	Up to 6.0
Inlet pressure	Max. 300 bar (4350 psig)
Inlet/outlet connection	1/4 FNPT
Oxygen use	Suitable

MATERIAL SPECIFICATIONS:

Seal	Kel-F (CTFE)
Seal	Metal to metal
Leak rate	2,0 x 10^{-8} mbar l/s He
Flow capacity	Cv = 0,13



RELATED OPTION:

Nipple connector 1/4" NPT

9574RM	1/4" NPT male	1/4" NPT male	Chrome-plated brass
957X4R	1/4" NPT male	1/4" NPT male	Stainless steel 316L

ORDERING INFORMATION:

PART NO.	CONNECTION INLET	CONNECTION OUTLET	BODY MATERIAL
9105190	1/4" NPT female	1/4" NPT female	Chrome-plated brass
9105191	1/4" NPT female	1/4" NPT female	Stainless steel 316L

Valves

HPI DS300
High purity, high pressure diaphragm valve

FEATURES:

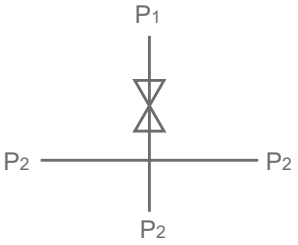
- Max. inlet pressure 300 bar
- Very high leak tightness
- Metal to metal sealing to atmosphere
- Made of 316L stainless steel for corrosive gases
- Made of chrome-plated brass for non-corrosive gases and mixture up to 6.0

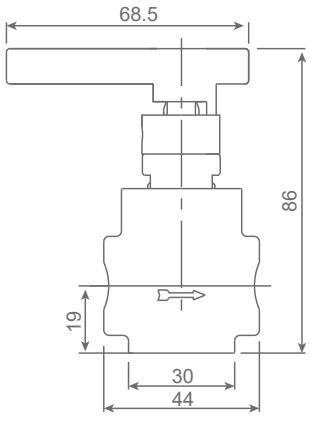
TECHNICAL DATA:

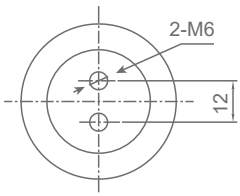
Purity	Up to 6.0
Inlet pressure	Max. 300 bar (4350 psig)
Oxygen use	Suitable

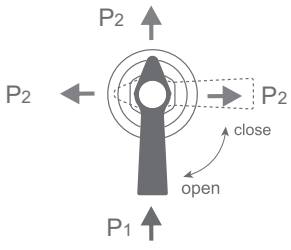
MATERIAL SPECIFICATIONS:

Seat	PCTFE
Diaphragm	Elgiloy®*
Filter	SS316
Leak rate	$1x10^{-8}$ mbar l/s He
Orifice	Ø 2,7 mm









Left lever for shutoff

ORDERING INFORMATION:

PART NO.	DESCRIPTION	INLET CONFIGURATION	OUTLET CONFIGURATION	BODY MATERIAL	DIAPHRAGM MATERIAL	SEAT MATERIAL
9103265	1/4 turn instrument valve	1/4" NPT female	1/4" NPT female	Chrome-plated brass	Elgiloy® (R)	PCTFE
9103266	1/4 turn instrument valve	1/4" NPT female	1/4" NPT female	Stainless steel	Elgiloy® (R)	PCTFE

** Elgiloy® a registered trademark of Elgiloy Specialty Metals*

HPI NR300

High purity, high pressure needle valve

FEATURES:

- Max. inlet pressure 206 bar (2987 psig)
- Durable
- Flow regulating
- Metal to metal sealing to atmosphere
- Made of 316L stainless steel

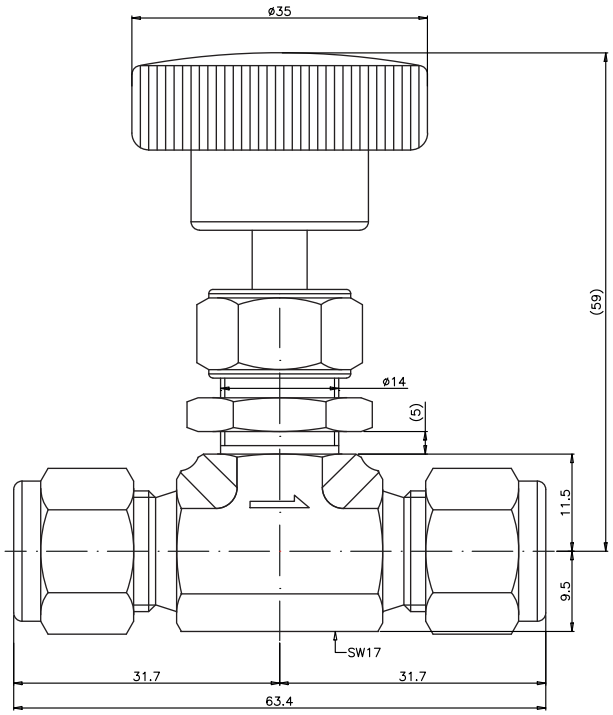
Model shown with additional accessories to be ordered separately

TECHNICAL DATA:

Purity	Up to 6.0
Inlet pressure	Max. 206 bar (2987 psig)
Oxygen use	Suitable

MATERIAL SPECIFICATIONS:

Seals	Metal to metal
Leak rate	$1x10^{-8}$ mbar l/s He
Flow capacity	Cv = 0,17



ORDERING INFORMATION:

PART NO.	CONNECTION INLET	CONNECTION OUTLET	BODY MATERIAL
9103270	1/4" NPT male	1/4" NPT female	Stainless steel 316L
9103271	1/4" NPT female	1/4" NPT female	
9103272	1/4" NPT male	1/8" tube fitting	
9103273	1/4" NPT male	6 mm tube fitting	
9103274	1/4" NPT male	1/4" tube fitting	
9103275	6 mm tube fitting	6 mm tube fitting	
9103276	1/4" tube fitting	1/4" tube fitting	

Flexible hoses

HPI FH

Flexible hoses for connecting gas supply panels and gas cylinder

FEATURES:

