



HALE HAMILTON®
Excellence in Pressure & Flow Control
A **CIRCOR** International, Inc. Company

Clean Gas Products



Clean Gas Products

**HP - High Purity &
UHP - Ultra High Purity**

**HP50, HP/UHP100T,
HP/UHP1100,
HP/UHP1400,
HP/UHP1550,
UHP1600 &
HP/UHP1700** Regulators

CFPR & CFPM High Flow Regulators

HP/UHP3600 Diaphragm Stop Valves

HP2000 Series Sealed Spindle Stop Valves

CFASV Bellows Stop Valves

HP/UHP10 Non-return Valves

CFRVS & CFLRV Relief Valves

UHP30 Vacuum Generator

Panels

We design, machine, build and test all our products on one site in Uxbridge. If you don't see what you want in our standard ranges, contact us and we'll do our best to meet your needs.

Hale Hamilton (Valves) Ltd
Cowley Road, Uxbridge, UB8 2AF, UK
Tel: 01895 236 525
www.halehamilton.com



HALE HAMILTON®

Excellence in Pressure & Flow Control

A CIRCOR International, Inc. Company

HP/UHP Spring-Loaded Regulator

Description

HP (High Purity) and UHP (Ultra High Purity) products are for service where the product must be kept free of contamination. The design is kept simple to minimise “dead” areas where contaminants might collect. Elastomers are not used and polymers are carefully selected for suitability.

UHP uses the same design as HP but the parts are machined to a better surface finish to improve cleanliness. The valve is assembled in a clean room and is Helium leak tested by mass spectrometer.

HP/UHP products may be used on reactive, corrosive and/or toxic products. Special materials are available for resistance to particularly aggressive chemicals.

We offer a range of spring-loaded regulators that provide a flow of gas at controlled pressure. The outlet pressure is set by turning the control knob. The process fluid is isolated from the spring compartment by a metal diaphragm. The range of outlet pressure is set by the diameter of the diaphragm and the strength of the spring.

The outlet pressure is substantially unaffected by flow rate but it does drop slightly as the inlet pressure is increased.

A back pressure variant is available. This controls the inlet pressure by venting pressure to the outlet if the inlet pressure exceeds the set value.



Standard Types

- HP50 – back pressure regulator
- HP/UHP100T – forward pressure regulator with tied diaphragm for low pressure
- HP/UHP1100 – high flow forward pressure regulator
- HP/UHP1400 - forward pressure regulator for low absolute pressure
- HP/UHP1550 - low flow forward pressure regulator
- UHP1600 – forward pressure regulator with no valve lift spring
- HP/UHP1700 – two stage forward pressure regulator

Build Standards (UHP only)

- Built to ultra high purity standards in a dedicated clean room facility.
- Ra 10 to 15 micro inch finish on wetted surfaces.
- Final assembly and testing is carried out under class 10 conditions.
- Each valve is tested for leakage using a mass spectrometer.
- Leak rate is less than 10^{-9} mbar l/s of Helium, inboard, outboard and across seat.
- No lubrication is used in the flow path and the seat materials are chosen for minimal gas absorption.

In addition to our standard product range, we have an extensive range of special designs and offer a custom build service. Contact our Sales office if you don't see what you want in our catalogue. The information contained within this catalogue is for reference purposes only and is subject to change.

When selecting a product, the total system design must be considered to ensure safe, trouble free performance. Component function, material compatibility, adequate ratings, proper installation, operation and maintenance are the responsibility of the system designer and user.

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Standard Specification

See next page for specification of individual types

- Ports: 1/4" NPT female for HP, 1/4" Cajon VCR fittings on welded stubs for UHP (except where stated otherwise)
- Temperature range: -40 to +100°C

Options

Please contact us for details

- Ports: alternative port configurations can be supplied including additional ports for gauges and relief valves.
- Materials: suitable combinations of materials can be supplied for various applications such as Oxygen service or semiconductor manufacturing.
- Mounting: all types have threaded mounting holes in the base but an optional threaded bonnet is available for panel mounting.
- The standard control knob may be replaced by a lever or by a locking cap.
- A maximum outlet pressure limit stop is fitted as standard but a minimum outlet pressure limit stop is available as an option
- Steam heated and explosion proof electrically heated variants are available.
- Certification: variants are available approved for use with Oxygen, for medical Oxygen service or for ATEX service. Some variants have passed adiabatic shock (BAM) tests.

Standard Materials

Alternative materials can be supplied

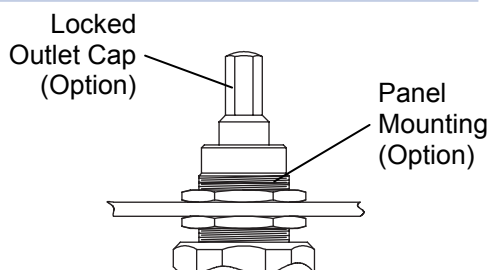
- Body: Stainless Steel or Brass
- Valve: Stainless Steel, Monel or Hastelloy
- Valve Seat: PCTFE
- Diaphragm: Stainless Steel (PTFE coating optional) or Hastelloy

Ordering Information

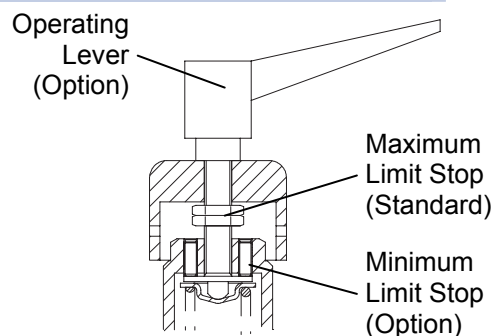
Please supply the following information when ordering

- Cleanliness level
- Inlet Pressure
- Outlet pressure range
- Forward or back pressure
- Flow medium
- Tied diaphragm (where available)
- Control knob or locked output (state required outlet pressure)
- Panel mounting required
- Internal limit stops – state maximum pressure
- Port configuration
- Operating and storage temperature ranges
- Certification and QA requirements

Panel Mounting and Locked Output Pressure



Lever Control and Outlet Limit Stops



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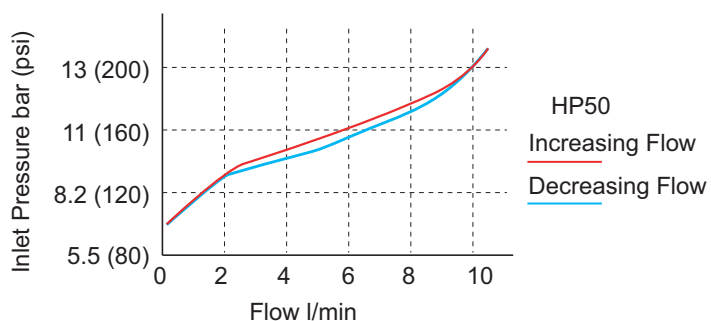
A CIRCOR International, Inc. Company

HP/UHP Spring-Loaded Regulator

HP50 Back Pressure Regulator

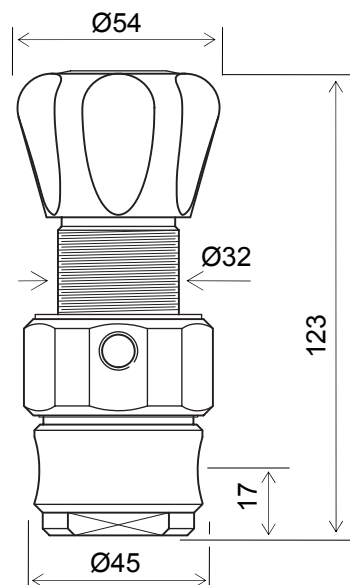
Specification

- Maximum inlet pressure: 17bar (250psi)
- Outlet pressure ranges: 0 to 2 bar (0 to 30psi), 0 to 7 bar (0 to 100psi), 0 to 17 bar (0 to 250psi)
- Flow factor (Cv): 0.12



Typical Dimensions

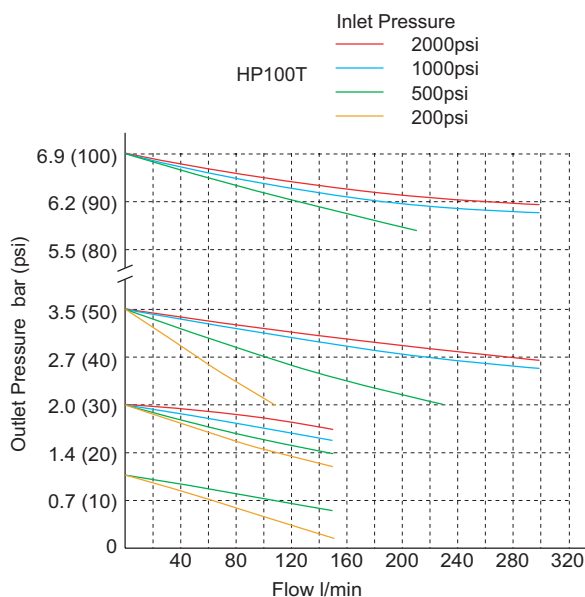
in mm except where shown otherwise



HP/UHP100T

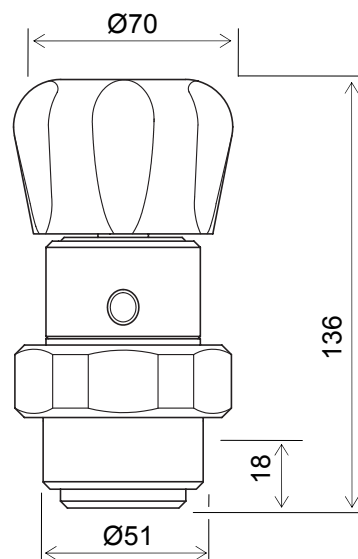
Specification

- Maximum inlet pressure: 207bar (3000psi)
- Outlet pressure ranges: 0 to 1.7 bar (0 to 25psi), 0 to 3.4 bar (0 to 50psi), 0 to 7 bar (0 to 100psi), 0 to 10 bar (0 to 150psi)
- Flow factor (Cv): 0.16



