

Engineered Solutions



Consultation • Design • Manufacture • Support

Exhaust Systems & Accessories • SCR & DPF Aftertreatment • Environmental Protection

Hatches, Doors, Manholes & Portlights • Yacht Cranes & Davits

Prop-Shaft Systems • Noise & Vibration Control • Service Support



Pleasure Craft

Commercial

Superyacht



Halyard has been recognised as a leading provider of technical equipment for marine engine rooms since 1979. Today our product range extends beyond exhaust systems, for which we are renowned, to include hatches & doors, cranes & davits, propeller shaft systems, filtration systems, noise and vibration control equipment plus a range of other technical products.

Halyard originated as the UK distributor for **Aquadrive** - an antivibration shaft system that delivers the propeller thrust into the hull of the vessel rather than through the transmission and engine. Installing the Aquadrive dramatically reduces noise and vibration and is fully optimised with the engine being supported by softer engine mounts, reducing the transference of engine vibration to the vessels structure. Our pursuit of making boating more comfortable quickly added the supply of **Water-cooled Exhaust Silencers, Tube and Connectors, Lift Silencers** and **Noise Insulation** to our product portfolio reducing noise pollution and adding once again to onboard comfort.





As technical demands of our customers grew, we then added exhaust **Risers, Spray Heads, Supports** and **Thermal Jackets** as well as **Hoses** and **Bellows** so that we were able to provide a complete exhaust system. Along with this an **In-House Design** capability was setup so that **Custom Parts** and systems could be provided. Working with a wider range of customers and vessel applications then led us to add **IMS Dry Silencers** to our product range.

With an increasing product portfolio, we have attracted Distributors from all over Europe and further afield - we now have over 30 distributors, dealers and agents worldwide.

As regulations have tightened, we have worked with established industry partners including **Xeamos** to provide exhaust **SCR** and **DPF** aftertreatment solutions, along with **Wave International** products to tackle overboard discharges including **Bilge Water** and **Grey Water**.

Our growing reputation as a distributor of technical products has also added **Seatorque Shaft Systems, Freeman Hatches and Doors, Steelhead Cranes** and **Ucalsa Doors, Hatches and Manholes** to our distributed product line-up.

We are delighted to be representing such prestigious, high-quality products and are always careful to ensure that products we bring to market are aligned to our own high technical and quality standards.

To provide our customers with the necessary support we have also grown our **Service Operation** offering **Maintenance, Repair** and **Overhaul Support**, plus **Installation, Sea Trial, Commissioning** and **Audit Services**.

For further information on Halyard full range of products please visit www.halyard.eu.com

Partnering with our Customers

Since being founded, Halyard has provided its customers with world class exhaust systems, service and support. This has led to a reputation for understanding our customers' needs and partnering with them to ensure the solution supplied is optimised for their application and service life requirements.

With in-house design and manufacturing, we have complete control over the entire process for our exhaust systems and components.

We manufacture exhaust dry sections, silencers, separators and water injection spray rings from specialist corrosion resistant alloys and stainless steels.

Specialist GRP silencers and separators are constructed from filament wound composite tube and bespoke exhaust hoses and bellows are made of either Nitrile rubber, Silicone or Nomex depending on the requirement and to Lloyd's approved construction methodologies.

The following outlines our partnering approach:

- Initially we consult with our customers in detail to understand their requirements and the project objectives
- Once these are established and agreed we design to this brief, creating detailed drawings and models for customer review and approval
- We then manufacture all applicable components within our own Halyard facilities and procure any necessary parts to complete the system
- Depending on the customer requirement, our services can extend to installation support, commissioning and sea trials with the relevant documentation and reports provided



Consultation



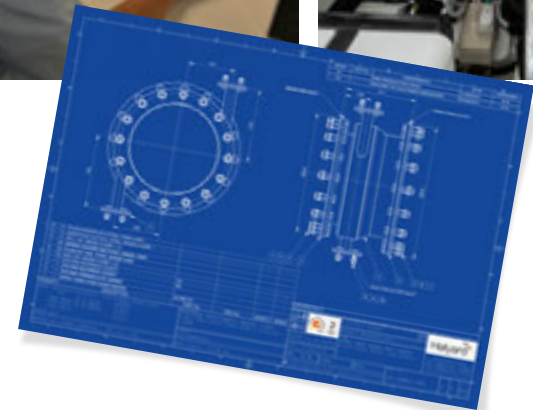
Understanding our customers' requirements and detailed specification is key to us developing the optimal final design. From the initial enquiry, the Halyard team work closely with our customers, listening and advising until everyone is satisfied that the design is agreed and budget requirement can be met within the project timescale.

