

## YOUR CREATIVE ENGINEERING PARTNER

The trusted choice for inspired innovation that you can depend on.

We don't believe in a one-size-fits-all approach. Acting as an extension of your team, we quickly get to the heart of your challenge, bringing our unique perspective to everything we do.

**Hale Hamilton.**  
Your Creative Engineering Partner.



 UK Head Office

 Sales office locations

## EXPERTS IN MARITIME & DEFENCE

Creative Engineering Partner



For further information go to

[www.circor.com](http://www.circor.com)

+44 (0)1895 236 525



We are proud to be a part of the Circor group, a global manufacturer specialising in highly engineered, complex and severe environment products that serve long-term, high growth infrastructure markets, including oil & gas, power generation, industrial and aerospace & defence.

Circor's strong global presence serves over 7,000 customers in 100+ countries. With primary manufacturing facilities in the United States, Canada, Western Europe, Morocco and India, Circor serves an ever-increasing range of markets on a local, national and global level.

#### The Circor mission

Delivering smart, reliable flow and motion control solutions for mission-critical applications.



#### CUSTOMER INTIMACY



#### TEAM BEFORE SELF



#### COMMITMENT AND ACCOUNTABILITY



#### SPEED, EXCELLENCE AND INNOVATION

## Who we are

Since 1947, we have been developing fluid control solutions for process and safety critical systems in a range of demanding applications.

In meeting our clients' needs, we utilise a range of pressure and flow control technologies with the scope of our supply ranging from individual valves to fully integrated fluid control systems.

Supporting growth in our chosen markets is a dedicated team of engineers, application specialists and sales/after-sales support staff committed to delivering the solutions and customer support you demand.

For pressure or flow control application where quality matters, visit [www.circor.com](http://www.circor.com) or contact us via your local sales office.

### Hale Hamilton. Your Creative Engineering Partner.

#### CUSTOMER FOCUS:

We take pride in our customer focus, believing that building relationships is the key to better service. While we're our own independent company, we have the privilege to access Circor's wealth of expertise, technology and support. This means we can explore solutions in sectors such as aerospace, energy and cryogenics alongside our core offering.

### Together, we can deliver the solution and support you need to prosper.

#### OUR SERVICES INCLUDE:

##### Collaborative Solution Development

We develop innovative fluid control solutions to meet the needs of our clients.

##### Project Management

We have a full project management service, encompassing all aspects of supply while maintaining close contact with customers to ensure all projects are delivered on time and within budget.

##### Project Delivery

From initial design through to final commissioning and training, we ensure successful project delivery and handover to our clients' satisfaction.

##### After Sales Support

Our Aftermarket team is focused on ensuring complete after-sales care from supply of spares, valve repair and ad hoc field service to full maintenance contracts and remote online support for those systems fitted with health monitoring.

## Your Creative Engineering Partner

Our team of Applications Experts, Engineers and Project Managers have a broad range of experience in delivering cost-effective solutions with projects delivered to specification, time and cost.

All projects are delivered with a view to delivering great aftersales support.

#### Solution Development

- > Valve/pressure control technology related projects delivered in partnership with our client through design & prototyping to qualification and in-field testing
- > System level projects delivered as 'Turnkey', i.e. from concept to fully commissioned solution

#### Research and Development

- > Development of valve and pressure control technologies supporting high pressure applications in the Defence market place
- > Client specific R&D activities undertaken to meet specific project requirements

#### Qualification Testing

- > Our qualification test programmes are written around specific project requirements, typical in safety & process critical situations
- > Mechanical shock, adiabatic shock, vibration, cycle testing, extreme temperature testing, et al

#### Quality Assurance System:

- > ISO 9001: 2015 (audited by Lloyds Register)
- > PED modules H & H1,
- > TPED – EC certificate of authorisation
- > ATEX – QA system audited by Intertek
- > ISO 18001: 2015 – Health & Safety and ISO 1400: 2015 Environmental Management
- > Rolls Royce SABRe2 and GS3001
- > BAE Systems Standard Submarine Quality Assurance
- > Clauses (SSQAC14)

#### Continuous Improvement:

- > Lean-Kaizen methodology
- > Formal problem solving techniques deployed
- > SC21 signatory (sponsor BAE Systems)

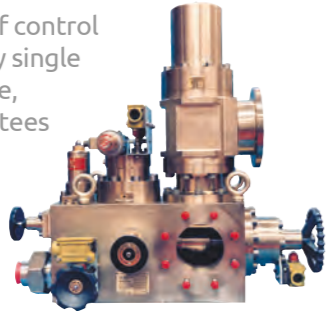


## What we do

### INTEGRATED SYSTEM SOLUTIONS

#### Reducing stations

This high functioning system of control valves, embodied in top quality single forged nickel aluminium bronze, or stainless-steel block, guarantees the safe control and reduction of high pressure stored air to lower pressures in your main engines and diesel generator start.



