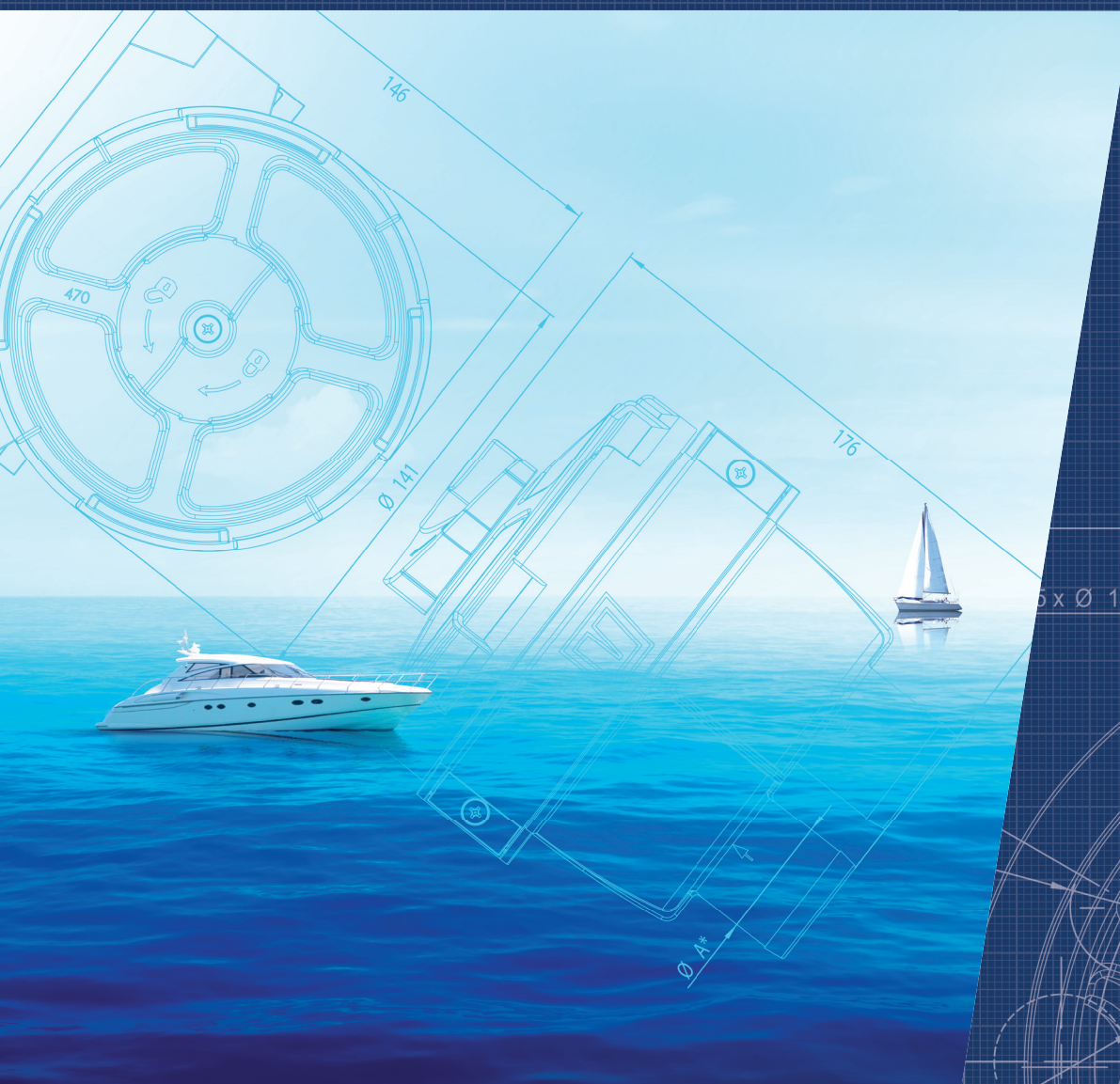
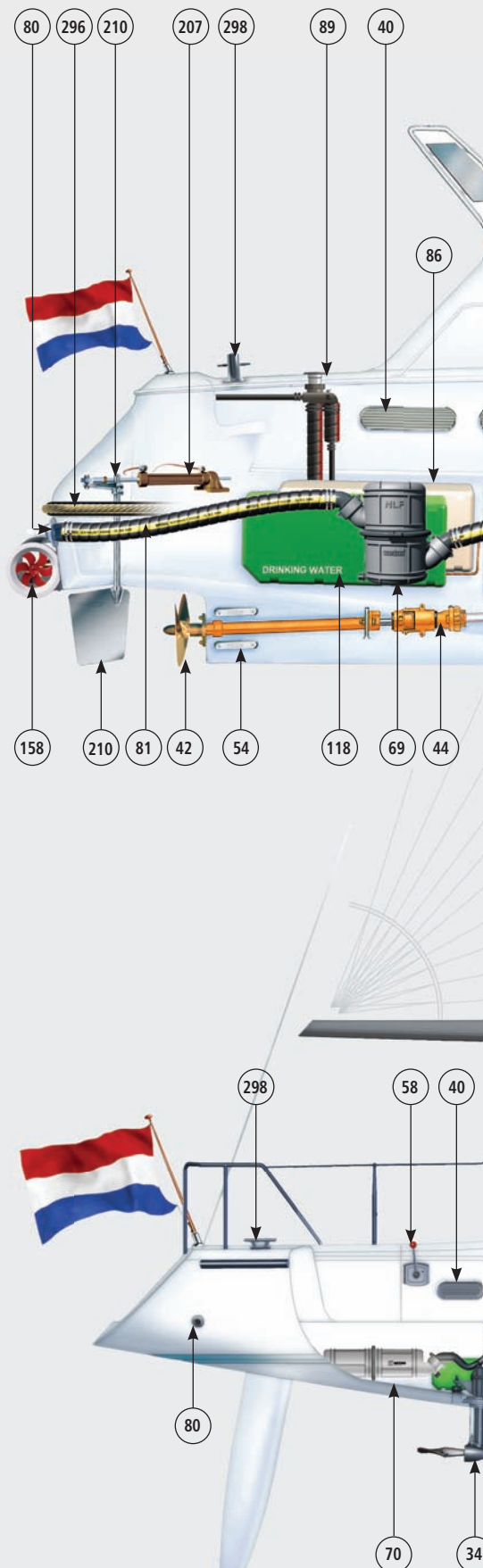


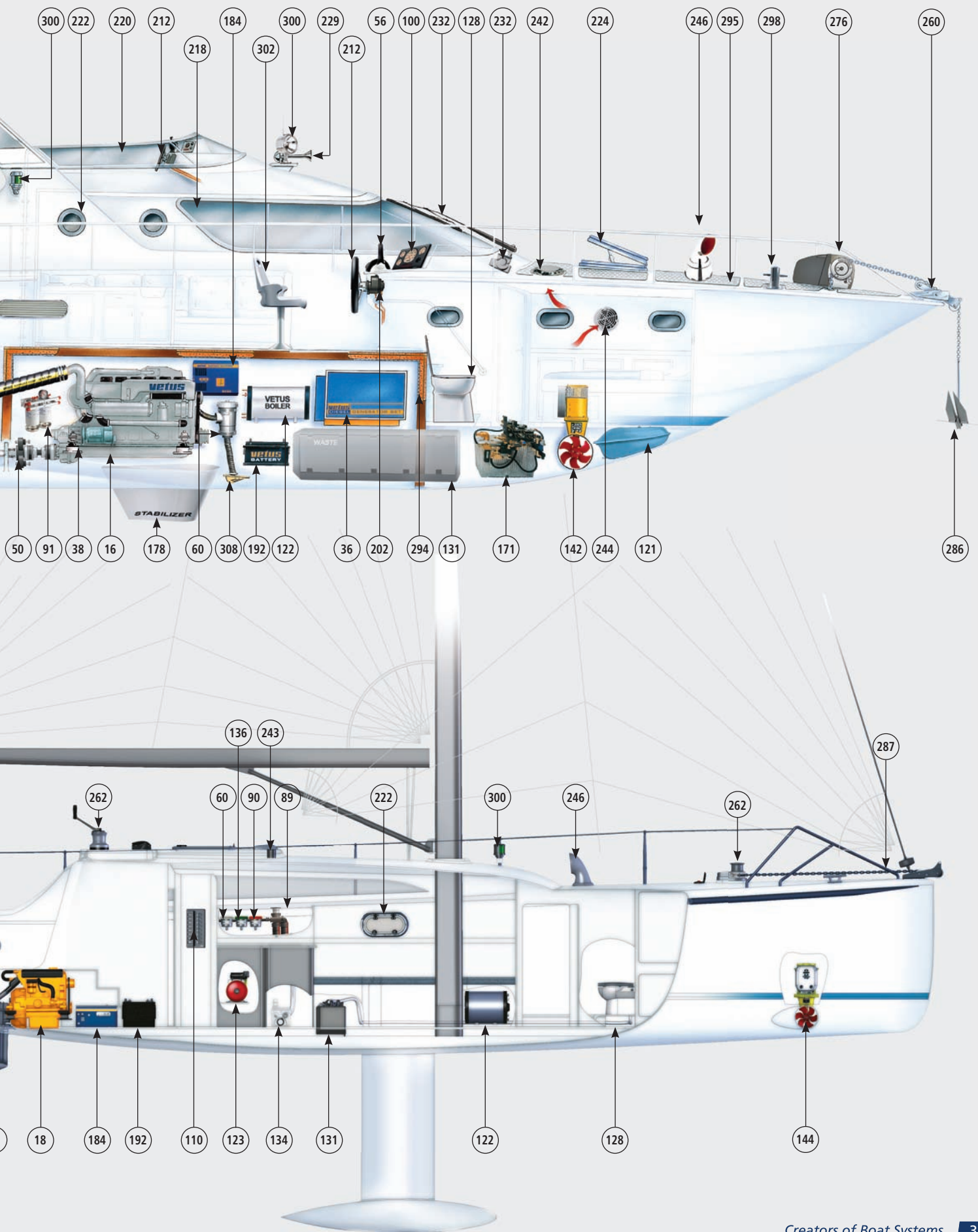
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VETUS, Creators of boat systems,

Developing innovative systems for your boat is truly what VETUS is about. The VETUS 2012 catalogue offers a wide range of products to build and maintain your boat to an optimum technical level. In recent years we have again listened carefully to our customers. Partly due to your input, existing products have been improved and many new ideas developed.

For 45 years VETUS has been one of the world's leading companies when it comes to innovative products for pleasure craft and small commercial vessels. Not for nothing is our catalogue regularly consulted by the engineers and designers from leading yacht builders and used as educational material in marine training establishments.

Why VETUS?

One of the most important reasons to choose VETUS is the sales and service network developed over many years of operation. Currently, VETUS products are sold in over 100 countries worldwide.

The VETUS mission

To put a product on the market that is high quality in all respects. It is essential to think in complete systems and offer full service, together with time saving installation methods. Everything revolves around making life as easy as possible for the customer.

VETUS systems

In 2010 VETUS changed from product thinking to system thinking. This system thinking is implemented in our latest catalogue and revolves around total solutions for the customer, rather than individual products. VETUS aims to deliver a 'full service' concept with complete systems for the most important areas of both motor and sailing boats. An example of this is propulsion engines. We can deliver not just an engine, but a complete "Around the Engine" package of related equipment, see page 4 Boat Systems.

The VETUS philosophy:

- Innovation through design
- Easy installation
- Complete system thinking
- Worldwide availability
- Worldwide service



VETUS international

Export was strongly developed from an early stage of the business. Currently there are international subsidiaries established in Great Britain, Finland, Spain, Sweden, Russia, the United States, Denmark, Australia, New Zealand and India, in addition to the main office in Schiedam and a branch office in Friesland. In 2011 a new office has been established in South Africa.

Boat Shows

For many years VETUS has been represented at all the major boat shows around the world. On these VETUS stands you will find a wide selection of our current product ranges, the latest product developments and special boat show offers. For the full boat show calendar, please visit our web site www.vetus.com.

VETUS sponsors Whisper Boat Building Academy in South Africa

Encouraging social responsibility is made valid by example. That is why VETUS has drawn up a social programme for the promotion of learning and transfer of knowledge for those who have fewer opportunities.



Warranty

Because of our many years of experience, product knowledge, careful material choices and sound technology, we have the confidence to give a 3 year warranty on all our boat equipment and 5 years warranty on our engines. In addition to these outstanding warranties, VETUS has a worldwide network of qualified dealers, who can offer advice, sales, installation and service of all our products.



Maxwell and Marex

In this catalogue is the complete range of Maxwell anchor winches and the many possibilities for custom made windows and hatches available with our Marex programme. Maxwell and Marex are independent companies, which are part of the international VETUS group.

MAXWELL
MAREX

V-QUIPMENT

With the V-Quipment line, VETUS offers a number of products which makes its range of boat equipment more complete. VETUS focuses on creating boat systems, but every boat also needs other components, such as seats, stanchions, and assorted fittings. V-Quipment consists of a wide range of these items at very competitive prices.

All V-Quipment products meet the quality standards of VETUS, but are largely developed and manufactured by third parties. This range has been assembled by us to better meet the needs of our customers.



In short, VETUS does everything to make boating as easy and carefree as possible.

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*VETUS, Maxwell and Marex articles are sold in more than 100 countries
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Fax: +1-321-453-7711
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Defender Industries Inc
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Waterford, CT 06385
Tel.: 800 628 8225
Fax: 800 654 1616
www.defender.com/maxwell.jsp

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Fax: +1-714-898-1996
info@tdcequipment.com

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Fax: +1-206-634-4600
help@fisheriessupply.com

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Fax: +1-281-474-2714
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Marysville Marine Distributors Inc.
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Fax: +1-810-364-4112
marketing@marysvillemarine.com

Jamestown Distributors Inc.
Tel.: +1-401-253-3840
Tel.: +1-800-423-0030 (Toll Free)
Fax: +1-401-254-5829
Fax: +1-800-423-0542
info@jamestowndistributors.com

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Fax: +410-268-6528
info@fawcettboat.com

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Tel.: +757-853-6781
Fax: +800-853-7709

Marine Equipment and Supply Co.
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Fax: +856-853-9732

Seacoast Distributors LLC
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Fax: +631-884-0985

Donovan Marine Inc.
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Tel.: +504 488 5731
Fax: +504 734 2658

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info@nautica.com.uy

Yemen
see United Arab Emirates



Save valuable installation time with this combined, muffler / gooseneck. See page 70.

NLPG60

NLPG70

NLPG90



Totally redesigned bow thruster panels in high quality aluminium. See page 100.

BPAJ



The new NLP3 waterlock / muffler is the quietest in the world! See page 71.

NLP3



Contemporary switch panel made from high quality aluminium. See page 101.

P4AFA



Robust stainless steel electronic engine control. See page 56.

EC4



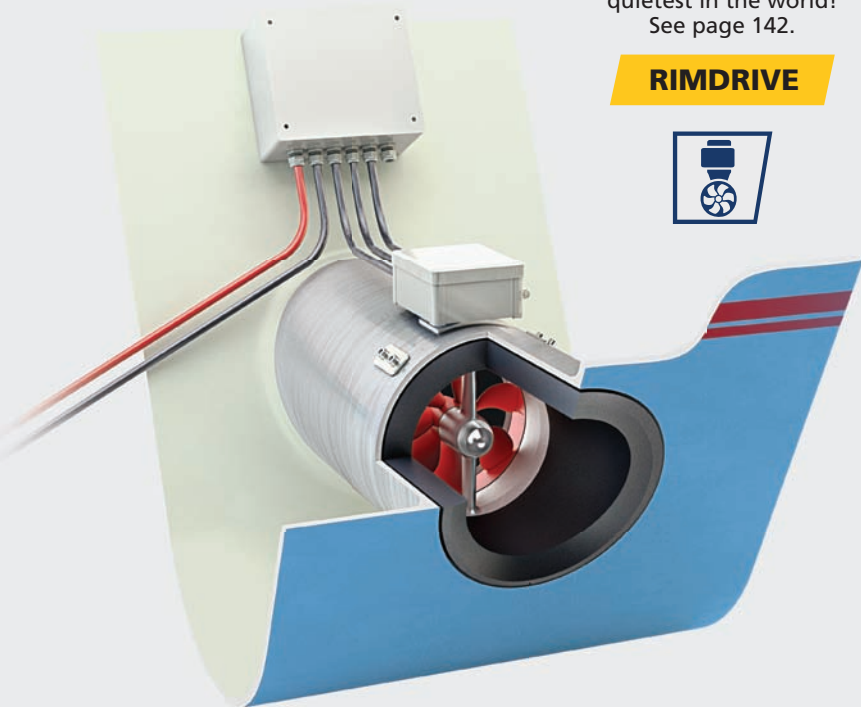
New stainless steel control handles. See page 58.

RC03RG

RC06RG



Revolutionary bow thruster.
A totally new concept and the
quietest in the world!
See page 142.

RIMDRIVE


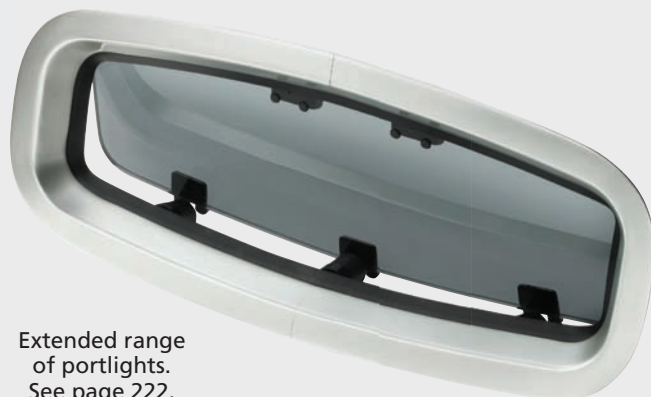
Wireless remote control
for bow thrusters.
See page 155.

R&C


Universal wireless remote
control for thrusters
and windlasses.
See page 154.

RCM4


Extended range
of portlights.
See page 222.

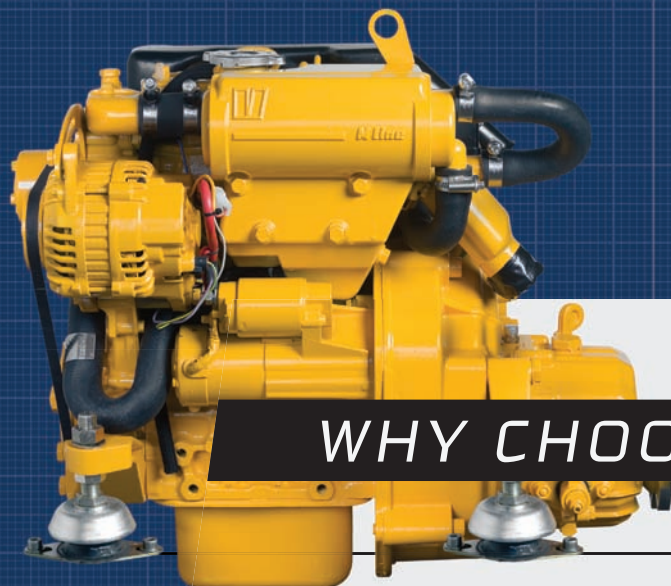
PXF


Electric toilet - small
in dimensions but great
in comfort.
See page 128.

TMWS


Anchor windlass for
boats up to 22 metres.
See page 266.

RC12

WHY CHOOSE A VETUS ENGINE?

- The first consideration for **the customer** must be adequate and good service, together with high quality, trustworthy and professional advice.
- The VETUS dealer network provides service, spare parts and a point of contact **worldwide**.
- For over 40 years, VETUS has produced a **reliable, compact, complete series of marine engines** ensuring your safe and continuous boating pleasure.
- A **5 year guarantee** (in accordance with the VETUS Guarantee and Service conditions).
- **Super quiet running and highly fuel efficient engines** for your comfort.
- **High power and torque** output provide rugged engines on which you can always rely.
- **Easy to service** due to good accessibility of most service items from one side.
- **Automatic bleeding** of the high pressure fuel system on all engines for convenience should you unexpectedly run out of fuel.
- All VETUS marine diesel engines meet the European RCD 1 and Russian RRR **emission standards**. Some also comply with the BSOII and American EPA Stage 3 A emission standards.
- The M3.28, M4.15 and M4.17 are the first engines in the M-Line to be **SOLAS certified**. Other engine models in this line will also be certified shortly.
- **High alternator outputs** as standard, specially developed for marine applications to recharge the batteries quickly. A second alternator is available as an option on most models.
- Most engines are provided as **standard** with a connection for the propeller shaft lubrication and cooling water.
- A **saildrive version** is available for all VETUS M-Line and H-Line engines up to 80 hp.
- A number of M-Line and H-Line engines are available as **"Powerpacks" or hydraulic propulsion versions**.

Around the engine

- Fuel filters with transparent bowls, approved to CE, ABYC and IMO standards
- Fuel Safe
- Fuel Splash Stop



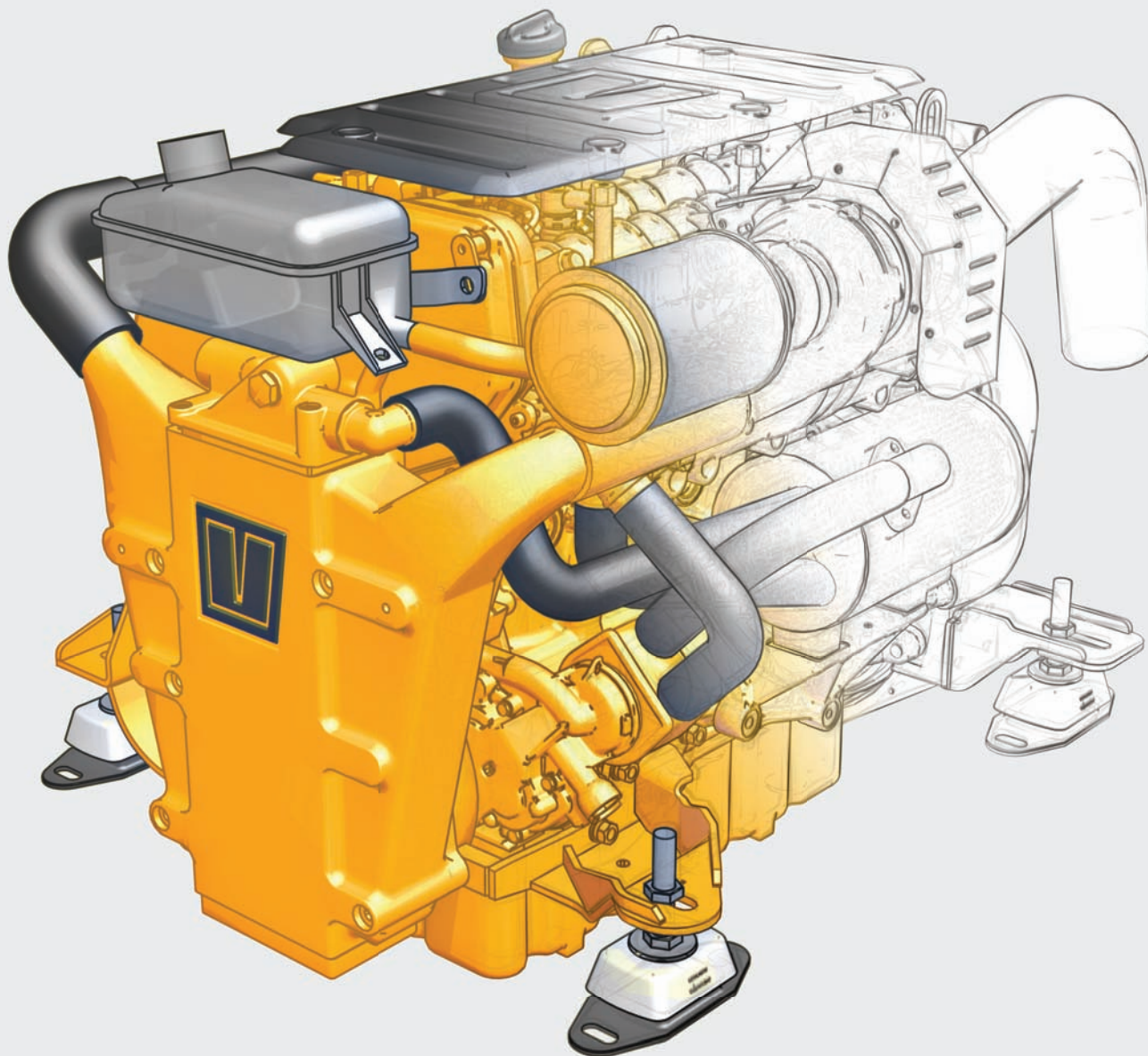
VETUS, Creators of....

The ranges of VETUS engines are wide and diverse. A VETUS engine for every type of boat is the idea behind the development of the various models.

VETUS not only offers a complete range, but goes much further. Everything that a boat owner needs to install his engine is also supplied by VETUS. The user experience is paramount. The engineers at VETUS keep in mind that the engine is often installed in a very small space. Therefore service items are always easily accessible from any position.

This applies not only to the engine, but to the whole range of "around the engine" products, such as water filters. VETUS developed the transparent cover which makes checking the filter for clogging very simple. In the latest model, opening the filter to clean it is never a problem. By simply turning the rotary knob, the lid is removed quickly and easily.

VETUS engines have a reputation for reliability, and of that we are proud!



