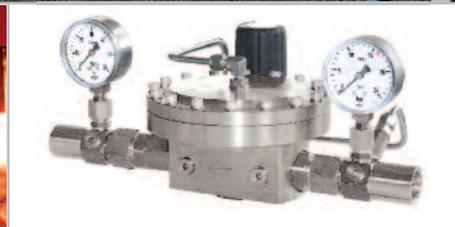


»Do you require maximum pressure stability in your gas supply?«

[SEBASTIAN LEHMANN: PRODUCT MANAGER – WITT-GASESTECHNIK]

The pressure regulation technology from WITT will ensure a stable operating pressure for your processes



STABLE OPERATING PRESSURE WITH WITT DOME-LOADED PRESSURE REGULATORS

THE PROBLEM

Pressure fluctuations in the gas supply are a risk factor in every industrial manufacturing process. Deviations in the gas pressure due to withdrawal fluctuations pose a threat to the quality of downstream processes and can make products unusable.

THE SOLUTION

Dome-loaded pressure regulators ensure maximum stability of the gas pressure even in case of withdrawal or inlet pressure fluctuations, thus ensuring maximum process safety.

WHY WITT?

With a special design, complex stream simulations and field detailed solutions, WITT has optimised the functioning of dome-loaded pressure regulators. An excellent advantage of WITT dome-loaded pressure regulators over the conventional pressure controllers is their extremely stable outlet pressure even in case of great withdrawal or inlet pressure fluctuations. The regulations characteristics are extremely stable even in case of extremely high or low flow rates in the limiting performance range. The WITT dome-loaded pressure regulators realise precise regulation even at large pressure differences. A two-stage pressure regulation is no longer necessary in most of the cases.

WITT offers a wide range of high-performance and low-maintenance dome-loaded pressure regulators that are suitable for large flow rates of several thousand m³/h as well. Even low pressure differences of less than 1 bar between the inlet pressure and outlet pressure can be accurately regulated. The own medium control makes additional gas for the pilot pressure regulator redundant. The pilot pressure regulator (or a proportional valve) enables maximum flexibility and the outlet pressure can be easily adjusted. This makes it possible to respond to temperature fluctuations or changes in the downstream process immediately.

The compact regulators, made of either stainless steel or brass, enable large withdrawal ranges, are suitable for numerous technical, corrosive and aggressive gases and can be mounted irrespective of the orientation. Dome-loaded pressure regulators from WITT are available individually or as a completely assembled set including pilot pressure regulator, pressure gauges, fittings and a non-return valve.

Dome-loaded pressure regulators by WITT: probably the best dome-loaded pressure regulators in the world.