The priorities of the owner; ship yard, yacht manager and designers are considered along with engine and generator installation and operational requirements; anticipated engine running hours and the Classification Society demands are all important inputs during this consultation stage to ensure they are all understood and met as the final specification and design emerges.

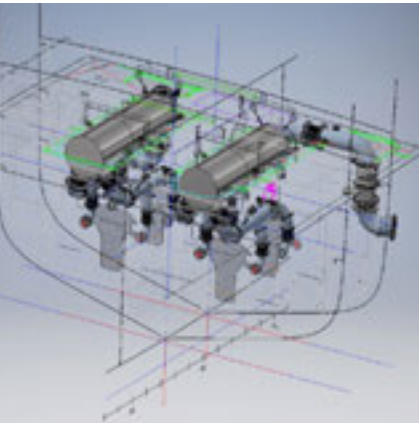
From this consultation we develop a timescale, a project plan, and a design brief for the required system.

This consultation process includes:

- Halyard scope of supply
- Identification of detailed system technical specification
- System space parameters
- Outlet positions and pipe runs
- Design, delivery, installation and launch schedules
- Vessel build / refit location
- Classification society requirements
- Customer team contacts
- Vessel and system inspection visits as necessary



Design & Manufacture



All Halyard components are produced following ISO 9001:2015 processes, and ensuring Classification Society compliance as required.

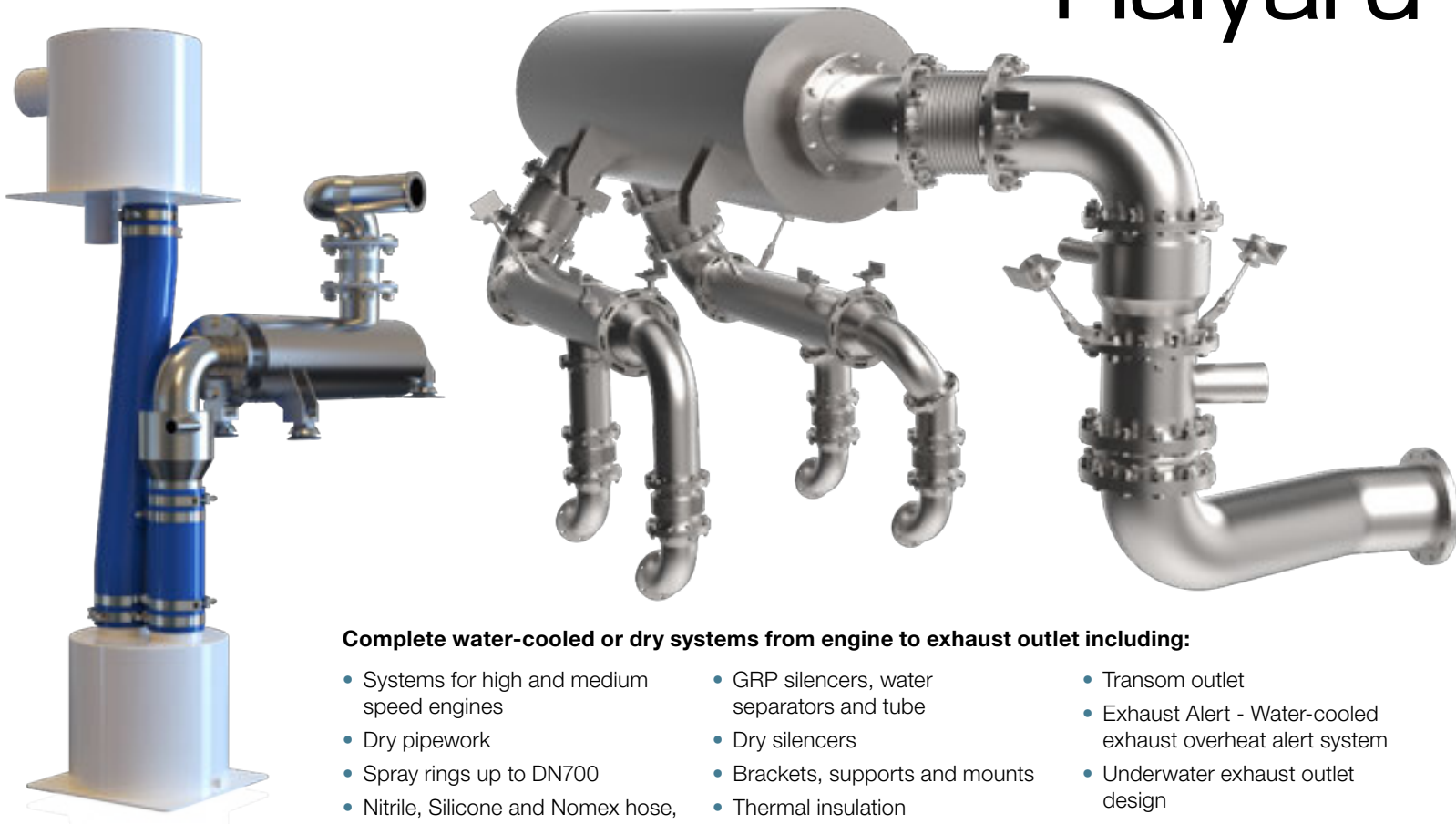


Following on from the consultation stage our team will begin to build the detailed system layout and the design of all associated components. We continue to liaise closely with the customer as questions emerge during this phase, be they engine related or vessel layout and systems considerations.