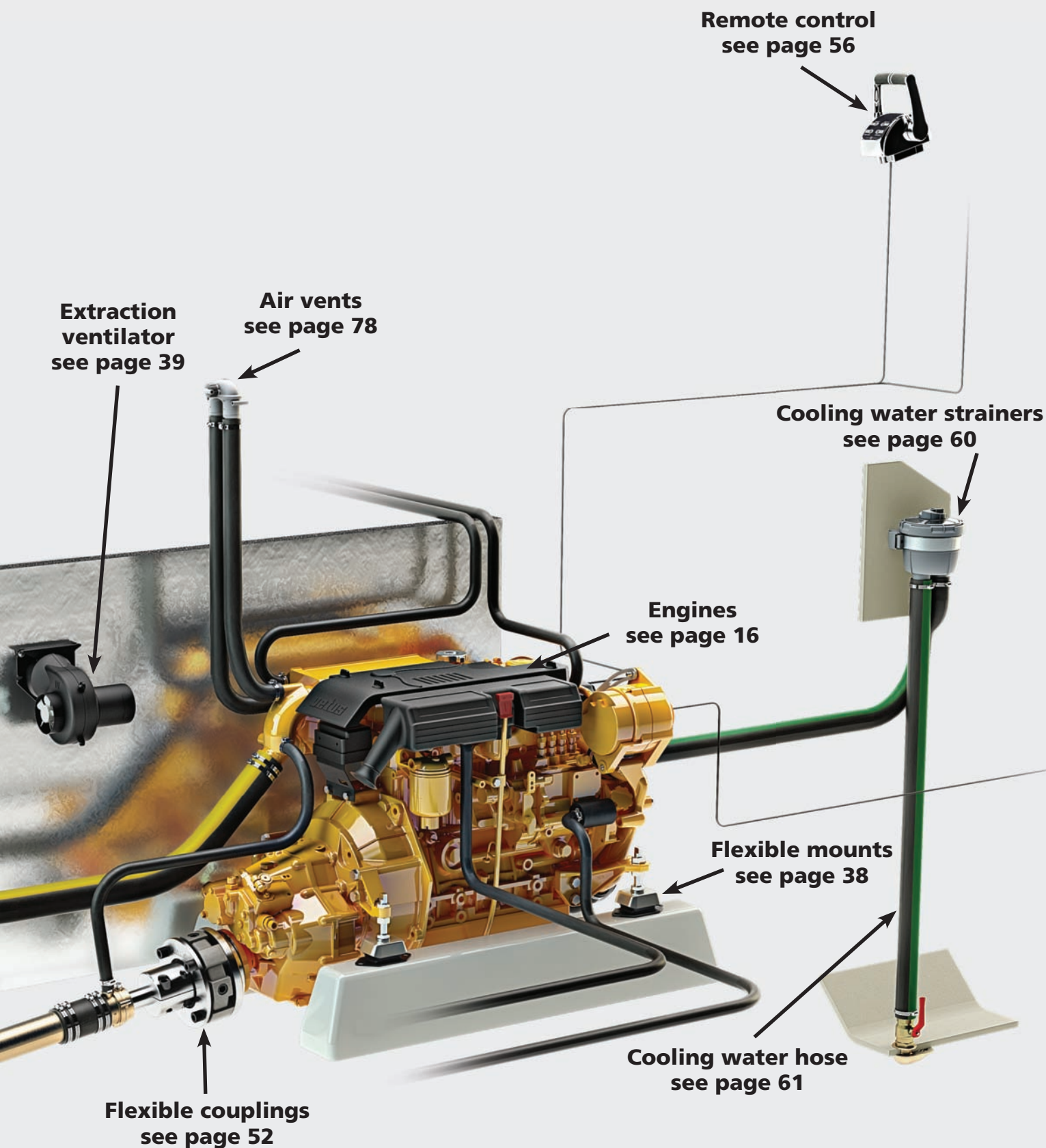


Air intakes
see page 40

Exhaust systems
see page 81

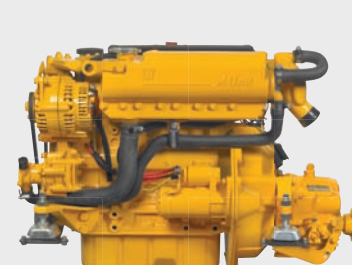
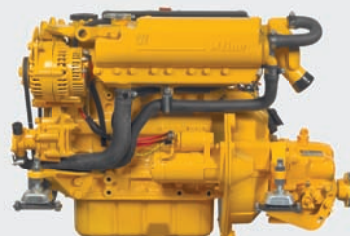
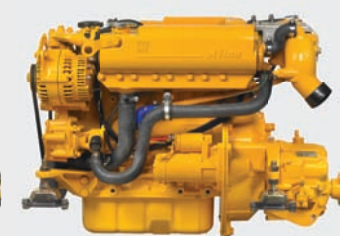
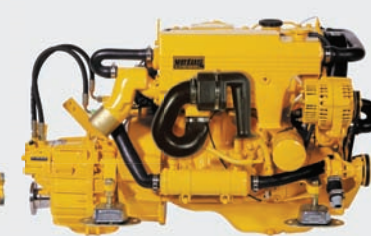
Propellers
see page 42

Shaft systems
see page 44



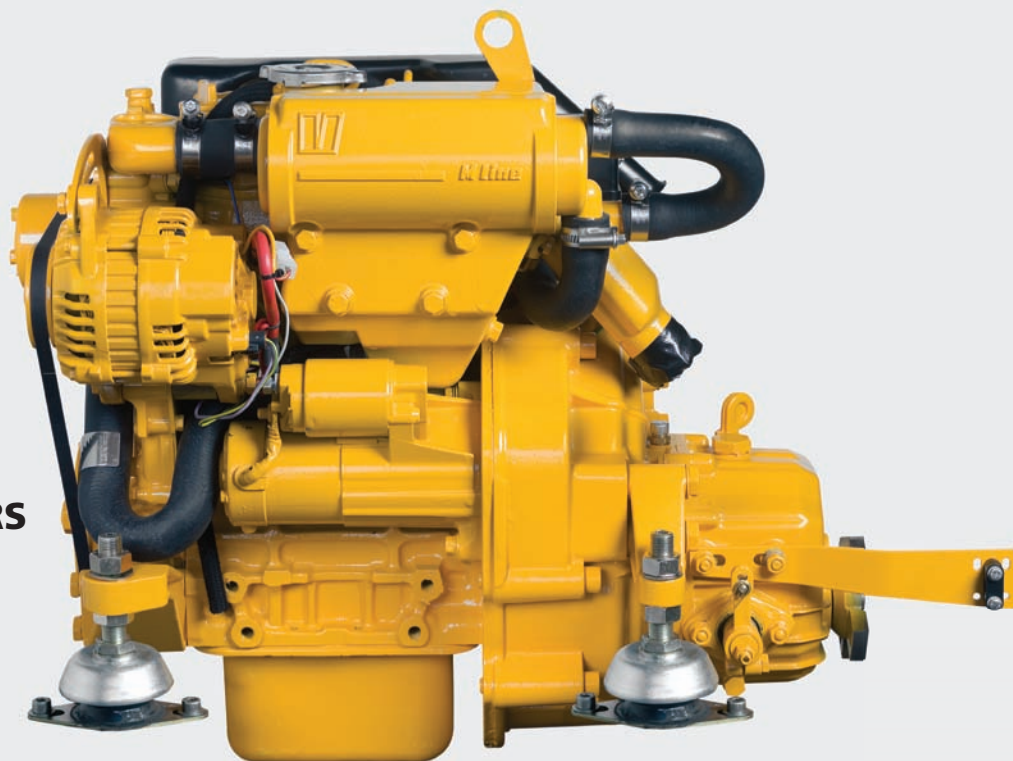

M2.02 8,8 kW (12 hp)

M2.06 11,8 kW (16 hp)

M3.28 20 kW (27,2 hp)

M4.15 24,3 kW (33 hp)

M4.17 30,9 kW (42 hp)

M4.55 38,3 kW (52 hp)

VH4.65 48 kW (65,3 hp)

VH4.80 59 kW (80,3 hp)

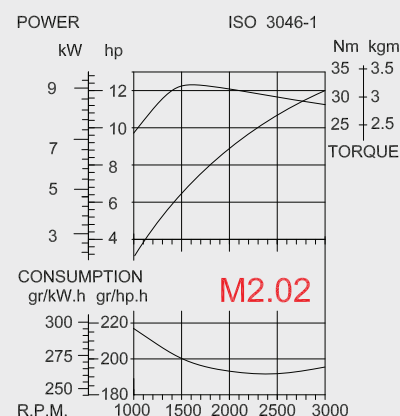
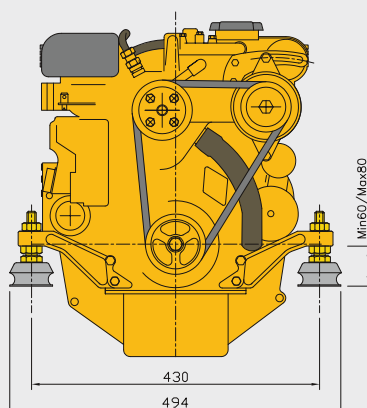
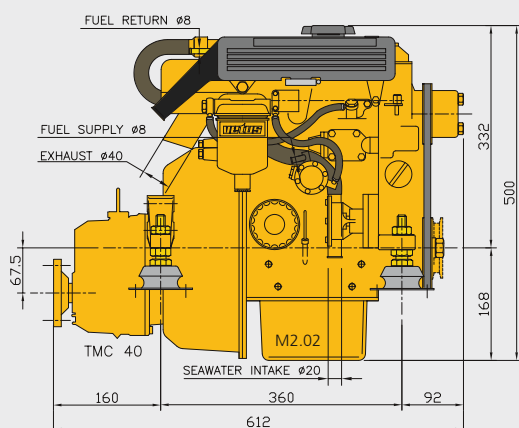
Engine model	M2.02		M2.06		M3.28		M4.15		M4.17		M4.55		VH4.65		VH4.80			
Power ISO3046/1 (hp/kW)	12/8.8		16/11.8		27.2/20		33/24.3		42/30.9		52/38,3		65.3/48		80.3/59			
Max. Speed (RPM)	3000		3600				3000										4000	
Gearbox reduction	2:1	2.6:1	2:1	2.6:1	2:1	2.6:1	2:1	2.5:1	2:1	2.5:1	2:1	2,47:1	2:1	2.63:1	1.97:1	2.8:1		
VETUS water lubricated propeller shaft system																		
* Shaft diam., Duplex 1-4462,	25				30				35	30	35	30	35	30	40			
VETUS manganese bronze propeller																		
* 3-blade, P3B, diameter in inches	12"	15"	13"	15"	14"	16"	18"	20"	18"	20"	17"	21"	request	22"				
* 4-blade, P4E, diameter in inches	on request																	
VETUS flexible coupling																		
* Bullflex type:	01		02		04				08	04	08	04	08	04	08			
* Uniflex type:	13								16	13	16							
VETUS water strainer																		
* hose connection diam.(mm)	20								25									
* water strainer, type FTR470 or FTR330:	330/19 or 470/19								330/25 or 470/25									
* water strainer installation kit	WKIT33019								WKIT33025									
VETUS fuel filter/water separator																		
* hose connection suction/return in mm	8-8																	
* fuel filter/water separator, type:	704VTER or 75704VTER																	
VETUS exhaust system with water injection																		
* exhaust hose, diam.(mm)	40				50				60				75					
* waterlock, type:	NLP40 / LP40				NLP50 / L50R/S				NLP60 / LP60				NLP75 / LP75					
* combi waterlock/muffler, type:	NLP H40				NLP H50				n/a									
* muffler, type:	MP 40				MP 50				MP 60				MP 75					
* gooseneck, type:	LT 40				LT 50				LT 60				LT75 75					
* combi muffler/gooseneck, type:	NLP G40				NLP G50				n/a									
* transom connection, type TRC...R, PV or SV	40R / PV or SV				50R / PV or SV				60R / PV or SV				TRC7590R					
* anti-siphon, type ASD or AIRVENT	V or H																	
VETUS engine remote control																		
* according to choice	SICO, SISCO, AFSTZIJ, RCTOPB, RCTOPS, AFSTTOP																	
VETUS maintenance free batteries																		
* voltage	12																	
* starter battery, min. Ah	55								108									
* service battery, Ah.	as required																	
VETUS louvred air suction vents																		
* per engine, type ASV, SSV or SSVL	1 x 25	2 x 20		2 x 25		2 x 40 or 4 x 20		2 x 50 or 4 x 30		2 x 60 or 4 x 30/3 x 40		2 x 70 or 2 x 30 + 2 x 40		2 x 80 or 4 x 40				

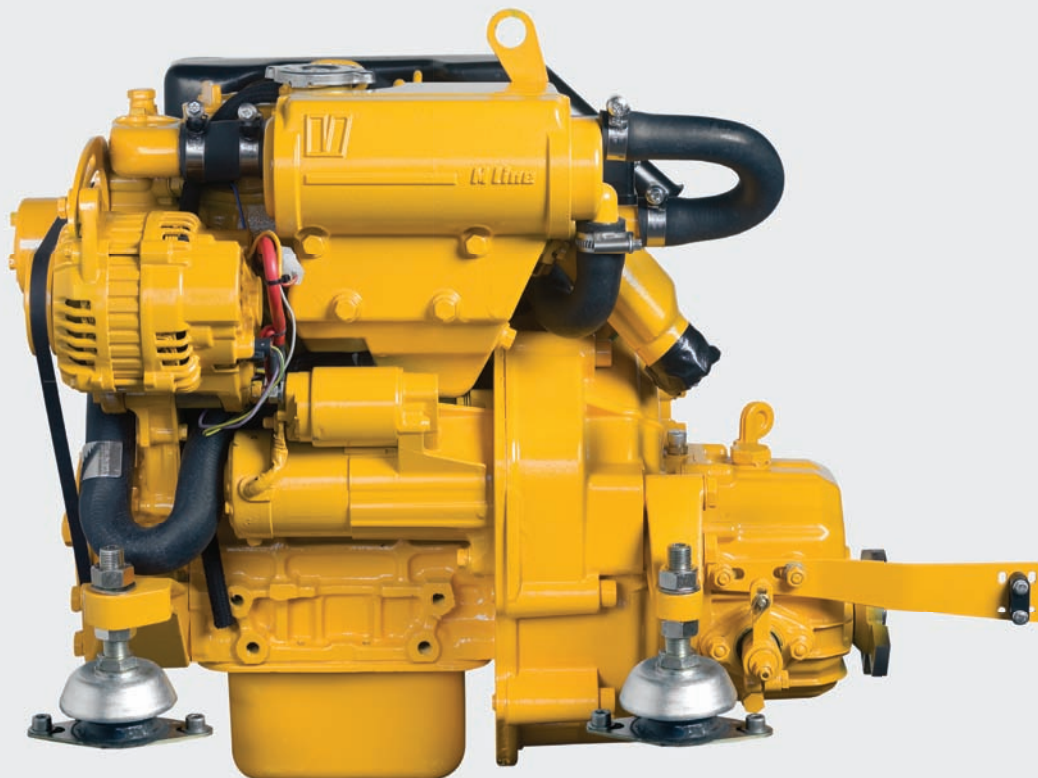


M2.02: 2 CYLINDERS
8.8 KW (12 HP)
3.000 RPM

Technical data

Technical data	M2.02	Dry weight (incl. standard gearbox)	: 98 kg
	IDI/4stroke/2cyl. in line/	Suction height of fuel lift pump	: 1.5 m
	NA diesel	Max. installation angle (backwards)	: 15°
Bore	: 76 mm	Max. lateral inclination angle	: 25°
Stroke	: 70 mm	(continuously)	
Capacity	: 635 cm³	Max. lateral inclination angle	: 30°
Number of cylinders	: 2	(5 minutes max.)	
Compression ratio	: 23:1	Calorifier connection	: standard
Firing order	: 1-2	Warning lights and audible alarm for	: oil pressure,
Alternator	: 12 Volt - 75 Amps.		temperature
* Max. output at flywheel	: 8.8 kW (12 hp)		(fresh and raw water),
(ISO 3046-1)			charging current
* Max. output at propeller shaft	: 8.7 kW (11.8 hp)	Control light for	: pre-heating
(ISO 3046-1)		Electric circuit protection	: fuse 10 Amps
Maximum rpm	: 3000	Cooling system	: indirect cooling as
Max. torque	: 32.7 Nm/1600 rpm		standard
Fuel consumption	: 268 g/kW.h (196 g/hp.h)		(keelcooling optional)
at 2500 rpm			
Gearbox, standard	: TMC40P	* In accordance with ISO 8665	
Reduction	: 2.05/2.60:1		
Option	: ZF10M 2.05/2.72:1		
	ZF15MIV 2.13/2.99:1		
	TMC60A 2/2.5:1		





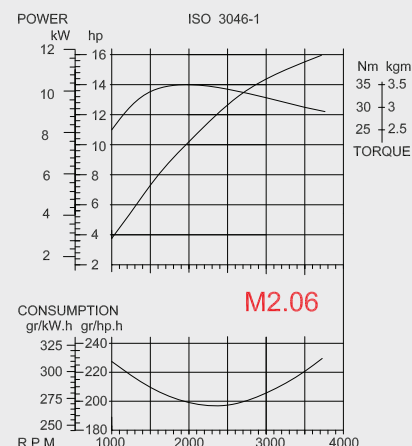
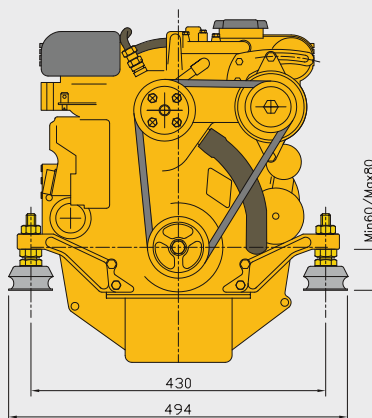
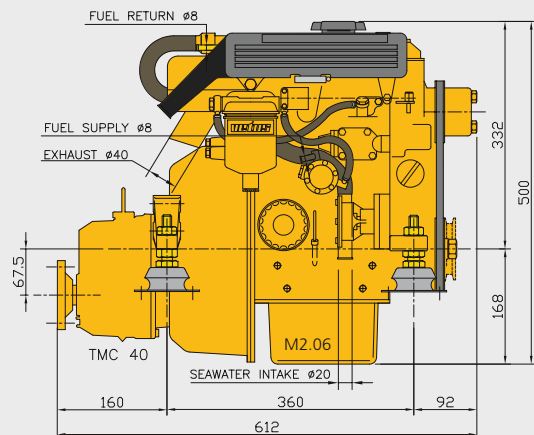
M2.06: 2 CYLINDERS 11.8 KW (16 HP) 3.600 RPM

Technical data

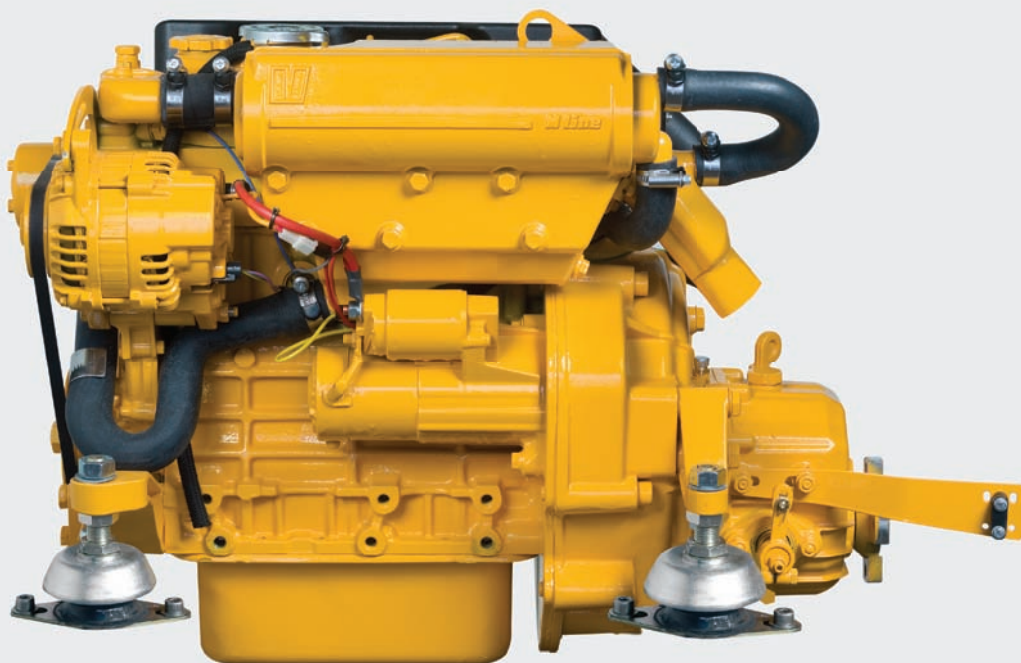
	M2.06
	IDI/4stroke/2cyl. in line/ NA diesel
Bore	: 76 mm
Stroke	: 70 mm
Capacity	: 635 cm ³
Number of cylinders	: 2
Compression ratio	: 23:1
Firing order	: 1-2
Alternator	: 12 Volt - 75 Amps.
* Max. output at flywheel (ISO 3046-1)	: 11.8 kW (16 hp)
* Max. output at propeller shaft (ISO 3046-1)	: 11.6 kW (15.8 hp)
Maximum rpm	: 3600
Max. torque	: 35.1 Nm/2000 rpm
Fuel consumption at 2500 rpm	: 268 g/kW.h (196 g/hp.h)
Gearbox, standard	: TMC40P
Reduction	: 2.05/2.60:1
Option	: ZF10M 2.05/2.72:1 ZF15MIV 2.13/2.99:1 TMC60A 2/2.5:1

Dry weight (incl. standard gearbox)	: 98 kg
Suction height of fuel lift pump	: 1.5 m
Max. installation angle (backwards)	: 15°
Max. lateral inclination angle (continuously)	: 25°
Max. lateral inclination angle (5 minutes max.)	: 30°
Calorifier connection	: standard
Warning lights and audible alarm for	: oil pressure, temperature (fresh and raw water), charging current
Control light for	: pre-heating
Electric circuit protection	: fuse 10 Amps
Cooling system	: indirect cooling as standard (keelcooling optional)

* In accordance with ISO 8665



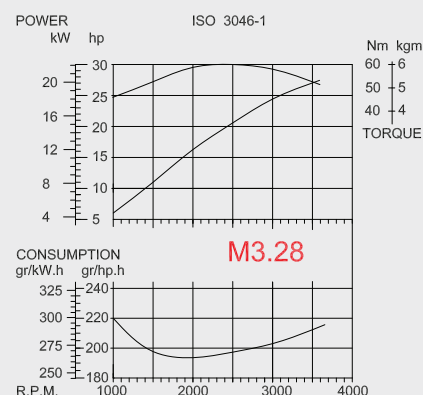
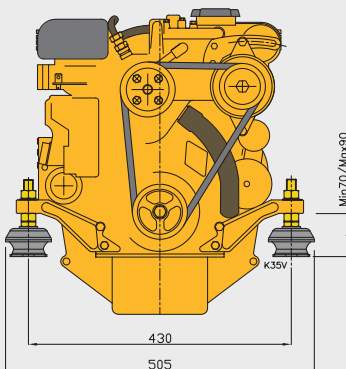
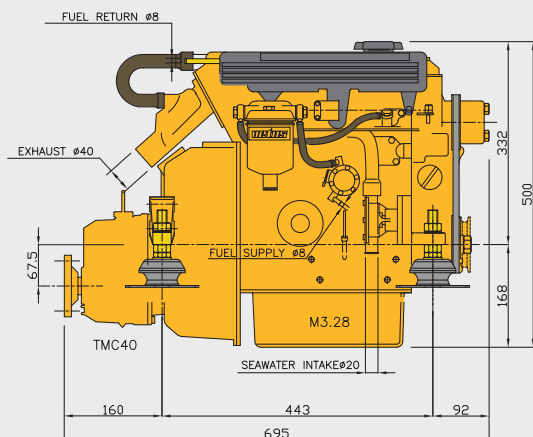
M3.28: 3 CYLINDERS 20 KW (27.2 HP) 3.600 RPM

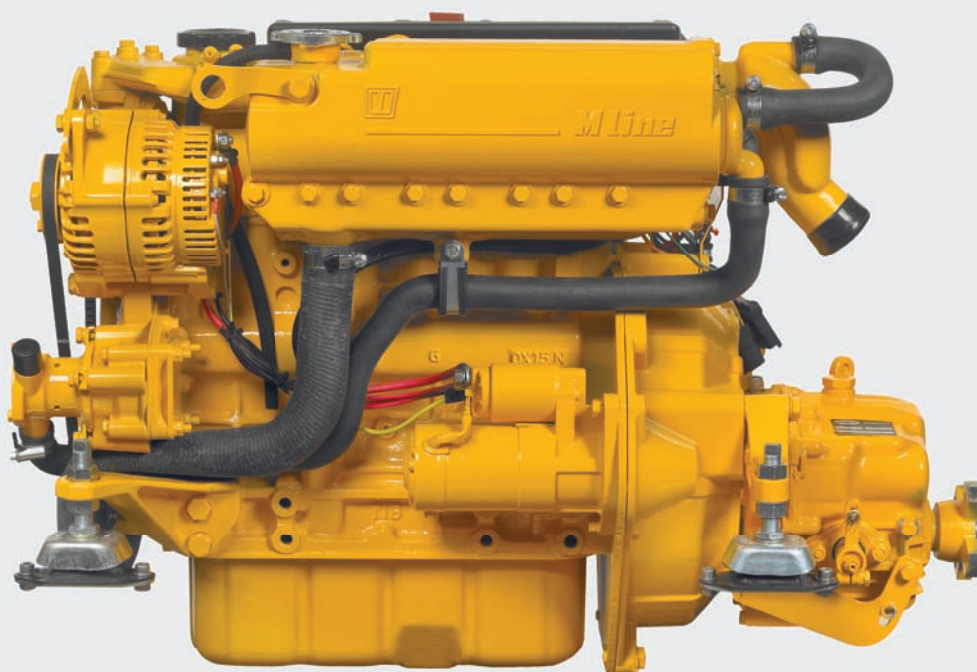


Technical data

	M3.28		
	IDI/4stroke/3cyl. in line/ NA diesel	Dry weight (incl. standard gearbox)	: 123 kg
Bore	: 76 mm	Suction height of fuel lift pump	: 1.5 m
Stroke	: 70 mm	Max. installation angle (backwards)	: 15°
Capacity	: 952 cm ³	Max. lateral inclination angle (continuously)	: 25°
Number of cylinders	: 3	Max. lateral inclination angle (5 minutes max.)	: 30°
Compression ratio	: 22:1	Calorifier connection	: standard
Firing order	: 1-3-2	Warning lights and audible alarm for	: oil pressure, temperature (fresh and raw water), charging current
Alternator	: 12 Volt - 75 Amps.	Control light for	: pre-heating
* Max. output at flywheel (ISO 3046-1)	: 20 kW (27.2 hp)	Electric circuit protection	: fuse 10 Amps
* Max. output at propeller shaft (ISO 3046-1)	: 19.3 kW (26.2 hp)	Cooling system	: indirect cooling as standard (keelcooling optional)
Maximum rpm	: 3600		
Max. torque	: 30.2 Nm/2500 rpm		
Fuel consumption at 2500 rpm	: 270 g/kW.h (199 g/hp.h)		
Gearbox, standard	: TMC40P		
Reduction	: 2.05/2.60:1		
Option	: ZF10M 2.05/2.72:1 ZF15MIV 2.13/2.99:1 TMC60A 2/2.5:1		