Typical Dimensions

in mm except where shown otherwise



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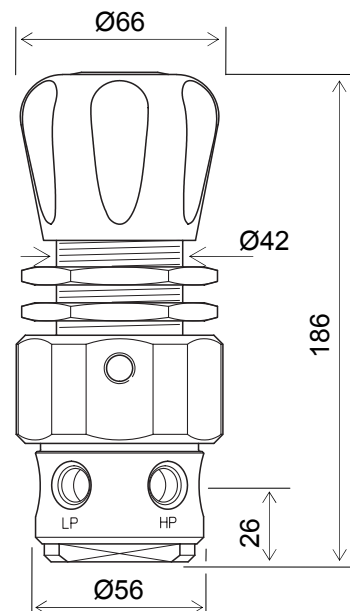
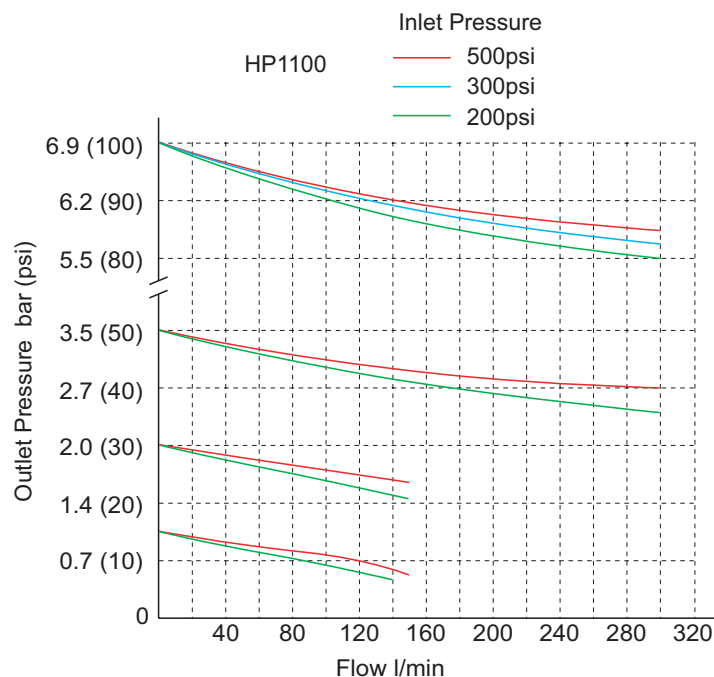
HP/UHP1100 High Flow

Typical Dimensions

in mm except where shown otherwise

Specification

- Maximum inlet pressure: 310bar (4500psi)
- Outlet pressure ranges: 0 to 0.7 bar (0 to 10psi), 0 to 1.7 bar (0 to 25psi), 0 to 3.4 bar (0 to 50psi), 0 to 7 bar (0 to 100psi), 0 to 14 bar (0 to 200psi), 0 to 20 bar (0 to 290psi)
- Flow factor (Cv): 0.2
- Process Ports: 3/8" NPT female for HP, 1/2" Cajon VCR fittings on welded stubs for UHP
- Pressure Variation** %: 0.6
- Tied diaphragm option available



** Pressure variation is the RISE in outlet pressure for a DROP in inlet pressure

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HP/UHP1400 Absolute Pressure

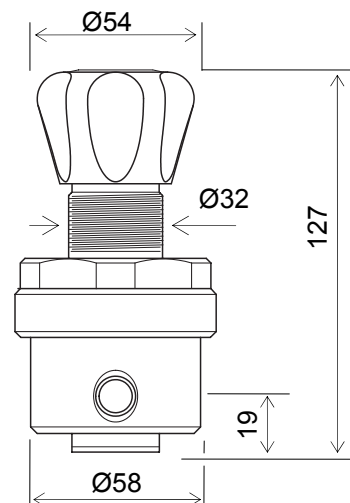
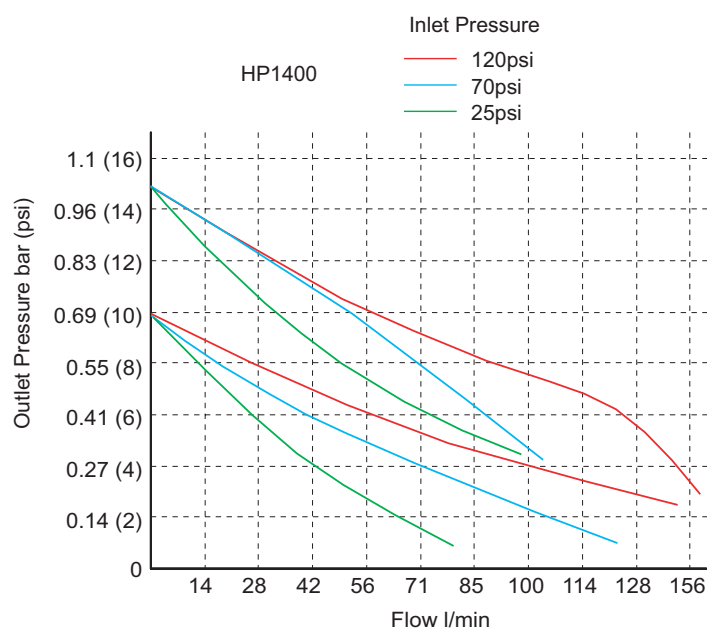
Typical Dimensions

in mm except where shown otherwise

Specification

This regulator is for use at vacuum and low positive pressure. It includes an internal spring to compensate for ambient pressure.

- Maximum inlet pressure: 10 barg (150 psig)
- Outlet pressure range: 0.07 to 2.1 bar (1 to 30 psi) absolute
- Flow factor (Cv): 0.3



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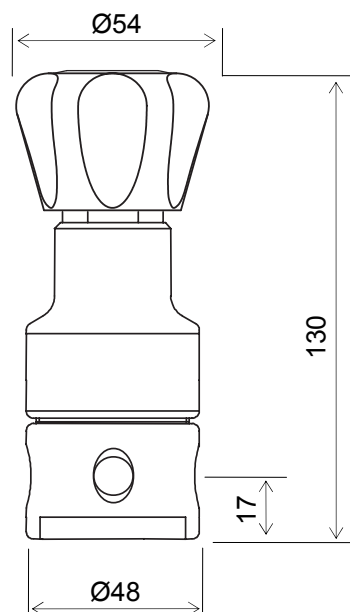
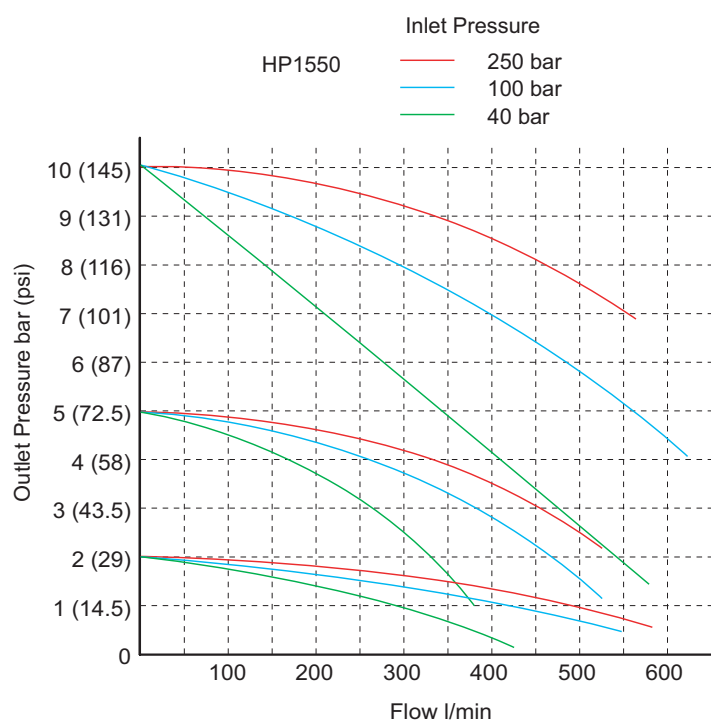
HP/UHP1550 Low Flow

Typical Dimensions

in mm except where shown otherwise

Specification

- Maximum inlet pressure: 376bar (5450psi)
- Outlet pressure ranges: 0 to 2 bar (0 to 30psi), 0 to 5 bar (0 to 75psi), 0 to 7 bar (0 to 100psi), 0 to 10 bar (0 to 150psi), 0 to 20 bar (0 to 290psi)
- Flow factor (Cv): 0.09
- Pressure Variation** %: 0.8
- Tied diaphragm option available



** Pressure variation is the RISE in outlet pressure for a DROP in inlet pressure

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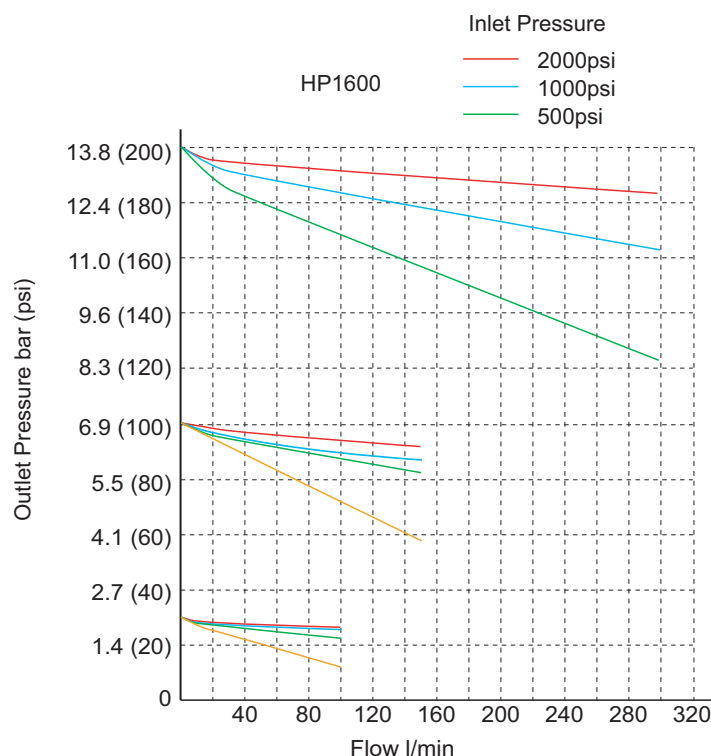
UHP1600 “Springless”

Specification

This regulator has no spring in the process flow to eliminate the possibility of contamination from the spring. The diaphragm acts as the valve lifting spring. Because of this the diaphragm is tied to the valve mechanism.

