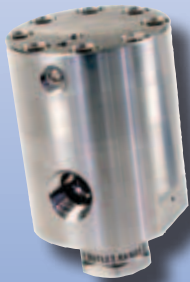
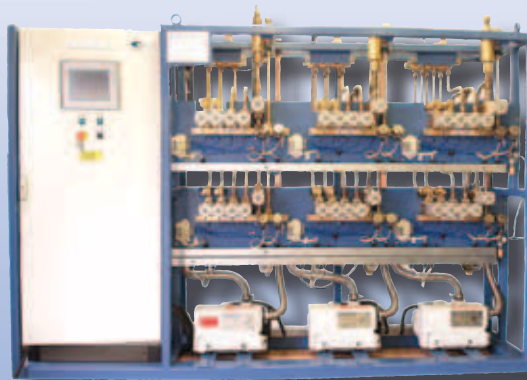


VALVES, VALVE MODULES AND PACKAGED SYSTEM SOLUTIONS FOR THE GAS INDUSTRY



PRESSURE REGULATORS



SEMI AUTOMATIC CYLINDER FILLING



MANUAL STOP VALVES



VALVE MODULES



RELIEF VALVES



CYLINDER FILLING SYSTEMS



ACTUATED STOP VALVES

WELCOME

Hale Hamilton is a world leader in the design, manufacture and supply of valves, valve modules and packaged system solutions for the Gas Industry.

With products ranging from standard catalogue valves to complete cylinder filling systems, Hale Hamilton is the ideal partner to satisfy the demanding requirements of our customers.

CORE CUSTOMERS



APPLICATIONS

Cylinder Filling Equipment (Industrial, Medical, Specialty Gas and Electronic Gases)

- High Pressure Valves, Filters and Regulators for Gas Application (non cryogenic).
- Valve Modules (Bolt together valve assemblies minimising piping, pipe fittings, welded joints, etc).
- Cylinder Filling Skids (Manual & Semi-Automatic / Single Cylinder & Pack Filling).
- Medical lifecycle validation documentation eliminating the need for external consultancy.
- Complete Plant Solutions.

Gas Pressure Reduction & Distribution System Solutions

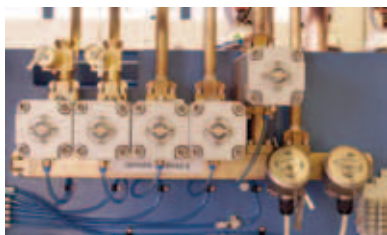
- Trailer Offload Stanchions.
- Pressure Reduction Panels & Skids.
 - Hydrogen Panels
 - CNG Pressure Reduction / Heater Skids
 - Breathing Air Panels
 - Custom design panels for Inert, Flammable, Oxidising and Corrosive Gases.

High Pressure Oxygen Equipment

- A complete range of adiabatically shock tested valves, filters and regulators suitable for use on medical/breathing gases.
- 400+ barg design typical across range.
- Panels, Skids and Systems built in accordance with best practice in oxygen piping design.
- HH oxygen equipment used worldwide by customers including the major Gas Companies.

High Pressure Hydrogen Equipment

- A new range of stainless steel valves compliant with the expectations of our Gas customers.
- Pressure rating up to 500 barg.
- Welded inline connections available.
- Flanged fittings per our Industrial range is also available.
- Valves certified in accordance with TPED.



VALVE MODULES

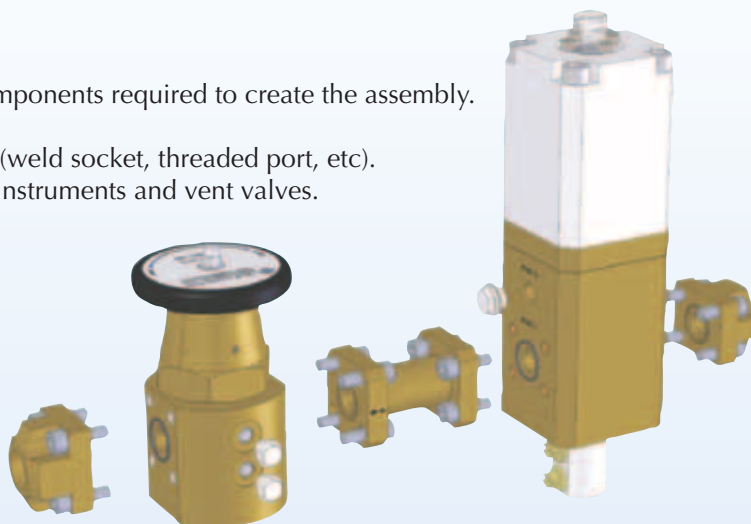
Hale Hamilton's range of Valves, Filters and Regulators are increasingly becoming available for use as part of our Flanged Connection System.