#### Autocharge

Our extensive experience designing industrial cylinder filling plants has been refined in this product which consistently allows safe and efficient bottle charging; removing the dangers of over-pressurising and over-heating. Autocharge provides reliable automatic cylinder filling for naval firefighting, damage control and air requirements.



#### Pneumatic and hydraulic systems

A dependable and innovative range of products and systems for weapons handling, torpedo and general weapons discharge.



#### Hood inflation systems

The heart of this visionary safety system is the HIS pressure controller. This valve, mounted in a submarine's escape tower, fulfils the vital role of tracking rising pressure from flooding with unparalleled accuracy. This responds to the changing tower pressure, meeting the needs of the submarine escape immersion suit, and ensuring a positive air supply is provided to the escaping submariner.



#### Hydraulic valve MV185

Shear Seal pilot operated Hydraulic selector valve used on a wide range of submarine platforms. Maximum working 207 barg.



#### Built in breathing system

This dependable system is comprised of expertly engineered valves which are essential to the success of planned submarine escapes. The product supplies a dedicated flow of clean breathing air to the submariners as they make their escape, ensuring their safety.



#### Land applications

We supply essential equipment for height and suspension systems in military vehicles. We are an established supplier on the BAE Systems Ultra Light-weight Field Howitzer gun.



#### Hull and blow valves

These market leading valves enable the safe transfer of fluids through the submarine pressure hull. They can be custom engineered to suit any length and bore size requirement, and supplied with a range of opening mechanisms.

## Key platforms

### MARITIME DEFENCE



#### Submarine Platforms

- > Astute Class (SSN)
- > Dreadnought Class (SSBN)
- > A26 (SSK)
- > Virginia Class (SSN)
- > Columbia (SSBN)
- > Ohio Class (SSBN)
- > Los Angeles Class

- > Vanguard Class (SSBN)
- > Trafalgar Class (SSN)
- > Collins Class (Life Extension)
- > Walrus Class (Life Extension)
- > Archer Class (SSK)
- > Class (Life Extension)