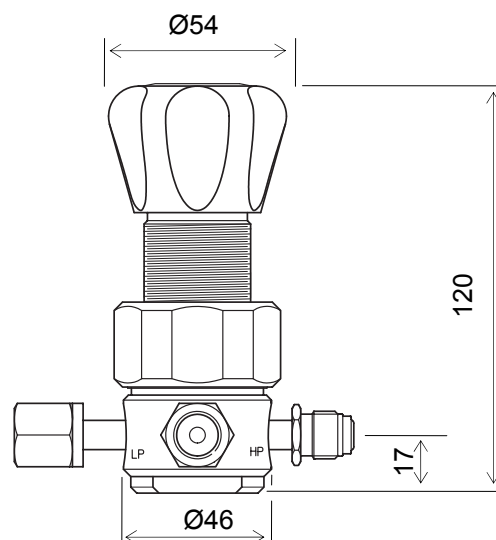
This type is only offered as ultra high purity.

- Maximum inlet pressure: 218bar (3161psi)
- Outlet pressure ranges: 0 to 2 bar (0 to 30psi), 0 to 7 bar (0 to 100psi), 0 to 17 bar (0 to 250psi)
- Flow factor (Cv): 0.09



Typical Dimensions

in mm except where shown otherwise



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HP/UHP1700 Two Stage

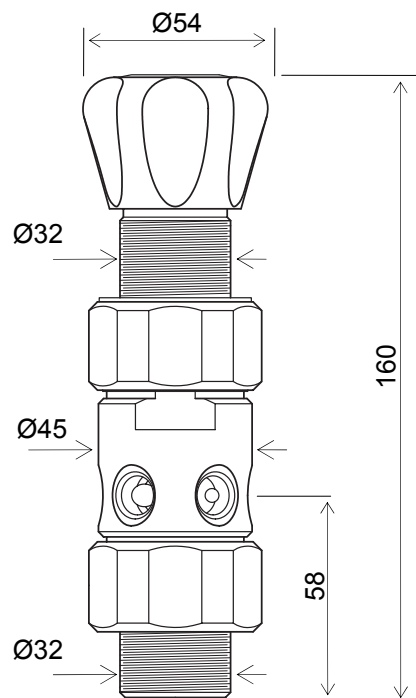
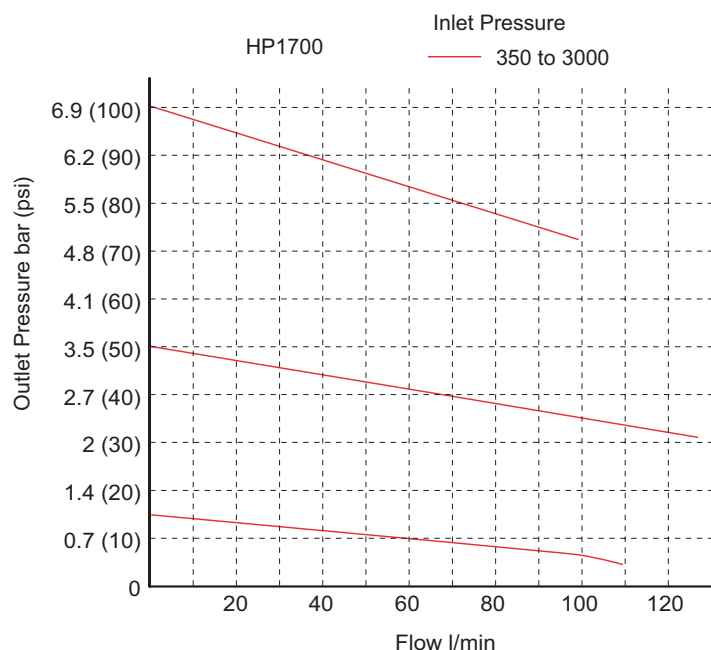
Typical Dimensions

in mm except where shown otherwise

Specification

This regulator incorporates two stages of regulation in a common body. This significantly reduces the effect of changes in inlet pressure on the outlet pressure. It also reduces the cooling effect of large pressure drops.

- Maximum inlet pressure: 376bar (5450psi)
- Outlet pressure ranges: 0 to 2 bar (0 to 30psi), 0 to 5 bar (0 to 75psi), 0 to 10 bar (0 to 150psi)
- Flow factor (Cv): 0.065
- Pressure Variation** %: 0.0064
- Tied diaphragm option available



** Pressure variation is the RISE in outlet pressure for a DROP in inlet pressure

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UHP High Flow Spring-Loaded Regulator

Description

UHP (Ultra High Purity) products are for service where the product must be kept free of contamination. Elastomers and polymers are carefully selected for suitability. Parts are machined to a high surface finish to improve cleanliness. The valve is assembled in a clean room and is Helium leak tested by mass spectrometer.

UHP products may be used on reactive, corrosive and/or toxic products. Special materials are available for resistance to particularly aggressive chemicals.

We offer a range of spring-loaded regulators that provide a flow of gas at controlled pressure. The outlet pressure is set by turning the control knob. The process fluid is isolated from the spring compartment by a piston. The range of outlet pressure is set by the diameter of the piston and the strength of the spring.

The outlet pressure is substantially unaffected by flow rate but it does drop slightly as the inlet pressure is increased.

A back pressure variant is available. This controls the inlet pressure by venting pressure to the outlet if the inlet pressure exceeds the set value.



Options

Please contact us for details

- Ports: alternative port configurations can be supplied including additional ports for gauges and relief valves.
- Materials: suitable combinations of materials can be supplied for various applications such as Oxygen service or semiconductor manufacturing.
- The standard control knob may be replaced by a locking cap.
- Certification: variants are available approved for use with Oxygen or for ATEX service.

Standard Specification

See next page for specification of individual types

- Process Ports: 1/2" Cajon VCR fittings on welded stubs
- Gauge Ports: 1/4" Cajon VCR compatible female
- Temperature range: -10 to +100°C

Build Standards

- Built to ultra high purity standards in a dedicated clean room facility.
- Ra 10 to 15 micro inch finish on wetted surfaces.
- Final assembly and testing is carried out under class 10 conditions.
- Each valve is tested for leakage using a mass spectrometer.

Standard Materials

Alternative materials can be supplied

- Body: Stainless Steel
- Valve: Stainless Steel
- Valve Seat: PCTFE
- O rings: Viton

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UHP High Flow Spring-Loaded Regulator

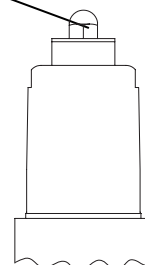
Ordering Information

Please supply the following information when ordering

- Inlet Pressure
- Outlet pressure range
- Forward or back pressure
- Flow medium
- Control knob or locked output (state required outlet pressure)
- Port configuration
- Operating and storage temperature ranges
- Certification and QA requirements

Locked Output Pressure

Locked
Outlet Cap
(Option)



CFPR1 Forward Pressure CFPM1 & 2 Back Pressure

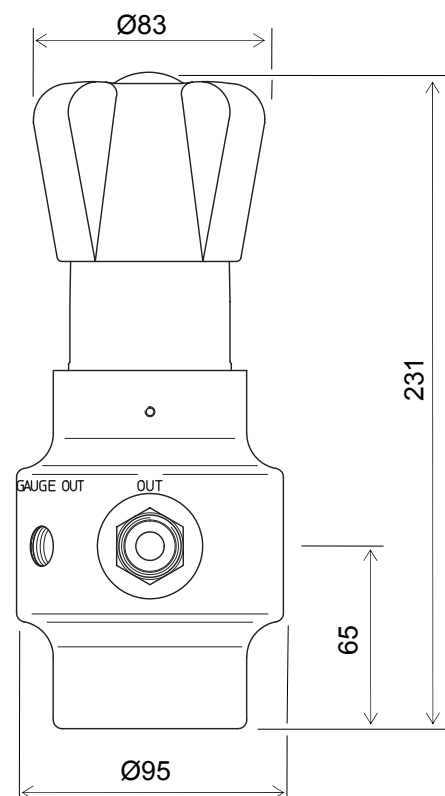
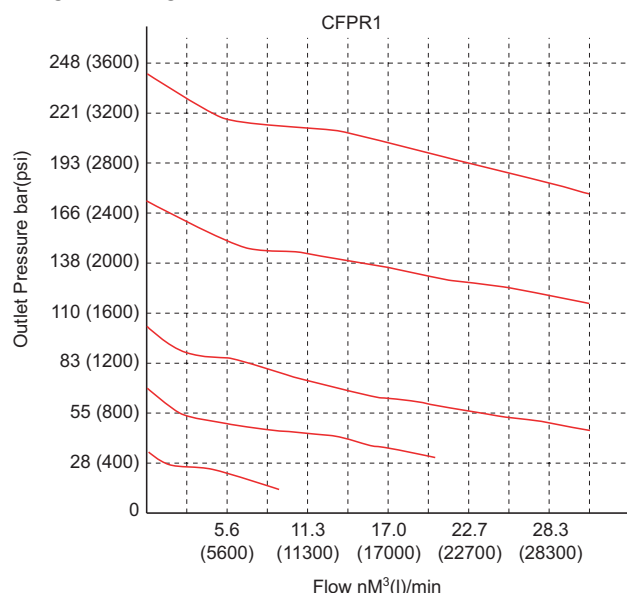
Typical Dimensions

in mm except where shown otherwise

Specification

	CFPR1	CFPM1	CFPM2
Max. inlet pressure	320bar (4640psi)	320bar (4640psi)	25bar (360psi)
Outlet pressure ranges bar	0 to 25 0 to 100 70 to 280	0 to 10 0 to 100 100 to 250	0.5 to 2.5
Outlet pressure ranges psi	0 to 360 0 to 1450 1015 to 4060	0 to 145 0 to 1450 1450 to 3625	7 to 36

- Weight: 5.5kg



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HP/UHP Diaphragm Stop Valves

Description

HP (High Purity) and UHP (Ultra High Purity) products are for service where the product must be kept free of contamination. The design is kept simple to minimise “dead” areas where contaminants might collect. Elastomers and polymers are carefully selected for suitability.