This allows our valve components to be bolted together into valve modules without the need for extra connectors, piping, welding or non destructive testing of the fabricated joints.

The Flanged Connection System's advantages include:

- A compact solution with the minimum number of components required to create the assembly.
- Fewer leak paths.
- Flanged connectors with the interface of your choice (weld socket, threaded port, etc).
- Valves with pressure tapplings built in for connecting instruments and vent valves.
- Easy to configure valve modules.
- A lower cost solution than the panel equivalent.

The range is available with a 420 barg design rating as standard and in brass and stainless steel.



Valve Module with the following components (left to right)
Inlet Connection + Manual Stop Valve + Check Valve
+ Actuated Valve + Outlet Connector
(includes 3 pressure tapping points where the 1/8" plugs are removed)



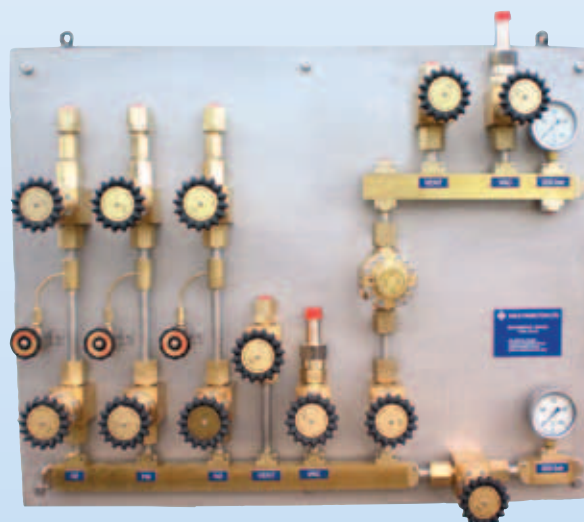
MANUAL VALVE PANELS AND CYLINDER FILLING SYSTEMS

Hale Hamilton manufactures a variety of Manual Valve Panels and Cylinder Filling Systems, all configured to meet our customers requirements.

All valve panels are based on Hale Hamilton's proven valve technology and where possible utilise our Flanged Connection System.

With our manual Cylinder Filling Systems, the operator uses manual valves and pressure gauges to control the fill. The operator is alerted towards the end of the fill to ensure the fill is ended at the right time.

If required, the manual fill valve can be replaced with an actuated valve and a pressure transmitter enabling the fill process to be stopped automatically when the cylinders are full. Pressure temperature compensation is available with this type of package.



'AUTOCHARGE' SEMI-AUTOMATIC CYLINDER FILLING SYSTEM

Hale Hamilton's Autocharge offers a simple solution for the Semi-Automatic filling of cylinders for Industrial and Medical applications.

For breathing air applications, an air dryer package is available ensuring the gas quality is always of a breathable standard. Systems of this type are limited to a design pressure of 350 barg.

Our Control Panel performs several functions:-

- Cylinder selection: a number of programs are available for different cylinder types.
- Initiate Fill Process: this is done via a simple set of push buttons.
- Set point adjustment with limited access via Supervisory System.



Summary of Features

- Design 360 barg.
- Control Panel.
- Air dryers for breathing air applications.
- Filtration on incoming line preventing contamination.
- Fill, Vent and Vacuum valves.
- Over pressure protection.
- Installation and Commissioning assistance available.



SEMI-AUTOMATIC CYLINDER FILLING SYSTEM

Hale Hamilton's State of the Art Semi-Automatic Cylinder Filling System enables our customers to achieve the best possible Productivity and Quality in Industrial and Medical Cylinder Filling.

Medical Systems can be supplied with 'Lifecycle' validation documentation to the European Pharmacopoeia (PhEur). This eliminates the need for external validation consultancy.

Our SCADA System performs several functions:-

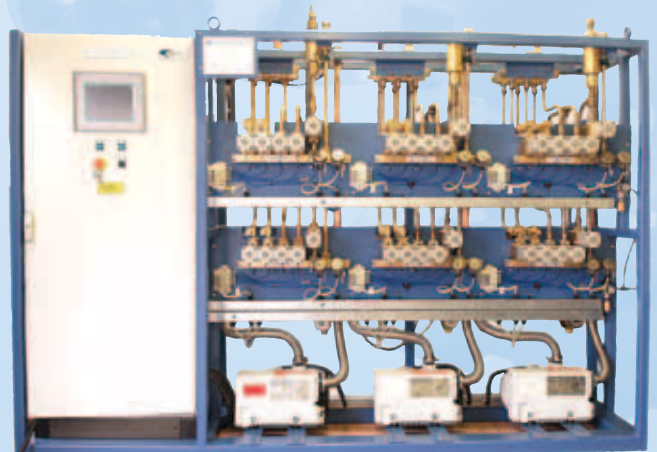
- HMI system offering overview of Plant similar to HMI unit.
- Supervisory System allowing set point and recipe changes.
- Engineering Station allowing update to HMI and PLC software.
- Remote Support Terminal allowing quick support from offsite if required.
- Data Collection – All fill and analysis information recorded.