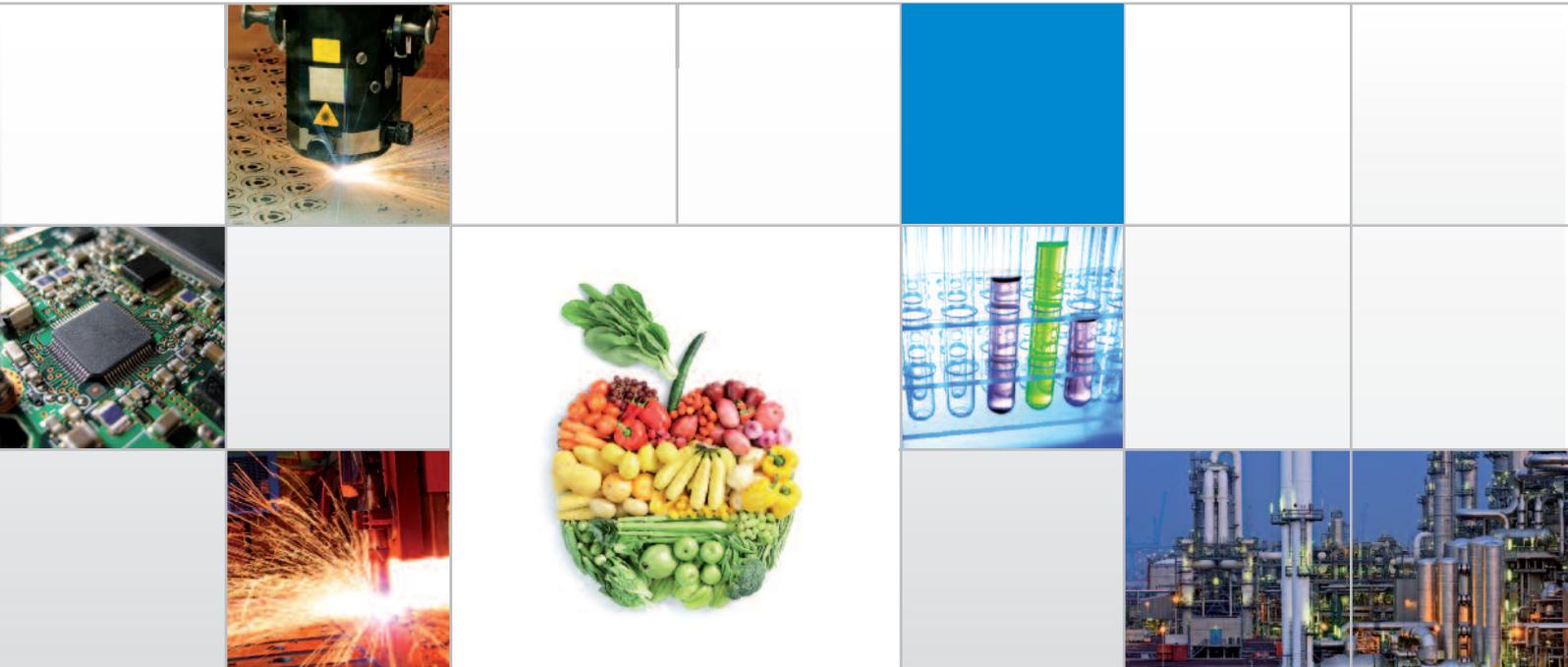
OUR RANGE

- High flow rates (up to Kv value 15)
- Inlet pressures of up to 300 bar
- Outlet pressures between 100 mbar and 45 bar
- Useable for almost all gases as well as for corrosive and aggressive mediums
- In brass, stainless steel and aluminium
- Different connections
- Wall bracket (optional)
- Filter for long durability (optional)
- All models available as a ready-to-install completely mounted and tested set (incl. pilot pressure regulator, pressure gauges and connections)

APPLICATIONS (EXAMPLE)

- Chemical industry
- Petrochemistry
- Oil & gas / energy generation
- Pharmaceuticals
- Automobile/shipbuilding
- Mechanical and system engineering
- Food industry
- Mining
- Semiconductors & photovoltaics



