

High Pressure
Capability
Valves and
Regulation solutions









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Engineering GREAT solutions through people, products, innovation and service

IMI Precision Engineering is a world-leader in fluid and motion control. Building close, collaborative relationships with our customers, we gain a deep understanding of their engineering needs and then mobilise our resources and expertise to deliver distinctive products and solutions.

Wherever precision, speed and engineering reliability are essential, our global footprint, problem-solving capability and portfolio of high performance products enables us to deliver GREAT solutions which help customers tackle the world's most demanding engineering challenges.

> Reliability

We deliver and support our high quality products through our global service network.

> High performance products

Calling on a world-class portfolio of fluid and motion control products including IMI Norgren, IMI Buschjost, IMI FAS, IMI Herion and IMI Maxseal. We can supply these singlely, or combined in powerful customised solutions to improve performance and productivity.

> Partnership & Problem Solving

We get closer to our customers to understand their exact challenges.

Delivering quality solutions for high pressure applications

For over 60 years, IMI Precision Engineering has provided expertise in high pressure products and solutions for a number of industries including Rail, Commercial Vehicle, CNG, Defence, Oil & Gas and Industrial Gases; with products capable of managing pressures up to 1000 bar.

Our market leading product ranges - IMI Norgren, IMI Buschjost, IMI Herion, and IMI Maxseal, combine to create an extensive range of proven valve and pressure control solutions including:

- > Pressure Regulators (Spring, Dome, Proportional Pressure Reducers, Back Pressure Valves)
- > Solenoid Operating Valves (Pilot Valves, High Pressure Direct Actuation, Solenoid Operated Stop Valves, Solenoid Operated Cartridge Valves)
- > Mechanical Slam Shut Valves
- > Manual Stop Valves
- > Filters Inline and Tee
- > Check Valves
- > Relief Valves
- > Bellow Sealed Valves

We are expert at designing for the precise needs of many high pressure appliations:

- > 0.1 bar to over 1000 bar
- > 1/8" to 5" ports
- > Industrial gases including N2, O2, Ar, Kr, CH4. H2. He. C02. CO. N20. etc.
- > Natural Gas
- > Hydraulic Fluids including water glycol, hydraulic oil, seawater, kerosene, etc
- > Temperature from -55°C to +300°C
- > Regulator Cv range: 0.08 83





Commercial Vehicle







Oil & Gas



Industrial Gases

Product options

SPRING LOADED PRESSURE REGULATORS - MEDIUM PRESSURE [M.W.P < 100 BAR]







SPRING LOADED PRESSURE REGULATORS - HIGH PRESSURE [M.W.P > 100 BAR]





















DOME LOADED PRESSURE REGULATORS - MEDIUM PRESSURE [M.W.P <100 BAR]













DOME LOADED PRESSURE REGULATORS - HIGH PRESSURE [M.W.P > 100 BAR]













SPRING LOADED BACK PRESSURE MAINTAINING VALVES - MEDIUM PRESSURE [M.W.P <100 BAR]





SPRING LOADED BACK PRESSURE MAINTAINING VALVES - HIGH PRESSURE [M.W.P > 100 BAR]









DOME LOADED BACK PRESSURE MAINTAINING VALVES - MEDIUM PRESSURE [M.W.P < 100 BAR]







DOME LOADED BACK PRESSURE MAINTAINING VALVES - HIGH PRESSURE [M.W.P > 100 BAR]



CHECK VALVES





Product options

FILTERS







SAFETY RELIEF VALVES













MANUAL STOP VALVES





ACTUATED STOP VALVES





SEMI-AUTOMATIC CHANGEOVER UNITS



SOLENOID VALVES











LOCK OFF VALVES - NATURAL GAS ENGINE APPLICATIONS







SOLENOID VALVES > 100 BAR





LNG SOLENOID VALVES - FUEL **DISPENSE & SUPPLY APPLICATIONS**





SOLENOID VALVE MANIFOLDS SOLUTIONS









MECHANICAL SLAM SHUT VALVES





PROPORTIONAL PRESSURE CONTROLLERS







HIGH PRESSURE FITTINGS





Aerospace

For over 30 years our high pressure valves and regulators have been used both in ground facilities and on the platform itself.

Typical Applications:

- > Rocket Engine Testing
- > Fuelling
- > Calibration
- > Production Equipment

Custom Engineering Solutions

We offer solutions tailored to our customers' exact requirements. Our solutions usually center around specialist valve / regulator design, a sub-system or manifolded assembly or solutions involving automatic pressure control, where our proportional valve technology is employed.