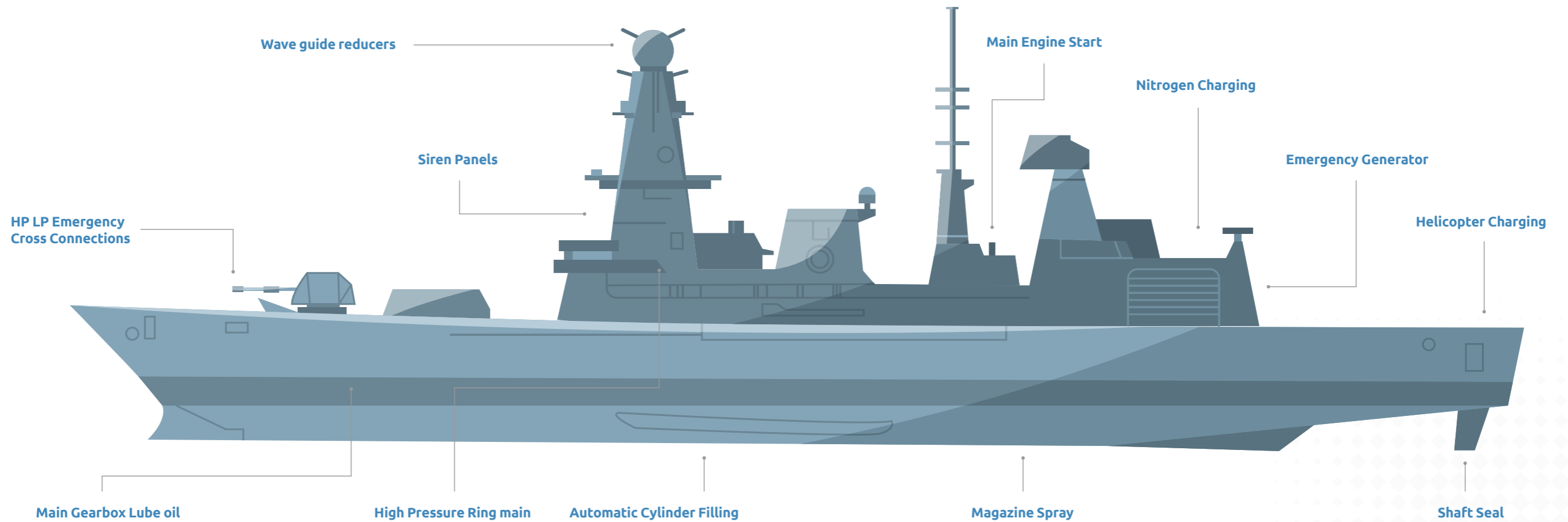
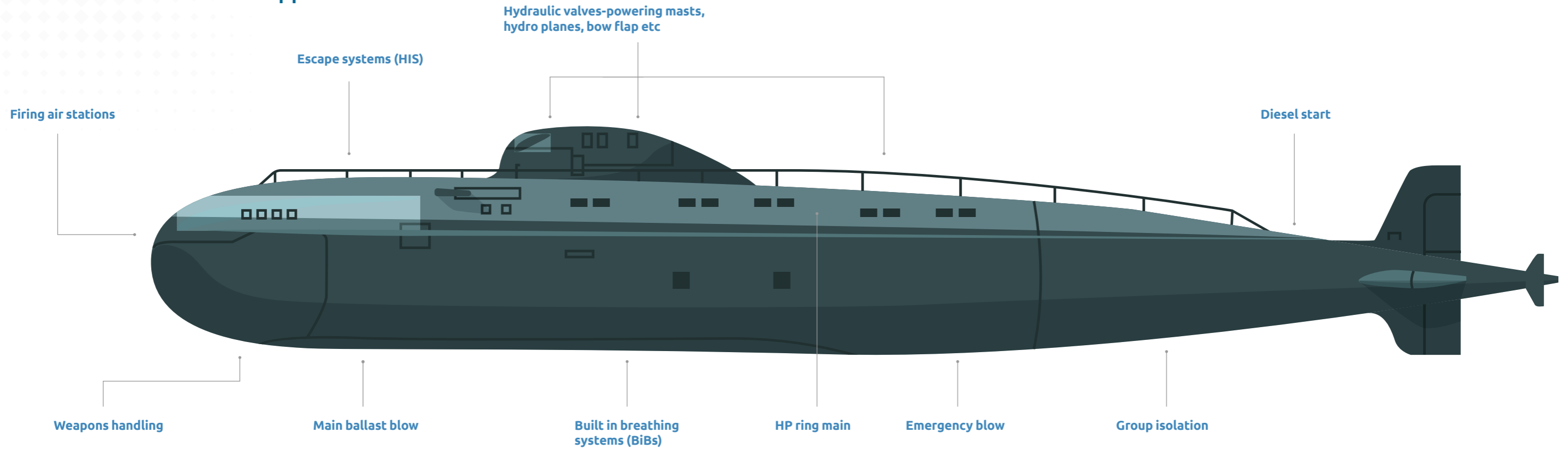


#### Surface Platforms

- > Queen Elisabeth Class – Aircraft Carrier
- > Type 26 Frigate programme
- > Type 45– Destroyer upgrade

- > Type 23– Frigate Major Refit
- > Hunt Class – Mine Hunter - Refit
- > Albion Class LPD – Life Extensions
- > Huron Class – Mine Hunter

### Submarine and surface vessel applications



## Portable Charging Units

Our range of Portable Charging Units are used by both commercial and military customers around the world, in support of all types of aircraft that include commercial airliners, business jets, fighter jets, helicopter transport planes and unmanned aerial vehicles.

### The N2GO Nitrogen charging units are used for:

- > Inflating tyres
- > Charging suspension struts
- > Topping up hydraulic accumulators
- > Blow down door systems
- > Many other nitrogen gas applications

An O2GO Oxygen charging unit is also available, used to service and top up on-board aircraft breathing systems.

By using industry standard carbon fibre, an epoxy resin composite gas cylinder and a light – but strong – case, each Portable Charging Unit (PCU) is the size and weight of a standard small travel suitcase, giving you a handy on-the-go source of either compressed nitrogen or oxygen.