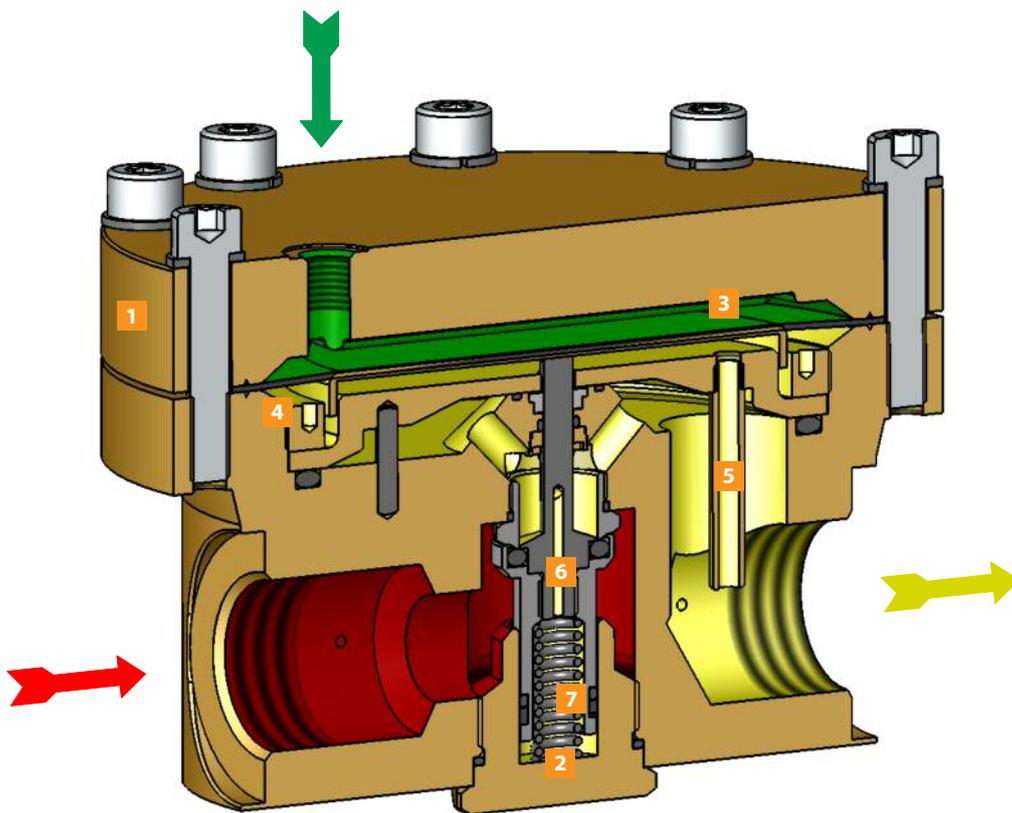


PROBABLY THE BEST DOME-LOADED PRESSURE REGULATORS IN THE WORLD

FUNCTION

Dome-loaded pressure regulators are operated with gas pressure. Unlike spring-loaded pressure controllers, the opening force of the valve required for pressure reduction is generated by the pressure of a so-called pilot gas and not by a spring. The pilot gas is supplied to the pressure chamber. In the pressure chamber, the pilot gas acts on a diaphragm whose stroke movement is transferred to the valve seat via a diaphragm plate. The gas to be

regulated is supplied to the dome where it reaches the valve seat. The pressure of the pilot gas and the relevant stroke movement of the diaphragm lead to the valve opening or closing, depending on the operating pressure set, and the required quantity of the gas being supplied further. The excess pilot gas is supplied to the back pressure side or blown off. The pressure of the pilot gas is regulated via a separate pilot gas regulator or a proportional valve.



- Inlet pressure
- Pilot pressure
- Outlet pressure

- 1 Body**
either in brass or in high-quality 1.4404 stainless steel
- 2 Valve seat**
- 3 Diaphragm**
A large diaphragm with a wide bearing surface on the diaphragm plate enables accurate regulation
- 4 Diaphragm plate**
- 5 Pilot Control Tube**
does not check the existing outlet pressure on the valve seat but at the output of the pressure regulator where it is relevant for receiving the correct outlet pressure
- 6 Balanced Seat Design**
Bore hole through the valve seat that leads the outlet pressure under the valve seat and thus balances it out
- 7 Closing spring**

DIAPHRAGM

Unlike many other designs, the diaphragm of WITT products is not located directly on the valve seat. Instead, it transfers the stroke movement via a special diaphragm plate. This allows extremely fast adaptation to withdrawal changes. There are no fluctuations in the outlet pressure till the pressure controller finds the correct valve opening. The special diaphragm also enables an extremely wide regulation range. The pressure is accurately regulated even in case of small pressure differences of less than 1 bar in the inlet pressure and the outlet pressure. Large pressure differences can also be realised.

BALANCED SEAT DESIGN

A bore hole through the valve seat and a special sealing of the stroke movement balance out the valve from both sides on an even surface by back pressure. The inlet pressure does not act on the valve piston and the outlet pressure is almost independent of the inlet pressure fluctuations.

PILOT CONTROL TUBE

Unlike other regulators, WITT dome-loaded pressure regulators do not check the existing outlet pressure on the valve seat but at the output of the pressure regulator where it is relevant for the correct outlet pressure control. This allows highest precision in pressure regulation.

PILOT PRESSURE REGULATOR

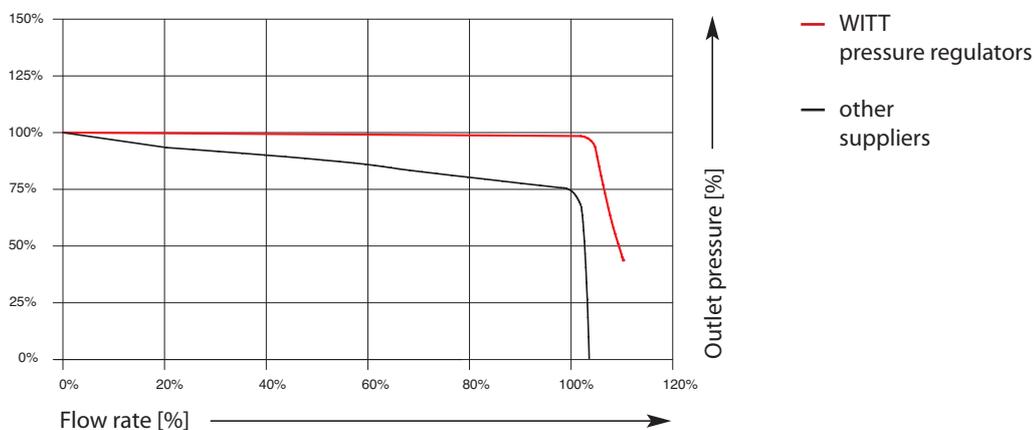
A major advantage of the WITT dome-loaded pressure regulators is their easy and flexible use. The pilot pressure regulator can be used to adjust the operating pressure as soon as a different gas pressure is required at the outlet point or the gas or ambient temperature changes significantly.