- HPI FH S hose made of stainless steel 316L / 304
- HPI FH T hose made of PTFE + stainless steel 304
- Special requirements on request
- The hose is made of stainless steel 316L or PTFE inside, a stainless steel 304 double braid and end needed connections
- All hoses are equipped with stainless steel safety cable
- Inner diameter 6 mm
- Elbow connection on cylinder side

Model shown with additional accessories to be ordered separately

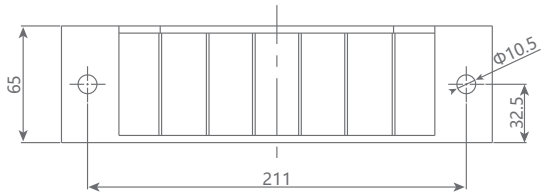
ORDERING INFORMATION:

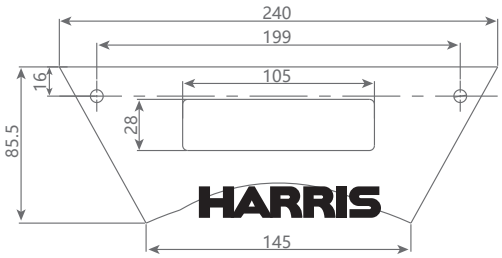
MODEL	LENGTH		INLET CONFIGURATION		CYLINDER CONNECTION		OPTION	
HPI FH T PTFE/stainless steel 304	1000 mm	1000	1/4" NPT (Male) Panel connection	001	Cylinder connection	Please specify	Elbow connection on cylinder connection side	000
HPI FH S 316L/304 stainless steel	2000 mm	2000	1/4" NPT (Female)	002			Elbow connection on both sides	EE
	3000 mm	3000					Straight cylinder connection	SC
For example:								
HPI FH T		1000		001			DIN477 no6	000

Cylinder Wall Bracket

DESCRIPTION:

- Special design for one cilinder
- Easy installation to a wall or construction
- Delivered with safety belt
- ABS material





ORDERING INFORMATION:

PART NO.
9009506

Check valves

HPI CV L
Check valve

FEATURES:

- The HPI CV L is a compact design for laboratory pipeline system
- Valve is closed
- When differential pressure between inlet and outlet is higher than the set pressure of the spring, the loaded poppet will move backwards and will enable a free passage of flow through the valve
- Inlet and outlet connection is 1/4“ tube fitting

MATERIAL SPECIFICATIONS:

O-ring	Viton®* (FKM)
Materials body	SS 316L
Pressure rating	200 bar
Cracking pressure	0,02 bar

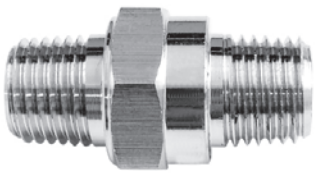
ORDERING INFORMATION:

PART NO.	DESCRIPTION	CONNECTION INLET	CONNECTION OUTLET	BODY MATERIAL
9010209	Line check valve	1/4” tube fitting	1/4" tube fitting	Stainless steel 316L

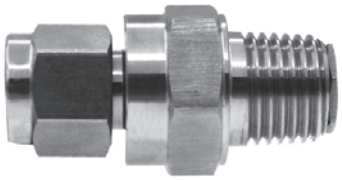
HPI CVP
Check valve

FEATURES:

- The HPI CVP is a compact design for connecting gas supply panel and hose or pigtail
- Valve is normally closed
- When differential pressure between inlet and outlet is higher than the set pressure of the spring, the loaded poppet will move backwards and will enable a free passage of flow through the valve



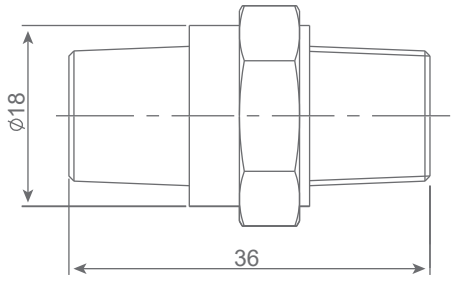
9010210

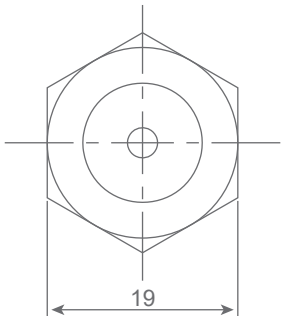


9010211

MATERIAL SPECIFICATIONS:

O-ring	Viton®* (FKM)
Materials body	SS 316L
Pressure rating	300 bar
Cracking pressure	0,02 bar





ORDERING INFORMATION:

PART NO.	DESCRIPTION	CONNECTION INLET	CONNECTION OUTLET	BODY MATERIAL
9010210	Panel check valve	1/4" NPT male	1/4" NPT male	Stainless steel 316L
9010211	Pigtail check valve	1/4" tube fitting	1/4" NPT male	Stainless steel 316L

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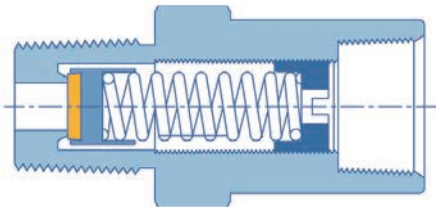
Relief valves

HPI RVP
Adjustable relief valves

These relief valves may be used as an integral part of a pressure regulator or on equipment downstream of a regulator. The relief valves have a 1/4" NPT inlet and outlet thread to vent gases either externally or remotely.

FEATURES:

- The HPI RVP is a relief valve for low pressure service.
- The valve is normally closed. It will open when system pressure reaches the set level. It will re-close when the system pressure falls below the set level.
- Upstream set pressure is the first indicator of flow process.
- Every pressure relief after the first is repeatable within a deviation at room temperature.
- Blocked upstream set pressure is the first indicator of a stopped flow process and is always lower than the set pressure.
- Calculation of set pressure valve design demands back pressure consideration as the system back pressure increases the set pressure. The set pressure are multiplied by 1,3 times of the working pressure.
- Every RVP Relief Valve is factory tested for proper set and resealing performance.