UHP uses a similar design to HP but the parts are machined to a better surface finish to improve cleanliness. The valve is assembled in a clean room and is Helium leak tested by mass spectrometer.

HP/UHP products may be used on reactive, corrosive and/or toxic products. Special materials are available for resistance to particularly aggressive chemicals.

We offer a range of stop valves in which a non-tied diaphragm isolates the operating mechanism from the process fluids.

The HP/UHP 3600 series is operated by a quarter turn lever or a pneumatic actuator which may be normally closed or normally open.



Construction

- The diaphragm is of one-piece non-welded construction for greater integrity and improved fatigue life. It acts directly on the seat to close the valve to minimise dead space and wetted area.
- The valve seat is mechanically supported and retained to minimise deformation under load and seat lift under reverse flow conditions.
- To prevent the shedding of particulate contamination, there are no sliding, rotating or rubbing components in the flow path.

Build Standards (UHP only)

- Built to ultra high purity standards in a dedicated clean room facility.
- Ra 10 to 15 micro inch finish on wetted surfaces.
- Final assembly and testing is carried out under class 10 conditions.
- Each valve is tested for leakage using a mass spectrometer.
- Leak rate is less than 10^{-9} mbar l/s of Helium, inboard, outboard and across seat.
- No lubrication is used in the flow path and the seat materials are chosen for minimal gas absorption.

Standard Materials

Alternative materials can be supplied

- Body: Stainless Steel, Monel or Brass
- Valve: Stainless Steel or Brass
- Seat: PCTFE
- Diaphragm: Hastelloy

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HP/UHP Diaphragm Stop Valves

Options

Please contact us for details

- Ports: alternative port configurations can be supplied.
- Materials: suitable combinations of materials can be supplied for various applications such as Oxygen service or semiconductor manufacturing.
- Certification: variants are available approved for use with Oxygen, for medical Oxygen service or for ATEX service.

Ordering Information

Please supply the following information when ordering

- Cleanliness level
- Valve size
- Actuator required: normally open or normally closed
- Maximum working pressure
- Flow medium
- Port configuration
- Operating and storage temperature ranges
- Certification and QA requirements

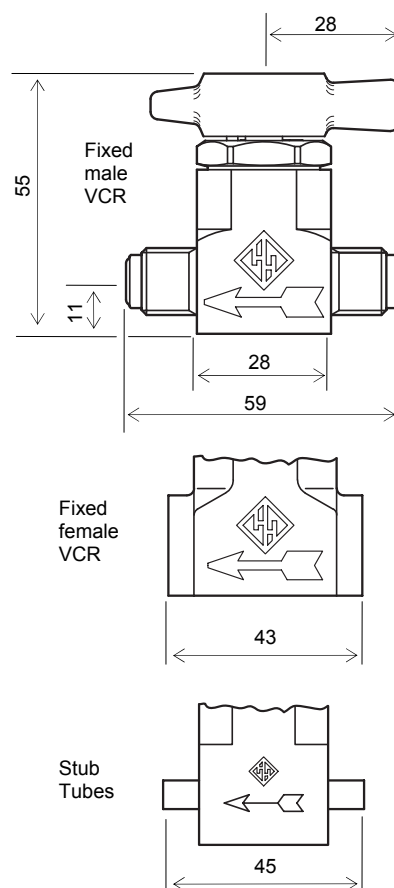
HP/UHP 3600 series

Specification

- Nominal Bore: 5mm
- Maximum working pressure: 241bar (3500psi)
- Flow factor (Cv): 0.2
- Ports: 1/4" NPT female for HP, 1/4" Cajon VCR compatible male or female, fixed or swivel, or 1/4" stub tube for welding for UHP (alternative ports can be supplied)
- Weight: 0.35kg
- Temperature range: -40 to +100°C (extended temperature range versions can be supplied)

Typical Dimensions

in mm except where shown otherwise



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HP/UHP 3600A series Actuated

Typical Dimensions

in mm except where shown otherwise

Specification

Normally closed and normally open actuated variants of the HP/UHP 3600 series are available.

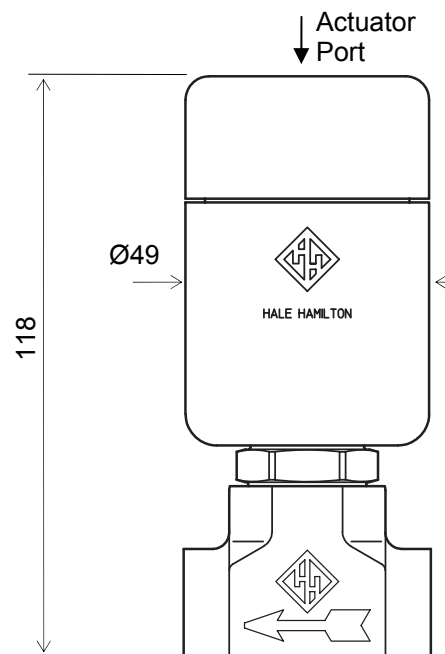
The normally closed actuator (LA5) is opened by a low-pressure pneumatic piston and closed by a spring.

The normally open actuator (LA4) is closed by a low-pressure pneumatic piston and opened by a spring.

The operating force is magnified by an internal hydraulic system.

The specifications of the valve are the same as for the manual variant.

- Actuator body material: Aluminium alloy
- Actuator port: 1/8" NPT
- Actuator pressure: 5 bar (75psi) nominal, 7 bar (100 psi) maximum
- Weight: approx 0.7kg



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HP Stop Valves Sealed Spindle

Description

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HP products may be used on reactive, corrosive and/or toxic products. Special materials are available for resistance to particularly aggressive chemicals.

We offer a range of stop valves in which the metal valve spindle seats directly on a seating face in the valve body. O-rings with back-up rings prevent leakage along the spindle.

HP2200 valves have a partially balanced spindle to reduce the load applied by the process pressure. This means that handwheel torque is low even at the maximum operating pressure of the valve and a relatively small actuator can be used.

Pneumatically actuated variants are available.

Some variants of these valves have passed adiabatic shock tests at the independent test houses BAM and CTE to qualify them for use with Oxygen.



Standard Materials

Alternative materials can be supplied

- Body: Stainless Steel, Monel or Brass
- Valve: Stainless Steel or Brass
- O rings: Viton or EPDM
- Back up rings: PTFE or Nylon

Options

Please contact us for details

- Ports: alternative port configurations can be supplied.
- Materials: suitable combinations of materials can be supplied for various applications such as Oxygen service or semiconductor manufacturing.
- The control knob for HP2000 and 2100 is available in metal or plastic in two styles.
- A metal handwheel with a locking mechanism is also available.
- Certification: variants are available approved for use with Oxygen, for medical Oxygen service or for ATEX service. Some variants have passed adiabatic shock (BAM) tests.

Ordering Information

Please supply the following information when ordering

- Valve size
- Actuator required
- Type of control knob required
- Locking required
- Maximum working pressure
- Flow medium
- Port configuration
- Operating and storage temperature ranges
- Certification and QA requirements

In addition to our standard product range, we have an extensive range of special designs and offer a custom build service. Contact our Sales office if you don't see what you want in our catalogue. The information contained within this catalogue is for reference purposes only and is subject to change.

When selecting a product, the total system design must be considered to ensure safe, trouble free performance. Component function, material compatibility, adequate ratings, proper installation, operation and maintenance are the responsibility of the system designer and user.

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A CIRCOR International, Inc. Company

HP Stop Valves Sealed Spindle

HP2000 Stop Valve (4mm)

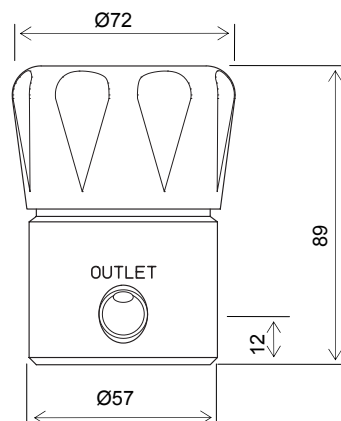
Specification

- Nominal Bore: 4mm
- Maximum working pressure: 400bar (5800psi)
- Inlet & outlet Ports: 1/4" NPT female (alternative ports can be supplied)
- Temperature range: -20 to +150°C (extended temperature range versions can be supplied)

Typical Dimensions

in mm except where shown otherwise

Control Knob available in Aluminium Alloy or Plastic

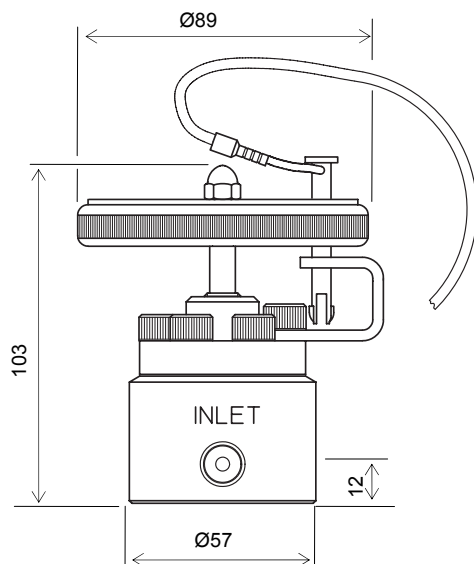


HP2000 Alternative Handwheels

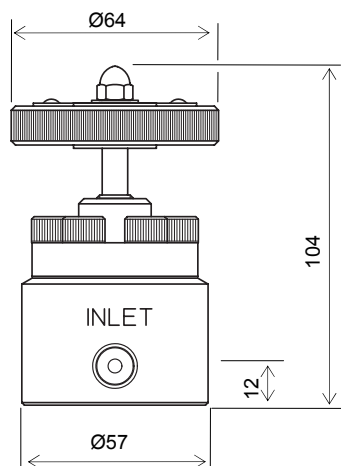
Typical Dimensions

in mm except where shown otherwise

Optional Locking Aluminium Alloy Handwheel



Alternative Plastic Handwheel



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HP Stop Valves Sealed Spindle