* In accordance with ISO 8665





M4.15: 4 CYLINDERS
24.3 KW (33 HP)
3.000 RPM

M4.17: 4 CYLINDERS
30.9 KW (42 HP)
3.000 RPM

Technical data

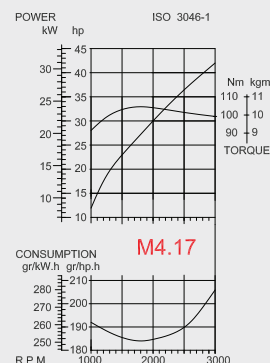
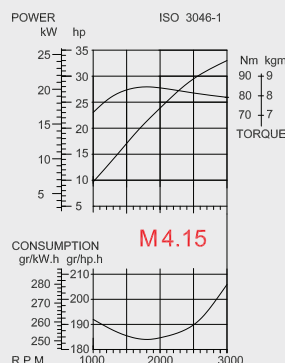
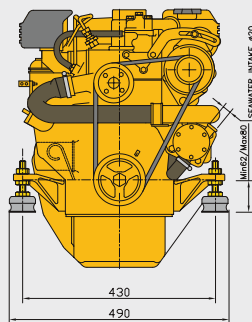
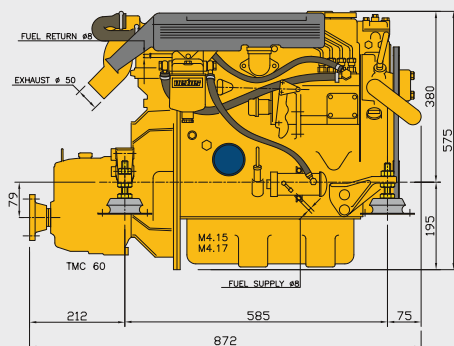
	M4.15/M4.17
	IDI/4stroke/4cyl. in line/ NA diesel
Bore	: 78 mm
Stroke	: 78.5 mm/92 mm
Capacity	: 1500 cm ³ / 1758 cm ³
Number of cylinders	: 4
Compression ratio	: 22:1
Firing order	: 1-3-4-2
Alternator	: 12 Volt - 110 Amps.
* Max. output at flywheel (ISO 3046-1)	: 24.3 kW (33 hp) (M4.15) 30.9 kW (42 hp) (M4.17)
* Max. output at propeller shaft (ISO 3046-1)	: 23.6 kW (32.1 hp) (M4.15) 30 kW (40.8 hp) (M4.17)
Maximum rpm	: 3000
Max. torque	: 83.8 Nm/1.700 rpm (M4.15)/ 106.4 Nm/1.750 rpm (M4.17)
Fuel consumption at 1800 rpm	: 252 g/kW.h (185 g/hp.h)
Gearbox, standard	: TMC60P
Reduction	: 2.0/2.5/2.94:1 / 2/2.5/2.94:1
Option	: ZF10M2.05:1 ZF12M2.14/2.63:1 TMC60A 2/2.5:1

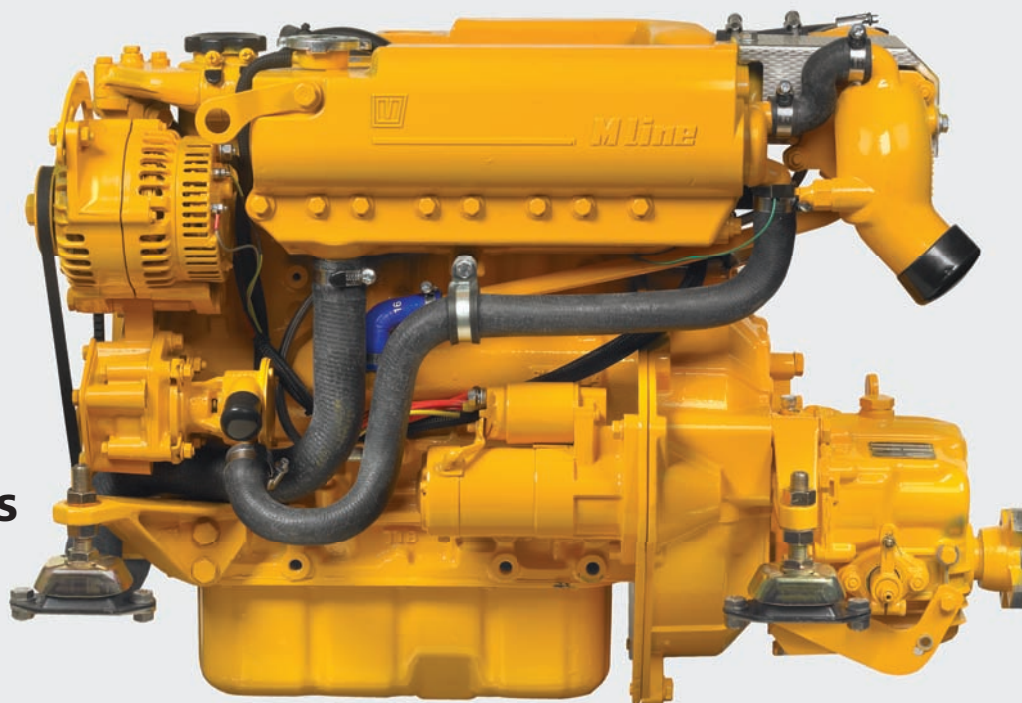
Hydraulic	: TM345 2/2.47:1 : TM345A 2/2.47:1
Dry weight (incl. standard gearbox)	: 180 kg (M4.15) 185 kg (M4.17)
Suction height of fuel lift pump	: 1.5 m
Max. installation angle (backwards)	: 15°
Max. lateral inclination angle (continuously)	: 25°
Max. lateral inclination angle (5 minutes max.)	: 30°
Calorifier connection	: standard
Warning lights and audible alarm for	: oil pressure, temperature (fresh and raw water), charging current
Control light for	: pre-heating
Electric circuit protection	: fuse 10 A
Tachometer	: electronic
Cooling system	: indirect cooling as standard (keelcooling optional)

* In accordance with ISO 8665

Option:

Engine models M4.15, M4.17 and M4.55 are available with an additional alternator 70 A or 110 A as an option.





M4.55: 4 CYLINDERS 38.3 KW (52 HP) 3.000 RPM

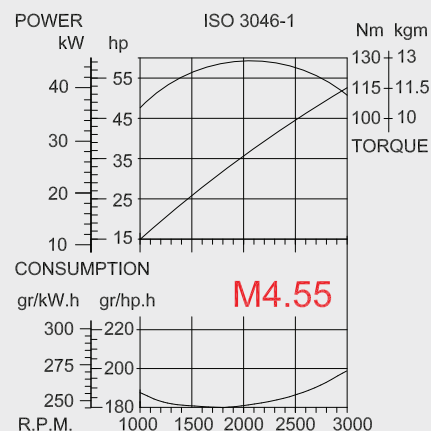
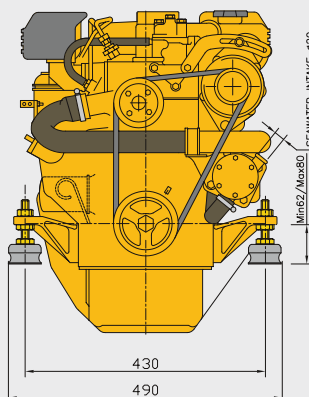
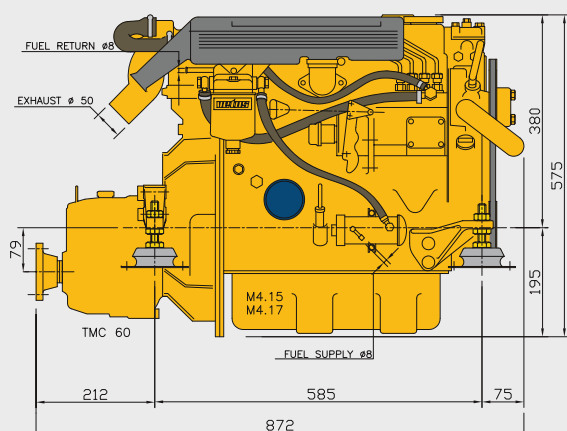
Technical data

	M4.55		
Bore	: 78 mm	Dry weight	: 192 kg
Stroke	: 92 mm	(incl. standard gearbox)	
Capacity	: 1758 cm ³	Suction height	: 1.5 m
Number of cylinders	: 4	of fuel lift pump	
Compression ratio	: 22:1	Max. installation angle	: 15°
Firing order	: 1-3-4-2	(backwards)	
Alternator	: 12 Volt - 110 Amps.	Max. lateral inclination angle	: 25°
* Max. output at flywheel	: 38.3 kW (52 hp)	(continuously)	
(ISO 3046-1)		Max. lateral inclination angle	: 30°
* Max. output at propeller shaft	: 37.1 kW (51 hp)	(5 minutes max.)	
(ISO 3046-1)		Calorifier connection	: standard
Maximum rpm	: 3000	Warning lights and	
Max. torque	: 127 Nm/2.000 rpm	audible alarm for	: oil pressure, temperature
Fuel consumption			(fresh and raw water),
at 1800 rpm	: 244 g/kW.h (179 g/hp.h)		charging current
Gearbox,		Control light for	: pre-heating
standard (hydr)	: TM345A 2/2,47:1	Electric circuit protection	: fuse 10 A
Optional	: TMC60P 2/2,5:1	Tachometer	: electronic
	ZF12M 2,14:1	Cooling system	: indirect cooling
			as standard
			(keelcooling optional)

* In accordance with ISO 8665

Option:

Engine models M4.15, M4.17 and M4.55 are available with an additional alternator 70 A or 110 A as an option.



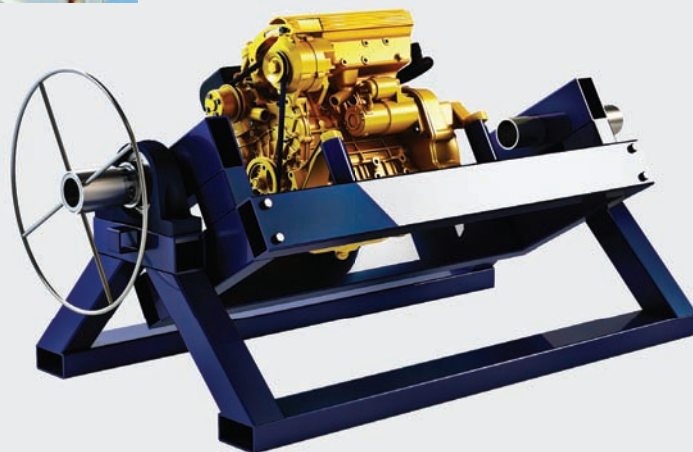
SOLAS (security of live at sea)

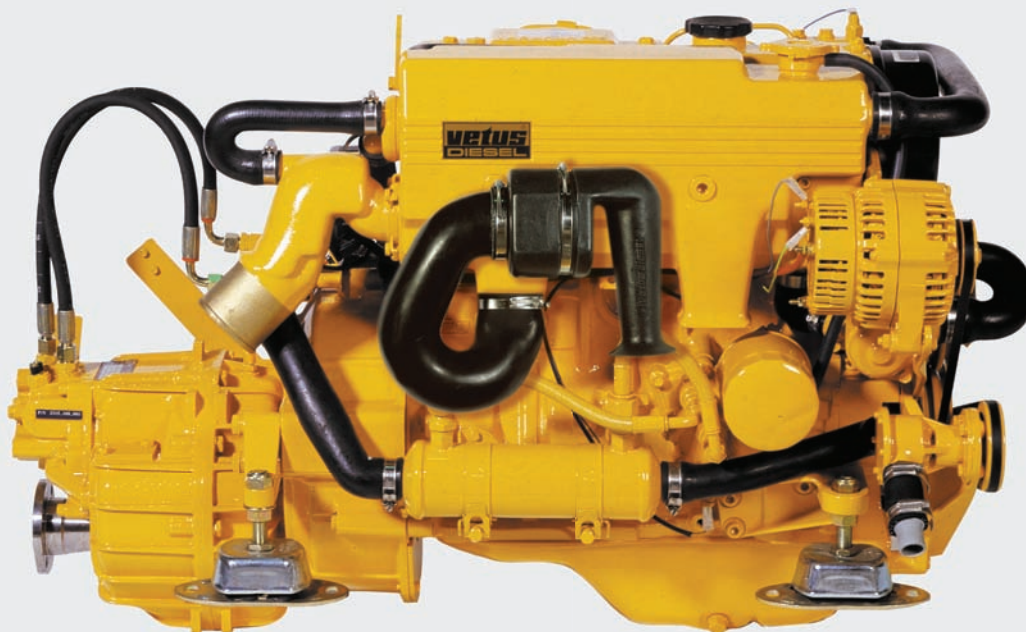


Engine models M3.28, M4.15 and M4.17 are also available to special order with SOLAS approval for use in lifeboats and rescue boats.

The special characteristics of SOLAS approved engines are as follows:

- stop automatically if inverted. If this occurs, leakage of oil and fuel is minimal.
- can be restarted immediately after righting.
- can be operated with the engine submerged up to crankshaft level.
- can be operated intermittently with a maximum inclination of 30 degrees (e.g. as a consequence of hanging in the davits).
- start at temperatures down to -15°C.
- resist shock as a consequence of free fall.
- are provided with the possibility to mount an external fire fighting pump on the crankshaft pulley.





VH4.65: 4 CYLINDERS
48 KW (65.3 HP)
3.000 RPM

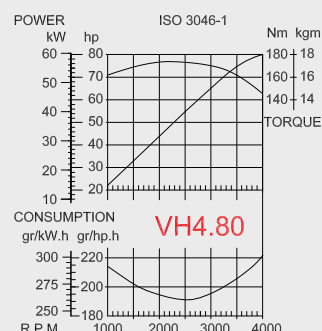
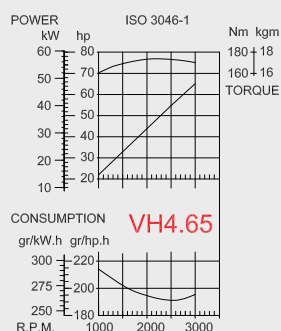
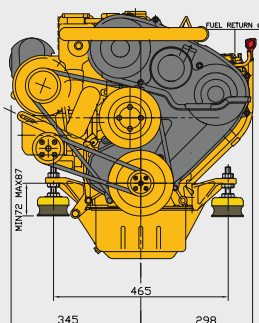
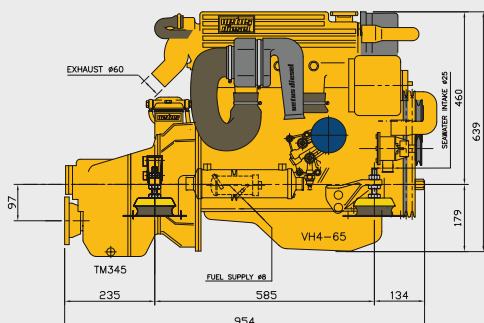
VH4.80: 4 CYLINDERS
59 KW (80.3 HP)
4.000 RPM

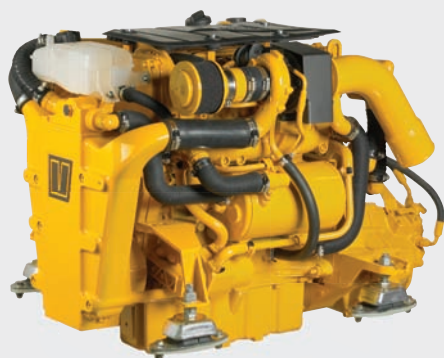
Technical data:

	VH4.65/VH4.80
	IDI/4stroke/4cyl. in line/NA diesel
Bore	: 91.1 mm
Stroke	: 100 mm
Capacity	: 2607 cm ³
Number of cylinders	: 4
Compression ratio	: 22:1
Firing order	: 1-3-4-2
Alternator	: 12 Volt - 115 Amp.
* Max. output at flywheel (ISO 3046-1)	: 48 kW (65.3 hp) (VH4.65) 59 kW (80.3 hp) (VH4.80)
* Max. output at propeller shaft (ISO 3046-1)	: 46.6 kW (63.4 hp) (VH4.65) 57.2 kW (77.6 hp) (VH4.80)
Maximum rpm	: 3000 (VH4.65) / 4000 (VH4.80)
Max. torque	: 170 Nm/2.200 rpm
Gearbox, standard	: TM345(A) Hydr.
Ratio	: 2/2,47:1
Optional	: ZF25A 1,93/2,29/2,71:1 ZF25 1,97/2,8:1
Dry weight (incl. TM345)	: 240 kg (VH4.65) / 245 kg (VH4.80)
Suction height of fuel lift pump	: 1.5 m

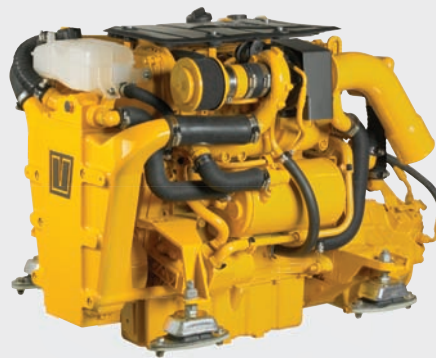
Max. installation angle (backwards)	: 15°
Max. lateral inclination angle (continuously)	: 25°
Max. lateral inclination angle (5 minutes max.)	: 30°
Calorifier connection	: standard
Warning lights and audible alarm for	: oil pressure, temperature (fresh and raw water), charging current
Control light for	: pre-heating
Electric circuit protection	: fuse 10 A
Cooling system	: indirect cooling as standard (Keelcooling optional)

* In accordance with ISO 8665





VF4.140E
103 kW (140 hp)



VF4.170E
125 kW (170 hp)

VF4.190E
140 kW (190 hp)



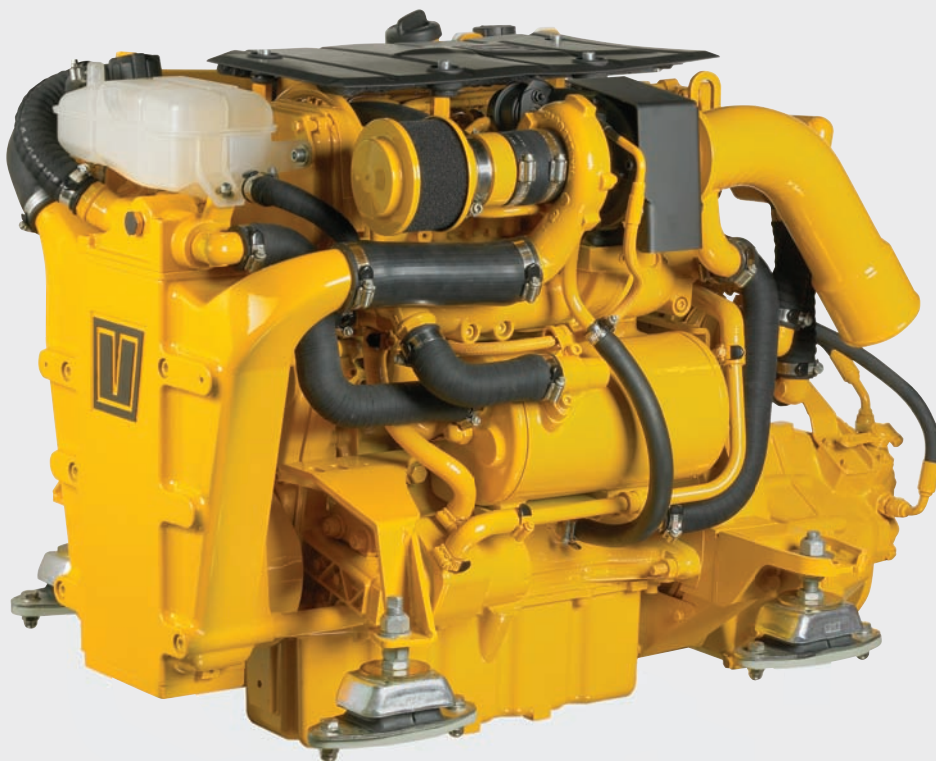
VF5.220E
162 kW (220 hp)



VF5.250E
184 kW (250 hp)

Engine model	VF4.140E			VF4.170 E / VF4.190E					VF5.220E					VF5. 250E				
Power ISO3046/1 (hp/kW)	140/103			170/125 / 190/140					220/162					250/184				
Max. Speed (RPM)	4000									4200								
Gearbox reduction	1,54:1	2:1	2,47:1	1,26:1	1,51:1	2:1	2,5:1	3:1	1,26:1	1,51:1	2:1	2,5:1	3:1	1,26:1	1,51:1	2:1	2,5:1	3:1
VETUS water lubricated propeller shaft system																		
* Shaft diam., Duplex 1-4462,	30	35	30	35	40	35	40	45	35	40	45	35	40	45	35	40	45	35
VETUS manganese bronze propeller																		
* 4 or 5-blade	on request																	
VETUS flexible coupling																		
* Bullflex type:	8	12	8	8/12	12	12/16	8	12	16	8	12	16	32					
VETUS intermediate flange between gearbox & coupling																		
* type, only suitable for TM gearbox:	TM345(A): CT50086			TM485A: CT50009					TM485A: CT50009					TM485A: CT50009				
* type, only suitable for ZF gearbox (not V-drive):	ZF45: CT50068			ZF45A: CT50009					ZF45(A): CT50068(CT50009)					ZF45(A): CT50068(CT50009)				
* type, only suitable for ZF gearbox and Bullflex 32:	n/a													ZF45: CT50069				
VETUS water strainer																		
* hose connection diam.(mm)	32mm																	
* water strainer, type FTR470 or FTR330:	FTR47032 or 330/32																	
* water strainer installation kit	WKIT33032																	
VETUS fuel filter/water separator																		
* hose connection suction/return in mm	8-8 mm																	
* fuel filter/water separator, type:	75709VTEB or 709VTEB																	
VETUS exhaust system with water injection																		
* exhaust hose, diam.(mm)	90																	
* waterlock, type:	NLP /MV/MF or MGP																	
* gooseneck, type:	LT9090																	
* transom connection type:	TRC 90SV/PV/TC90																	
* anti-siphon, type ASD or AIRVENT	V or H																	
VETUS engine remote control																		
* type	Either mechanical controls or Series 3500 electronic engine controls may be used with VETUS F-line engines																	
VETUS maintenance free batteries																		
* voltage	12V																	
* starter battery, min. Ah	min. 120 Ah, max. 200 Ah																	
* service battery, Ah.	as required																	
VETUS louvred air suction vents																		
* per engine, type ASV, SSV or SSVL	4 x 70			2 x 80 + 2 x 90 / 2 x 90 + 2 x 100					2 x 100 + 2 x 125					4 x 125				

VF4.140E: 4 CYLINDERS 103 KW (140 HP) 4.000 RPM



Technical data

Configuration

: VF4.140E

: 4-stroke cycle, twin camshaft,
16 valves

Maximum output
at crankshaft (ISO 8665)

: 103 kW (140 hp) at 4.000 rpm

Maximum torque

: 310 Nm at 2.200 rpm

Displacement

: 1910 cc

Bore x stroke

: 82 x 90,4 mm

Cylinders

: 4 in-line

Combustion system

: direct injection common rail

Aspiration

: turbo charged with variable
geometry turbo

Starting system

: electric starting 14 V - 2,3 kW

Alternator

: 14 V - 105 A

Cooling system

: indirect cooling system
with heat exchanger

Lubrication system

: totally enclosed, forced
lubricating system with pump

Max. mounting inclination

: 10°

Dry weight

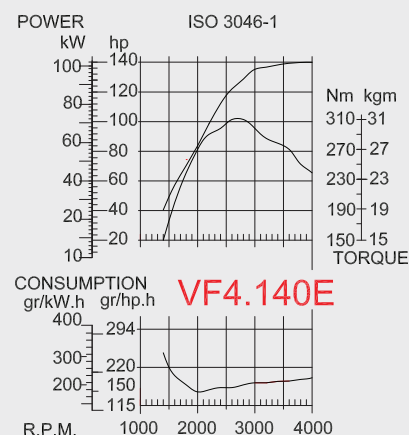
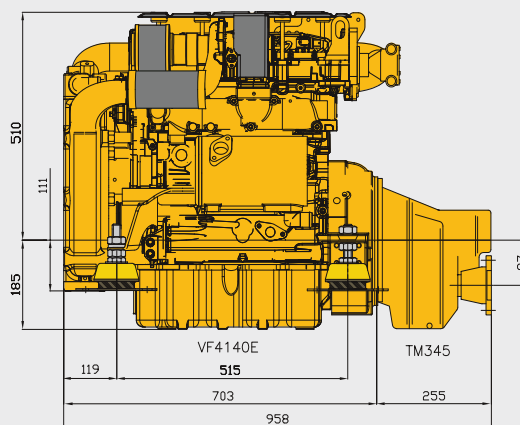
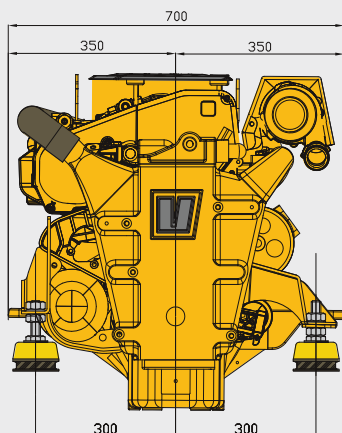
: 295 kg

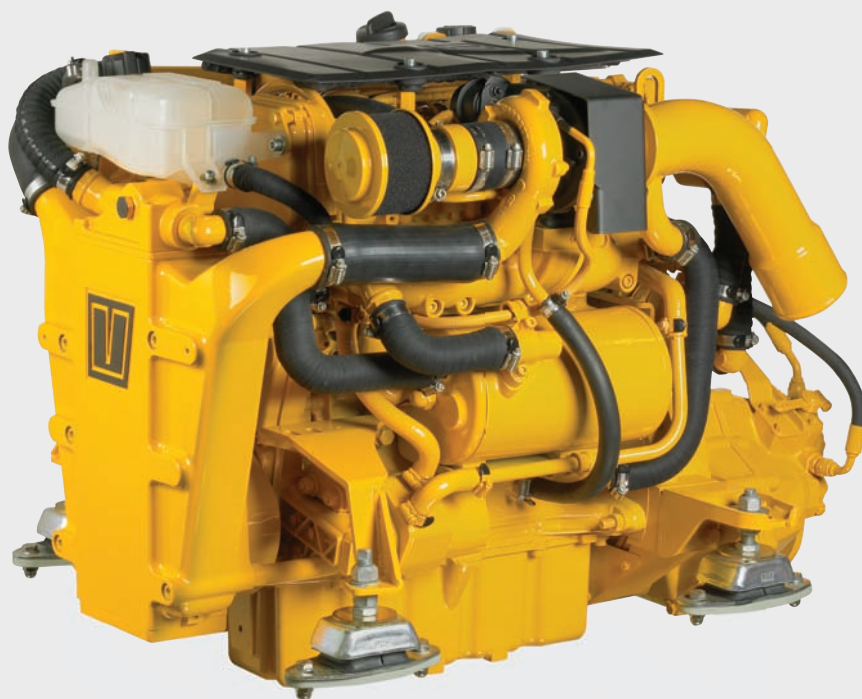
Options

Electronic engine control

Electronic engine control model EC is used with the VETUS VF range of engines. The engine control may be used for single or twin electronically controlled engines, together with a mechanically or electrically controlled gearbox or stern drive. The connection between the handle and the control box utilizes CAN-bus technology. This enables several controls to be connected in a single system. Depending on the control type, the following functions are possible:

- Synchronous control of twin engines.
- Starting engine without engaging drive.
- Trim control for the stern drive.





