Halyard

Established **1979**

Engineered Solutions

Quieter, cleaner and more efficient systems

- Exhaust Systems & Accessories
- SCR & DPF Aftertreatment
- Yacht Cranes & Davits
- Hatches, Doors, Manholes & Portlights
- Prop-Shaft Systems
- Noise & Vibration Control
- Environmental Filtration Solutions
- Service Support



Manufacture, Distribution & Support



Global Brands & Expertise



Engineered Reliability



Solutions for all Types of Vessels



Quieter Operations



Cleaner Performance

EMISSION CONTROL By Emtnox

SEATORQUE MARINE PROPULSION

VCNLSN

FM FREEMAN MARINE EQUIPMENT

SM STEELHEAD MARINE

IMS

wave International

Rubber Design vibration and noise control

CONSULTATION | DESIGN | MANUFACTURE | SUPPORT

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The information published by Halyard indicates the general suitability of our products for the types of applications for which they are designed. We cannot accept design responsibility for any specific installation unless we have confirmed in writing that the overall installation design is correct following our approval of detailed drawings or our physical survey of the vessel or equipment in which it will be used.

Halyard







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.

From our inception the focus has been on making boating more comfortable and alongside other products we soon 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 to provide exhaust **SCR** and **DPF** aftertreatment solutions, aftertreatment solutions and have a formal relationship with **Eminox**. **Wave International** is a long standing partner whose products include filtration systems for **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**

Lloyd's Register



Halyard





HALYARD EXHAUST SYSTEMS & ACCESSORIES

Water-cooled or dry systems, standard or bespoke risers, spray heads, silencers, separators, DPF & SCR aftertreatment solutions



Standard product range:

- GRP silencers, separators, tube & connectors
- Moulded silencers & separators
- Rubber & silicone hose, bellows & connectors
- Through-Hull Exhaust Outlets
- Clamps, supports & accessories

Bespoke solutions:

- Designed to meet customers requirements
- Water-cooled or dry silencers
- Solutions for all high & medium speed engines
- DPF & SCR solutions
- Lloyd's Type Approvals
- Underwater exhaust outlet design

Please refer to the Halyard Exhaust System Installation Manual

Halyard Exhaust Systems & Accessories

Halyard UK Manufacturing Facilities



Halyard products including stainless steel risers, water injection spray heads, exhaust transom outlets, supports, high temperature GRP silencers and separators, tube and connectors, marine exhaust hose, silicone hoses and bellows are designed and manufactured in-house at our UK manufacturing facilities.

As a result Halyard are uniquely placed to be able to design and manufacture market leading exhaust systems and components to meet your exact requirements.







Halyard Automated Hose Making Lathe

Design & Manufacturing







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

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
- Risers & spray heads
- 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

Halyard Exhaust Systems & Accessories

Exhaust System Examples



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 - Search & Rescue Vessel

Risers, Spray Heads, Thermal Jackets, Supports, Hoses, GRP Silencers, Silicone Bellows and Overboard Outlets



Full Bespoke System - Commercial Vessel

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



Full Bespoke System - Motor Yacht

Halyard 'Heatshell' Carbon Fibre Thermal Insulation

Halyard Exhaust Systems & Accessories

Risers and Spray Heads

Halyard designs and manufactures exhaust risers and spray heads to suit the specific engine requirements and installation geometry. These are made from stainless steels or specialist corrosion resistant alloys depending on the engine duty cycle.

Riser and spray head supports and thermal insulation are normally supplied as part of the system.





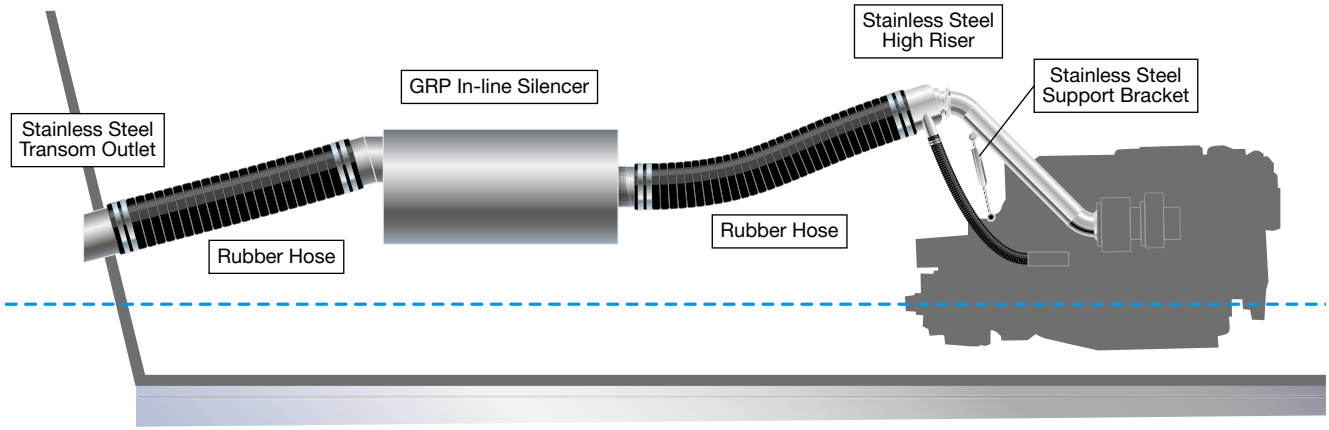
Replacement Exhaust Injection Elbows & Spray Rings

- Made in stainless steel or special corrosion resistant alloys
- Electro or mirror polished to customer requirements
- Thermal jackets and supports also available
- May require original unit as pattern

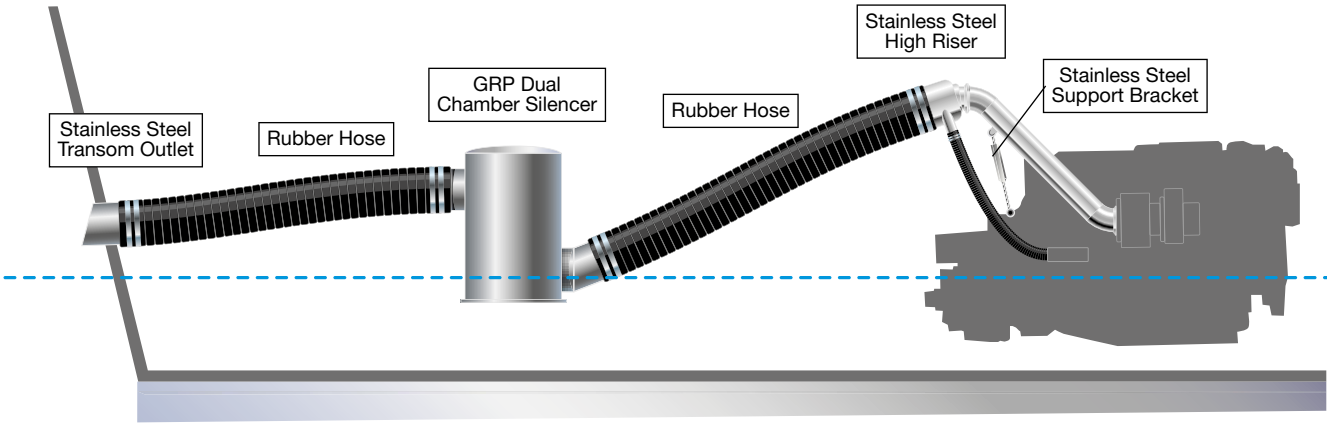




Example System - Standard In-line Silencer with Discharge Above Waterline



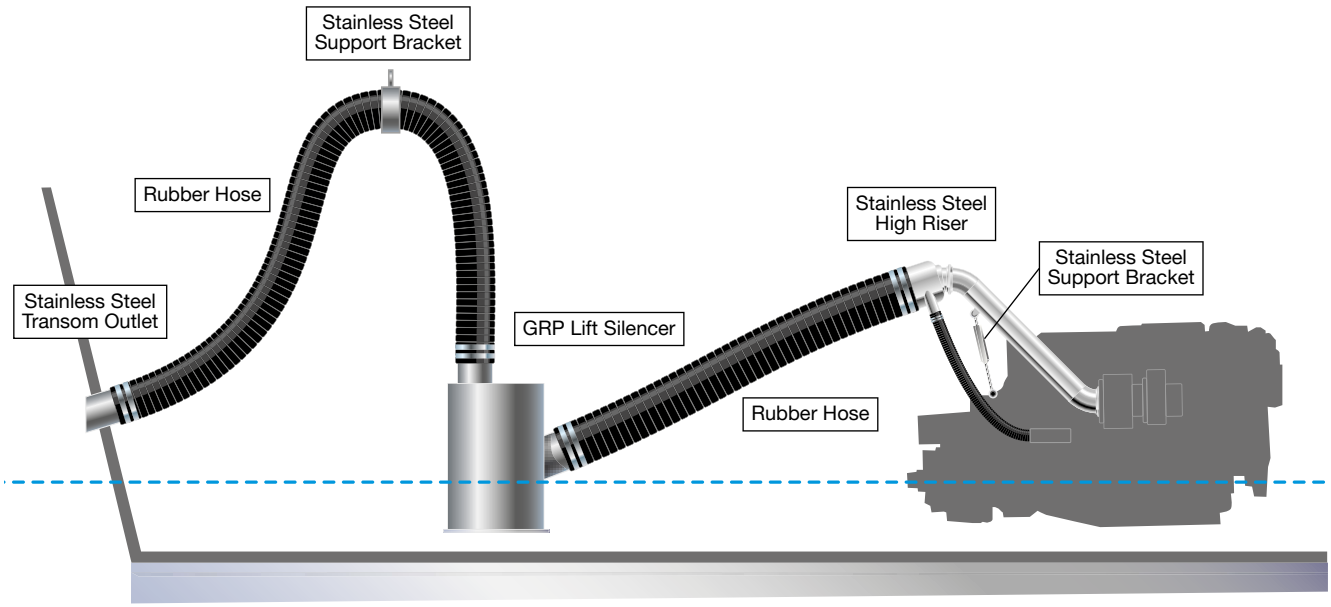
Example System - Dual Chamber Silencer with Discharge Above Waterline



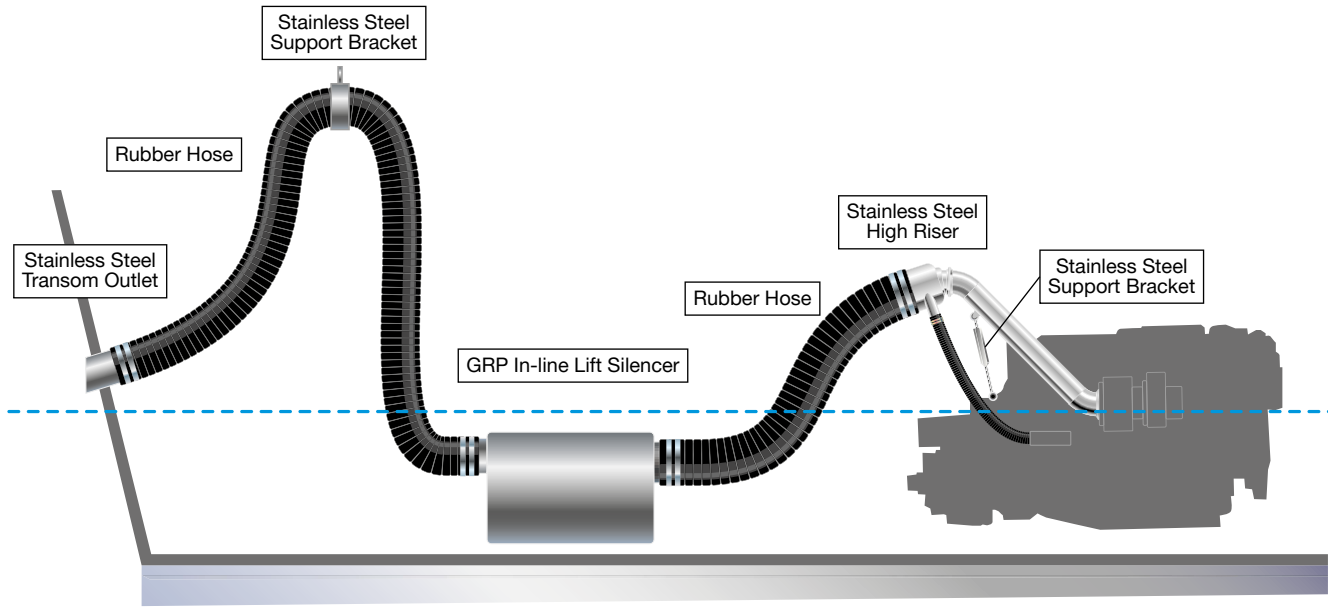
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Halyard Exhaust Systems & Accessories

Example System - Single Chamber Lift Silencer with Discharge Above Waterline

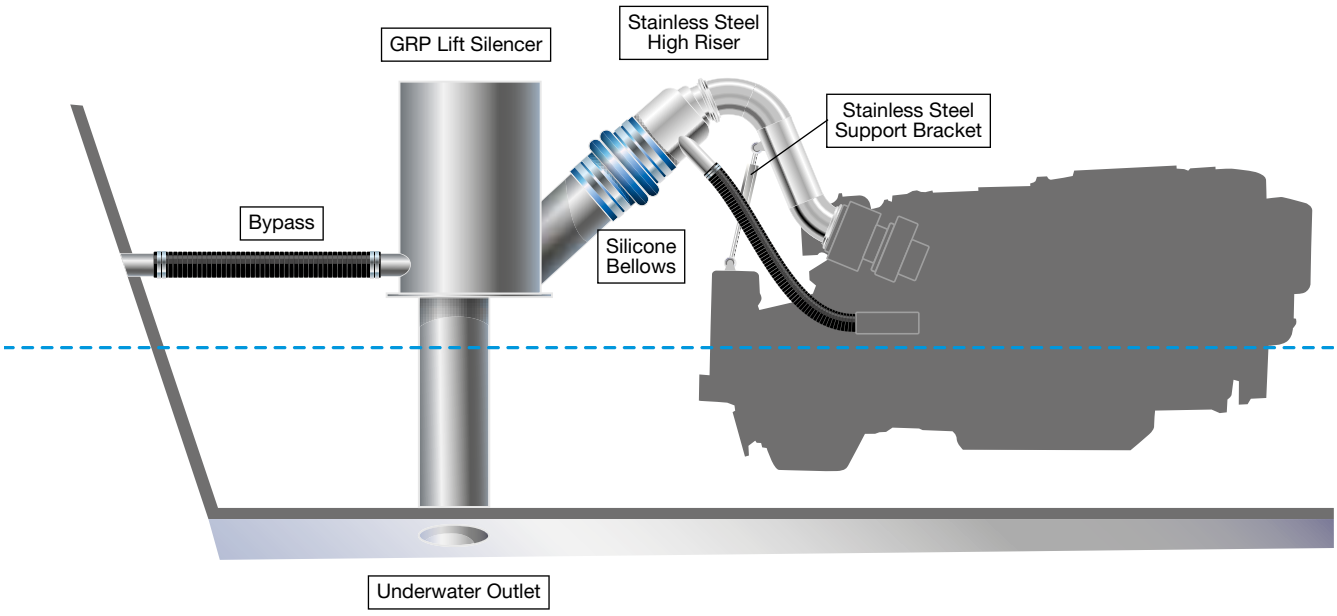


Example System - Standard In-line Lift Silencer with Discharge Above Waterline

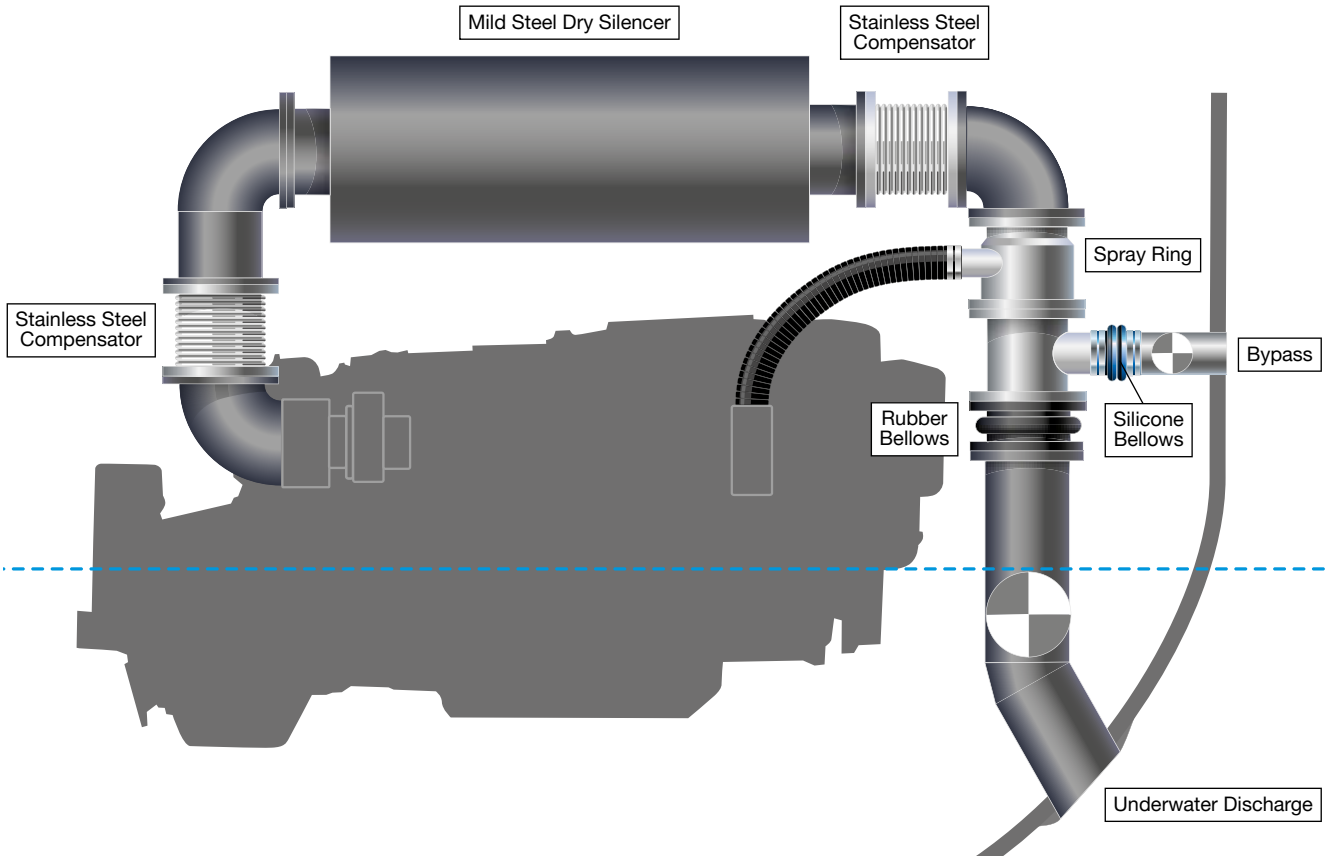


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Example System - Single Chamber Lift Silencer with Bypass & Underwater Discharge



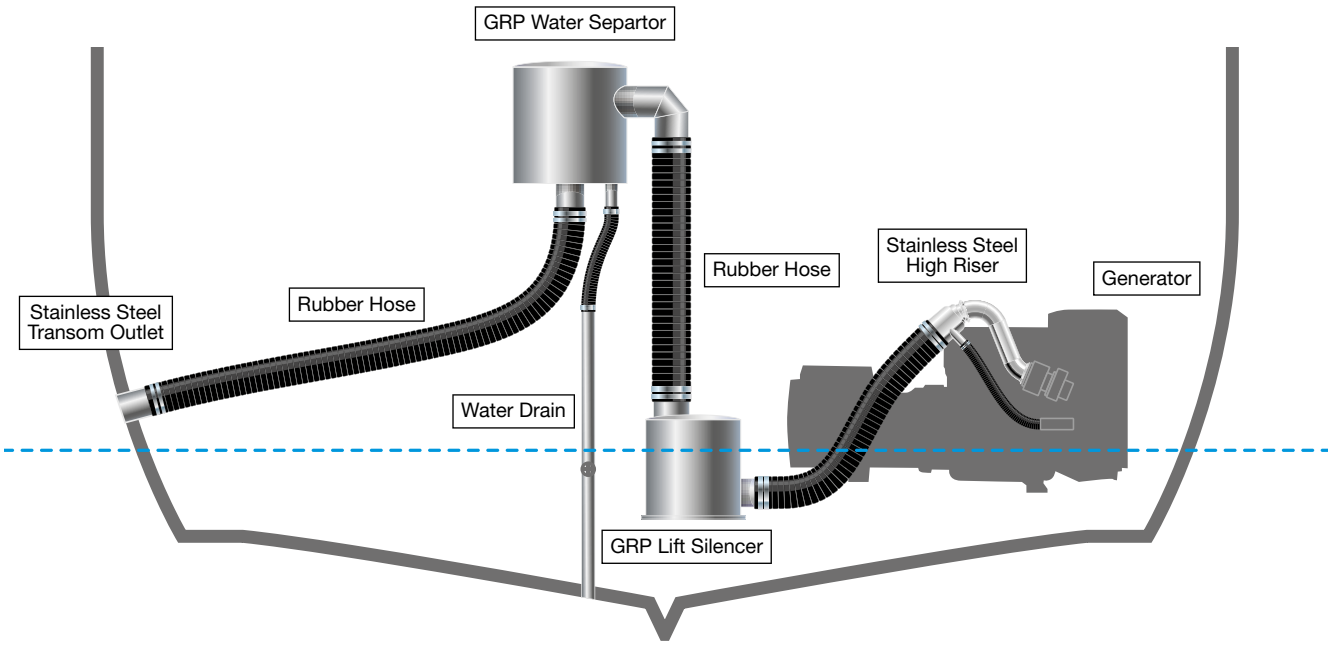
Example System - Dry Silencer to Spray Ring with Bypass & Underwater Discharge



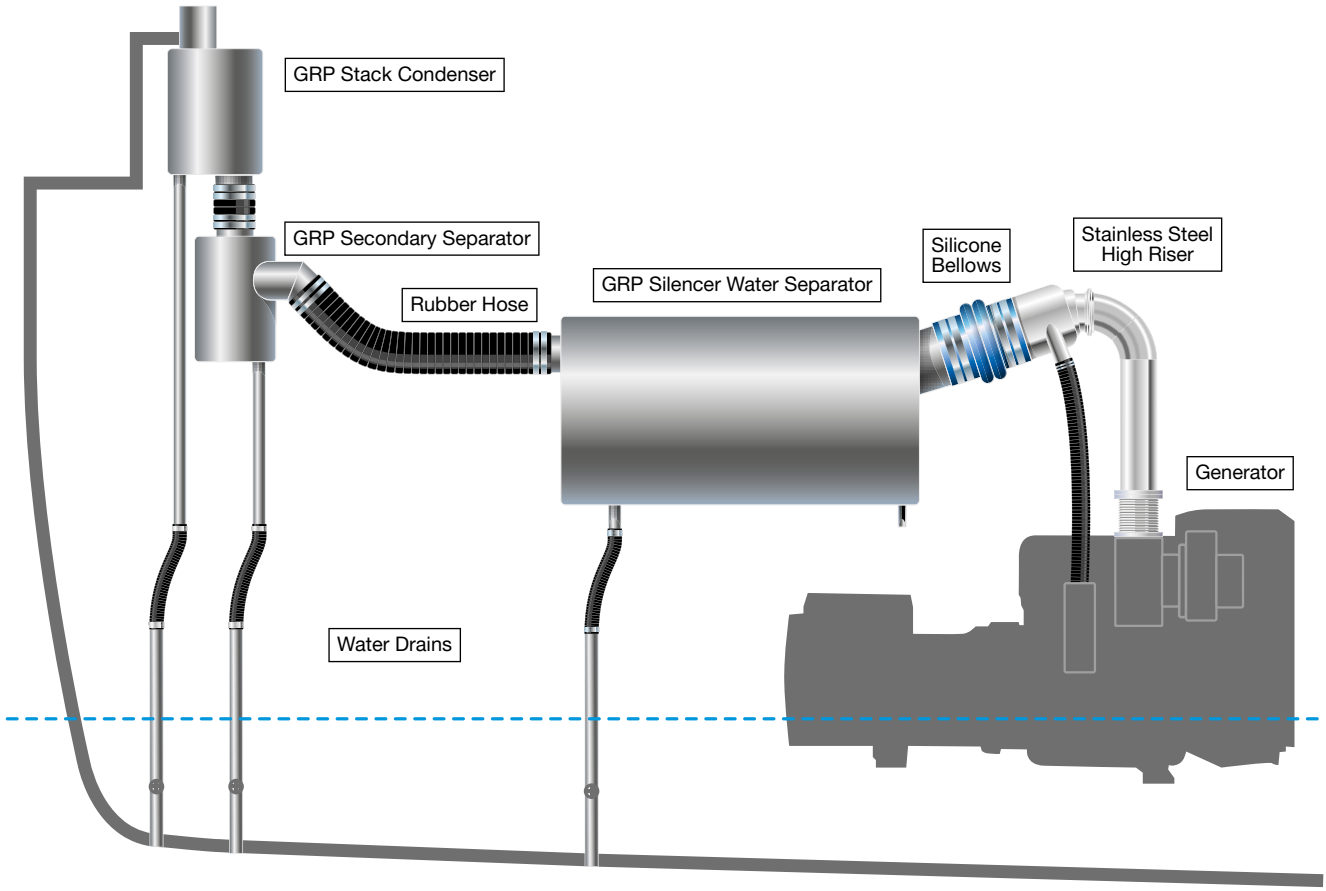
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Halyard Exhaust Systems & Accessories

Example System - Single Chamber Lift Silencer & Separator with Discharge Above Waterline



Example System - Combined Silencer & Separator with Gas Discharge up the Stack



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Halyard





WATER-COOLED SILENCERS, SEPARATORS & CONNECTORS

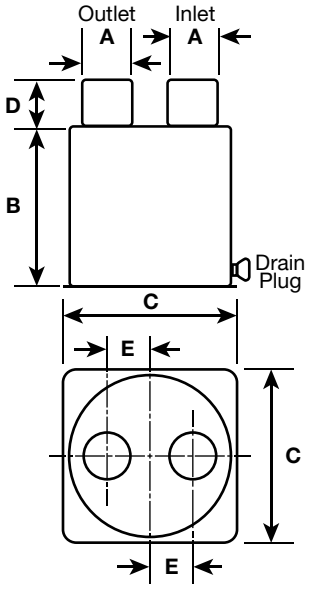
- Dry pipework
- Spray rings to DN700
- Water-cooled silencers
- Separated system options
- Brackets, supports & mounts
- Thermal insulation
- Hull outlets
- Underwater exhaust outlet design
- Exhaust Alert water-cooled exhaust overheat alert system



Water-Cooled Silencers, Separators & Connectors

Water-Cooled GRP Lift Silencers - Top In / Top Out - Standard Products

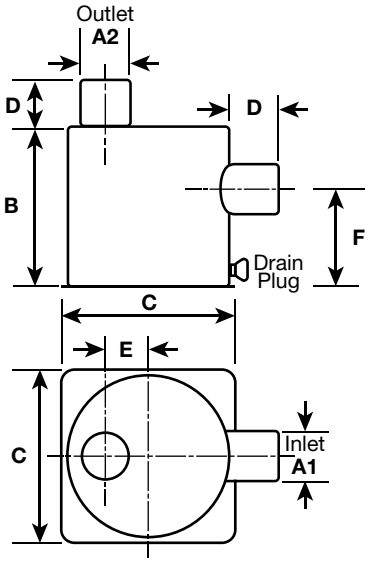
Lift Silencers - Top In / Top Out								
Part No.	Reference	A		B	C	D	E	Weight
		inch	mm	mm	mm	mm	mm	kg
H001671	HTT005	1 1/2	38	158	200	90	43.5	1.5
H001673	HTT025	1 5/8	41	158	200	90	43.5	1.5
H001674	HTT030	1 5/8	41	230	200	90	43.5	1.9
H001675	HTT040	1 3/4	45	158	200	90	43.5	1.5
H001676	HTT045	1 3/4	45	230	200	90	43.5	1.9
H001677	HTT055	2	51	158	200	90	43.5	1.6
H001678	HTT065	2	51	255	275	90	68	3.3
H001679	HTT070	2	51	305	324	90	84	4.9
H001680	HTT085	2 3/8	60	255	275	90	68	3.5
H001681	HTT090	2 1/2	63	255	275	90	68	3.5
H001682	HTT110	3	76	255	275	90	68	3.7
H001683	HTT115	3 1/2	89	305	324	90	84	5.6
H001684	HTT120	4	102	305	324	102	70	5.6
H001685	HTT125	5	127	370	446	127	83	10.4
H001686	HTT130	6	152	370	446	152	102	10.7
H010299	HTT135	8	203	521	548	203	122	17.9
New Range of Moulded Lift Silencers - Not Currently Lloyd's Register Type Approved								
H025134	HTT065M	2	51	260	277	90	68	4.8
H025860	HTT085M	2 3/8	60	260	277	90	68	4.8
H025861	HTT090M	2 1/2	63	260	277	90	68	4.8
H025135	HTT110M	3	76	260	277	90	68	4.8
H026566	HTT115M	3 1/2	89	260	277	90	68	4.8



Drawings and dimensions are for guidance. Alternative sizes and configurations available on request.

Water-Cooled GRP Lift Silencers - Side In / Top Out - Standard Products

Lift Silencers - Side In / Top Out											
Part No.	Reference	A1		A2		B	C	D	E	F	Weight
		inch	mm	inch	mm	mm	mm	mm	mm	mm	kg
H001615	HST005	1 1/2	38	1 1/2	38	169	200	90	43.5	95	1.5
H001616	HST010	1 1/2	38	1 1/2	38	230	200	90	43.5	139	1.8
H001617	HST025	1 5/8	41	1 5/8	41	169	200	90	43.5	95	2.2
H001618	HST035	1 5/8	41	1 5/8	41	255	275	90	68	165	3.3
H001619	HST055	1 3/4	45	1 3/4	45	230	200	90	43.5	139	1.9
H009936	HST105	2	51	2	51	230	200	90	43.5	139	1.9
H009525	HST110	2	51	2	51	255	275	90	68	165	3.3
H001623	HST115	2	51	2	51	305	324	90	84	200	4.9
H001624	HST145	2 3/8	60	2 3/8	60	305	324	90	84	200	5.1
H001625	HST150	2 3/8	60	2 3/8	60	255	275	90	68	165	3.5
H010352	HST165	2 1/2	63	2 1/2	63	255	275	90	68	165	3.5
H009937	HST200	3	76	3	76	255	275	90	68	165	4.4
H001629	HST205	3	76	3	76	305	324	90	84	184	6
H001630	HST210	3 1/2	89	3 1/2	89	305	324	90	84	184	5.6
H001631	HST215	4	102	4	102	305	324	102	60	184	5.6
H001632	HST220	5	127	5	127	370	446	127	99	222	10
H001633	HST225	5	127	5	127	343	342	127	64	219	6.6
H001634	HST230	6	152	6	152	370	446	152	99	254	11.4
H001635	HST235	6	152	8	203	370	446	152	64	222	12.4
H001636	HST240	8	203	8	203	585	500	203	83	392	15.6
H010301	HST245	8	203	10	254	576	635	250	145	420	29.5
H017157	HST250	10	254	10	254	576	635	254	145	400	30.1
New Range of Moulded Lift Silencers - Not Currently Lloyd's Register Type Approved											
H025129	HST005M	1 1/2	38	1 1/2	38	260	277	90	68	165	4.8
H025130	HST025M	1 5/8	41	1 5/8	41	260	277	90	68	165	4.8
H025131	HST110M	2	51	2	51	260	277	90	68	165	4.8
H025855	HST150M	2 3/8	60	2 3/8	60	260	277	90	68	165	4.8
H025132	HST165M	2 1/2	63	2 1/2	63	260	277	90	68	165	4.8
H025133	HST200M	3	76	3	76	260	277	90	68	165	4.8
H026567	HST210M	3 1/2	89	3	76	260	277	90	68	165	4.8

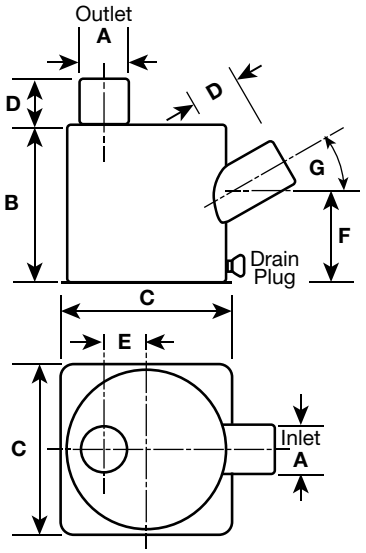


Drawings and dimensions are for guidance. Alternative sizes and configurations available on request.

Water-Cooled Silencers, Separators & Connectors

Water-Cooled GRP Lift Silencers - Side Angle In / Top Out - Standard Products

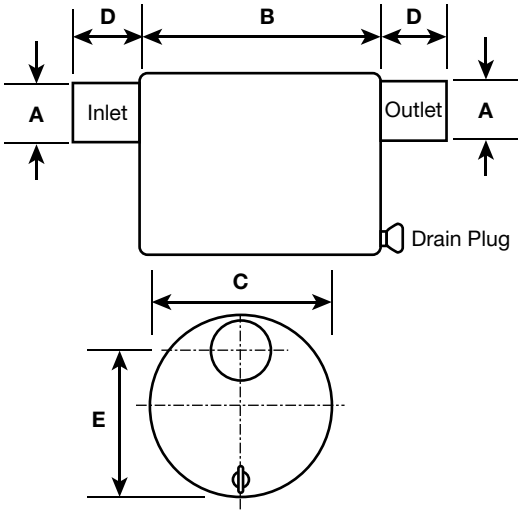
Lift Silencers - Side Angle In / Top Out										
Part No.	Reference	A		B	C	D	E	F	G°	Weight kg
		inch	mm	mm	mm	mm	mm	mm		
H001454	HAT015	2 3/8	60	270	275	90	68	175	30	3.6
H001456	HAT020	3	76	270	275	90	68	175	30	3.9
H001458	HAT025	3 1/2	89	305	324	90	84	184	30	5.5
H001459	HAT030	3 1/2	89	266	275	90	50	152	30	4.4
H001460	HAT035	4	102	480	324	102	70	300	35	7.8
H001461	HAT040	4	102	305	324	102	70	184	35	5.7
H001462	HAT043	4 1/2	114	480	324	114	70	300	35	7.9
H001463	HAT045	5	127	480	324	127	70	300	35	8.7
H001464	HAT050	6	152	370	446	152	100	222	35	11.2
H010302	HAT055	8	203	521	548	203	122	323	55	18.6
H017158	HAT060	10	254	660	650	254	148	374	55	29.6
New Range of Moulded Lift Silencers - Not Currently Lloyd's Register Type Approved										
H025856	HAT010M	2	51	260	277	90	68	165	30	4.8
H025857	HAT015M	2 3/8	60	260	277	90	68	165	30	4.8
H025858	HAT020M	3	76	260	277	90	68	165	30	4.8
H025859	HAT030M	3 1/2	89	260	277	90	68	165	30	4.8



Drawings and dimensions are for guidance. Alternative sizes and configurations available on request.