CLOSED CONTROL SYSTEM

WITT dome-loaded pressure regulators are flexible as regards the gas supply. Either the regulated gas (internal medium) or a separate gas (external medium) can be used as pilot gas. In case of internal medium control, the dome-loaded pressure regulator works autonomously and the pilot gas is then supplied to the outlet pressure side once again. Gas is thus not used for pressure control and there are no additional costs.

BENEFITS

- Stable operating pressure even in case of inlet pressure and withdrawal fluctuations for maximum process quality
- Accurate control of low pressure differences of less than 1 bar
- Large pressure differences (300 to 10 bar) can be regulated, two-stage control redundant
- Pilot gas regulator for fast and flexible adaptation of the outlet pressure
- The closed control system makes additional gas supply redundant and saves costs
- Useable for almost all gases as well as for corrosive and aggressive mediums
- Different connections, compact design and wall bracket (optional) for easy assembly
- Low maintenance
- All models available as ready-to-install as a completely assembled and tested set



GAS TYPES & MATERIAL

WITT dome-loaded pressure regulators are made of high-quality materials and are ideal for a wide range of gases and applications. Depending on the requirement, the devices can be made from a wide range of body materials and material combinations for diaphragms and seals. For technical gases for instance, the standard body material is brass. The diaphragm is made of a specially coated fabric lining.

For aggressive and corrosive gases, housings are made of 1.4404 stainless steel (AISI 316L). This material offers high resistance against acid and corrosion. The diaphragm is made of FPM which is as well very durable and resistant. These materials cover the most aggressive applications and ensure the quality of your processes.

Gas type	Body material	Diaphragm / seal material
Technical gases	Brass	NBR
Aggressive gases (e.g. chlorine), corrosive gases (e.g. biogas)	1.4404 stainless steel (316L stainless steel)	FPM

STANDARDS AND REGULATIONS

Latest production technologies and a complex quality management system ensure maximum WITT quality that you can trust. WITT dome-loaded pressure regulators are manufactured taking into account the rules of technology and the relevant safety regulations for designing, material selection and resistance. All organisational, commercial and technical activities affecting the quality have been appropriately planned, controlled and monitored in our QM manual.

WITT and WITT products also fulfil all relevant international standards and norms, e.g. DIN EN ISO 9001, DIN EN ISO 14001, DIN EN ISO 22000, ATEX 94/9/EC and PED 97/23/EC.

In the course of ATEX, WITT dome-loaded pressure regulators were subjected to an ignition hazard analysis as per EN 1127-1, DIN EN 13463-1 and ZH1/200. The controllers can thus be used in the explosion group IIC, device category 2.

Moreover, a special test for resistance to internal ignition in case of effect of oxygen pressure surges is conducted by BAM.

With the implementation of ISO 22000, all WITT pressure regulators were subjected to a HACCP analysis and thus fulfil the requirements pertaining to food safety.

The specified certificates and test reports can be provided on request.

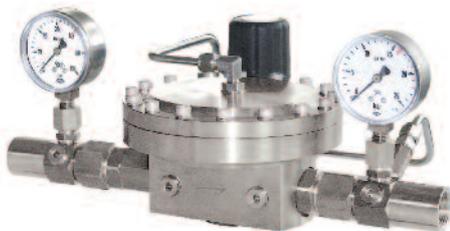
MAINTENANCE & ACCESSORIES

WITT dome-loaded pressure regulators require almost no maintenance. A maintenance interval of 5 years is usually sufficient for ensuring complete functionality. In case of use of contaminated gases, regular replacement of all wear parts every 2–3 years is recommended. WITT offers an economical maintenance kit with all the necessary replacement parts for easy maintenance.

WITT dome-loaded pressure regulators are used in various areas of application. There is a wide range of connection adapters for every screw connection for almost any application. All models also have an option of installing or pre-installing a filter. Wall brackets are also optionally available for easy assembly.

DOME-LOADED PRESSURE REGULATOR SETS – READY TO USE!

Make use of our know-how in the field of gas safety technology and buy a complete package of the WITT dome-loaded pressure regulator. All models are available as dome-loaded pressure regulator sets, including pilot pressure regulator, inlet and outlet pressure gauges and connections. All components of the complete solution are perfectly adapted to each other. The set is completely assembled and tested and can be directly used in the process.



