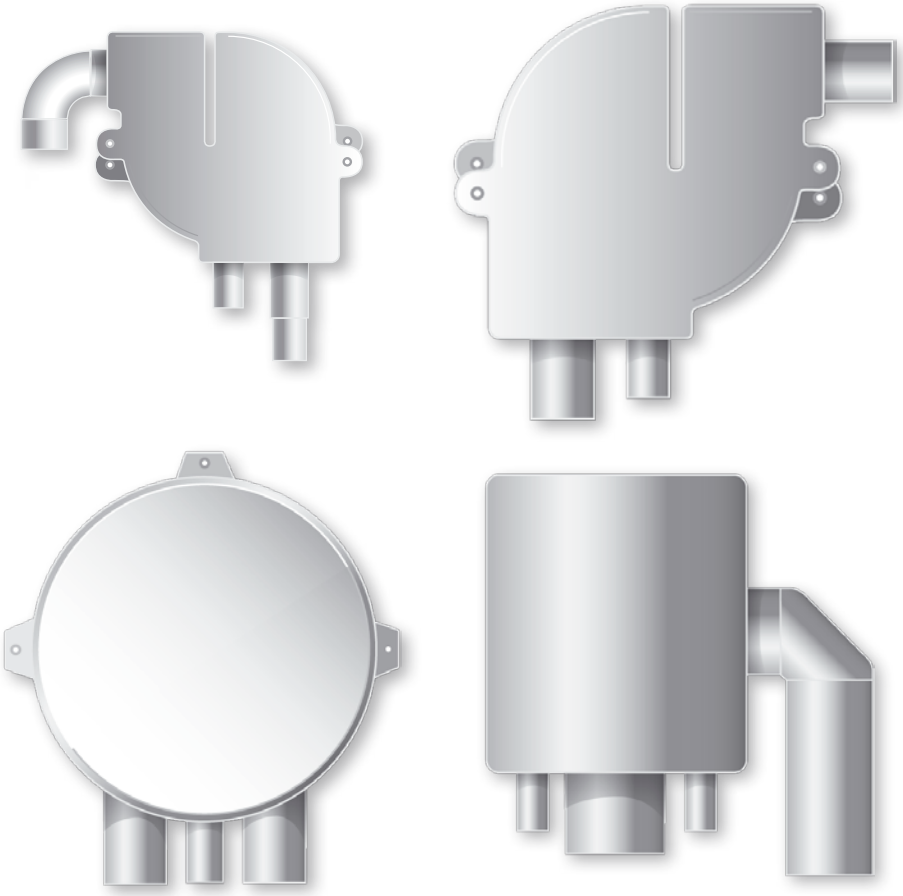
Halyard

Halyard Water Separators

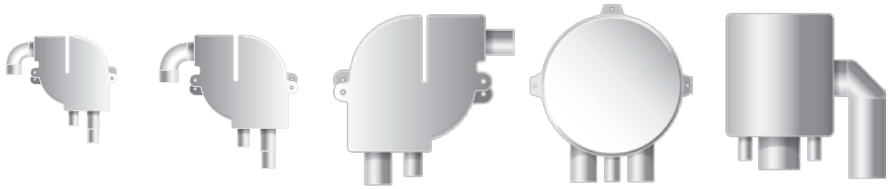
Model Series MS4000, MS5000, MS7500, HFS & HWS



Installation & Operating Instructions

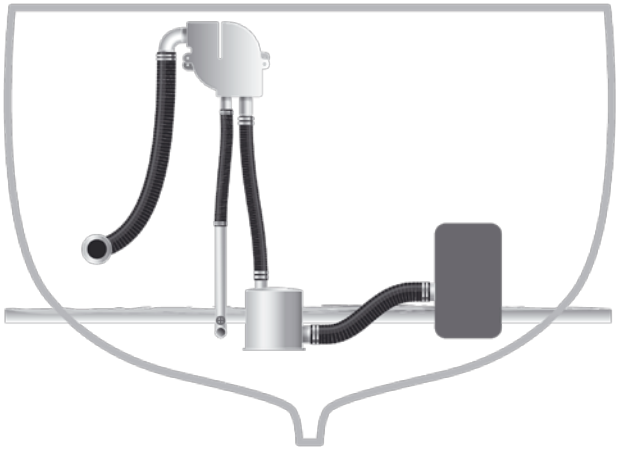
Halyard Water Separators

Thank you for purchasing a Halyard Water Separator. Correct installation is vital to safety, and to avoid back-flooding water into the engine or generator. The following information will help achieve correct installation and ensure a long life for the product. Please seek our help and advice if you have any doubts or questions. The installation of a marine exhaust system should be undertaken only by persons experienced in this task.