Water-Cooled GRP Lift Silencers - End In / End Out - Standard Products

Lift Silencers - End In / End Out								
Part No.	Reference	A		B	C	D	E	Weight kg
		inch	mm	mm	mm	mm	mm	
H001496	HEE005	1 1/2	38	250	178	90	141	1.7
H001497	HEE010	1 5/8	41	250	178	90	133	1.8
H001498	HEE020	1 3/4	45	250	178	90	133	1.8
H001499	HEE035	2	51	310	178	90	133	2.1
H001500	HEE040	2	51	420	254	90	195	4.2
H001501	HEE045	2	51	250	178	90	133	1.8
H001502	HEE060	2 3/8	60	310	254	90	195	3.7
H001503	HEE065	2 3/8	60	420	254	90	195	4.4
H001504	HEE070	2 1/2	63	420	254	90	195	4.4
H001505	HEE080	3	76	420	254	90	195	4.7
H001506	HEE090	3 1/2	89	465	254	90	188	5.2
H001507	HEE095	4	102	462	305	102	222	6.8
H001508	HEE100	4 1/2	114	462	305	114	220	7.0
H001509	HEE105	5	127	599	305	127	220	8.8
H001510	HEE110	6	152	640	346	152	260	11.4
H010303	HEE115	8	203	695	446	203	297	18.4

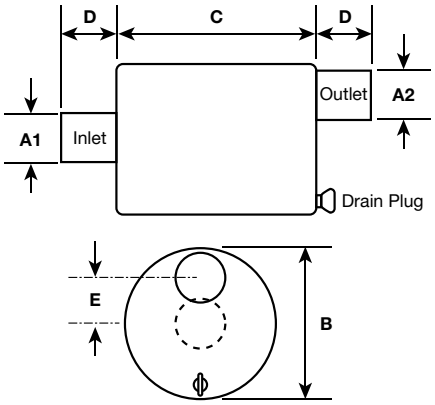


Drawings and dimensions are for guidance. Alternative sizes and configurations available on request.

Water-Cooled Silencers, Separators & Connectors

Water-Cooled GRP In-line Round Body Silencers - Standard Products

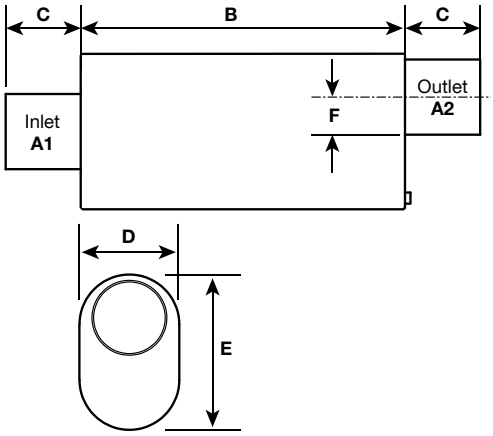
In-line Round Body Silencers										
Part No.	Reference	A1		A2		B	C	D	E	Weight kg
		inch	mm	inch	mm	mm	mm	mm	mm	
H001524	HILR003	2 3/8	60	2.38	60	152	212	90	41	1.8
H001525	HILR005	3	76	3	76	203	335	90	59	3.5
H001526	HILR010	3 1/2	89	3 1/2	89	203	390	90	53	4.2
H001527	HILR015	4	102	4	102	254	465	102	68	6.4
H001528	HILR020	4 1/2	114	4 1/2	114	254	502	114	61	6.8
H001529	HILR025	5	127	5	127	254	546	127	55	7.9
H001530	HILR030	5	127	6	152	305	762	127	65	12.1
H001531	HILR035	6	152	6	152	305	661	152	65	11.4
H001532	HILR040	6	152	8	203	398	880	152	91	22.0
H001533	HILR045	8	203	8	203	395	880	203	88	23.0
H001534	HILR050	10	254	10	254	446	1092	254	87	32.0
H001535	HILR055	12	305	12	305	489	1308	305	87	41.0



Drawings and dimensions are for guidance. Alternative sizes and configurations available on request. All units are made to order and customisable.

Water-Cooled GRP In-line Oval Body Silencers - Standard Products

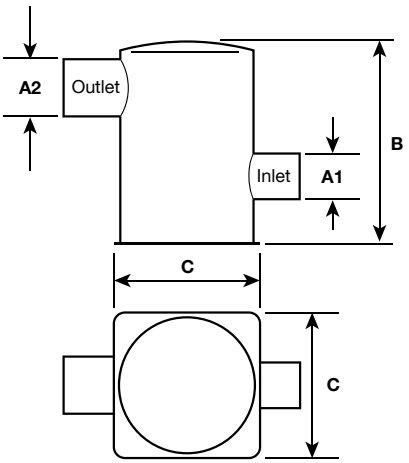
In-line Oval Body Silencers											
Part No.	Reference	A1		A2		B	C	D	E	F	Weight kg
		inch	mm	inch	mm	mm	mm	mm	mm	mm	
H001517	HILO005	5	127	5	127	520	127	225	385	118	10.8
H001518	HILO006	5	127	6	152	640	127	225	385	105	10.6
H001519	HILO010	6	152	6	152	640	152	225	385	105	9.5
H001520	HILO012	6	152	8	203	928	152	270	420	93	12.2
H001521	HILO015	8	203	8	203	876	203	270	420	93	16.3
H001522	HILO016	8	203	10	254	758	203	295	465	87	21.6
H001523	HILO020	10	254	10	254	1092	254	365	630	164	39.0



Drawings and dimensions are for guidance. Alternative sizes and configurations available on request. All units are made to order and customisable.

Water-Cooled GRP Dual Chamber Silencers - Standard Products

Dual Chamber Silencers							
Part No.	Reference	A1		A2		B	C
		inch	mm	inch	mm	mm	mm
H008419	HDC025	4	102	4	102	600	446
H001488	HDC035	5	127	5	127	700	446
H001489	HDC040	5	127	6	152	800	446
H001490	HDC045	6	152	6	152	800	446
H001491	HDC050	6	152	8	203	800	446
H001492	HDC055	8	203	8	203	900	648
H001493	HDC060	8	203	10	254	900	650
H001494	HDC065	10	254	10	254	1000	650
H001495	HDC070	12	305	12	305	1000	650



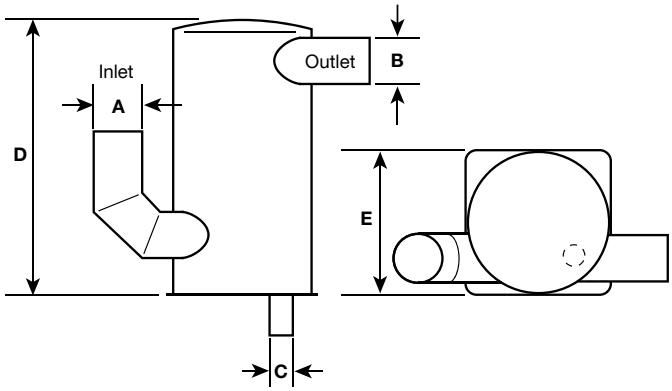
Drawings and dimensions are for guidance. Alternative sizes and configurations available on request. All units are made to order and customisable.

Water-Cooled Silencers, Separators & Connectors

Water-Cooled GRP Combined Silencer / Separators - Standard Products

Combined Silencer / Separators											
Part No.	Type	A		B		C		D	E	Max. Water Flow Rate l/Min	Max. Exhaust Gas Flow Rate kg/h
		inch	mm	inch	mm	inch	mm	mm	mm		
ML-0382-02	Side in, bottom out	4	102	4	102	3	76	641	370	174	917
ML-0382-03	Side in, bottom out	5	127	5	127	3	76	750	430	174	1490
ML-0364-01	Side in, horizontal top out	3 1/2	89	3 1/2	89	2	51	595	370	80	682
ML-0364-02	Side in, horizontal top out	4	102	4	102	3	76	626	370	174	917
ML-0364-03	Side in, horizontal top out	5	127	5	127	3	76	725	430	174	1483
ML-0364-04	Side in, horizontal top out	6	152	6	152	3	76	904	470	174	2183

Drawings and dimensions are for guidance. Alternative sizes and configurations available on request. All units are made to order and customisable.

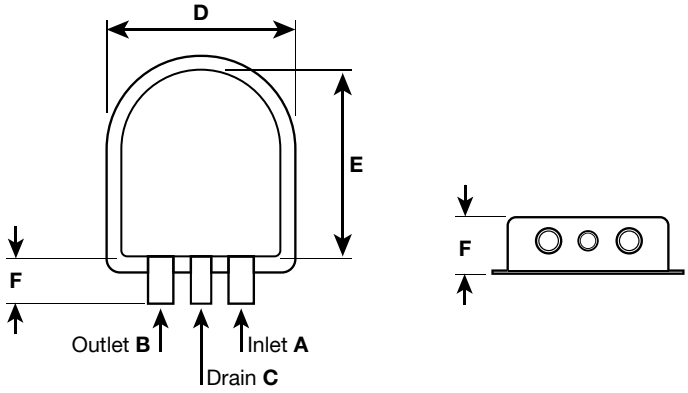


Side in, horizontal top out

GRP Horeshoe Water Separator - Standard Products

GRP Horeshoe Water Separator											
Part No.	Reference	A		B	C	D	E	F	Weight kg	Max. Water Flow Rate l/Min	Max. Exhaust Gas Flow Rate kg/h
		inch	mm	mm	mm	mm	mm	mm			
H021530	HHS020	2	51	51	38	305	405	120	5.4	34	362
H021956	HHS030	3	76	76	51	398	498	140	8.5	80	591
H028107	HHS032	3	76	89	51	398	498	160	11.1	80	634
H024762	HHS035	3 1/2	89	89	51	398	498	300	11.8	80	1357
H019640	HHS040	4	102	102	51	398	498	180	9.8	80	733
H023215	HHS050	5	127	127	63	446	546	300	11.6	120	1420
H028106	HHS060	6	152	152	76	493	647	300	12.5	174	1832

Drawings and dimensions are for guidance. Alternative sizes and configurations available on request. All units are made to order and customisable.
HHS separators are suited to generators with higher water flow rates and for some main engines depending on raw water flow rate.



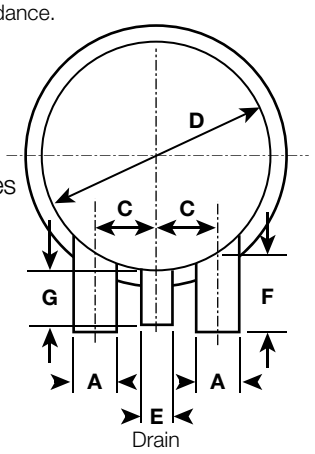
Water-Cooled Silencers, Separators & Connectors

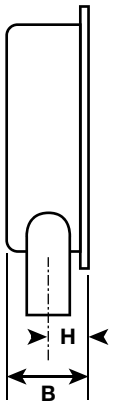
GRP Low Profile Water Separator - Standard Products

GRP Low Profile Water Separator														
Part No.	Reference	A		B	C	D	E		F	G	H	Weight kg	Max. Water Flow Rate l/Min	Max. Exhaust Gas Flow Rate kg/h
		inch	mm	mm	mm	mm	inch	mm	mm	mm	mm			
H014054	HFS020	2	51	125	75	305	1 1/2	38	96	76	65	4.4	34	280
H001511	HFS025	2 1/2	63	140	100	346	1 1/2	38	144	100	70	4.8	34	316
H001514	HFS030	3	76	140	110	398	2	51	144	100	70	6.5	80	405
H001515	HFS035	3 1/2	89	140	110	398	2	51	144	107	70	6.5	80	405
H001516	HFS040	4	102	170	110	398	2	51	144	107	85	7.0	80	498
H007116	HFS050	5	127	175	125	494	2 1/2	63	140	107	88	12.5	120	625
H010304	HFS060	6	152	215	151	594	2 1/2	63	175	107	105	17.1	120	810

Drawings and dimensions are for guidance. Alternative sizes and configurations available on request.

This separator has universal inlet and outlet tubes. The tubes marked '**A**' can be used as either inlet or outlet



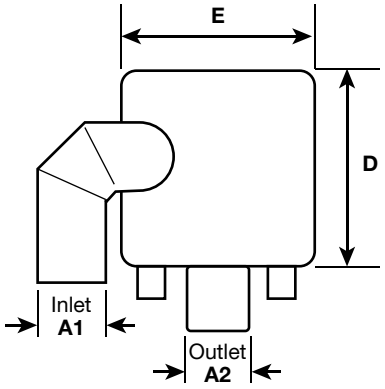


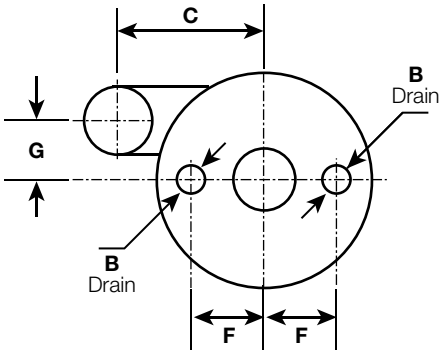


GRP General Water Separator - Standard Products

GRP General Water Separator												
Part No.	Reference	A1	A2	B	C	D	E	F	G	Weight kg	Max. Water Flow Rate l/Min	Max. Exhaust Gas Flow Rate kg/h
		mm	mm	mm	mm	mm	mm	mm	mm			
H001687	HWS030	76	76	38	240	356	346	120	110	7.6	68	1476
H001688	HWS035	89	89	38	264	356	346	120	110	7.8	68	1476
H001689	HWS040	102	102	38	282	356	346	120	100	9.5	68	1476
H001690	HWS050	127	127	51	310	406	398	150	110	11.1	160	1969
H001691	HWS060	152	152	51	335	406	398	158	100	12.1	160	1969

Drawings and dimensions are for guidance. Alternative sizes and configurations available on request.







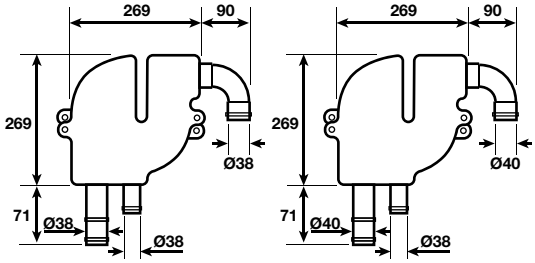
Water-Cooled Silencers, Separators & Connectors

MS4000 Series Moulded Water Separator - Standard Products



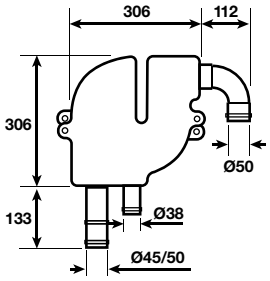
Halyard's exhaust water separator range is available with inlet / outlet diameters from 38mm (1.5") to 76mm (3"). Manufactured from a special high temperature Polyolefin and available from stock.

MS4020 38mm 90° Outlet **MS4025** 40mm 90° Outlet
Exhaust: 38mm and 40mm
Gas Outlet: 38mm and 40mm
Maximum Water Flow: 18 Litres Per Minute
Weight: 1kg

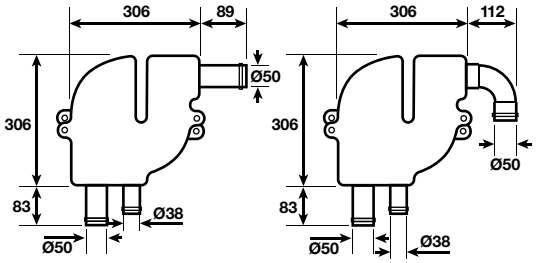


MS5000 Series Moulded Water Separator - Standard Products

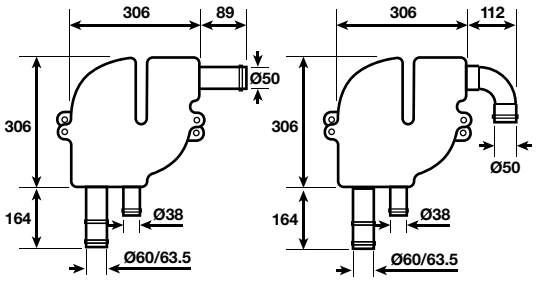
MS5020 45mm and 50mm 90° Outlet
Exhaust: 45mm and 50mm
Gas Outlet: 50mm
Maximum Water Flow: 42 Litres Per Minute
Weight: 1.7kg



MS5010 50mm Straight Outlet **MS5025** 50mm 90° Outlet
Exhaust: 50mm
Gas Outlet: 50mm
Maximum Water Flow: 42 Litres Per Minute
Weight: 1.7kg

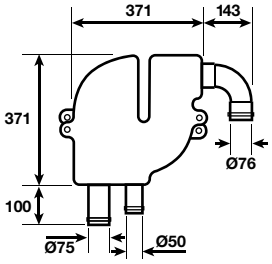


MS5015 60mm and 63.5mm Straight Outlet **MS5030** 60mm and 63.5mm 90° Outlet
Exhaust: 60mm and 63.5mm
Gas Outlet: 50mm
Maximum Water Flow: 42 Litres Per Minute
Weight: 1.7kg



MS7000 Series Moulded Water Separator - Standard Products

MS7510 76mm 90° Outlet
Exhaust: 76mm
Gas Outlet: 76mm
Maximum Water Flow: 65 Litres Per Minute
Weight: 3.3kg



Water-Cooled Silencers, Separators & Connectors

GRP Exhaust Tube

GRP Tube						
Part No.	Reference	**A** Nominal O.D.		Nominal Wall Thickness	Weight kg per m	**B** Standard Length
		inch	mm	mm		m
H000526	HT001	3/4	19	3.5	0.25	1.2
H000527	HT005	1	25	2.6	0.33	1.2
H005336	HT007	1 1/4	32	3.3	0.42	1.2
H000528	HT010	1 1/2	38	4	0.5	1.2
H000529	HT015	1 5/8	41	2.3	0.5	1.2
H000530	HT020	1 3/4	45	2.5	0.6	1.2
H009939	HT030	2	51	2.5	0.7	3
H009940	HT040	2 3/8	60	3	0.9	3
H009953	HT045	2 1/2	63	3.5	1	3
H009954	HT055	3	76	4	1.3	3
H009965	HT060	3 1/2	89	4	1.5	3
H009966	HT065	4	102	4	1.9	3
H010014	HT070	4 1/2	114	4	2.2	3
H010017	HT075	5	127	4	2.5	3
H010018	HT080	6	152	4	2.9	3
H010028	HT082	7	178	4.5	3.7	3
H010030	HT085	8	203	4.5	4.5	3
H010034	HT090	10	254	4.5	5.5	3
H010036	HT095	12	305	4.5	6.8	3
H010040	HT100	13 5/8	346	5	7.7	3
H016264	HT101	14	356	5	7.7	3
H010041	HT105	15 43/64	398	4.5	8.9	3
H010371	HT115	19 13/32	493	5	10.9	3
H010042	HT120	23 11/32	593	5	14.7	3

Drawings and dimensions are for guidance. Alternative sizes and up to 1000mm O.D. configurations available on request.

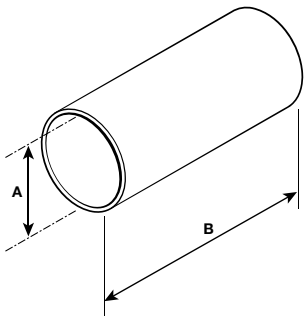
Diameters from 2" to 24" are supplied with peel-ply wrapping - a special layer which the customer peels off to leave a course outer surface requiring minimal preparation.

Lloyd's Approved resins with special temperature ratings are used in the manufacture of this tube (applies to tube over 2"/ 51mm only).

Part numbers H000526 – H000530, do not have Lloyd's Approval.

Note: Lloyd's Type Approval is applicable for Halyard GRP products in exhaust system applications.







GRP Exhaust Connectors					
Part No.	Reference	**A** Nominal O.D.		**B**	Weight kg
		inch	mm	mm	
H001536	HJ010	1 1/2	38	175	0.1
H001537	HJ015	1 5/8	41	175	0.1
H001538	HJ020	1 3/4	45	175	0.1
H001539	HJ030	2	51	200	0.15
H001540	HJ040	2 3/8	60	200	0.2
H001541	HJ045	2 1/2	63	200	0.25
H001542	HJ055	3	76	250	0.4
H001543	HJ060	3 1/2	89	250	0.5
H001544	HJ065	4	102	300	0.65
H001545	HJ070	4 1/2	114	300	0.75
H001546	HJ075	5	127	300	0.85
H001547	HJ080	6	152	350	1.1
H007269	HJ082	7	178	350	1.35
H001548	HJ085	8	203	350	1.7
H001549	HJ090	10	254	400	2.4
H001550	HJ095	12	305	400	2.7

Drawings and dimensions are for guidance. Alternative sizes and configurations available on request.

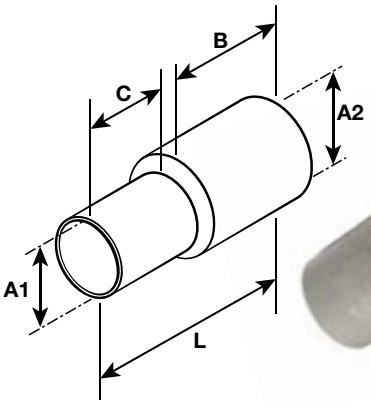
Water-Cooled Silencers, Separators & Connectors

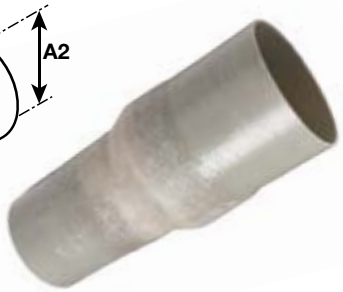
Halyard

GRP Exhaust Tube & Connectors

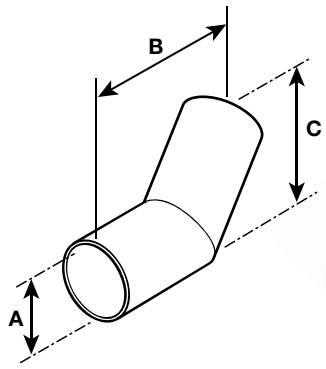
Lloyd's Register

GRP Reducers									
Part No.	Reference	**A1** O.D.		**A2** O.D.		**B**	**C**	**L**	Weight
		inch	mm	inch	mm	mm	mm	mm	kg
H001442	HA020	2	51	3	76	102	78	205	0.4
H001443	HA035	2 1/2	63	3	76	102	95	222	0.4
H001444	HA050	3	76	3 1/2	89	125	102	252	0.5
H001445	HA055	3	76	4	102	142	102	269	0.6
H001446	HA060	3 1/2	89	4	102	142	125	293	0.7
H001447	HA065	3 1/2	89	4 1/2	114	140	125	290	0.9
H001448	HA070	4	102	5	127	158	142	326	1.1
H001449	HA075	4	102	6	152	177	142	370	1.7
H001450	HA095	5	127	6	152	177	158	361	1.8
H001451	HA096	6	152	7	178	240	177	467	1.9
H001452	HA110	6	152	8	203	225	177	452	2.1
H001453	HA115	8	203	10	254	279	225	555	3.5

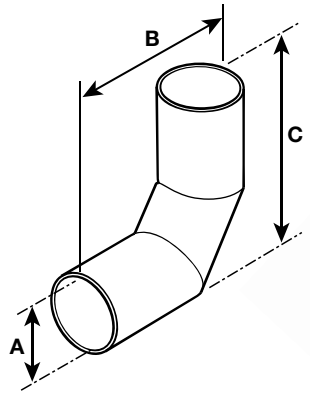




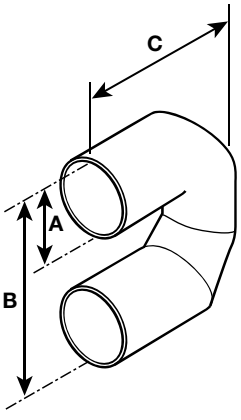
GRP 45° Elbows						
Part No.	Reference	**A1** Nominal O.D.		**B**	**C**	Weight
		inch	mm	mm	mm	kg
H001408	H45010	1 5/8	41	161	103	0.2
H001409	H45025	2	51	161	103	0.2
H001410	H45035	2 3/8	60	166	111	0.3
H001411	H45040	2 1/2	63	188	123	0.4
H001412	H45050	3	76	213	142	0.6
H001414	H45055	3 1/2	89	282	181	0.8
H001415	H45060	4	102	243	173	0.7
H001417	H45065	4 1/2	114	181	208	1.0
H001418	H45070	5	127	339	230	1.2
H001419	H45075	6	152	376	263	2.0
H007270	H45077	7	178	599	374	2.5
H001420	H45080	8	203	710	438	4.5
H001421	H45085	10	254	776	501	5.5
H012577	H45090	12	305	776	501	5.5
GRP 90° Elbows						
H001422	H90005	1 1/2	38	121	121	0.3
H008858	H90010	1 5/8	41	121	121	0.3
H001424	H90025	2	51	150	150	0.4
H001425	H90035	2 3/8	60	158	158	0.5
H001426	H90040	2 1/2	63	177	177	0.5
H001427	H90050	3	76	197	197	0.8
H001428	H90055	3 1/2	89	229	229	1.0
H001429	H90060	4	102	242	242	1.2
H001430	H90065	4 1/2	114	269	269	1.5
H001431	H90070	5	127	308	308	1.8
H001433	H90075	6	152	358	358	2.5
H001435	H90077	7	178	542	542	4.0
H001436	H90080	8	203	580	580	5.6
H010290	H90085	10	254	659	659	6.5
H001438	H90090	12	305	762	762	8.0
GRP 180° Elbows						
H001397	H180010	1 5/8	41	133	124	0.3
H001398	H180015	1 3/4	45	133	124	0.3
H001399	H180025	2	51	153	154	0.6
H001400	H180035	2 3/8	60	181	150	0.6
H001401	H180040	2 1/2	63	192	166	0.7
H001402	H180050	3	76	214	187	1.1
H001403	H180055	3 1/2	89	268	219	1.6
H001404	H180060	4	102	293	228	1.8
H001405	H180070	5	127	380	310	3.0
H001406	H180075	6	152	427	327	3.6
H007310	H180080	7	178	531	455	5.0
H001407	H180085	8	203	684	547	7.0





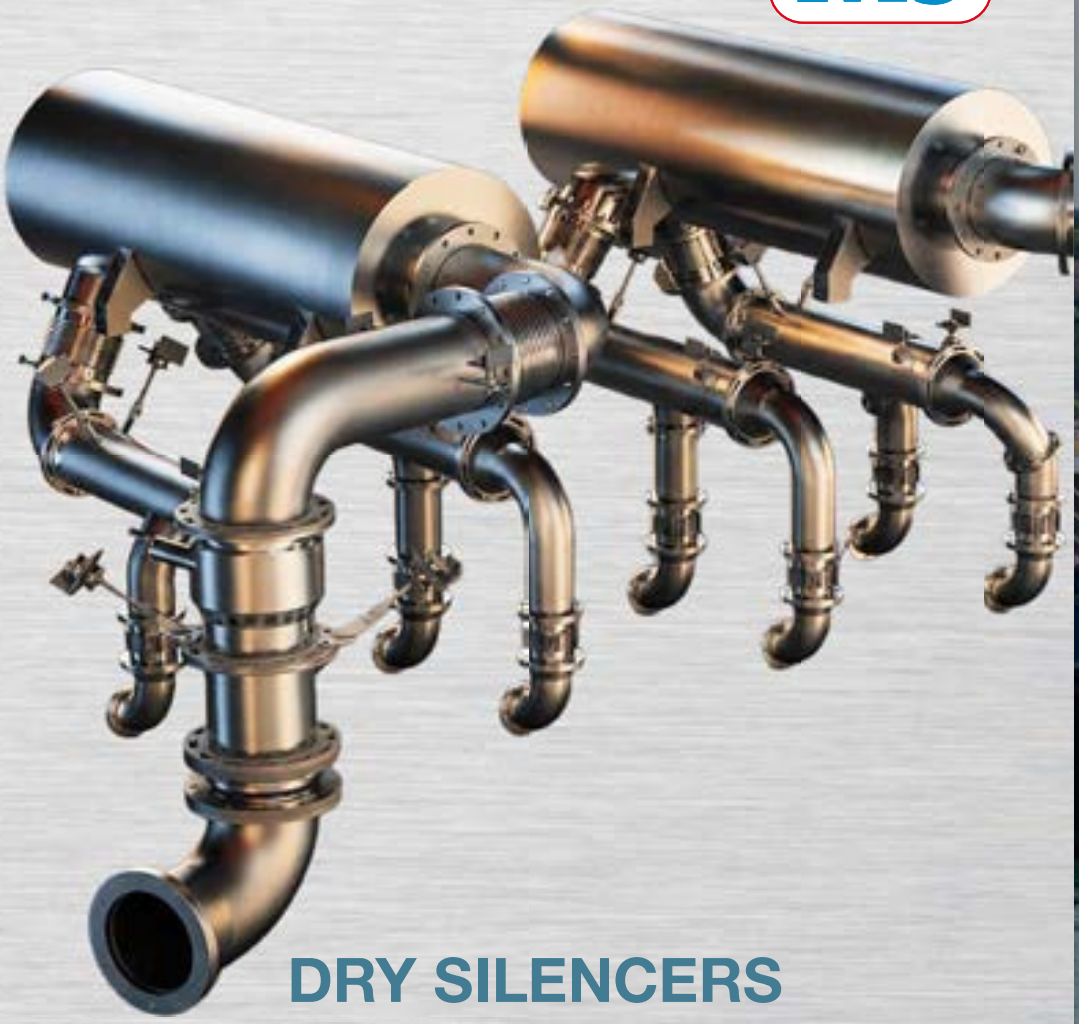








Alternative sizes and configurations available on request.





DRY SILENCERS

UK based IMS are global leaders in noise reduction and particulate filtering, manufacturing absorptive and reactive exhaust gas silencers

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

Dry Silencers

Dry Silencers

UK based IMS are global leaders in noise reduction and particulate filtering, manufacturing absorptive and reactive exhaust gas silencers.

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.

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 band-widths 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

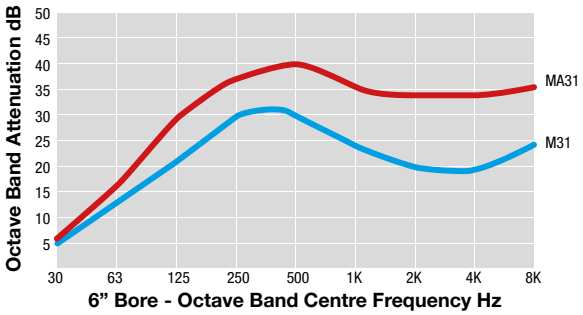
The most common silencers sold by Halyard into the marine industry are the M31/MA31, M51/MA51 and FP ranges. There are, however, also the M21/MA21, M41/MA41, MRA1/MAA1, MRA2/MAA2, MRA3/MAA3, MSA & BTS ranges with different configurations and specifications available on request.

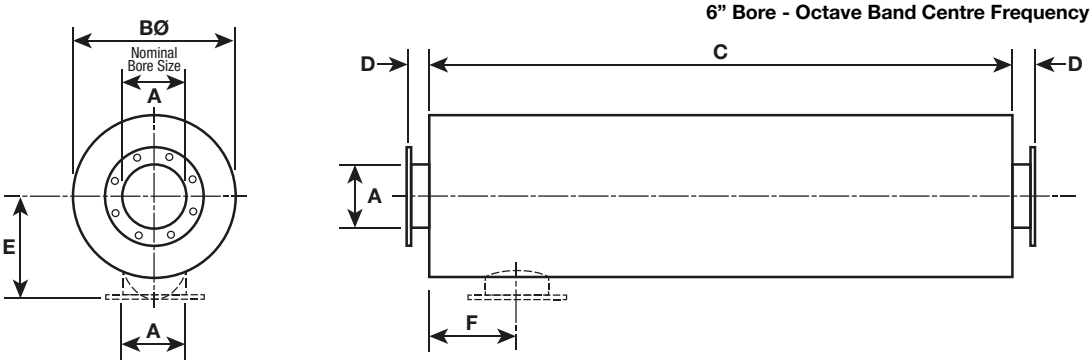
Dry Silencers

Dry Silencers - M31 Reactive Critical Grade Exhaust Silencers

The M31 range of semi-residential reactive silencers are a medium attenuation design recommended for use where equipment must operate with a reduced noise level. Highly efficient and of advanced acoustical design, they are suitable for the exhausts or intakes of all two-stroke and four-stroke internal combustion engines, compressors and blowers. The units can be mounted vertically, horizontally or inclined, without affecting efficiency. The M31 'semi-residential grade' reactive exhaust silencer range 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. All units are fitted with drain points to remove exhaust condensate.

MA31 Range is acoustically treated MA31 type silencer increases the higher frequency performance by up to 11dB(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.





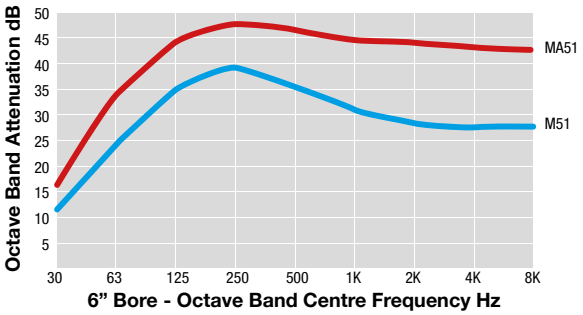
MA31 Series												
Silencer Ref.		All	M31	MA31	All	All	M31	MA31	All	All	Weight	Weight
		A	B	B	C	D	E	E	F Min.	F Max.	M31	MA31
		Inch	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg
M31/MA31	**038**	1.5	160	260	600	50	155	205	60	250	3	4
M31/MA31	**050**	2	210	310	600	50	180	230	60	250	5	6
M31/MA31	**063**	2.5	260	360	700	50	205	255	70	380	8	10
M31/MA31	**075**	3	310	410	800	50	230	280	90	430	14	16
M31/MA31	**090**	3.5	360	460	900	75	255	305	150	480	32	36
M31/MA31	**100**	4	360	460	1000	75	255	305	160	490	45	50
M31/MA31	**125**	5	410	510	1200	75	280	330	180	530	54	62
M31/MA31	**150**	6	460	560	1400	75	305	355	190	590	78	95
M31/MA31	**175**	7	540	640	1400	75	350	400	200	590	100	135
M31/MA31	**200**	8	560	660	1800	75	355	405	220	810	130	170
M31/MA31	**225**	9	660	760	1800	75	420	470	235	810	190	230
M31/MA31	**250**	10	660	760	2100	75	420	470	250	1100	210	280
M31/MA31	**300**	12	760	860	2500	100	470	520	280	1150	340	390
M31/MA31	**350**	14	920	1020	2800	100	550	600	320	1350	440	500
M31/MA31	**400**	16	1020	1120	2900	100	600	650	340	1450	610	700
M31/MA31	**450**	18	1170	1270	3000	100	685	735	370	1500	840	940
M31/MA31	**500**	20	1270	1370	3400	100	735	785	400	1700	990	1050
M31/MA31	**550**	22	1370	1470	3700	100	785	835	430	1800	1200	1400
M31/MA31	**600**	24	1470	1570	4000	100	915	965	460	2000	1550	1800

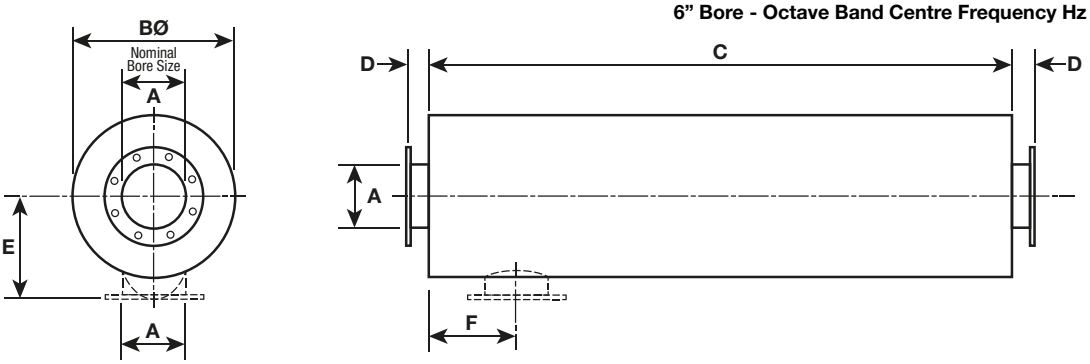
Dry Silencers

Dry Silencers - M51 Critical Grade Exhaust Silencers

The M51 range of 'critical grade' exhaust silencers has been designed to meet the increasingly stringent noise criteria required in a pollution conscious environment. Generally specified for use on two stroke and four-stroke internal combustion engine exhausts, the units give good low frequency attenuation in the normal engine firing frequency ranges. The units can be installed horizontally, vertically or inclined, without affecting efficiency. The M51 'residential grade' reactive exhaust silencer range 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. All units are fitted with drain points to remove exhaust condensate.