VF4.170E: 4 CYLINDERS
125 KW (170 HP)
4.000 RPM

VF4.190E: 4 CYLINDERS
140 KW (190 HP)
4.000 RPM

Technical data

Configuration

: VF4.170E

4-stroke cycle, twin camshaft,
16 valves

VF4.190E

4-stroke cycle, twin camshaft,
16 valves

Maximum output
at crankshaft
(ISO 8665)

: 125 kW (170 hp)
at 4.000 rpm

140 kW (190 hp)
at 4.000 rpm

Maximum torque

: 345 Nm at 2200 rpm

370 Nm at 2.400 rpm

Displacement

: 1910 cc

1910 cc

Bore x stroke

: 82 x 90,4 mm

82 x 90,4 mm

Cylinders

: 4 in-line

4 in-line

Combustion system

: direct injection
common rail

direct injection
common rail

Aspiration

: turbo charged with variable
geometry turbo

turbo charged with variable
geometry turbo

Starting system

: electric starting
14 V - 2,3 kW

electric starting
14 V - 2,3 kW

Alternator

: 14 V - 105 A

14 V - 105 A

Cooling system

: indirect cooling system
with heat exchanger

indirect cooling system
with heat exchanger

Lubrication system

: totally enclosed, forced
lubricating system
with pump

totally enclosed, forced
lubricating system
with pump

Max. mounting
inclination

: 10°

10°

Dry weight

: 295 kg

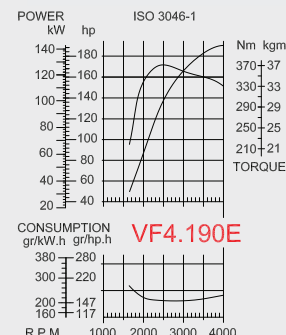
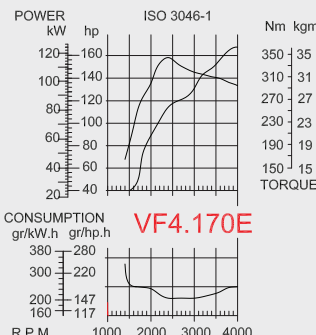
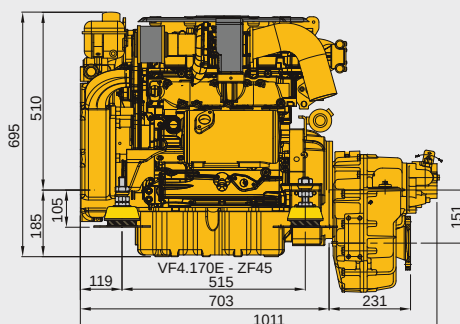
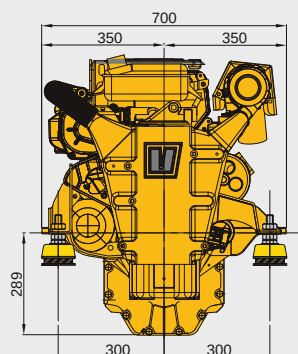
295 kg

Options

Electronic engine control

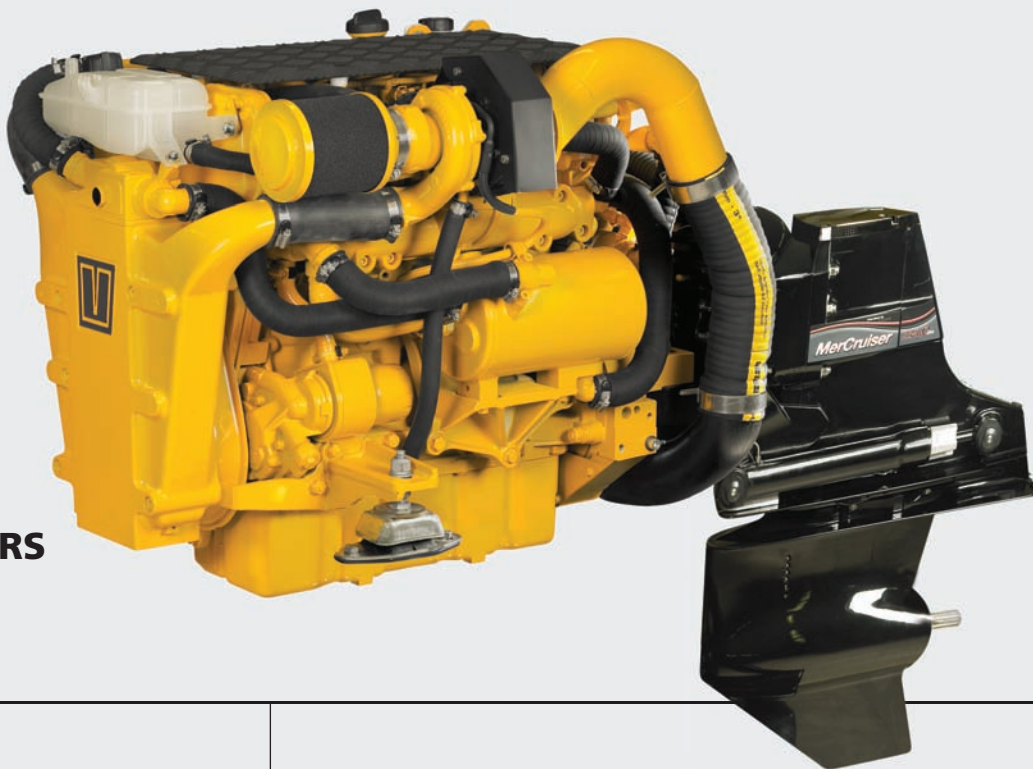
Electronic engine control model EC is used with the VETUS VF range of engines. The engine control may be used for single or twin electronically controlled engines, together with a mechanically or electrically controlled gearbox or stern drive. The connection between the handle and the control box utilizes CAN-bus technology. This enables several controls to be connected in a single system. Depending on the control type, the following functions are possible:

- Synchronous control of twin engines.
- Starting engine without engaging drive.
- Trim control for the stern drive.



For more detailed information concerning Bravo sterndrives, please consult your VETUS dealer.

VF5.220E: 5 CYLINDERS 162 KW (220 HP) 4.200 RPM



Technical data	: VF5.220E
Configuration	: 4-stroke cycle, twin camshaft, 20 valves
Maximum output at crankshaft (ISO 8665)	: 162 kW (220 hp) at 4.200 rpm
Maximum torque	: 416 Nm at 2.500 rpm
Displacement	: 2387 cc
Bore x stroke	: 82 x 90,4 mm
Cylinders	: 5 in-line
Combustion system	: direct injection common rail
Aspiration	: turbo charged with variable geometry turbo
Starting system	: electric starting 14 V - 2,3 kW
Alternator	: 14 V - 140 A
Cooling system	: indirect cooling system with heat exchanger
Lubrication system	: totally enclosed, forced lubricating system with pump
Max. mounting inclination	: 10°
Dry weight	: 305 kg

Options

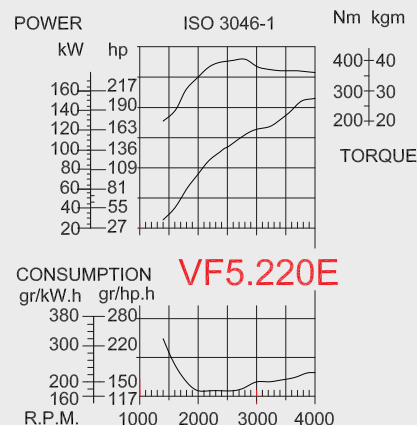
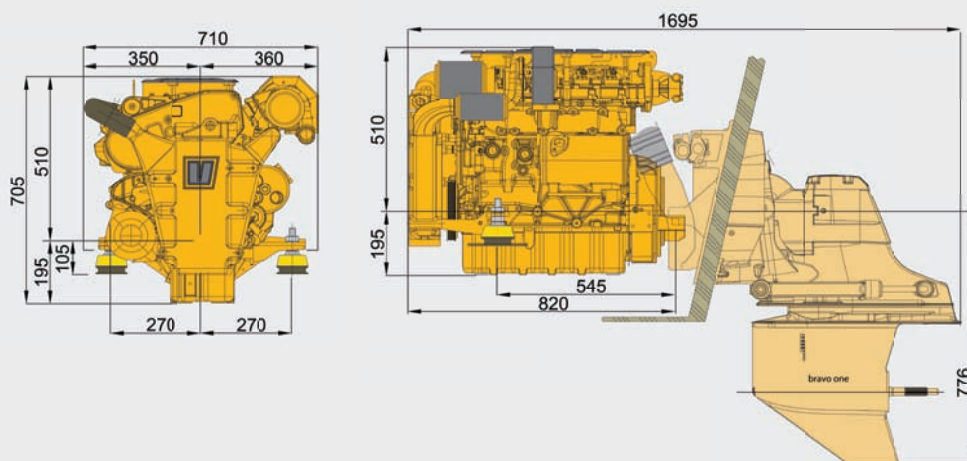
Electronic engine control

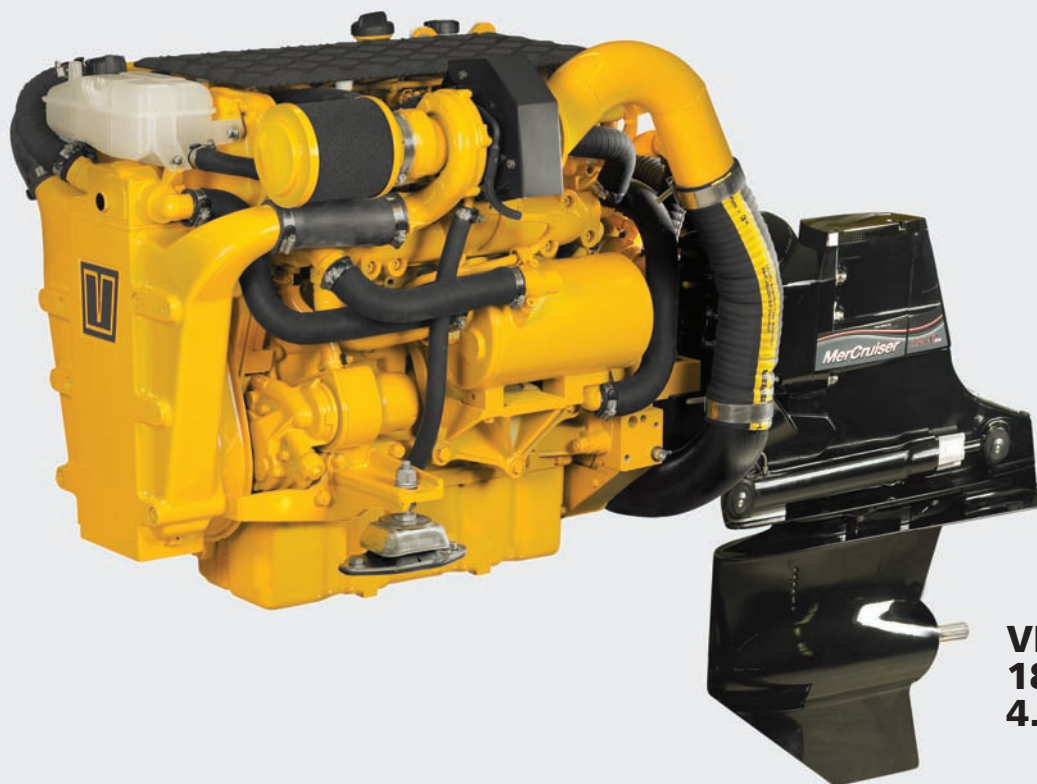
Electronic engine control model EC is used with the VETUS VF range of engines. The engine control may be used for single or twin electronically controlled engines, together with a mechanically or electrically controlled gearbox or stern drive.

The connection between the handle and the control box utilizes CAN-bus technology. This enables several controls to be connected in a single system.

Depending on the control type, the following functions are possible:

- Synchronous control of twin engines.
- Starting engine without engaging drive.
- Trim control for the stern drive.





VF5.250E: 5 CYLINDERS 184 KW (250 HP) 4.200 RPM

Technical data

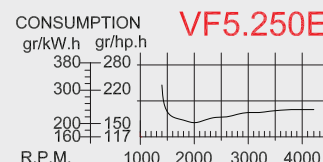
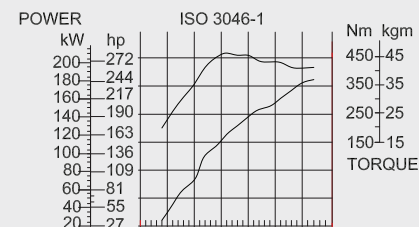
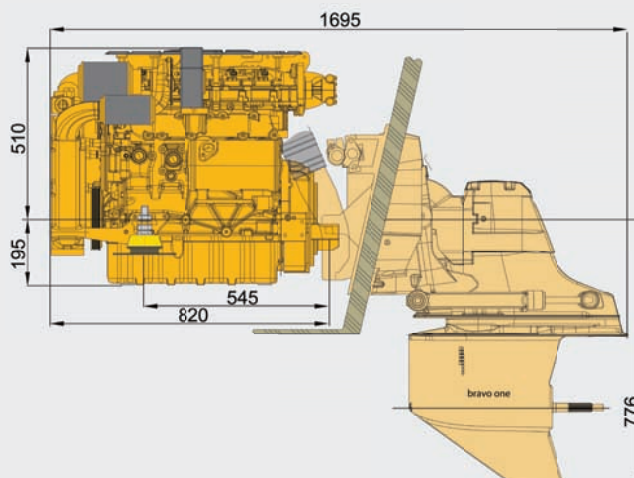
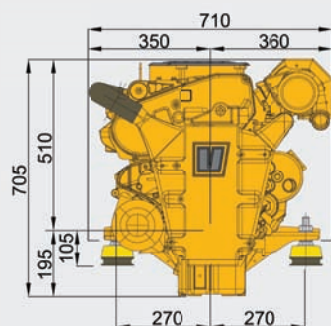
Configuration	: VF5.250E : 4-stroke cycle, twin camshaft, 20 valves
Maximum output at crankshaft (ISO 8665)	: 184 kW (250 hp) at 4.200 rpm
Maximum torque	: 450 Nm at 2.600 rpm
Displacement	: 2387 cc
Bore x stroke	: 82 x 90,4 mm
Cylinders	: 5 in-line
Combustion system	: direct injection common rail
Aspiration	: turbo charged with variable geometry turbo
Starting system	: electric starting 14 V - 2,3 kW
Alternator	: 14 V - 140 A
Cooling system	: indirect cooling system with heat exchanger
Lubrication system	: totally enclosed, forced lubricating system with pump
Max. mounting inclination	: 10°
Dry weight	: 305 kg

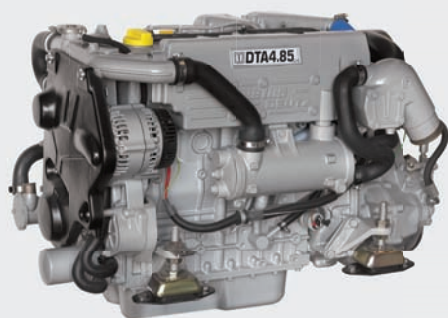
Options

Electronic engine control

Electronic engine control model EC is used with the VETUS VF range of engines. The engine control may be used for single or twin electronically controlled engines, together with a mechanically or electrically controlled gearbox or stern drive. The connection between the handle and the control box utilizes CAN-bus technology. This enables several controls to be connected in a single system. Depending on the control type, the following functions are possible:

- Synchronous control of twin engines.
- Starting engine without engaging drive.
- Trim control for the stern drive.



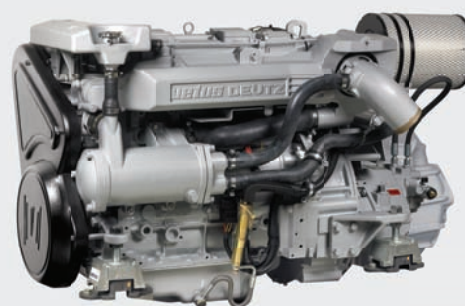


DT4.70

50 kW (68 hp)

DTA4.85

62 kW (85 hp)

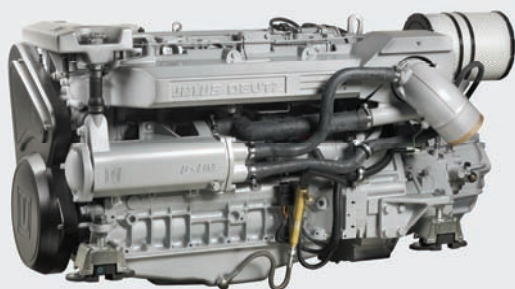


DT44

84 kW (114 hp)

DTA44

103 kW (140 hp)

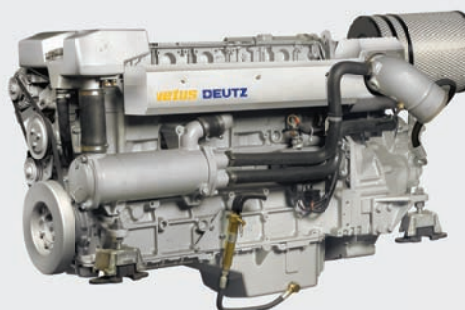


DT66

125 kW (170 hp)

DTA66

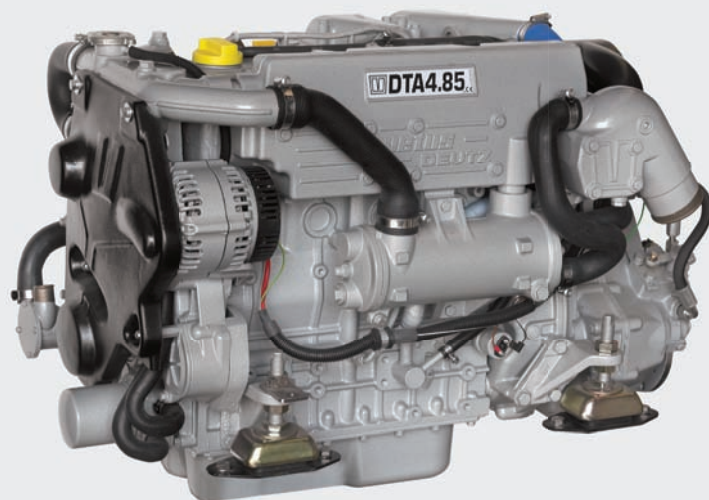
155 kW (210 hp)



DT67

170 kW (231 hp)

Engine model	DT4.70		DTA 4.85		DT 44		DTA 44		DT 66		DTA 66		DT67		
Power ISO3046/1 (hp/kW)	70/50		85/62		114/84		140/103		170/125		210/155		231/170		
Max. Speed (RPM)	2800		3000		2500									2600	
Gearbox reduction	1,97:1	2,8:1	1,97:1	2,8:1	2,2:1	2,5:1	2,2:1	2,5:1	2,2:1	2,5:1	1,93:1	2,5:1	1.93:1	2,78:1	
VETUS water lubricated propeller shaft system															
* Shaft diam., Duplex 1-4462,	35				40				45			50	45	50	
VETUS manganese bronze propeller															
* 3 or 4-blade	on request														
VETUS flexible coupling															
* Bullflex type:	08				12			16			32				
VETUS intermediate flange between gearbox & coupling															
* type, only suitable for ZF gearbox:	ZF25(A): CT50082				ZF45A: CT50009			ZF45: CT50068			Bullfl16: CT50009		Bullfl1 32: CT50065		
VETUS water strainer															
* hose connection diam.(mm)	25				32										
* water strainer, type FTR470 or FTR330:	330/25 or 470/25				330/32 or 470/32										
* water strainer installation kit	WKIT33025				WKIT33032										
VETUS fuel filter/water separator															
* hose connection suction/return in mm	8-8				12-10										
* fuel filter/water separator, type:	330 VTEB or				75100 VTME										
	75704 VTEB				or WS										
VETUS exhaust system with water injection															
* exhaust hose, diam.(mm)	75				90		100		125						
* waterlock, type:	NLP75 or LP75				NLP or MF/MGP		MF or MGP								
* muffler, type:	MP 75				MP 90		MP 100		n/a						
* gooseneck, type:	LT 7575				LT 9090		LT 102		LT 127						
* transom connection type:	TRCR / PV or SV						TC / TRC or SV								
* anti-siphon, type ASD or AIRVENT	V or H														
VETUS engine remote control															
* according to choice	RECO1/2(black), RECO15/25(silver), RCTOPS, RCTOPTS, RCTOPB, RCTOPTB, AFSTTOP, AFSTTOPT														
VETUS maintenance free batteries															
* voltage	12														
* starter battery, min. Ah	108														
* service battery, Ah.	as required														
VETUS louvred air suction vents															
* per engine, type ASV, SSV or SSVL	2 x 70		2 x 90		4 x 60		4 x 70		2 x 80 + 2 x 90		4 x 50 + 4 x 60		8 x 60		



High power and torque, low revolutions, ruggedness, reliability, high build quality and durability are the primary characteristics of these VETUS D-Line marine diesel engines.

- VETUS D-Line engines from 114 hp (84 kW), are eminently suitable to drive power hydraulics systems on board. They are supplied as standard with a Power Take Off (PTO), to which a suitable flange and hydraulic motor can be easily connected. The resultant hydraulic power can be used to drive a bow and stern thruster, anchor windlass, mast lowering device, power steering, stabilizers and many other applications.
- VETUS D-Line engines are available in two versions: mechanically or electronically regulated. The electronic version offers higher fuel efficiency.
- As an option a larger alternator and/or a second alternator can be supplied. From 114 hp (84 kW), these can be supplied as 12 or 24 Volt and single or double pole.
- All VETUS D-Line engines are supplied with a front drive belt cover for personal protection.