MATERIAL SPECIFICATIONS:

O-ring	Viton®* (FKM)
Materials body	SS 316L or chrome-plated brass
Inlet connection	1/4" NPT (M)
Outlet connection	1/4" NPT (F)
Open pressure	Up to 50 bar[1]

ORDERING INFORMATION:

PART NO.	SET PRESSURE RANGE	MATERIAL
9103281	0 - 6 bar	Chrome-plated brass
9103282	0 - 6 bar	Stainless steel
9103283	6 - 16 bar	Chrome-plated brass
9103284	6 - 16 bar	Stainless steel
9103285	16 - 26 bar	Chrome-plated brass
9103286	16 - 26 bar	Stainless steel

[1] 26 – 50 bar upon request

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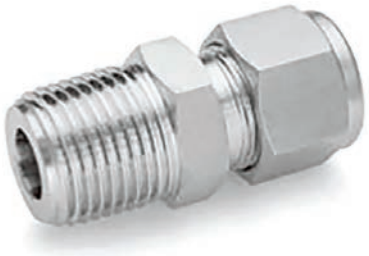
Stainless Steel Tube Fitting

Male Connector

PART NO.		BODY MATERIAL
9007848	6 mm OD x 1/4 in. male NPT	316 stainless steel
9007849	8 mm OD x 1/4 in. male NPT	316 stainless steel
9007850	10 mm OD x 1/4 in. male NPT	316 stainless steel
9007857	1/8 in. tube OD x 1/4 in. male NPT	316 stainless steel
9007858	1/4 in. tube OD x 1/4 in. male NPT	316 stainless steel
9007861	1/2 in. tube OD x 1/4 in. male NPT	316 stainless steel



Union

PART NO.		BODY MATERIAL
9007897	6 mm tube OD	316 stainless steel
9007898	8 mm tube OD	316 stainless steel
9007900	1/4 in. tube OD	316 stainless steel

Union Elbow

PART NO.		BODY MATERIAL
9007908	6 mm tube OD	316 stainless steel
9007909	8 mm tube OD	316 stainless steel
9007911	1/4 in. tube OD	316 stainless steel

Union Tee

PART NO.		BODY MATERIAL
9007913	6 mm tube OD	316 stainless steel
9007914	8 mm tube OD	316 stainless steel
9007915	1/4 in. tube OD	316 stainless steel

Plug

PART NO.		BODY MATERIAL
9007935	6 mm tube OD	316 stainless steel
9007936	8 mm tube OD	316 stainless steel
9007950	1/4 in. tube OD	316 stainless steel

Models shown with additional accessories to be ordered separately

Pressure Gauges

PG

DESCRIPTION:

- Pressure gauges are designed for general and laboratory applications involving the measurement of compressed gases compatible with the materials of construction.
- Gauges are used to monitor pressure of regulators, points of use, supply boards.
- Radial (6 o'clock) mount PG R
- Centre back mount PG B

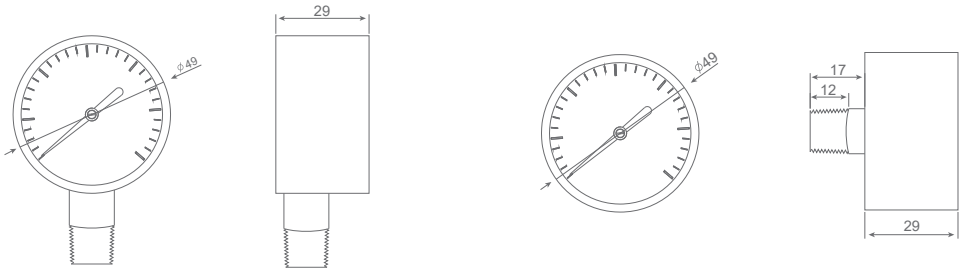
PG R

PG B

Models shown with additional accessories to be ordered separately

MATERIAL SPECIFICATIONS:

Type	Bourdon tube pressure gauge
Diameter	49 mm
Pressure	Many pressure ranges available From 2 bar up to 400 bar
Mounting connections	Radial mount Centre back mount
Connection	¼" NPT male
Corpus material	Chrome-plated brass or stainless steel
Accuracy	Class 2,5



ORDERING INFORMATION:

PART NUMBER	DESCRIPTION	SCALE (bar)	SCALE (psi)	MATERIAL	CONNECTION	INDUCTIVE
9007664	PG RC-2,5B	0-2,5 bar	0-35 psig	BC	Radial	No
9007665	PG RC-6B	0-6 bar	0-86 psig	BC	Radial	No
9007666	PG RC-10B	0-10 bar	0-145 psig	BC	Radial	No
9007667	PG RC-16B	0-16 bar	0-230 psig	BC	Radial	No
9007668	PG RC-25B	0-25 bar	0-350 psig	BC	Radial	No
9007669	PG RC-60B	0-60 bar	0-860 psig	BC	Radial	No
9007676	PG RC-250B	0-250 bar	0-3500 psig	BC	Radial	No
9007677	PG RC-400B	0-400 bar	0-5800 psig	BC	Radial	No
9007678	PG BC-6B	0-6 bar	0-86 psig	BC	Back	No
9007679	PG BC-16B	0-16 bar	0-230 psig	BC	Back	No
9007680	PG BC-25B	0-25 bar	0-350 psig	BC	Back	No
9007681	PG BC-60B	0-60 bar	0-860 psig	BC	Back	No
9007682	PG RS-2,5B	0-2,5 bar	0-35 psig	SS	Radial	No
9007683	PG RS-6B	0-6 bar	0-86 psig	SS	Radial	No
9007684	PG RS-10B	0-10bar	0-145psig	SS	Radial	No
9007685	PG RS-16B	0-16 bar	0-230 psig	SS	Radial	No
9007686	PG RS-25B	0-25 bar	0-350 psig	SS	Radial	No
9007687	PG RS-60B	0-60 bar	0-860 psig	SS	Radial	No
9007688	PG RS-250B	0-250 bar	0-3500 psig	SS	Radial	No
9007689	PG RS-400B	0-400 bar	0-5800 psig	SS	Radial	No
9007690	PG BS-6B	0-6 bar	0-86 psig	SS	Back	No
9007691	PG BS-16B	0-16 bar	0-230 psig	SS	Back	No
9007692	PG BS-25B	0-25 bar	0-350 psig	SS	Back	No
9007693	PG BS-60B	0-60 bar	0-860 psig	SS	Back	No

Inductive contact version on request.