The acoustically treated MA51 type silencer increases the higher frequency performance by up to 13dB(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.

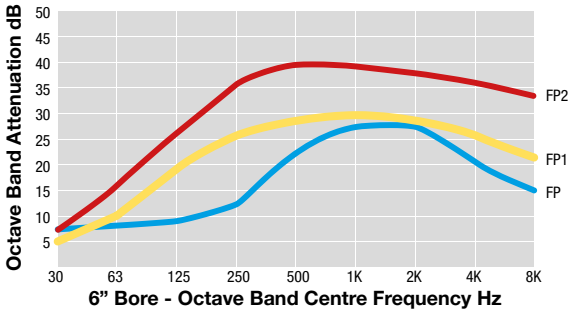


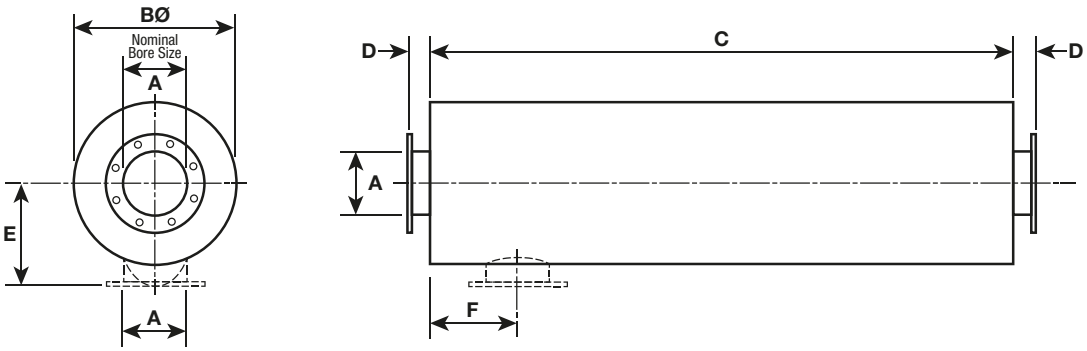


MA51 Series												
Silencer Ref.		All	M51	MA51	All	All	M51	MA51	All	All	Weight	Weight
		A	B	B	C	D	E	E	F Min.	F Max.	M51	MA51
		Inch	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg
M51/MA51	**038**	1.5	160	260	800	50	155	205	60	400	9	10
M51/MA51	**050**	2	210	310	900	50	180	230	60	450	16	17
M51/MA51	**063**	2.5	260	360	1000	50	205	255	70	500	36	38
M51/MA51	**075**	3	310	410	1200	50	230	280	90	600	45	47
M51/MA51	**090**	3.5	360	460	1300	75	255	305	150	650	80	85
M51/MA51	**100**	4	360	460	1500	75	255	305	160	750	90	98
M51/MA51	**125**	5	410	510	1700	75	280	330	180	850	130	150
M51/MA51	**150**	6	460	560	2000	75	305	355	190	1000	168	200
M51/MA51	**175**	7	540	640	2000	75	350	400	200	1000	220	280
M51/MA51	**200**	8	560	660	2400	75	355	405	220	1200	265	300
M51/MA51	**225**	9	660	760	2400	75	420	470	235	1200	320	360
M51/MA51	**250**	10	660	760	2800	75	420	470	250	1400	390	480
M51/MA51	**300**	12	760	860	3500	100	470	520	280	1500	580	650
M51/MA51	**350**	14	920	1020	3600	100	550	600	320	1500	710	800
M51/MA51	**400**	16	1020	1120	4000	100	600	650	340	1600	920	1000
M51/MA51	**450**	18	1170	1270	4600	100	685	735	370	1800	1150	1250
M51/MA51	**500**	20	1270	1370	5300	100	735	785	400	2200	1400	1550
M51/MA51	**550**	22	1370	1470	5700	100	785	835	430	2300	1780	2000
M51/MA51	**600**	24	1470	1570	6000	100	915	965	460	2500	2070	2400

Dry Silencers - FP Straight Through Absorption Silencers

The FP series silencer is a straight through absorption type, suitable for vertical and horizontal installations. The design gives good attenuation in the higher frequency octave band widths and is, therefore, versatile in its application as an intake or exhaust silencer on fan blowers, centrifugal compressors, internal combustion engines, and small low-pressure gas vents and steam ejectors. 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. The FP 'industrial grade' absorptive silencer series 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.





FP 1/2 Series													
Silencer Ref.	All	FP	FP1/2	FP	FP1	FP2	All	FP	FP1/2	All	Weight	Weight	Weight
	A	B	B	C	C	C	D	E	E	F	FP	FP1	FP2
	Inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg	kg
FP/1/2 038	1.5	115	178	600	800	1100	50	93	160	60	3	10	14
FP/1/2 050	2	115	210	700	850	1200	50	98	180	60	5	17	20
FP/1/2 063	2.5	140	210	700	850	1200	50	110	180	70	6	25	35
FP/1/2 075	3	152	230	700	900	1250	50	126	190	90	9	35	55
FP/1/2 090	3.5	178	310	850	950	1350	75	164	230	150	15	60	80
FP/1/2 100	4	230	360	850	1100	1600	75	190	255	160	20	85	125
FP/1/2 125	5	310	410	850	1200	1800	75	230	280	180	30	120	160
FP/1/2 150	6	360	460	1150	1400	1900	75	255	305	190	46	160	220
FP/1/2 175	7	360	460	1150	1500	2300	75	255	305	200	47	170	250
FP/1/2 200	8	410	610	1450	1650	2500	75	280	355	220	64	190	280
FP/1/2 225	9	410	610	1450	1800	2600	75	280	355	235	68	220	320
FP/1/2 250	10	460	660	1750	2000	2700	75	305	430	250	130	290	400
FP/1/2 300	12	560	760	2200	2200	3200	100	380	480	280	200	400	500
FP/1/2 350	14	560	760	2200	2400	3300	100	380	480	320	218	490	680
FP/1/2 400	16	660	920	2600	2700	3700	100	430	550	340	280	630	850
FP/1/2 450	18	660	920	2900	3000	4200	100	430	550	370	310	780	1000
FP/1/2 500	20	760	1070	2900	3300	4500	100	480	640	400	330	900	1200
FP/1/2 550	22	760	1270	3200	3600	4800	100	480	735	430	375	1100	1400
FP/1/2 600	24	810	1370	3500	3700	5000	100	505	835	460	430	1300	1800

EMISSION CONTROL By Eminox

Halyard





SCR AND DPF AFTERTREATMENT SYSTEMS

Eminox and Halyard strategic partnership uniquely positions Halyard to be your one-stop shop for your aftertreatment or full exhaust system solution

The Eminox approach combines:

- Maritime SCR systems engineered for precise NOx reduction for IMO Tier III emissions compliance
- Diesel Particulate Filters (DPF) for particulate matter control
- Stage V emissions compliance for Inland Waterways with DPF and SCR technology
- Hybrid and dual-fuel compatibility for future-ready propulsion systems
- Full system integration, from design through to commissioning

Eminox SCR systems engineered for IMO Tier III:

- Over 90% NOx reduction efficiency, depending on operating conditions
- Proven compliance within all global ECAs
- Scalable across 130 kW to 4MW engine platforms

SCR and DPF Aftertreatment Systems

Advanced Exhaust Aftertreatment Solutions

Eminox and Halyard have a strategic partnership to deliver advanced exhaust aftertreatment solutions to the marine industry complemented by Halyard's exhaust systems including; risers, sprayheads, connectors, silencers, and hull outlets. This partnership uniquely positions Halyard to be your one-stop shop for your aftertreatment and full exhaust system solution.

Eminox Emission Controls

As part of the Eminox Group of Companies, Emission Control by Eminox has been a trusted industry leader since 1978 specialising in exhaust aftertreatment systems.

Emission Control by Eminox specialise in the design and manufacture of modular, scalable exhaust aftertreatment systems and insulation solutions for both new applications and retrofits.

With over 30 years of expertise in oxidation catalysts, particulate filters, and SCR technologies, Emission Control by Eminox enable customers to meet or exceed the latest global emissions regulation compliance. Their fully accredited exhaust aftertreatment system designs are readily available and adaptable for any application.

Emission Compliance

Operating within Emission Control Areas (ECAs) demands more than incremental improvements, it requires an engineered approach to NOx reduction, particulate control, and system integration. Under IMO Tier III regulations, vessels must achieve up to 80% NOx reduction compared to Tier I baselines, making advanced exhaust aftertreatment systems not just beneficial, but essential.

For OEMs, naval architects, boat builders and shipyard engineers, the challenge is clear: how to deliver compliant, efficient and future-ready vessels without compromising performance, space, or project timelines.



SCR and DPF Aftertreatment Systems

Company Overview



Optimised Emission Reduction Technologies:

Emission Control by Eminox exhaust aftertreatment systems are engineered to enhance the emissions performance of diesel engines ranging from 50kW to 4MW. Designed to be compact, these systems significantly reduce particulate matter (PM) and nitrogen oxides (NOx).

Modular Products and Comprehensive Servicing:

Eminox portfolio offers modular solutions, with every exhaust aftertreatment system element developed from a standard range of components tailored to Eminox requirements.

Emission Control by Eminox provide a full range of service options, including genuine, warrantied replacement and exchange parts based on the operating hours of each application, ensuring optimal performance and reliability.

Local Engineering, Global Manufacturing:

Engineering evaluation, modelling, prototyping, validation, and verification are all carried out at Eminox's 7,000m² facility in the UK. Manufacturing is primarily carried out at their site in the UK, with additional manufacturing capabilities in Slovakia, North American and India.

From concept to manufacture, the Eminox team understands the challenges of developing smaller, lighter products that perform reliably in harsh environments, while delivering sustainable and serviceable solutions.

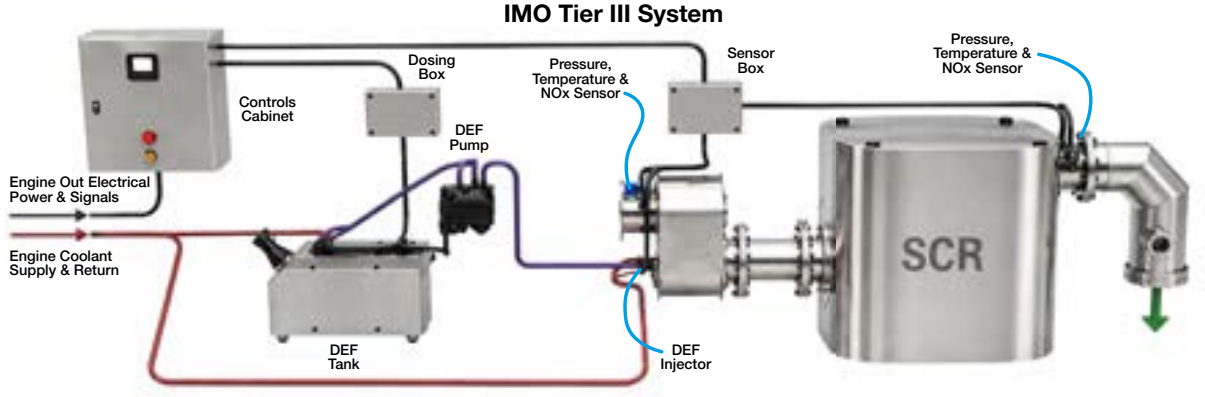
Designing for IMO Tier III emission compliance can face complex engineering and commercial pressures, such as:

- **Regulatory complexity across ECAs:** With ECAs spanning the North Sea, Baltic Sea, North America and beyond, compliance is operationally critical. Each vessel must meet stringent NOx emission limits when operating within these zones, requiring reliable and certifiable emission control technologies aligned with International Maritime Organization standards
- **Space and integration constraints:** Vessels often operate within tight spatial envelopes. Integrating Selective Catalytic Reduction (SCR) technologies without affecting vessel architecture or stability can present challenging design constraint
- **Performance vs emissions trade-offs:** Maintaining engine efficiency, fuel consumption targets, and operational uptime while achieving emissions compliance remains a key concern, particularly across variable duty cycles common in commercial workboats

SCR and DPF Aftertreatment Systems

System Designs

IMO Tier III System



The Eminox approach combines:

- **Maritime SCR systems** engineered for precise NOx reduction (IMO Tier III emissions compliance)
- **Diesel Particulate Filters (DPF)** for particulate matter control (Stage V Inland Waterways emissions compliance, when added to SCR technology)
- **Hybrid and dual-fuel compatibility** for future-ready propulsion systems
- **Full system integration**, from design through to commissioning

Eminox integrated methodology ensures that every component functions as part of a cohesive system, optimised for both compliance and operational performance.

Maritime SCR systems engineered for IMO Tier III:

Selective Catalytic Reduction (SCR) remains the most effective and widely adopted technology for achieving IMO Tier III NOx limits.

Key Advantages of maritime SCR:

- Over 90% NOx reduction efficiency, depending on operating conditions
- Proven compliance within all global ECAs
- Scalable across 130 kW to 4MW engine platforms

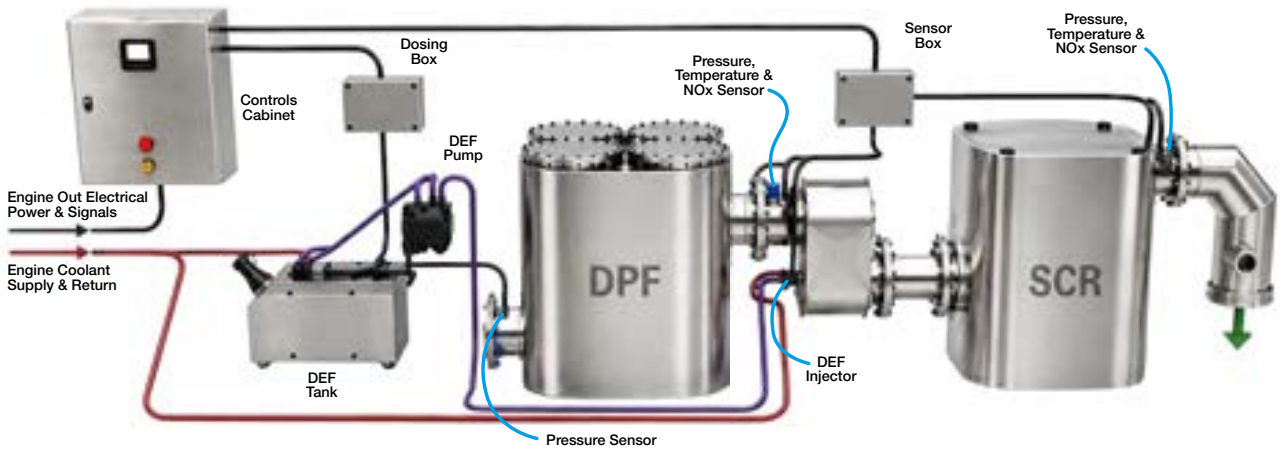
By injecting a urea-based reductant into the exhaust stream, SCR systems convert harmful nitrogen oxides into harmless nitrogen and water vapour, ensuring regulatory compliance without compromising engine performance.

Note: If needed, systems can also be Stage V Inland water ways approved by adding an additional DPF unit.

Stage V Inland Waterways:

Eminox's engineered maritime and inland solutions apply the same robust SCR technology used across global ECAs, now paired with high-efficiency DPF filtration to achieve Stage V-level PM and PN control. Whether upgrading a single vessel or modernising an entire fleet, these retrofit systems deliver measurable emission improvements, support global sustainability targets, and strengthen your position by prioritising low-emission operations.

Stage V Inland Waterways System



SCR and DPF Aftertreatment Systems

EMISSION CONTROL By Eminox

Applications & Design

Designed for Commercial, Naval and Yacht Applications:

Eminox systems are purpose-built for the operational realities of the diverse applications across the marine market where high load variability and frequent transient operation with demanding uptime and durability are required.

Consideration is also given to:

- Strict space, weight and acoustic constraints
- Mission-critical reliability
- Compliance with evolving environmental standards

The scalable, platform solution is engineered to integrate seamlessly within the vessel's architecture, supporting both newbuild and retrofit projects.



Collaborative engineering from concept to commissioning:

Delivering emission compliance is not a one-size-fitsall approach. Engineering experts collaborate closely with the customer project teams across the entire vessel development lifecycle including:

1. Early stage customer consultation
2. System modelling and simulation to optimise performance
3. Customised integration strategies for shipyards and engineers
4. On-site support during installation and commissioning
5. Ongoing lifecycle services and technical support

This partnership-driven model ensures that compliance is achieved efficiently, with minimal risk to project timelines or operational performance.

Future-proofing emission control:

As environmental regulations continue to evolve, vessel operators and designers must prepare for increasingly stringent standards.

Eminox integrated exhaust aftertreatment systems provide a future-ready platform, supporting:

- Transition to hybrid and alternative fuel propulsion
- Continued compliance with tightening IMO and EPA regulations
- Reduced environmental impact and improved sustainability credentials

Advantages:

- Compact mixing device used to mix the urea injection into the exhaust gas flow, whilst adhering to engine backpressure limits
- Mixers designed and validated in-house, back by over 20 years of experience
- Compact design reduces overall system size and allows the SCR chamber to be positioned closer to the engine
- Easy addition of modular components including: DPF, Silencers, Water-cooled tailpipe
- Customisable design features including inlet and outlet positions
- Flexible SCR and mixer orientation, with multiple urea tank sizes and designs available
- Range of bespoke airless dosing systems that deliver accurate and reliable urea dosing
- Fully validated systems approved by DNV and BV
- Integrated display screen provides system status and fault notifications
- The system contains a switchable IMOIII mode which reduces dosing when operating in an IMOIII area



Eminox HMI Screen



SCR and DPF Aftertreatment Systems

System Certification

Eminox IMO Tier III solution for Marine applications:

The System:

- Modular and scalable design
- Intelligent control system
- Multiple installation configurations
- Proven, proprietary airless injection system
- Durable, stainless-steel housing
- Low maintenance
- Thermal insulation options
- Integrated noise attenuation
- Remote service/support options

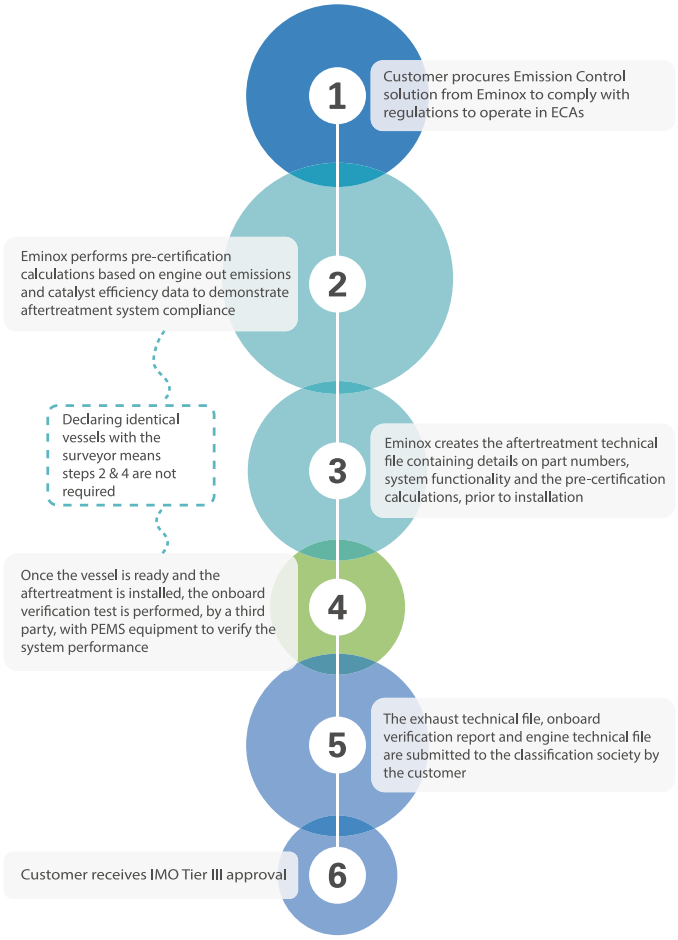
Eminox are also able to offer the Scheme B approach to IMO Tier III emissions certification and Single Vessel Approval:

Step-by-step guide to Scheme B Approval:

- 1. Adopt an early emissions strategy in the design process
- 2. Upgrade your preferred engine with an exhaust aftertreatment compliant to IMO/EPA standards
- 3. Engage with classification societies
- 4. Conduct emissions modelling and PEMS testing
- 5. Prepare a comprehensive compliance file

Following the Scheme B Approval process involves:

- Engine and propulsion system assessments
- Emissions testing and verification
- Certification by a flag state or classification society



Halyard





Exhaust Accessories, Hoses, Bellows & Connectors

A range of exhaust accessories designed specifically to compliment installations:

- Exhaust Overheat Alert System
- Thermal Insulation Jackets & Hot Lag
- Flexible Exhaust Bends - Standard Products
- Wire Reinforced Standard Range Exhaust Hose
- Wire Reinforced ‘HalFlex’ Ultra Flexible Exhaust Hose
- Wire Reinforced ‘HalFlex-HT’ High Temperature Hose
- Wire Reinforced Silicone Exhaust Hose
- Softwall Silicone Exhaust Connections
- Silicone Flexible Bellows
- Bronze Siphon Breakers
- Separator Non-Return Valves
- Stainless Steel Hose Clamps
- 316L Stainless Steel Through-Hull Exhaust Outlets
- 316L Stainless Steel Deck Drain Manifolds & Connectors

Exhaust Accessories, Hoses, Bellows & Connectors

Exhaust Overheat Alert System



- IP67 waterproof 52mm gauge
- Self test functionality
- Touch screen control
- Single and twin engine monitoring
- Single and dual station display
- Easy installation
- Fail-safe functionality

Halyard's Exhaust Alert provides a class leading exhaust overheat alert system housed in a stylish new standard 52mm diameter, IP67 waterproof gauge.

The new system incorporates self-test functionality with touch screen control and is supplied as a 12/24 dual voltage unit. Available with a choice of chrome or black bezel and black or white gauge faces to compliment your existing gauges.

Exhaust Accessories, Hoses, Bellows & Connectors

Exhaust Alert - Gauge System

Part No.	Reference	Exhaust Alert System
		Sets
H021248	AS125	Single engine single station gauge display with removable through hose sensor with 16 metre cable
H021250	AS145	Single engine dual station gauge displays with removable through hose sensors with 16 metre cable
H021252	AS225	Twin engine single station gauge displays with removable through hose sensors with 16 metre cable
H021254	AS245	Twin engine dual station gauges with removable through hose sensors with 16 metre cable
H020170	AS701	Master display suitable for 1-2 engines, 52mm diameter gauge with white card and Chrome bezel
H020171	AS702	Repeater display to be used in conjunction with master display for a second station
H024728	AS905	120 degree Hose Sensor
H024729	AS906	140 degree Hose Sensor
H021389	AS780	Connector block for wiring in displays to power and sensors

Gauge



Removable through hose sensor



Part No.	Reference	Exhaust Alert System
		OEM -Kits
H000424	AS180	OEM Control Box kit (12/24 Volt) with single through hose sensor with 16 metre cable
H000433	AS280	OEM Control Box kit (12/24 Volt) with twin through hose sensors with 16 metre cables
H000439	AS380	OEM Control Box kit (12/24 Volt) with triple through hose sensors with 16 metre cables

Exhaust Alert - Options

Part No.	Reference	Exhaust Alert System
		Options
H000447	AS777	Optional 120dB 12V siren
H021451	AS778	Optional 120dB 24V siren
		OEM Control Box - For Vessel Display Integration
H024727	AS705/AS706	Control box suitable for use with Halyard exhaust alert sensors, used to integrate into vessel alarm system/display, 12/24V input, common alarm output matches input voltage

Siren



OEM Control Box



Exhaust Accessories, Hoses, Bellows & Connectors

Thermal Insulation Jackets

Thermal insulation jackets can be supplied to suit your new exhaust system or can also be made and supplied as replacements for your existing system.

These are available with either a grey or black finish.

Carbon Fibre Halyard ‘Heatshell’ is also an option for certain systems.





Hot Lag

Hot Lag		
Part No.	Reference	Description
H000532	HTL05090	5m x 100mm wide, 5mm thick

Hot lag is designed for lagging hot exhaust systems with a thermal insulator which is asbestos free. It has a nominal width of 100mm (4”) by 5mm ($^1/_2$”) and may be held in place with stainless steel wire or hose clamps.



Flexible Exhaust Bends - Standard Products

Flexible 45° Black EPDM Bends 100°C Continuous										
Part No.	Reference	I.D.		A	B	C	D	R	W	Hose Clamp
		inch	mm	mm	mm	mm	mm	mm	mm	
H003337	CBR450040	2	51	125	125	50	50	50	5	H000510
H003338	CBR450050	3	76	145	145	50	50	95	6.5	H000515
H003339	CBR450055	3½	89	155	155	50	50	100	6.5	H000517
H003340	CBR450060	4	102	160	160	50	50	102	7	H024246
H003341	CBR450065	5	127	240	240	50	50	187	8	H024249
H003342	CBR450070	6	152	350	350	60	60	250	8	H024250
H003343	CBR450075	8	203	400	400	65	65	300	10	H024252
H003344	CBR450080	10	254	425	425	65	65	350	12	H024253

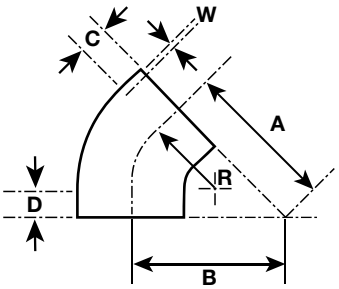
Flexible 90° Black EPDM Bends 100°C Continuous										
Part No.	Reference	I.D.		A	B	C	D	R	W	Hose Clamp
		inch	mm	mm	mm	mm	mm	mm	mm	
H003345	CBR90040	2	51	125	125	50	50	50	5	H000510
H003346	CBR90045	2½	63.5	145	145	50	50	95	5	H000513
H003347	CBR90050	3	76	145	145	50	50	95	6.5	H000515
H003348	CBR90055	3½	89	155	155	50	50	100	6.5	H000517
H003349	CBR90060	4	102	160	160	50	50	110	7	H024246
H003350	CBR90065	5	127	240	240	50	50	187	8	H024249
H003351	CBR90070	6	152	350	350	60	60	250	8	H024250
H003352	CBR90075	8	203	400	400	65	65	300	10	H024252
H003353	CBR90080	10	254	425	425	65	65	350	12	H024253

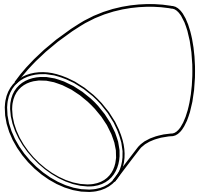
Flexible 45° Silicone Bends 180°C Continuous										
Part No.	Reference	I.D.		A	B	C	D	R	W	Hose Clamp
		inch	mm	mm	mm	mm	mm	mm	mm	
H003319	CB45040	2	51	125	125	50	50	50	5.5	H000510
H003320	CB45050	3	76	145	145	50	50	95	7	H000515
H003321	CB45055	4	102	102	160	50	50	110	7	H024247
H003322	CB45065	5	127	240	240	50	50	187	7	H000487
H003318	CB45070	6	152	350	350	60	60	250	7	H024251

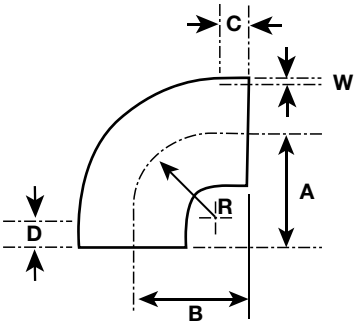
Flexible 90° Silicone Bends 180°C Continuous										
Part No.	Reference	I.D.		A	B	C	D	R	W	Hose Clamp
		inch	mm	mm	mm	mm	mm	mm	mm	
H003324	CB90040	2	51	125	125	50	50	50	5.5	H000510
H003325	CB90045	2½	63.5	145	145	50	50	95	5.5	H000513
H003326	CB90050	3	76	145	145	50	50	95	7	H000515
H003327	CB90055	3½	89	155	155	50	50	100	7	H000517
H003328	CB90060	4	102	160	160	50	50	110	7	H024247
H003329	CB90065	5	127	240	240	50	50	187	7	H000487
H003330	CB90070	6	152	350	350	60	60	250	7	H024251
H003331	CB90075	8	203	350	350	65	65	300	7	H024252

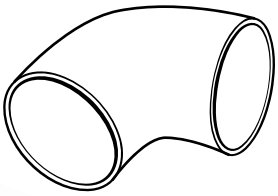
Options

- Extremely high temperature Nomex bends rated to 260°C
- Alternative sizes and configurations













Exhaust Accessories, Hoses, Bellows & Connectors

Wire Reinforced Standard Range Exhaust Hose - Standard Products



Wire Reinforced Standard Range Exhaust Hose 'ETNA' Temperature rating - Continuous: 100°C						
Part No.	Reference	I.D.		Bend Radius	Max. Length	Hose Clamp
		inch	mm	mm	metres	
H000518	2HS32	1 1/4	32	130	60	H000505
H000519	2HS38	1 1/2	38	150	60	H000507
H000520	2HS41	1 5/8	41	160	60	H000507
H000521	2HS45	1 3/4	45	170	60	H000509
H000522	2HS51	2	51	180	60	H000510
H000523	2HS60	2 3/8	60	190	60	H000512
H000524	2HS63	2 1/2	63	200	60	H000512
H000525	2HS76	3	76	250	60	H000514
H013763	2HS89	3 1/2	89	330	60	H000517
H013764	2HS102	4	102	410	60	H024246
H018617	2HS127	5	127	560	60	H024249
H019437	2HS152	6	152	680	12	H024250
H019438	2HS203	8	203	995	12	H024252
Wired to end only						

Wire Reinforced 'HalFlex' Ultra Flexible Exhaust Hose - Standard Products



Wire Reinforced 'HalFlex' Ultra Flexible Exhaust Hose Temperature rating - Continuous: 100°C							
Part No.	Reference	I.D.		Bend Radius	Max. Length	Hose Clamps Wired to End	Hose Clamp Soft Cuffed Ends
		inch	mm	mm	metres		
H022112	HFX38	1 1/2	38	75	9	H000508	H000507
H022113	HFX41	1 5/8	41	85	6	H000509	H000507
H022114	HFX45	1 3/4	45	90	10	H000510	H000509
H022115	HFX51	2	51	105	10	H000511	H000510
H022116	HFX60	2 3/8	60	120	10	H000513	H000512
H022117	HFX63	2 1/2	63.5	125	6	H000513	H000513
H022118	HFX76	3	76	175	10	H000516	H000515
H022119	HFX89	3 1/2	89	205	10	H000517	H000517
H022120	HFX102	4	102	235	10	H024247	H024246
H022121	HFX113	4 1/2	113	260	9	H024248	H000485
H022122	HFX127	5	127	295	10	H000487	H024249
H022123	HFX152	6	152	350	10	H024251	H024250
H022124	HFX177	7	177	410	6	H000491	H000491
H022125	HFX203	8	203	470	6	H024252	H024252
H022126	HFX254	10	254	700	6	H024253	H024253
H022127	HFX305	12	305	840	6	H024254	H024254
H022128	HFX356	14	356	N/A	4.5	H024255	H024255
H022129	HFX406	16	406	N/A	3.5	H018627	H018627
H022130	HFX458	18	458	N/A	2	H017611	H019339
Available as wired to end or with soft cuffed ends to aid hose clamping							

Exhaust Accessories, Hoses, Bellows & Connectors

Wire Reinforced 'HalFlex-HT' High Temperature Hose - Standard Products



Wire Reinforced 'HalFlex-HT' High Temperature Hose Temperature rating - Continuous: 140°C							
Part No.	Reference	I.D.		Bend Radius	Max. Length	Hose Clamps Wired to End	Hose Clamp Soft Cuffed Ends
		inch	mm	mm	metres		
H022131	HFXHT38	1 1/2	38	75	6	H000508	H000507
H022132	HFXHT41	1 5/8	41	85	5	H000509	H000508
H022133	HFXHT45	1 3/4	45	90	6	H000510	H000509
H022134	HFXHT51	2	51	105	6	H000511	H000510
H022135	HFXHT60	2 3/8	60	120	6	H000513	H000512
H022136	HFXHT63	2 1/2	63.5	125	6	H000513	H000513
H022137	HFXHT76	3	76	175	6	H000515	H000515
H022138	HFXHT89	3 1/2	89	205	6	H000517	H000517
H022139	HFXHT102	4	102	235	6	H024247	H024246
H022140	HFXHT113	4 1/2	114	260	6	H024248	H000485
H022141	HFXHT127	5	127	295	6	H000487	H024249
H022142	HFXHT152	6	152	350	6	H024251	H024250
H022143	HFXHT177	7	178	410	5	H000491	H000491
H022144	HFXHT203	8	203	470	5	H024252	H024252
H022145	HFXHT254	10	254	700	5	H024253	H024253
H022146	HFXHT305	12	305	840	5	H024254	H024254
H022147	HFXHT358	14	356	N/A	4	H024255	H024255
H022148	HFXHT406	16	406	N/A	3	H018627	H018627
H022149	HFXHT458	18	458	N/A	1.5	H017611	H019339
Available as wired to end or with soft cuffed ends to aid hose clamping							

Lloyd's approval. Please contact Halyard for further information

Wire Reinforced Silicone Exhaust Hose - Standard Products

Options

- Extremely high temperature Nomex rated to 260°C
- Alternative sizes and configurations



Wire Reinforced Silicone Exhaust Hose Temperature rating - Continuous: 180°C					
Part No.	Reference	I.D.		Max. Length	Hose Clamp
		inch	mm	metres	
H022181	SW38	1 1/2	38	6	H000509
H022182	SW41	1 5/8	41	5	H000510
H022183	SW45	1 3/4	45	6	H000511
H022184	SW51	2	51	6	H000512
H022185	SW60	2 3/8	60	6	H000514
H022186	SW63	2 1/2	63.5	6	H000510
H022187	SW76	3	76	6	H000516
H022188	SW89	3 1/2	89	6	H000517
H022189	SW102	4	102	6	H000485
H022190	SW113	4 1/2	114	6	H000486
H022191	SW127	5	127	6	H000487
H022192	SW152	6	152	6	H000490
H022193	SW177	7	178	5	H000492
H022194	SW203	8	203	5	H000494
H022195	SW254	10	254	5	H012776
H022196	SW305	12	305	5	H019846
H022197	SW356	14	356	4	H019851
H022198	SW406	16	406	3	H018627
H022199	SW456	18	456	1.5	H017611
Available as wired to end or with soft cuffed ends to aid hose clamping					

Note: Lloyd's approval is not applicable for Halyard Wired Reinforced Silicone Exhaust Hose ID sizes SW254 – SW456

Exhaust Accessories, Hoses, Bellows & Connectors

Softwall Silicone Exhaust Connections - Standard Products

Lloyd's Register

Options

- Extremely high temperature Nomex rated to 260°C
- Alternative sizes and configurations



Silicone Exhaust Hose Temperature rating - Continuous: 180˚C					
Part No.	Reference	I.D.		Max. Length	Hose Clamp
		inch	mm	metres	
H022160	SS38	1 1/2	38	6	H000508
H022161	SS41	1 5/8	41	5	H000508
H022162	SS45	1 3/4	45	6	H000509
H022163	SS51	2	51	6	H000511
H022164	SS60	2 3/2	60	6	H000513
H022165	SS63	2 1/2	63.5	6	H000513
H022166	SS76	3	76	6	H000515
H022167	SS89	3 1/2	89	6	H000517
H022168	SS102	4	102	6	H024247
H022169	SS113	4 1/2	114	6	H024251
H022170	SS127	5	127	6	H000487
H022171	SS152	6	152	6	H024248
H022172	SS177	7	178	5	H000491
H022173	SS203	8	203	5	H024252
H022174	SS254	10	254	5	H024253
H022175	SS305	12	305	5	H024254
H022176	SS356	14	356	4	H024255
H022177	SS406	16	406	3	H018627
H022178	SS456	18	456	1.5	H017611

This product is designed for short flexible connections only – Please contact Halyard for further information

Silicone Flexible Bellows - Standard Products

Lloyd's Register

Options

- Extremely high temperature Nomex rated to 260°C
- Large range of alternative sizes also available
- Variants with different end to end diameters available



Silicone Flexible Bellows Temperature rating - Continuous: 180˚C						
Part No.	Reference	I.D.		Length Overall	Single/Dual Hump	Hose Clamp
		inch	mm	mm		
H007926	CB1051	2	51	150	Single	H000513
H003300	CB1063	2 1/2	63	150	Single	H000513
H003301	CB1076	3	76	170	Single	H000515
H003302	CB1090	3 1/2	89	220	Single	H000517
H003303	CB1102	4	102	220	Single	H024247
H003304	CB1127	5	127	220	Single	H000487
H003305	CB1152	6	152	220	Single	H024251
H003306	CB1178	7	178	220	Single	H000491
H003307	CB1203	8	203	220	Single	H024252
H003308	CB1254	10	254	250	Single	H024253
H003309	CB1305	12	305	300	Single	H024254
H010251	CB1356	14	356	300	Single	H024255
H017078	CB1406	16	406	300	Single	H018627
H003310	CB2102	4	102	350	Double	H024247
H008903	CB2127	5	127	350	Double	H024247
H003311	CB2152	6	152	350	Double	H024251
H003312	CB2178	7	178	350	Double	H000491
H003313	CB2203	8	203	350	Double	H024252
H003314	CB2254	10	254	350	Double	H024253
H003315	CB2305	12	305	350	Double	H024254
H003316	CB2324	12 3/4	324	350	Double	H010478
H003317	CB2355	14	356	400	Double	H024255
H003202	CB2406	16	406	400	Double	H018627
H010109	CB2508	20	508	700	Double	H021267
H020627	CB1508	20	508	450	Single	H021267

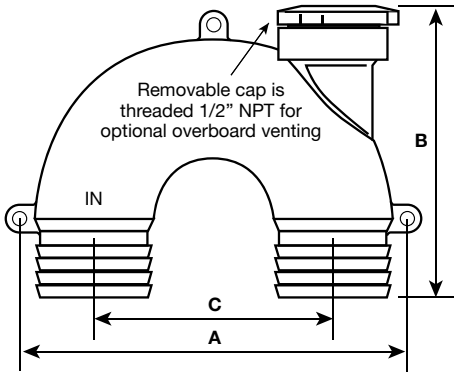
Exhaust Accessories, Hoses, Bellows & Connectors

Bronze Siphon Breakers

This range of siphon breakers are made from corrosion resistant bronze.