HP2000A Normally Closed Actuated Valve

Specification

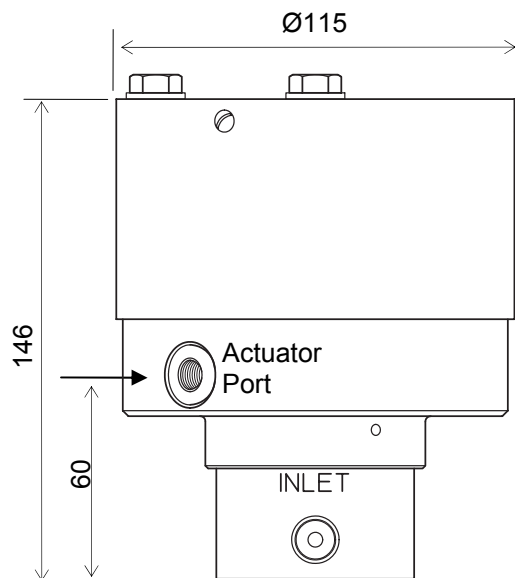
The normally closed actuated variant of HP2000 is opened by a low-pressure pneumatic piston and closed by a spring.

The specifications of the valve are the same as for the manual variant.

- Actuator port: G1/8
- Actuator pressure: 7 bar (100 psi)

Typical Dimensions

in mm except where shown otherwise



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HP Stop Valves Sealed Spindle

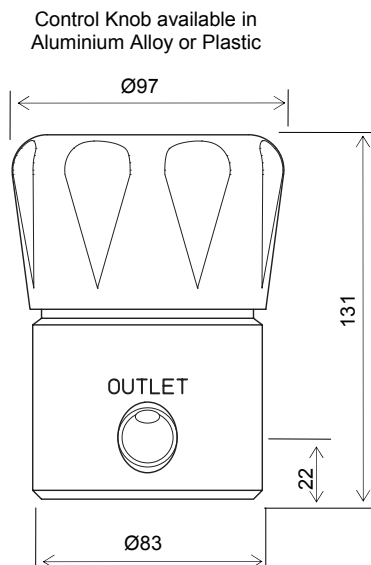
HP2100 Stop Valve (8mm)

Specification

- Nominal Bore: 8mm
- Maximum working pressure: 400bar (5800psi)
- Inlet & outlet Ports: 1/2" NPT female (alternative ports can be supplied)
- Temperature range: -20 to +150°C (extended temperature range versions can be supplied)

Typical Dimensions

in mm except where shown otherwise



HP2100A Normally Closed Actuated Valve

Specification

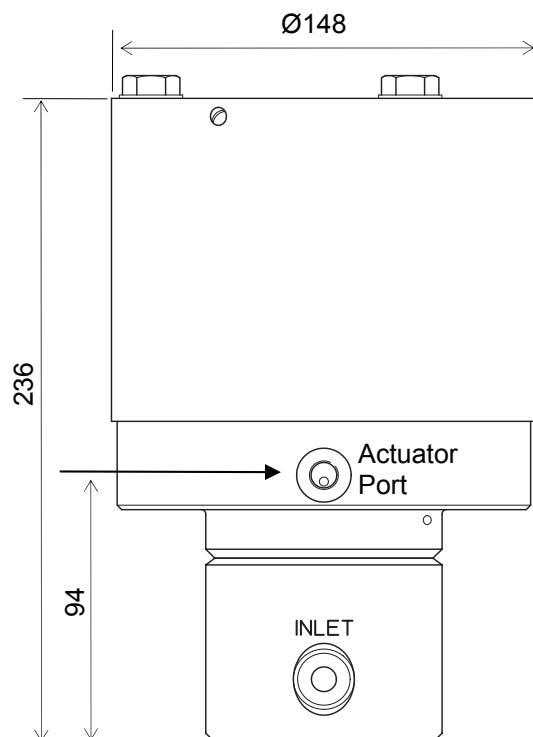
The normally closed actuated variant of HP2100 is opened by a low-pressure pneumatic piston and closed by a spring.

The specifications of the valve are the same as for the manual variant.

- Actuator port: G1/8
- Actuator pressure: 7 bar (100 psi)

Typical Dimensions

in mm except where shown otherwise



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HP Stop Valves Sealed Spindle

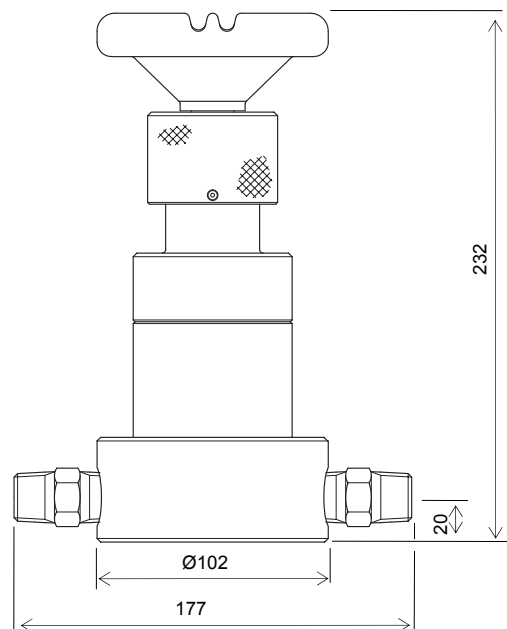
HP2200 Stop Valve (12.5mm)

Specification

- Nominal Bore: 12.5mm
- Maximum working pressure: 400bar (5800psi)
- Inlet & outlet Ports: 1/2" NPT female (alternative ports can be supplied)
- Temperature range: -20 to +150°C (extended temperature range versions can be supplied)

Typical Dimensions

in mm except where shown otherwise



HP2200A Normally Closed Actuated Valve

Specification

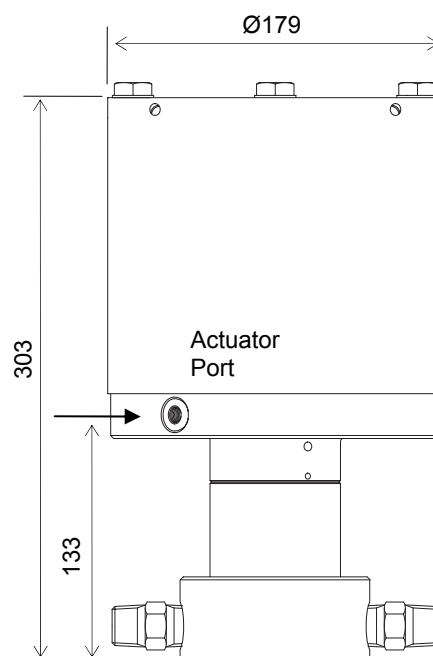
The normally closed actuated variant of HP2200 is opened by a low-pressure pneumatic piston and closed by a spring.

The specifications of the valve are the same as for the manual variant.

- Actuator port: G1/8
- Actuator pressure: 7 bar (100 psi)

Typical Dimensions

in mm except where shown otherwise



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UHP Bellows Stop Valve

Description

UHP (Ultra High Purity) products are for service where the product must be kept free of contamination. Elastomers and polymers are carefully selected for suitability. Parts are machined to a high surface finish to improve cleanliness. The valve is assembled in a clean room and is Helium leak tested by mass spectrometer.

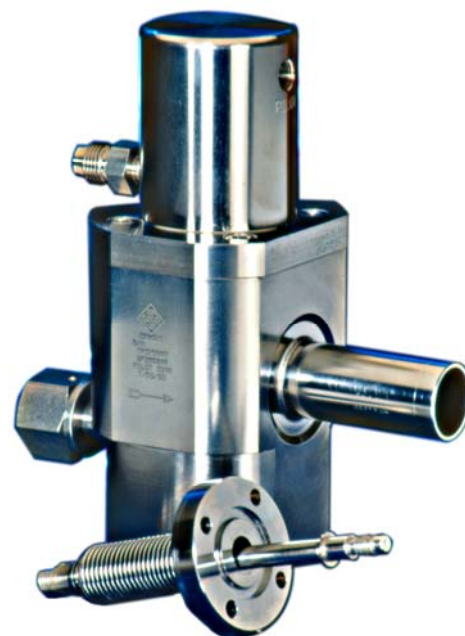
UHP products may be used on reactive, corrosive and/or toxic products. Special materials are available for resistance to particularly aggressive chemicals.

CFASV is an actuated stop valve in which a long stroke bellows isolates the operating mechanism from the process fluids. The valve is sealed by a polymer seat.

CFASV is intended for vacuum purging of empty gas cylinders. The valve can withstand the rated pressure of a full cylinder on the inlet but will not open unless the inlet pressure is below a safe value.

To prevent the shedding of particulate contamination, there are no sliding, rotating or rubbing components in the flow path.

A test port is provided to detect and contain leakage across the bellows.



Build Standards

- Built to ultra high purity standards in a dedicated clean room facility.
- Ra 10 to 15 micro inch finish on wetted surfaces.
- Final assembly and testing is carried out under class 10 conditions.
- No lubrication is used in the flow path and the seat materials are chosen for minimal gas absorption.
- Each valve is tested for leakage using a mass spectrometer.
- Leak rate is less than 10^{-7} mbar l/s of Helium, across seat, less than 10^{-8} mbar l/s of Helium, outboard, less than 10^{-9} mbar l/s of Helium, inboard.