Alarm system

HAS

DESCRIPTION:

- Alarm box is used for monitoring low supply pressure gas source and inform user visually by LED light and acoustically by loud buzzer.
- Three version available 2, 6, 10 possible contact connection
- Readable LED light display
- 230V AC, 50 Hz; 110V AC, 60 Hz power supply (on request)

ORDERING INFORMATION:

4302085	HAS1, 1 connection
4302086	HAS2, 2 connections
4302087	HAS4 4 connections
4302088	HAS6, 6 connections
4302089	HAS10, 10 connections

Cylinder cabinet

Gas cylinder safety cabinet

DESCRIPTION:

- Safety storage cabinet for the storage of flammable or toxic gas cylinders in working areas for 1 to 4 50 l cylinder according to EN-14470-2
- 90 minutes fire resistance

TECHNICAL DATA:

In accordance with EN 14470-2	
Indoor storage	1 to 4 50 l cylinders
Outdoor storage	2 to 5 50 l cylinders

- **GS-test** (EN 14470-1,EN 14727, document EK5/ AK4 09-10, ProdSG);
- **50,000** wear-free opening and closing actions;
- Test basis: all cabinets of this model group correspond to the requirements of the Equipment and Product Safety Act (§7 pkt. 1) with respect to the guarantee of safety and health.

Indoor version

FUNCTION / CONSTRUCTION:

- No unauthorised use: doors lockable with profile cylinder (integration in an existing locking system possible)
- Easy alignment: adjusting aids to compensate for uneven floor
- Easy mounting of connecting pipes and gas fittings: large interior height (1890 mm), many lead-through possibilities on the top of the cabinet
- Ventilation: integrated air ducts ready for connection (DN75) to a technical exhaust, even ventilation inside the cabinet
- Tested and certified: according to the stricter GS principles

Outdoor version

Models shown with additional accessories to be ordered separately

ORDERING INFORMATION:

INSIDE	FLAMABLE AND TOXIC			
Indoor storage				
MODEL	**EXTERNAL DIMENSIONS W X D X H (mm)**	**INTERNAL DIMENSIONS W X D X H (mm)**	**WEIGHT**	**CYLINDER**
G.90.205.140	1400 x 615 x 2050	1245 x 400 x 1858	690	4
G.90.205.090	900 x 615 x 2050	745 x 425 x 1858	490	3
G.90.205.060.2F	600 x 615 x 2050	477 x 424 x 1858	365	2
G.90.205.060	600 x 615 x 2050	445 x 425 x 1858	365	1
Outdoor storage				
GOD.215.135	1356 x 400 x 2149	1345 x 370 x 2070	138	5
GOD.215.100	1006 x 400 x 2149	995 x 370 x 2070	113	3
GOD.215.070	706 x 400 x 2149	695 x 370 x 2070	85	2

INLET CONNECTION STANDARDS

DIN 477 (German Institute for Standardisation - Deutsches Institut für Normung)

DIN 477 PART 1 1990				
INLET CONNECTION	CONNECTOR TYPE	CONNECTOR DESCRIPTION	GAS PROPERTIES	EXAMPLES OF GASES OR GAS MIXTURES
D1	DIN 477-1 No. 1	W 21.8 x 1/14" LH	Flammable	Hydrogen, propane
D2	DIN 477-1 No. 2	W 21.8" x 1/14" LH	Flammable	Propane
D3	DIN 477-1 No. 3	Yoke	Flammable	Acetylene
D3.1	DIN 477-1 No. 3.1	M 24 x 2" LH	Flammable	Acetylene
D5	DIN 477-1 No. 5	W 1" x 1/8" LH	Toxic	Carbon monoxide
D6	DIN 477-1 No. 6	W 21.8 x 1/14"	Various	Ammonia, argon, helium, carbon dioxide, krypton, neon, sulphur hexafluoride, xenon
D7	DIN 477-1 No. 7	G 5/8"	Toxic	Sulphur dioxide
D8	DIN 477-1 No. 8	W 1" x 1/8"	Toxic	Boron trichloride
D9	DIN 477-1 No. 9	G 3/4"	Oxidizer	Oxygen
10	DIN 477-1 No. 10	W 24.32 x 1/14" RH	Inert	Nitrogen
D11	DIN 477-1 No. 11	G 3/8"	Oxidizer	Nitrous oxide (>3 l size)
D12	DIN 477-1 No. 12	G 3/4" INT	Oxidizer	Nitrous oxide (<3 l size)
D13	DIN 477-1 No. 13	G 5/8" INT	Non-flammable	Air
D14	DIN 477-1 No. 14	M 19 x 1.5 LH	Various	Mixtures

DIN 477 PART 5 2002			
INLET CONNECTION	CONNECTOR TYPE	CONNECTOR DESCRIPTION	GAS PROPERTIES
D54	DIN 477-5 No. 54	W 30 x 2 (Ø15.9/20.1)	Non-flammable, non-toxic and non-oxidizing gases and gas mixtures
D55	DIN 477-5 No. 55	W 30 x 2 (Ø15.2/20.8)	Non-flammable, toxic and corrosive gases and gas mixtures
D56	DIN 477-5 No. 56	W 30 x 2 (Ø16.6/19.4)	Pressurized air
D57	DIN 477-5 No. 57	W 30 x 2LH (Ø15.2/20.8)	Flammable, non-toxic gases and gas mixtures
D58	DIN 477-5 No. 58	W 30 x 2LH (Ø15.9/20.1)	Flammable, toxic and corrosive or non-corrosive gases and gas mixtures
D59	DIN 477-5 No. 59	W 30 x 2 (Ø17.3/18.7)	Oxygen and oxidizing, non-toxic, non-corrosive gases and gas mixtures
D60	DIN 477-5 No. 60	W 30 x 2 (Ø18.0/18.0)	Oxidizing, toxic and / or corrosive gases and gas mixtures

INLET CONNECTION STANDARDS

CGA (Compressed Gas Association, USA)