Agreement of the initial system layout is a key gateway in the process – a plan to which all parties commit and one which enables development of a specification against which the system design can be finalised, approved and manufactured.

The design and manufacturing stages include:

- System general arrangement 3D model
- Back pressures and safety considerations
- Silencer attenuation, and the way this fits to the overall objective
- Exhaust pipe runs
- Water injection spray ring design and positioning
- Water separation on generator systems
- Bypasses where below water outlets are involved
- Underwater exhaust outlet design
- Silencers, separators and connections
- Supports and mounts
- Bellows and hoses
- Thermal insulation
- SCR / DPF aftertreatment systems
- Customer approval
- Creation of manufacturing drawings
- Halyard in-house manufacture and procurement of all system components



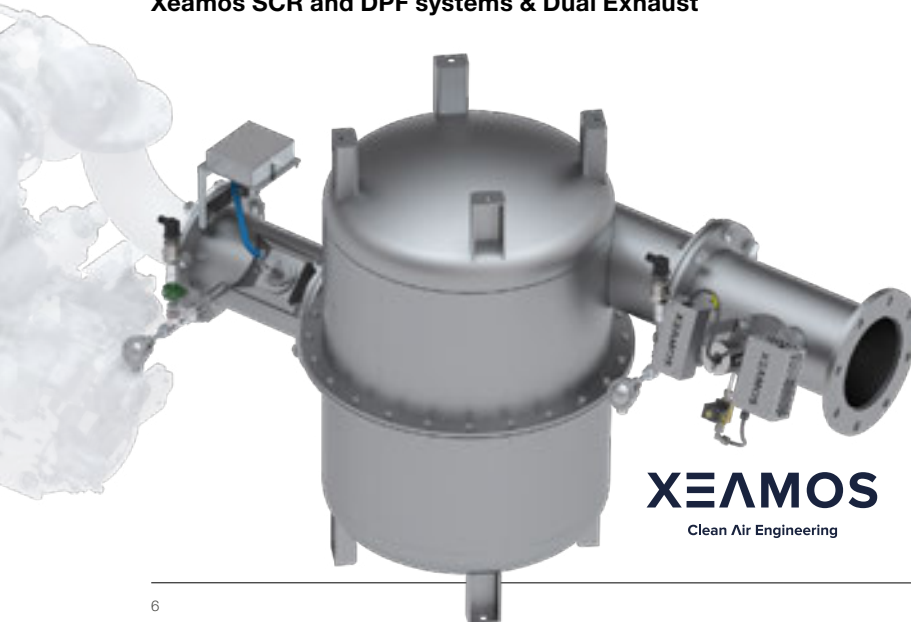
Complete water-cooled or dry systems from engine to exhaust outlet including:

- Systems for high and medium speed engines
- Dry pipework
- Spray rings up to DN700
- Nitrile, Silicone and Nomex hose, bellows and connectors
- GRP silencers, water separators and tube
- Dry silencers
- Brackets, supports and mounts
- Thermal insulation
- Transom outlet
- Exhaust Alert - Water-cooled exhaust overheat alert system
- Underwater exhaust outlet design

SCR & DPF Aftertreatment Systems

Customer requirements and vessel machinery spaces are many and varied. These range from the need to meet statutory emissions regulations, through to the requirement to eliminate soot from blemishing the deck of a luxury yacht. Along with this there is often the need to engineer the solution to make best use of restricted space. Whether for a commercial vessel or superyacht, new build or retrofit, Halyard work with the industry leading company Xeamos to provide the most suitable, optimised system for each project.

Xeamos SCR and DPF systems & Dual Exhaust



Aftertreatment Systems (DPF/SCR):

Xeamos is driven by technology to develop bespoke compact solutions that are optimised for every engine room. Engineering expertise and unrivalled knowledge of how best to reduce emissions is key. Meticulous planning of the design and implementation of engineering technology products is assured by an in-depth understanding of how applications work in practice. From thermal engineering and fluid dynamics to acoustics, every aspect of the physical principles involved is taken into account.