All skids are factory acceptance tested (in the presence of our customers if appropriate) and leave site ready for installation and commissioning. This approach saves time and cost on site and overall.

Summary of Features

- Design 420 barg regardless of service pressure.
- Modular design configured to meet system requirements with capacity for further expansion for further components, etc.
- Vacuum System.
- Control Panel with software and remote support as standard.
- Filtration on incoming lines preventing contamination.
- Fill, Vent and Vacuum valves and with visual indication of valve position.
- Back flow prevention preventing back contamination of supply lines.
- Over pressure protection for multi cylinder filling pressures if necessary.
- Pressure indication with redundancy built in.
- Filling manifolds to match filling pallets.
- Frameworks and Walkways available.
- Installation and Commissioning assistance available.



GAS INDUSTRY SOLUTIONS



SINGLE CYLINDER FILLING SYSTEM

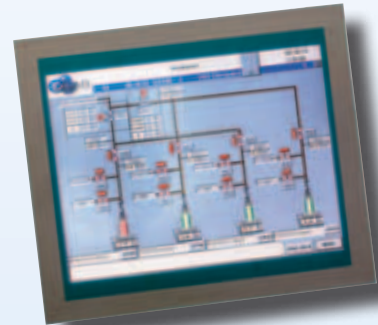
Hale Hamilton's state-of-the-art Medical Oxygen Single Cylinder Filling System exceeds all requirements of a medical filling system including:

- **Safety** Incorporates best practice design for O₂ systems: over pressure protection, key process safety interlocks and operator protection.
- **Productivity** one man operation yields 4 cylinders every 60-90 seconds (2- 10 litre cylinders respectively).
- **Quality** Cylinders are automatically checked for residual pressure, vacuumed, then filled individually by weight and flow control. All details during the fill are recorded automatically against a batch and cylinder ID. The system is paperless as all records are generated and stored electronically.
- **Validation** - Each system is supplied with 'Lifecycle' validation documentation to the European Pharmacopoeia (Ph Eur).



Summary of Features

- 4 Slot Filling System with Dual Fill Resources for Increased Productivity.
- Control Panel with touch screen and multiple control system options.
- Paperless system with Barcode reader and automatic record generation.
- High accurate filling via proportional flow control.
- Fill, Vent and Vacuum cycle.
- Single Cylinder filling provides 100% certainty of Gas Quality.
- Return pressure checking eliminates separate check by operator.
- Multi-tasking which increases productivity.
- Over pressure protection for multiple cylinder pressure.



GAS PRESSURE REDUCTION AND DISTRIBUTION

Hale Hamilton manufactures Pressure Reduction Panels and Skids for a number of applications including:

Hydrogen Trailer applications (loading & unloading).

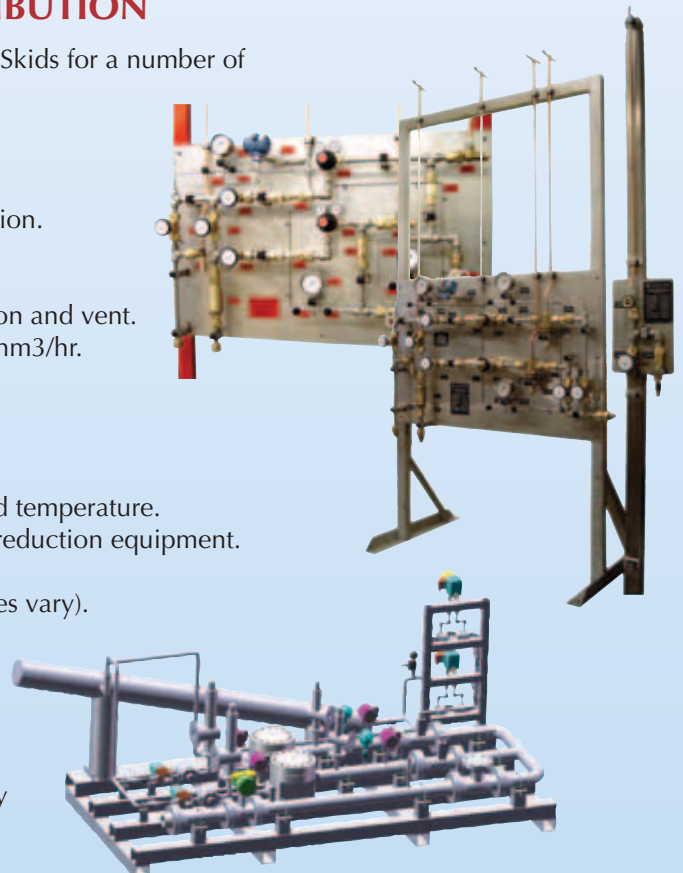
- 250 barg typical design pressure.
- Connections to Supply Trailer, on-site storage and application.
- Autochangeover function.
- Multiple Trailer connections as required.
- Trailer Stanchions with transfer hose, earthing lead, isolation and vent.
- Typical flow options 0-100 nm³/hr, 0-250 nm³/hr & 1000nm³/hr.
- High flow / pressure panels can be custom made.