INLET CONNECTION	CONNECTOR TYPE	CONNECTOR DESCRIPTION	GAS PROPERTIES	EXAMPLES OF GASES OR GAS MIXTURES
C 110	CGA 110	0.3125 - 32 UNEF INT	Small cylinders	All Gases
C 170	CGA 170	9/16" - 18 UNF INT	Non-corrosive,	Propane
small cylinders	Argon, helium	Yoke	Flammable	Acetylene
C 180	CGA 180	5/8" - 18 UNF INT	Small cylinders	All Gases
C 240	CGA 240	3/8" - 18 NPT	Toxic	Ammonia
C 296	CGA 296	0.803" - 14 UNS INT	Oxidising mixtures	Oxygen Mix > 23%
C 300	CGA 300	0.825" - 14 NGO	Refrigerant	Ethyl chloride
C 320	CGA 320	0.825" - 14 NGO	Non-flammable	Carbon dioxide
C 326	CGA 326	0.825" - 14 NGO	Oxidiser	Air
C 330	CGA 330	0.825" - 14 NGO LH	Toxic	Hydrogen chloride
C 346	CGA 346	0.825" - 14 NGO	Oxidiser	Air
C 350	CGA 350	0.825" - 14 NGO LH	Flammable	Hydrogen, methane
C 510	CGA 510	0.825" - 14 NGO LH INT	Flammable	Propane
C 540	CGA 540	0.903" - 14 NGO	Oxidiser	Oxygen
C 580	CGA 580	0.965" - 14 NGO INT	Inert	Argon, nitrogen
C 590	CGA 590	0.965" - 14 NGO LM INT	Oxidiser	Air
C 330	CGA 330	1.030" - 14 NGO	Toxic	Hydrogen sulphide
C 679	CGA 679	1.030" - 14 NGO LH	High pressure	Nitrogen
C 705	CGA 705	1.125" - 14 UNS LH	Toxic	Ammonia

AFNOR (French Standardisation Association - Association Française de Normalisation)

INLET CONNECTION	CONNECTOR TYPE	CONNECTOR DESCRIPTION	GAS PROPERTIES	EXAMPLES OF GASES OR GAS MIXTURES
NF B	NF B	W 30 x 1.75	Oxidiser	Industrial air
NF C	NF C	SI 21.7 x 1.814	Inert gases	Argon, helium, nitrogen
NF E	NF E	SI 21.7 x 1.814 LH	Flammable	Hydrogen, hydrogen mix >4%
NF F	NF F	SI 22.94 x 1.814 INT	Oxidiser	Oxygen
NF G	NF G	SI 26 x 1.5 INT	Oxidiser	Nitrous oxide
NF H	NF H	W 22.91 x 1.814 LH INT	Flammable	Acetylene
NF J	NF J	W 25.4 x 3.175	Corrosive	Chlorine
NF K	NF K	W 27 x 2	Corrosive	Hydrogen chloride
NF L	NF L	W 27 x 2	Oxidiser	Inert gases + oxygen mix > 21%
NF M	NF M	W 30 x 2	Oxidiser	Inert gases + oxygen mix > 21% & CO_2 < 7%
NF P	NF P	W 27 x 2	Oxidiser or corrosive	Nitric oxide, nitrogen dioxide

BS 341 (British Standard)

INLET CONNECTION	CONNECTOR TYPE	CONNECTOR DESCRIPTION	GAS PROPERTIES	EXAMPLES OF GASES OR GAS MIXTURES
BS 2	BS 341 No. 2	G 5/8" LH	Flammable	Acetylene
BS 3	BS 341 No. 3	G 5/8" INT	Inert	Air, argon, neon, nitrogen
BS 3	BS 341 No. 3	G 5/8" INT	Oxidiser	Oxygen
BS 4	BS 341 No. 4	G 5/8" LH INT	Flammable	Acetylene, hydrogen
BS 4	BS 341 No. 4	G 5/8" LH INT	Flammable	Carbon monoxide, methane, natural gas
BS 6	BS 341 No. 6	G 5/8"	Toxic	Chlorine, hydrogen chloride
BS 7	BS 341 No. 7	G 5/8" LH	Flammable refrigerants	Flammable refrigerants
BS 8	BS 341 No. 8	W 0.860" x 14 TPI	Non-flammable	Carbon dioxide
BS 10	BS 341 No. 10	G 1/2"	Toxic	Ammonia
BS 12	BS 341 No. 12	G 1/2"	Toxic	Sulphur dioxide
BS 13	BS 341 No. 13	W 11/16" - 20 TPI	Oxidiser	Nitrous oxide
BS 14	BS 341 No. 14	G 3/8"	Toxic	Hydrogen cyanide, nitric oxide
BS 15	BS 341 No. 15	G 3/8" LH	Toxic	Carbonyl sulphide, hydrogen sulphide

INLET CONNECTION STANDARDS

UNI (Italian National Unification - Ente Nazionale Italiano di Unificazione)

INLET CONNECTION	CONNECTOR TYPE	CONNECTOR DESCRIPTION	GAS PROPERTIES	EXAMPLES OF GASES OR GAS MIXTURES
U 4405	UNI 4405	W 20 x 1/14" LH	Flammable	Hydrogen
U 4406	UNI 4406	W 21.7 x 1/14"	Non-flammable, Oxidiser	Carbon dioxide, oxygen
U 4407	UNI 4407	W 30 x 1/14"	Toxic	Ammonia
U 4408	UNI 4408	W 1" x 1/8"	Toxic	Chlorine
U 4409	UNI 4409	W 21.7 x 1/14"	Inert	Nitrogen
U 4410	UNI 4410	W 30 x 1/14"	Non-flammable	Air
U 4411	UNI 4411	W 22.9 x 1/14"	Flammable	Acetylene
U 4412	UNI 4412	W 24.5 x 1/14"	Inert	Argon, helium
U 9097	UNI 9097	G 3/8" EXT	Oxidiser	Nitrous oxide

NEN 3268 (Dutch Standards - Nederlandse Norm)