MS4000 **MS5000** **MS7500** **HFS Series** **HWS Series**

General Arrangement



This general arrangement shows exhaust gasses and water entering the watertrap silencer, which is at a lower level than the exhaust outlet on the engine (see silencer fitting instructions for detail), and then rising to the Halyard Water Separator. The separator needs to be positioned well above the watertrap, and there must be a vertical rise of at least 450 mm (18″) between the two. It is better to position the Water Separator vertically above the watertrap silencer, but it will perform satisfactorily if it is within 500 mm of the vertical position provided there is a rise of 450 mm. There must be no sharp bends in the hose from the lift silencer to the separator. The separator must also be positioned generously above the heeled waterline of the vessel. This dimension will vary between craft, and with the distance off the centreline on which the unit is positioned. Seek professional advice if in doubt.

As a general rule on smaller craft the separator must be at least 450 mm (18″) above the maximum heeled waterline and a maximum of 1.6 m above the base of the silencer.

Maximum Water Flow Rates and Exhaust Sizes

Halyard separators and designed to be used with the following cooling water flow rates:-

Separator Model	Drain Size	Max. Cooling Water Flow Rate
MS4000	38 mm	18 Litres per Minute
MS5000	38 mm	42 Litres per Minute
MS7500	50 mm	60 Litres per Minute
HFS	50 mm	65 Litres per Minute
HWS	2 x 50 mm	225 Litres per Minute

Raw water flow rates are the maximum at which full separation will take place. These will vary with exhaust gas flow and are not fixed numbers. It may be possible to exceed these flow rates with a slight reduction in the volume of water separated. Please check at Techhelp@halyard.eu.com or +44 (0)1722 710922 for details.

Hose Connections

Inlets and outlets on water separators are provided as follows:

MS4000 series

- Inlet and Outlet provided at 40 mm

MS5000 series

- Cut inlet to suit hose diameter. 5000 series is available with 45 mm, 50 mm, 60 mm and 63.5 mm. Outlet is 50 mm in all cases.

MS7500 series

- Inlet and outlet provided for 75 mm (3″) hose.

HFS series

- Built individually for particular exhaust hose sizes

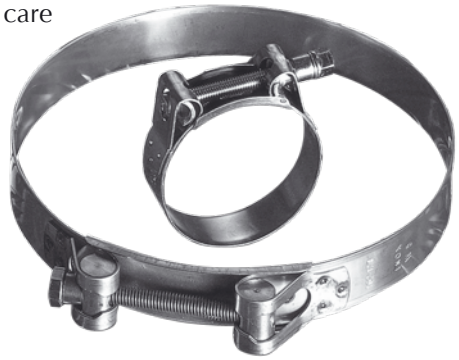
HWS series

- Built individually for particular exhaust hose sizes

Hose Types and Clamps

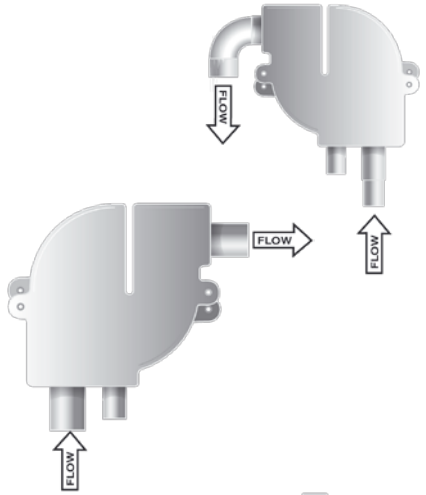
The Halyard Separator must only be used with marine diesel exhaust hose, preferably with a Lloyds Type Approval mark. The hose must be double clamped using high torque exhaust hose clamps of the type shown, as conventional hose clamps may not have sufficient strength to compress reinforced marine grade exhaust hose.

Clamps should be tightened with care remembering that there is a danger of crushing the plastic spigot inside the hose.



Flow

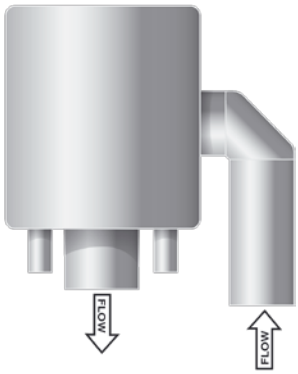
The MS4000, MS5000 and MS7500 **MUST** have gas flow in through the large spigot on the bottom, and flow out through the spigot higher up at the side. To change from left hand outlet to right hand outlet, simply mount the unit the other way around. Water drains from the 38mm spigot underneath on the MS4000 and MS5000 model (50 mm (2″) o.d water drain on the MS7500).



The HFS series inlet and outlet are reversible. Either of the large tubes can be used for gas flow in or gas flow out. The centre outlet, normally 63.5 mm or $2\frac{1}{2}$″, provides the drain.