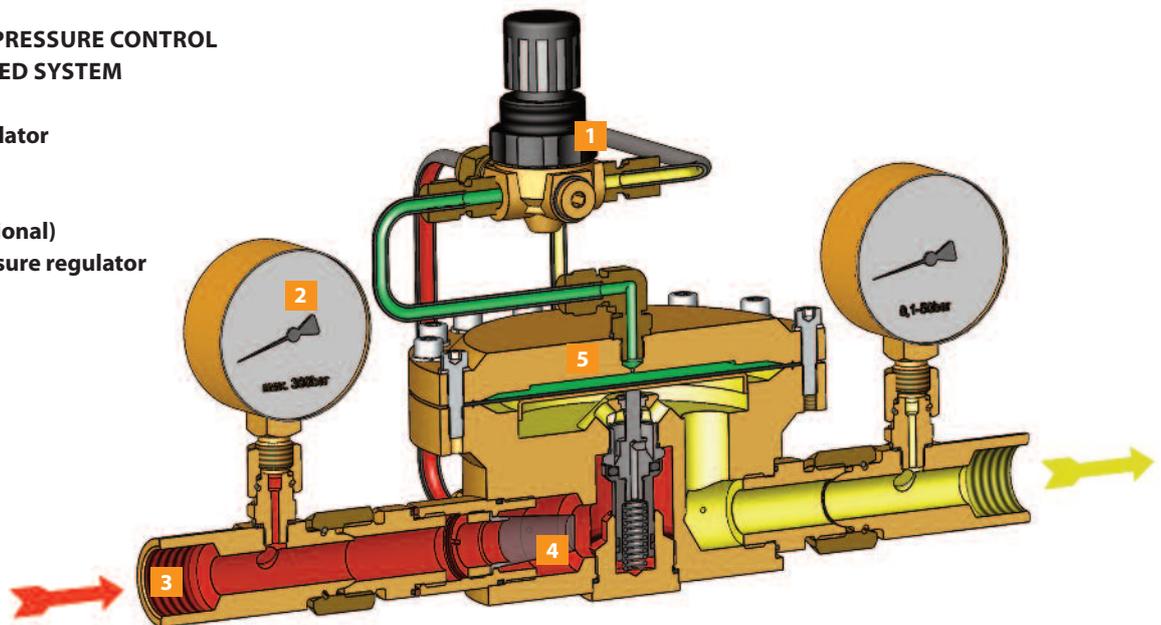
ADVANTAGES

- No emission of the pilot gas in the environment – closed system
- Dynamic control, operating pressure can always be changed (e. g. in case of temperature fluctuations)
- Direction-independent installation of pressure regulators and pressure gauges by means of rotatable input and output screw connections
- Additional connection options in the inlet and outlet pressure range (e.g. of pressure transmitters)
- Quick installation without additional assembly requirements (in combination with WITTFIX as well)
- Individual production as per desire and requirement
- Available completely in 1.4404 stainless steel or brass

EXAMPLE WITH A PRESSURE CONTROL REGULATOR: CLOSED SYSTEM

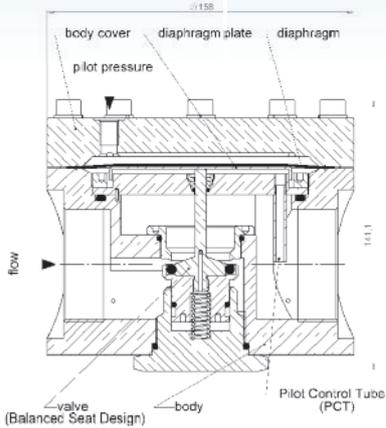
- 1 Pilot pressure regulator
- 2 Pressure gauge
- 3 Screw connection
- 4 Filter element (optional)
- 5 Dome-loaded pressure regulator

- Inlet pressure
- Pilot pressure
- Outlet pressure



757LE

HIGH PERFORMANCE DOME-LOADED PRESSURE REGULATOR

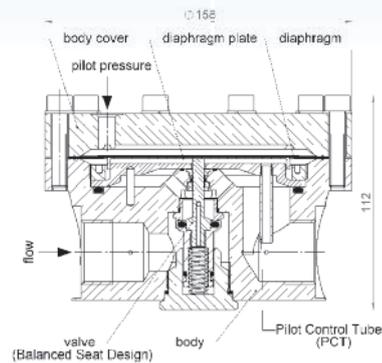


- Connection G 2" IG, Flange DN 50
(Other connections on request)
- High flow rates
- Kv value: 15
- Max. inlet pressure: CO₂ 25 bar / 363 psi,
O₂ 30 bar / 435 psi, other 40 bar / 580 psi
- Outlet pressure: 1–30 bar / 14–435 psi
- Max. pilot pressure: 30 bar / 435 psi
- Pilot pressure: G 1/8" IG
- Gauge: G 1/8" IG
- Body: Brass or 316L / 1.4404 stainless steel
- Diaphragm: NBR or FPM
- Optional: Filter
- Weight: 14 kg / 30.9 lb (Brass)