INLET CONNECTION	CONNECTOR TYPE	CONNECTOR DESCRIPTION	GAS PROPERTIES	EXAMPLES OF GASES OR GAS MIXTURES
N LU 0	LU 0	M 19 x 1.5 LH	Flammable Mixtures	Flammable mixtures
N LU 1	LU 1	W 21.8 - 1/14" LH	Flammable	Hydrogen, methane
N LU 4	LU 4	W 25.4 x 3.175" LH	Toxic	Hydrogen cyanide
RI 2	RI 2	G 22.91 x 1.814" RH	Oxidiser	Oxygen
N RU 1	RU 1	W 21.8 - 1/14"	Refrigerants	Ammonia, carbon dioxide
N RU 3	RU 3	W 24.32 - 1/14"	Inert	Argon, helium, nitrogen
N RU 4	RU 4	W 25.4 x 3.175" RH	Toxic	Chlorine, hydrogen chloride, sulphur dioxide
N RU 6	RU 6	W 28.81 x 1.814" RH	Oxidiser	Air

ISO 5145 (International Organization for Standardization)

INLET CONNECTION	CONNECTOR TYPE	CONNECTOR DESCRIPTION	GAS PROPERTIES	EXAMPLES OF GASES OR GAS MIXTURES
I 1	ISO 5145 No.1	W 24 x 2 11,2 - 16,8 RH	Inert	Medical helium & xenon
I 2	ISO 5145 No.2	W 24 x 2 11,9 - 16,1 RH	Oxidiser	Oxygen
I 4	ISO 5145 No.4	W 24 x 2 13,3 - 14,7 RH	Inert	Inert gases & mixes, except He & Xe
I 9	ISO 5145 No.9	W 24 x 2 13,3 - 14,7 LH	Flammable	Mixes with a flammable gas, except hydrogen
I 10	ISO 5145 No.10	W 24 x 2 14 - 14 LH	Flammable	Hydrogen
I 11	ISO 5145 No.11	W 27 x 2 11,8 - 20,2 RH	Inert	Nitrogen
I 17	ISO 5145 No.17	W 27 x 2 16 - 16 RH	Inert	Carbon dioxide
I 24	ISO 5145 No.24	W 27 x 2 16 - 16 LH	Flammable	LPG
I 30	ISO 5145 No.30	W 30 x 2 15,9 - 20,1 RH	Inert	Helium, argon, nitrogen, inert gas mixtures*
I 32	ISO 5145 No.32	W 30 x 2 17,3 - 18,7 RH	Oxidiser	Oxygen*
I 38	ISO 5145 No.38	W 30 x 2 15,2 - 20,8 LH	Flammable	Mixes with a flammable gas*
I 41	ISO 5145 No.41	W 30 x 2 17,3 - 18,7 LH	Refrigerants	Refrigerant gases**

** Working pressure above 250 bar in Europe and 182 bar in the USA*
*** Flammable according to ISO 5145, for inert No. 4 can be used when FTSC codes fit with the mixture*

MATERIALS COMPATIBILITY

The compatibility data shown on the following pages has been compiled to assist in evaluating the appropriate materials to use in handling various gases. Prepared for use with the dry (anhydrous) gases at normal operating temperature of 70º (21º C), information may vary if different operating conditions exist.

DIRECTIONS:

Locate the gas you are using in the first column.

Compare the materials of construction for the equipment you intend to use with the materials of construction shown in the Compatibility Chart. Then use the Key to Materials Compatibility to determine the compatibility.

• Satisfactory for use with the intended gas
U Unsatisfactory for use with the intended gas
I Insufficient data available to determine compatibility with the intended gas
R1 Satisfactory with brass having a low copper content
R2 Satisfactory with acetylene, however, cylinder gas is dissolved in a solvent (generally acetone) which may be incompatible with these elastomers
R3 Satisfactory with brass, except where acetylene or acetylides are present
R4 Generally unsatisfactory, except where specific use conditions have proven acceptable
R5 Satisfactory below 3000 PSIG (206.9 bar) where gas velocities do not exceed 30 ft./sec (9,14 m/s).
R6 Compatibility depends on condition of use

COMPATIBILITY GUIDE

COMMON NAME	CHEMICAL FORMULA	MATERIALS OF CONSTRUCTION										
		METALS					PLASTICS		ELASTOMERS			
		Brass	Stainless Steel	Aluminum	Zinc	Copper	PCTFE	Teflon®	Viton®	Buna-N	Neoprene	Polyurethane
Acetylene	C_2H_2	R1	•	I	U	U	•	•	R2	R2	R2	R2
Air	-	•	•	•	•	•	•	•	•	•	•	•
Allene	C_3H_4	•	•	•	I	U	•	•	•	•	•	I
Ammonia U	NH_3	U	•	•	U	U	•	•	U	•	•	
Argon	Ar	•	•	•	•	•	•	•	•	•	•	•
Arsine	AsH_3	•	•	R4	I	•	•	•	•	•	•	U
Boron Trichloride	BCl_3	U	•	U	I	•	•	•	I	I	I	I
Boron Trifluoride	BF_3	•	•	•	I	•	•	•	I	I	I	I
1,3-Butadiene	C_4H_6	•	•	•	•	•	•	•	•	U	•	U
Butane	C_4H_{10}	•	•	•	•	•	•	•	•	•	•	•
1-Butene	C_4H_8	•	•	•	•	•	•	•	•	•	•	•
cis-2-Butene	C_4H_8	•	•	•	•	•	•	•	•	•	•	•
trans-2-Butene	C_4H_8	•	•	•	•	•	•	•	•	•	•	•
Carbon Dioxide	CO_2	•	•	•	•	•	•	•	•	•	•	U
Carbon Monoxide	CO	•	•	•	•	•	•	•	I	•	•	•
Carbonyl Sulfide	COS	•	•	•	I	•	•	•	•	I	I	I
Chlorine	Cl_2	U	•	U	U	U	•	•	•	U	U	U
Deuterium	D_2	•	•	•	•	•	•	•	•	•	•	•
Diborane	B_2H_6	•	•	U	I	•	•	•	I	I	I	I
Dichlorosilane	H_2SiCl_2	I	•	I	I	I	•	•	I	I	I	I
Dimethyl Ether	C_2H_6O	•	•	•	•	•	•	•	•	•	•	I
Ethane	C_2H_6	•	•	•	•	•	•	•	•	•	•	•
Ethyl Acetylene	C_4H_6	I	•	•	I	U	•	•	•	I	•	I
Ethyl Chloride	C_2H_5Cl	•	•	U	I	•	•	•	•	•	•	U
Ethylene	C_2H_4	•	•	•	•	•	•	•	•	•	•	I
Ethylene Oxide	C_2H_4O	R3	•	R4	I	U	•	•	U	U	U	U
Ethylene Oxide/Carbon Dioxide Mixtures		R3	•	I	I	U	•	•	U	U	U	U
Ethylene Oxide/Halocarbon Mixtures		R3	•	I	I	U	•	•	U	U	U	U
Ethylene Oxide/HCFC-124		R3	•	I	I	U	•	•	U	U	U	U
Halocarbon 11	CCl_3F	•	•	R4	I	•	•	•	•	•	U	U
Halocarbon 12	CCl_2F_2	•	•	R4	I	•	•	•	•	•	•	•
Halocarbon 13	$CClF_3$	•	•	R4	I	•	•	•	•	•	•	•
Halocarbon 13B1	CBF_3	•	•	R4	I	•	•	•	•	•	•	•
Halocarbon 14	CF_4	•	•	R4	I	•	•	•	•	•	•	•