Xeamos Main Features:

- Particulate Matter (soot) reduction up to 97%
- NOx reduction up to 97%
- Safety bypass DPF (100% engine availability)
- Active regeneration (fuel burner or electric heater)
- Combined controller (up to 3 systems on 1 controller)
- Customizable
- Compact design (urea injector and mixing tube integrated)
- Closed loop system
- Integrated sound attenuation
- Certificate holder of most common engines, GDA and IMO Tier III EIAPP (refit & new build)

Please contact Halyard for further information and to discuss your specific requirements.



Dry Silencers - Reactive & Absorptive

UK based IMS are global leaders in noise reduction manufacturing absorptive and reactive exhaust gas silencers, air inlet & extract attenuators.

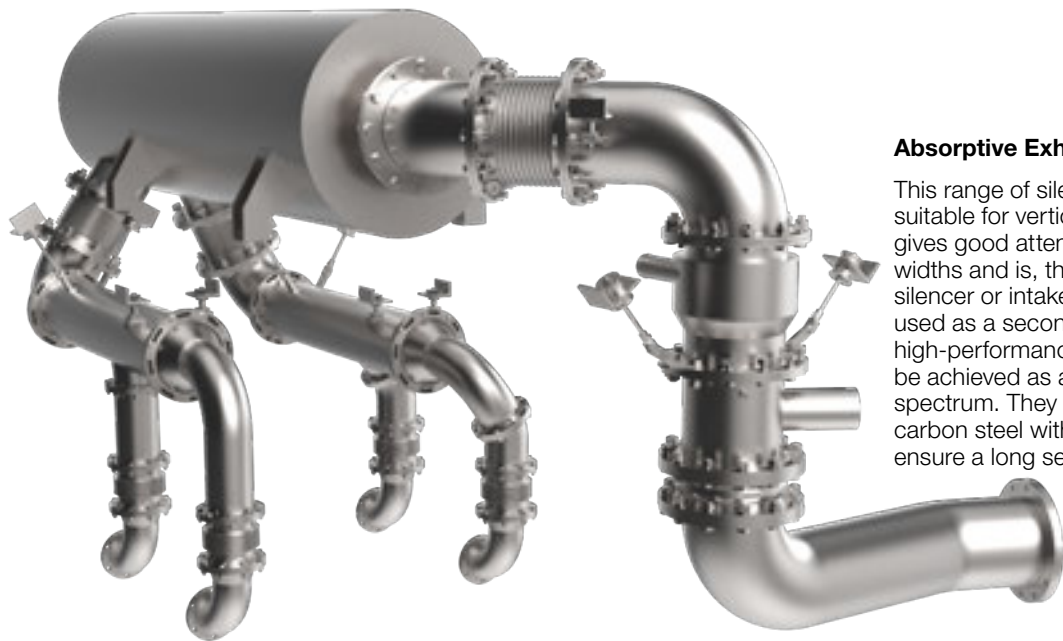
Reactive Exhaust Gas Dry Silencer

This range of reactive silencers are designed primarily for use with internal combustion engine exhausts. The units can be installed vertically, horizontally or inclined, without affecting performance. They are of fully welded design, sturdily constructed in carbon steel with a heat resisting aluminium or black paint finish to ensure a long service life. All units are fitted with drain points to remove exhaust condensate. The acoustically treated MA type silencer increases the higher frequency performance by up to 10dB(A), reducing casing breakout as well as lowering the surface temperature. The units can be used where good overall acoustic performance is required without a secondary or terminal silencer.



The most common silencers sold by Halyard into the marine industry are the M31/MA31, M51/MA51 and FP ranges. There are, however, also the M21/MA21, M41/MA41, MRA1/MAA1, MRA2/MAA2, MRA3/MAA3, MSA & BTS ranges with different configurations and specifications available on request.





Absorptive Exhaust Gas Dry Silencer

This range of silencers are straight through absorption type, suitable for vertical, horizontal or inclined installations. The design gives good attenuation in the higher frequency octave bandwidths and is, therefore, versatile in its application as an exhaust silencer or intake silencer on internal combustion engines. When used as a secondary or terminal silencer in conjunction with a high-performance reactive silencer, stringent noise limitations can be achieved as a result of their complementary effect on the noise spectrum. They are of all welded design, sturdily constructed in carbon steel with a heat resisting aluminium or black paint finish to ensure a long service life.