Stop Valves

Our Balanced Stop Valves are typically used on test stands, bottle head assemblies and on instrumentation lines where low operating torque and high cycle life mean they work for years with no reduction in performance.

14" – 1" & 0–700 barg Piloting / Process Application



Fast Acting, SIL 3, Hazardous Area Certifications



Spring Loaded Regulators Lead in toet stands, calibration gas

Used in test stands, calibration gas applications and for piloting larger regulators, our wide range of regulators provide accurate pressure control from <1 bar to 700 bar if required.

Dome Loaded Regulators

With port sizes ranging from 1/4" to 6", our dome loaded regulators are used in test stands, production test equipment, rocket engine testing, etc, for medium to high flow applications. Filters and relief valves can be matched to our regulators for our customers' convenience.

Solenoid Valves

IMI Maxseal Solenoid Valves offer unrivalled reliability. The product offers SIL ratings to SIL 3, a Force Friction ratio of 10, Worldwide hazardous area certification and valves sizes for 1/4" to 4".

Filters

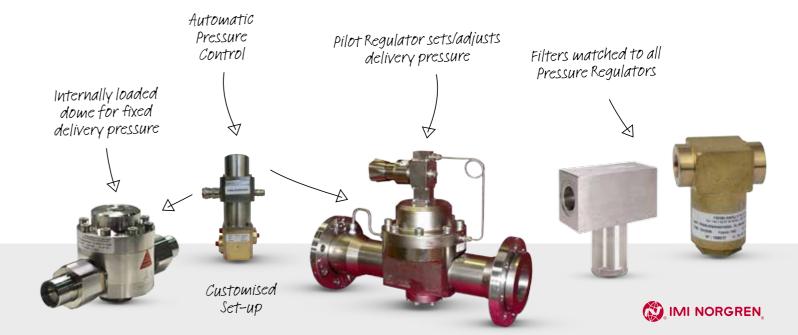
Suitable for use in high flow systems, with a tolerance to high differential pressures, our filters are available for all regulators in our standard product range.

Relief valves

Often supplied matched to our regulators to guarantee the system is protected.

Check Valves

Our piston check valves are proven to be highly reliable in high pressure service. Typically used on test stands and lines of 1" on below.





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Biomethane Compressed Natural Gas

Compressed Natural Gas and Biomethane are both increasingly used in vehicle fuelling and off-grid Industrial applications.

IMI Precision Engineering manufactures a series of valve technologies suited to the needs of this market.

Applications

- > NGV Fuelling Stations (dispenser & priority fill cascade applications)
- > Decompression skids for trailer offload in Off-Grid applications
- > Primary Isolation applications for transportable application

Solenoid valves and manifolds

A range of solenoid valves and manifolds used in priority fill storage cascades and fuelling dispensers. Custom engineered manifolds to suit individual customer requirements can be configured upon request.

Dome Loaded Regulators

Utilised in medium and high flow applications for primary and secondary pressure reduction duties. IMI Precision's range offers Cv's up to 83 for a regulator with an inlet rating to 300 barg (type: KO4Q). The high flow capable offers IMI Precision's customers the opportunity to exclude bypass valves even in high flow systems and still achieve a low residual pressure in the trailer / cylinder pack. IMI Precision's Proportional Control valves are often used to pilot our dome loaded reglators providing exceptional pressure control of the delivery pressure to the customers' process.

Spring Loaded Regulators

Utilised in low to medium flow, trailer off-load applications for primary and secondary pressure reduction duties. IMI Precision latest generation of spring loaded regulators are focused on achieving a high flow capacity with minimal drop in delivery pressure. As such, IMI Precision is able to delivery low residual pressures in the trailer / cylinder source maximising our customers' operating profit.

Filters

Suitable for use in high flow systems with a tolerance to high differential pressures, our filters are available for all regulators in our standard product range.

Slam Shut Valves

We offer both electrically and mechanically operated slam shut valves for use in overpressure protection applications where the design philosophy is one of containment rather than pressure relief. The SOV Series Solenoid valve operates in <150ms and carries a SIL3 rating. The R05 & R06 series mechanical slam shut valves are also fastacting and latch mechanically once tripped ensuring the system cannot be bought back online without manual intervention. Pressure ratings are available to 276 bar.











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Naval Defence

We have over 60 years experience in supplying high pressure equipment for pressure reduction and fluid control in the Naval Marine market.