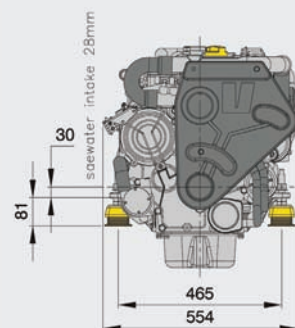
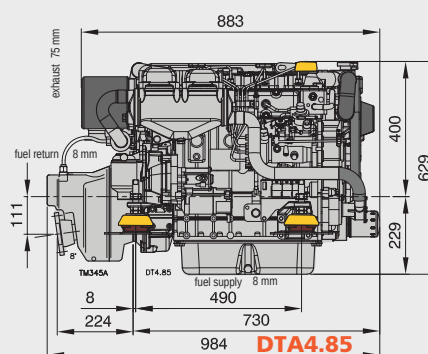
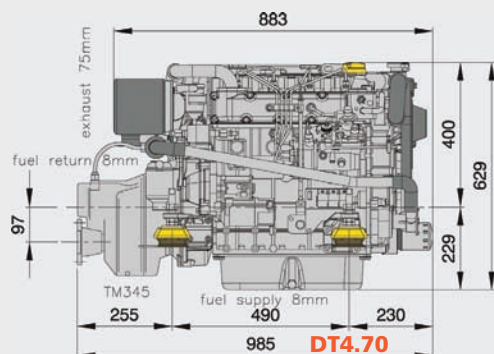
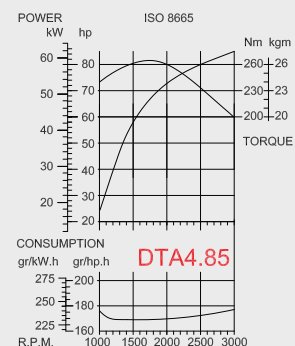
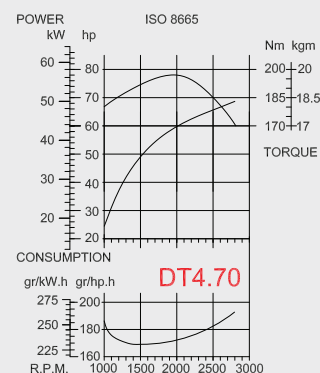
DT4.70: 4 CYLINDERS 50 KW (68 HP) 2.800 RPM

DTA4.85: 4 CYLINDERS 62 KW (85 HP) 3.000 RPM

Technical data

	DT4.70	DTA4.85
Bore	: 90 mm	90 mm
Stroke	: 90 mm	90 mm
Capacity	: 2290 cm ³	2290 cm ³
Number of cylinders	: 4	4
Compression ratio	: 18:1	17:1
Firing order	: 1-3-4-2	1-3-4-2
Alternator	: 12 Volt - 90 A	12 Volt - 90 A
Optional	: 12 Volt - 130 A	12 Volt - 130 A
* Max. output at flywheel (ISO 3046-1)	: 50 kW (68 hp)	62 kW (85 hp)
* Max. output at propeller shaft (ISO 3046-1)	: 49 kW (67 hp)	60 kW (83 hp)
Maximum rpm	: 2800	3000
Max. torque	: 197 Nm/2.000 rpm	263 Nm/1.500 rpm
Fuel consumption	: 273 g/kW.h	242 g/kW.h
Gearbox, standard	: TMC345(A)	TMC345(A)
Ratio	: 2:1/2.47:1	2/2,47:1
Option	: ZF25 1.97/2,8:1	ZF25A 1.93/2,29/2,71:1
Dry weight (incl. gearbox TMC345)	: 292 kg	298 kg
Suction height of fuel lift pump	: 0.5 m	1.5 m
Max. installation angle (backwards)	: 15°	15°
Max. lateral inclination angle (continuously)	: 25°	25°
Max. lateral inclination angle (5 minutes max.)	: 30°	30°
Calorifier connection	: standard	standard
Warning lights and audible alarm for	: oil pressure, temperature (oil and raw water), charging current	oil pressure, temperature (oil and raw water), charging current
Control lights and audible alarm for	: Oil pressure, temperature fresh and raw water, charging current	Oil pressure, temperature fresh and raw water, charging current
Coltrol light for	: pre-heating	pre-heating
Electric circuit protection	: fuse 10 A (slow)	fuse 10 A (slow)
Cooling system, standard	: heat exchanger cooling (dual circuit)	heat exchanger cooling (dual circuit)
Optional	: Keel-cooling	N/A

* In accordance with ISO 8665



EMR 2

Electronic Motor Regulation (EMR) controls and monitors all the following engine functions: low oil and intake air pressures, high cooling water and intake air temperatures, low and high engine speeds as well as providing fast, accurate power regulation.

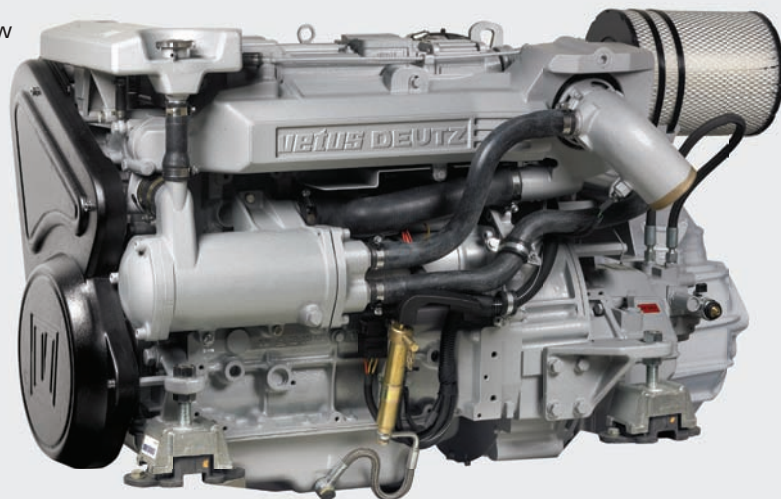
Via the CAN bus connection the following information can be read electronically: Power, revolutions, fuel consumption, water and oil temperatures, oil and charge air pressures.

By combining an EMR controlled engine with an electrically operated gearbox, all mechanical push/pull cables can be eliminated and the engine can be controlled using a VETUS EC4 or RECO electronic control.

When power hydraulics are applied, fine adjustments to speed and power are easily applied through the EMR system.

Technical specifications:

Voltage	: 12 and 24 V (voltage range 10 – 36 V)
Protection factor	: IP66
Ambient temperature	: range - 40 to 85° C
Dimensions	: 231 x 204 x 62 mm (l x w x h)
Instrument output via	: CAN bus protocol, SAE-J1939
Electronic engine controls	
- Voltage	: 0,5 - 4,5 V
- CAN bus	: SAE-J1939
- PWM	: frequency 100 Hz, 5 - 95% pulse range



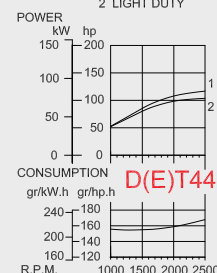
DT44: 4 CYLINDER	DTA44: 4 CYLINDER
84 KW (114 HP)	103 KW (140 HP)
2.500 RPM	2.500 RPM

Technical data

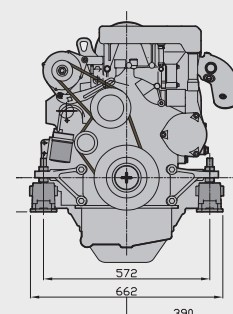
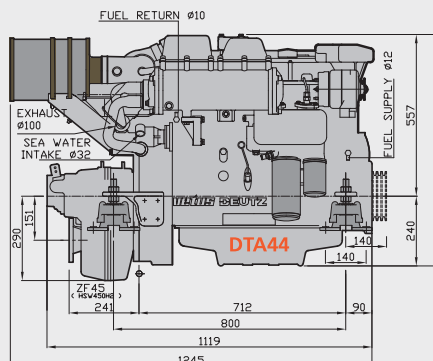
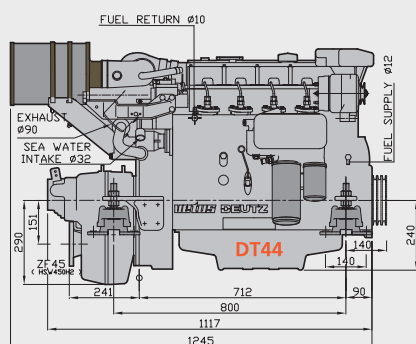
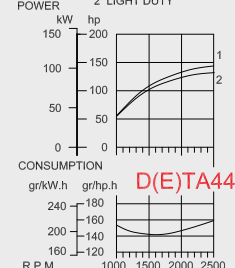
	DT44	DTA44
Bore	: 101 mm	101 mm
Stroke	: 126 mm	126 mm
Capacity	: 4038 cm ³	4038 cm ³
Number of cylinders	: 4	4
Compression ratio	: 18,4:1	18,4:1
Firing order	: 1-3-4-2	1-3-4-2
Alternator	: 12 Volt - 115 A	12 Volt - 115 A
* Max. output at flywheel (ISO 3046-1)	: 84 kW (114 hp)	103 kW (140 hp)
* Max. output at propeller shaft (ISO 3046-1)	: 80.1 kW (109,5 hp)	98.9 kW (134,4 hp)
Maximum rpm	: 2500	2500
Torque at maximum rpm	: 320 Nm	394 Nm
Fuel consumption	: 208 g/kW.h (152 g/hp.h)	202 g/kW.h (146 g/hp.h)
Gearbox, standard	: ZF45	ZF45
Ratio	: 2,2/2,5/3:1	2,2/2,5/3:1
Optional	: ZF45A / 1,51/2,03/2,44:1	ZF45A / 1,51/2,03/2,44:1
Dry weight (incl. standard gearbox)	: 513 kg	532 kg
Max. installation angle	: 15°	15°
Max. lateral inclination angle (continuously)	: 30°	30°
Calorifier connection	: standard	standard
Electric circuit protection	: fuse 10 Amps	fuse 10 Amps
Cooling system, standard	: heat exchanger cooling (dual circuit)	heat exchanger cooling (dual circuit)
Optional	: keel-cooling	N/A

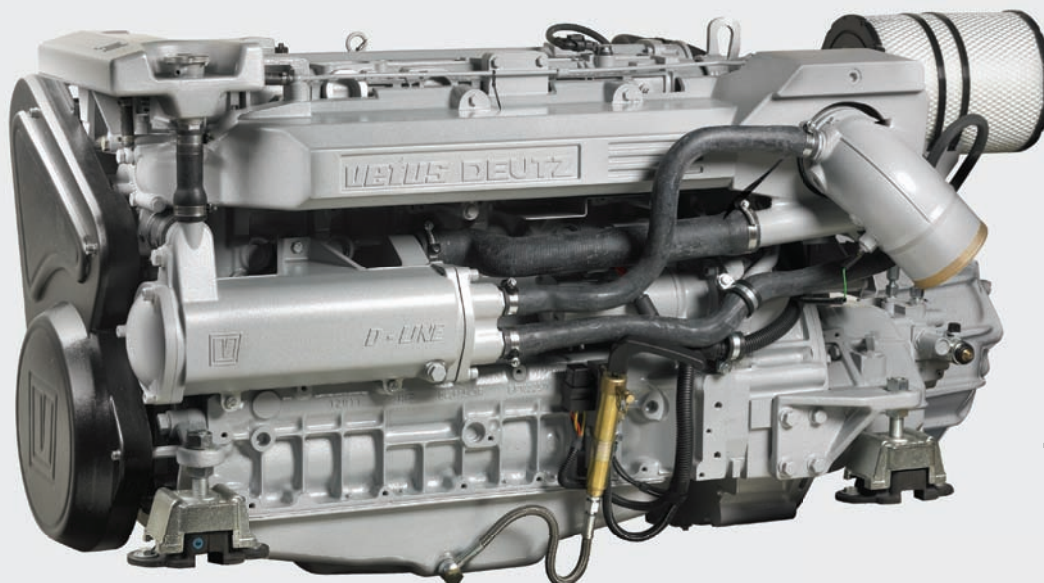
* In accordance with ISO 8665

ISO 3046-1 FUEL STOP POWER RATING
1 SPECIAL LIGHT DUTY
2 LIGHT DUTY



ISO 3046-1 FUEL STOP POWER RATING
1 SPECIAL LIGHT DUTY
2 LIGHT DUTY





DT66: 6 CYLINDER
125 KW (170 HP)
2.500 RPM

DTA66: 6 CYLINDER
155 KW (210 HP)
2.500 RPM

Technical data

Bore : 101 mm
 Stroke : 126 mm
 Capacity : 6057 cm³
 Number of cylinders : 6
 Compression ratio : 18,4:1
 Firing order : 1-5-3-6-2-4
 Alternator : 12 Volt - 115 A
 * Max. output at flywheel (ISO 3046-1) : 125 kW (170 hp)
 * Max. output at propeller shaft (ISO 3046-1) : 120 kW (163,2 hp)
 Maximum rpm : 2500
 Torque at max. rpm : 478 Nm
 Fuel consumption : 208 g/kW.h (152 g/hp.h)
 Gearbox, standard : ZF45
 Ratio : 1,51/2,03:1
 Optional : ZF45 A
 : 1,51/2,03:1
 : ZF63A 2,52:1

Dry weight (incl. standard gearbox) : 652 kg
 Max. installation angle (backwards) : 15°
 Max. lateral inclination angle (continuously) : 30°
 Calorifier connection : standard
 Electric circuit protection : fuse 10 Amps
 Cooling system, standard : heat exchanger cooling (dual circuit)
 Optional : keel-cooling

Optional

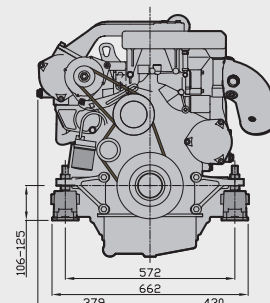
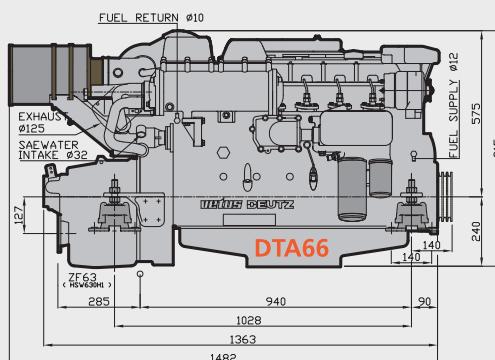
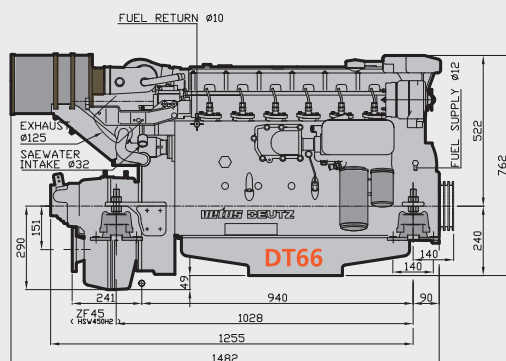
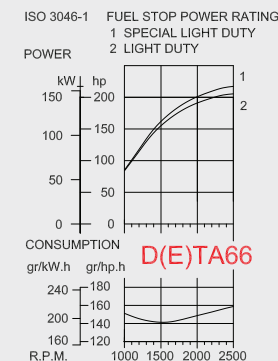
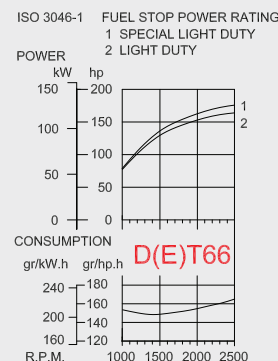
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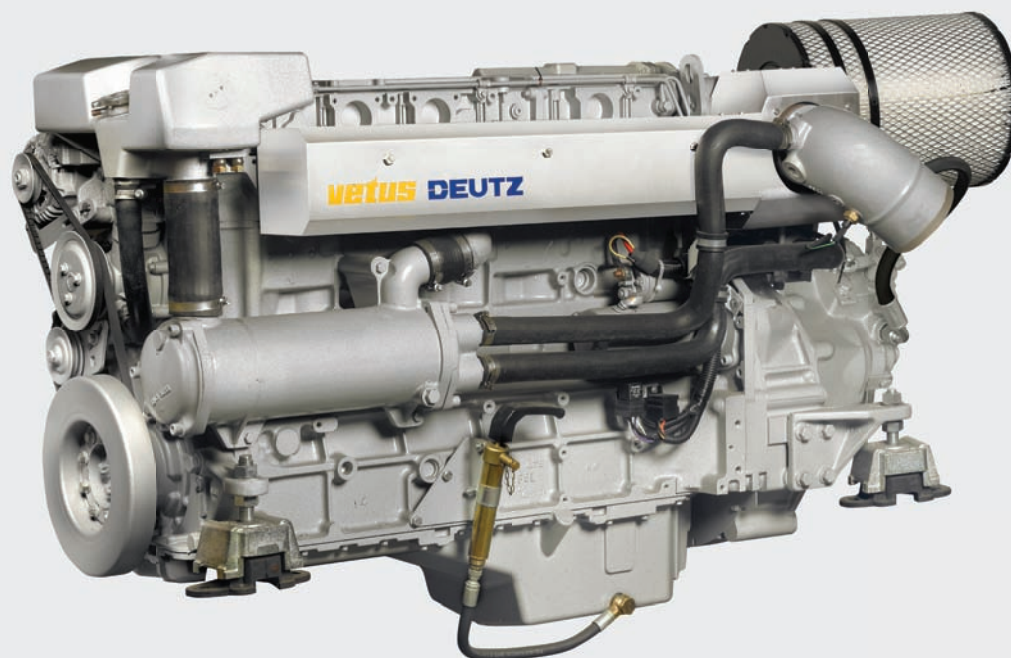
DT66

Bore : 101 mm
 Stroke : 126 mm
 Capacity : 6057 cm³
 Number of cylinders : 6
 Compression ratio : 18,4:1
 Firing order : 1-5-3-6-2-4
 Alternator : 12 Volt - 115 A
 * Max. output at flywheel (ISO 3046-1) : 125 kW (170 hp)
 * Max. output at propeller shaft (ISO 3046-1) : 120 kW (163,2 hp)
 Maximum rpm : 2500
 Torque at max. rpm : 478 Nm
 Fuel consumption : 208 g/kW.h (152 g/hp.h)
 Gearbox, standard : ZF45
 Ratio : 1,51/2,03:1
 Optional : ZF45 A
 : 1,51/2,03:1
 : ZF63A 2,52:1
 Dry weight (incl. standard gearbox) : 652 kg
 Max. installation angle (backwards) : 15°
 Max. lateral inclination angle (continuously) : 30°
 Calorifier connection : standard
 Electric circuit protection : fuse 10 Amps
 Cooling system, standard : heat exchanger cooling (dual circuit)
 Optional : keel-cooling

DTA66

Bore : 101 mm
 Stroke : 126 mm
 Capacity : 6057 cm³
 Number of cylinders : 6
 Compression ratio : 18,4:1
 Firing order : 1-5-3-6-2-4
 Alternator : 12 Volt - 115 A
 * Max. output at flywheel (ISO 3046-1) : 155 kW (210 hp)
 * Max. output at propeller shaft (ISO 3046-1) : 148,8 kW (201.6 hp)
 Maximum rpm : 2500
 Torque at max. rpm : 590 Nm
 Fuel consumption : 202 g/kW.h (146 g/hp.h)
 Gearbox, standard : ZF63
 Ratio : 1,51/1,93/2,5/2,78:1
 Optional : ZF63 A
 : 1,56/2,04/2,52:1
 Dry weight (incl. standard gearbox) : 657 kg
 Max. installation angle (backwards) : 15°
 Max. lateral inclination angle (continuously) : 30°
 Calorifier connection : standard
 Electric circuit protection : fuse 10 Amps
 Cooling system, standard : heat exchanger cooling (dual circuit)
 Optional : N/A





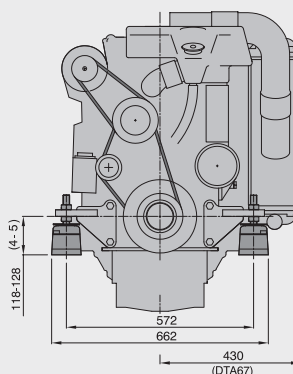
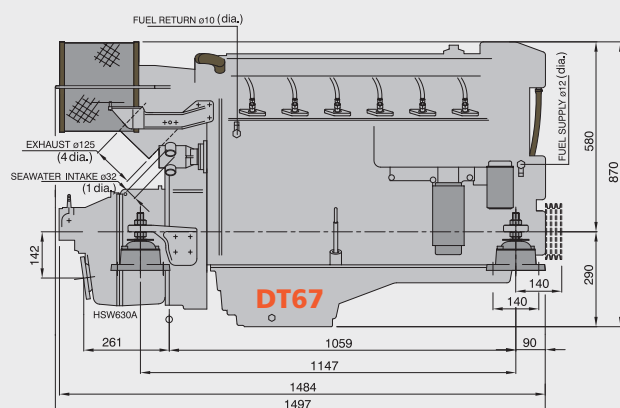
DT67: 6 CYLINDER 170 KW (231 HP) 2.600 RPM

Technical data

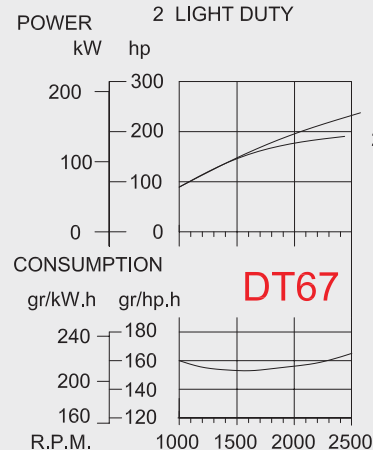
	DT67
Bore	: 108 mm
Stroke	: 130 mm
Capacity	: 7140 cm ³
Number of cylinders	: 6
Compression ratio	: 17.6:1
Firing order	: 1-5-3-6-2-4
Alternator	: 12 Volt - 115 A
Max. output at flywheel (ISO 3046-1)*	: 170 kW (231 hp)
Max. output at propeller shaft (ISO 3046-1)*	: 163 kW (222 hp)
Maximum rpm	: 2600
Torque at 2600 rpm	: 624 Nm 773 Nm
Fuel consumption	: 200 g/kW.h(146g/hp.h)

Gearbox, standard	: ZF63A
Ratio	: 1.56/2.04:1
Optional	: ZF63 1.51/1.93/2.5/2.78:1
Dry weight (incl.standard gearbox)	: 777 kg
installation angle (backwards)	: 15°
Max. lateral inclination angle (continuously)	: 30°
Calorifier connection	: optional kit
Cooling system, standard	: heat exchanger cooling (dual circuit)
Optional	: keelcooling

* In accordance with ISO 8665



ISO 3046-1 FUEL STOP POWER RATING
1 SPECIAL LIGHT DUTY
2 LIGHT DUTY





We will be pleased to recommend the correct propeller for your sail drive

Attention: If a folding propeller is installed, we recommend that this is of a type incorporating a shock absorbing hub, to prevent damage when engaging gear.

This Sail Drive is available for all yellow VETUS marine diesel engines up to 80 hp and is electrically isolated so it can be installed in a aluminium vessel. Two transmission ratios (2.49:1 or 2.23:1) have been selected to match engine power and speed to propeller size, with identical ratios both ahead and astern. This feature is ideal for twin-engine installations such as a catamaran, with one left-hand and one right-hand propeller. The overall dimensions are identical for both ratios. As an example, please see the installation drawing of engine model M4.17 below. Another advantage of this Sail Drive is that the underwater drive leg can be fitted 180° reversed. This will permit the engine to be installed ahead or behind the Sail Drive unit for greater flexibility of installation.

Technical data:

Transmission ratio (ahead and astern) : 2.23 : 1
Maximum input torque : 155 Nm

Transmission ratio (ahead and astern) : 2.49 : 1
Maximum input torque : 147 Nm

Gear mechanism: Protected against overload by incorporated torque limiter

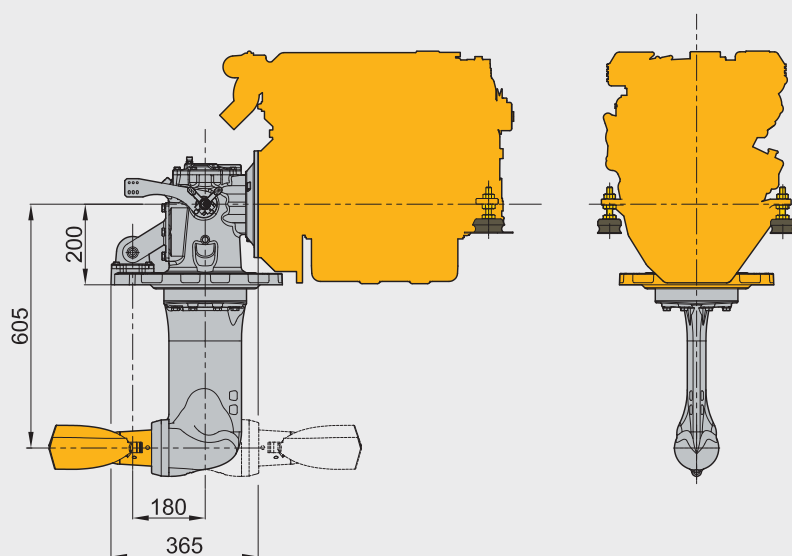
Weight: 30 kg

Recommended transmission ratios:

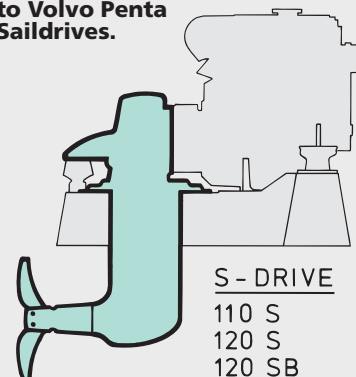
M2.02	12	hp at 3000 r.p.m	Ratio 2.23 : 1
M2.06	16	hp at 3600 r.p.m	Ratio 2.49 : 1
M3.28	27.2	hp at 3600 r.p.m	Ratio 2.23 : 1
M4.15	33	hp at 3000 r.p.m	Ratio 2.23 : 1
M4.17	42	hp at 3000 r.p.m	Ratio 2.23 : 1
M4.55	52	hp at 3000 r.p.m	Ratio 2.23 : 1
VH4.65	65	hp at 3000 r.p.m	Ratio 2.23 : 1
VH4.80	80	hp at 4000 r.p.m	Ratio 2.49 : 1

Options:

- Universal GRP engine bed, for models M2.02, M2.D5, M2.06, M3.28, M4.15, M4.17 and M4.55.
- Universal GRP engine bed, for models VH4.65 and VH4.80.