CNG Trailer (Virtual Gas Pipeline) Applications.

- 250 barg typical design pressure.
- Delivers gas to the application at the required pressure and temperature.
- Typically equipped with dual redundancy for all pressure reduction equipment.
- Heater / Heater Control panel to ATEX EE xd typically.
- Flow rates to 3000 nm³/hr (regulator, valve and heater sizes vary).
- Over Pressure Protection.
- Reverse flow protection from customer system.
- Flow measurement available as an option.

All Hale Hamilton skids are factory acceptance tested (in the presence of our customers if appropriate) and leave site ready for installation and commissioning.

This approach saves time and cost on site and overall.



Hale Hamilton manufactures a wide range of valves and regulators designed to meet the requirements of our Gas Industry customers.

OXYGEN COMPATIBILITY is a key feature of our range and most component types are supplied suitable for medical / breathing gas service and have passed adiabatic shock tests carried out by BAM or CTE.

HYDROGEN HH has developed a range of valves, filters and regulators available in stainless steel and if required, with welded inline ports.

FLANGED CONNECTIONS are used on our latest component range enabling valves to be bolted together without the need for threaded, welded or brazed connections, thus reducing piping, fitting, labour, fabrication and non destructive testing costs.

Manual Stop Valves	Description	Connections	Seat Ø	Pressure Range	Materials
	SV47 Series Range includes models suitable for oxygen and use with non corrosive gases.	G1/4" and 1/4"NPT	6mm	upto 420 barg	Brass and Ni.Al.Bronze
	N6 Flanged Series <ul style="list-style-type: none">• Hard Seated Oxygen Valve Available• Soft Seated Valve for non oxidising gases• Additional port for instrumentation or vent functions• Used in module and skids for our system products.• Fully balanced design for easy operation	Flanged connections (see our full catalogue for details)	11mm	420 barg	Brass
	N6 Stainless Series <ul style="list-style-type: none">• Suitable for Hydrogen application (TPED approved)• Soft Seated Valve• Full Stainless Steel Construction• Fully balanced design for easy operation	Flanged connections (see our full catalogue for details) or welded inline ports	11mm	500 barg	Stainless Steel
	N Series (standard range with threaded body). Range includes models suitable for oxygen and use with non corrosive gases.	G1/4" to G1 3/4"	6-25mm	upto 420 barg	Ni.Al.Bronze
	SV130/131/132 Series Range includes models suitable for oxygen and use with non corrosive gases.	1 3/8" UN - 2 5/16" UN Male Threaded Connections	12.7 - 20mm	420 barg	Brass
Actuated Stop Valves	Description	Connections	Seat Ø	Pressure Range	Materials
	ASV158 Series <ul style="list-style-type: none">• Series contains versions suitable for oxygen and non corrosive gas service.• Normally Open or Normally Closed• Visual indication of valve position• Position feedback sensors• Additional port for instrumentation or vent functions• Used in module and skids for our system products.	Flanged connections (see our full catalogue for details)	12.7 mm	420 barg	Brass
	ASV157 Series - features per ASV158	Flanged connections (see our full catalogue for details) or welded inline ports	12.7 mm	420 barg	Stainless Steel
	ASV130,131,132,133 Series Range includes models suitable for oxygen and use with non corrosive gases.	1 3/8" UN - 2 5/16" UN Male Threaded Connections	12.7 - 25mm	420 barg	Brass
Relief Valves	Description	Connections	Seat Ø	Pressure Range	Materials
	RS Series Range includes models suitable for oxygen and use with non corrosive gases.	G3/8" fixed or Banjo connection	9mm	3.5-420 barg	Brass and Ni.Al.Bronze
	RVA Series Range includes models suitable for oxygen and use with non corrosive gases.	G5/8" to G1"	6-19mm	1-448 barg	Brass and Ni.Al.Bronze