The siphon permits air to enter, but does not permit air and odours to escape. The cap is threaded 1/2" NPT to accept a barb fitting to facilitate overboard venting. Overboard venting is required if used in an exhaust system.

Vented loops assure clog-free anti-siphon protection for sanitation or engine exhaust systems. The oversized vent valve can easily be removed for inspection or cleaning.



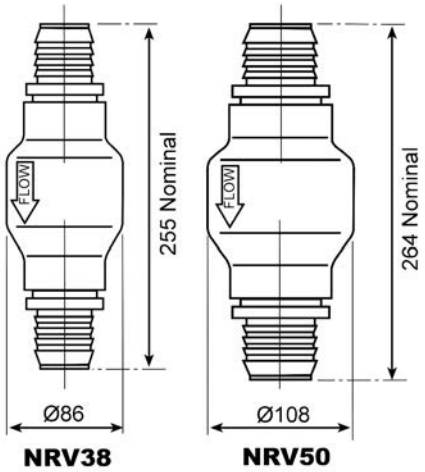
Bronze Siphon Breakers										
Part No.	Reference	Description	Hose I.D.		**A** Mount Holes		**B** Height		**C** Hose Centres	
			mm	inch	mm	inch	mm	inch	mm	inch
H021061	SB050	Siphon breaker 1/2"	13	1/2	120	4 3/4	109	1 37/64	76	3
H021062	SB0750	Siphon breaker 3/4"	19	3/4	120	4 3/4	109	1 37/64	76	3
H018133	SB100	Siphon breaker 1"	25	1	120	4 3/4	109	1 37/64	76	3
H018134	SB150	Siphon breaker 1 1/2"	38	1 1/2	170	6 11/16	109	1 37/64	101	4
H021063	SB200	Siphon breaker 2"	51	2	185	7 9/32	137	5 25/64	114	4 1/2
H018171	N/A	90 degree hose barb for overboard venting								

Separator Non-Return Valves

Designed for use where there is a risk of water being pushed back up the separator drain or other vessel equipment.

Separator Non-Return Valves			
Part No.	Reference	Inlet/Outlet Dia. inch	Inlet/Outlet Dia. mm
H008743	NRV38	1 1/2	38
H008744	NRV50	2	51





Note: When part of an overboard system valves must not be installed below the waterline.

Exhaust Accessories, Hoses, Bellows & Connectors

Stainless Steel Hose Clamps

Stainless Steel Hose Clamps			
Part No.	Reference	Hose O.D. Range - mm	Material
H000501	HCSS3134	31-34	W4 S/S
H000502	HCSS3740	37-40	W4 S/S
H000505	HCSS4043	40-43	W4 S/S
H000506	HCSS4347	43-47	W4 S/S
H000507	HCSS4751	47-51	W4 S/S
H000508	HCSS5155	51-55	W4 S/S
H000509	HCSS5559	55-59	W4 S/S
H000510	HCSS5963	59-63	W4 S/S
H000511	HCSS6368	63-68	W4 S/S
H000512	HCSS6873	68-73	W4 S/S
H000513	HCSS7379	73-79	W4 S/S
H000514	HCSS7985	79-85	W4 S/S
H000515	HCSS8591	85-91	W4 S/S
H000516	HCSS9197	91-97	W4 S/S
H000517	HCSS97104	97-104	W4 S/S
H024246	HCSS109117	109-117	300SS
H024247	HCSS114122	114-122	300SS
H000485	HCSS121130	121-130	W4 S/S
H024248	HCSS126134	126-134	300SS
H000486	HCSS131139	131-139	W4 S/S
H024249	HCSS134142	134-142	300SS
H000487	HCSS140150	140-150	W4 S/S
H000488	HCSS150162	150-162	W4 S/S
H024250	HCSS159167	159-167	300SS
H024251	HCSS165173	165-173	300SS
H000490	HCSS174187	174-187	W4 S/S
H000491	HCSS188200	188-200	W4 S/S
H000492	HCSS201213	201-213	W4 S/S
H024252	HCSS211227	211-227	300SS
H000494	HCSS226239	226-239	W4 S/S
H000495	HCSS239252	239-252	W4 S/S
H024253	HCSS262278	262-278	300SS
H012776	HCSS278291	278-291	W4 S/S
H024254	HCSS316332	316-332	300SS
H024255	HCSS367383	367-383	300SS
H015470	HCSS395408	395-408	W4 S/S
Stainless Steel Double Bolt Clamps			
H019846	HCSS300324	300-324	W4 S/S
H000500	HCSS312336	312-336	W4 S/S
H019851	HCSS361387	361-387	W4 S/S
H018627	HCSS413439	413-439	W4 S/S

Note:

Please contact Halyard or your local distributor or dealer to verify correct clamp size to suit your Halyard hose, connector or bellows.



Exhaust Accessories, Hoses, Bellows & Connectors

316L Stainless Steel Through-Hull Exhaust Outlets

Stainless steel through-hull exhaust outlets

Legacy Part Number	Ref.	A		B O.D.	C	E	Fixing	G	No. of Fixing Holes	*Flap Material	Bolting Flange Y/N	Weight	New Part Numbers		
		inch	mm	mm	mm	mm	PCD F	mm/ Screw					No Flap or Cowl	Flap	Flap & Cowl
H002524	HF004	1 3/4	45	84	80	26	65	7 / M6	3	NBR	N	0.6	H027537	H027538	H027539
H002525	HF005	2	51	104	80	27	80	7 / M6	3	NBR	N	0.7	H027540	H027541	H027542
H002526	HF006	2 3/8	60	114	87	29	90	7 / M6	3	NBR	N	1	H027543	H027544	H027545
H002527	HF010	3	76	129	95	32	102	7 / M6	3	NBR	N	1.2	H027546	H027547	H027548
H002528	HF015	1 1/4	89	141	110	34	118	7 / M6	4	NBR	Y	1.9	H027549	H027550	H027551
H002529	HF020	4	102	154	123	36	130	7 / M6	4	NBR	Y	2.1	H027552	H027553	H027554
N/A	HF023	4 1/2	114	204	178	84	165	7 / M6	6	SS	Y	4.5	H027555	H027556	H027557
H002531	HF025	5	127	204	178	87	165	7 / M6	6	SS	Y	4.7	H027558	H027559	H027560
H002532	HF030	6	152	254	178	94	190	7 / M6	6	SS	Y	6.1	H027561	H027562	H027563
H002533	HF035	8	203	304	254	107	240	7 / M6	6	SS	Y	9.5	H027564	H027565	H027566
N/A	HF040	10	254	355	254	121	295	7 / M6	8	SS	Y	13	H027567	H027568	H027569
N/A	HF045	12	305	406	254	135	350	7 / M6	8	SS	Y	17	H027570	H027571	H027572

*NBR = Nitrile Rubber, SS = 316L Stainless Steel

With Nitrile Flap & Cowl - Up To 4" diameter



Without Flap or Cowl



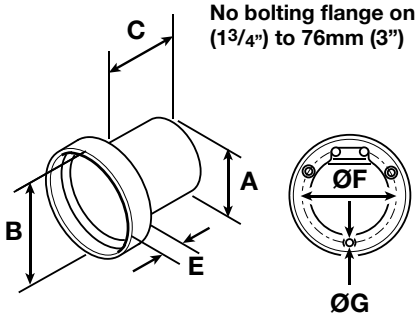
With 316L Flap



With 316L Flap & Cowl

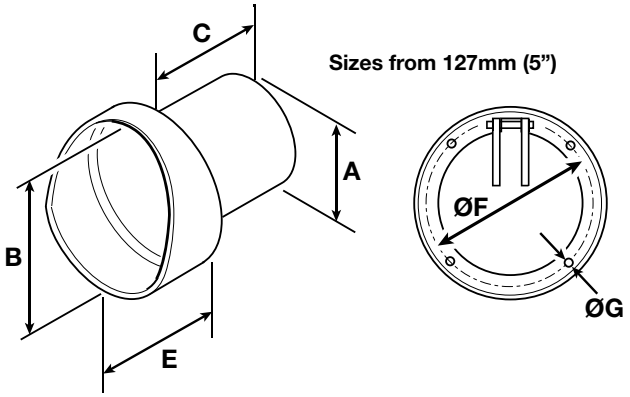


No bolting flange on sizes 45mm (1 3/4") to 76mm (3")



For CSK Screw

Sizes from 127mm (5")



Alternative sizes on request | Standard electro-polished finish | Optional mirror-polished finish

Exhaust Accessories, Hoses, Bellows & Connectors

Halyard Fabricated 316L Stainless Steel Deck Drain Manifolds

316L stainless steel manifolds available in 3/8" to 4" connections.

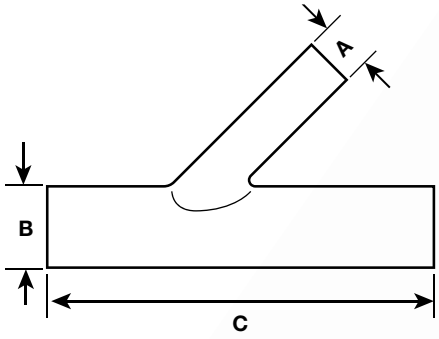
- Manufactured to customer specification
- Optional mounting brackets
- Electro polished
- Price on application



Halyard Fabricated 316L Stainless Steel Branch Connectors

316L stainless steel branch connectors made to order.

- Electro polished
- Price on application
- Alternative sizes available on request



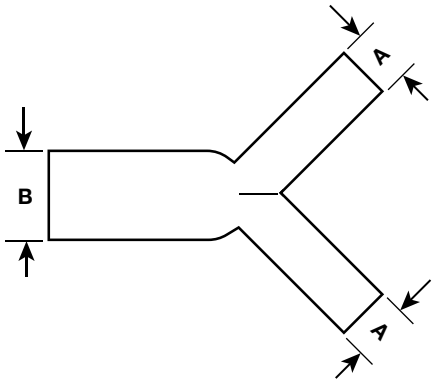
A	B	C
Inches BSP		
1/2	3/4	5
1/2	1	5
1/2	1 1/4	6
1/2	1 1/2	6
1/2	2	7
1/2	2 1/2	8
1/2	3	10
3/4	3/4	5
3/4	1	5
3/4	1 1/2	6
3/4	1 1/2	6
3/4	2	7
3/4	2 1/2	8
3/4	3	10
1	1	5
1	1 1/4	6
1	1 1/2	6
1	2	7
1	2 1/2	8
1	3	10
1.25	1 1/4	6
1.25	1 1/2	6
1.25	2	7
1.25	2 1/2	8
1.25	3	10
1 1/2	1 1/2	7
1 1/2	2	8
1 1/2	2 1/2	8
1 1/2	3	10
2	2	8
2	2 1/2	10
2	3	10
2 1/2	2 1/2	8
2 1/2	3	10
3	3	10

Exhaust Accessories, Hoses, Bellows & Connectors

Halyard Fabricated 316L Stainless Steel Y Connectors

316L stainless steel Y hose connectors made to order.

- Electro polished
- Ten off minimum order
- Price on application
- Alternative sizes available on request





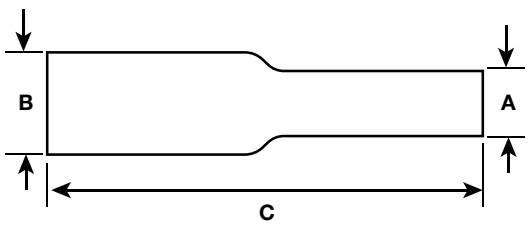
A	B
Inches	
1/2	1/2
1/2	3/4
1/2	1
3/4	3/4
1	1
1	1 1/4
1	1/2
1 1/4	1 1/4
1 1/4	1 1/4
1 1/2	1 1/4
1 1/2	2
2	2
2	2 1/2
2 1/2	2 1/2

Halyard Fabricated 316L Stainless Steel In-line Reducers

A range of 316L stainless steel in-line reducers made to order.

- Electro polished
- Ten off minimum order
- Price on application
- Alternative sizes available on request





A	B	C
Inches		
3/4	1	5
1	1 1/2	6
1 1/2	2	7
2	2 1/2	8
2 1/2	3	10
3	3 1/2	10
3 1/2	4	10

Rubber Design

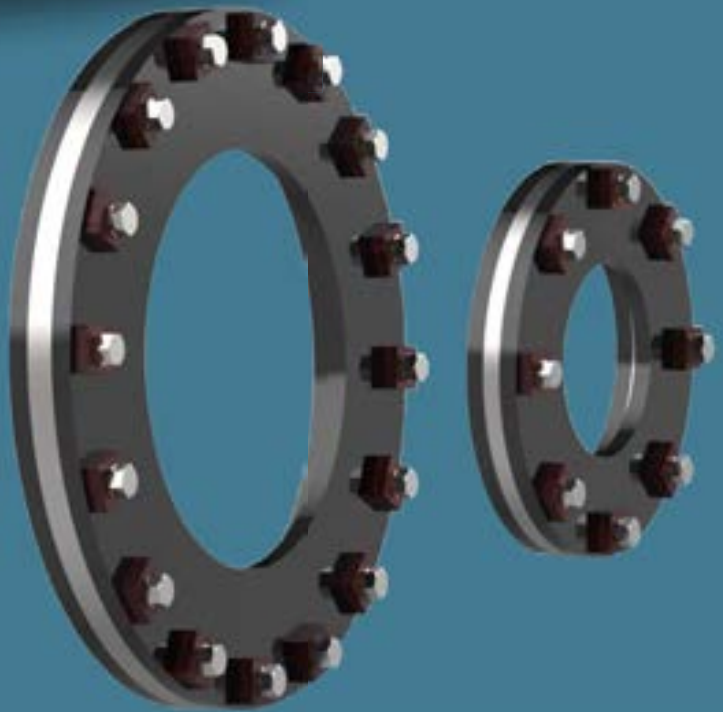
vibration and noise control





ANTIVIBRATION MOUNTS, FLANGED BELLOWS & BULKHEAD PENETRATIONS

- 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



Rubber Design Mounts, Bellows & Bulkhead Penetrations

Rubber Design
vibration and noise control

Hanging/Standing Fixed Point and Stabiliser Mounts

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.

Noise and Vibration Reduction

A significant reduction in the radiated noise and vibrations can be achieved by using rubber-metal elements between the exhaust gas system and ships structure. This is because the transmission speed of sound through rubber is only 45 to 90m/sec, while it is around 5000m/sec through steel. With a smart design and using rubber-metal elements a reduction of 8 to 10dB (A) can be obtained across the majority of the frequency range of 63 to 4000Hz.

Types of Mounting

For exhaust systems, two basic types of mountings are used, hanging/standing fixed support mountings and stabiliser mountings. The fixed support mountings take the static and dynamic forces and determine the direction of the expansion in the exhaust system. The stabiliser mountings guides the thermal expansion caused by the high temperature of the exhaust to the applied stainless steel bellows in the exhaust system. the stabiliser mountings also support the weight of the pipe.

Thermal Insulation

It is important to protect the rubber from the high temperature of the exhaust system. To obtain a long life time of the mountings the temperature must be below 80°C. To achieve this our fixed supports are equipped with suitable thermal insulators. By using this material, as well as providing a minimum air gap of 25mm between the exhaust mounting and the outside exhaust insulation, the temperature can be controlled to around 50°C. The above is applicable for the flexible fixed points, for the stabilisers the thermal insulation is attained by the length of the threaded rod. For more details refer to the installation instructions.

Mounting Selection

Generally these products are part of a complete system, therefore it is advisable to seek expert advice from our engineering team. Halyard, with the support from Rubber Design, can take total responsibility for the complete design including the vibration calculations of the flexible suspended exhaust systems. Besides flexible exhaust supports, Rubber Design also produce stainless steel bellows, flexible fire proof and/or watertight bulkhead penetrations, funnel deck passages. All according to the latest design standards and regulations. With the best design and products a maximum reduction of vibrations and life span of your exhaust gas system will be achieved.





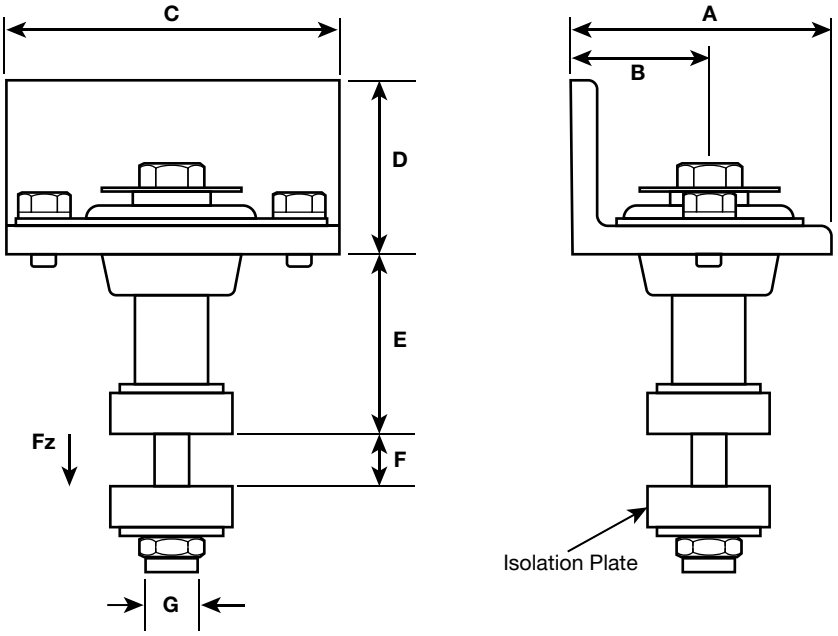


Rubber Design Mounts, Bellows & Bulkhead Penetrations

Fixed Point Mounts



Hanging fixed points are mainly used to support horizontal exhaust pipes, isolate the engine vibrations and control the dynamic forces which occur while the vessel is in operation. Besides this they determine the direction of the expansion due to thermal growth of the exhaust pipe. The fixed points can also be installed close to the engine outlet to avoid thermal expansion from the exhaust system towards the engine bellows. This to protect the turbo against external forces from the exhaust system.



Fixed Point Mounts											
Reference	A	B	C	D	E	F	G	Isolation Plate	Weight	Fz Max	Hardness
	mm	mm	mm	mm	mm	Max. mm			kg	N	°S h. A
RD101	75	40	95	50	50	15	M10	35x35x12	0.9	500	45
										900	60
RD251	100	55	110	65	92	15	M12	40x40x12	2.1	2300	60
										4200	70
										4300	45
RD501	120	68	135	80	97	12	M16	50x50x12	3.3	4000	45
										6200	60
										8750	70
RD1001	150	80	150	100	115	15	M24	60x60x12	7.3	6500	45
										9000	65
RD2001	200	110	180	125	110	15	M30	70x70x16	10.9	10000	45
										15000	65
RD3001	200	110	230	125	155	20	M36	80x80x16	17.0	16000	45
										36000	65

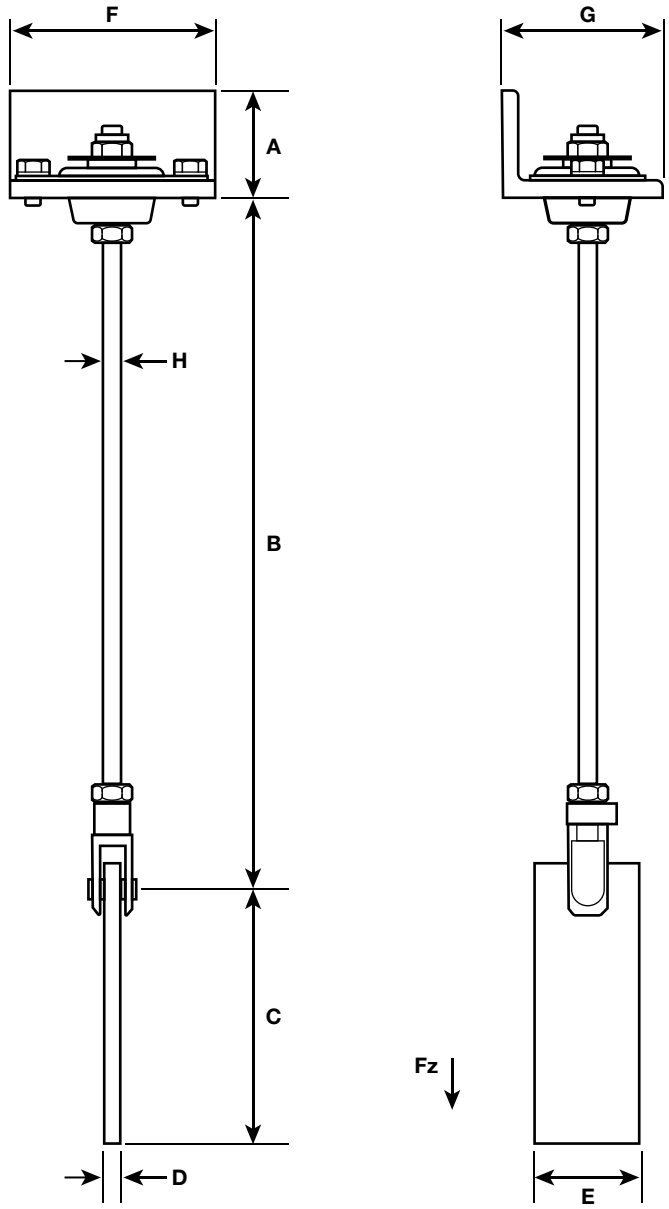
Rubber Design Mounts, Bellows & Bulkhead Penetrations

Rubber Design
vibration and noise control

Stabiliser Mounts

Stabilisers are mainly used to support horizontal exhaust pipes as well as stabilizing the vertical pipes and components like silencers, aftertreatment SCR or DPF units, etc. They isolate the engine vibrations and control the dynamic forces which occur while the vessel is in operation. Besides this they guide the direction of the expansion due to thermal growth of the exhaust system.





Stabiliser Mounts											
Reference	A	B	C	D	E	F	G	H	Weight	Fz Max	Hardness
	mm	mm	mm	mm	mm	mm			kg	N	°S h. A
RD101	50	320	118	8	50	95	75	M10	1.4	500	45
										900	60
RD251D	65	300	135	10	60	100	100	M12	2.6	1750	45
										3000	60
RD501D	80	470	130	15	70	120	120	M16	5.0	3000	45
										4500	60
RD1001	100	530	115	10	40	150	150	M24	9.7	6500	45
										9000	65
RD2001	100	530	130	10	50	180	200	M30	14.6	10000	45
										15000	65
RD3001	125	555	215	15	65	230	200	M36	29.9	16000	45
										36000	65

Rubber Design Mounts, Bellows & Bulkhead Penetrations

MP2 Series Compression Mounts

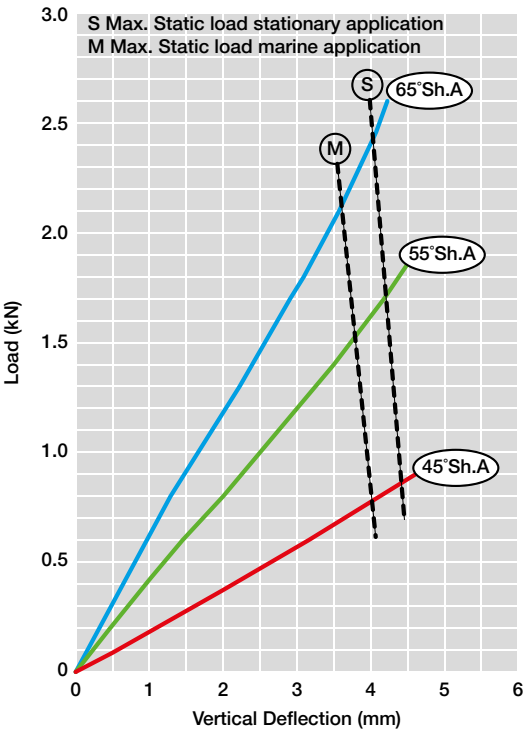


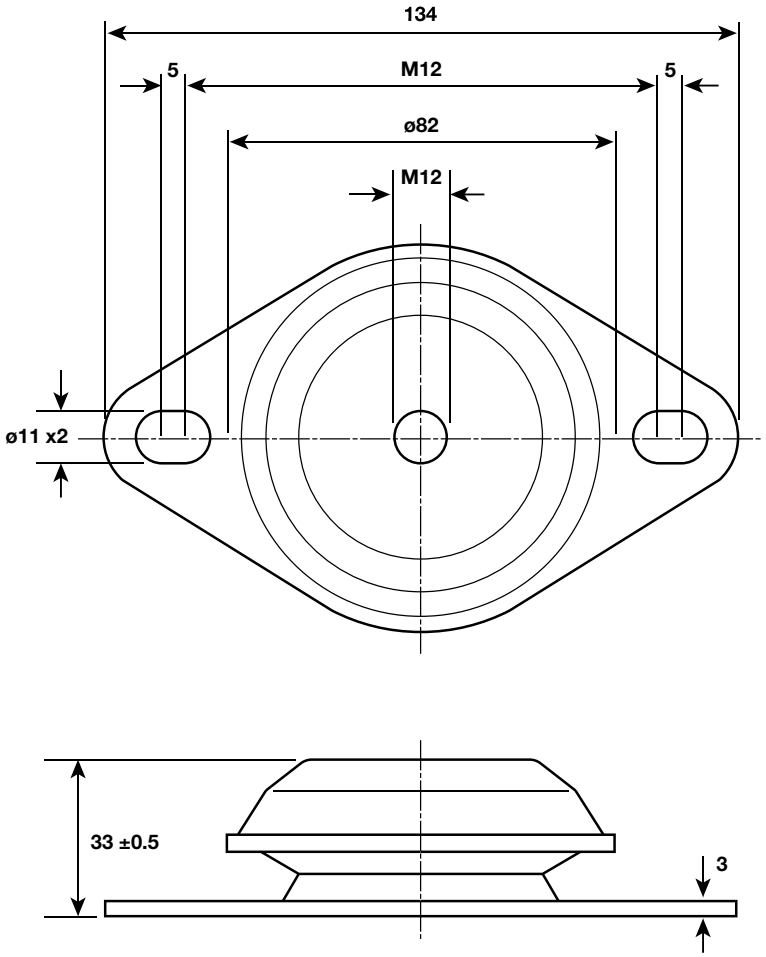
The MP-mountings (Multi Purpose) are developed to offer excellent passive and active vibration isolation for various applications.

Next to offering excellent isolation the MP-mountings internal deflection limiter avoids overload and allows use for mobile applications on for example trucks and ships. The geometry of the metal top offers protection to the natural rubber against oil and ozone. Also available in stainless steel.

Typical applications:

- Generators
- Engines
- Fans
- AC-units
- Cooling equipment
- Electro motors
- Cabinets



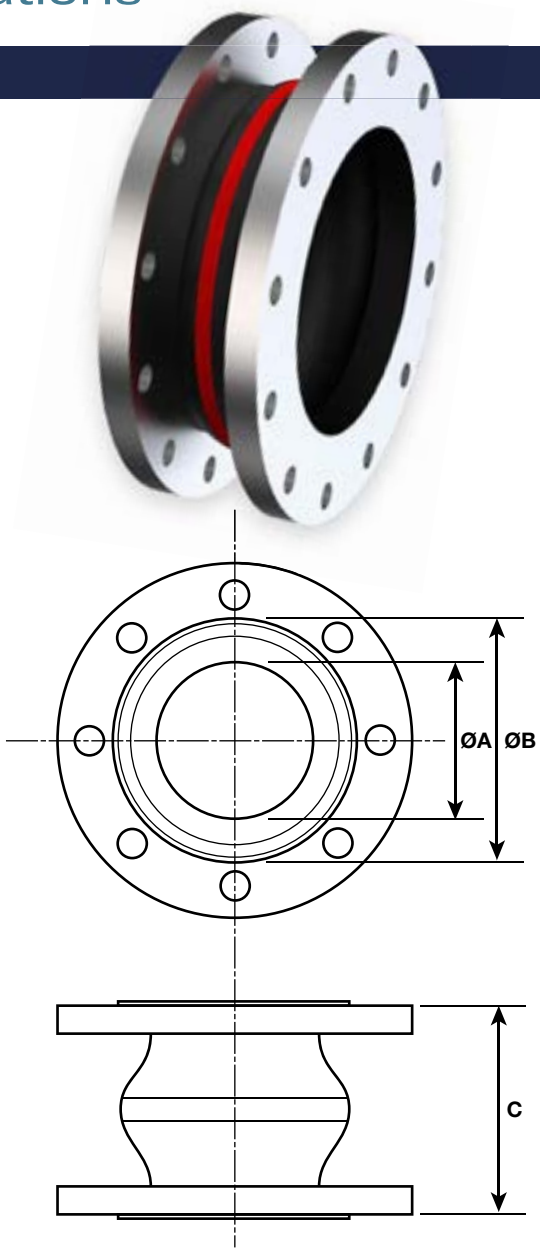


MP2 Series					
Reference	Max. Load Marine	Max. Load Static	Max. Vertical Deflection Marine	Max. Vertical Deflection Static	Cz Stiffness
	kN	kN	mm	mm	N/mm
MP2-45	0.8	0.9	4.0	4.4	200
MP2-55	1.5	1.7	3.8	4.2	400
MP2-65	2.1	2.4	3.6	4.0	600

Rubber Design Mounts, Bellows & Bulkhead Penetrations

Rubber Design
vibration and noise control

Flanged Rubber Bellows



Rubber Design rubber bellows red ring are made from EPDM rubber and provide resistance to water up to 90ºC, however this is influenced by the working pressure.

Rubber bellows with flanges have a special flow assisting convoluted shape of the bellows which minimize detrimental turbulence of the medium and pressure loss. High tensile strength texture cord plies combined with proven synthetic rubber mixes guarantee maximum reliability and an extended working life.

The rubber bellows are produced with a vulcanized steel ring to guarantee a perfect sealing of the profiled sealing rings in the special chamber of the swivel flanges. Average installed insulation is about 25dB, a figure which is further improved by compressed installation.