- Options for both reactive and absorptive silencers:
- BS10 Table 'D' flanges fitted as standard
- Alternative flange patterns on request for example PN flanges
- B.S.P. connections available on smaller sizes
- Radial/axial Inlet & Outlet
- Heat resistant aluminium or black paint
- Shot blast and aluminium metal sprayed Stainless steel grades such as 304 / 316 available

- Corten steel
- Support feet and brackets
- Anti-vibration mounts
- Lifting lugs
- Spark arrestors
- Thermal Insulation Jackets / Stainless Steel Cladding
- Marine Classification Certification



Full Bespoke System - Motor Yacht

Complete systems including: Risers, Compensators, Spray Heads, Supports, Hoses, GRP Silencers, Silicone Bellows and Overboard Outlets with Grey or Black Thermal Jackets



Full Bespoke System - Commercial Vessel

Risers, Compensator, Spray Heads, Thermal Jackets, Supports, Hoses, Silencers and Overboard Outlets

Rubber Design



A comprehensive range of antivibration mounts, flanged bellows & bulkhead penetrations.

Rubber Design are global leaders in noise, vibration and shock control solutions for the worldwide marine market. Halyard is an authorised reseller of Rubber Design antivibration exhaust equipment. Halyard have a long-standing partnership with Rubber Design utilizing their products in Halyard exhaust systems and other applications. We can also offer these as standalone products to meet customer requirements.

- Significant reduction of vibration into the vessel structure from the engine including through the exhaust system
- Specification and design support to ensure correctly specified and efficient systems
- Over 40 years of experience in vibration, noise, and shock control



Hatches



Freeman Cast Hatches

Freeman Hatches, Doors & Portlights deliver reliability, safety and more features than any other manufacturer.

Reliable **Solutions**, Superior **Quality** & World-Class **Support**.

AdvanTec Marine's Freeman hatches are used on a wide variety of commercial vessels, rescue craft, and yachts around the world.

The Freeman hatch is designed for new boats, or replacing other hatches in standard openings, or for improving existing craft.

The hatches are fast acting and easy to use. Simply grasp the handle and pull, the shaft slides into place, and with less than a quarter turn, completely disengages the locking mechanism. The dogs and linked handle do the work smoothly in just a second.

Our easy lift system allows simple removal. With the locking mechanism disengaged, the hatch is resting on the deck ring and can be lifted out with one hand.

- High quality range of cast Aluminium and Ductile Iron hatches
- Watertight hatches, designed to seal up to 30' (9.144 metres) intermittent head, the double-sealing gasket seals tighten under pressure
- Handle is always attached and fits flush with the deck
- Quick-acting dogs eliminates over or under tightening
- Options include a built-in drainage system to prevent water entering the compartment when opened
- Versatile installation, hatches can be installed in steel, aluminium, wood, or fibreglass decks
- Marine Class approvals and Certifications





Cast Hatches

Freeman Cast Hatches, deliver reliability, safety and more features than any other manufacturer.



Watertight Hatches

Freeman Marine's Watertight Hatches are class approved, manufactured in marine grade aluminum, A36 steel or 304/316 stainless-steel.



Military & Commercial Closures

Engineered to meet the rigorous standards of the Naval Sea Systems Command (NAVSEA) for water and fire resistance, shock and vibration resistance, and long-term durability.



Premium Yacht & Commercial Vessel Doors & Glass

Whether it's aluminium, steel, stainless steel, or light weight carbon fibre composite marine doors, Halyard are your first source for sales, support and supply of AdvanTec marine doors.

Premium Quality Defence & Commercial/Workboat Doors & Hatches

- Classed vessels
- Rollover rescue, navies, specialized commercial boats

Quick Availability Doors:

- Selection of watertight and weathertight doors
- Stock items, ready to ship
- Guaranteed quality products
- Hinged and sliding



Custom Made Doors



Ucalisa was established in 1986 and has evolved into a major manufacturer of weathertight, watertight, and fire rated doors, hatches and manholes supplying its products across Europe and further afield.

Halyard are the Ucalisa distributor for the UK and Ireland for their bespoke weathertight, watertight and fire rated doors, hatches and manholes. These are made to suit the customers specification rather than from a standard range. This differs from Freeman Marine who make an extended range of standard products with a selection of options. With a modern factory spanning more than 10,000 square metres equipped with the latest equipment and with in-house design, Ucalisa specialise in bespoke solutions optimised to suit the customers specifications.

Bespoke Made to Order Doors, Hatches & Manholes

- Weathertight
- Watertight
- Fire Rated
- Available with a broad range of options including Marine Classification Approval

Available in:

- Marine Grade Steel
- Stainless Steel
- Aluminium



UCALISA

External doors built in accordance with Standard NS 6091 or designed as required and fire rated MED and UKCA certified A0, A15, A30, A60 watertight doors.

Hatches & Manholes

Ucalsa manholes built to recognised standards such as: NS6261, NS6262, NS6263 and NS6270; NAE standards: 64524, 64527, 64530 and 64531; or shipyard's own standards.



Flush hatches or with a coaming, available with various watertight configurations according to customer requirements.