On Surface Ships we supply equipment for applications including Diesel Engine Air Start, Torpedo Launch, Deluge Systems, Breathing Air Supply applications, Automatic Cylinder Charging for Breathing Air and Diving Gas and General Pressure Reduction.

On **Submarines**, we supply fluid control equipment for applications such as Interhull Fluid Transfer, Ballast Tank Blow, Divers Air Supply, Submarine Escape, Weapons Handling, Diesel Engine Air Start and Emergency Breathing Air.

For Nuclear Submarines, we supply bellows sealed valves for use on the steam systems.

To suit this market, our products are supplied in a range of materials including Nickel, Aluminium, Bronze and Stainless Steel and are tested to meet our customers' requirements for shock, vibration and noise.

Air Start Manifold for



Air Start Modules

The Diesel Engine Air Start Module provides a reliable integrated package to control the delivery pressure to the air start unit on the ships' diesel engine. Air flow commences when the solenoid actuated stop valve is commanded to open. The dome loaded pressure regulator within the module provides repeatable, accurate pressure control to the starter motor. The regulator is protected from contamination with an upstream filter and the downstream system is protected from over pressure via the integrated relief valve, which is matched to the regulator.

Pressure Reducing Stations

Generally configured to meet customer requirements using our core range of regulator and valve products, our pressure reducing stations reduce pressure in one or two stages depending on the pressure drop and gas in question.





Bottle Head Assemblies

Pressure isolation, regulation and relief are all functions commonly built into bottle head assemblies. We offer a range of existing designs but also offer custom versions of this product line to meet our customers' requirements.

Hull Valves

Hull valves handle interhull fluid transfer of gases, liquids, blackwater, etc. and are generally rated to 276 bar, but capable of greater pressures if required. The valve mechanism is balanced for low operating torque and high reliability.

Isolation Valves

Balanced Stop valves for low operating torque and high reliability. These are available in a range of sizes from 1/4" and generally suitable for service pressures to 414 bar.

Balanced Stop

Valve

Spring and Dome Loaded Pressure Regulators

Supplied line mounted or integrated into an integrated package, our pressure regulators can be set up to meet the performance requirements of the application with a range of control options (i.e. manually adjustable, fixed output, automatic pressure control via PLC, etc).

Solenoid Valves (SIL3/4)

Primarily used for piloting larger actuated valves open and closed, the IMI Maxseal Solenoid valve is widely regarded as the most reliable valve on the market.

Bellows Sealed Valves

Used in the reactor primary cooling circuits for isolation, bellows valves opearate at high temperature and provide excellent leak integrity.

Automatic Cylinder Filling Equipment

Our proportional valve technology provides an accurate, repeatable and controlled method of cylinder filling that assures the user of a consistent fill each time without excessive heat build up during the fill process. Automatic valves are used to control vent, vac and fill processes. Typically, gases will be high pressure air or oxygen in this industry.

Solenoids for Gas & Liquid Fluid Control - SIL3





















Check Valves

Our Nuclear Class Check Valves

Gaseous Waste Processing, Nuclear

Component Drain & Vent Systems,

Gas Collection and Monitoring and

With an accurate and predictable shut

off, this product is typically utilised for

Primary, Secondary and Auxiliary Circuit

Instrumentation Line Breakage Protection.

are utilised in applications such

as Control & Instrumentation,

Nuclear Component Cooling.

Excess Flow Valves

We can offer an extensive range of nuclear class valve products for PWR, BWR, CANDU and other proven reactor types. The product range is also applicable to nuclear facilities, waste management and decommissioning programs. The products listed in this section, all conform to ASME and RCC-M Nuclear Class 1, 2 & 3 Design Rules.

ASME Certified

Pressure Regulator

Bellows Sealed Globe Valves

High Integrity Bellow Sealed Valves provide excellent leak tight integrity on applications such as Primary Circuit Instrument Isolation, Gas Collection and Monitoring, Coolant Storage and Treatment, Gaseous Waste Processing and Hydrogen Monitoring.

Pressure Regulators

Our range of Spring Loaded Regulators are utilised in applications such as Reactor Vessel Hydraulic Control, Boron Fast Shutdown Systems, Primary Circuit Moderator Systems, Gas Collection and Monitoring and Coolant Storage and Treatment System.

Dome Loaded Regulators & Back Pressure Valve

Often custom engineered to meet the application requirements, we supply product to a vast range of applications including Hydrogen Monitoring, Fuel Handling, Nitrogen Blanketing, Electro-Deionisation / Steam Generator and Feedwater Recirculation.