COMPATIBILITY GUIDE CONT.

COMMON NAME	CHEMICAL FORMULA	MATERIALS OF CONSTRUCTION										
		METALS					PLASTICS		ELASTOMERS			
		Brass	Stainless Steel	Aluminum	Zinc	Copper	PCTFE	Teflon®	Viton	Buna-N	Neoprene	Polyurethane
Halocarbon 21	$CHCl_2F$	•	•	R4	I	•	•	•	U	U	•	•
Halocarbon 22	$CHClF_2$	•	•	R4	I	•	•	•	U	U	•	U
Halocarbon 23	CHF_3	•	•	R4	I	•	•	•	I	I	I	•
Halocarbon 113	CCl_2FCClF_2	•	•	R4	U	•	•	•	•	•	•	•
Halocarbon 114	$C_2Cl_2F_4$	•	•	R4	I	•	•	•	•	•	•	•
Halocarbon 115	C_2ClF_5	•	•	R4	I	•	•	•	•	•	•	•
Halocarbon 116	C_2F_6	•	•	R4	I	•	•	•	I	I	I	•
Halocarbon 142B	$C_2H_3ClF_2$	•	•	R4	I	•	•	•	U	•	•	•
Halocarbon 152A	$C_2H_4F_2$	•	•	R4	I	•	•	•	U	•	•	•
Halocarbon C-318	C_4F_8	•	•	R4	I	I	•	•	•	•	•	•
Halocarbon 502	$CHClF_2/CClF_2$-CF_3	I	•	R4	I	I	•	•	•	•	•	•
Halocarbon 1132A	$C_2H_2F_2$	•	•	R4	I	•	I	•	I	I	I	•
Helium	He	•	•	•	•	•	•	•	•	•	•	•
Hydrogen	H_2	•	•	•	•	•	•	•	•	•	•	•
Hydrogen Chloride	HCl	U	•	U	U	U	•	•	•	U	U	U
Hydrogen Sulfide	H_2S	U	•	•	I	I	•	•	U	•	•	•
Isobutane	C_4H_{10}	•	•	•	•	•	•	•	•	•	•	•
Isobutylene	C_4H_8	•	•	•	I	•	•	•	•	•	•	I
Isopentane	C_5H_{12}	•	•	•	•	•	•	•	•	•	•	•
Krypton	Kr	•	•	•	•	•	•	•	•	•	•	•
Methane	CH4	•	•	•	•	•	•	•	•	•	•	•
Methyl Chloride	CH_3Cl	•	•	U	U	•	•	•	•	U	U	U
Methyl Mercaptan	CH_3SH	•	•	U	I	U	•	•	I	I	•	I
Neon	Ne	•	•	•	•	•	•	•	•	•	•	•
Nitric Oxide	NO	U	•	•	I	•	•	•	I	I	•	I
Nitrogen	N_2	•	•	•	•	•	•	•	•	•	•	•
Nitrogen Dioxide	NO_2	I	•	•	I	I	•	•	U	U	U	U
Nitrous Oxide	N_2O	•	•	•	•	•	•	•	•	•	•	•
Oxygen	O_2	•	R5	R4	•	•	•	•	R6	R6	R6	•
Perfluoropropane	C_3F_8	•	•	•	I	•	•	•	I	•	•	I
Phosphine	PH_3	I	•	•	I	I	•	•	I	I	I	I
Phosphorous Pentafluoride	PF_5	I	•	I	I	I	•	•	I	I	I	I
Propane	C_3H_8	•	•	•	•	•	•	•	•	•	•	•
Propylene	C_3H_6	•	•	•	•	•	•	•	•	U	U	U
Propylene Oxide	C_3H_6O	I	•	I	I	I	•	•	U	U	U	U
Refrigerant Gases	See Halocarbons											
Silane	SiH_4	•	•	•	I	•	•	•	•	•	•	•
Silicon Tetrachloride	$SiCl_4$	I	•	U	I	I	•	•	I	I	I	I
Silicon Tetrafluoride	SiF_4	•	•	•	I	•	•	•	•	•	•	•
Sulfur Dioxide	SO_2	U	•	•	U	U	•	•	•	U	U	•
Sulfur Hexafluoride	SF_6	•	•	•	I	•	•	•	•	•	•	•
Trichlorosilane	$HSiCl_3$	I	•	U	I	I	•	•	I	I	I	I
Vinyl Methyl Ether	C_3H_6O	•	•	•	I	U	•	•	I	I	I	I
Xenon	Xe	•	•	•	•	•	•	•	•	•	•	•