Built to Ucalsa's own standards, complying with applicable regulations such as ISO12216 and regulations of various marine classification societies.



UCALSA

Materials:

- Naval sheet metal
- Aluminium
- Stainless steel

Options include:

- Multiple closing & locking systems
- Internal & external hinges
- Insulation
- Flame-retardant / intumescent seals
- Paint & other finishes
- Marine Classification Approvals



Yacht Cranes

Halyard

Steelhead Marine High Performance Yacht Lifting Equipment

Steelhead Marine's elegantly designed, high-tech cranes are renowned across the yachting industry, but their ambitions stretch even higher. Through persistence, innovation, and hard work they are aiming to become the leader in advancing hydraulic solutions for the yachting world.

With strong leadership and a dynamic workforce, Steelhead is working to take their innovative products to the next level of sophistication. A diligent sales, engineering, design and build process combined with a close working relationship with their clients ensures Steelhead products will be at the forefront of innovation in the global yacht market.

- Engineered for performance
- Greater lift capacity with reduced crane weight
- Superior engineering and advanced materials
- Durability, strength and reliability
- Compact and attractive design that puts less space and weight demands on your yacht
- Easy to use



2 year industry leading warranty

An optional 3rd year limited warranty with approved commissioning by certified AdvanTec technician



STEELHEAD
MARINE

Seatorque Shaft Systems

Developed over twenty-five years and fitted as standard equipment to a growing number of globally recognised builders, the Seatorque 'BOSS' (Bolt On Shaft System) offers a multitude of noise and vibration, fuel consumption and delivered power benefits.

Features & Benefits

The enclosed shaft arrangement eliminates turbulence and drag, referred to as the 'Magnus Effect', so the water flow to the propeller is far less disturbed compared to a shaft spinning in open water. Inefficiency and drag created by cutlass bearings and shaft misalignment are also eliminated.

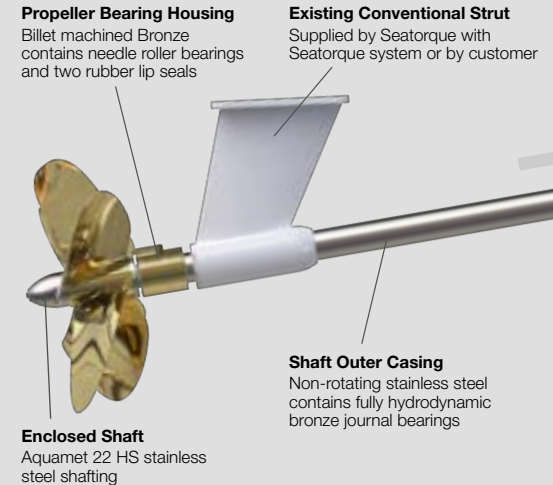
The system is completed with Cardan shafts connecting the Seatorque system to the transmission reducing the need for very accurate and time-consuming engine alignment. An oil reservoir located in the engine room allows easy monitoring of the oil level.

Conventional shaft installations rely on anti-vibration mounts to absorb engine and transmission vibration as well as propeller thrust. The Seatorque system removes the thrust from the mounts so they can then be optimised for absorption of engine vibration and torque, reducing the transmission of vibration into engine beds and the vessels structure.

The combination of taper and needle roller bearings, the non-rotating full-length shaft casing, the resiliently mounted thrust bearing and strut, and the optimised engine mounts all contribute to the very significant reduction of noise and vibration, typically over 50%

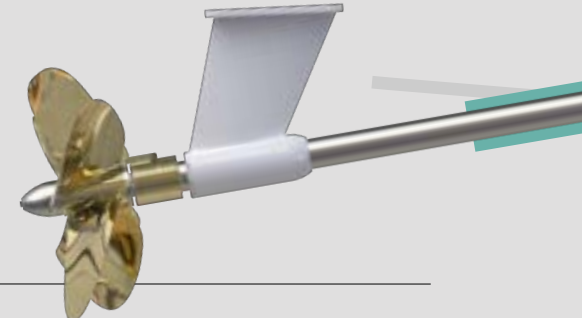
In addition, the reduction of mechanical losses to only 2%, thus providing valuable extra power for propulsion, and fuel consumption reductions in the region of 8%, as verified across a number of in-service case studies, are very valuable considerations when specifying your shaft system.

STM3 Enclosed Shaft System



ST Series Tube Style System

This typical layout example mirrors the above STM3 system but is for through hull shaft tube systems.