The HWS series must be used with the cranked side spigot as the gas inlet and the large bottom spigot as the gas outlet as shown here.

Two drains of 50 mm (2″) are normally provided in the position shown.

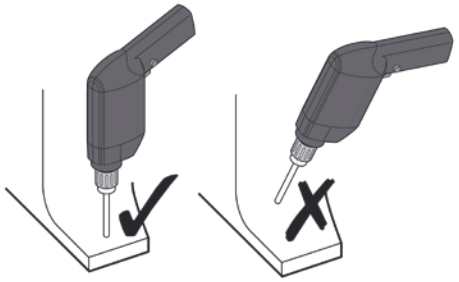


Any separators not using the part numbers starting MS, HFS or HWS may have purpose built layouts. Please check at Techhelp@halyard.eu.com or +44 (0)1722 710922 for details.

Attachment

MS4000, MS5000 and MS7500 have mounting tabs allowing them to be mounted facing either right or left. Screws suitable for the type of surface should be used.

HFS series have a circular flange for attachment holes, which **MUST NOT** be drilled through the laminate overlay which attaches the body to the back plate. Screws suitable for the type of surface should be used, with penny washers to spread the load on the GRP surface. The unit must not be positioned in such a way that the inlet and outlet spigots are strained by hose bent through angles. In this situation fabricated bends must be used, and the hose must be bracketed directly to the bulkhead, removing strain from the separator spigots.



All units must be secured to a perfectly flat surface. Any unevenness on the surface will lead to the mounting tabs being strained, potentially causing damage and fracturing the unit.

HWS series is designed to be supported on a frame or with strapping around the body.

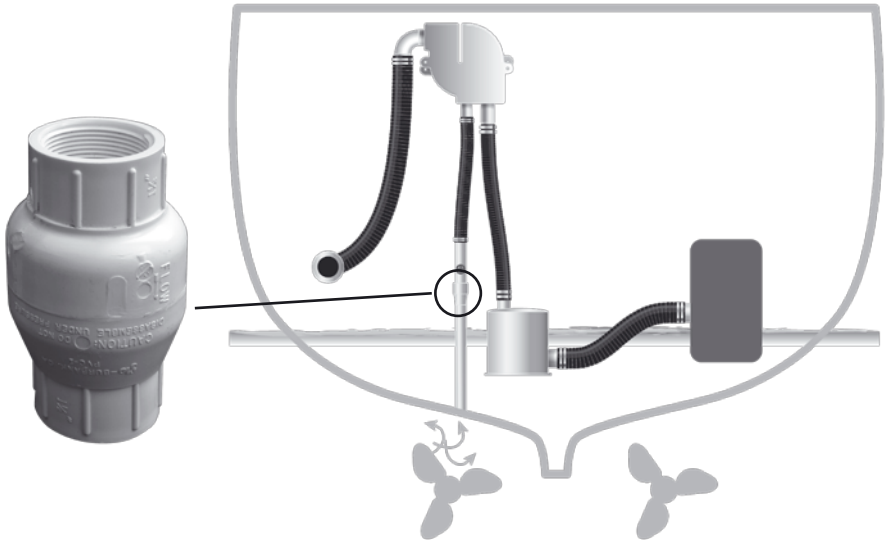
Gas Exit

The gas exit hose should be run aft from the separator unit to exit at least 50 mm (2″) above the heeled waterline. The hose can run up and down but must never run at a higher level than the base of the separator. It must exit the hull at a lower level than the base of the water separator with an average downwards gradient of at least 1 in 10.

The water drain hose must be connected to the 38 mm (1½″) spigot on the MS4000 and MS5000 models. 50 mm (2″) drain hose is used on the MS7500. The HFS and HWS units are provided with varying drain diameters. The drain hose must be connected to a sea-cock, and must be taken through a hull skin fitting not less than 100 mm (4″) below the waterline. The following Warning is vital.

⚠ WARNING

The exit must be positioned in a place where sea-water will not be forced up the pipe by the motion of the craft moving through the water, or by turbulent water adjacent to a propeller or engine exhaust outlet. You are at particular risk if you position the outlet above or aft of a propeller, or engine pod drive such as the Volvo IPS unit, or aft of an underwater outlet for the main engine exhaust. All cause serious turbulence which may force water back up the exhaust. If there is any risk of this a non-return valve (contact Halyard for details) must be used.



Care and Maintenance

The separator needs no maintenance beyond an occasional wipe with a soapy cloth. Solvents must not be used. There are no parts requiring service within any of the separators covered by these instructions.

Halyard Specialist Silencers - Non-standard Installations

Halyard manufactures a whole range of specialist silencers and separators as well as a range of noise control materials, flexible couplings, engine mounts etc. The separator range is designed for use in straightforward generator and propulsion engine installations with exhaust systems up to 150 mm (6″) diameter.

Halyard

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