Standard Materials

Alternative materials can be supplied

- Body: Stainless Steel
- Valve: Stainless Steel
- Seat: PCTFE
- Bellows: Stainless Steel

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UHP Bellows Stop Valve

Options

Please contact us for details

- Ports: alternative port configurations can be supplied.
- Materials: suitable combinations of materials can be supplied for various applications such as Oxygen service or semiconductor manufacturing.
- Certification: variants are available approved for use with Oxygen, for medical Oxygen service or for ATEX service.

Ordering Information

Please supply the following information when ordering

- Valve size
- Maximum working pressure
- Flow medium
- Port configuration
- Operating and storage temperature ranges
- Certification and QA requirements

CFASV

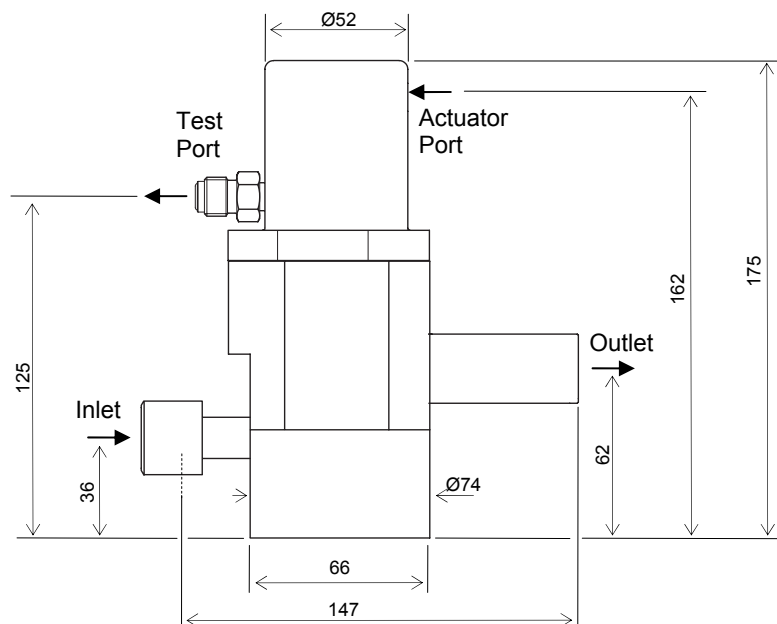
Specification

- Nominal Bore: 20mm
- Maximum inlet pressure – valve closed: 250bar (3625psi)
- Working inlet pressure range: vacuum to 1.9barg (28psig) – valve will not open at higher pressures
- Actuator pressure 3bar (44psi)
- Flow factor (Cv): 9

- Inlet Port: 1/2" Cajon VCR compatible female swivel, or stub tube for welding
- Outlet Port: stub tube for welding
- Actuator port: 1/8" NPT female
- Test port: 1/8" NPT female with 1/4" Cajon VCR compatible male adaptor
(alternative ports and various sizes of stub tube can be supplied)
- Temperature range: -10 to +30°C

Typical Dimensions

in mm except where shown otherwise



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HP/UHP Non-Return Valve

Description

HP (High Purity) and UHP (Ultra High Purity) products are for service where the product must be kept free of contamination. The design is kept simple to minimise “dead” areas where contaminants might collect. Elastomers and polymers are carefully selected for suitability.

UHP uses a similar design to HP but the parts are machined to a better surface finish to improve cleanliness. The valve is assembled in a clean room and is Helium leak tested by mass spectrometer.

HP/UHP products may be used on reactive, corrosive and/or toxic products. Special materials are available for resistance to particularly aggressive chemicals.

We offer a range of spring-loaded, non-return or check valves. They are suitable for use with gases or liquids to prevent reverse flow in high-pressure lines.

The valves are sealed by an elastomer O ring. The main closing force is provided by the process pressure. The spring ensures that the valve will close at any orientation. The opening (cracking) pressure can be selected by specifying the strength of the closing spring.

The internal design of the valve ensures that there is minimal restriction to flow.



Options

Please contact us for details

- Ports: alternative port configurations can be supplied.
- Materials: suitable combinations of materials can be supplied for various applications such as Oxygen service or semiconductor manufacturing.
- Certification: variants are available approved for use with Oxygen, for medical Oxygen service or for ATEX service.

Build Standards (UHP only)

- Built to ultra high purity standards in a dedicated clean room facility.
- Ra 10 to 15 micro inch finish on wetted surfaces.
- Final assembly and testing is carried out under class 10 conditions.
- Each valve is tested for leakage using a mass spectrometer.
- Leak rate is less than 10^{-9} mbar l/s of Helium, inboard, outboard and across seat.
- No lubrication is used in the flow path and the seat materials are chosen for minimal gas absorption.

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Standard Specification

See next page for specification of individual types

- Temperature range: -23 to +205°C for Viton seals, -20 to +100°C for Nitrile seals
- Maximum inlet pressure: 376bar (5450psi)

Ordering Information

Please supply the following information when ordering

- Valve size
- Lift pressure
- Maximum working pressure
- Flow medium
- Port configuration
- Operating and storage temperature ranges
- Certification and QA requirements

HP10

Specification

- Ports: 1/4" NPT male or female in any combination
- Cracking pressures: 0.2 bar (0.3psi), 0.07 bar (1psi), 0.7 bar (10psi), 1.7 bar (25psi), 3.5 bar (50psi), 7 bar (100psi)
- Flow factor (Cv): 0.45
- Weight: 100gm

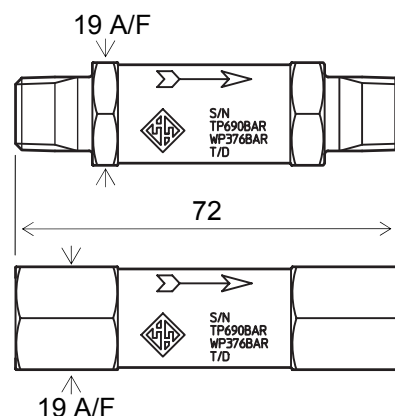
Standard Materials

Alternative materials can be supplied

- Body: Stainless Steel or Brass
- Spring: Stainless Steel or Inconel
- O ring: Viton, Nitrile or Kalrez
- Guide Ring: PTFE or Nylon

Typical Dimensions

in mm except where shown otherwise



UHP10

Specification

- Ports: 1/4" Cajon VCR compatible male or female in any combination
- Cracking pressures: 0.07 bar (1psi), 0.7 bar (10psi), 1.7 bar (25psi)
- Flow factor (Cv): 0.3
- Weight: 70gm

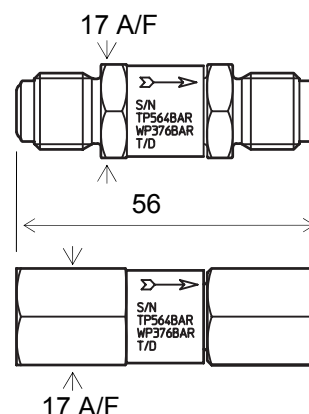
Standard Materials

Alternative materials can be supplied

- Body: Stainless Steel or Monel
- Spring: Stainless Steel or Inconel
- O ring: Viton, Nitrile, Kalrez or EPR
- Gasket: PTFE

Typical Dimensions

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UHP Relief Valve

Description

UHP (Ultra High Purity) products are for service where the product must be kept free of contamination. Elastomers and polymers are carefully selected for suitability. Parts are machined to a high surface finish to improve cleanliness. The valve is assembled in a clean room and is Helium leak tested by mass spectrometer.

UHP products may be used on reactive, corrosive and/or toxic products. Special materials are available for resistance to particularly aggressive chemicals.

We offer a range of differential relief valves. The valve is operated by an internal piston or diaphragm that is larger than the flow area. The process pressure acts on the difference in these areas (hence "differential"). This means that the spring can be small for high pressures. It also means the valve snaps open to full bore because as soon as the valve starts to open the process pressure acts on the full piston area.

Each valve is adjustable within a range of pressures. The range depends on the size of the piston or diaphragm and the strength of the spring.



Options

Please contact us for details

- Ports: alternative port configurations can be supplied.
- Materials: suitable combinations of materials can be supplied for various applications such as Oxygen service or semiconductor manufacturing.
- Certification: variants are available approved for use with Oxygen, for ATEX service or as "Safety Accessories" to PED Category 4.

Ordering Information

Please supply the following information when ordering

- Relief pressure range
- Relief set pressure – we can supply valves pre-set to your required pressure
- Wire locking required (please state set pressure)
- Flow medium

Build Standards

- Built to ultra high purity standards in a dedicated clean room facility.
- Ra 10 to 15 micro inch finish on wetted surfaces.
- Final assembly and testing is carried out under class 10 conditions.
- Each valve is tested for leakage using a mass spectrometer.