Halyard

Inner & Outer Urethane Sealing Rings

Absorbs vibration and seals hull/shaft penetration eliminates need for stuffing box and dripless or conventional shaft seal

Shaft Coupling / Companion Flange

Machined to accept universal joint assembly

Mounting Isolator - Through Hull Assembly

Cast bronze or billet machined stainless steel

Double Universal Joint Driveline Assembly

Cardan Shaft system eliminates alignment issues. Single or multiple shafts supplied to suit installation.

Thrust Bearing Housing

Contains forward and reverse taper bearings, all rubber lip seal, oil pump and connections to oil reservoir, anodized aluminium alloy

Hull Propeller Shaft Tube

Glass tube type hull penetration bonded to thrust bulkhead

Mounting Isolator Housing

Bolted to thrust bulkhead anodized aluminium alloy absorbs vibration and seals hull/shaft penetration

- The Seatorque system is a self-contained shaft and thrust bearing assembly supplied as a complete unit from the transmission output coupling to the propeller shaft end
- An oil-filled stainless-steel tube, in which the propeller shaft rotates supported by roller bearings, hydrodynamic journal bearings, and thrust bearings reduces drag to an absolute minimum
- The thrust bearing housing, at the inboard end of the tube, bolts to the hull transferring thrust from the propellers to the vessel structure and not through the transmission and engine
- Flexible isolators located between the Seatorque system, the vessel's hull, and the strut absorb thrust loads as well as significantly reducing noise and vibration
- Significant reduction of noise and vibration from engines, shafts and propellers
- Alignment issues eradicated
- Reduced installation times
- Mechanical losses reduced to 2% total
- Up to 8% reduction in fuel consumption and increased delivered horse power
- Reduced underwater drag



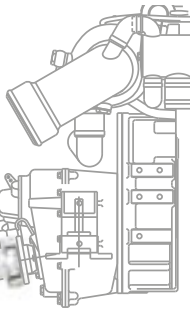
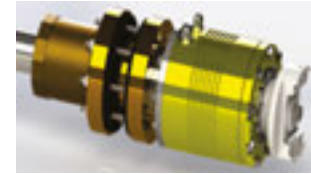
MX Series

Additional Benefits of all Seatorque Propulsion Systems

- Designed to handle power suitable for vessels from 30 Feet to 200 Feet, with no need for high cost of ownership, and often complex, multi-engine and drive packages
- All Seatorque propulsion systems are Joy Stick compatible
- Builders enjoy simplified and dramatically reduced installation times.
- End users enjoy a silky smooth, whisper quiet ride, improved operating efficiency and range, plus easy maintenance cycles; with rugged reliable operation
- Popular options include Seatorque's Bio-Mar fully biodegradable Oil; QuickKutter line cutters, extended warranty packages and more
- All equipment is fully supported by our worldwide network of sales and service professionals, and backed by Seatorque's International 2-year Limited Warranty

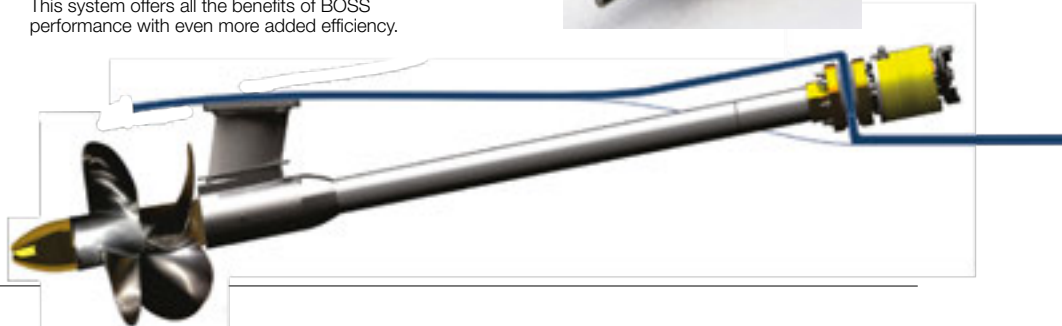
MX1 BOSS-Lite System

Seatorque's thrust bearing and Isolator technology mated to traditional shafting. This system offers many of the benefits of Seatorque's patented technologies. Perfect for retro-fits as well as new construction.



MX2 BOSS-Lite System

A new concept in the field of dual, counter rotating propellers with no horsepower restrictions. MX2 is a fixed shaft application, and an extension of the patented BOSS oil lubricated technology. This system offers all the benefits of BOSS performance with even more added efficiency.



Aquadrive System

Aquadrive offers a wide range of models up to 1500hp to suit main yacht propulsion systems and vessel tenders.

The Aquadrive antivibration system will help you, and your crew, enjoy the peace and quiet of boating. By isolating the engine from the rest of your boat, noise and vibration are greatly reduced. Most installations result in a 50% or more reduction in interior noise and vibration. Aquadrive will also help to keep your driveline in good condition by minimising wear and tear on the transmission and mounts.