747LE

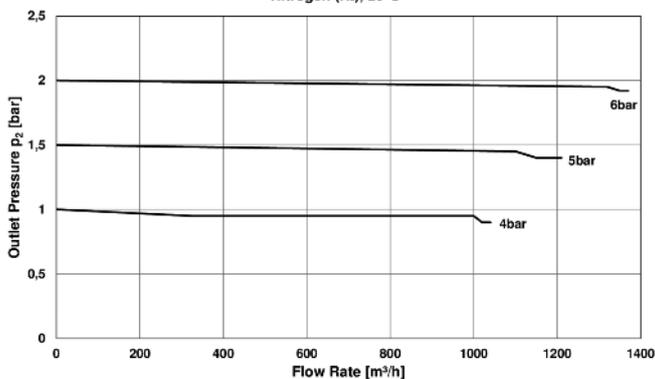
UNIVERSAL DOME-LOADED PRESSURE REGULATOR

(For high flow rates)

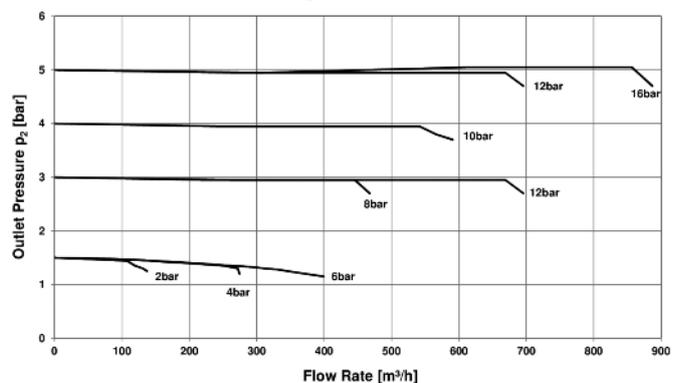


- Connection G 1" IG
- High flow rates
- Kv value: 3.6
- Max. inlet pressure: CO₂ 25 bar / 363 psi,
O₂ 30 bar / 435 psi, other 40 bar / 580 psi
- Outlet pressure: 1–30 bar / 14–435 psi
- Max. pilot pressure: 30 bar / 435 psi
- Pilot pressure: G 1/8" IG
- Gauge: G 1/8" IG
- Body: Brass or 316L / 1.4404 stainless steel
- Diaphragm: NBR or FPM
- Optional: Filter
- Weight: 10 kg / 22 lb (Brass)

Flow Chart 757LE
Nitrogen (N₂), 20°C



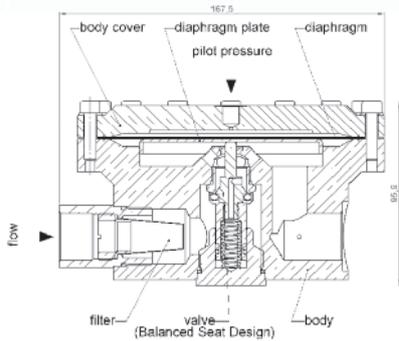
Flow Chart: 747LE
Nitrogen (N₂), 20°C



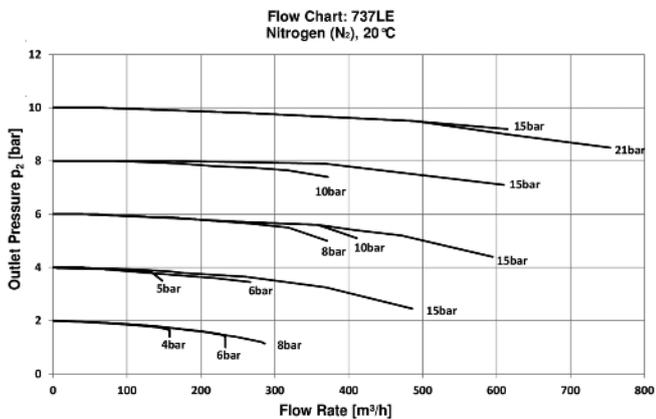
737LE

UNIVERSAL DOME-LOADED PRESSURE REGULATOR

(For medium flow rates)