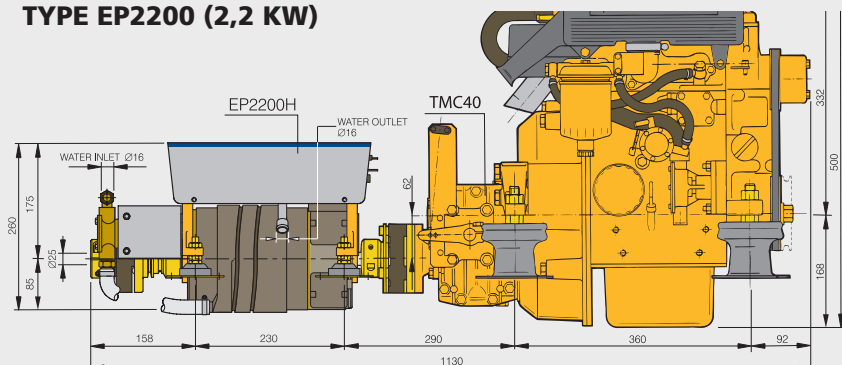
All VETUS engines models may also be supplied as a version ready to be connected to Volvo Penta Saildrives.



The many virtues and pleasures of electric propulsion are well known in river and canal boating circles. Electric motors are virtually noiseless, have no smelly fuel and produce no polluting emissions. In other words, these propulsion units are truly "green" and environmentally friendly. By making good use of modern developments in electric motor design, VETUS has constructed the **ideal electric propulsion unit**. This has the principal assets of: **very low power consumption**, continuously variable speed, low weight and compact dimensions.

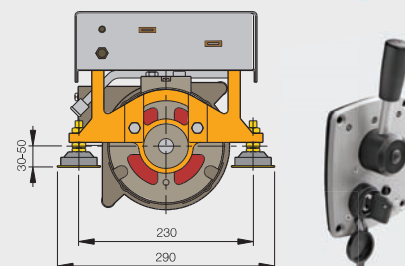


TYPE EP2200 (2,2 KW)

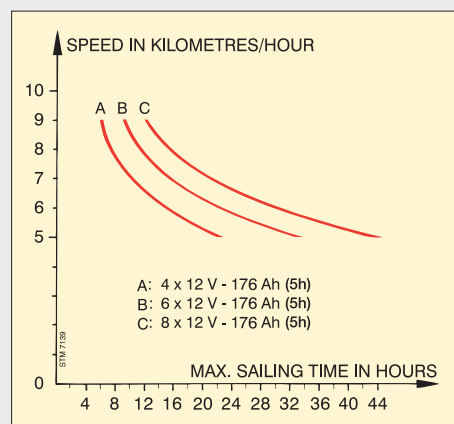


EP2200K

EP2200KH



The VETUS brushless electric motor



The diagram shows the motoring time (in this example) at various speeds and with different battery capacities.

This VETUS electric propulsion motor does not use carbon brushes, which makes it whisper-silent and maintenance-free. At low revolutions, the efficiency of this brushless motor is considerably higher than conventional electric motors equipped with carbon brushes. This VETUS brushless motor also has a very favourable power to weight ratio. Another remarkable feature of the **brushless VETUS electric motor** is the very low number of revolutions (max. 1,250 r.p.m.), which means that it can be coupled directly to the propeller shaft, without the need for a reduction gearbox. The complete installation is maintenance free and operates virtually without vibration.

Scope of supply

The standard motor package comprises:

- 2.2 kW electric motor with revolution regulator (continuously variable, reversible and water cooled)
- Electric remote control lever, with 5-metre connection cable
- Four flexible motor mountings
- Flexible coupling for connection to a Ø 25 mm propeller shaft
- Keel cooling
- Weight: 20 kg

A VETUS hybrid installation, allowing either electric or diesel propulsion.

A few hours of leisurely pottering around and then, at the end of the day, back home with a little more speed. The electric motor, driven by the diesel engine, will then function as a dynamo, charging the batteries for the next round of electric propulsion.

Energy consumption gauge

It is often very important to know the exact state of charge of a battery or battery bank. The energy consumption gauge monitors the following functions:

- Voltage; scale range 0-32.6 Volts. An alarm warns of low voltage during discharge or excessive voltage during charging.
- Charge of discharge current; scale range +/- 200 A
- Battery state of charge; scale range 0-99.9% of the nominal battery capacity. This capacity can be entered by the user.
- Time to complete discharge at the present discharge rate; scale range 0-999 hours.

The instrument can be used in both 12 Volt and 24 Volt electrical systems. It is supplied with a 200 A shunt and both square and round bezels. Diameter of hole: Ø 52 mm. Outside dimensions: Ø 63 mm



BATMON

Batteries

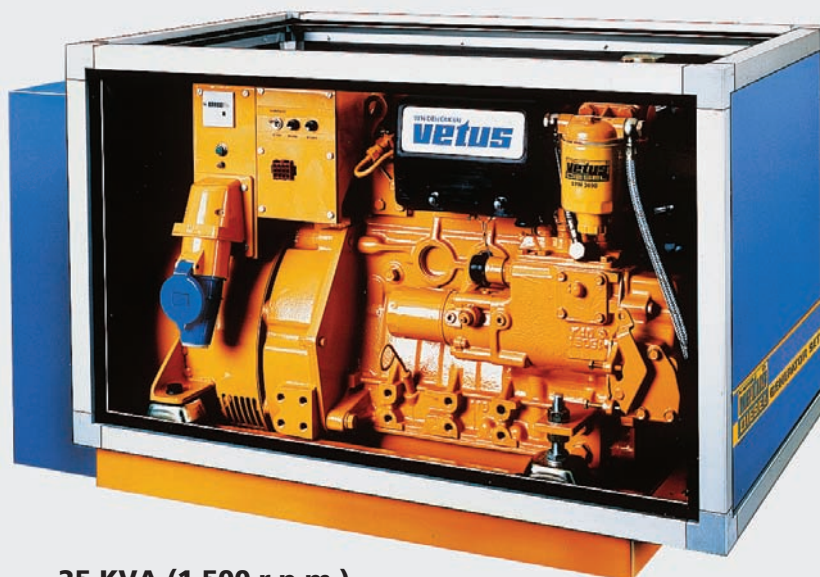
Because electric propulsion often involves heavy discharge of the batteries, we strongly recommend a battery that can sustain such treatment and has a long life-span.



AGM214



4 - 14 KVA (3.000 r.p.m.)



25 KVA (1.500 r.p.m.)

All VETUS generators are supplied as standard with a complete exhaust system, a water intake system and a remote control panel.

4 - 14 kVA generator sets 3.000 r.p.m. 50 Hz										
Model		Power (at cos φ = 0,8)		Voltage	Current	Frequency	Phase	Engine model	Generator	Weight without
		kVA	kW	Volt	Amps	Hz		VETUS	model	sound-proof-box
GHS4:	GHS4SI	4	3,2	230	14	50	1	F1.02	BWG430	95 kg
GHS8:	GHS8SI	8	6,4	230	27,5	50	1	M2.06	BWG830	125 kg
GHS14	GHS14SI	14	11	230	46	50	1	M3.28	BCI162G	220 kg
	GHS14SI	14	11	230/400	10	50	3	M3.28	BCI162E	200 kg

4,5 - 17 kVA generator sets 3.600 r.p.m. 60 Hz										
Model		Power (at cos φ = 0,8)		Voltage	Current	Frequency	Phase	Engine model	Generator	Weight without
		kVA	kW	Volt	Amps	Hz		VETUS	model	sound-proof-box
GHS55IK	GHS55IK	4,5	3,2	120/240	30/15	60	1	F1.02	BWG536	95 kg
GHS95IK	GHS95IK	9	7,2	120/240	60/30	60	1	M2.06	BWG936	125 kg

14 - 25 kVA generator sets 1.500 r.p.m. 50 Hz										
Model		Power (at cos φ = 0,8)		Voltage	Current	Frequency	Phase	Engine model	Generator	Weight without
		kVA	kW	Volt	Amps	Hz		VETUS	model	sound-proof-box
GLS14	GLS14SI	14	11,2	230	48	50	1	M4.15	BCI184E	315 kg
	GLS14TI	14	11,2	230/240	3 x 16	50	3	M4.15	BCI164D	295 kg
GLS25	GLS 25	25	20	230/240	3 x 16	50	3	VH4.80	BCI184F	415 kg

7,8 - 30 kVA generator sets 1.800 r.p.m. 60 Hz										
Model		Power (at cos φ = 0,8)		Voltage	Current	Frequency	Phase	Engine model	Generator	Weight without
		kVA	kW	Volt	Amps	Hz		VETUS	model	sound-proof-box
GLS17SIK	GLS17SIK	17	13,6	120/240	114/57	60	1	M4.17	BCI184E	315 kg
GLS17TIK	GLS17TIK	17	13,6	127/220	3 X 36	60	3	M4.17	BCI164D	295 kg
				139/240	3 X 33					
				220/380	3 X 21					
				277/480	3 X 17					
GLS30TIK	GLS30TIK	30	24	127/220	3 X 63	60	3	VH4.80	BCI184F	415 kg
				139/240	3 X 57					
				220/380	3 X 36					
				277/480	3 X 29					

Technical data generator: 4 - 8 kVA

Voltage tolerance: plus or minus 5%
Protection: IP55
Overload capacity (2 sec.): 1½ nominal current
Max. ambient temperature: 40°C
Max. raw water temperature: 30°C
Noise level with sound-proof box: 70 dB(A)
Max. cont. angle of inclination: fore and aft: 15°
athwartships: 25°

Technical data generator: 14 kVA

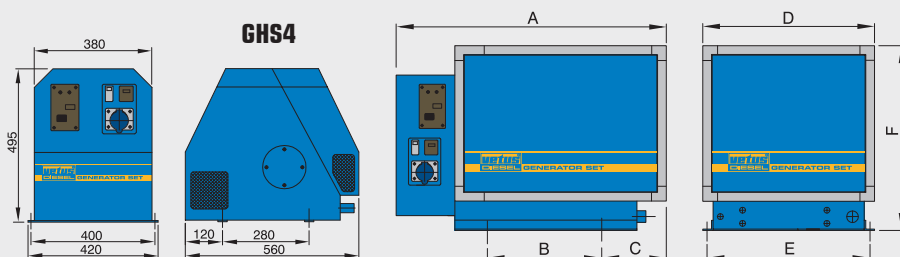
Voltage tolerance: plus or minus 2%
Protection: IP55
Overload capacity (2 sec.): 2,5 x nominal current
Max. ambient temperature: 40°C
Max. raw water temperature: 30°C
Noise level with sound-proof box: 65 dB(A) / 68 dB(A)
Max. cont. angle of inclination: fore and aft: 15°
athwartships: 25°

Technical data generator: 14 kVA

Voltage tolerance: 14 kVA plus or minus 2%
Protection: IP55
Overload capacity (2 sec.): 3 x nominal current
Max. ambient temperature: 40°C
Max. raw water temperature: 30°C
Noise level with sound-proof box: 57 dB(A)
Max. cont. angle of inclination: fore and aft: 15°
athwartships: 25°

Technical data generator: 25 kVA

Voltage tolerance: plus or minus 2%
Protection: IP44
Overload capacity (2 sec.): 3 x nominal current
Max. ambient temperature: 40°C
Max. raw water temperature: 30°C
Noise level with sound-proof box: 57 dB(A)
Max. cont. angle of inclination: fore and aft: 15°
athwartships: 25°

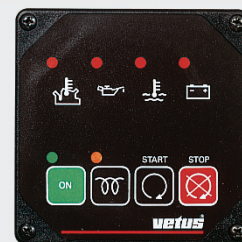


	GHS8	GHS14	GLS14	GLS25
A	780 mm	1010 mm	1120 mm	1360 mm
B	310 mm	390 mm	645 mm	785 mm
C	180 mm	220 mm	130 mm	150 mm
D	465 mm	585 mm	585 mm	700 mm
E	435 mm	555 mm	555 mm	670 mm
F	560 mm	630 mm	630 mm	730 mm

Remote control panel generator set

In addition to the standard remote control panel, any number of additional panels may be connected, as are required to start the generator set at any place on board. Dimensions: 94 x 94 mm.

MPOOGEN



Generator sets with "Power Take-Off" (P.T.O.), Type SAE-B.

Two generator sets fitted with a Power Take-Off (P.T.O.), type SAE-B flange, to take a hydraulic pump with a 13 spline shaft, 16/32 pitch.

TYPE GLS 14: suitable for a variable plunger pump with an output of 0 - 30 cm³

TYPE GLS 25: suitable for a variable plunger pump with an output of 0 - 30 cm³ or 0 - 45 cm³

For this application a variable plunger pump with a compensated pressure/flow control and a limitable stroke volume should be used.

An electric generator set that is also fitted with a variable hydraulic plunger pump as shown here, is able to provide both hydraulic and electrical power and may therefore be genuinely called a multifunctional "powerpack". However, if the generator set is required to provide hydraulic power, under certain circumstances it may be that there is insufficient electrical power to meet demand, due to the limitations of the engine horsepower. In this case the electrical supply will be automatically locked out.

With a view to the fact that the pump stroke volume and operating pressure can be limited, the hydraulic output power may be limited to any maximum value, as required.

A few examples of useful applications:

- When a boat has only one propulsion engine and it is required that the maximum output of both the bow thruster and the stern thruster is produced at idling speed. The generator set running at 1.500 rpm is about twice the speed of the propulsion engine at idling speed. This will then provide full power to both the bow and stern thrusters simultaneously.
- If a boat is equipped with a hydraulic emergency propulsion "HPS" installation (see page 175).





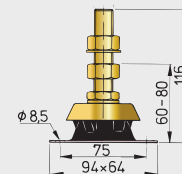
All VETUS engine mountings absorb the propeller thrust

The torque of an engine is one of the deciding factors for determination of the load applied to the engine mounts. When more powerful engines are installed, it is important to use the following formula to define the load per support in kg (4 supporting points).

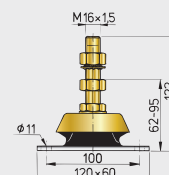
$$\frac{\text{engine weight in kg}}{\text{number of supports}} + \frac{\text{kW} \times 487 \times \text{reduction of gearbox}}{\text{engine revs/min.} \times \text{centre to centre spacing in metres of the longitudinal engine bearers}} = \text{max. load per support in kg}$$


KSTEUN25V

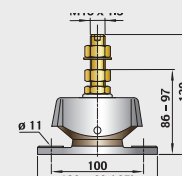
Type	Stiffness ratio			Min. load kg	Min. compression mm	Max. load kg	Max. compression mm	Hardness in ° Shore
	vertical	athwartships	fore and aft					
K25	1	1,4	1,4	15	1,3	35	3	45


KSTEUN50V
KSTEUN75V
KSTEUN100V

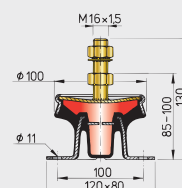
Type	Stiffness ratio			Min. load kg	Min. compression mm	Max. load kg	Max. compression mm	Hardness in ° Shore
	vertical	athwartships	fore and aft					
K50 V	1	0,75	2,5	25	2	50	4	45
K75 V	1	0,75	2,5	38	2	75	4	55
K100 V	1	0,75	2,5	50	2	100	4	65


KSTEUN40V

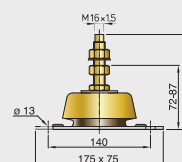
Type	Stiffness ratio			Min. load kg	Min. compression mm	Max. load kg	Max. compression mm	Hardness in ° Shore
	vertical	athwartships	fore and aft					
K40	1	1	2,4	25	5	40	8	50


MITSTEUN

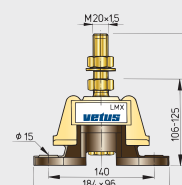
Type	Stiffness ratio			Min. load kg	Min. compression mm	Max. load kg	Max. compression mm	Hardness in ° Shore
	vertical	athwartships	fore and aft					
Mitsteun	1	1	1	25	1,3	67	4,5	45


HY150
HY230

Type	Stiffness ratio			Min. load kg	Min. compression mm	Max. load kg	Max. compression mm	Hardness in ° Shore
	vertical	athwartships	fore and aft					
HY100	1	1,2	3,5	40	2	100	5	40
HY150	1	1,2	3,5	60	2	150	5	50
HY230	1	1,2	3,5	92	2	230	5	60

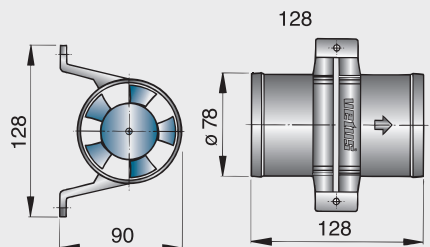

LMX140
LMX210
LMX340
LMX500

Type	Stiffness ratio			Min. load kg	Min. compression mm	Max. load kg	Max. compression mm	Hardness in ° Shore
	vertical	athwartships	fore and aft					
LMX140	1	1	7	85	3	140	5	35
LMX210	1	1	7	125	3	210	5	45
LMX340	1	1	7	205	3	340	5	55
LMX500	1	1	7	300	3	500	5	65



We do **not** recommend using these extraction ventilators to provide air to the main engine(s). Every marine engine is able to draw sufficient air by itself, provided of course, that the ventilation openings to the engine room are adequate. If an extraction ventilator is placed in the air duct, the electric motor may overheat, as the suction power of the engine will cause the fan to over-rotate.

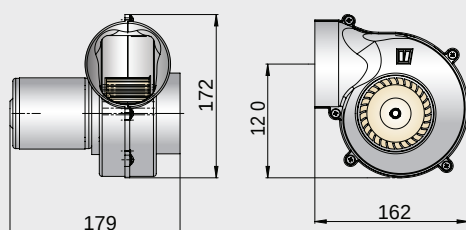
The purpose of these VETUS ventilators, is to extract the heat from the engine room when the engines are stopped, or, when petrol engines are installed, to extract any possible petrol vapours prior to starting the engine(s).



- **Ignition protected**
- Complies with ISO 9097 Marine Standard.
- Capacity 4 m³ per minute.
- Static pressure: 36 mm H₂O.
- Available in 12 V - 2,8 A max.
- Suited to fit Ø 78 mm I.D.hose.
- Hose may be connected to Scirocco or Typhoon Shell ventilators.



TWINLINE

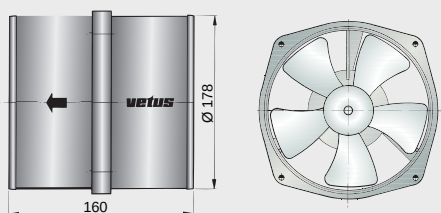


- **Ignition protected.**
- Complies with ISO 9097 Marine Standard.
- With Delrin Impeller.
- Capacity 4 m³ (140 cu.ft.) per minute.
- Static pressure: 57 mm H₂O.
- Ideal for galley, toilet and engine room.
- Available in 12 or 24 Volt.
- Connection for 76 mm I.D. hose (see page 239).
- 12 Volt-8 A/24 Volt-4 A.



VENT7612A

VENT7624A



- **Ignition protected**
- Complies with ISO 9097 Marine Standard.
- Available for 12 Volt (6 A) or 24 Volt (3 A) installations
- Capacity: air displacement of approx.. 12,2 m³ per minute at 12 Volt D.C.
- Static pressure: 32 mm H₂O. Air displacement of approx. 12.5 m³ per minute at 24 Volt D.C. Static pressure: 36 mm H₂O
- Suitable for bulkhead mounting and for receiving Ø 178 mm (internal) air ducting hose.



VENT17812A

VENT17824A

TWINLINE	In line extraction ventilator	12 Volt	Ø 76 mm
VENT7612A	Extraction ventilator	12 Volt	Ø 76 mm
VENT7624A	Extraction ventilator	24 Volt	Ø 76 mm
VENTKIT	In line connection kit with mounting bracket for VENT76		
VENT17812A	Extraction ventilator	12 Volt	Ø 178 mm
VENT17824A	Extraction ventilator	24 Volt	Ø 178 mm



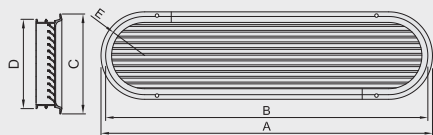
Air requirements

A marine diesel engine needs sufficient air in order to function correctly. The volume of combustion air required is approximately 6.1m³ per kW (4.5 m³ per hp) per hour, based on a maximum air velocity of 3m/sec. In addition to combustion air, the engine also requires sufficient ventilation air to dissipate the radiated heat. The volume of ventilation air required is about the same as the combustion air needed. The design of the VETUS air suction vents is based on these principles. The model numbers given in the table relate to the engine horsepower for which they are suitable. When designing the engine room layout, it is therefore easy to calculate the size of the air vents required. Do not forget to allow for extra vents to extract the heat from the engine space as well. For example: A boat with an engine of 60 hp will require for the combustion and ventilation air, 2 louvred air suction vents type 60 (1 x Starboard + 1 x Port) or 4 type 30 vents (2 x Starboard + 2 x Port).

The frame is made of polished anodised aluminium and the grilles of naturally anodised aluminium



ASV

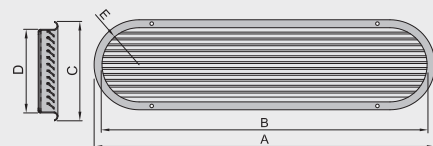


Air Suction Vent ASV	20	25	30	40	50	60	70	80	90	100	125	150
Dimensions in mm												
A	300	350	360	450	490	570	590	660	670	730	750	890
B = Cutout	280	330	340	430	470	550	570	640	650	710	730	870
C	117	117	130	130	146	146	159	159	172	172	198	198
D = Cutout	97	97	110	110	126	126	139	139	152	152	178	178
E = Cutout radius	R 48,5	R 48,5	R 55	R 55	R 63	R 63	R 69,5	R 69,5	R 76	R 76	R 89	R 89
Free flow area in dm ²	0,83	1,00	1,22	1,59	2,02	2,41	2,83	3,21	3,63	4,00	5,03	6,08

The frame is made of high gloss stainless steel (AISI 316) and the grilles of naturally anodised aluminium



SSV

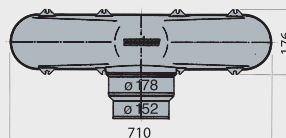


Air Suction Vent SSV	70	80	90	100	125	150
Dimensions in mm						
A	590	660	670	730	750	890
B = Cutout	570	640	650	710	730	870
C	159	159	172	172	198	198
D = Cutout	139	139	152	152	178	178
E = Cutout radius	R 69,5	R 69,5	R 76	R 76	R 89	R 89
Free flow area in dm ²	2,83	3,21	3,63	4,00	5,03	6,08

Louvred air vent with hose connector Ø 152 mm and Ø 178 mm

MOFI100

The VETUS extraction ventilator type VENT178 can easily be connected to a MOFI100 ventilation box, by means of flexible air hose with 178 mm internal diameter.



This ventilation box with hose connections fits to the aluminium louvred air vent type ASV100, which should be ordered separately. It cannot be used with the stainless steel versions, type SSV or SSVL.

VHOSE..N

VHOSE

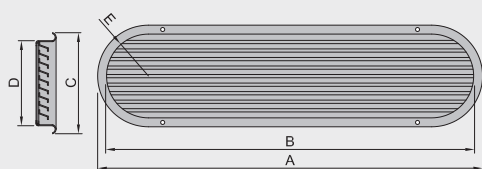


Suction/pressure hose Ø 152 mm or Ø 178 mm. Very flexible hose, to connect the MOFI air vent to the extraction ventilator, type 178.

The frame and grilles are made of high gloss polished stainless steel (AISI 316)



SSVL



Air Suction Vent SSV	70	80	90	100	125	150
Dimensions in mm						
A	590	660	670	730	750	890
B = Cutout	570	640	650	710	730	870
C	159	159	172	172	198	198
D = Cutout	139	139	152	152	178	178
E = Cutout radius	R 69,5	R 69,5	R 76	R 76	R 89	R 89
Free flow area in dm ²	2,83	3,21	3,63	4,00	5,03	6,08

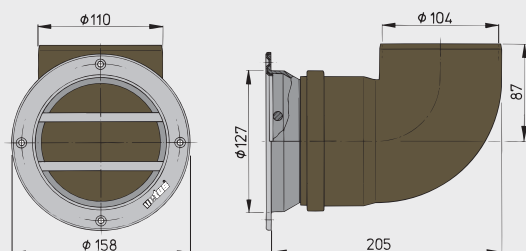
All standard air suction vents can be supplied with a synthetic dorade box as an option



DBOX



* free flow area: 0,66 dm²



ERV110

Round air suction vent

This air suction vent is made of stainless steel. The synthetic rotating hose connector acts as a watertight dorade box. This vent is suitable for 16 hp of engine power.

Therefore, for a 60 hp engine, 4 of these air suction vents must be fitted (2 x to port and 2 x to starboard).