Alternative specification bellows including yellow ring single and double are available, contact Halyard for details

Pressure

The maximum working pressure is 16Bar (10Bar*) with a test pressure of 25Bar and even a burst pressure of over 60Bar (30Bar*)

(*For bellows larger than NB150)

1 A Red Ring Flanged Rubber Bellows

Reference	ØA	ØB	C	Ax	Lat.	Angle	Bellows Area	Weight	Pressure (abs)		Installation Length	
	mm	mm	mm	mm	mm	Degrees	cm^2	kg	kPa	MPa	Min. mm	Max. mm
KR025R110A000	25	72	130	-30/+20	±20	±35	35	1.9	20	1.6	120	135
KR032R110A000	32	72	130	-30/+20	±20	±35	35	2.0	20	1.6	120	135
KR040R110A000	40	79	130	-30/+20	±20	±35	50	3.5	20	1.6	120	135
KR050R110A000	50	89	130	-30/+20	±20	±35	74	4.3	20	1.6	120	135
KR065R110A000	65	104	130	-30/+20	±20	±30	87	5.5	20	1.6	120	135
KR080R110A000	80	120	130	-30/+20	±20	±30	120	6..2	30	1.6	120	135
KR100R110A000	100	139	130	-30/+20	±20	±25	143	7.7	40	1.6	120	135
KR125R110A000	125	164	130	-30/+20	±20	±25	210	8.7	60	1.6	120	135
KR150R110A000	150	189	130	-30/+20	±20	±15	283	11.3	60	1.6	120	135
KR200R110A000	200	237	130	-30/+20	±20	±15	525	16.2	70	1.0	115	140
KR250R110A000	250	289	130	-30/+20	±20	±10	636	20.5	70	1.0	125	140
KR300R110A000	300	338	130	-30/+20	±20	±10	897	24.0	80	1.0	125	140
KR350R110A000	350	390	200	-30/+20	±20	±10	1290	34.0	80	1.0	190	210
KR400R110A000	400	455	200	-30/+20	±20	±10	1628	37.5	80	1.0	190	210
KR500R110A000	500	555	200	-30/+20	±20	±10	2546	47.0	80	1.0	190	210

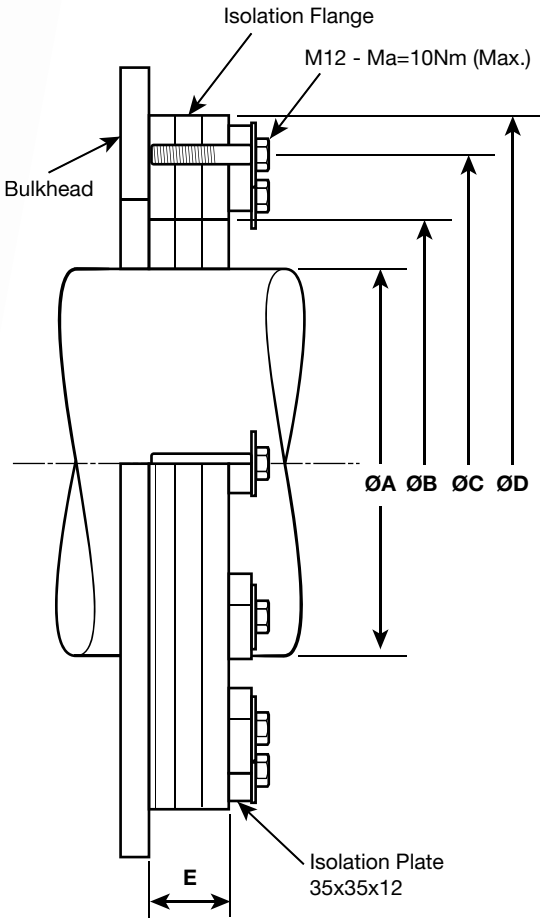
Standard flange range made of carbon steel S235JR, drilled according to DIN PN10/16, electrolytic galvanised

Rubber Design Mounts, Bellows & Bulkhead Penetrations

Rubber Design
vibration and noise control

Heat Reducing Bulkhead Penetration





Heat reducing penetrations are fixed penetrations designed to insulate the high exhaust temperature to bulkheads or decks. The complete assembled penetrations are made of carbon steel flanges and special asbestos free insulation material, ready for installation. Alternative materials for the carbon steel flanges can be supplied on request.

Flexible deck and bulkhead penetrations are also available, contact Halyard for details.

The penetrations are available as standard with the following dimensions.

Heat Reducing Bulkhead Penetration						
Reference	ØA	ØB	ØC	ØD	E	Bolts
	mm	mm	mm	mm	mm	
50	25	72	130	-30/+20	±20	35
65	32	72	130	-30/+20	±20	35
80	40	79	130	-30/+20	±20	50
100	50	89	130	-30/+20	±20	74
125	65	104	130	-30/+20	±20	87
150	80	120	130	-30/+20	±20	120
175	100	139	130	-30/+20	±20	143
200	125	164	130	-30/+20	±20	210
250	150	189	130	-30/+20	±20	283
300	200	237	130	-30/+20	±20	525
350	250	289	130	-30/+20	±20	636
400	300	338	130	-30/+20	±20	897
450	350	390	200	-30/+20	±20	1290
Standard flange range made of carbon steel S235JR, drilled according to DIN PN10/16, electrolytic galvanised Other dimensions available on request						

Halyard Bow Thruster Tube

GRP Tube For Bow Thrusters

GRP Bow Thruster Tube		
Part No.	Reference	Description
H008493	HBT140/15	140mm I.D. by 5mm wall x 1.5m
H001470	HBT185/15	185mm I.D. by 6mm wall x 1.5m
H001477	HBT250/15	250mm I.D. by 8mm wall x 1.5m
H001482	HBT300/15	300mm I.D. by 9mm wall x 1.5m

Drawings and dimensions are for guidance. Alternative sizes and configurations available on request.

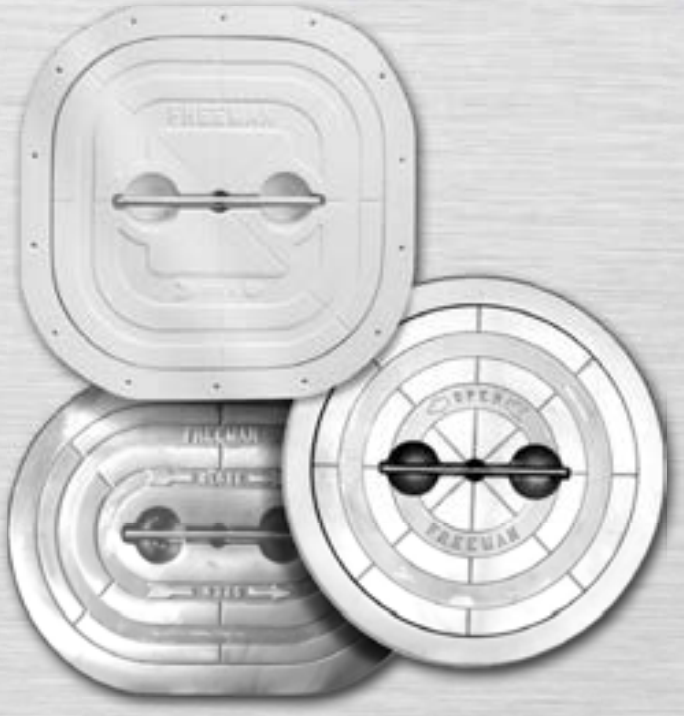
Note: Lloyd's Type Approval is applicable for Halyard GRP products in exhaust system applications.





AdvanTec Marine

FREEMAN MARINE EQUIPMENT





FREEMAN CAST HATCHES

Freeman Marine deliver reliability, safety and more features than any other manufacturer

Freeman Cast Hatches Attributes:

- Evenly spaced dogging arms exert uniform force on the cover plate.
- Handle position shows when dogging arms are engaged or disengaged.
- Handle is always attached. Hatch and handle fit flush with the deck with the handle in a recessed locked position.
- Watertight hatches, designed to seal up to 30’ (9.144 metres) intermittent head, the double-sealing gasket seals tighter under pressure.
- Versatile installation, hatches can be in stalled in steel, aluminum, wood, or fibreglass decks.
- Complete units include aluminum or steel mounting rings for bolt-in or weld-in installations.
- Dogging mechanism assures smooth consistent action; no binding or jamming.
- Quick-acting dogging eliminates over or under tightening; hatch operates the same each time.
- Marine Classification Society Certifications

Cast Hatches

Approvals & Certificates - ISO 9001:2015

Quality Policy Statement

- Consistently meet or exceed our customer's expectation for product quality and performance.
- Consistently meet or exceed our customer's expectation for product and service delivery.
- Continuously improve our processes and systems.
- Provide employee training to better serve our customers and to support personal growth.

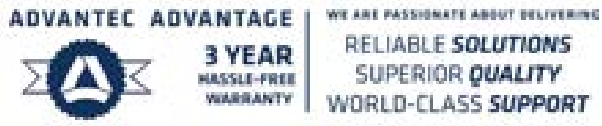
Certificates and Acceptances

AdvanTec's Freeman cast hatch line has various approvals and certifications.
The hatches have been granted American Bureau of Shipping (ABS) Product Design Assessment Certification for 109 different models. Each of these models can be used on a number of ABS classed vessels in locations specified in the design assessment.

AdvanTec Marine constantly monitors maritime regulations, standards and classification society activities related to closure approvals.

AdvanTec Marine closures have received specific intended use acceptance by:

- ABS - American Bureau of Shipping
- DNV - Det Norske Veritas
- LR - Lloyds Register of Shipping
- GL - Germanisher Lloyds
- BV - Bureau Veritas
- MCA - Maritime Coastguard Agency
- RS - Russian Maritime Register of shipping
- RINA - RINA S.P.A., Italy
- CRS - Croatian Registry of Shipping
- USCG - US Coast Guard
- CCG - Canadian Coast Guard (Transport Canada)
- ABYC - American Boat & Yacht Council



Approvals at a glance



- **ABS - type approval, certificate no.13-HS1082451-PDA**
- **Lloyd's Register - type approval certificate no. 03/00088(E3) & 9/60003(E1)**
- **U.S. Coast Guard, CE, ISO-12216 compliant**

Approvals have been awarded and may be obtained for specific intended uses.

AdvanTec Cast Hatches are currently in use on Coast Guard vessels and Naval craft of all types.

AdvanTec Marine can assist with specific intended use applications.



Over 350 self righting vessels 100% completely outfitted with AdvanTec hatches, doors, windows & portlights. The people you trust, trust AdvanTec Marine.

Our Warranty

All Non-Powered Equipment:

- Platinum Warranty - 3 years from date of shipment

All Powered Equipment:

- Standard Warranty - 2 years from date of shipment
- 1 year extension - Onsite commissioning required by AdvanTec Marine or certified technician

Scan for more information and the full range of available products

Cast Hatches

Service, Value and Experience



Lift Out



Surface Hinges

Freeman Cast Hatches Attributes

- Evenly spaced dog arms exert uniform force on the cover plate.
- Handle position shows when dog arms are engaged or disengaged.
- Handle is always attached. Hatch and handle fit flush with the deck with the handle in a recessed locked position.
- Watertight hatches, designed to seal up to 30' intermittent head, the double-sealing gasket seals tighter under pressure.
- Versatile installation, hatches can be installed in steel, aluminium, wood, or fibreglass decks.
- Complete units include aluminium or steel mounting rings for bolt-in or weld-in installations.
- Dog mechanism assures smooth consistent action; no binding or jamming.
- Quick-acting dog eliminates over or under tightening; hatch operates the same each time.

- **Great Value**
- **Versatile**
- **Fast Acting**
- **Reliable**
- **Easy Lift**
- **Low Maintenance**



• **Concealed Yoke Hinge**
(Optional, selected models)

Freeman Hatches have more quick-acting flush hatch experience, models and features than any manufacturer.

AdvanTec Marine's Freeman hatches are used on a wide variety of fishing boats, tugs, barges, research vessels, offshore tenders, rescue craft and other workboats. The Freeman hatch is designed for new boats, or replacing other hatches in standard openings, or for improving existing craft.

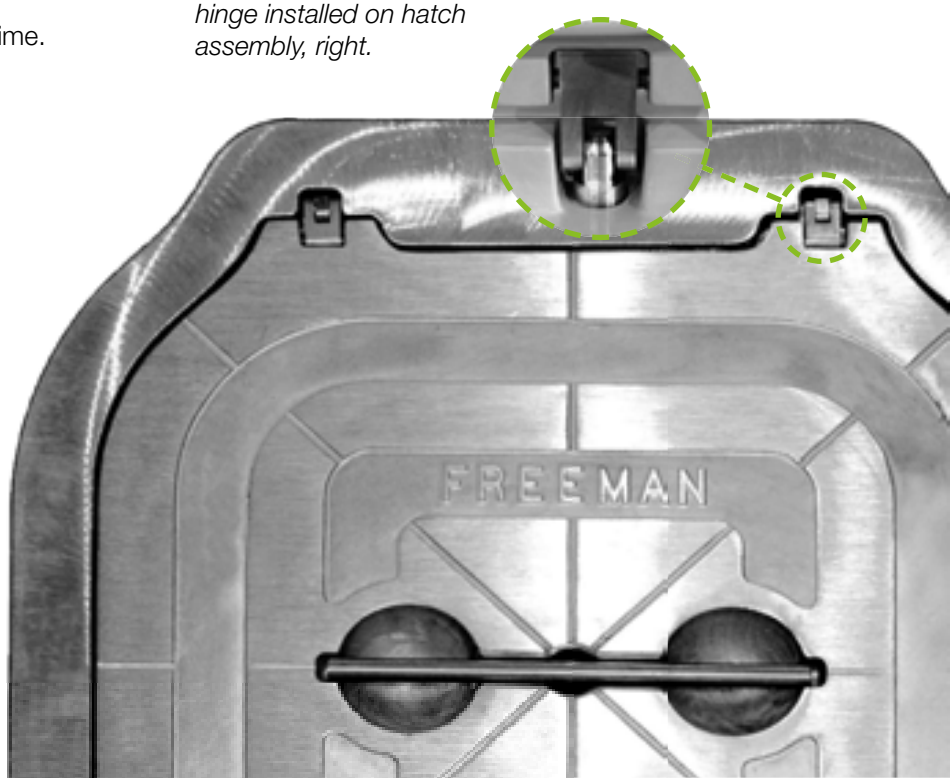
The hatches are fast acting and easy to use. Simply grasp the handle and pull, the shaft slides into place, and with less than a quarter turn, completely disengages the locking mechanism. The dogs and linked handle do the work smoothly in just a second.

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.

Hinged Hatches

For hinged models the unique hinging device allows the hatch to be opened more than 180° and "floats" when the hatch is closed to facilitate a tighter seal. Round hatches 18" and larger, and all oval and square hatches with aluminium covers are available hinged from the factory.

Close-up view of standard Freeman "floating" hinge installed on hatch assembly, right.



Cast Hatches

Quality and Capability

Two Important Features Distinguish the Freeman Cast Hatch from Other Designs

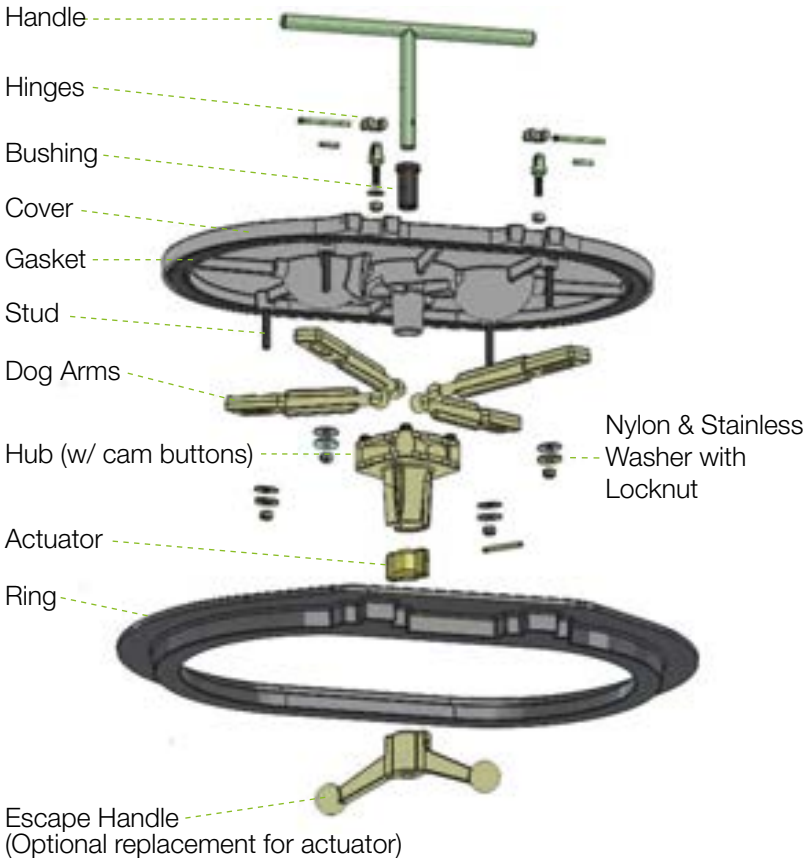
- **Built in T-Handle**
- **Easy Operating Dogging Mechanism**

The standard pocketed, stainless steel T-handle is built in, permanently part of the hatch. Grasp the handle and pull, the shaft slides up into place, and with less than a quarter of a turn the locking mechanism completely disengages. The alignment of the handle shows when dog arms are engaged or disengaged.

Evenly spaced dog arms (either 3, 4 or 8 depending on size of hatch) exert uniform sealing pressure on the cover plate. The unique design, fit, and adjustability of Freeman's dog mechanism assure smooth, consistent action; no binding or jamming of parts.

- **As hub rotates a cam exponentially increases force at the opposite end of the dog arm**
- **Each dog is adjustable to insure equal tension on the gasket sealing surface**

Typical Hatch Cover Assembly

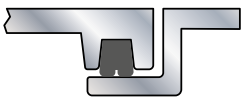


Knife Edge or Compression Sealing

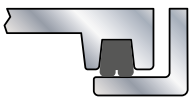
Compression Seal 2400 Series Hatches

These hatches have easy-to-clean spigots, feature long gasket life, and are economical to purchase.

- Aluminium Deck Rings are intended to be weld installed into aluminium decks and bolt installed into other deck materials.
- Steel Deck Rings are to be weld installed into steel decks only.
- Watertight seal to 30 foot intermittent head, continuous 10 foot head top-loaded pressure (on properly installed and adjusted hatch assemblies).



A-C Aluminium Deck Ring with Compression Seal

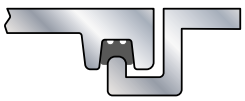


S-C Steel Deck Ring with Compression Seal

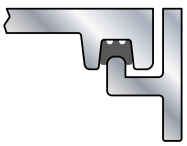
Knife-edge Seal 2400 Series Hatches

These hatches feature a coaming with drain gutter and an aggressive sealing rim edge. A drain fitting can be installed to minimize water from entering enclosure when hatch is initially opened.

- Aluminium Deck Rings are intended to be weld installed into aluminium decks and bolt installed into other deck materials.
- Steel Deck Rings are to be weld installed into steel decks only.



A-K Aluminium Deck Ring with Knife Edge Seal



S-K Steel Deck Ring with Knife Edge Seal

Cast Hatches

Oval Cast Hatches



15”x 24” Oval lift-out, Aluminium ring



15” x 24” Oval hinged, Steel ring, Inside view



15”x 24” Oval lift-out, Steel ring



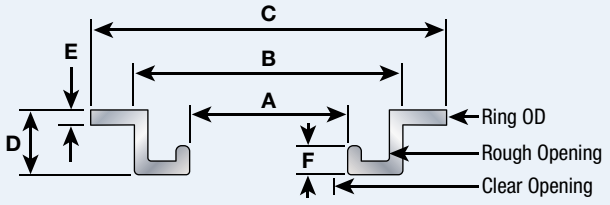
15”x 24” Oval hinged, Steel ring

Cast Aluminium Hatches - Oval

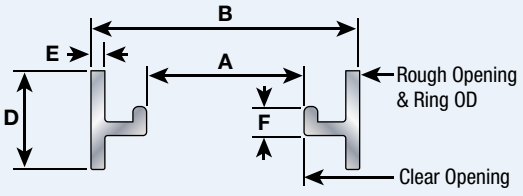
Part No.	Size Inch	Style	Ring	Hatch Dimensions									Cover Dimensions				Mechanism		Assembly Weight	
				Clear Opening		Rough Opening*		Overall (Cover + Ring)					Material		Overall					
				A (inch)	A (mm)	B (inch)	B (mm)	C (inch)	C (mm)	D	E	F	Metal	Thick	Inch	mm	Metal	Dog Qty.	lbs	kg
2431-0002	12x18	Lift-Out	A-C	12.0x18.0	305x457	15.0x21.0	381x533	18.8x24.8	478x630	1.5	0.31	NA	A	0.28	14.1x20.3	358x516	AA	4	29	13.2
2431-0003	12x18	Lift-Out	S-C	12.0x18.0	305x457	14.8x19.8	376x503	14.8x19.8	376x503	1.3	0.25	NA	A	0.29	14.1x20.3	358x516	AA	4	30	13.6
2471-0002	12x18	Hinged	A-C	12.0x18.0	305x457	15.0x21.0	381x533	18.8x24.8	478x630	1.5	0.31	NA	A	0.28	14.1x20.3	358x516	AA	4	31	14.1
2471-0003	12x18	Hinged	S-C	12.0x18.0	305x457	14.8x20.8	376x503	17.2x20.8	437x529	1.3	0.25	NA	A	0.29	14.1x20.3	358x516	AA	4	31	14.1
2433-0002	15x24	Lift-Out	A-C	14. 8x23.7	376x603	17.7x26.7	450x677	21.3x30.3	541x770	1.5	0.25	NA	A	0.22	16.3x25.9	414x658	AA	4	35	15.9
2433-0003	15x24	Lift-Out	S-C	14. 8x23.7	376x603	17.5x26.5	445x673	17.5x26.5	445x673	1.3	0.25	NA	A	0.22	16.3x25.9	414x658	AA	4	37	16.8
2434-0002	15x24	Lift-Out	A-K	15.2x24.2	386x615	17.9x26.9	455x684	21.0x30.0	533x762	1.6	0.31	0.6	A	0.21	17.7x26.7	450x678	AA	4	35	15.9
2434-0003	15x24	Lift-Out	S-K	15.2x24.2	386x615	17.9x26.7	454x678	17.9x26.7	454x678	2.5	0.31	0.25	A	0.21	17.6x26.4	447x671	AA	4	54	24.5
2473-0002	15x24	Hinged	A-C	14.6x23.5	371x597	17.6x26.5	447x673	21.6x30.5	549x775	1.5	0.31	NA	A	0.2	16.1x25.7	409x653	AA	4	37	16.8
2473-0003	15x24	Hinged	S-C	14.6x23.5	371x597	17.6x26.5	440x670	19.7x26.5	500x673	1.3	0.31	0.25	A	0.2	16.1x25.7	409x653	AA	4	38	17.2
2474-0002	15x24	Hinged	A-K	15.2x24.2	388x615	17.2x26.2	437x665	21.0x30.0	533x762	1.6	0.31	0.6	A	0.21	17.4x26.3	442x668	AA	4	35	15.9
2474-0003	15x24	Hinged	S-K	15.2x24.2	388x615	20.1x26.7	454x678	20.1x26.7	510x678	2.5	0.31	0.25	A	0.21	17.0x26.1	432x668	AA	4	60	27.2
2483-0107	15x24	Lift-Out	S-C	15.1x24.1	384x613	16.8x25.6	427x650	16.8x25.6	427x650	1.5	0.25	NA	D I	0.38	17.0x26.1	432x668	AA	4	85	28.6
2435-0002	19x26	Lift-Out	A-K	19.2x26.2	488x665	21.2x28.2	538x716	25.0x32.0	635x813	1.6	0.31	0.6	A	0.29	21.5x28.4	546x721	AA	4	43	19.5
2435-0003	19x26	Lift-Out	S-K	19.2x26.2	488x665	21.7x28.7	551x729	21.7x28.7	551x729	2.5	0.31	0.25	A	0.29	21.3x28.4	546x721	AA	4	61	27.7
2475-0002	19x26	Hinged	A-K	19.2x26.2	488x665	21.2x28.2	538x716	27.2x32.4	691x823	1.6	0.31	0.6	A	0.29	21.3x28.4	546x721	AA	4	44	20
2475-0003	19x26	Hinged	S-K	19.2x26.2	488x665	24.0x28.8	610x732	24.0x28.8	610x732	2.5	0.31	0.25	A	0.29	21.3x28.4	546x721	AA	4	67	30

AA - Aluminium Alloy **SS** - Stainless Steel **DI** - Ductile Iron (see loading limits page) ***Rough opening dimensions do not include hinge pockets**

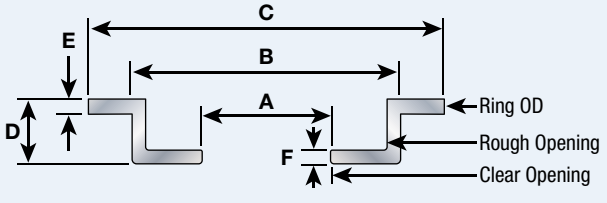
A-K Aluminium Deck Ring with Knife Edge Seal



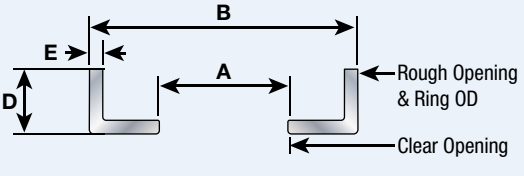
S-K Steel Deck Ring with Knife Edge Seal



A-C Aluminium Deck Ring with Compression Seal



S-C Steel Deck Ring with Compression Seal



Cast Hatches

Round Cast Hatches



30” Round lift-out, steel ring



8” Round lift-out, aluminium ring



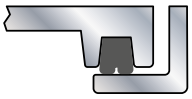
18” Round lift-out, steel ring



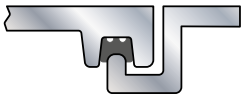
20” Round hinged, aluminium ring



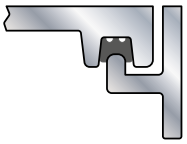
A-C Aluminium deck ring with compression seal



S-C Steel deck ring with compression seal



A-K Aluminium deck ring with knife edge seal



S-K Steel deck ring with knife edge seal

Cast Aluminium Hatches - Round

Part No.	Size Inch	Style	Ring	Hatch Dimensions									Cover Dimensions				Mechanism		Assembly Weight	
				Clear Opening		Rough Opening*		Overall (Cover + Ring)					Material		Overall					
				A (inch)	A (mm)	B (inch)	B (mm)	C (inch)	C (mm)	D	E	F	Metal	Thick	Inch	mm	Metal	Dog Qty.	lbs	kg
2401-0002	8”	Lift-Out	A-C	7.9	201	10.3	262	12.2	310	1.1	0.31	NA	AA	0.23	9.8	249	AA	3	8	3.6
2402-0002	12”	Lift-Out	A-C	11.9	302	14.8	376	17.4	442	1.3	0.31	NA	AA	0.19	13.9	353	AA	3	13	5.9
2402-0003	12”	Lift-Out	S-C	11.9	302	14.5	368	14.7	373	1.3	0.25	NA	AA	0.19	13.9	353	AA	3	16	7.3
2403-0002	15”	Lift-Out	A-C	15	381	17.8	452	12.5	546	1.3	0.31	NA	AA	0.29	17	432	AA	3	23	10.4
2403-0003	15”	Lift-Out	S-C	15	381	17.6	447	17.8	452	1.3	0.25	NA	AA	0.29	17	432	AA	3	26	11.8
2404-0002	18”	Lift-Out	A-C	18	457	20.9	530	24.5	622	1.4	0.31	NA	AA	0.26	20	508	AA	3	30	13.6
2404-0003	18”	Lift-Out	S-C	18	457	20.5	521	20.7	526	1.3	0.25	NA	AA	0.26	20	508	AA	3	32	14.5
2405-0002	18”	Lift-Out	A-K	18	457	20	508	24	607	1.5	0.38	0.8	AA	0.24	20.4	518	AA	3	38	17.2
2405-0003	18”	Lift-Out	S-K	18	457	20.6	523	21.1	536	2.5	0.31	1	AA	0.24	20.7	526	AA	3	36	16.3
2441-0002	18”	Hinged	A-C	18	457	25.7	653	24.5	622	1.6	0.27	NA	AA	0.38	20	508	AA	3	35	15.9
2441-0003	18”	Hinged	S-C	18	457	20.8	528	20.5	521	1.3	0.25	NA	AA	0.38	20	508	AA	3	38	17.2
2442-0002	18”	Hinged	A-K	18	457	20.7	527	24.5	607	1.5	0.38	0.8	AA	0.24	20.7	526	AA	3	39	17.7
2442-0003	18”	Hinged	S-K	18	457	20.6	523	22.9	580	2.5	0.31	1	AA	0.24	20.7	526	AA	3	42	19.1
2481-0107	18”	Lift-Out	S-C	18	457	20.5	521	20.3	516	1.5	0.25	NA	DI	0.41	19.9	505	SS	3	75	34
2406-0002	20”	Lift-Out	A-C	19.8	503	22.8	579	26.5	673	1.3	0.31	NA	AA	0.26	21.9	556	AA	4	36	16.3
2406-0003	20”	Lift-Out	S-C	19.8	503	22.4	569	22.3	566	1.3	0.25	NA	AA	0.26	21.9	556	AA	4	37	16.8
2407-0002	20”	Lift-Out	A-K	20	508	22	559	26	660	1.4	0.38	0.7	AA	0.35	21.9	556	AA	4	44	20
2407-0003	20”	Lift-Out	S-K	20	508	22.6	574	22.3	566	2.5	0.31	1	AA	0.35	21.6	549	AA	4	41	18.6
2443-0002	20”	Hinged	A-C	19.6	498	22.8	579	26.5	673	1.7	0.4	NA	AA	0.29	21.9	556	AA	4	44	20
2443-0003	20”	Hinged	S-C	19.6	498	22.4	569	22.1	561	1.3	0.25	NA	AA	0.29	21.9	556	AA	4	47	21.3
2444-0002	20”	Hinged	A-K	20	508	22	559	26	660	1.4	0.38	0.7	AA	0.35	22.4	569	AA	4	45	20.4

AA - Aluminium Alloy **SS** - Stainless Steel **DI** - Ductile Iron (see loading limits page)

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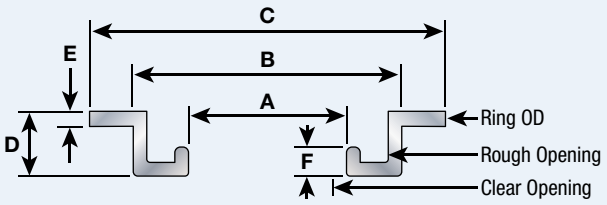
*Rough opening dimensions do not include hinge pockets

Cast Hatches

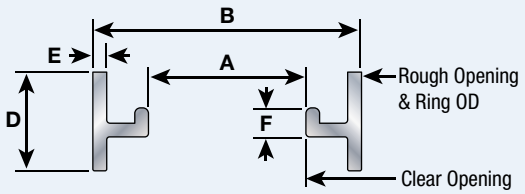
Cast Aluminium Hatches - Round																				
Part No.	Size Inch	Style	Ring	Hatch Dimensions									Cover Dimensions				Mechanism		Assembly Weight	
				Clear Opening		Rough Opening*		Overall (Cover + Ring)					Material		Overall					
				A (inch)	A (mm)	B (inch)	B (mm)	C (inch)	C (mm)	D	E	F	Metal	Thick	Inch	mm	Metal	Dog Qty.	lbs	kg
2444-0003	20"	Hinged	S-K	20	508	22.6	579	22.9	582	2.5	0.31	1	AA	0.35	22.4	569	AA	4	48	21.8
2408-0002	22"	LIFT-OUT	A-C	22	559	24.8	630	28.5	724	1.6	0.31	NA	AA	0.31	24	610	AA	4	39	17.7
2408-0003	22"	LIFT-OUT	S-C	22	559	24.6	625	24.7	627	1.5	0.25	NA	AA	0.31	24	610	AA	4	40	18.1
2411-0002	24"	LIFT-OUT	A-C	23.3	592	26.6	676	30.5	775	1.4	0.31	NA	AA	0.37	25.8	665	AA	4	52	23.6
2411-0003	24"	LIFT-OUT	S-C	23.3	592	26.7	679	26.2	665	1.5	0.25	NA	AA	0.37	25.8	665	AA	4	54	24.5
2412-0002	24"	LIFT-OUT	A-K	24.1	612	27.1	689	30.6	778	1.6	0.38	0.6	AA	0.42	26.5	673	AA	4	65	29.5
2412-0003	24"	LIFT-OUT	S-K	24.1	612	26.7	678	26.5	673	2.5	0.31	1.0	AA	0.42	26.2	665	AA	4	59	28.8
2447-0002	24"	HINGED	A-C	23.4	594	26.4	671	30.5	775	1.7	0.4	NA	AA	0.41	25.8	665	AA	4	59	28.8
2447-0003	24"	HINGED	S-C	23.4	594	26.5	673	29.3	743	1.5	0.25	NA	AA	0.41	25.8	665	AA	4	62	28.1
2448-0002	24"	HINGED	A-K	24.1	612	26.1	663	30.6	777	1.6	0.38	0.6	AA	0.42	25.8	665	AA	4	66	29.9
2448-0003	24"	HINGED	S-K	24.1	612	26.7	678	26.3	668	2.5	0.31	1.0	AA	0.42	25.8	655	AA	4	65	29.5
2482-0107	24"	LIFT-OUT	S-C	23.3	592	26.5	673	26.3	668	1.5	0.25	NA	DI	0.36	25.8	655	AA	4	110	49.9
2415-0006	30"	LIFT-OUT	A-C	30	762	33.5	851	37.3	947	1.4	0.31	NA	AA	0.41	32.5	826	SS	4	81	36.7
2415-0007	30"	LIFT-OUT	S-C	30	762	33.3	846	33.1	841	1.3	0.25	NA	AA	0.39	32.5	826	SS	4	87	39.5
2452-0006	30"	HINGED	A-C	30	762	33.5	851	37.3	947	1.7	0.4	NA	AA	0.46	32.5	826	SS	4	82	37.2
2452-0007	30"	HINGED	S-C	30	762	33.3	846	33.1	841	1.5	0.25	NA	AA	0.49	32.5	826	SS	4	118	53.5

AA - Aluminium Alloy **SS** - Stainless Steel **DI** - Ductile Iron (see loading limits page) ***Rough opening dimensions do not include hinge pockets

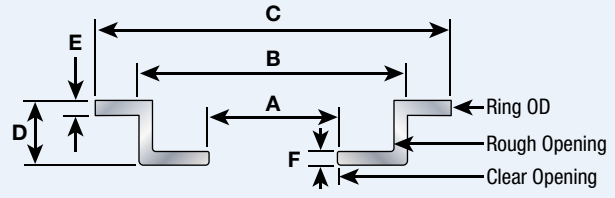
A-K Aluminium Deck Ring with Knife Edge Seal



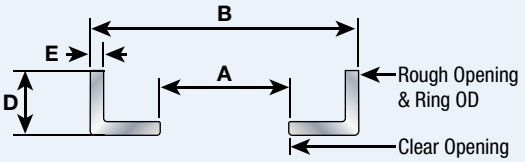
S-K Steel Deck Ring with Knife Edge Seal



A-C Aluminium Deck Ring with Compression Seal



S-C Steel Deck Ring with Compression Seal



Cast Hatches

Rectangular/Square Cast Hatches



22" Square hinged, inside view



27" Square hinged, steel ring



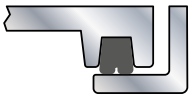
18 x 24" Rectangular hinged, aluminium ring