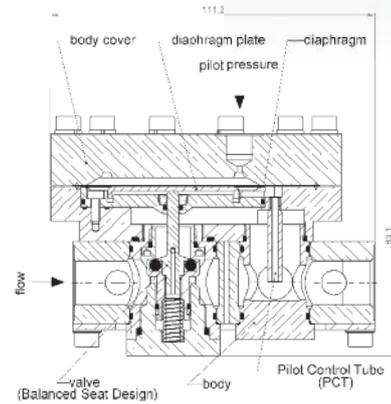
- Connection G 3/4" IG
- Medium flow rates
- Kv value: 2.4
- Max. inlet pressure: CO₂ 25 bar / 363 psi, O₂ 60 bar / 870 psi, other 60 bar / 870 psi
- Outlet pressure: 1–9 bar / 14–131 psi
- Max. pilot pressure: 10 bar / 145 psi
- Pilot pressure: G 1/8" IG
- Gauge: G 1/8" IG
- Body: Brass or 316L / 1.4404 stainless steel
- Diaphragm: NBR or FPM
- Burn-out safety with oxygen
- Optional: Filter
- Weight: 8 kg / 18 lb (Brass)



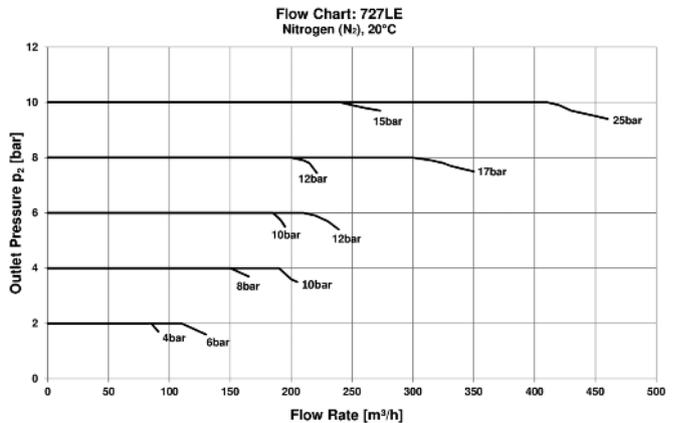
727LE

MINI HIGH PERFORMANCE DOME-LOADED PRESSURE REGULATOR

(For medium flow rates)



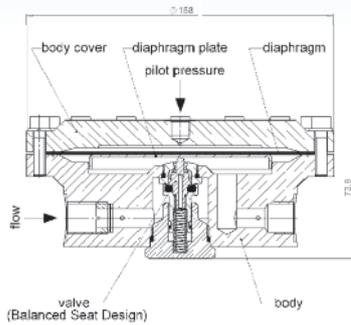
- Connection G 3/8" IG
- Medium flow rates
- Kv value: 1.4
- Max. inlet pressure: 25 bar / 363 psi,
- Outlet pressure: 2–22 bar / 29–319 psi
- Max. pilot pressure: 10 bar / 145 psi
- Pilot pressure: G 1/8" IG
- Gauge: G 1/8" IG
- Compact design
- Body: Brass or 316L / 1.4404 stainless steel
- Diaphragm: NBR or FPM
- Optional: Filter
- Weight: 3 kg / 6.5 lb (Brass)



772LE

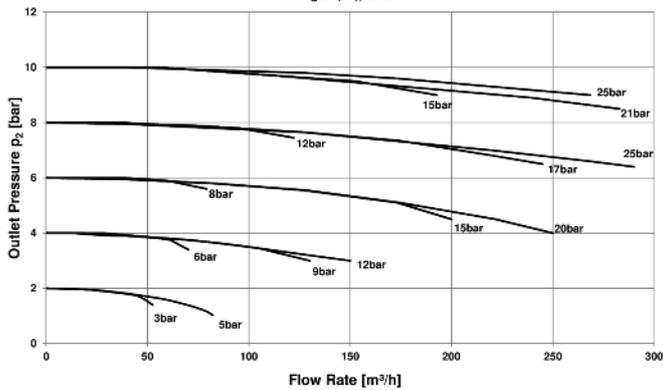
UNIVERSAL DOME-LOADED PRESSURE REGULATOR

(For low to medium flow rates)



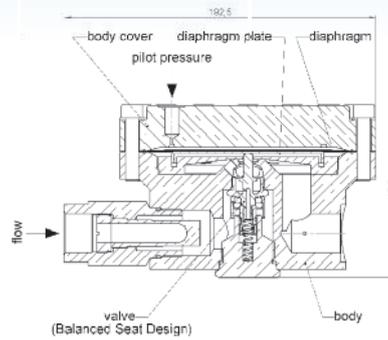
- Connection G 3/8" IG
- Low to medium flow rates
- Kv value: 0.7
- Max. inlet pressure: CO₂ 25 bar / 363 psi, O₂ 30 bar / 435 psi, other 46 bar / 870 psi
- Outlet pressure: 2–9 bar / 29–130 psi
- Max. pilot pressure: 10 bar / 145 psi
- Pilot pressure: G 1/8" IG
- Gauge: G 1/8" IG
- Body: Brass
- Diaphragm: NBR or FPM
- Optional: Filter
- Weight: 5 kg / 11 lb