The propeller shaft is aligned to an Aquadrive thrust bearing, which absorbs the propeller thrust. A Constant Velocity (CV) shaft transmits engine power to the thrust bearing and propeller shaft. The CV shaft automatically adjusts to changes in the alignment between engine and thrust bearing and allows engine movements in every direction. Unlike standard installations, periodic realignment is not required. The use of softer engine mounts, which isolate engine vibration from the hull, completes the system. Aquadrive antivibration system creates the necessary conditions for a smooth running, quiet boat.

- Cabin & cockpit noise and vibration reduced by 50% or more
- Propeller thrust transmitted to the hull reducing load on transmission and engine mounts
- Improved isolation of the engine from the hull structure
- A range of shafts and engine mounts also available



aquadrive[®]
antivibration system

Wave Filtration Systems

Wave MiniBOSS - Bilge Filtration

MPEC 107(49) Certified bilge filter system giving effective control and prevention of oily bilge water discharge using Wavestream System 3 filters.

- Wave MiniBOSS with Wavestream technology removes trace oils to less than 5 ppm, keeping within the IMO required 15 or 5 ppm levels
- IMO Certified Oil in Water Monitor with 18 month data logging, 2 models available
- Wave MiniBOSS maximum flow rate 0.50m³/hr
- Compact, light and easy to maintain with Wavestream high capacity cartridges



Wavebrite - Grey Water Filtration

Wavebrite discharge meets EU Council Directive concerning waste water treatment (91/271/EEC).

- Wavebrite removes the polluting components in grey/ waste water, significantly reducing pollution and protecting the environment
- Wavebrite has five main components with four stage waste water filtration; main Wavebrite module, pre-filters, pump, pump strainer and control
- Pump with automatic control, no holding tanks or pump out required
- The components are modular and can be located separately, connected by flexible hose for ease of installation
- Basic models have 15l/min maximum flow rate with an option to increase available on request
- The Wavebrite Grease Trap is a useful addition to any Wavebrite system when processing galley waste water. It removes food waste, fat and grease which helps prevent solids forming in the system and extends the life of the Wavebrite module and filter cartridges.



Wave range of filtration systems:

Wavestream bilge filter systems | **Wavebrite** waste water filter system | **Flostream** drinking water filter system
Prostream watermaker filter protection system | **Waveair** holding tank vent filter system | **Waveshine** wash & rinse system

Acoustic Enclosures



Halyard offer a range of generator enclosures designed and built in-house and manufactured to suit the particular engine / generator model and installation requirements.

The standard specification for these acoustic enclosures includes the following but other options are available on request:



- Modular Aluminium frame
- Removable and fixed Aluminium panels to suit and allow for service access
- All panels internally lined with Halyard noise insulation materials
- Base frame skid with optional integrated fuel tank
- Cut outs to facilitate service connections
- Cooling fans
- Mounting to accommodate generator manufacturers control panel

Please contact Halyard for further information.

Service

To ensure reliable operation and long service life of onboard equipment, it is critical that regular inspection and maintenance is carried out. To support this Halyard is able to provide its customers with the high level of support required with our service operation providing both field based and workshop support.

This service is available both in the UK and overseas from our own support engineers and also through our network of distributors and dealers.

We offer: Health Checks, Maintenance, Repair, Overhaul, Equipment Replacement, and Sea trial services for all Halyard supplied products but also for other selected onboard equipment. Service support includes but is not limited to the following:

- Exhaust systems
- Steelhead cranes
- Freeman hatches & doors
- Aquadrive antivibration systems
- Seatorque shaft systems
- Conventional shaft systems
- Other select vessel equipment on request

If you have the requirement for any of the above services, please contact us to discuss your detailed requirements.

Contacts:

service@halyard.eu.com

Landline: +44(0)1722 713717



Support



At Halyard we fully recognise the importance of aftermarket support, providing our customers with timely response to minimise any impact to their vessel operation.

Halyard products are supported by a comprehensive two-year limited global warranty as standard. Service support is provided by Halyard and our distributor and dealer network.

In addition to an extensive stock of standard products Halyard retain manufacturing drawings for all products supplied relating to each specific project. This guarantees the supply of identical replacement parts quickly and efficiently, without the need for the return of the original part.

Halyard aftermarket support includes:

- Email and telephone technical support
- Support with rapid replacements of components from our standard products stock
- Drawing archives giving us immediate access to manufacture bespoke components
- Field support and consultation services





Halyard (M&I) Limited
86 Cobham Road, Ferndown Industrial Estate, Wimborne, Dorset BH21 7PQ, UK

technical@halyard.eu.com
service@halyard.eu.com
www.halyard.eu.com
+44 (0) 1722 710 922

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