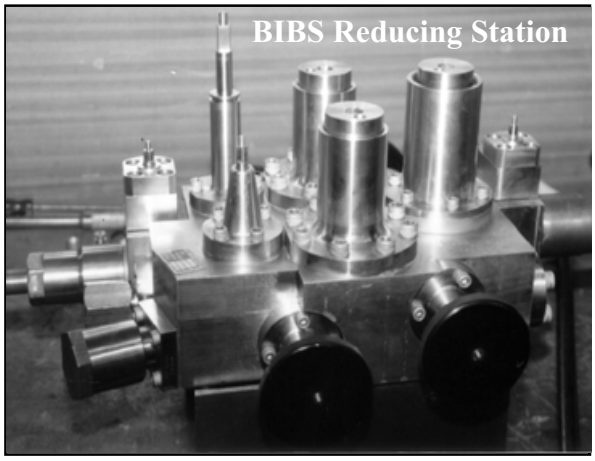
Emergency Breathing Air Systems

"Hood Inflation System"

H.I.S - The emergency escape system is designed to allow submariners to escape from a depth of up to 180m. Wearing a double walled watertight suit, the crew member enters an escape chamber. Within 30 seconds the chamber is flooded and pressurised to the outside water pressure. At the same time, the crew's suit is pressurised, via a 'Stole' valve to approximately 0.1 bar above the chamber pressure. The chamber is opened through the hull and the crew member escapes. Hale Hamilton supply both the HIS Pressure Controller and Stole Charging Valves.

"Built In Breathing System"

BIBS - The BIBS provides the submarine's crew with breathing air in an emergency. Supplied through an independent pipeline system, each crew member can rapidly connect his breathing air mask to any number of quick connectors. Hale Hamilton supplies the BIBS reducing station. When the station's diaphragm piercing valve is opened, air is supplied to the crew at a constant pressure over that within the submarine.



H.I.S

Through Life Support

Regular maintenance of these vital life support systems is essential. Hale Hamilton recommends annual refurbishment and calibration to ensure safe operation of its equipment. In conjunction with the UK Ministry of Defence, Hale Hamilton has developed a unique test facility for this purpose. After servicing, each HIS Controller is put through this test facility and its performance is assessed and recorded. The tests simulate escape from different depths. The computerised data collected is compared with the valve's technical specification and its previous test results. Only valves meeting the exacting performance criteria are re-certified.

In-Service with Navies Worldwide

Hale Hamilton's BIBS Reducing Stations & HIS Controllers are in-service world-wide, including: TRIDENT (UK); SSN (UK); SSK (UK); A19 (Sweden); Collins Class (Australia); Type 209 (Germany/ world-wide); Sauro Class (Italy); Walrus Class (Netherlands); Oberon (Canada), Ula (Norway), and all US Fleet Submarines (U.S.A.) to name but a few.

"Over 50 years Supporting Life Saving Systems"

For more information contact:-

HALE HAMILTON (VALVES) LTD

OFFICES IN UNITED KINGDOM • SINGAPORE • GERMANY

H.I.S - Technical Data - B.I.B.S

General Characteristics

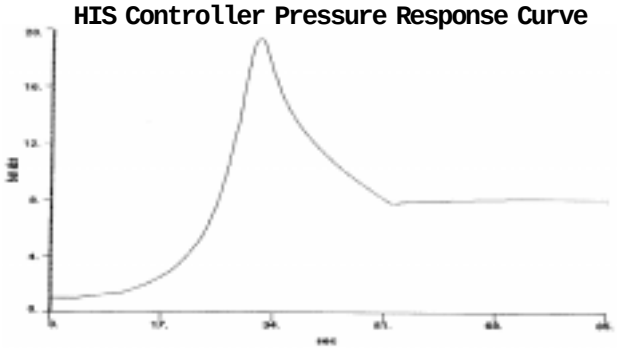
H.I.S - The HIS system valves comprises a pressure controller, charging connection and primary pressure regulator, together with other ancillary components. The main element of the system is the H.I.S Controller. This valve is mounted in the escape tower and tracks the rising pressure as flooding takes place. It must respond to the changing tower pressure, meeting the demand of the submarine escape immersion suit (SEIS) and maintaining a positive air supply to the escaping submariner.

BIBS - The BIBS system (panel or manifold form) comprises all the valves necessary to control the dedicated clean air supply used during a planned escape from a submarine.

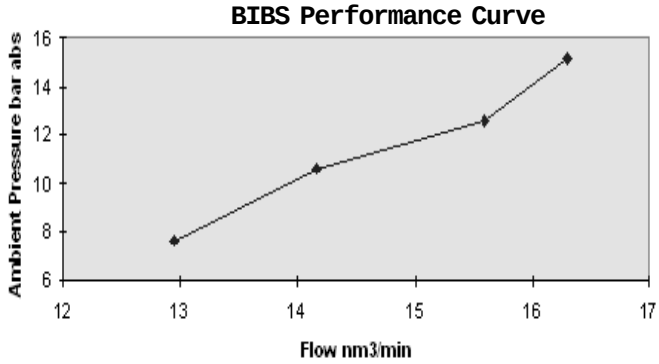
The system includes an extremely high integrity isolation valve to ensure the supply is available when required, a twin circuit regulation system for built in redundancy and a tracking safety relief control.

The complete system senses the compartment pressure, maintaining a constant positive supply to the escaping submariner.

HIS Controller Pressure Response Curve



BIBS Performance Curve

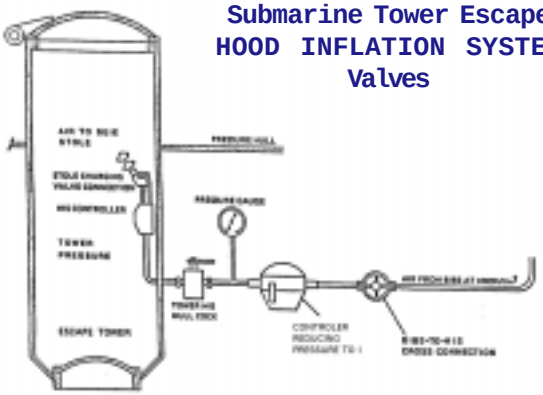


H.I.S

HIS Technical Specification

- Design inlet pressure 45 bar
- Design operating outlet pressure 34.5 bar
- Normal operating inlet pressure 27.5 bar
- Normal operating outlet pressure 0.13-1.8 bar
- Test pressure 69 bar

Submarine Tower Escape HOOD INFLATION SYSTEM Valves



MoD Approval - As developed with the UK MoD, all the escape system valves are individually tested under simulation conditions. In the case of the HIS system, this involves the SEIE and controlled tower flooding times to 180m depth. Each BIBS station carries certification for elevated ambient pressure acceptance testing. A validity period control is also maintained for the HIS system valves, coupled with on-going development and research programme.

Company Information

Hale Hamilton utilise the most up-to-date CAD / CAM methods for design and manufacture. State of the art CNC machining centres are extensively used, backed by conventional machining and traditional skills in support of the Company's commitment to Integrated Logistics Support (ILS). In addition to a dedicated Repair Section, an experienced Customer Support team is always available to inspect, install and commission equipment world-wide.

Quality Assurance

Hale Hamilton (Valves) Limited operates a Quality Management System accredited by LRQA to BS EN ISO9001:1994 - Reg No. 861113. Specific customer quality requirements can be accommodated. Equipment can be designed to conform to many major independent Approval bodies including; Lloyds Register of Shipping (LRS) and Germanischer Lloyds (GL), for example.

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