### Features

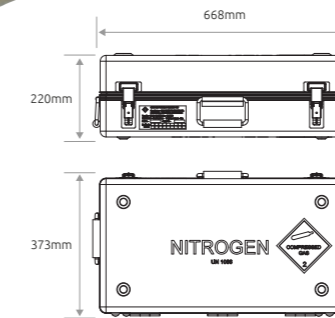
- > Light-weight
- > Single or dual pressure outlets (different charge pressures depending on application)
- > Accurate pressure control
- > Over pressure protection
- > Charge pressure indication
- > Hose vent feature
- > On-board particulate filtration
- > High pressure hose, with a range of accessories
- > Hand-carry portable, with a wheel option

### General Specification

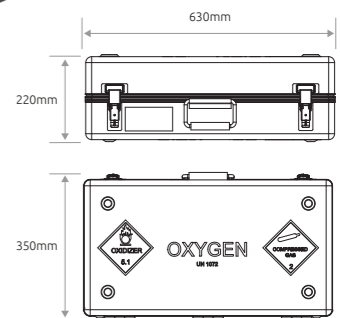
- > Cylinder charge pressure: up to 300 barg
- > Design pressure: up to 350 barg
- > Cylinder capacity: 6.8 litres (water capacity), 1800 litre (gas at STP)
- > Outlet pressure ranges from 0–2 barg, to 0–300 barg
- > Temperature range: -34 to 60°C



## NATO codified versions



NSN 3655-99-2125901



NSN 3655-99-6659781

### Nitrogen unit – Dual Range

- > Outlet pressure ranges: 0 to 34.5bar and 0 to 2bar
- > Valve body material: Brass except regulator bodies which are aluminium to reduce weight
- > A 3m outlet hose, tyre inflator and special tyre adaptor are stowed in the case lid. These items have quick fit connectors for easy assembly
- > The tyre inflator is fitted with an automatic shut off device to prevent over inflation
- > Weight: 19kg (uncharged), 21.5kg (charged)
- > Additional handles are fitted to allow for two-man lifting

### Oxygen unit – Single Range

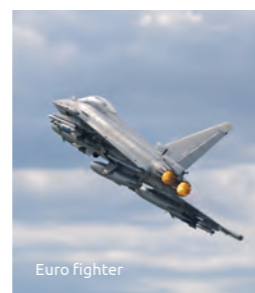
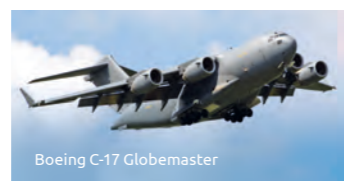
- > Outlet pressure range: 0 to 220bar
- > Valve body material: Brass
- > A 5m outlet hose is stowed in the case lid
- > Weight: 16.5kg (uncharged), 19kg (charged)

### Oxygen Cylinder Filling

Provides a semi automatic push button controlled system for filling aviation oxygen cylinders.

### The system has five separate programmes for filling cylinders to the following pressures:

- > Batches of up to 8x128 Bar/1850psi AVOX cylinders
- > Batches of up to 24x250 Bar/3625psi Sabre cylinders
- > Up to 4 x 250 Bar/3625 psi
- > Charging Carts with Mk12 Cylinders