Welded Inline Piston Check Valve





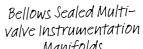
Welded Pressure

Vessel

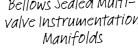


Welded Inline Bellows Sealed Globe Valve



















Industrial Gas

We have more than 40 years experience in supplying the Industrial Gas market with Valves, Regulators and Pressure Control Solutions for a range of applications. We use our broad product range and expertise to provide customers with solutions.

Applications

- > Gas Applications
- > Transportable
- > Central Plant
- > Industrial Gas
- > Medical Gas
- > Specialty Gas

Approvals / Certification

- > PED
- > TPED
- > ATEX
- > TUV

Type Tests

> CTE (adiabatic shock test in oxygen)





Gas Supply Applications We provide a broad range of

fluid control components for Industrial Gas Applications.

For applications where the Gas Supplier provides pressure reduction equipment to reduce the pressure from bulk or trailer source to the required delivery pressure, we provide the components required.

Delivery pressure can be controlled manually via spring or dome loaded controllers or automatically via our Proportional Pressure Control Technology, even in a Hazardous Area.

We have an expert knowledge of handling Industrial Gases including inerts, oxidising, flammable and corrosive gases.

Oxygen CTE tested Relief Valve Proportional Pressure Control for



exceptional fill control

Transportable Applications

> Emergency Shut Down valves

> Pressure Reduction from 600 barg

> 700 barg Cylinder Mounted Multi-

Function Valves for Hydrogen

Where required, approvals to meet

the requirements of the European

Transportable Pressure Equipment

Directive and other can be sought.

Typical applications include:

for trailer application

> Primary Shut off valves

> Slam Shut Valve solutions

Cylinder Filling

Typical applications include:

- > Fill, Vent & Vacuum Manifolds for single gas and mixtures filling.
- > Valves for filling systems including isolation, check, relief, back pressure, etc for which IMI has CTE test certification available for oxygen applications.
- > Relief valves used throughout the filling plant but in particular, on oxygen at high pressure where a stable set pressure and CTE certificate for O2 shock test are required.

> Proportional Pressure Controllers for exceptional control over the filling process.

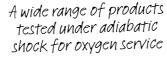
Our range of valve, regulators and manifolded solutions are ideally suited for use in cylinder filling systems and are typically custom engineered to suit the requirements of each client.

> Custom Manifold Solutions







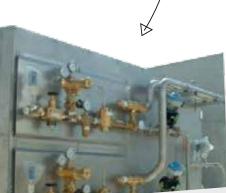


























Saturation Diving

For this safety critical application, reliable high quality equipment is essential. The accuracy of pressure control, certainty of delivery at an adequate flow rate and assurance that the gas quality is appropriate are paramount. For oxidising gases, adiabatic shock resistance can also be an important factor. For applications in Saturation Diving Systems, Diving Bells and Hyperbaric Chambers, our range of Fluid Control Components offer a proven, reliable solution for our customers' pressure control requirements.

Typical applications include:

- > Breathable gas pressure control
- > Compressor inlet pressure control
- > Water pressure control (pressure tracking application)
- > Isolation and metering in control panels
- > Filtration

Custom Engineered Manifold Solutions

For high flow gas supply applications, integrated manifold solutions offering a range of pressure and flow control features.

This method of integration saves space, weight and the number of leak paths and piping components reducing overall system cost and is configured to meet our customers' application requirements.

Stop Valves

Balanced stop valves are typically used on high capacity gas lines for isolation where low operating torque and high cycle mean they work for years with no reduction in performance.

Spring Loaded Regulators

Used to control the delivery pressure to the application. In some cases the regulator is used as a differential regulator taking a bias pressure from another source and controlling the delivery pressure relative to the bias pressure.

Dome Loaded Regulators

Used to control the delivery pressure to the application in high flow applications. All regulators of this type within our range are balanced and provide an accurate delivery pressure.

Filters

Suitable for use in high flow systems, with a tolerance to high differential pressures. Our filters are available for all regulators in our standard product range.

Relief valves

Often supplied matched to our regulators to guarantee the system is protected.

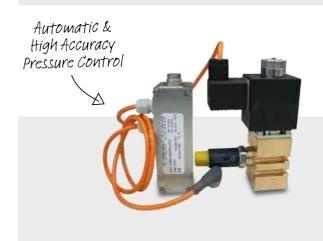
Check Valves

Our piston check valves are proven to be highly reliable in high pressure service. Typically used on test stands and lines of 1" on below.