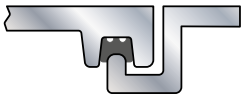
22" Square hinged, aluminium ring



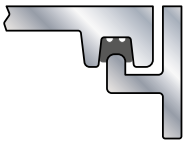
A-C Aluminium deck ring with compression seal



S-C Steel deck ring with compression seal



A-K Aluminium deck ring with knife edge seal



S-K Steel deck ring with knife edge seal

Cast Aluminium Hatches - Rectangular/Square

Part No.	Size (inch)	Shape	Style	Ring	Hatch Dimensions									Cover Dimensions		Mechanism		Assembly Weight	
					Clear Opening		Rough Opening*		Overall (Cover + Ring)					Material					
					A (inch)	A (mm)	B (inch)	B (mm)	C (inch)	C (mm)	D	E	F	Metal	Thick	Metal	Dog Qty.	lbs	kg
2421-0002	18x24	R	Lift-Out	A-K	18.0x24.0	457x610	20.5x26.5	521x673	24.5x30.5	622x775	1.6	0.38	0.7	ALUM	0.2	AA	4	36	16.3
2421-0003	18x24	R	Lift-Out	S-K	18.0x24.0	457x610	20.5x26.5	521x673	20.4x26.4	518x671	2.5	0.31	0.9	ALUM	0.2	AA	4	61	27.7
2461-0002	18x24	R	Hinged	A-K	18.0x24.0	457x610	20.5x26.5	521x673	24.5x30.5	622x775	1.6	0.38	0.7	ALUM	0.2	AA	4	36	16.3
2461-0003	18x24	R	Hinged	S-K	18.0x24.0	457x610	20.5x26.4	521x673	22.8x26.3	579x668	2.5	0.31	0.9	ALUM	0.2	AA	4	61	27.7
2436-0002	24x28	R	Lift-Out	A-K	24.6x28.6	625x727	27.5x31.5	699x799	31.2x35.2	793x894	1.6	0.38	0.7	ALUM	0.2	AA	4	61	27
2436-0003	24x28	R	Lift-Out	S-K	24.6x28.6	625x727	27.5x31.5	699x799	27.1x31.1	688x790	2.5	0.31	0.9	ALUM	0.3	AA	4	83	37.4
2476-0002	24x28	R	Hinged	A-K	24.6x28.4	629x724	29.6x31.4	752x797	33.1x34.9	840x887	1.6	0.38	0.7	ALUM	0.3	AA	4	62	28.1
2476-0003	24x28	R	Hinged	S-K	24.6x28.4	629x724	29.6x31.4	752x797	29.6x33.1	752x841	2.5	0.31	0.9	ALUM	0.3	AA	4	84	37.9
2429-0002 0001**	30x36	R	Lift-Out	A-K	30.5x36.5	775x927	32.8x38.8	834x987	36.3x42.3	923x1075	2.5	0.31	0.9	ALUM	0.3	AA	8	102	46.3
2429-0003 0001**	30x36	R	Lift-Out	S-K	30.5x36.5	775x927	33.5x39.5	850x1003	33.5x39.5	850x1003	2.5	0.31	0.9	ALUM	0.3	AA	8	119	54
2469-0002 0001**	30x36	R	Hinged	A-K	30.6x36.6	776x930	32.8x38.8	834x987	38.1x42.3	967x1075	1.6	0.38	0.7	ALUM	0.3	AA	8	93	42.4
2469-0003 0001**	30x36	R	Hinged	S-K	30.0x36.0	762x914	33.5x39.5	850x1003	37.5x39.3	952x998	2.5	0.31	0.9	ALUM	0.3	AA	8	130	59
2422-0002	20x20	SQ	Lift-Out	A-K	20.3x20.3	517x517	22.8x22.8	579x579	26.8x26.8	681x681	1.6	0.38	0.7	ALUM	0.5	AA	4	43	19.5
2422-0003	20x20	SQ	Lift-Out	S-K	20.3x20.3	517x517	22.8x22.8	579x579	22.5x22.5	572x572	2.5	0.31	0.9	ALUM	0.5	AA	4	74	33.6
2462-0002	20x20	SQ	Hinged	A-K	20.3x20.3	517x517	22.8x22.8	579x579	28.2x26.4	715x672	1.6	0.38	0.7	ALUM	0.3	AA	4	45	20.4
2462-0003	20x20	SQ	Hinged	S-K	20.3x20.3	517x517	22.8x22.8	579x579	25.2x22.8	640x579	2.5	0.31	0.9	ALUM	0.3	AA	4	76	34.5
2423-0002	22x22	SQ	Lift-Out	A-K	22.0x22.0	559x559	24.5x24.5	622x622	28.5x28.5	724x724	1.6	0.38	0.7	ALUM	0.3	AA	4	45	20.4
2423-0003	22x22	SQ	Lift-Out	S-K	22.0x22.0	559x559	24.5x24.5	622x622	24.7x24.7	627x627	2.5	0.31	0.9	ALUM	0.3	AA	4	92	41.7
2463-0002	22x22	SQ	Hinged	A-K	22.0x22.0	559x559	24.5x24.5	622x622	28.5x28.5	724x724	1.6	0.38	0.7	ALUM	0.3	AA	4	46	20.9

AA - Aluminium Alloy **DI** - Ductile Iron (see loading limits page) ***Rough opening dimensions do not include hinge pockets

**Requires escape handle as standard

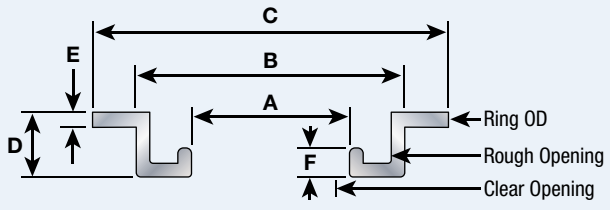
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Cast Hatches

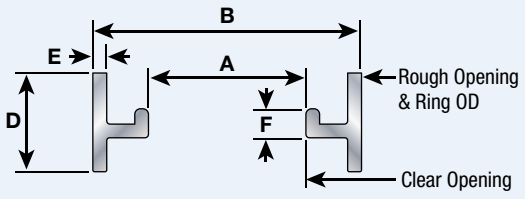
Cast Aluminium Hatches - Rectangular/Square																			
Part No.	Size (inch)	Shape	Style	Ring	Hatch Dimensions									Cover Dimensions		Mechanism		Assembly Weight	
					Clear Opening		Rough Opening*		Overall (Cover + Ring)					Material					
					A (inch)	A (mm)	B (inch)	B (mm)	C (inch)	C (mm)	D	E	F	Metal	Thick	Metal	Dog Qty.	lbs	kg
2463-0003	22x22	SQ	Hinged	S-K	22.0x22.0	559x559	24.5x24.5	622x622	26.8x24.3	681x617	2.5	0.31	0.9	ALUM	0.3	AA	4	92	41.7
2423-0002	22x22	SQ	Lift-Out	A-K	22.0x22.0	559x559	24.5x24.5	622x622	28.5x28.5	724x724	1.6	0.38	0.7	ALUM	0.3	AA	4	45	20.4
2423-0003	22x22	SQ	Lift-Out	S-K	22.0x22.0	559x559	24.5x24.5	622x622	24.6x24.9	625x625	2.5	0.31	0.9	ALUM	0.3	AA	4	92	41.7
2424-0002	24x24	SQ	Lift-Out	A-K	24.6x24.6	625x625	27.5x27.5	697x697	31.2x31.2	792x792	1.6	0.38	0.7	ALUM	0.3	AA	4	63	28.6
2424-0003	24x24	SQ	Lift-Out	S-K	24.0x24.0	610x610	27.4x27.4	695x695	27.4x27.4	695x695	2.5	0.31	0.9	ALUM	0.3	AA	4	82	37.2
2480-0106	24x24	SQ	Hinged	A-K	24.8x24.8	630x630	27.3x29.2	693x742	31.2x35.2	793x894	1.6	0.38	0.7	D I	0.3	DI	4	133	60.3
2480-0107	24x24	SQ	Hinged	S-K	24.7x24.7	629x629	27.4x29.5	695x748	29.6x27.4	752x695	2.5	0.31	0.9	D I	0.3	DI	4	155	70.3
2464-0002	24x24	SQ	Hinged	A-K	24.0x24.0	610x610	27.5x27.5	698x698	33.1x31.2	840x792	1.6	0.38	0.7	ALUM	0.3	AA	4	59	26.7
2464-0003	24x24	SQ	Hinged	S-K	24.0x24.0	610x610	27.4x27.4	695x695	29.6x27.4	695x695	2.5	0.31	0.9	ALUM	0.3	AA	4	87	39.5
2427-0002	27x27	SQ	Lift-Out	A-K	27.2x27.2	690x690	29.6x29.6	752x752	33.6x33.6	854x854	1.6	0.32	0.8	ALUM	0.3	AA	4	63	28.6
2427-0003	27x27	SQ	Lift-Out	S-K	27.2x27.2	690x690	29.6x29.6	750x750	29.6x29.6	752x752	2.5	0.31	1.9	ALUM	0.3	AA	4	85	38.6
2426-0006	30x30	SQ	Lift-Out	A-K	30.0x30.0	762x762	32.5x32.5	826x826	36.5x36.5	927x927	1.6	0.25	0.7	ALUM	0.3	AA	4	75	31
2426-0007	30x30	SQ	Lift-Out	S-K	30.0x30.0	762x762	32.5x32.5	826x826	32.6x32.6	828x828	2.5	0.31	0.9	ALUM	0.3	AA	4	113	51.3
2466-0006	30x30	SQ	Hinged	A-K	30.0x30.0	762x762	32.5x32.5	826x826	36.5x36.5	927x927	1.6	0.25	0.7	ALUM	0.2	AA	4	78	35.4
2466-0007	30x30	SQ	Hinged	S-K	30.0x30.0	762x762	32.5x32.5	826x826	34.8x32.6	884x829	2.5	0.31	0.9	ALUM	0.2	AA	4	114	51.7
2428-0002 0001**	36x36	SQ	Lift-Out	A-K	36.0x36.0	914x914	39.3x39.3	998x998	42.5x42.5	1080x1080	2.5	0.31	0.9	ALUM	0.4	AA	8	104	48
2428-0003 0001**	36x36	SQ	Lift-Out	S-K	36.0x36.0	914x914	39.3x39.3	998x998	39.2x39.0	996x991	2.5	0.31	0.9	ALUM	0.4	AA	8	134	60.8
2468-0002 0001**	36x36	SQ	Hinged	A-K	36.0x36.0	914x914	39.3x39.3	998x998	44.2x42.2	1067x1067	2.5	0.31	0.9	ALUM	0.3	AA	8	119	54
2468-0003 0001**	36x36	SQ	Hinged	S-K	36.0x36.0	914x914	39.3x39.3	998x998	43.6x39.3	1106x997	2.5	0.31	0.9	ALUM	0.3	AA	8	149	67.6

AA - Aluminium Alloy **DI** - Ductile Iron (see loading limits page) ***Rough opening dimensions do not include hinge pockets
****Requires escape handle as standard

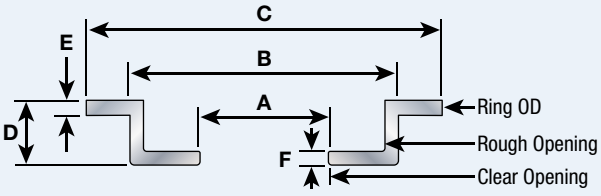
A-K Aluminium Deck Ring with Knife Edge Seal



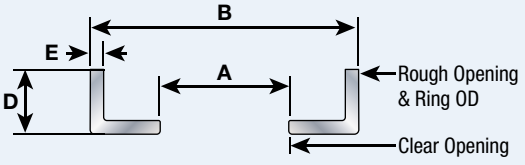
S-K Steel Deck Ring with Knife Edge Seal



A-C Aluminium Deck Ring with Compression Seal



S-C Steel Deck Ring with Compression Seal



Cast Hatches

Handle Options

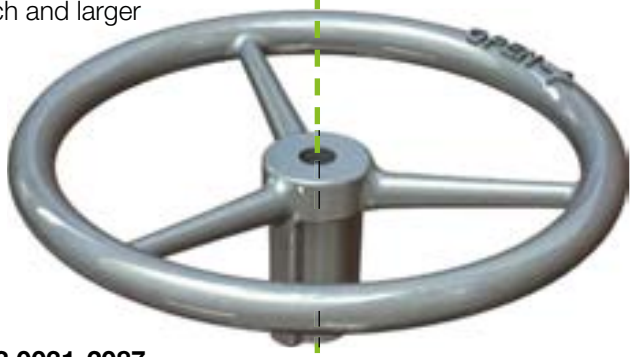
Inside Escape Handle Options



0001 0031-2064
[AL] w/ Pin.18" Hatches and larger



0002 0031-2065
7.5" O. D. [AL] w/ Pin 20" Hatch and larger



0003 0031-2087
12.5" O.D. [AL] w/ Pin 20" Hatches and larger



0004 0031-2119
[SS mill finish] w/ Pin. Use with hatches that have SS dogging mechanism



Topside Handle Options



0031-2158
[SS] Standard Integral Handle Includes o-ring and pin

Optional Removable Handles

0435-2012
Winch Handle
Use with Flat Top Bi-square Spindle



0031-2264
Interlocking T-Wrench
Use with Interlocking Spindle



0021-2008
T-Style Wrench Handle
Use with T-Style Slot Spindle



Cast Hatches

Hinge Options



0461-2205 [SS]
Standard hinge Assembly
Double Acting

Allows cover to lay flat





0461-2202 [SS]
Standard Hinge Assembly
Single Pivot

Use with hold open or gas shocks





0461-2077 Yoke Hinge

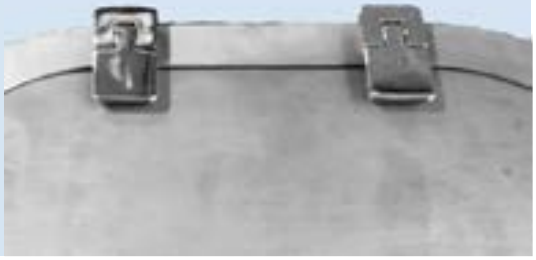
Concealed, includes hold open





0461-2171 Yoke Hinge

Raised flush with Teak





0462-2021 Blade Hinge

Use with raised coaming & vertical mount hatches



Cast Hatches

Hold Open Options



0031-2007 Hold Open

Use with 18”, 20”, 24”, 18”x24”, 15”x24”, 20”x20”, 22”x22”, 24”x24”, 19”x26”

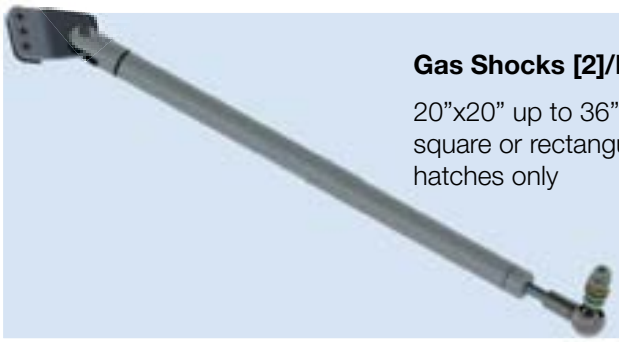




0423-1023
Hold Open Slide Rod

Hold open , slide rod
Use with 24”x24” or larger



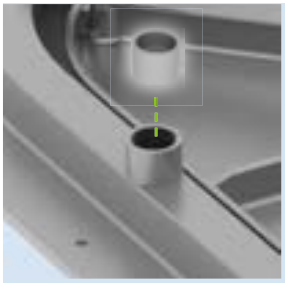


Gas Shocks [2]/Hatch

20”x20” up to 36”x36” square or rectangular hatches only



Miscellaneous Options



Coaming Drain

Use with knife edge

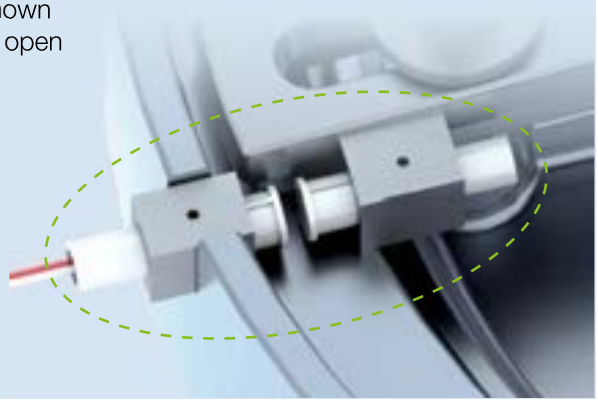
Drill & Countersink

Aluminium rings with flange. Hatch shown with Inside escape handle, drain hold open ring drilled and countersunk



Sensor Assembly

Magnetic contact senses if hatch isn’t dogged completely



Cast Hatch Loading Limits

Maximum allowable loading for cast iron covers listed and their aluminium equivalents. The following values CANNOT be used to extrapolate loading limits on other models or cover/ring combinations.				
Hatch Part Number, Description	**Max Load** kN (lbf)	**Max Load-Fatigue** kN (lbf)	**Max Watertight Pressure** kPa (psi)	**Comment**
2483-1101 (0136-4001) Oval 15"x24" Cast Iron	13 (2900)	-	28 (4)	All rings excluding aluminium
2433-1001 (2433-3001) Oval 15"x24" Aluminium	2.5 (550)	1.5 (350)	28 (4)	All rings, as cast
2482-1101 (0136-4003) Round 24" Cast Iron	17 (3800)	-	43 (6.2)	All rings excluding aluminium
2411-1001 (2411-3001) Round 24" Aluminium	4.5 (1000)	3 (650)	43 (6.2)	All rings, as cast
2481-1101 (0136-4002) Round 18" Cast Iron	16 (3600)	-	38 (5.5)	All rings excluding aluminium
2404-1001 (0111-4106) Round 18" Aluminium	3 (650)	2 (450)	38 (5.5)	All rings, as cast
2480-1101 (0136-4006) Hinged Square 24"x24" Cast Iron	*3.5 (800)	-	*55 (8)	All rings excluding aluminium
2464-1001 (2464-3001) Hinged Square 24"x24" Aluminium	1.5 (350)	1 (200)	55 (8)	All rings, as cast
	* Failure mode is non-typical and found at hinge pin			

Definitions

- **Max load:** maximum point load acceptable on any point on top of the cover.
- **Max load–fatigue:** maximum cyclic point load acceptable on any point on top of the cover. Higher loads will result in non-infinite fatigue life which may be acceptable in certain applications.
- **Max watertightness pressure:** Maximum tank test pressure (inside direction).

Analysis

The load results are based on finite element analysis of hatch/ring combinations. In the case of aluminium castings, the fatigue limit is also included as it is lower than the yield limit. A 2x safety factor was assumed in all instances.

The watertightness pressures listed are based on Type Approvals and previous sealing results. Note that only the aluminium models hold TA certificates.

Higher loading results may be acceptable based on the application and other requirements. Please contact Engineering if additional clarity is required.

For the full range of available products and specifications please visit:

www.advantecglobal.com/marine

Watertight Hatches

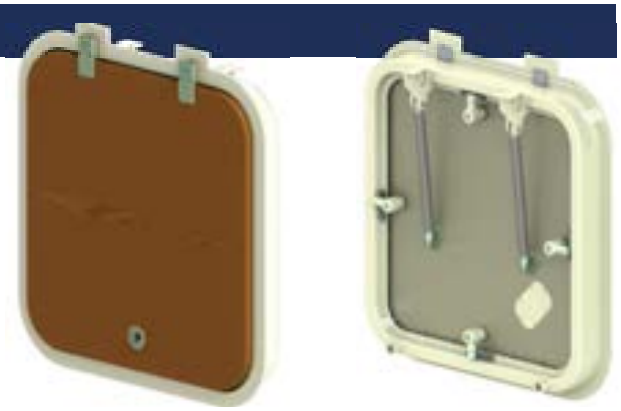
Premium Duty - 3140 Series



Individual Dog

Freeman Marine 3140 Series hatches are manufactured from marine grade aluminium, with an option for steel or stainless-steel coamings, flush or raised.

Premium Duty - 3440 Series



Quick Action

Freeman Marine 3440 Series hatches are manufactured from marine grade aluminium, with an option for steel or stainless-steel coamings, flush or raised.

Commercial Heavy Duty - 3211 Series



Flush

Freeman Marine's Model 3211 is a flush hatch, that is class approved, manufactured in marine grade aluminium, A36 steel or 304/316 stainless-steel.

Commercial Heavy Duty - 3212 Series



Raised

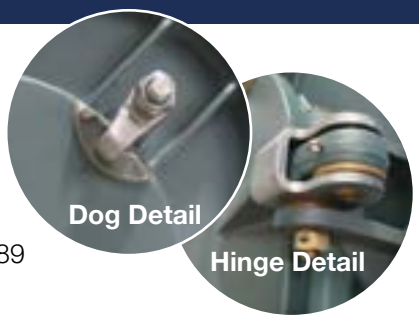
Freeman Marine's Model 3212 is a raised hatch, that is class approved, manufactured in marine grade aluminium, A36 steel or 304/316 stainless-steel.

Premium Military Closures

Our products are 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.

Doors

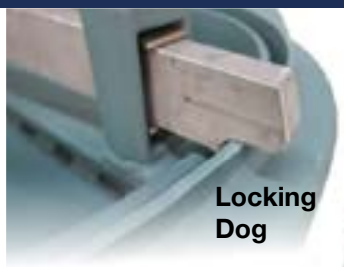
- Weathertight & watertight doors
- Aluminum, steel & stainless-steel
- Quick-acting & individual dogging
- Shock & fire rating qualifications
- Robotic certified welding
- ISO 9001:2015 Certified
- Quality control & testing – NAVSEA Mil Spec 248/1689





Scuttles

- High-pressure watertight
- Flush, ramped & raised coamings
- Quick-acting & individual dogging
- Shock & fire rating qualifications
- ISO 9001:2015 Certified
- Quality control & testing – NAVSEA Mil Spec 248/1689



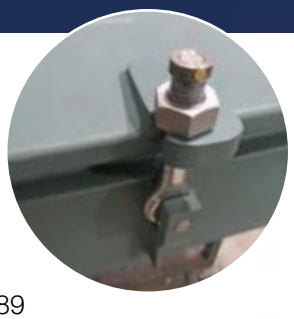
Features

- Hold-opens
- Adjustable dogs
- Knife-edge watertight sealing
- Silicone high-heat gasketing
- Aluminum, steel & stainless-steel
- Quick-acting & individual dogging



Hatches

- Watertight
- Aluminum, steel & stainless-steel
- Flush & raised coamings
- Integrated scuttle
- Quick-acting, drop-bolt & individual dogging
- Shock & fire rating qualifications
- ISO 9001:2015 Certified
- Quality control & testing – NAVSEA Mil Spec 248/1689





Features

- Hold-opens
- Adjustable dogs
- Knife-edge watertight sealing
- Silicone high-heat gasketing
- Aluminum, steel & stainless-steel
- Quick-acting, drop-bolt & individual dogging

Military & Commercial Cast Aluminium Closures

Ventilation Hatches

- 2120-0002 10” x 10”
- 2121-0002 10” x 12”
- 2122-0002 12” x 12”



Console Door

- Model 6101-0002 11” x 23”
- Model 6101-0004 9” x 18”
- Model 6101-0005 18” x 28”



Lens Hatch

- Quick-acting watertight
- Clear opening 25.5” x 25.5”





Interior Access Hatch

- Clear opening 24.3” x 24.3”
- Flush slam latch
- Neoprene gasket





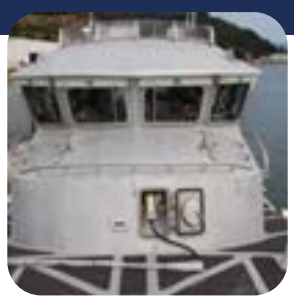
Civil Engineering Hatches

- Floating Bridge
- Airport & Ports
- Sewer & Dams
- Commercial Buildings



Flush Shore Power Hatch

- Watertight
- Flush Weld-In
- Available sizes: 9” x 15” & 11” x 20”



AdvanTec Marine

FREEMAN MARINE EQUIPMENT





FREEMAN WEATHER & WATERTIGHT DOORS

Freeman Marine deliver reliability, safety and more features than any other manufacturer

Doors:

- Weathertight & Watertight options
- Standard, Heavy Duty & Premium ranges
- Single, Dutch, French hinged & Sliding versions
- Manual or powered operation
- Commercial, Military & Yacht
- Marine grade aluminium, steel or stainless steel
- Painted finish option
- Marine Classification Society Certifications
- Quick Availability Doors:
- Selection of watertight and weathertight doors
- Stock items, ready to ship
- Guaranteed quality products
- Hinged and sliding

Approvals & Certificates

Quality Policy Statement

- Consistently meet or exceed our customer's expectation for product quality and performance.
- Consistently meet or exceed our customer's expectation for product and service delivery.
- Continuously improve our processes and systems.
- Provide employee training to better serve our customers and to support personal growth.

Craftsman Training and Certification

Halyard Technicians participate regularly in training and certification programs to gain new skills, update capabilities and certify compliance with industry standards for design, machining, welding, fabrication, painting and other specialized skills. Our goal is to constantly improve not only its products but also the quality of life and work of its valued employees.

AdvanTec Marine closures have received specific intended use acceptance by:

- DNV - Det Norske Veritas
- LR - Lloyds Register of Shipping
- GL - Germanisher Lloyds
- BV - Bureau Veritas
- ABS-American Bureau of Shipping
- MCA - Maritime Coastguard Agency
- USCG - US Coast Guard
- CCG - Canadian Coast Guard {Transport Canada)

ADVANTEC MANUFACTURING USA FACTORY APPROVALS

CERTIFICATE OF MANUFACTURING ASSESSMENT

BV MODE II | ISO 9001:2015

TYPE APPROVALS

2400 Series Watertight Hatches:
Cert # 23-2417921-PDA
2400 Series Watertight Hatches:
Cert # LR23366654TA
1212 & 1662 Watertight & Weathertight:
Cert # 23-2402820-PDA
1212 Watertight Door: Cert # 23-2402821-PDA
3212 Raised Watertight Hatches:
Cert # 23-2402822-PDA
3211 Flush Watertight Hatches:
Cert # 23-2402819-PDA

ADVANTEC ADVANTAGE
3 YEAR HASSLE-FREE WARRANTY
WE ARE PASSIONATE ABOUT DELIVERING
RELIABLE *SOLUTIONS*
SUPERIOR *QUALITY*
WORLD-CLASS *SUPPORT*

Our Warranty

All Non-Powered Equipment:

- Platinum Warranty - 3 years from date of shipment

All Powered Equipment:

- Standard Warranty - 2 years from date of shipment
- 1 year extension - Onsite commissioning required by AdvanTec Marine or certified technician

Scan for more information and the full range of available products

Standard Duty Weathertight

1111 Series



Standard Duty, Single Leaf, Bonded Construction, Individual Dog

- The doors have .080”or .160” marine grade aluminium skins bonded with Plexus® structural adhesive.
- The construction includes a Foil-Faced Foam Sheathing Board, which is a rigid polyisocyanurate foam sheathing that provides exceptional heat, sound and moisture resistance.
- Internal welding stiffeners

1511 Series



Standard Duty, Dutch Leaf, Semi Custom

- Double-skin, semi-custom doors perform like a single panel door when regular access is needed, yet the top half can be operated separately from the bottom half
- Door panels are aluminium .080” mill finished skins are bonded to an extruded aluminium panel frame.

Fully insulated, standard duty Dutch doors are suitable for the following typical high traffic access installations:

- Example locations: Pilothouse - Galley - Salon - Main Deck

1611 Series



Standard Duty, French Leaf, Bonded Construction, Individual Dog

- Wider access French doors perform like two single panel doors that seal to each other
- Thick panel skins, extra internal reinforcements, no exposed seams and all welded construction
- Individually dogged versions. Lineal brushed finish, with the option of custom colour

Fully insulated, suitable for the following typical high traffic access installations:

- Example locations: Salon - Main Deck - Owner’s Cabin

Heavy Duty Weathertight

1120 Series



Heavy Duty, Single Aluminum Panel

- Optional yacht-quality paint to your colour specifications, the 1120 Series welded construction results in a smooth, seamless appearance that features long lasting beauty
- Doors offer welded in windows and can accommodate special glazing

Suitable for the following typical high traffic access installations:

- Example locations: Pilothouse - Galley - Engine Room - Salon - Main Deck - Storage

1520 Series



Heavy Dutv. Dutch Leaf, Clamp-In Window

- Perform like a single panel door when regular access is needed, yet the top half can be operated separately
- Optional yacht quality paint to your color specifications, fully welded construction results in a seamless appearance
- Doors offer welded in windows and can accommodate special glazing

Fully insulated, suitable for the following typical high traffic access installations:

- Example locations: Pilothouse - Galley - Salon - Main Deck

1620 Series



Heavy Duty, French Leaf, Individual Dog

- Wide access French doors, two single panel doors that seal to each other
- Thick panel skins, extra internal reinforcements, no exposed seams and all welded construction to create a rugged closure in individually dogged versions
- Doors offer welded-in windows and can accommodate special glazing

Fully insulated, suitable for the following typical high traffic access installations:

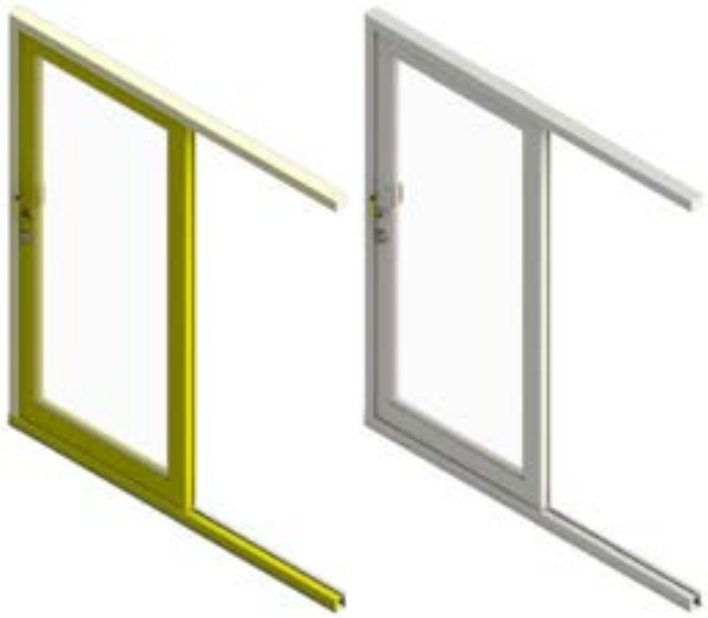
- Example locations: Salon - Main Deck - Owner's Cabin - Passenger Ferries - Water Taxis - Dinner - Cruise Vessels - Tour Boats

Standard Duty Sliding Weathertight

1710 Series

Heavy Duty, Formed Panel, Steel/Stainless Steel, Commercial

- Single-axis sliding boat doors offer traditional felted strip weathertight sealing
- Sliding doors can be specified in virtually any size required and a variety of configurations
- Passive solid panels as well as side lights are also available
- Finished in yacht-quality linear polyurethane and offer attention to detail, durability, performance
- Optional nuckled panels featuring angles defined for individual projects
- Quiet and durable urethane rollers, full perimeter felt seals and deep drainage gutters, glazing can be done with mitered or radiused corners. Individual top and vertical panels separated by a sturdy, robust mullion is another option
- Flybridge sliders can be specified with two-tone paint and factory installed glazing. This allows the builder to merely prepare the rough opening sealing surfaces, bolt in the Freeman slider module, and install drain plumbing
- Example locations: Salon - Main Deck - Owner's Cabin



1716 Series

Standard Duty, Sliding, Single-Axis, Bi-Parting

- Single-axis sliding doors offer traditional felted strip weathertight sealing
- Specify in virtually any size required and a variety of configurations; single panel, bi-parting, and multi-panel styles
- Custom sized windows designed to complement adjacent vessel windows
- Optional assive solid panels as well as side lights
- Finished in yacht-quality linear polyurethane and offer attention to detail, durability
- Optinal fabricated with knuckled panels featuring angles defined for individual projects
- Quiet and durable urethane rollers, full perimeter felt seals and deep drainage gutters
- Glazing can be done with mitered or radiused corners. Individual top and vertical panels separated by a sturdy, robust mullion is another option.
- Flybridge sliders can be specified with two-tone paint and factory installed glazing
- Example locations: Galley - Salon - Main Deck -Owner's Cabin



Premium Duty Watertight

1140 Series



Heavy Duty, Sliding, Dual-Axis, Single Leaf

- Heavy-duty, single aluminum panel, watertight door designed for commercial use on boats
- Fully insulated, and high quality, making it suitable for commercial, military, and yacht crew or machinery space applications

Special Applicatiions

- For military-security applications, R/F – EMI suppression
- Ballistics resistance, and low radar reflective signature performance can be specified
- GSA approved locks for containers used to protect national security information and arms, ammunition and explosives
- Fully insulated and moderately priced, Freeman Commercial Aluminum Panel doors are suitable for commercial, military and yacht crew or machinery space applications
- Example locations: Transom - Below Deck Bulkheads - Engine Room - Machinery Spaces - Storage

1440 Series

Heavy Duty, Single Leaf, Commercial Aluminum Panel, Quick-Acting Dogging

- Commercial panel, quick acting boat doors feature patented chain-drive, single actuation dogging
- Rugged knife-edge seal, robust gasket and floating hinges to provide a Commercial watertight seal** when properly adjusted and dogged closed.
- Thick aluminum panel skins (.160” up to .250”), internal reinforcements, welded construction and screw fastened interior skin create the rugged, closure that is required in a Q-A dogged door
- Finished with lineal brushed durable uniform texture finish.
- Welded in windows and can accommodate special glazing such as heated glass, ballistic glass. For military-security applications, R/F – EMI suppression, ballistics resistance and low radar reflective signature performance can be specified.
- Fully insulated and moderately priced, suitable for commercial, military and yacht crew or machinery space applications

1440 Series Quick-Acting commercial duty doors are specified where aggressive sealing is required:

- Example locations: Transom - Bulkheads - Deck Compartments - Engine Room - Main Deck Access - Technical Spaces



Quick Ship Doors

250 Series Weathertight doors

250 Hinged door & 250 Dutch door

- Marine Grade .090” Aluminium Captured Panel Skins Mill Finish
- Welded 6063 Flanged Aluminium Frame
- 4” Radius Corners
- Gasket on Frame
- Insulation Korolite Rigid Foam Core
- Bolt-in or Weld-in Frames
- (2) Individual Nylon Dogs
- Stainless Steel Hinges and Fasteners
- Trioving Lockset with 3 keys



250 Hinged



250 Dutch

1212 Series Watertight doors

Hinged Watertight Door

- Marine Grade Interprime 198 Red Oxide Primer Finish
- Welded Mild Steel, Radius Formed Corners
- Gasket on Door Panel for Long Life and Positive Sealing
- 250” Thick, Outside Mild Steel Panel
- (4) Individual Steel Dogs
- (3) Welded Steel Panel Hinges
- Inside and Outside Steel Pull Handles



300X Series Sliding Doors

Single Panel Sliding Door

- Commercial Duty Closure Designed for Offshore Use
- Marine Grade 6063 Aluminium
- Mill Finish
- Insulation Korolite Rigid Foam Core
- Tempered Window
- Trioving Lockset with 3 keys



Premium Yacht & Commercial Vessel

Directbond Glass, Hinged/Sliding Doors & Hatches







Diamond Sea Glaze

- 6mm, 8mm or 10mm tempered glass. Clear, or from our selection of available tint options
- Customizable shapes and sizing
- Wide selection of window openings to meet customer requirements
- Visually appealing wrap around glass
- Wide selection of window openings to meat customer requirements
- Example locations: Patrol boats, fishing vessels, tugs & pleasure craft

Premium Quality Defence & Commercial/Workboat Doors & Hatches



FREEMAN MARINE EQUIPMENT



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

Premium Yacht & Commercial Vessel

World-class Superyacht Sliding & Hinged Doors



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.