A propeller is possibly the most essential component of a motorboat and very important for sailing boats too. It requires a lot of attention, both by the naval architect and by the propeller manufacturer. "Specialists", who are able to tell you "off the cuff" what type of propeller your boat requires, simply do not exist. VETUS makes good use of an especially developed computer programme, which ensures the determination of the exactly right propeller for your boat, with the aid of some (correct) information, which we require from you.

What are the most important demands made upon a propeller?

- **Balance:** If you bear in mind that a propeller is often rotating at 2.000 r.p.m. (which is more than **30 revolutions per second!**), you will understand that a good propeller should be **well-balanced**. A difficult and timeconsuming job, but an absolute "must" nonetheless.
- **Dimensions:** In order to achieve the best performance and to prevent vibrations, it is extremely important to ensure that the

pitch of each blade is **identical** and also that the distance between the blades does not vary. Again, this requires great manufacturing precision.

- **Material:** "Bronze" is the common denominator of a great variety of alloys. VETUS propellers are made of **manganese bronze**, an extremely resilient, yet very flexible material. By virtue of their material specifications, VETUS propellers, when damaged, can nearly always be repaired. The choice of a good (VETUS) propeller, combining all qualities mentioned above, is therefore of utmost importance! The diameter and the pitch of propellers are nearly always given in inches (1" = 25.4 mm).

Blade area

In order to specify the correct propeller, the propeller specialist must first of all determine the required Fa/F ratio. Each propeller has a fixed Fa/F ratio. This means the total area of the propeller circle (F) in comparison to the surface area (stretched and developed) of all blades together (Fa). The choice of the Fa/F ratio is dependent on the shape of the underwater section and the speed of the boat in question.

VETUS propellers with diameters between 12" and 24" (30-60 cm) in stock!



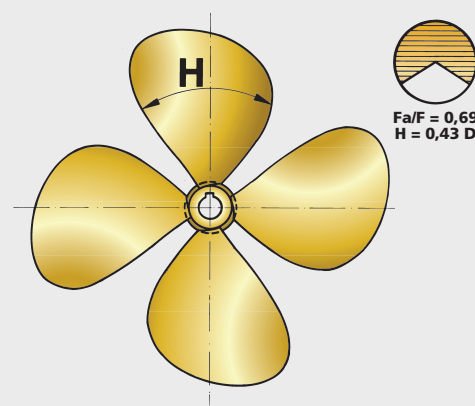
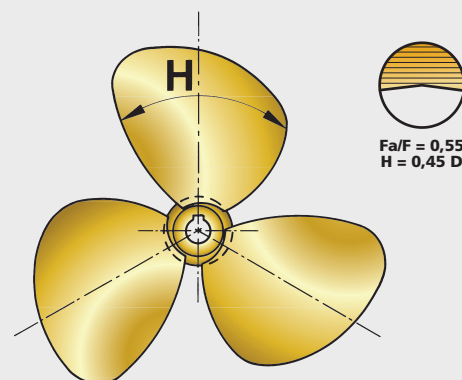
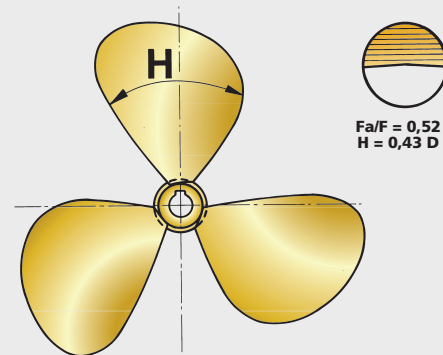
3-Bladed propeller
Type P3B

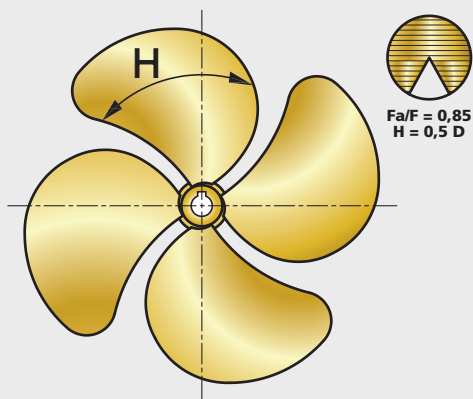


3-Bladed propeller
Type P3C



4-Bladed propeller
Type P4E





4-Bladed propeller
Type P4G



VETUS has stocks of type P3B, P3C and P4E propellers, with standard shaft holes and keyway sizes as indicated in the table.

Propellers of different types and dimensions are available to special order, with a delivery time of 10 to 12 weeks.

5-Bladed propeller
Type P5G
 $Fa/F = 1,06$
 $H = 0,5 D$



VETUS can also supply from stock the propeller shafts to match. (see page 44)

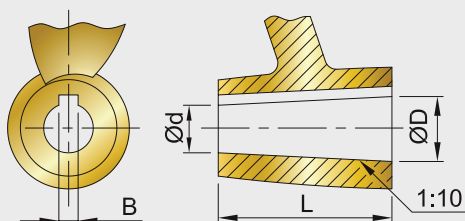


Standard taper of shaft holes of VETUS propellers (1:10). Dimensions according to ISO 4566

Propeller diameter					Largest diameter D	Smallest diameter d	Hub length L	Keyway width B
3-bladed propeller P3B	3-bladed propeller P3C	4-bladed propeller P4E	4-bladed propeller P4G	5-bladed propeller P5G				
12"-15"	12"-15"	14"-15"			25 mm	19 mm	60 mm	8 mm
16"-18"	16"-18"	16"-17"	on request	on request	30 mm	22 mm	80 mm	8 mm
19"-21"	19"-21"	18"-20"	on request	on request	35 mm	26 mm	90 mm	10 mm
22"-24"	22"-24"	21"-22"	on request	on request	40 mm	30 mm	100 mm	12 mm
25"	25"	23"-24"	on request	on request	45 mm	34 mm	110 mm	14 mm
greater than 25"	greater than 25"		on request	on request	50 mm	38 mm	120 mm	14 mm

How to order?

Please give us the dimensions of the propeller's diameter and pitch, as well as the number of the blades, the sense of rotation and the dimensions of the boss and the taper, according to the sketch.



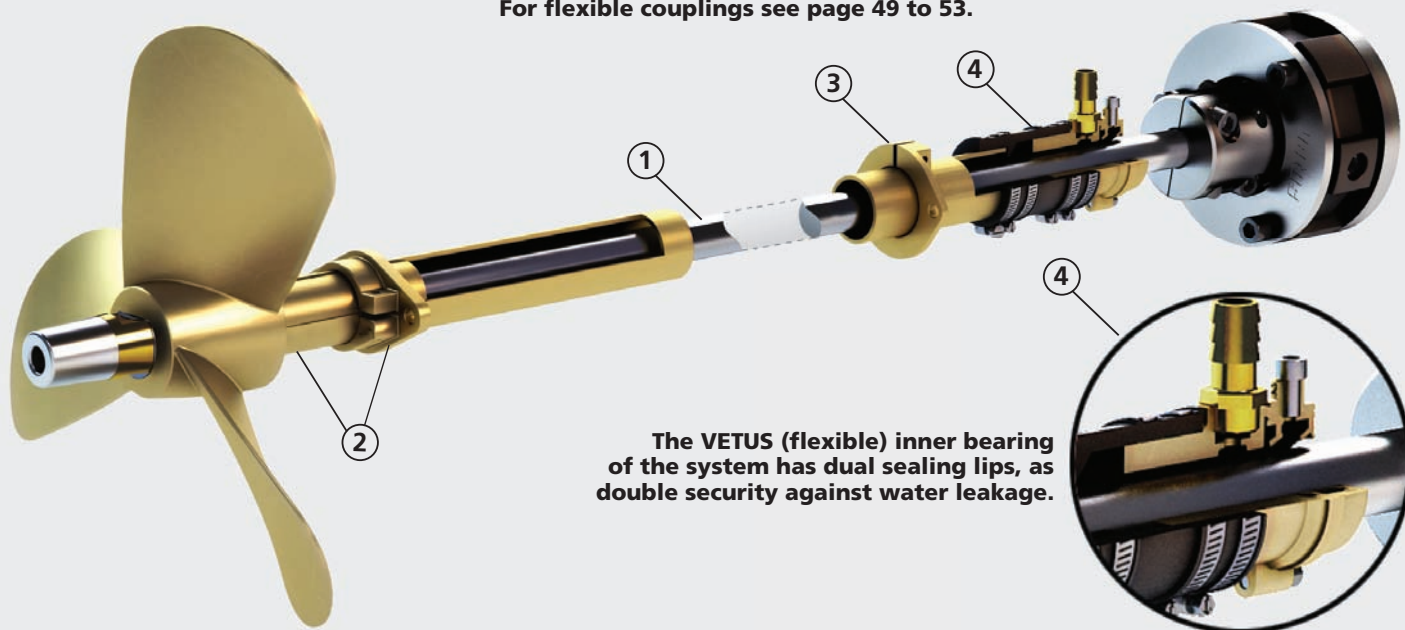
Tapering of the propeller shaft

All propellers in stock at VETUS have the standard taper 1:10. This means that the difference between the largest and the smallest diameter of the tapered hole represents 10% of the length of the propeller's boss ($D-d=0.1 \times L$). If required, we can machine the boss to a taper of 1:12, 1:16, etc. It takes a few days extra delivery time plus a small surcharge. (see pricelist)



VETUS can deliver from stock, stern gear assemblies which can be installed with a minimum of fuss. Machining, threading and keyway cutting have all been taken care of by VETUS. In addition, these shaft assemblies **protect the environment: lubrication is ensured by means of raw water, without use of grease or oil.** The stern tube is provided with a **dual shaft seal**, eliminating the need for a stuffing box. These propeller shaft assemblies feature a propeller nut with integrated zinc anode as standard supply.

For flexible couplings see page 49 to 53.

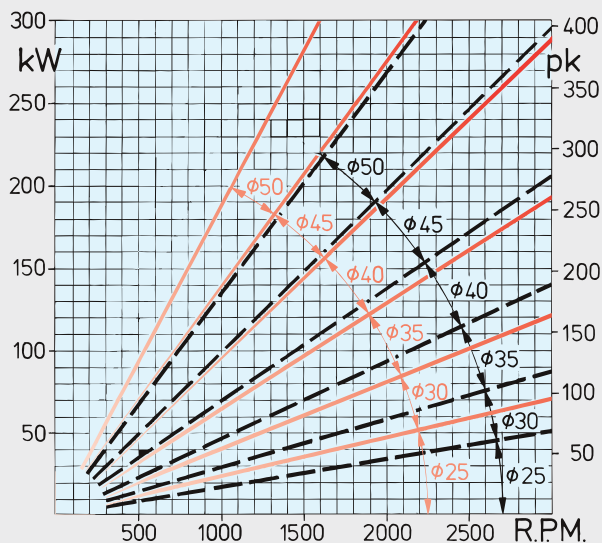


The VETUS (flexible) inner bearing of the system has dual sealing lips, as double security against water leakage.

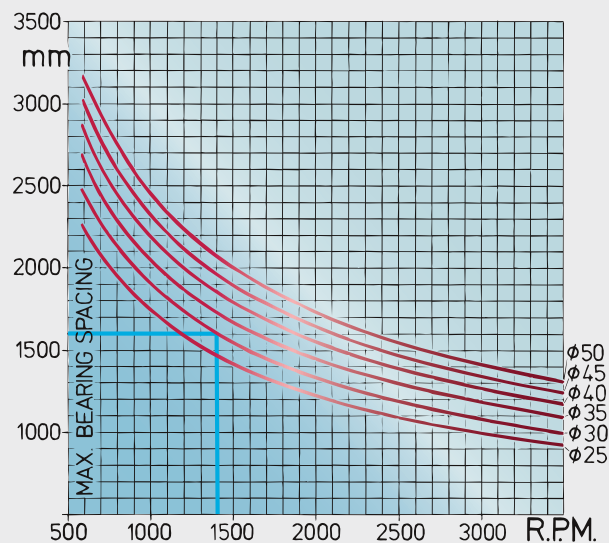
Why use a propeller shaft with a diameter of Ø 35 mm, if a Ø 30 mm shaft is more than adequate?

DUPLEX 1-4462

AISI 316



DUPLEX 1-4462



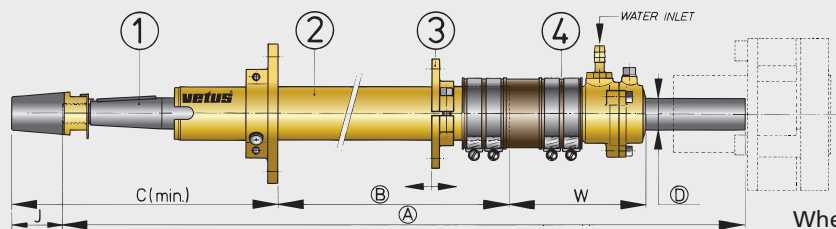
Material of VETUS propeller shafts

All VETUS propeller shaft are made of stainless steel type "Duplex 1- 4462". In comparison with stainless steel materials like AISI 316 and Aquamet 17 or 22, the corrosion resistance of "Duplex 1-4462" is much greater. In addition the tensile strength of "Duplex 1-4462" is about 30% greater than AISI 316 and its hardness is approximately 40% higher. It is precisely this high degree of hardness, which gives "Duplex 1-4462" its excellent running properties in (rubber) bearings.

Dependent on length, diameter and number of shaft revolutions, 1, 2 or 3 cutlass bearings must be installed.

Example

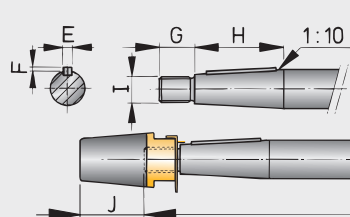
Imagine, you have a shaft with a maximum shaft speed of 1400 r.p.m. and a diameter of 30 mm. The diagram shows (blue line) that the maximum distance between 2 bearings amounts to 1600 mm. If you have a shaft of e.g. 1500 mm. length, then one rubber bearing will be sufficient. Should you have a shaft of 2000 mm. length, in this case 2 rubber bearings have to be used. For shafts with a length of 3200 mm or longer use 3 bearings.



All dimensions are in mm.

Propeller shaft of Ø 25 and 30 mm					
D	A	B	C	W	
Ø 25	×	×	210	112	
Ø 30	×	×	267	112	

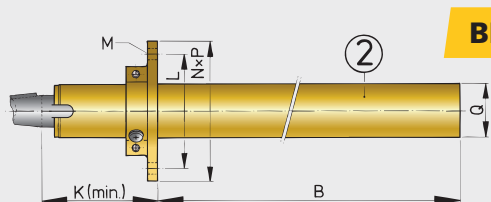
When ordering, please indicate sizes A, B and D.



SA

D	standard length A				E	F	G	H	I	J
Ø 25	1000	1500	2000	2500	8	3	25	55	M16 x 1,5	40
Ø 30	1000	1500	2000	2500	8	3	30	75	M20 x 1,5	57

One end of a VETUS propeller shaft is machined with a 1:10 taper and a keyway as standard. Also supplied, is a matching key with dimensions according to ISO 4566, a tab washer and a propeller nut with integrated zinc anode. The other end of the shaft may be cut to length.

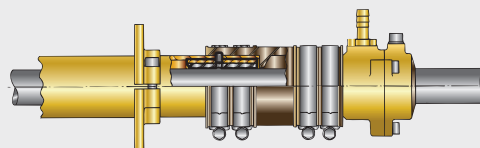


BL

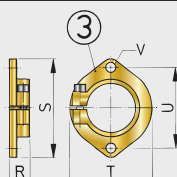
D	standard length B				E	F	G	H	I	J
Ø 25	500	1000	1500	2000	88	90	Ø 8,5	110	60	Ø 43
Ø 30	500	1000	1500	2000	105	100	Ø 8,5	120	67	Ø 49,5

The rear of the bronze stern tube is provided with an outer cutlass bearing and a mounting flange. The slots in the tube are designed for easy replacement of the cutlass bearing.

D	R	S	T	U	V
Ø 25	18	86	72	70	Ø 8,5
Ø 30	18	90	78	74	Ø 8,5

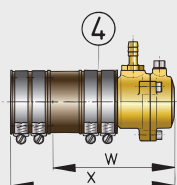


This water-lubricated shaft assembly can, upon request, easily be provided with an additional cutlass bearing, to accommodate longer shafts or higher shaft revolutions.



FLK

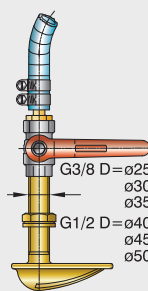
Mounting flange for stern tube.



ZWB

Flexible inner bearing with DUAL lip seal. These inner bearings with dual lip seal are also available to replace older 25 and 30 mm diameter VETUS bearings with a conventional gland packing. A water scoop set should also be installed when making this upgrade.

D	W	X
Ø 25	112	144
Ø 30	112	144

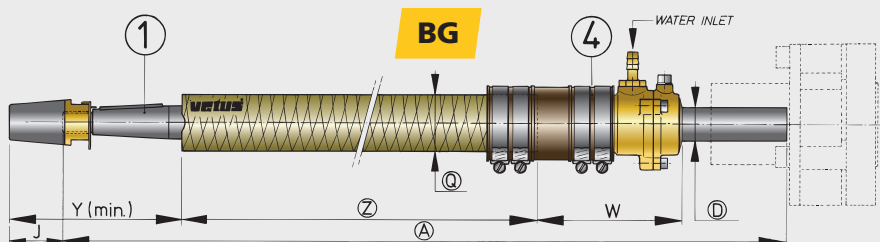


WCAPS

There are two possibilities of water lubrication for these shaft assemblies:

1. by means of a water scoop G 3/8, with ball valve, hose pillar, 1 m of water hose and hose clamps (optional kit).
2. by tapping a small amount of water from the main engine's raw water cooling circuit.

Propeller shaft assemblies with G.R.P. (Polyester) stern tubes



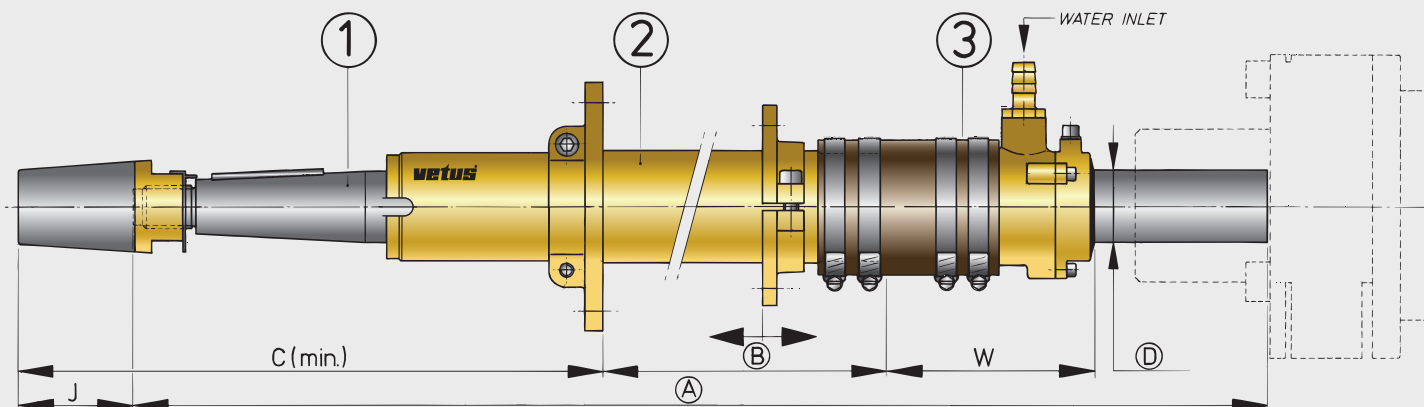
BG

D	J	Q	W	Y	W
Ø 25	40	Ø 44	112	127	581.5
					1081.5
					1581.5
					2081.5
Ø 30	57	Ø 50	112	172	595.5
					1095.5
					1595.5
					2095.5

G.R.P. tubes, for 25 or 30 mm diameter shafts, featuring the same **dual shaft** seal as shown above. The shaft tubes, which are provided with a cutlass bearing, must be bonded directly into the hull. A propeller nut with integrated zinc anode comes as standard with the propeller shafts.



For steel, G.R.P. or wooden vessels



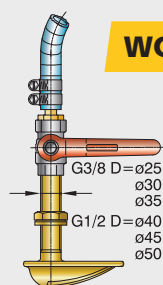
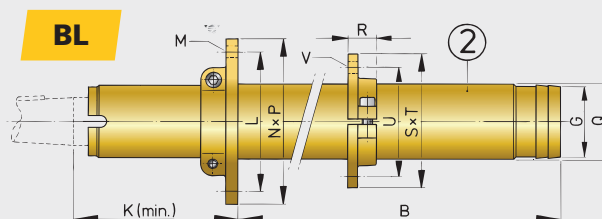
D	A	B	C	J	W
Ø 35	X	X	291	54	112
Ø 40	X	X	327	64	114
Ø 45	X	X	359	69	129
Ø 50	X	X	401	79	129

All dimensions are in mm.

Dependent on length, diameter and number of shaft revolutions, 1, 2 or 3 cutlass bearings must be installed.

Bronze stern tube with one cutlass bearing, aft.

D	B	G	K	L	M	N	P	Q	R	S	T	U	V
Ø 35	on request	Ø 56	117	110	Ø 10,5	132	76	Ø 57	23	112	100	92	Ø 10,5
Ø 40	on request	Ø 61	113	116	Ø 10,5	138	82	Ø 62	23	116	104	96	Ø 10,5
Ø 45	on request	Ø 71	145	150	Ø 13	180	93	Ø 72	28	132	122	108	Ø 13
Ø 50	on request	Ø 76	162	165	Ø 15	197	99	Ø 77	28	138	128	114	Ø 13



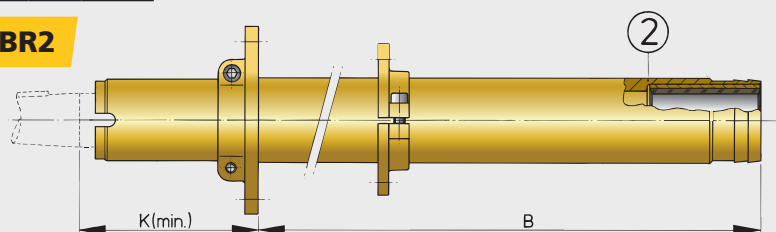
WCAPS

There are two possibilities to provide water lubrication for these shaft assemblies:

1. by means of a water scoop with ball valve, hose pillar, 1 m of water hose and hose clamps (optional kit).
2. by tapping a small amount of water from the main engine's raw water cooling circuit.

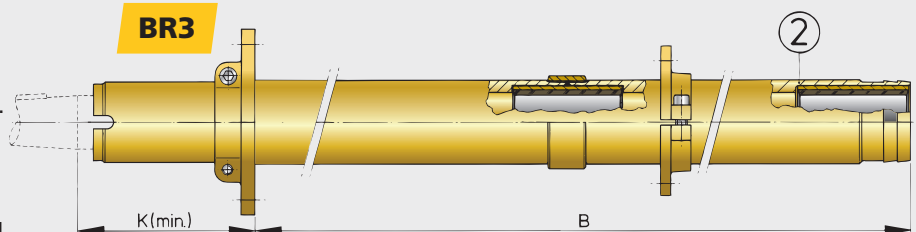
Bronze stern tube with two cutlass bearings, one forward and one aft.

BR2

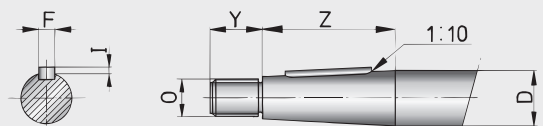


Bronze stern tube with three cutlass bearings (forward, aft and intermediate). When ordering, please specify dimensions A, B and D. The slots in the tube are designed for easy replacement of the cutlass bearing.

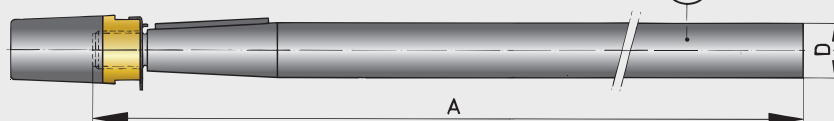
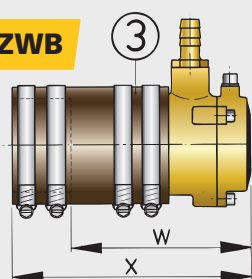
BR3



Duplex stainless steel type 1-4462 propeller shaft, completely machined and with propeller nut with integrated zinc anode. Dimensions of taper and keyway in accordance with ISO 4566.



ZWB



SA

Self-aligning inner bearing

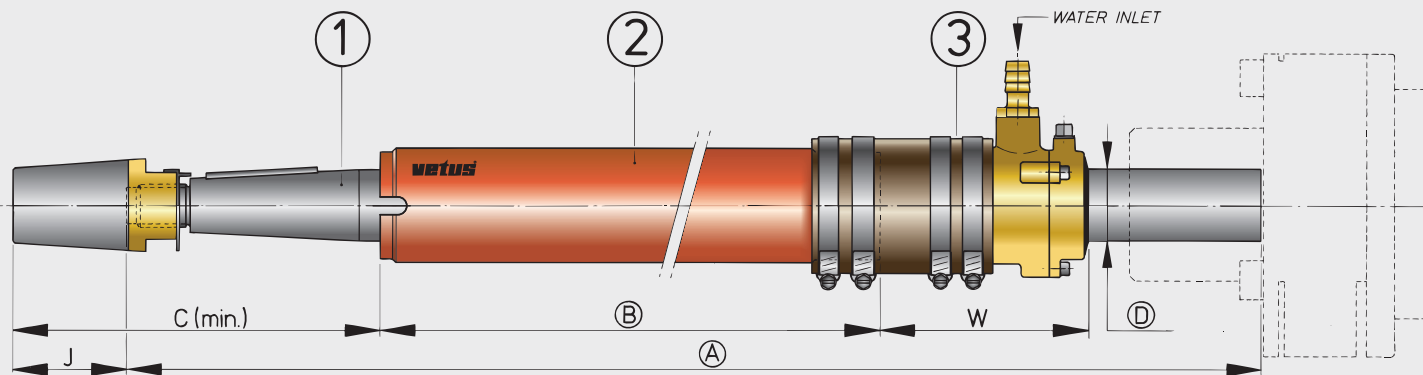
The VETUS (flexible) inner bearing used in this system has dual sealing lips, as double security against water leakage.