- Port configuration
- Operating and storage temperature ranges
- Certification and QA requirements

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UHP Relief Valve

CFRVS High Pressure

Specification

- Pressure ranges: 2 to 12 bar (30 to 175 psi),
5 to 30 bar (70 to 430 psi),
17 to 120 bar (250 to 1750 psi),
120 to 320 bar (1750 to 4650 psi)
- Nominal bore: 10mm
- Inlet Port: 1/2" Cajon VCR male
- Exhaust Port: 1/2" NPT female
- Weight: 0.5kg
- Temperature range: -10 to +100°C

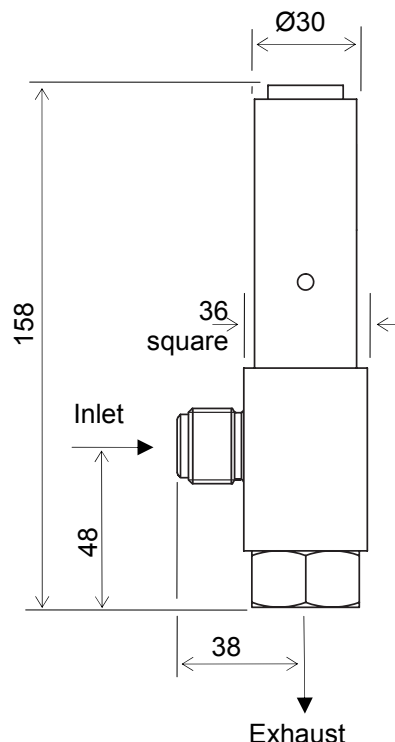
Standard Materials

Alternative materials can be supplied

- Body: Stainless Steel
- Spring Housing: Gunmetal
- Valve: Stainless Steel
- Valve Seat: Polyurethane ULON
- O rings: Viton
- Back up rings: PTFE

Typical Dimensions

in mm except where shown otherwise



CFLRV Low Pressure

Specification

- Pressure ranges: 0.5 to 2 bar (7 to 30 psi),
2 to 5.5 bar (30 to 80 psi)
- Nominal bore: 6mm
- Inlet Port: 1/4" Cajon VCR male
- Exhaust Port: 3/8" NPT female
- Weight: 0.5kg
- Temperature range: -10 to +100°C

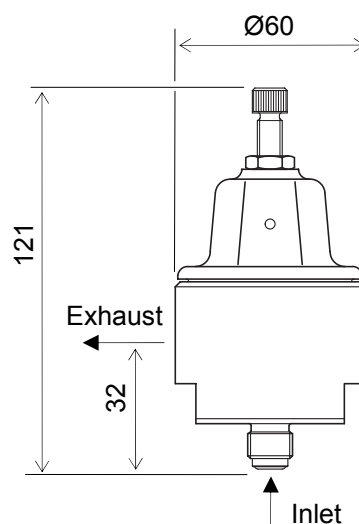
Standard Materials

Alternative materials can be supplied

- Body: Stainless Steel
- Spring Housing: Aluminium Alloy
- Diaphragm: Viton

Typical Dimensions

in mm except where shown otherwise



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UHP Vacuum Generator

Description

UHP (Ultra High Purity) products are for service where the product must be kept free of contamination. Elastomers and polymers are carefully selected for suitability. Parts are machined to a high surface finish to improve cleanliness. The valve is assembled in a clean room and is Helium leak tested by mass spectrometer.

UHP products may be used on reactive, corrosive and/or toxic products. Special materials are available for resistance to particularly aggressive chemicals.

The UHP30 vacuum generator uses an ejector mechanism in which a flow of gas creates a vacuum. There are no seals and no moving parts. The body is machined from a single part so there are no leak paths. The vacuum generator is rated to withstand the rated pressure of a full gas cylinder.



Options

Please contact us for details

- Ports: alternative port configurations can be supplied including additional ports for gauges and relief valves.
- Materials: suitable combinations of materials can be supplied for various applications such as Oxygen service or semiconductor manufacturing.
- Certification: variants are available approved for use with Oxygen or for ATEX service.

Build Standards

- Built to ultra high purity standards in a dedicated clean room facility.
- Ra 10 to 15 micro inch finish on wetted surfaces.
- Final assembly and testing is carried out under class 10 conditions.
- Each valve is tested for leakage using a mass spectrometer.

Ordering Information

Please supply the following information when ordering

- Inlet Pressure
- Flow medium
- Port configuration
- Operating and storage temperature ranges
- Certification and QA requirements

Standard Materials

Alternative materials can be supplied

- Body: Stainless Steel or Monel
- Internal jets: Stainless Steel or Monel

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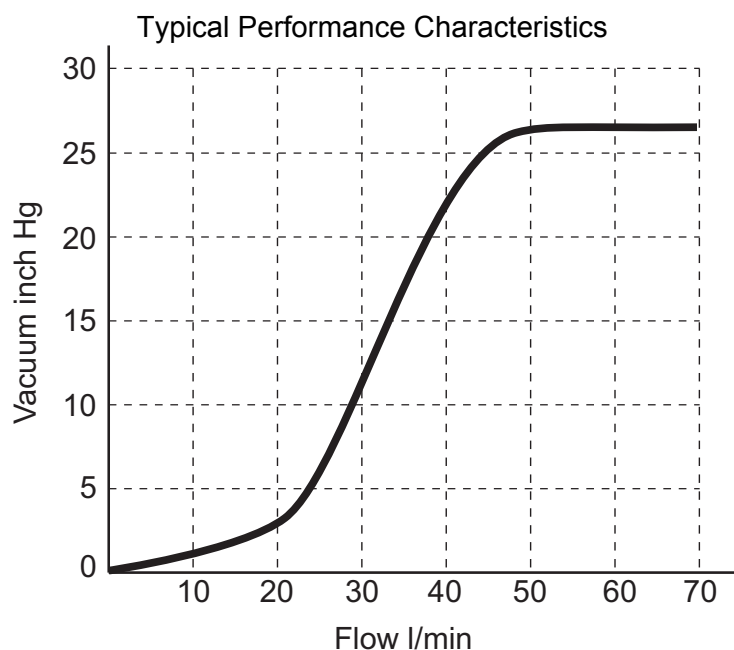
UHP30

Typical Dimensions

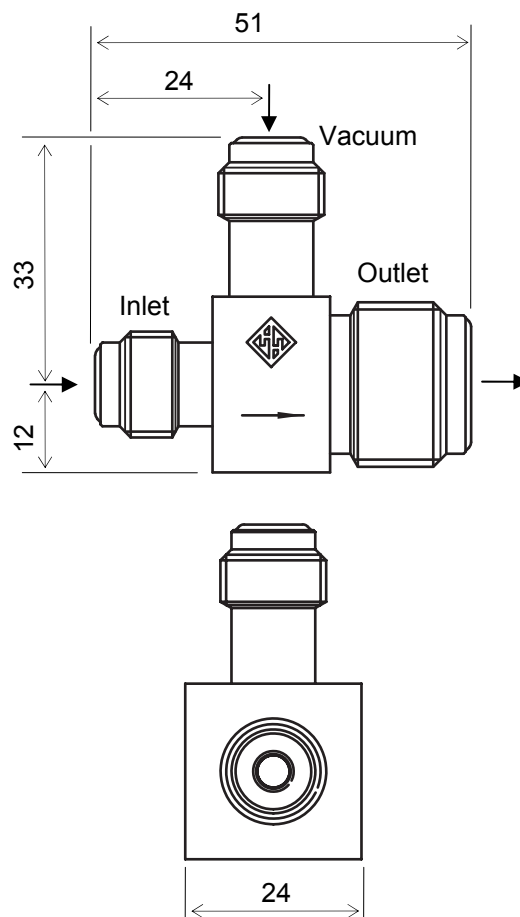
in mm except where shown otherwise

Specification

- Maximum pressure: 372bar (5400psi)
- Recommended inlet pressure: 4bar (60psi)
- Inlet and vacuum ports: 1/4" Cajon VCR compatible male
- Outlet port: 1/2" Cajon VCR compatible male
- Temperature range: -40 to +300°C
- Weight: 135gm



Outlet restriction must be less than the equivalent of a 6.3mm ID tube of 300mm length



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Clean Gas Panels

Description

Clean gas panels consist of one or more of our High Purity regulators mounted on a panel with gauges and stop valves.

The configurations shown here use the HP1550 regulator and offer flow rates of about 150 l/min at 10bar. Similar configurations can be supplied using our HP1100 to give higher flow or our two stage HP1700 to give better accuracy.

For more details of the flow characteristics please see our Clean gas regulators data sheet.

We can supply systems with appropriately rated pressure gauges and relief valves to operate at different inlet and outlet pressures from those shown below.



Standard Configurations

The configurations shown in detail on the following pages are available as standard items:

- Type 2 Regulator Station
- Type 5 Regulator Station
- ACU1550 Auto Changeover Unit

Other configurations can be designed as required. Please contact us for details.

Standard Specification

- Nominal Bore: 6mm
- Temperature range: -20 to +70°C

Standard Materials

Alternative materials can be supplied

- Valve bodies and panel: Stainless Steel

Options

Please contact us for details

- Ports: alternative port configurations can be supplied
- Materials: suitable combinations of materials can be supplied for various applications.
- Bottle connections: we can supply metal tube or flexible hose connections terminated with any industry standard connector

Ordering Information

Please supply the following information when ordering

- Panel Configuration
- Inlet Pressure
- Outlet pressure range
- Flow medium
- Port configuration
- Operating and storage temperature ranges
- Certification and QA requirements

In addition to our standard product range, we have an extensive range of special designs and offer a custom build service. Contact our Sales office if you don't see what you want in our catalogue. The information contained within this catalogue is for reference purposes only and is subject to change.

When selecting a product, the total system design must be considered to ensure safe, trouble free performance. Component function, material compatibility, adequate ratings, proper installation, operation and maintenance are the responsibility of the system designer and user.

Hale Hamilton (Valves) Ltd
Cowley Road, Uxbridge, UB8 2AF, UK
Tel: 01895 236 525
www.halehamilton.com



HALE HAMILTON®

Excellence in Pressure & Flow Control

A CIRCOR International, Inc. Company

Clean Gas Panels

Type 2 Regulator Station

Specification

Single stage regulator station with stop valve to vent the inlet, stop valve to isolate the outlet, pressure gauges on inlet and outlet and a relief valve to prevent over pressure.

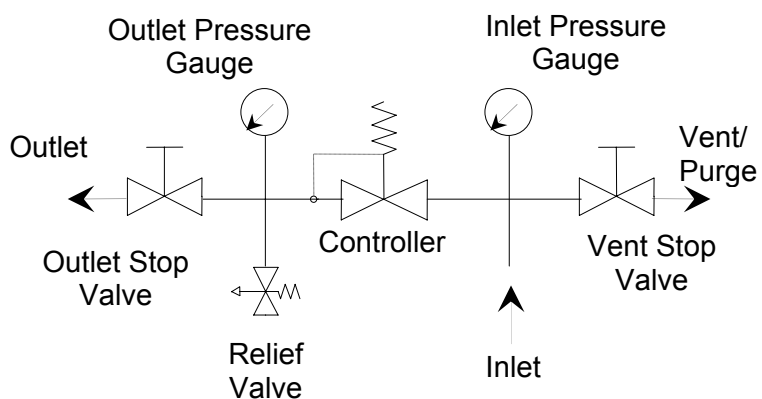
- Inlet pressure: 200bar (2900psi). Alternative inlet pressures up to 376bar can be supplied.