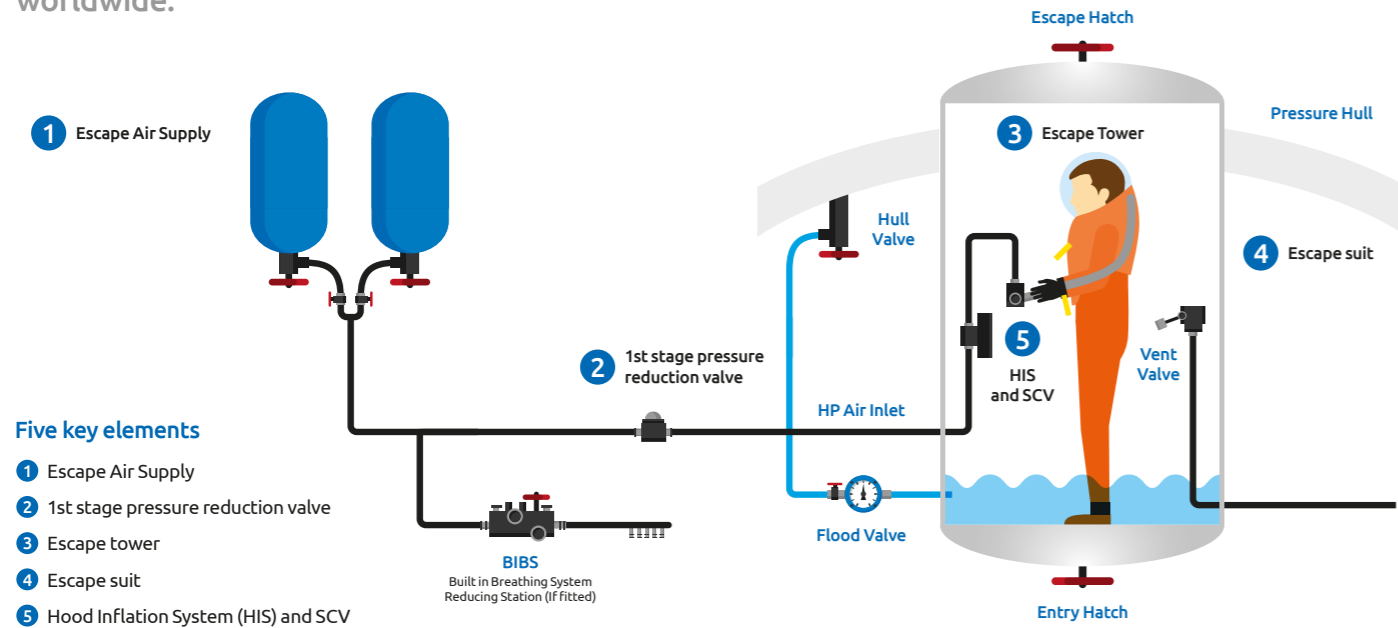
## Hood inflation systems (HIS)

A highly sensitive tracking pressure regulator that maintains the specified pressure differential (typically 1.9 psi).

18 different models supplied to navies worldwide.

### Three basic families:

- > Original HIS
- > Extended Life HIS
- > Reduced Flow HIS



### Five key elements

- 1 Escape Air Supply
- 2 1st stage pressure reduction valve
- 3 Escape tower
- 4 Escape suit
- 5 Hood Inflation System (HIS) and SCV



### Original HIS – 12 month service

Various models based on the SA154 and later SA656.

### Scheduled Upgrade Path

- > Return to HHV
- > Full inspection
- > Upgrade kit installed – Fit, Form & Function
- > Full factory acceptance Test
- > Return with approved certification – Extended life



### Extended Life HIS – 36 month service

Models based SA656 mk3 with modified features to extend service intervals.

### Recommended Practise

- > Once valves installed, static tests undertaken using HIS Test Set
- > Test repeated six months later
- > After 12 months' service, valves returned to base for re-calibration

### Current factory acceptance test at Hale Hamilton

- > Automated simulation of pressurisation cycle on single man escape tower
- > Full dynamic test to exercise valve across entire pressure and flow range
- > Normal in-service test of valve health involves HIS test set with orifice meter

### 3 year service interval

- > Synchronisation with typical 3 year intermediate docking schedule
- > Extended Operational availability
- > Reduced through-life costs

## Aftermarket Support

We provide outstanding global Aftermarket care with our regional through-life servicing. Our combined expertise, 24/7 support and customer-focus makes us the right partner to build the confidence you need to prosper.

Being a solutions provider and helping our clients maintain high productivity is at the core of what we do. A critical element is the Maintenance, Repair and Overhaul of our products. In our core industry,

operational and support costs can run extremely high and budgets are always under pressure. That's why it's important to have through-life support solutions tailored to each individual system, product and situation.

Our technicians provide a bespoke service based on the individual company's or authorities' requirements from provision of OEM spares kits through to full on-site operational support contracts.

### OUR SERVICES INCLUDE:



### Repairs

Focused MRO support so products are always in 'as new' condition.



### Maintenance & Service Contracts

To maintain optimum operational up time and performance we provide a range of on-site service support contracts including preventative maintenance inspection and service schedules plus remote performance monitoring capability on our system solutions.



### Spare Parts

Our spare component parts are genuine OEM-approved products.



### Field Service

We supply fully-qualified technicians in controlled environments to carry out your essential on-site repairs, maintenance and product training programmes.