- Classed Superyachts



UCALSA







UCALSA CUSTOM MADE DOORS, HATCHES & MANHOLES

Leaders in the Design and Manufacture of Custom Made Doors, Hatches, Tanks & Structures

Bespoke Made to Order Doors, Hatches & Manholes

- Weathertight
- Watertight
- Fire Rated

Available in:

- Marine Grade Steel
- Stainless Steel
- Aluminium

Available with:

- Marine Classification Society Approvals



Ucalsa Custom Made Doors, Hatches

Watertight & Fire Rated Doors & Hatches

Ucalsa 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. In addition, Ucalsa also designs and manufactures tanks, gangways and other fabricated vessel systems. With a modern factory spanning more than 10,000 square metres equipped with the latest equipment and with in-house design, Ucalsa specialise in bespoke solutions optimised to suit the customers specifications.

Halyard are the Ucalsa 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.



Spraytight Doors

External doors bullt In accordance with Standard NS 6091 or designed as required. Normally located on upper decks, they withstand spray and do not form part of the stability calculations.

Weathertight Doors



Doors designed to withstand external pressures. Built in accordance with Standards NS 6090 and ISO 6042 with the same resistance as the bulkhead Into which they are fitted.

Watertight Doors

Doors inserted in watertight bulkhead under the freeboard deck. They are designed to withstand static water pressure on both sides. Type approval is required and they are verified individually by means of a watertightness test of the required water column.

Fire Rated Doors

MED and UKCA certified A0, A15, A30, A60 watertight doors.

Customised Solutions

Tailor-made shell and pantograph doors with options for manual or hydraulic closures.

Hatches

Flush hatches or with coamings and with different watertight ratings built in accordance with Ucalsa standards, customer specifications or customised design and complying with the applicable regulations (NS 6028, ISO 12216, etc.)



Options: A wide range of closing systems, windows, locks and hinge systems are available for doors. Materials available for all products include Marine Steel, Stainless Steel & Aluminium.

Ucalsa Custom Made Manholes

Watertight 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.



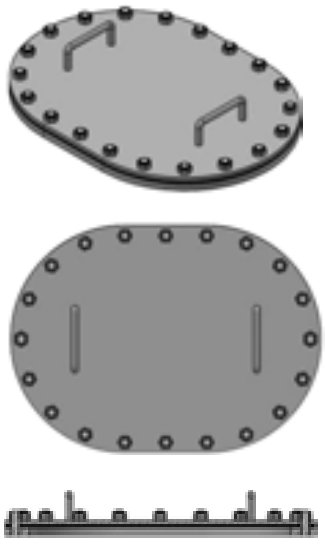


Materials

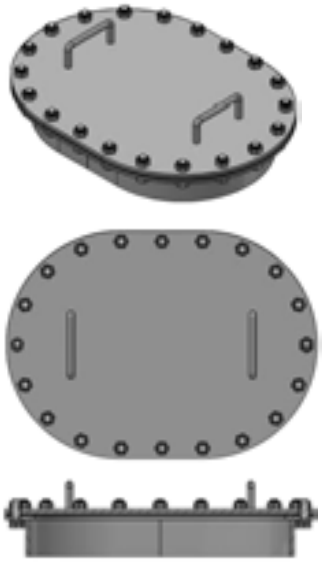
- Naval sheet steel
- Aluminium
- Stainless

Details

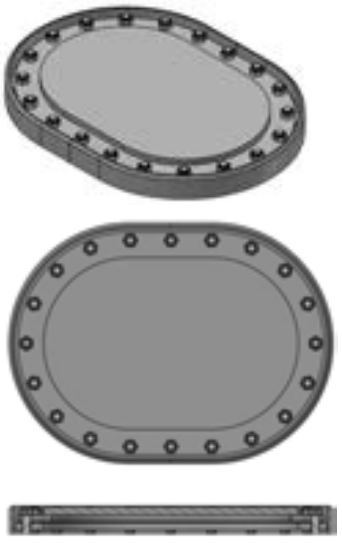
Standard NS - 6261



Standard NS - 6262



Standard NS - 6263



For the full range of available products and specifications please visit:

www.ucalsa.es/en

AdvanTec Marine

STEELHEAD MARINE





STEELHEAD HIGH PERFORMANCE YACHT CRANES

Raising the bar on Yacht Crane Performance

Yacht Cranes:

- High performance
- Efficient lightweight versions
- Heavy duty versions
- Advanced easy operation
- 2 Year warranty



High Performance Yacht Cranes

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.

Benefits of Steelhead Marine

- 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



Our Warranty

All Non-Powered Equipment:

- Platinum Warranty - 3 years from date of shipment

All Powered Equipment:

- Standard Warranty - 2 years from date of shipment
- 1 year extension - Onsite commissioning required by AdvanTec Marine or certified technician

Scan for more information and the full range of available products

High Performance Yacht Cranes

STEELHEAD MARINE

LW Series (Light Weight)

LW Series offers Manual or Electric winch operation with hinging base for storage

Weight Range: 250-350 LBS





WD Series

Whisper–quiet, low lift requirments, compact, sleek, and dual function davits.

Weight Range: 600-1,000 LBS

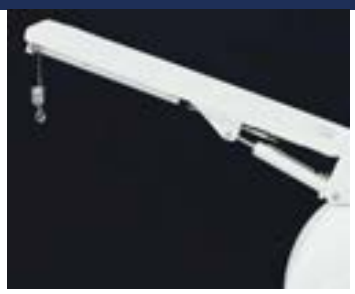




E Series

Lightweight aluminum crane with standard two function (luffing & lifting) operation.

Weight Range: 1,000-1,750 LBS





ES Series

Lightweight, super efficient, low profile European design with four-function hydraulics. Comes standard with wireless controller.

Weight Range: 1,000-2,500 LBS





CT Series

Fabricated heavy duty four function hydraulic cranes with standard or customizable features. Standard with wireless & wired pendent controllers.

Weight Range: 2,000-10,000 LBS





High Performance Yacht Cranes

AdvanTec Marine

High Performance Yacht Crane Product Specifications

Yacht Crane Product Specifications													
Series	**Functions**	**Options**	**Model**	**Capacity**		**Reach**		**Hoist**		**Retracted Length**		**Weight**	
				lbs	kg	ft	m	ft	m	ft	m	lbs	kg
LW	**12vDC** Winch or **Manual** Hand Crank	Pedestal Base Standpipe Mount	LW250	250	113	5.3	1.6	8	2.4	NA	NA	66/72	30/32
			LW350	350	158	5.3	1.6	8	2.4	NA	NA	78/84	35/38
WD	**Hydraulic** Hoisting Power Luffing	Standpipe Mount Pedestal Base HPU Base Square Base Round Base	WD600	600	363	8	2.4	17	5.2	NA	NA	215	98
			WD800	800	363	8	2.4	17	5.2	NA	NA	215	98
			WD1000	1000	454	8	2.4	17	5.2	NA	NA	235	107
E	**Hydraulic** Hoisting Luffing	Standpipe Mount Pedestal Base HPU Base Square Base Round Base	E1000	1000	454	10	3.0	16	4.9	6	1.8	384	174
			E1100	1100	500	10	3.0	16	4.9	6	1.8	389	167
			E1500	1500	680	12	3.7	20	6	7	2.1	582	263
			E1750	1750	794	12	3.6	20	6	7	2.1	610	276
ES	**Hydraulic** Hoisting Luffing Rotation Extension	Standpipe Mount Pedestal Base HPU Base Square Base Round Base	ES1000	2000	454	10	3.0	16	4.9	6	1.8	384	174
			ES1100	2500	500	10	3.0	16	4.9	6	1.8	384	174
			ES1500	3000	680	12	3.7	20	6	7	2.1	602	273
			ES1750	3500	794	12	3.6	20	6	7	2.1	630	285
			ES2200	4000	1000	14	4.3	22	6.7	8	2.4	1150	521
			ES2500	5000	1131	14	4.3	22	6.7	8	2.4	1150	521
CT	**Hydraulic** Hoisting Luffing Rotation Extension	Radio Controlled Fixed Boom 230V ac Power or Ship's Hydraulics Standpipe Mount Square Base Round Base Custom Reach Available	CT2000	2000	907	18/20	5.5/6.1	24	7.3	12	3.7	1050	476
			CT2500	2500	1134	18/20	5.5/6.1	24	7.3	12	3.7	1150	522
			CT3000	3000	1361	16	4.9	24	7.3	11	3.4	1150	522
			CT3500	3500	1588	18/20	5.5/6.1	24	7.3	13	4.0	1700	771
			CT4000	4000	1814	20	6.1	30	9.1	12.5	3.8	2100	953
			CT5000	5000	2268	20	6.1	30	9.1	12.5	3.8	2400	1089
			CT6000	6000	2722	20/30	6.1/9.1	30	9.1	12.5	3.8	2600	1179
			CT1000	10000	4536	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC



Cranes are proof tested to minimum 110% capacity.



All cranes above 1500lbs (680kg) come with wired and wireless proportional controls.



Compact design uses less deck space.



Whisper quiet linear winches use composite rope which is quieter and stronger than steel cable.

High Performance Yacht Cranes

STEELHEAD MARINE

Accessories - Crane Controllers

LW WIRED CONTROLLER P/N114918	WD CONTROLLER P/N104921	NON-PROPORTIONAL P/N104916-15' Cord	PROPORTIONAL P/N1044917-15' Cord P/N1044922-20' Cord
			
• **Wired** 12' Lead • **Single Function Controller** Rope	• **WIRED** 6' lanyard • **2 Function controller** Rope, Luffing	• **Wired** 12' Lead • **Single Function Controller** Rope	• **Wired** 12' Lead • **Single Function Controller** Rope
LW250 & LW350	**LD600, LD800 & WD1000**	**E1000, E1100, ES1000 & ES1100**	**ES1500, ES1750, CT2000, CT2500, CT3500, CT4000, CT5000 &CT6000**

LW WIRELESS CONTROLLER P/N114919	MICRO CONTROLLER P/N106251	MACRO CONTROLLER P/N113835	PROPORTIONAL GUIDER P/N104926
			
• **Wireless** • **2 Controllers** • **Dual Acting Solenoid** • **Range to 50'** • **Single Function Controller** Rope	• **Wireless** • **Function Controller** Rope, Rotation, Luffing, Extension • **Battery Life 40 Hours** • **Micro USB Charger** • **Range to 600'** • **Clonable Transmitter** (can have more than one controller per reciever)	• **Wireless** • **Function Controller** Rope, Rotation, Luffing, Extension • **Battery Life 40 Hours** • **Micro USB Charger** • **Range to 600'** • **Clonable Transmitter** (can have more than one controller per reciever)	• **Wireless** • **Function Controller** Rope, Rotation, Luffing, Extension • **Proportional Trigger Controlled** • **Twist to Release E-Stop** • **Range to 1000'** • **Rechargable Battery**
LW250 & LW350	**LD600, LD800 & WD1000**	**E1000, E1100, ES1000 & ES1100**	**ES1500, ES1750, CT2000, CT2500, CT3500, CT4000, CT5000 &CT6000**

High Performance Yacht Cranes

LW Series 250 & 350

Standard Features

- 360° Manual Rotation
- 12v DC Electric Winch
- Amsteel Blue™ Synthetic Rope
- Powder coated finish
- Proof tested to 110% capacity
- Wired Controller

Optional Features

- Manual hand crank winch
- Wireless controller



Manual hand crank



Laydown Hinged base collapsed view



Laydown Hinged base

WD Series 600, 800 & 1000

Standard Features

- 350° Manual Rotation
- Amsteel Blue™ Synthetic Rope
- Power Luffing
- Easy Installation
- Proof tested to 110% capacity
- Yacht Quality Paint Finish or Powder Coated
- 12v DC or 24v DC Power Unit

Optional Features

- Wireless Controllers
- Custom Specifications Available Upon Request
- Wireless controller

Mounting Options

- Standpipe
- Pedestal Base
- FRP HPU Base (shown)

Contact Halyard for full specifications



High Performance Yacht Cranes

STEELHEAD MARINE

E Series

Standard Features

- 350° Rotation
- Low Profile Design
- 2 function Hydraulics (Luffing, Hoisting)
- 12v DC or 24v DC Power Units
- Yacht Quality Paint Finish
- Amsteel Blue™ Synthetic Rope
- Proof Tested to 110% Capacity
- Wireless Control

Optional Features

- Power Rotation, Power Extension
- Wired Controllers
- 230V AC Power
- Color Match Finish
- Custom Specifications Available Upon Request

Standard Mounting Options

- Standpipe
- Round Base
- HPU Base
- Square Base

Contact Halyard for full specifications



ES Series

Standard Features

- 4 Powered Function
  - Luffing, Rotation, Extension & Hoisting
  - ES1000-ES1750: 355° Rotation
  - ES2200 & 2500: Infinite Rotation
- Amsteel Blue™ Synthetic Rope
- Proof Tested to 110% Capacity
- Yacht Quality Paint Finish
- 12v DC or 24v DC
- Wireless Control System

Optional Features

- Wired Controllers
- A/C Powered Hydraulic Power Unit

Custom Options Upon Request



Standard Mounting Options (Not all models)

- Standpipe
- Round Base
- HPU Base
- Square Base

Contact Halyard for full specifications

High Performance Yacht Cranes

CT Series

Standard Features

- Infinite Rotation
- 4 Powered Function
  - Luffing, Rotation, Extension & Hoisting
- 12v or 24v DC Power Units
- Yacht Quality Paint Finish
- Amsteel Blue™ Synthetic Rope
- Proof Tested to 125% Capacity
- Wired/Wireless Controllers

Optional Features

- Wired Controllers
- 230v AC Power
- Color Match Finish

Custom Options Upon Request

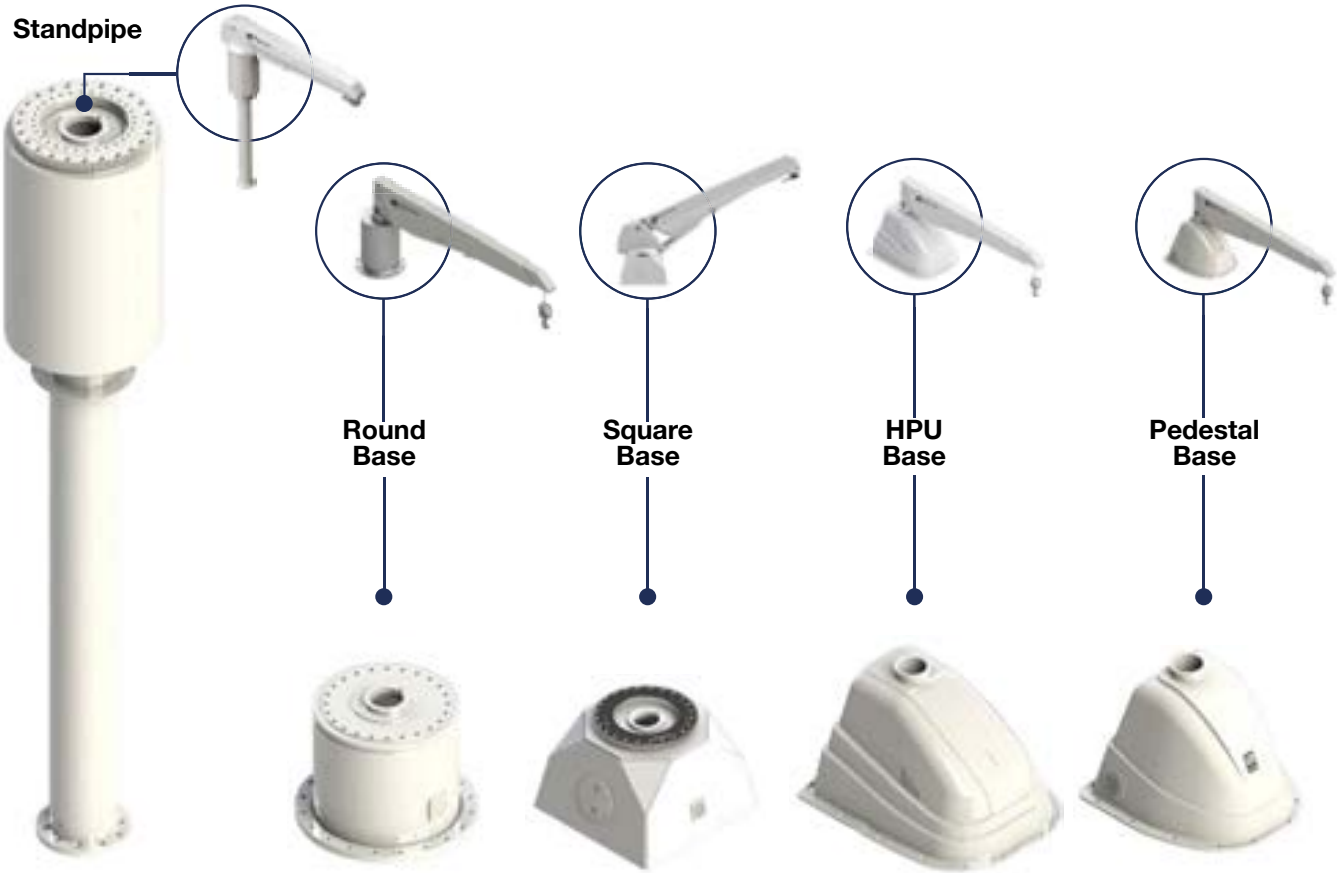


Standard Mounting Options (Not all models)

- Standpipe
- Round Base
- HPU Base
- Square Base

Contact Halyard for full specifications

Mounting Configurations



SEATORQUE
MARINE PROPULSION





SEATORQUE SHAFT SYSTEMS

The BOSS™ system is the internationally acclaimed Bolt On Shaft System by Seatorque Control Systems

- 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



Seatorque Shaft Systems

Developed over twenty-five years and fitted as standard equipment to a growing number of globally recognised boat manufacturers, Seatorque Shaft Systems offer a multitude of noise and vibration, fuel consumption and delivered power benefits.

- The 'BOSS' 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 'BOSS' system, the vessel's hull, and the strut absorb thrust loads as well as significantly reducing noise and vibration



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 a Cardan shaft connecting the 'BOSS' 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 'BOSS' 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 of circa 8%, as verified across a number of in-service case studies, are very valuable considerations when specifying your shaft system.

System Maintenance

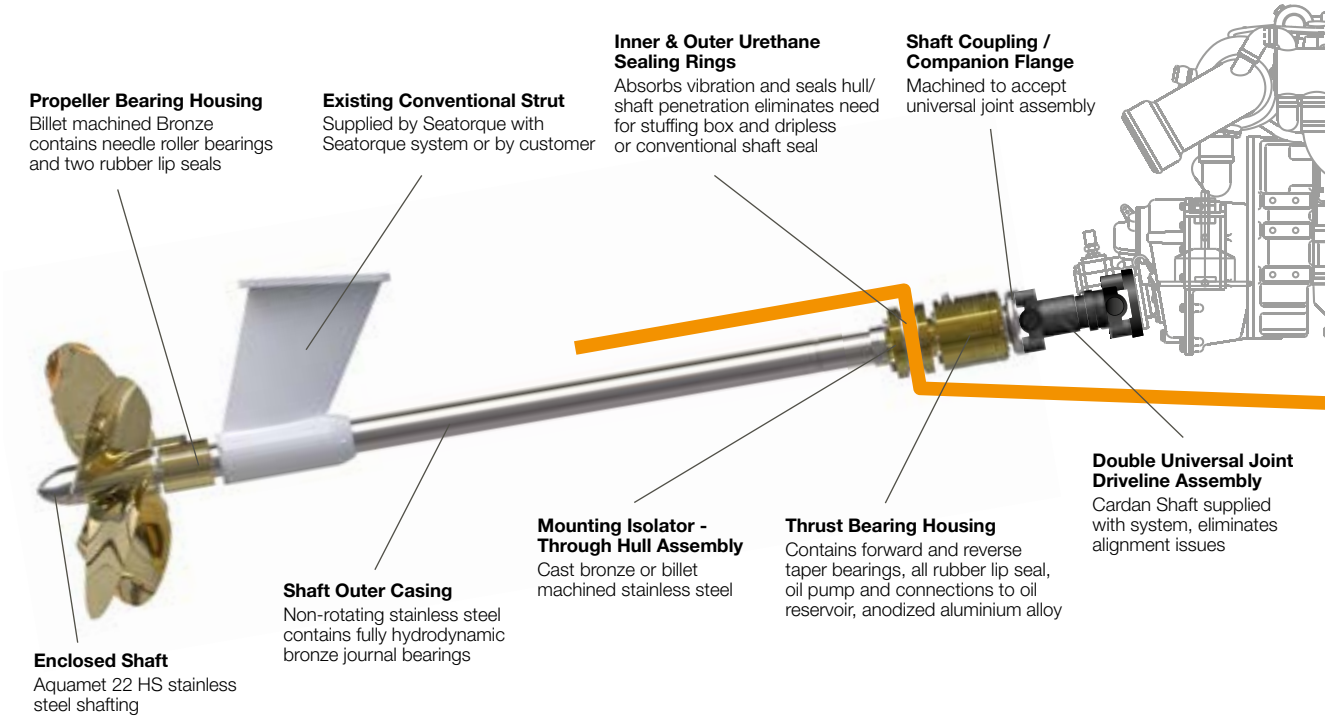
Recommended service intervals on the 'BOSS' are very realistic for the commercial operator as well as for recreational use. Cost effective oil and seal changes are not required until 3,000 hours while a major inspection is only necessary every 10,000 hours or ten years.



Seal and oil changes are carried out when the vessel is out of the water, a job that takes approximately 1-2 hours per system (excluding removal and refitting of the propeller) comparing very favourably with conventional shaft systems, including those with a thrust bearing, which require: gland/stuffing box maintenance or replacement, cutlass bearing replacement, shaft/ strut alignment, and even shaft replacement in very silty/sandy waters. It is therefore very clear to see the maintenance advantages with the 'BOSS' system.

Seatorque Shaft Systems

STM3 Enclosed Bolt-on-Shaft System 'BOSS' - Typical Installation



Propeller Bearing Housing
Billet machined Bronze contains needle roller bearings and two rubber lip seals

Existing Conventional Strut
Supplied by Seatorque with Seatorque system or by customer

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

Double Universal Joint Driveline Assembly
Cardan Shaft supplied with system, eliminates alignment issues

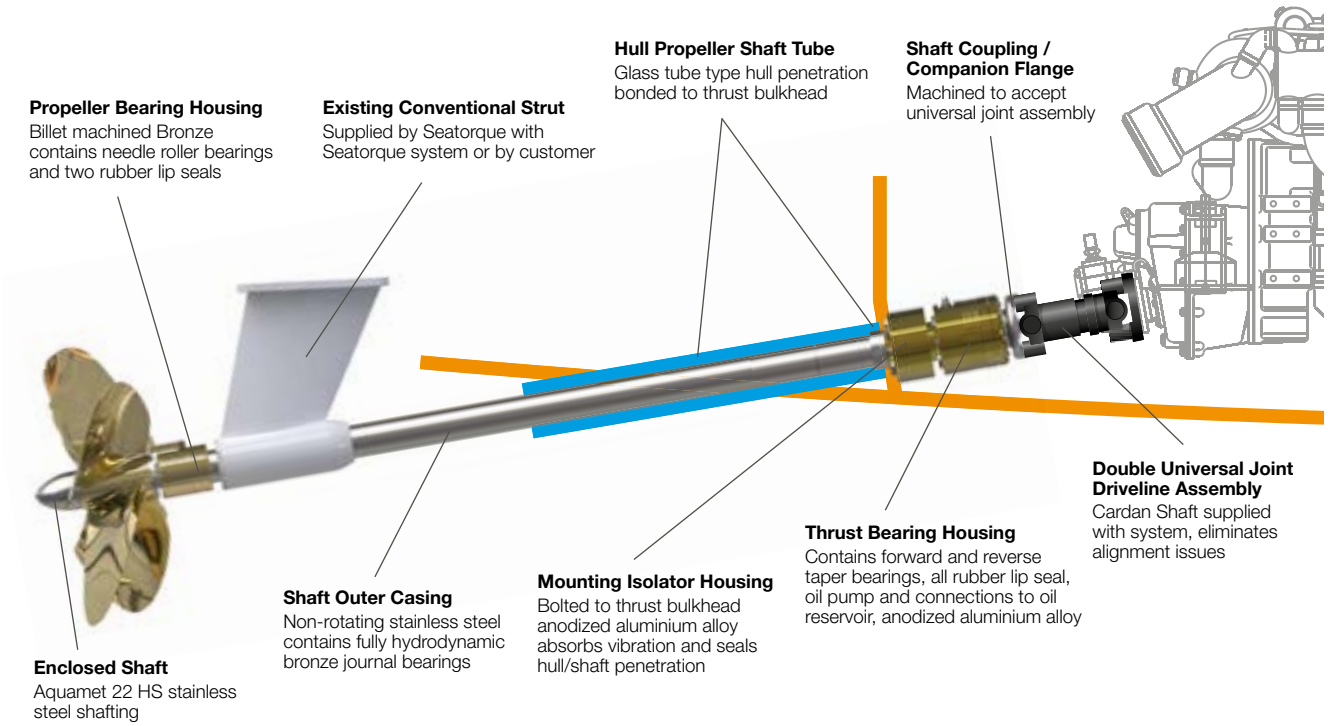
Mounting Isolator - Through Hull Assembly
Cast bronze or billet machined stainless steel

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

Shaft Outer Casing
Non-rotating stainless steel contains fully hydrodynamic bronze journal bearings

Enclosed Shaft
Aquamet 22 HS stainless steel shafting

ST Series Tube Style System - Typical Installation



Propeller Bearing Housing
Billet machined Bronze contains needle roller bearings and two rubber lip seals

Existing Conventional Strut
Supplied by Seatorque with Seatorque system or by customer

Hull Propeller Shaft Tube
Glass tube type hull penetration bonded to thrust bulkhead

Shaft Coupling / Companion Flange
Machined to accept universal joint assembly

Double Universal Joint Driveline Assembly
Cardan Shaft supplied with system, eliminates alignment issues

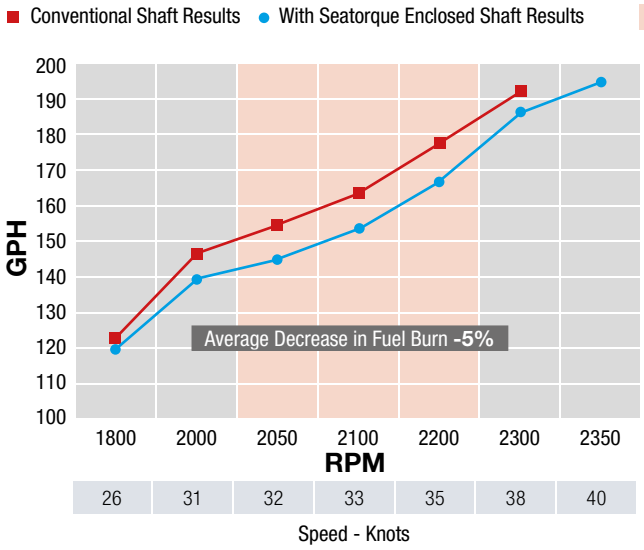
Thrust Bearing Housing
Contains forward and reverse taper bearings, all rubber lip seal, oil pump and connections to oil reservoir, anodized aluminium alloy

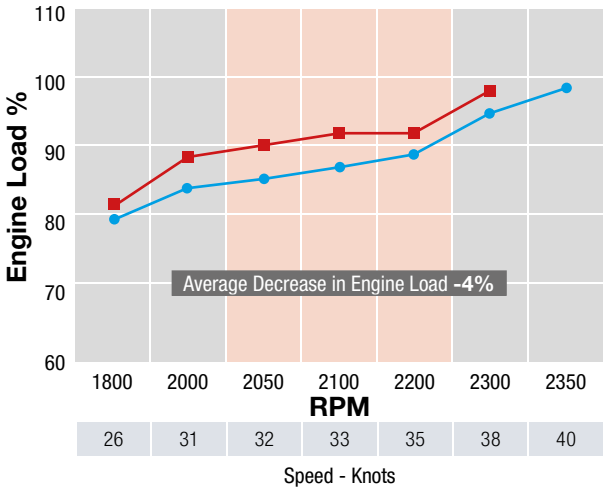
Mounting Isolator Housing
Bolted to thrust bulkhead anodized aluminium alloy absorbs vibration and seals hull/shaft penetration

Shaft Outer Casing
Non-rotating stainless steel contains fully hydrodynamic bronze journal bearings

Enclosed Shaft
Aquamet 22 HS stainless steel shafting

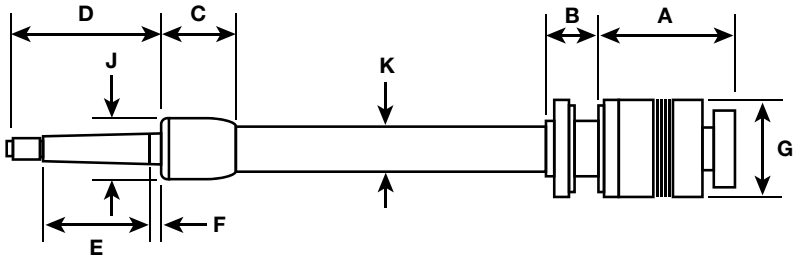
Seatorque Shaft Systems





Test Boat Specifications: LOA - 64ft Displacement - 109,000lbs Engines: MTU 16V2000M91 2000hp

Seatorque 'BOSS' Standard Range Dimensions



STM3 SERIES		A Thrust Assembly	B Mounting Length	C Propeller Housing	D Exposed Shaft	E SAE Taper Length	F Housing Clarence to Taper	G Housing Diameter	H Shaft Diameter	J Propeller Housing Dia.	K Shaft Casing O.D.
100	inch	5.5	3	3	4.5	2.75	1	3.75	1	2.25	1.9
	mm	139.70	76.20	76.20	114.30	69.85	25.40	95.25	25.40	57.15	48.26
175	inch	6.75	3.5	4.5	7.75	5	1	5	1.75	3.5	2.375
	mm	171.45	88.90	114.30	196.85	127.00	25.40	127.00	44.45	88.90	60.33
200	inch	8	4	5	8.875	5.75	1	6.125	2	4.25	3
	mm	203.20	101.60	127.00	225.43	146.05	25.40	155.58	50.80	107.95	76.20
250	inch	10.54	4.15	5.5	10.75	7.25	1	7.37	2.5	4.75	3.5
	mm	267.72	105.41	139.70	273.05	184.15	25.40	187.20	63.50	139.70	101.60
300	inch	12.5	5.125	5.9	13	8.625	1	9	3	5.75	4
	mm	317.50	130.18	149.86	330.20	219.08	25.40	228.60	76.20	146.05	101.60
350	inch	12.5	6	7.07	15.25	10.125	1	9.5	3.5	6.25	4.5
	mm	317.50	152.40	179.58	387.35	257.18	25.40	241.30	88.90	158.75	114.30
400	inch	12.75	6	7.98	17.5	11.625	1	10	4	6.5	5.5
	mm	323.85	152.40	202.69	444.50	295.28	25.40	254.00	101.60	165.10	139.70

In summary, the Seatorque 'BOSS' is a premium engineered, proven system that offers significantly reduced levels of noise and vibration, improved onboard comfort, increased delivered propeller power and reduced fuel consumption with very low maintenance requirements. The 'BOSS' further delivers unrivalled ruggedness in operation coupled with the lowest underbody drag of any system currently available.

With systems available for commercial and recreational power and sailing vessels from circa 30 to 200 feet, there is a system to suit your needs.

Seatorque Shaft Systems

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 BOSS propulsion systems are always 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; QuicKutter 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



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 Duo-BOSS



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.



Halyard



Class 0
FIRE RATED

Fuel & Oil
RESISTANT FACINGS



HALYARD NOISE INSULATION MATERIALS & ACCESSORIES

A proven range of high quality
UK manufactured noise insulation materials

A range of technically advanced noise insulation materials:

- Compliant with the European Recreational Craft Directive
- Available in standard thicknesses of 12, 25, 32, and 45mm
- Three tough fuel and oil resistant facings: Maritex, Sealglass and Reinforced Foil
- Range of tapes & accessories



Self-adhesive mechanical mounting pin to assist with the installation of the materials.

Halyard self-adhesive joining tape.



Halyard Noise Insulation Materials & Accessories

Noise Insulation Materials, Tapes and Accessories

Part No.	Reference	Description
12mm (1/2") Materials (2.4 sq metre packs)		
H000535	S3002	Maritex
H000537	S3004	Sealglass
H000536	S3003	Reinforced Silver
12mm (1/2") Self Adhesive Materials (2.4sq metre packs)		
H000554	S5002	Maritex
H000556	S5004	Sealglass
H000555	S5003	Reinforced Silver
25mm (1") Value Materials (2.4sq metre packs)		
H024545	Halcoustic 25	Non-adhesive backing
H024546	Halcoustic 25SA	Self-adhesive backing
32mm (1 1/2") Materials (2.4 sq metre packs)		
H000540	S3017	Maritex
H000538	S3015	Sealglass
H000539	S3016	Reinforced Silver
32mm (1 1/2") Self Adhesive Materials (2.4sq metre packs)		
H000559	S5017	Maritex
H000557	S5015	Sealglass
H000558	S5016	Reinforced Silver
45mm (1 3/4") Materials (1.2sq metre packs)		
H000543	S3039	Maritex
H000541	S3037	Sealglass
H000542	S3038	Reinforced Silver
45mm (1 3/4") Self Adhesive Materials (1.2sq metre packs) Physical fixing required when hanging from the underside		
H000562	S5039	Maritex
H000560	S5037	Sealglass
H000561	S5038	Reinforced Silver
60mm SilentWave (1.2sq metre packs)		
H020841	S3018	Foil Faced
Joining Tapes		
H020666	S4021	20m x 50mm Sealglass
H020311	S4025	5m x 50mm Maritex
H020158	S4026	20m x 50mm Maritex
H000552	S4036	45m x 48mm Silver Aluminium
Accessories		
H000544	S4000	10m x 25mm Hatch Noise Tape
H000545	S4010	3m x 19mm Hatch Noise Tape
H000553	S4041	1.2m x 1m x 2.4mm Barrier Layer
H000533		Stick Pin & Backing Washer

Halyard noise insulation uses high performance barrier materials to achieve excellent acoustic results with low frequency noise associated with diesel engines and other onboard noise generating equipment.