- Outlet pressure: 0 to 10bar (0 to 145psi)

Alternative outlet pressure ranges can be supplied - see the data sheet for HP1550

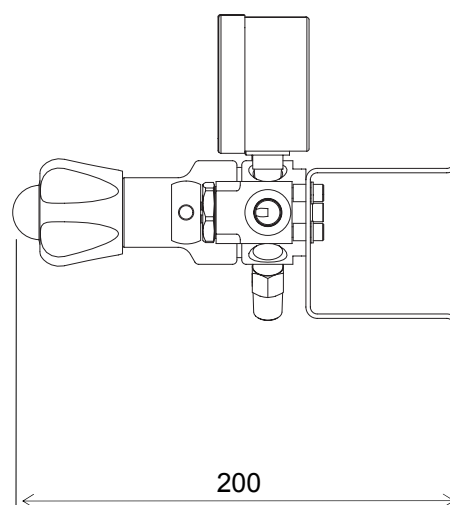
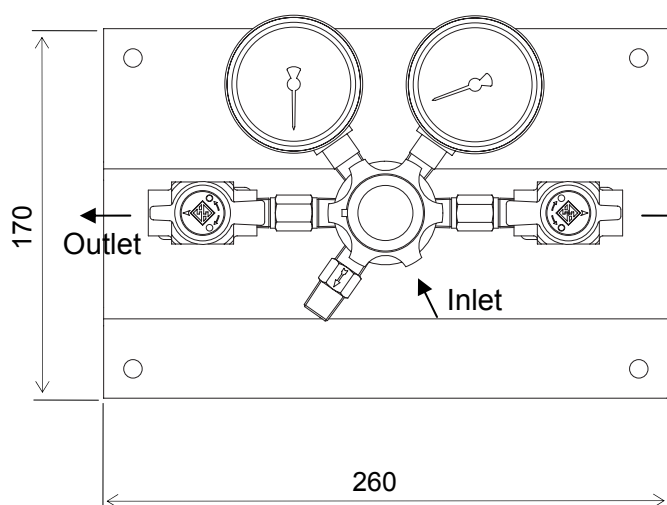
- Weight: approx. 3kg

Typical P & ID



Typical Dimensions

in mm except where shown otherwise



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Clean Gas Panels

Type 5 Regulator Station

Specification

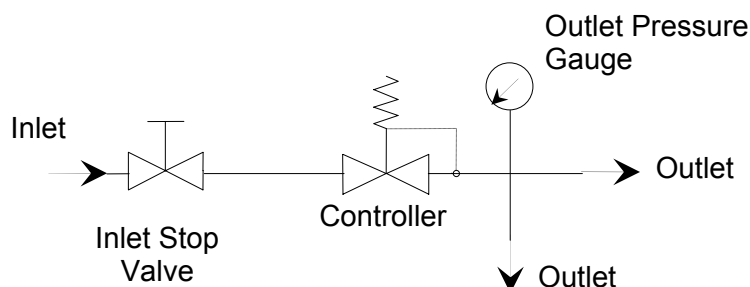
Single stage regulator station with stop valve to isolate the inlet outlet and a pressure gauge on the outlet.

- Inlet pressure: 376bar (5450psi).
- Outlet pressure: 0 to 5bar (0 to 73psi)

Alternative outlet pressure ranges can be supplied - see the data sheet for HP1550

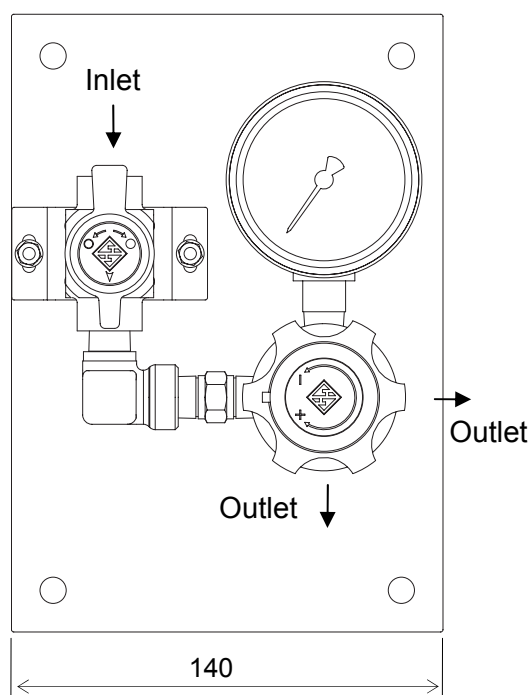
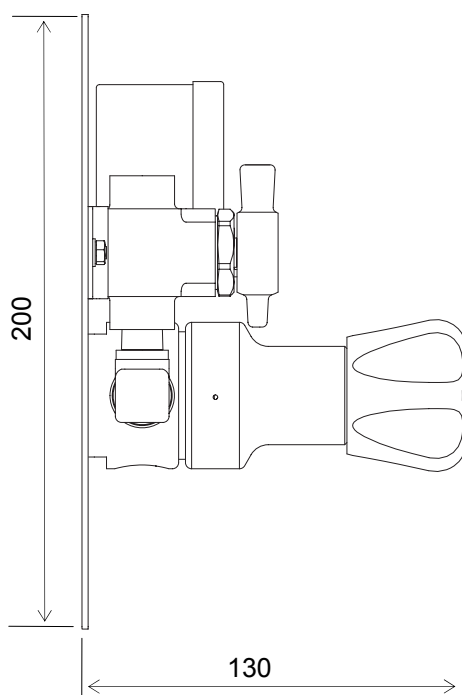
- Weight: approx. 2kg

Typical P & ID



Typical Dimensions

in mm except where shown otherwise



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Clean Gas Panels

ACU1550 Auto Changeover Unit

Specification

Two stage regulator system in which the first stage automatically accepts gas supply from the cylinder storage bank with the highest pressure. The bank priority is controlled by a lever connected to both first stage regulators. Pressure gauges and stop valves are fitted to control and monitor the flow.

- Inlet pressure: 200bar (2900psi).

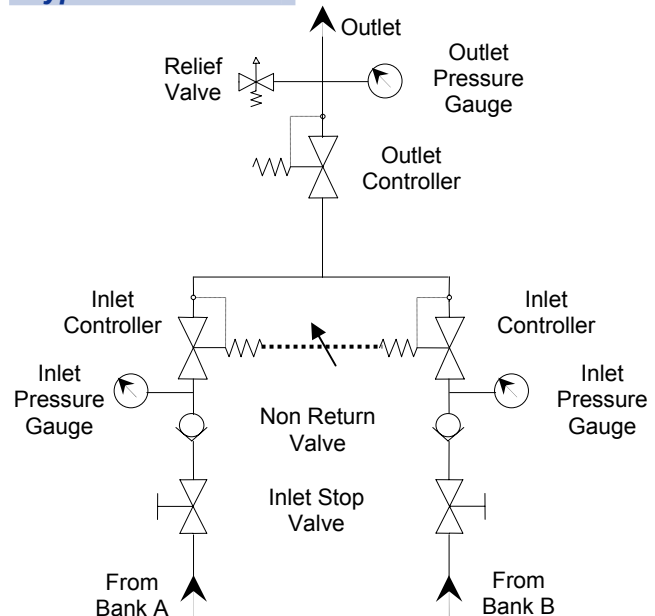
Alternative inlet pressures up to 376bar can be supplied.

- Outlet pressure: 0 to 5bar (0 to 73psi)

Alternative outlet pressure ranges can be supplied - see the data sheet for HP1550

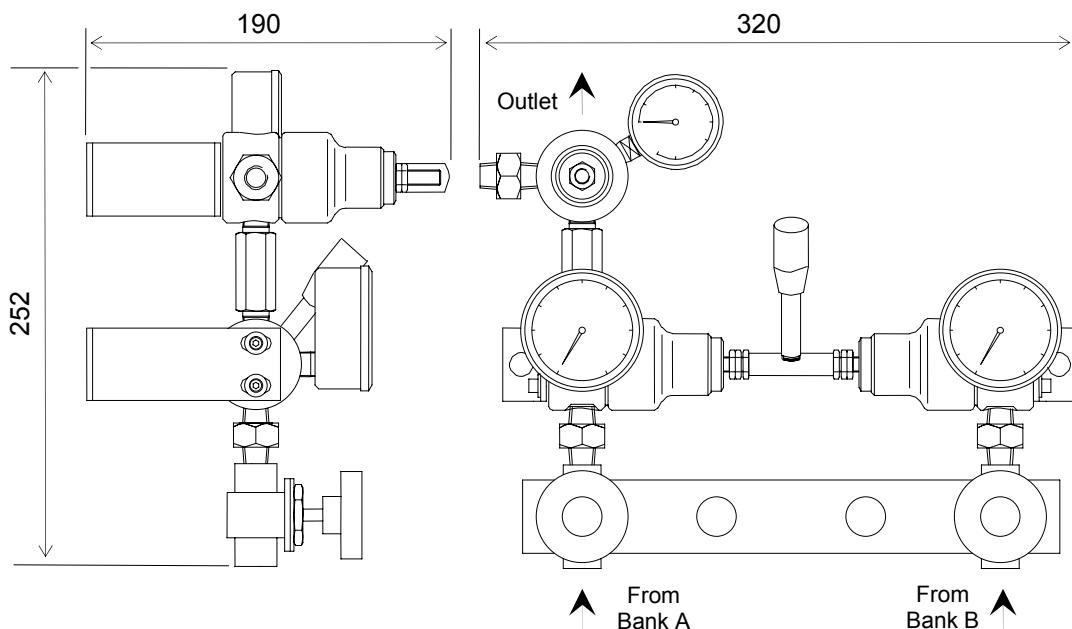
- Weight: approx. 10kg

Typical P & ID



Typical Dimensions

in mm except where shown otherwise



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