Flow Chart: 772LE
Nitrogen (N₂), 20°C



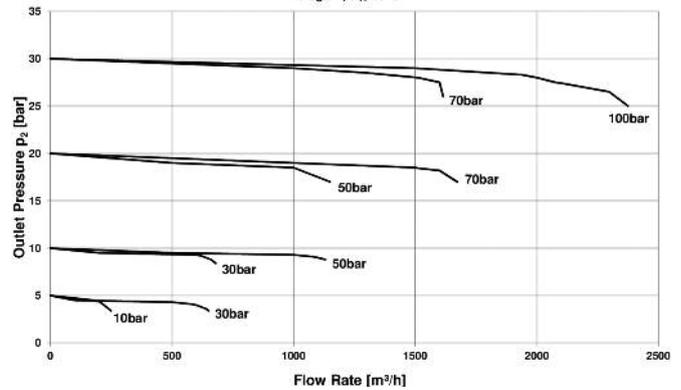
737LE HD

HIGH PRESSURE DOME-LOADED PRESSURE REGULATOR



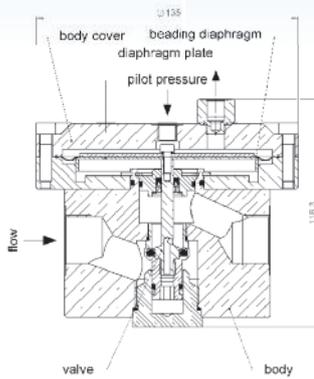
- Connection G 3/4" IG
- Medium to high flow rates
- Kv value: 1.65
- Max. inlet pressure: CO₂ 60 bar / 870 psi, O₂ 200 bar / 2,900 psi, other 300 bar / 4,350 psi
- Outlet pressure: 2–45 bar / 29–653 psi
- Max. pilot pressure: 50 bar / 725 psi
- Pilot pressure: G 1/8" IG
- Gauge: G 1/8" IG
- Body: Brass
- Diaphragm: NBR or FPM
- Burn-out safety with oxygen
- Optional: Filter
- Weight: 10 kg / 22 lb

Flow Chart: 737LE HD
Nitrogen (N₂), 20°C

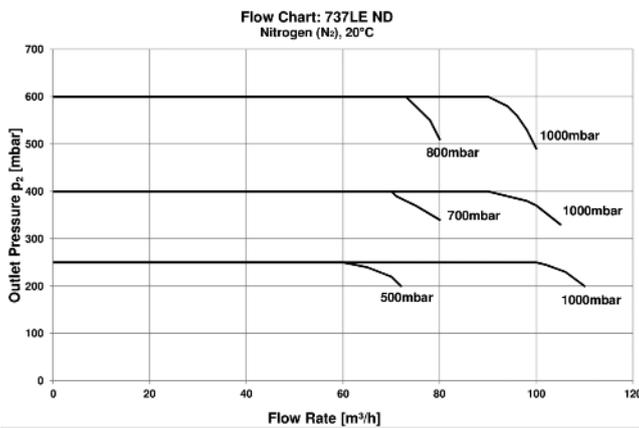


737LE ND

LOW PRESSURE DOME-LOADED PRESSURE REGULATOR



- Connection G 3/4" IG
- Medium to high flow rates
- Kv value: 1.65
- Max. inlet pressure: CO₂ 10 bar / 145 psi, O₂ 10 bar / 145 psi, other 10 bar / 145 psi
- Outlet pressure: 0,1–2 bar / 1,4–29 psi
- Max. pilot pressure: 2 bar / 29 psi
- Pilot pressure: G 1/8" IG
- Gauge: G 1/8" IG
- Body: Aluminium
- Diaphragm: NBR
- Optional: Filter
- Weight: 2 kg / 4.5 lb



OUR PROMISE

► Premium quality pressure regulation technology

► Very high value for money

► Individual pressure regulators and customised solutions

► Decades of WITT know how

OUR PRODUCT RANGE

Gas Control Equipment

- Gas mixing systems
- Gas metering systems
- Gas analysers
- Leak detection systems
- Gas pressure vessels
- Engineering of customised systems

Gas Safety Equipment

- Flashback arrestors
- Non-return valves / check valves
- Quick couplers
- Safety relief valves
- Stainless steel devices
- Gas filters
- Pressure regulators
- Outlet points
- Lance holders
- Ball valves
- Automatic hose reels
- Test equipment
- Accessories
- Customised safety equipment

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