MOISTURE CONVERSION

Dew Point °C	Dew Point °F	Vapor Pressure (Water/Ice in Equilibrium) mm of Mercury	PPM on Volume Basis at 760 mm of Hg Pressure	Relative Humidity at 70° F %	PPM on Weight Basis in Air
-90	-130	0.00007	0.0921	0.00037	0.057
-88	-126	0.0001	0.132	0.00054	0.082
-86	-123	0.00014	0.184	0.00075	0.11
-84	-119	0.0002	0.263	0.00107	0.16
-82	-116	0.00029	0.382	0.00155	0.24
-80	-112	0.0004	0.562	0.00214	0.33
-78	-108	0.00056	0.737	0.003	0.46
-76	-105	0.00077	1.01	0.0041	0.63
-74	-101	0.00105	1.38	0.00559	0.86
-72	-98	0.00143	1.88	0.00762	1.17
-70	-94	0.00194	2.55	0.0104	1.58
-68	-90	0.00261	3.43	0.014	2.13
-66	-87	0.00349	4.59	0.0187	2.84
-64	-83	0.00464	6.11	0.0248	3.79
-62	-80	0.00614	8.08	0.0328	5.01
-60	-76	0.00808	10.6	0.043	6.59
-58	-72	0.0106	13.9	0.0565	8.63
-56	-69	0.0138	18.2	0.0735	11.3
-54	-65	0.0178	23.4	0.0948	14.5
-52	-62	0.023	30.3	0.123	18.8
-50	-58	0.0295	38.8	0.157	24.1
-48	-54	0.0378	49.7	0.202	30.9
-46	-51	0.0481	63.3	0.257	39.3
-44	-47	0.0609	80	0.325	49.7
-42	-44	0.0768	101	0.41	62.7
-40	-40	0.0966	127	0.516	78.9
-38	-36	0.1209	159	0.644	98.6
-36	-33	0.1507	198	0.804	122.9
-34	-29	0.1873	246	1	152
-32	-26	0.2318	305	1.24	189
-30	-22	0.2859	376	1.52	234
-28	-18	0.351	462	1.88	287
-26	-15	0.43	566	2.3	351
-24	-11	0.526	692	2.81	430
-22	-8	0.64	842	3.41	523
-20	-4	0.776	1020	4.13	633
-18	0	0.939	1240	5	770
-16	3	1.132	1490	6.03	925
-14	7	1.361	1790	7.25	1110
-12	10	1.632	2150	8.69	1335
-10	14	1.95	2570	10.4	1596
-8	18	2.326	3060	12.4	1900
-6	21	2.765	3640	14.7	2260
-4	25	3.28	4320	17.5	2680
-2	28	3.88	5100	20.7	3170
0	32	4.579	6020	24.4	3640
2	36	5.294	6970	28.2	4330
4	39	6.101	8030	32.5	4990
6	43	7.013	9230	37.4	5730
8	46	8.045	10590	42.9	6580
10	50	9.029	12120	49.1	7530
12	54	10.52	13840	56.1	8600
14	57	11.99	15780	63.9	9800
16	61	13.63	17930	72.6	11140
18	64	15.48	20370	82.5	12650
20	68	17.54	23080	93.5	14330

Certificate

Standard **ISO 9001:2015**

Certificate Registr. No. 01 100 1332014

Certificate Holder:

HARRIS
A LINCOLN ELECTRIC COMPANY

Harris Calorific International Sp. z o.o.
ul. Strefowa 8
58-200 Dzierżoniów
Poland

including the locations according to annex

Scope: design and development, production, sale, marketing and service of pressure regulators and flowmeters of industrial gases as well as torches and accessories for gas cutting, welding, brazing and heating

Proof has been furnished by means of an audit that the requirements of ISO 9001:2015 are met.

Validity: The certificate is valid from 2017-11-09 until 2018-12-21.
First certification 2012

2017-11-10

Grzegorz Grabka

TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln

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Certificate of Registration

ERM Certification and Verification Services

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Fax: +44 (0)20 3206 5442
Email post@ermcvs.com

This is to certify that

Harris Calorific International Sp. z o.o.

ERMCVS

Certificate Number: 457
Initial Issue Date: 03 May 2010
Reissue Date: 29 April 2016
Expiry Date: 18 September 2018
Version #: 3

at

Strefowa 8
58-200
Dzierżoniów
Poland

has been registered to ISO 14001:2004 for

UKAS MANAGEMENT SYSTEMS
067

Manufacture, sale and service of pressure regulators and flow-metering devices for use with industrial gases, gas cutting, welding and heating torches and accessories at Harris Calorific International Sp. z o.o. at Strefowa Street, 8 58-200 Dzierżoniów, Poland

Signed on behalf of ERM CVS by:

Jeff Rose

Head of Certification

HARRIS SPECIALTY GAS Equipment

Warranty

This equipment is sold by The Harris Products Group under the warranties and policies set forth in the following paragraphs. The warranty is extended only with respect to the purchase of this equipment directly from The Harris Products Group or its authorized distributor network as new merchandise and is extended to the first buyer thereof other than for the purpose of resale.

Unless stated otherwise, the warranty period is one (1) year from the date of original delivery to the buyer with the following exception for equipment use in corrosive gas service. Equipment used in corrosive gas service will have a warranty of ninety (90) days from the date of original delivery. The equipment is warranted to be free from functional defects in materials and workmanship and to conform to the description of this equipment contained in the product manual and any associated labels, inserts or instructions provided that the equipment is properly operated under conditions of normal use and that recommended regular maintenance and service is performed in accordance with the instructions provided.

The warranty for such equipment shall not apply if the equipment has been altered by any third party. The Harris Products Group or its designated service facility shall only perform repairs to the equipment. If the equipment has been subject to abuse, misuse, negligence or accident the stated warranty will not apply.

The Harris Products Group sole obligation to the buyer and the buyer's sole remedy is limited to the repair or replacement of the equipment free of charge at The Harris Products Group's option. The authorized distributor from which it was purchased must report the request for return or repair to The Harris Products Group. The request must include the observed deficiency, the part number or assembly number, gas service used and the proof of purchase. The request for return or repair must occur no later than seven (7) days after the expiration of the warranty period (One year and seven days for non-corrosive equipment and ninety seven (97) days for equipment in corrosive gas service). Transportation charges are to be prepaid for the return of the equipment and upon examination the equipment is found defective due to no fault of the buyer the equipment will be replaced or repaired and returned to the original buyer at no charge. If the product is found to be defective due to negligence of the buyer or his customer the product will be repaired or replaced and returned to the original buyer only after authorization has been received to pay for any such repairs and all transportation charges.

The Harris Products Group shall not be liable for any damages including but not limited to incidental damages, consequential damages or other damages which may occur due to negligence, breach of warranty or otherwise.

There are no expresses or implied warranties that extend beyond the warranties set forth by The Harris Products Group.




HARRIS

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