Balanced Valve for Low Operating Torque







Upstream Oil & Gas

We supply products for a range of safety and process critical applications where reliability and performance are of the upmost importance to our customers.

> Solenoid Valves (Instrument / Process Solutions)





Applications

- > Fire Suppression
- > Watermist / Microfog
- > Deluge
- > Foam
- > Breathing Air Supply / H2S Protection
- > Hydraulics
- > Wellhead Control
- > HPU
- > Ballast Control
- > Chemical Injection
- > Direct Gas and Hydraulic Valve Actuation
- > Instrument Gas Supply

Filter

Fire Suppression Systems

High Pressure solenoid valves are used for isolating the store of high pressure air until the system is activated. The IMI Maxseal IC04 range or 83770/83790 series are typically used in this application.

The IC03/IC04 Series is also used for valve actuation in higher flow systems.

Spring or Dome Loaded Pressure Regulators are used to control gas pressure used to force fire suppression media through the system. Our J45, K50 and D268 regulator series are most often used for these applications.



Titanium valves and pressure regulators can also be supplied for seawater applications as a custom engineered solution

W & F series filters can be used to protect the regulators from leakage if necessary.

Pressure relief valves provide over pressure protection for the system downstream of the pressure regulator. Our S series relief valves would normally be used.

> Threaded Ports or Flange Mounted



Breathing Air / H2S Protection

Our range of pressure regulators are used to control the deliver of breathing air from storage cascade to point of use.

Filtration and over pressure protection devices can be supplied to match the pressure regulators provided.

Medium and High Flow Spring Hydraulic Applications

Our range of Pressure Control Solutions include Filters, Regulators, Solenoid, Isolation, Check, Relief and Pneumatically Actuated valves.

Valve Actuation

Our J Series Pressure Regulators offer a range options for Direct Gas & Valve Actuation Supply Applications.

IMI Maxseal's IC04 Solenoid Valve provides a highly reliable solution offering worldwide hazardous area certification.

Our J series pressure regulators offer a range of options for direct gas and hydraulic valve actuation applications.

> Custom Manifold Solutions













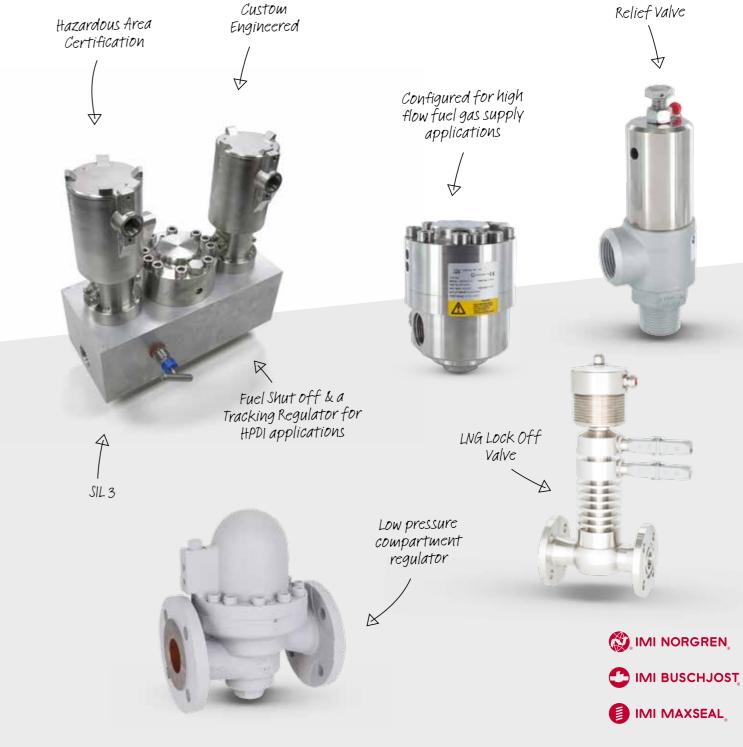






High Horsepower Applications in Rail, Vehicle, Marine and **Power Sectors**

We supply a range of innovative valve technologies for various applications in this sector. CNG & LNG applications are supplied with service pressures to 800 barg in certain HPDI applications. Custom engineered solutions involving the integration of components into skid mounted packages or machined manifolds adds value for our customers'.



IMI Precision Engineering operates four global centres of technical excellence and a sales and service network in 75 countries, as well as manufacturing capability in the USA, Germany, China, UK, Switzerland, Czech Republic, Mexico and Brazil.

For information on all IMI Precision Engineering companies visit www.imi-precision.com

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