COMPONENTS



Filters	Description	Connections	Seat Ø	Pressure Range	Materials
	Filter - Oxygen, Inert & Hydrogen Application - Series F105 to F109	1" to 2" BSP or NPT	6-37mm	upto 400 barg	Al.Alloy, Carbon Steel, Brass & Stainless Steel
Check /Non Return Valves	Description	Connections	Seat Ø	Pressure Range	Materials
	NRS38.Mk9 Flanged Check Valve <ul style="list-style-type: none"> • Bolts directly to other flanged valves. • Hard seated for oxygen compatibility • Used in module and skids for our system products. 	Flange connection	10mm	420 barg	Brass
	NRS Series Range includes models suitable for oxygen and use with non corrosive gases.	G1/4" to G1 1/4"	6-25mm	upto 420 barg	Brass and Ni.Al. Bronze
Pressure Regulators	Description	Connections	Seat Ø	Pressure Range	Materials
	Series 28 Spring Loaded Regulators <ul style="list-style-type: none"> • Generally soft seated for Gas Application • Hard seated CTE tested versions for Oxygen Service • Self Relieving as standard • Adjustable, fixed output or limited output available 	1/4", 3/8" and 1/2" ports. BSP or NPT	2 to 6mm (Cv 0.08 to 0.6)	upto 465 barg for gas and 690 barg hydraulic	Al.Alloy, Brass, Ni.Al.Bronze or Stainless Steel
	Series 44 High Flow Spring Loaded Regulators <ul style="list-style-type: none"> • Generally soft seated for Gas Application • Hard seated CTE tested versions for Oxygen Service • Self Relieving as standard • Adjustable, fixed output or limited output available 	3/4" NPT	6mm (Cv 2)	Inlet Pressures up to 310 barg Outlet range 0.7 - 103 barg	Brass and Stainless Steel
	Series RH20, 30 and 40 Dome Loaded Pressure Regulators <ul style="list-style-type: none"> • Balanced design for stable outlet pressure control • Dual Dome Loading (inlet supply or external source) • RS Series relief valves can be mounted on the regulator direct. • BSP port connections compatible with the F105, F107 and F109 series filters 	G1" to G2"	9 - 37mm	Inlet Pressures to 420 barg Outlet Pressures from 2.7 barg to 241 barg	Ni.Al.Bronze
	Series RH25 & RH35 Dome Loaded Pressure Regulators <ul style="list-style-type: none"> • Balanced design for stable outlet pressure control • Dual Dome Loading (inlet supply or external source) with soft seated needle valves for easy adjustment. • BSP port connections compatible with the F105, F107 and F109 series filters 	G1" to G1 1/2" or 1" NPT in Stainless RH25 only	9 - 37mm	Inlet Pressures to 420 barg Outlet Pressures from 2.7 barg to 241 barg	Al.Alloy and Stainless Steel
	Series RH11.Mk15 Proportional Regulator A Dome Loaded Pressure Regulator with a 0-7 barg dome for controlling outlet pressures to 380 barg. <ul style="list-style-type: none"> • Used for automatic pressure control in gas systems. • Excellent for Surge Control and Fill Control in Cylinder Filling Systems. • CTE tested for adiabatic shock resistance in Oxygen • Used at the heart of many of Hale Hamilton's cylinder filling systems. 	G1/2"	6mm	Inlet Pressures to 420 barg Outlet Pressures to 380 barg	Brass
	Series RL Dome Loaded Regulators <ul style="list-style-type: none"> • Excellent control of low to medium pressure. • Internal or External Dome Loading • BSP port connections compatible with the F series filters 	G3/8" to G3"	6-52mm	upto 69 barg	Ni.Al.Bronze & Al.Alloy
Back Pressure Maintaining Valves	Description	Connections	Seat Ø	Pressure Range	Materials
	Series DR28 Dome Loaded Back Pressure Maintaining Valve	G1"	12mm	420 barg	Brass
	Series 28 Spring Loaded Back Pressure Maintaining Valve	G3/8"	2mm	Up to 465 barg	Brass and Stainless Steel
	Series L17 Spring Loaded Back Pressure Maintaining Valve	G1/4"	5mm	Up to 103 barg	Al.Alloy

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