Technical Specification

- Fire Safety - Compliant with European Recreational Craft Directive (RCD)
- Class 0 fire rated (BS476-7) - (Excludes Halcoustic and SilentWave)
- Lowest possible weight
- All materials tested to ISO 4589-3 (oxygen index – elevated temperature)
- Compliant to ISO 9094-2 Fire Protection for craft with a hull over 15m
- Bulkhead performance up to Rw 54dB (EN ISO 717-1)
- Fuel & oil resistant facing

Packing (12, 25 and 32mm materials):

Halcoustic only: 25mm supplied in packs of 4 sheets 990mm x 590mm (2.3m^2)

12 & 32mm supplied in packs of 4 sheets 1000mm x 600mm (2.4m^2)

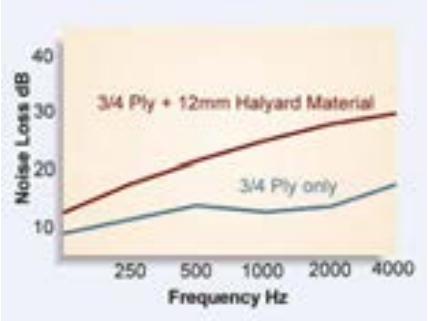
Box weight is approximately 14kg for 12mm, 16kg for 25mm and 19kg for 32mm.

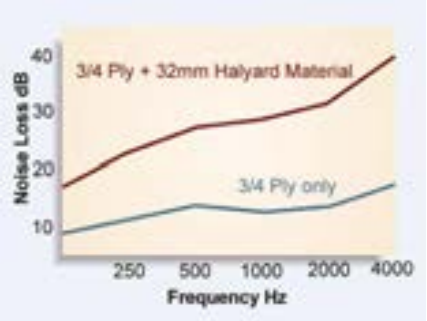
Packing (45mm materials):

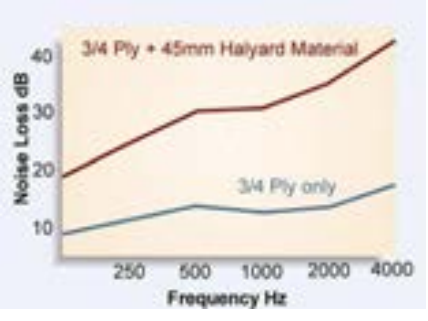
45mm supplied in packs of 2 sheets 1000mm x 600mm (1.2m^2).
Box weight is approximately 16kg.

Actual noise attenuation achievable with the products is dependant on many factors relating to the specific installation. Please note the above graphs are indicative only.

Please contact Halyard for further information and detailed product specifications to suit your particular installation requirements.







Halyard Acoustic Enclosures

Custom Generator Enclosure



Halyard are now able to offer a range of generator enclosures designed 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 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.



Wave International



Lloyd's Register



WAVE INTERNATIONAL LTD FILTRATION SYSTEMS

Wave International technically advanced marine 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

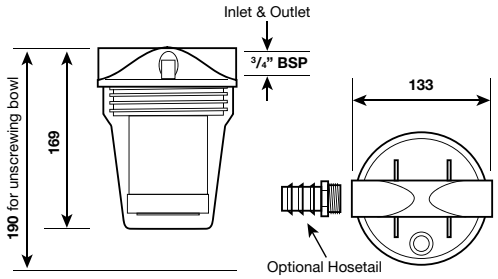


Wave Filtration Systems

Effective control and prevention of oily contaminated bilge water. The Wavestream bilge filters are Lloyd's Register of shipping Type Approved and Boat Safety Scheme compliant. Wavestream provides an efficient way of managing bilge water removal without the need for holding tanks whilst still protecting the environment.

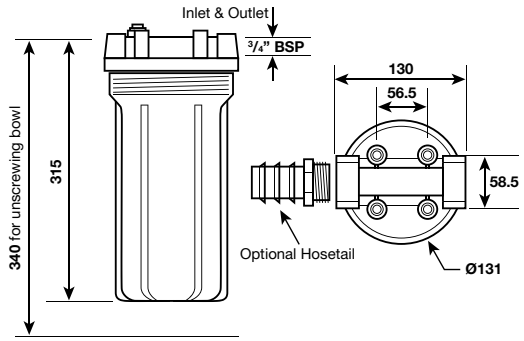
Wavestream Micro Bilge Filter

Ref: WMS - Part No. H000610	
Flow Rate	1 - 40 litres per minute
Maximum Pressure	8 bar
Maximum Temperature	40°C
Minimum Temperature	1 °C
Connection	3/4" BSP (3/4 NPT available)
Cartridge	WS-CM H000611
With Whale Orca 12V Pump	WMSFP H020978



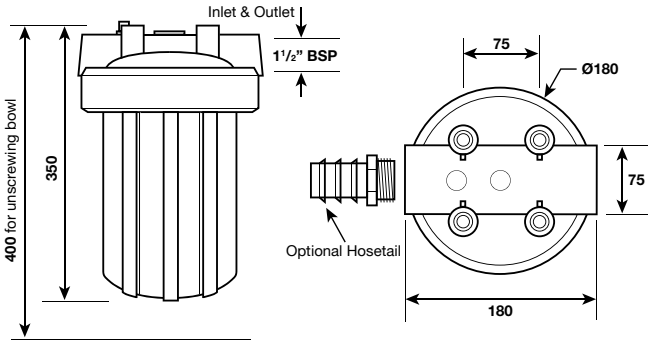
Wavestream System 1 Bilge Filter

Ref: WSS1 - Part No. H000596	
Flow Rate	1 - 40 litres per minute
Maximum Pressure	6.2 bar
Maximum Temperature	40°C
Minimum Temperature	1 °C
Connection	3/4" BSP
Cartridge	WS-C1 H000597
With Whale Orca 12V Pump	WSS1FP H020982



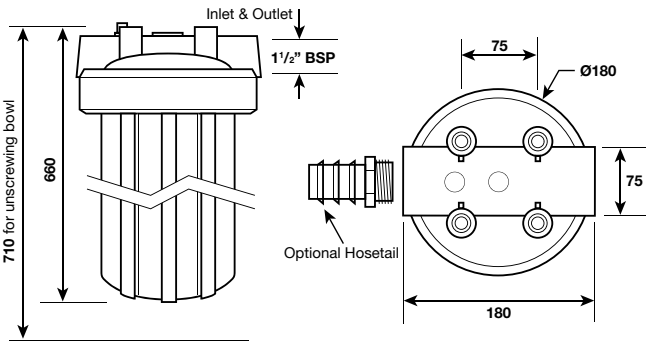
Wavestream System 2 Bilge Filter

Ref: WSS2 - Part No. H000601	
Flow Rate	1 - 265 litres per minute
Maximum Pressure	6.8 bar
Maximum Temperature	37°C
Minimum Temperature	1 °C
Connection	1 1/2" BSP
Cartridge	WS-C2 H000602
With Whale Orca 12V Pump	WSS2FP H020983



Wavestream System 3 Bilge Filter

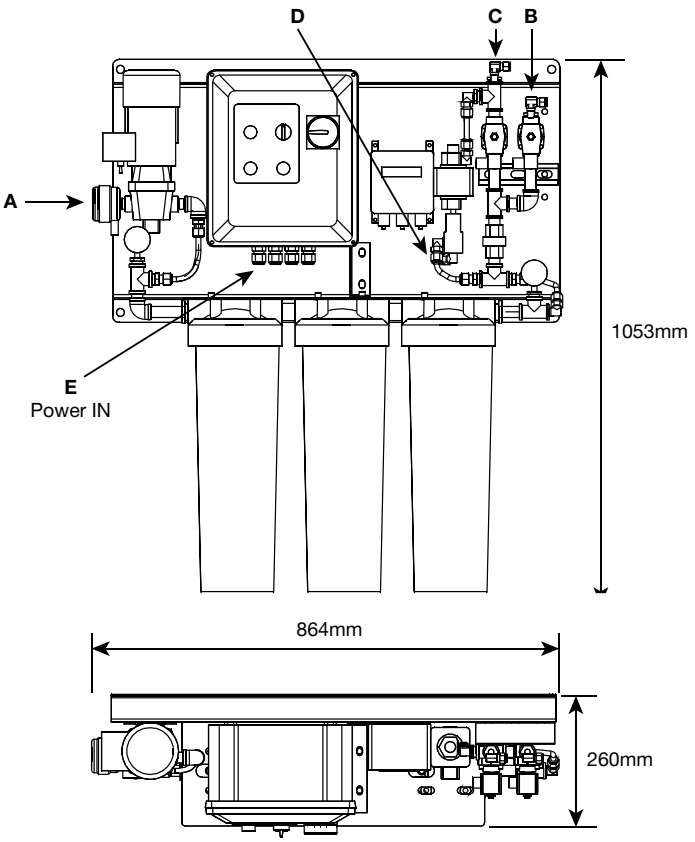
Ref: WSS3 - Part No. H007262	
Flow Rate	1 - 265 litres per minute
Maximum Pressure	6.2 bar
Maximum Temperature	37°C
Minimum Temperature	1 °C
Connection	1 1/2" BSP
Cartridge	WS-C3 H000608
With Whale Orca 12V Pump	WSS3FP H020985



Wave Filtration Systems

Wavestream MiniBOSS IMO Bilge Filter System





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

- MiniBOSS from Recovered Energy Inc., with Wavestream 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 0.50m^3/hr
- Compact, light and easy to maintain with Wavestream high capacity cartridges

Ref: 24V - Part No. H020994
Ref: 110V - Part No. H021904
Ref: 240V - Part No. H021905

Wave Filtration Systems

Wavebrite Waste Water Filter System

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

- 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

WB100 / 300



Wavebrite SMART

Marine grey water filtration unit that is self-monitoring and gives a clear indication of how grey water onboard is being responsibly processed with due care for the environment.

Information such as daily volume processed, accumulative volume, status of the various filters within the unit is all displayed on a screen with audio and visual alarms, the screen can also be remote from the unit.

Grey water is discharged real time which negates the need for grey water holding tanks which significantly reduces the boat weight.

The unit is compact, has its own pump within a sound and vibration suppressed enclosure.

Simple to install and maintain with a high capacity of 20,000 litres between filter cartridge changes, this innovative product is based on the proven Wavebrite filter unit already installed to many commercial and leisure boats across the world.

Dimensions:
Length 670mm, Height 355mm + AV Mounts,
Width 360mm

Overboard discharge meets the EU Waste Water Directive.

WBS / WBLite



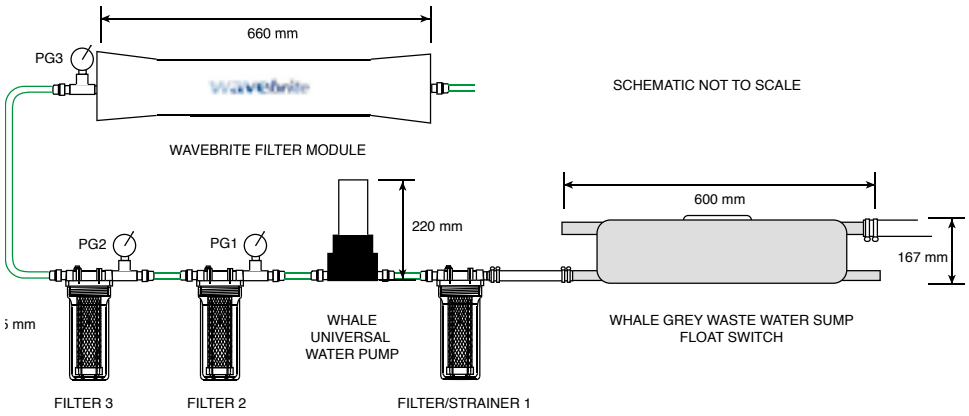
WBSMART



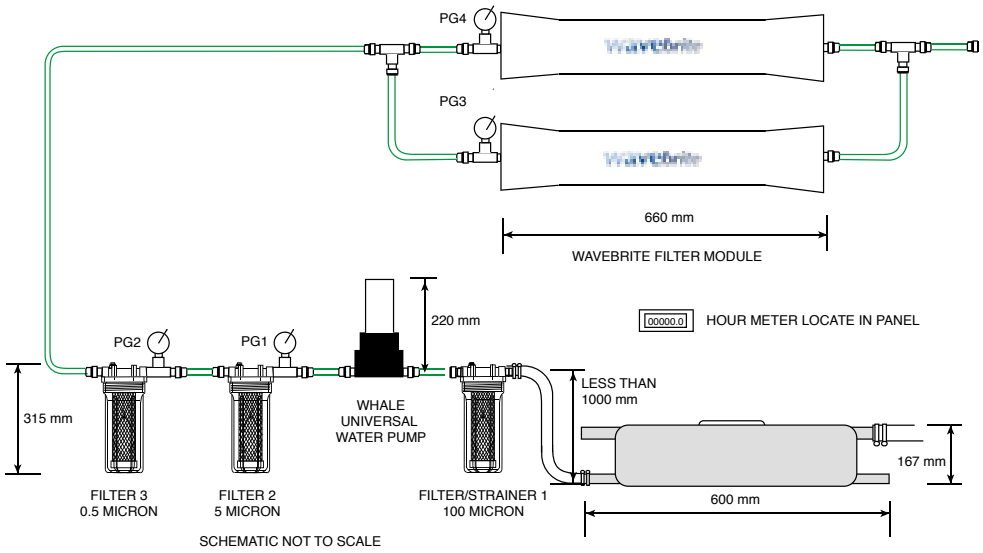
Wavebrite System		
Reference	Part No.	Description
WBS	H020996	Wavebrite System 12 / 24V dc - complete with pump, filters, gauges, control pump, fittings and pipe
WBLite	H020997	Wavebrite Lite System 12 / 24V dc - complete as WBS for smaller boats
WB2010	H019882	Wavebrite 2010 System 12 / 24V dc - complete for boats with multiple showers and basins
WB2020	H020998	Wavebrite 2020 System 12 / 24V dc - complete as 2010 but larger capacity
WB100	H020999	Wavebrite 100 System 12 / 24V dc or ac - complete for S/Y and boats requiring larger capacity, processes up to 100 cubic metres
WB300	H021000	Wavebrite 100 System 12 / 24V dc or ac - complete for S/Y and boats requiring larger capacity, processes up to 300 cubic metres

Wave Filtration Systems

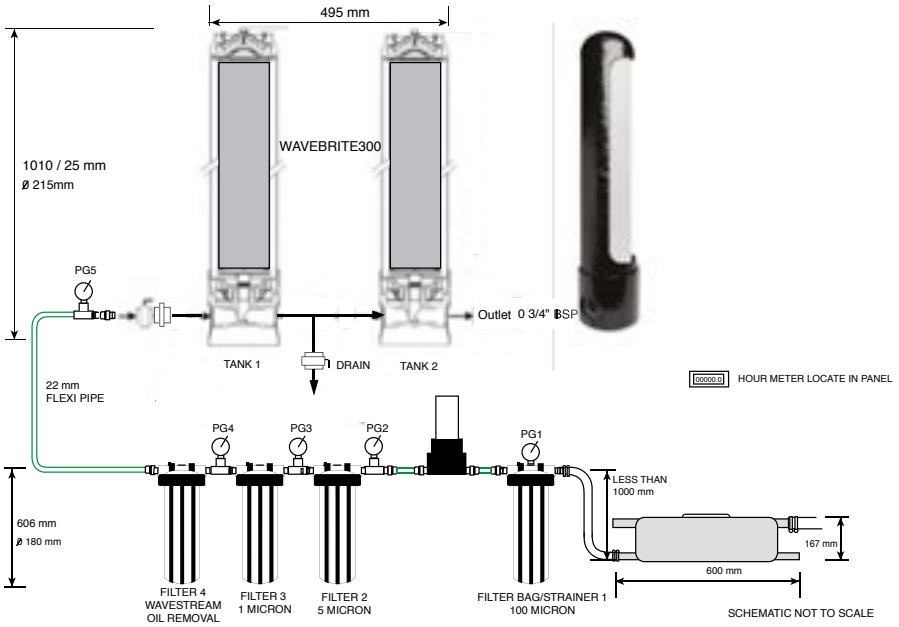
Wavebrite WBS Schematic



Wavebrite WB2010 Schematic



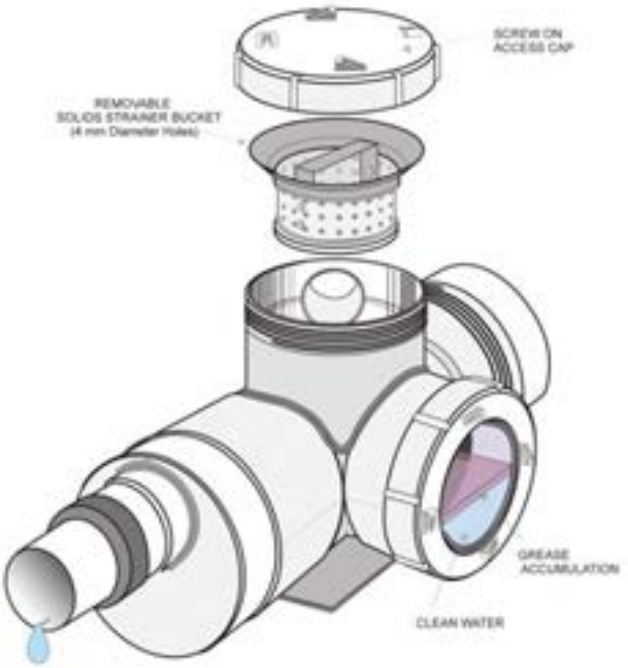
Wavebrite WB300 Schematic



Wavebrite Grease Trap

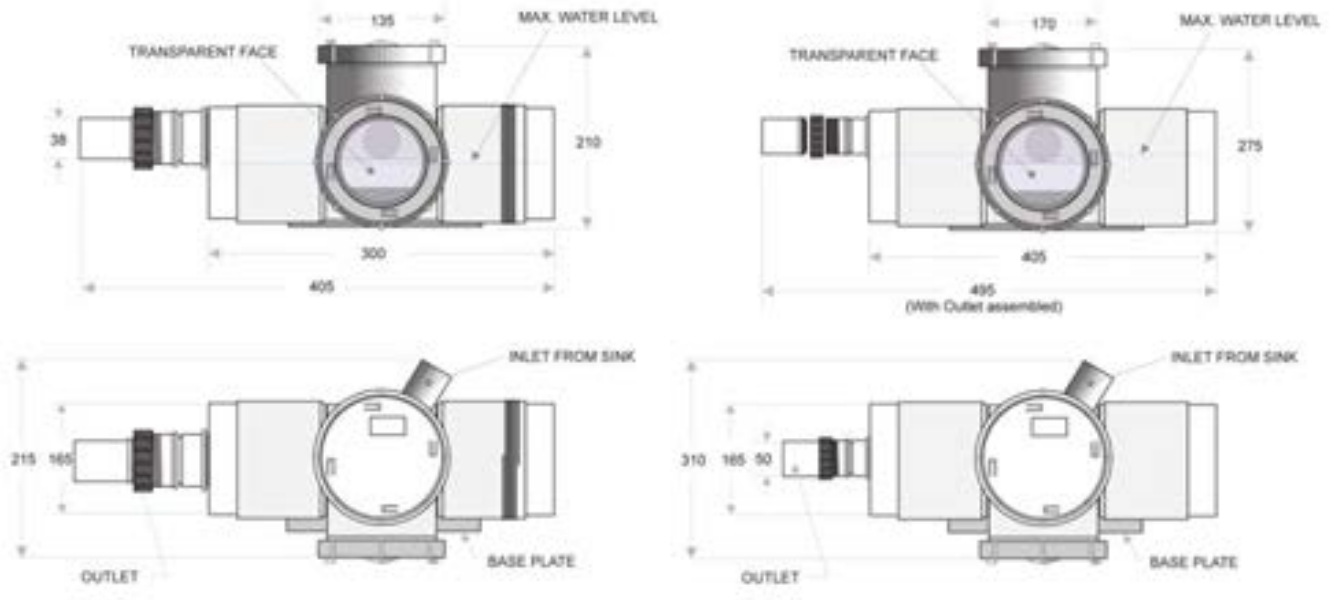
The Wavebrite Grease Trap is a useful addition to any Wavebrite system when processing galley waste water. It removes food waste, fat and grease which helps prevent solids forming in the system and extends the life of the Wavebrite module and filter cartridges.

- Simply installed in the drain from the galley sink or dishwasher
- Removes food debris, fat and grease retaining them in a food basket and grease trap reservoir
- Extends the life of the Wavebrite module and filter cartridges and improves pump efficiency
- The fat / grease level is visible through the inspection glass which indicates when the trap needs servicing
- Two sizes are available - 1.75 and 4.50 litre



Wavebrite Grease Trap		
Reference	Part No.	Description
WBGT/1.75	H021005	Wavebrite Grease Trap 1.75l capacity
WBGT/4.5	H021006	Wavebrite Grease Trap 4.50l capacity

Wavebrite 1.75l Dimensions



Wave Filtration Systems

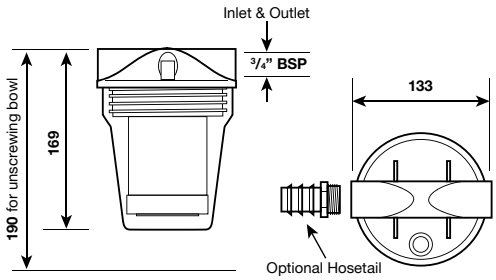
Flostream HiFlo Drinking Water Filters

The Flostream HiFlo 10 and HiFlo 10 Micro are designed for higher flow rate drinking/ wash applications providing premier quality, safe healthy water and eliminating the need for plastic water bottles.

- WRAS and NSF Certified components and filter cartridge
- Chlorine, taste and odour reduction
- Limescale inhibition and reduces heavy metals
- Bacteriostatic control to inhibit microbial growth in the water system
- Filter body easily removed with spanner provided. Replace cartridge after 6 months or if it has passed stated capacity of 6000 litres or 3000 litres for HiFlo 10 Micro.
- Pressure range 0.7 - 8 bar. Temperature range 4 - 45ºC. Recommended maximum flow rate 10 litres per minute
- Simple installation with 15mm push-fits for flexi-pipe connectors or standard 3/4" BSP

Flostream HiFlo 10		
Reference	Part No.	Description
FLOHF10BH	H025656	Flostream HiFlo housing with 3/4" BSP threaded connections, cartridge and mounting bracket.
FLOHF10-15BH	H025657	Flostream HiFlo housing with 15mm push-fit connections, cartridge and mounting bracket.
FLOHF10C	H021012	Flostream HiFlo replacement cartridge, capacity 6,000 litres
FLOMHF10	H024487	Flostream 10 Micro housing with 3/4" BSP threaded connections, cartridge and mounting bracket.
FLOMHF10-15	H024476	Flostream 10 Micro housing with 15mm push-fit connections, cartridge and mounting bracket.
FLOMHF10C	H025900	Flostream HiFlo 10 Micro replacement cartridge, capacity 3,000 litres

HiFlo 10 Micro Dimensions





FLOMHF10



FLOHF10

Wave Filtration Systems

Flostream Drinking Water Cartridge & Head

Designed to provide premium quality drinking water and for all food service applications. Available in two sizes giving a practical, cost effective point of use solution for safe, healthy water.

- NSF 42 & 53 Certified to meet health and aesthetic standards
- Chlorine, taste and odour reduction
- Limescale and KDF inhibition, anti-bacterial and reduces heavy metals
- Cyst reduction, removes contaminants that cause health issues
- Bacteriostatic control to inhibit microbial growth in the water system
- Cartridge easy connect / release with a quarter turn
- Pressure range 0.7 - 8.5 bar. Temperature range 2 - 38ºC. Recommended flow rate 1.9l/min
- Simple installation with push-fit connectors for standard 10mm flixi-pipe. Install in vertical position with cartridge hanging down for easy replacement

Flostream		
Reference	Part No.	Description
FLOW2	H019878	Flostream Cartridge 2 replacement cartridge,length plus head 264mm. Capacity 3,800l
FLOW4	H021009	Flostream Cartridge 4 replacement cartridge, length plus head 372mm. Capacity 7,600 litres
FLOWPHD	H021008	Flostream Universal Head with 10mm quick connect ports
FLOWPHD15	H019877	Flowstream Universal Head with 15mm quick connect ports



Flostream Dock Water Filter, Cartridge & Hose

The Flostream Dock Water Filter is installed in the water supply to pre-filter water when filling onboard tanks. Removing most impurities in three stages, further purification at the point of use can then be applied if required.

- Removes particulates and chlorine improving the taste and smell as a pre-filter
- STAGE 1 - Removes large particulates
- STAGE 2 - Removes sediments down to one micron
- STAGE 3 - Effectively reduces Chlorine, smell and odours, improving taste and colour with bacteriostatic control
- Maximum pressure 6.20 bar. Temperature range 1 - 45ºC. Recommended maximum flow rate 20l/min
- Simple installation, hose supplied with 3/4" BSP connectors. The filter is installed between the supply tap and the onboard tanks

Note: Bracket is not included.

Flostream HiFlo 10		
Reference	Part No.	Description
FDF	H021023	Flostream dock water filter and housing, cartridge, connections and supply hose
FDF-C1	H021024	Flostream dock water filter replacement cartridge, length plus head 315mm. Capacity 20,000 litres
WSS1SSMB	H024439	Flostream Wavestream1/Dock Filter Mounting Bracket



Wave Filtration Systems

Waveair Holding Tank Vent Filter

Eliminates foul smells in and around your boat from holding tank vents. Waveair is simply installed in the vent line after the tank and before the outlet. Removes the organic compounds that cause bad odours

- Waveair uses a highly effective filter media, available in two sizes, 430mm and 200mm long, both for 16,19 and 25mm hose connections
- Single module supplied with brackets and connections
- Easy filter replacement. Simply remove the complete filter after one year, retaining bracket and connections and insert replacement filter
- Not suitable for treated sewage with significant amounts of chemicals, chlorine or other oxidising agents within the tank

Waveair		
Reference	Part No.	Description
WAM16	H021025	Waveair Micro tank vent filter - 16mm
WAM19	H021026	Waveair Micro tank vent filter - 19mm
WAM25	H021027	Waveair Micro tank vent filter - 25mm
WAMC	H021028	Waveair Micro replacement filter - 16 & 19mm
WAMC25	H021030	Waveair Micro replacement filter - 25mm
WA16	H021013	Waveair tank vent filter - 16mm
WA19	H021014	Waveair tank vent filter - 19mm
WA25	H021015	Waveair tank vent filter - 25mm
WAC	H021016	Waveair replacement filter - 16 & 19mm
WAC25	H021031	Waveair replacement filter - 25mm



PROstream Watermaker Duo Cartridge

Unique pre-RO watermaker protection removes both sediment and trace oils. Combined string wound or melt blown cartridge with Wavestream oil removal technology. The PROstream cartridge replaces an existing pre-filter and offers additional oil protection phase

- Protects main RO by efficient oil removal with high dirt holding properties
- Wide range of sizes, micron ratings and end cap configurations available
- Consistent filtration over the life of the cartridge
- Marine, domestic and industrial applications

PROstream		
Reference	Part No.	Description
PRO-C1	H021017	PROstream wound outer 5 micron oil removal cartridge fits standard 10" housings
PRO-C1 / 20	H021018	PROstream wound outer 5 micron oil removal cartridge fits standard 20" housings
PRO-C2	H021019	PROstream wound outer 5 micron oil removal cartridge fits large diameter Big Blue 10" housings
PRO-C2 / 20	H021020	PROstream wound outer 5 micron oil removal cartridge fits large diameter Big Blue 20" housings



Wave Filtration Systems

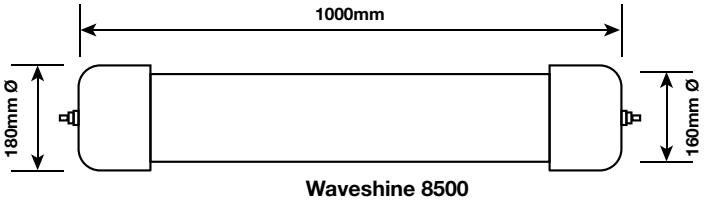
Waveshine Inline Wash & Rinse System

Waveshine is a wash down filter system that removes the minerals from water that causes spotting and smears when washing and rinsing your boat. When also used to filter water going onboard it removes hardness softening the water for regular use, protecting appliances, taps, sinks, showers, pumps and systems.

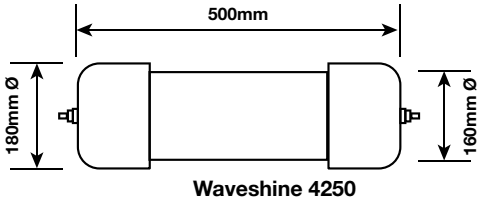
- Waveshine 4250 and 8500 use a highly effective resin media with 4250 and 8500 litre capacities, depending on water hardness
- Replacement salt cartridges and hardness test kits available
- Waveshine can be used free standing on the dock or installed onboard. Saddle clamps work as a stand on the dock or as installation brackets
- Softened water dramatically reduces scaling in appliances, pumps and systems and improves the effectiveness of soaps and detergents reducing the impact on the environment

Waveshine		
Reference	Part No.	Description
WSN4250	H022157	Waveshine system with 4250 litre capacity, regeneration filter, salt cartridge, hose and hardness kit
WSN8500	H021021	Waveshine system with 8500 litre capacity, regeneration filter, salt cartridge, hose and hardness kit
WSN-CS1	H021022	Waveshine 4250 & 8500 regeneration cartridge
WSN-HK	H021029	Waveshine hardness test kit





Waveshine 8500



Waveshine 4250

Waveshine Clear Cartridge Wash & Rinse System

The Waveshine Clear range of wash down filter systems remove the minerals from water that cause spotting and smears when washing and rinsing your boat, leaving a clear, shiny finish.

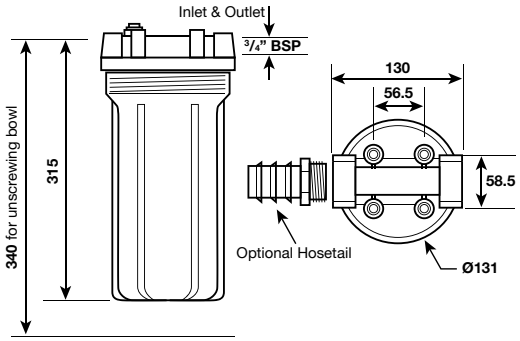
Three models available, Clear 300, 1000 and 2000, reflecting the approximate capacity of the cartridge in the filter in litres. A replaceable cartridge in each filter system removes and retains the minerals from the rinse water. **Note:** Must not be used as drinking water filter.

- Waveshine Clear Systems use a highly effective resin media with an approximate 300, 1000 and 2000 litre capacity, depending on model and water hardness
- The cartridges are non-regenerable and replacements are available
- Waveshine Clear can be used free standing on the deck or installed onboard. Stainless brackets are supplied for internal fitting
- Maximum performance is ensured with no need for wipe or leather off after rinsing reducing the overall time for wash down leaving a clear, shiny finish all over the vessel

Waveshine Clear 300

Lloyd's Register

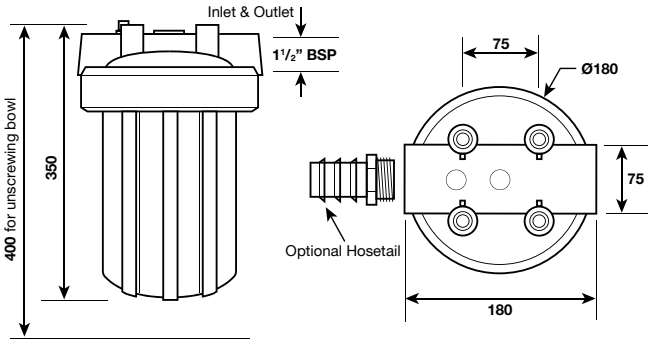
Ref: WSNC300 - H023020	
Flow Rate	1 - 40 litres per minute
Maximum Pressure	6.2 bar
Maximum Temperature	40ºC
Minimum Temperature	1 ºC
Connection	3/4" BSP
Cartridge	H023023



Waveshine Clear 1000

Lloyd's Register

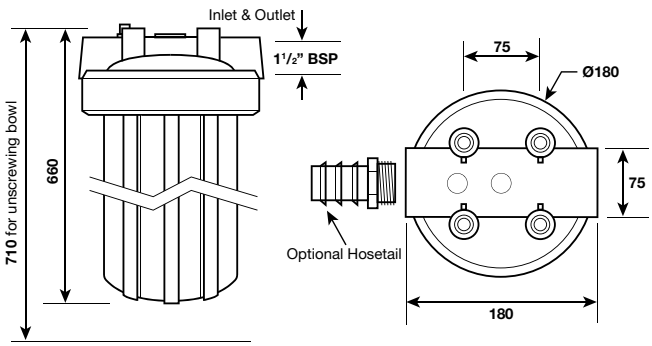
Ref: WSN1000 - H023021	
Flow Rate	1 - 265 litres per minute
Maximum Pressure	6.8 bar
Maximum Temperature	37ºC
Minimum Temperature	1 ºC
Connection	1 1/2" BSP
Cartridge	H023024



Waveshine Clear 2000

Lloyd's Register

Ref: WSN2000 - H023022	
Flow Rate	1 - 265 litres per minute
Maximum Pressure	6.2 bar
Maximum Temperature	37ºC
Minimum Temperature	1 ºC
Connection	1 1/2" BSP
Cartridge	H023025



Halyard Service Support

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 & components
- Steelhead cranes
- Freeman hatches & doors
- Aquadrive antivibration systems
- Seatorque shaft systems
- Conventional shaft systems

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 710 922





Halyard Network

Distributors & Dealers

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www.argoyachting.com
southampton@argoyachting.com

AR Peachment Ltd
Riverside Estate, Brundall
Norwich NR13 5PL
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www.peachment.co.uk

Darthaven Marina Ltd
Brixham Road, Kingswear
Dartmouth TQ6 0SG
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Maidenhead SL6 9SN
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www.mikewillsmarine.co.uk
mikewills2@aol.com

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supportteam@salmarine.com
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www.seapowermarine.com

TW Marine Ltd
The Marina
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High Peak SK23 7QA
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www.twmarine.co.uk

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Tel: +354 496-4400
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www.marineworks.eu/pl

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124 Service Road
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Tel: +27 83 273 4704
www.seascapemarine.co.za

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Trans Auto
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151 48 Södertälje
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www.transauto.se

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Koh Kaew, Muang Phuket
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Tel: +66 7623 9739
www.boatlagoonyachting.com
enquiries@boatlagoonyachting.com
Service Department:
Tel: +66 76 238799
Email: enquiries@boatlagoonyachting.com

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Yılmaz Sk.
No:4/1 D:5
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info@navantec.com

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Whiteley, Hampshire
PO15 7FE
Tel: +44 (0) 1489 565 107
info@cquipcom
www.cquip.com

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Netherlands & Germany - Projects >24m:

AP Management
Hugo van de Wetering
E-mail: info@apmanagement.nl
Tel: +31 612992026

UAE:

Blazer Marine LLC
Warehouse No. WHA001, Plot No. 318-0
Al Warsan Third, P.O. Box 36834
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Tel: +971 4 324 2054
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For all other territories please contact Halyard directly

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Aug 2026

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