D	Length A	F	J	O	Y	Z
Ø 35	on request	10	3	M24x2	35	85
Ø 40	on request	12	3	M24x2	35	95
Ø 45	on request	14	3,5	M30x2	40	105
Ø 50	on request	14	3,5	M36x2	45	115

D	W	X
Ø 35	112	145
Ø 40	114	150
Ø 45	129	165
Ø 50	129	165
Ø 60	129	168



For steel vessels



All dimensions are in mm.

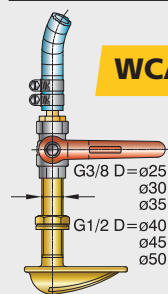
D	A	B	C	J	W
Ø 25	X	X	127	40	112
Ø 30	X	X	172	57	112
Ø 35	X	X	184	54	112
Ø 40	X	X	206	64	114
Ø 40	X	X	226	69	129
Ø 50	X	X	254	79	129

Dependent on length, diameter and number of shaft revolutions, 1, 2 or 3 cutlass bearings must be installed.

All steel stern tubes may be supplied with additional sleeves to reduce distortion when welding. Please specify when ordering.

Steel stern tube with one cutlass bearing, aft.

D	B	G	K	Q
Ø 25	on request	Ø 43	8	Ø 51
Ø 30	on request	Ø 49	10	Ø 54
Ø 35	on request	Ø 56	10	Ø 60
Ø 40	on request	Ø 61	12	Ø 63,5
Ø 45	on request	Ø 71	12	Ø 70
Ø 50	on request	Ø 76	15	Ø 76



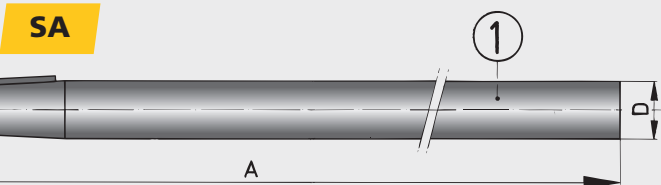
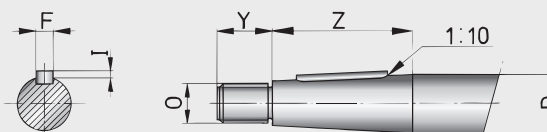
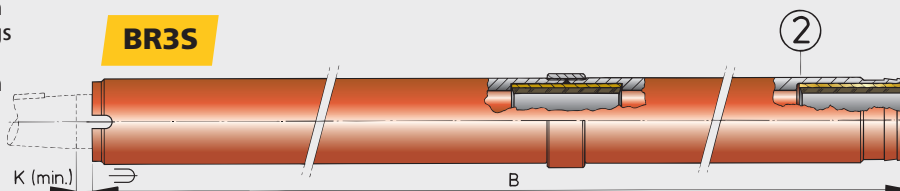
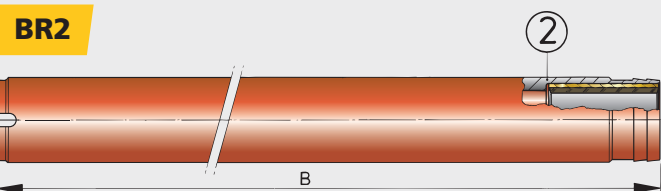
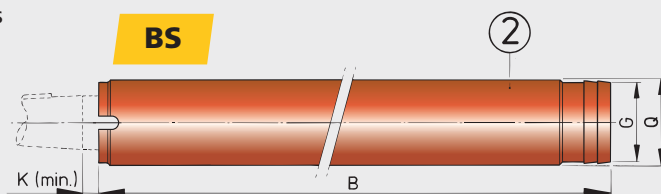
WCAPS

- There are two possibilities to provide water lubrication for these shaft assemblies:
1. by means of a water scoop with ball valve, hose pillar, 1 m of water hose and hose clamps (optional kit).
 2. by tapping a small amount of water from the main engine's raw water cooling circuit.

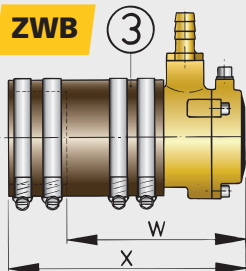
Steel stern tube with two cutlass bearings, one forward and one aft.

Steel stern tube with three cutlass bearings (forward, aft and intermediate). When ordering, please specify dimensions A, B and D. The slots in the tube are designed for easy replacement of the cutlass bearing

Duplex stainless steel type 1-4462 propeller shaft, completely machined and with propeller nut with integrated zinc anode. The dimensions of the taper and the keyway are machined according to ISO 4566.



ZWB



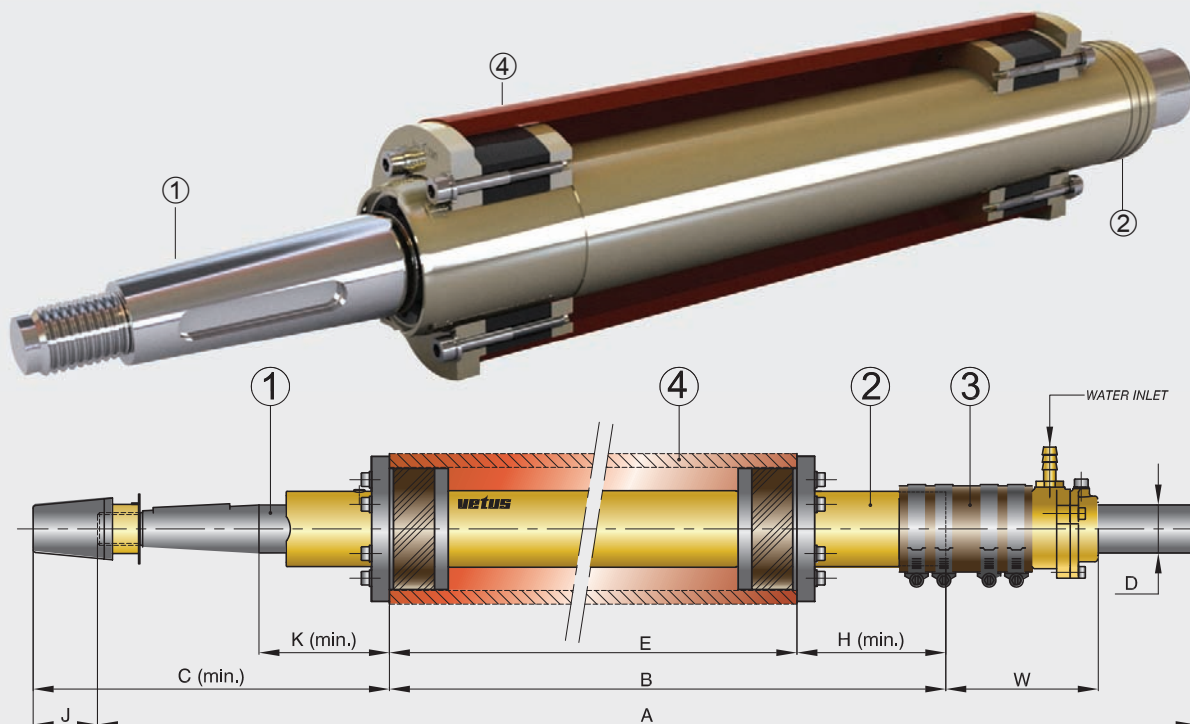
Self-aligning inner bearing

The VETUS (flexible) inner bearing used in this system has dual sealing lips, as double security against water leakage.

D	Length A	F	J	O	Y	Z	D	W	X
Ø 25	on request	8	3	M16 x 1.5	25	55	Ø 25	112	144
Ø 30	on request	8	3	M20 x 1.5	30	75	Ø 30	112	144
Ø 35	on request	10	3	M24 x 2	35	85	Ø 35	112	145
Ø 40	on request	12	3	M24 x 2	35	95	Ø 40	114	150
Ø 45	on request	14	3,5	M30 x 2	40	105	Ø 45	129	165
Ø 50	on request	14	3,5	M36 x 2	45	115	Ø 50	129	165
Ø 60	on request						Ø 60	129	168



With dual lip seal and rubber bushings



This water-lubricated propeller shaft assembly uses a thick walled steel outer tube, which can be welded into a steel boat with minimum distortion. In this steel tube a VETUS bronze stern tube can be easily fitted with the aid of the rubber bushings. The bronze stern tube is supplied as standard with one rear cutlass bearing, but additional cutlass bearings (intermediate and/or forward) can be supplied upon request at extra cost. The bronze inner tube can be supplied with a VETUS self-aligning inner bearing with dual lip seal, type ZWB. When ordering, please state dimensions A, B, D and E. Although the inside of the steel tube will not come into contact with water, the assembly is provided with a corrosion resistant coating, to provide additional protection.

D	A	B	C	E	H	J	K	W	Precision steel tube
Ø 35	on request	on request	291	on request	60	54	117	112	I.D. = 90 / O.D. = 102
Ø 40	on request	on request	327	on request	63	64	133	114	I.D. = 90 / O.D. = 102
Ø 45	on request	on request	359	on request	63	69	145	129	I.D. = 115 / O.D. = 127
Ø 50	on request	on request	401	on request	63	79	162	129	I.D. = 115 / O.D. = 127

VETUS water lubricated cutlass bearings

Available for shaft diameters between Ø 20 mm and Ø 100 mm and from Ø 1" through Ø 4". Polyurethane-rubber lining. Outer bushings made of either brass or phenolic resin. Phenolic resin is lighter in weight, cannot corrode and may be replaced very easily. Ideally suited for use in aluminium boats. VETUS rubber bearings are, upon request, also available for larger shaft diameters.

For shafts with diameter in mm and stern tubes with inside diameters in inches.

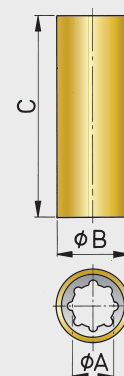
A	B	C
20 mm*	1 1/4"	76 mm
22 mm*	1 1/4"	76 mm
25 mm	1 1/2"	100 mm
30 mm	1 3/4"	120 mm
35 mm	1 7/8"	140 mm
40 mm	2 1/8"	160 mm
45 mm	2 3/8"	180 mm
50 mm	2 5/8"	200 mm
55 mm*	2 7/8"	220 mm
60 mm	3"	240 mm
65 mm*	3 1/8"	260 mm
70 mm	3 1/2"	280 mm
80 mm	4"	320 mm

For shafts with diameter in mm and stern tubes with inside diameter in mm.

A	B	C
25 mm	40 mm	100 mm
30 mm	45 mm	120 mm
35 mm	50 mm	140 mm
40 mm	55 mm	160 mm
45 mm	65 mm	180 mm
50 mm	70 mm	200 mm
60 mm	80 mm	240 mm
70 mm	90 mm	280 mm
80 mm	100 mm	320 mm
90 mm	110 mm	360 mm
100 mm	125 mm	400 mm

For shafts with diameters in inches and stern tubes with inside diameters in inches.

A	B	C
1"	1 1/2"	4"
1 1/8"	1 5/8"	4 1/2"
1 1/4"	1 3/4"	5"
1 3/8"	1 7/8"	5 1/2"
1 1/2"	2"	6"
1 5/8"*	2 1/8"	6 1/2"
1 3/4"	2 3/8"	7"
2"	2 5/8"	8"
2 1/4"	3"	9"
2 1/2"	3 1/4"	10"
2 3/4"	3 3/4"	11"
3"	4"	12"
3 1/4"	4 1/2"	14"
4"	5"	16"



* Available by special order.

RULAGER

RULAGPH

RL

RLPH

RULAG

RLPH

We are often asked why we offer 3 different types of flexible couplings for one and the same purpose. The answer is that, notably from the after-market, there is still a huge demand for replacement flexible

couplings, for units already in service, like the type 6 and the Uniflex models. The Bullflex flexible couplings represent the latest, state-of-the-art technology and are therefore recommended for new installations.

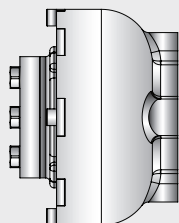
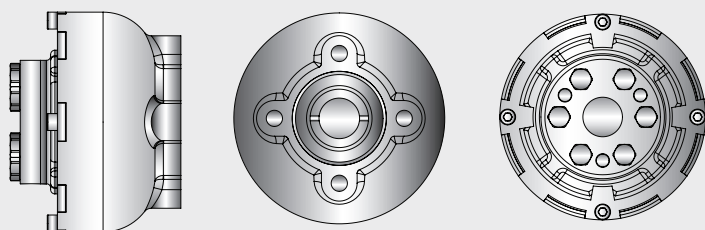
Type Uniflex

Exact alignment and concentric installation of a propeller shaft in a boat is not easy and often not even possible. VETUS flexible couplings of the Uniflex type solve these problems. In addition to the qualities of the VETUS couplings shown at the bottom of this page, Uniflex couplings have extra features that permit a **misalignment of 2°**, so that they will **centre** the shaft to the gearbox, resulting in an ideal flexible coupling for a propeller shaft with a self-aligning bearing and an engine on flexible supports. If the propeller shaft is connected to the engine at an angle of 2°, then the maximum admissible number of revolutions is 1500 r.p.m. on the shaft. These couplings are axially and radially secured against shearing off.

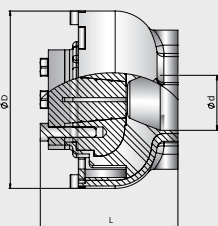
Uniflex couplings permit a misalignment of the propeller shaft of up to 2°.

Uniflex couplings align the propeller shaft to the gearbox.

UNIFL



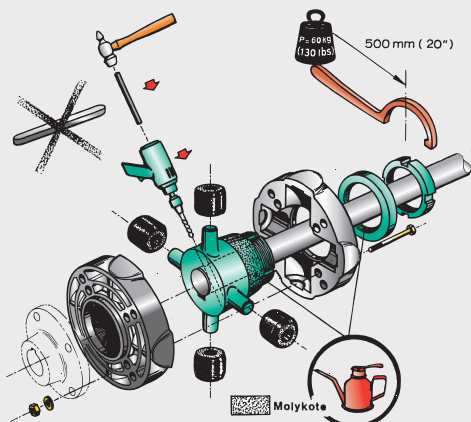
Type	DIN 6270 B = pleasure craft. kW/100 r.p.m. on shaft (HP)	Example: at 1500 r.p.m. the max. admissible power is (DIN B)	DIN 6270 A = commercial craft. kW/100 r.p.m. on shaft (HP)	D	L	d	Weight
Uniflex 13	2,6 (3,6)	15 x 2,6 = 39 kW (53 pk)	1,8 (2,5)	130 mm	98 mm	Ø 20, 25, 30	2,4 kg
Uniflex 16	5,2 (7,1)	15 x 5,2 = 79 kW (107 pk)	3,6 (5)	199 mm	131 mm	Ø 30, 35, 40	6,9 kg
Type 6	3,9 (5,3)	15 x 3,9 = 58,5 kW (79,5 pk)	3,3 (4,5)	137 mm	84 mm	Ø 20, 25, 30, 35	2,7 kg



Type Uniflex 13: with cylindrical bore and clamping hub for shafts with a diameter of 20-25-30 mm with a 4" connection for Hurth, Velvet, TD, ZF, PRM and other makes.

Type Uniflex 16: with cylindrical bore and clamping hub for shaft with a diameter of 30-35-40 mm with 4" and 5" connection for Hurth, Velvet, TD, ZF, PRM and other makes.

For the most popular Volvo, Yanmar and Kanzaki gearboxes special adapter flanges are available, for proper installation of the Uniflex models 13 and 16 and type 6. Please see pricelist for the correct types.



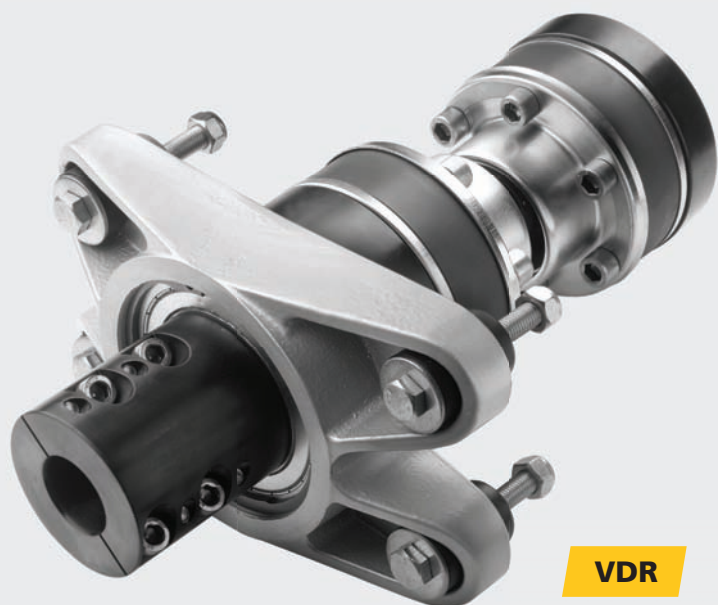
K05

The VETUS flexible coupling **type 6** has a special conical clamping hub, which guarantees a 100% concentric fit. This saves installation time. (Suitable for V-drives.)



Type 6: pilot bored Ø 20 mm or with a cylindrical bore for Ø 25 - 30 - 35 mm shaft, with 4" and 5" connections for Hurth, Velvet, TD, ZF and PRM.

Constant-velocity joint with integral thrust bearing

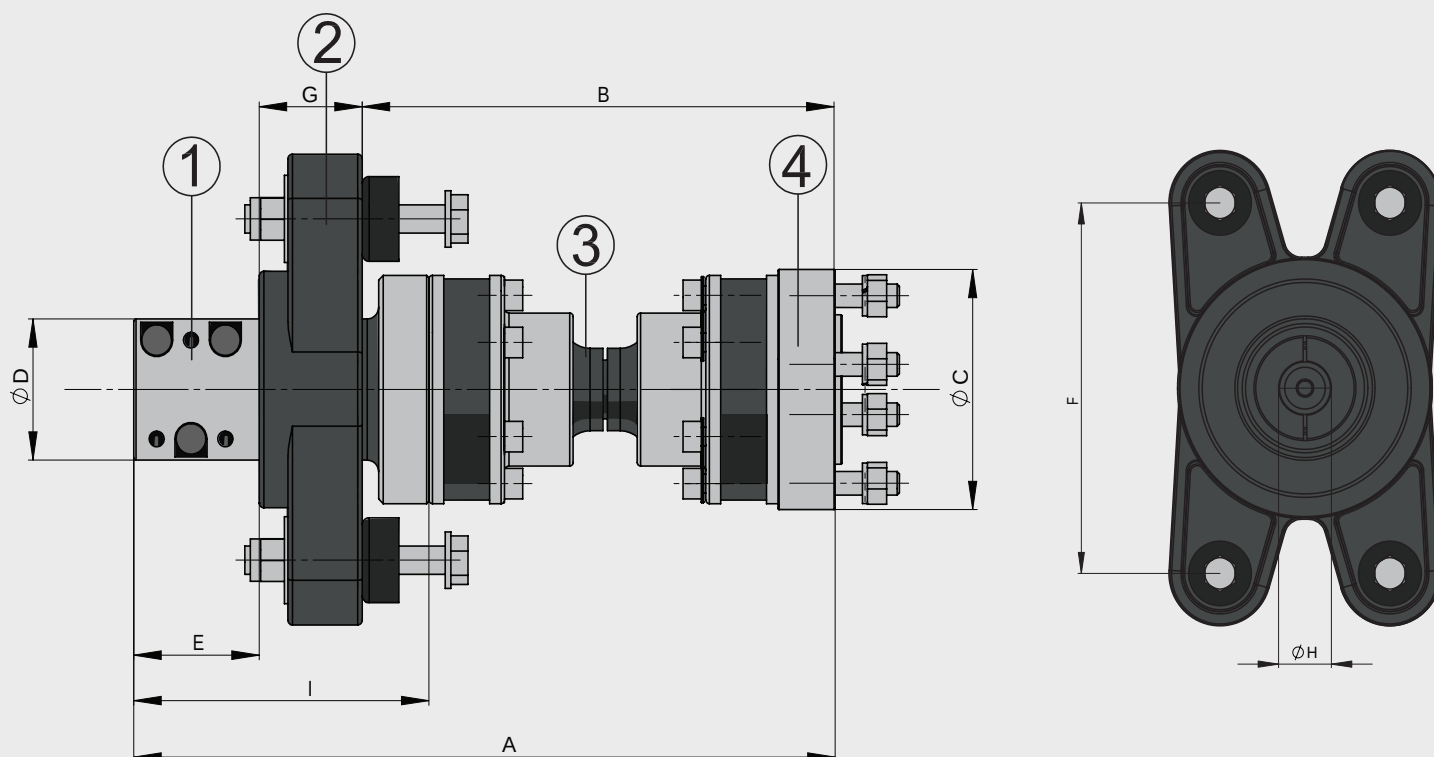


VDR

A few of the advantages of this system are:

- More freedom for engine movement due to the combination of a self-aligning thrust bearing and a double acting constant velocity joint.
- The propeller thrust is transmitted by the inbuilt thrust bearing, allowing the engine to be set up on softer mountings. This results in lower vibration and transmitted engine noise.
- Compact design with short installation length.
- Interchangeable with other well-known models.
- Designed for long service periods.
- Corrosion resistant materials: stainless steel, bronze, and black passivated steel parts.
- Simple alignment of the propeller shaft.

	A mm	B mm	C mm	D Ø	E mm	F mm	G mm	H mm	I mm
VDR21025	325	217	112	60	63	145	45	25	143
VDR21030	325	217	112	60	63	145	45	30	143
VDR21525	376	268	112	60	63	145	45	25	175
VDR21530	376	268	112	60	63	145	45	30	175
VDR21535	401	268	112	69	88	145	45	35	200
VDR21130	429	321	132	60	63	145	45	30	183
VDR21135	454	321	132	69	88	145	45	35	208
VDR21140	454	321	132	69	88	145	45	40	208
VDR42140	437	294	132	85	90	214	53	40	188
VDR42145	437	294	132	85	90	214	53	45	188
VDR42150	448	294	132	89	102	214	53	50	199
VDR43040	538	395	148	85	90	214	53	40	233
VDR43045	538	395	148	85	90	214	53	45	233
VDR43050	549	395	148	89	101	214	53	50	244
VDR630505	350	333	148	87.5	87.5	250	87	50	250
VDR630605	350	333	148	87.5	87.5	250	87	60	250
VDR630705	350	333	148	87.5	87.5	250	87	70	250
VDR630506	350	333	148	87.5	87.5	250	87	50	250
VDR630606	350	333	148	87.5	87.5	250	87	60	250
VDR630706	350	333	148	87.5	87.5	250	87	70	250
VDR642505	579	362	148	87.5	87.5	250	87	50	250
VDR642605	579	362	148	87.5	87.5	250	87	60	250
VDR642705	579	362	148	87.5	87.5	250	87	70	250
VDR642506	579	362	148	87.5	87.5	250	87	50	250
VDR642606	579	362	148	87.5	87.5	250	87	60	250
VDR642706	579	362	148	87.5	87.5	250	87	70	250



1	Clamp Hub
2	Thrust Bearing
3	CV Joint (Constant Velocity Joint)
4	Flange

Type 2 Propeller shaft 25, 30		Type 2 Propeller shaft 25, 30,35		Type 2 Propeller shaft 30, 35, 40		Type 4 Propeller shaft 40, 45, 50		Type 4 Propeller shaft 40, 45, 50	
CV Joint 10		CV Joint 15		CV Joint 21		CV Joint 21		CV Joint 30	
Power (hp)	RPM	Power (hp)	RPM	Power (hp)	RPM	Power (hp)	RPM	Power (hp)	RPM
28	500	50	500	98	500	98	500	140	500
44	1000	79	1000	115	1000	115	1000	170	1000
59	1500	101	1500	160	1500	160	1500	235	1500
70	2000	122	2000	182	1800	182	1800	280	2000
81	2500	130	2250	179	2000	179	2000	325	2500
90	3000	125	2500	161	2500	161	2500	360	3000
90	3500	123	3000	143	3000	143	3000	370	3150
90	3500	122	3500	136	3500	136	3500	340	3500



BULFL



Example:

An engine has an output of 84 kW at maximum 3,600 R.P.M. and a gearbox ratio of 2.1:1.

The maximum speed of the propeller shaft is

$$\frac{3.600}{2,1} = 1.714 \text{ R.P.M.}$$

Therefore, the power to be transmitted per 100 R.P.M. is

$$\frac{84}{17,14} = 4.9 \text{ kW/100 R.P.M.}$$

From the table, the correct model is a Bullflex 8 for a pleasure craft or a Bullflex 12 for a commercial craft. This formula can also be used with the relevant tables for Uniflex and Type 6 flexible couplings.

Adapter flanges for many models of gearboxes, made by Volvo, Yanmar and Kanzaki, are available as an option. Please see the pricelist for the adapter flange to suit your own gearbox.

Type Bullflex

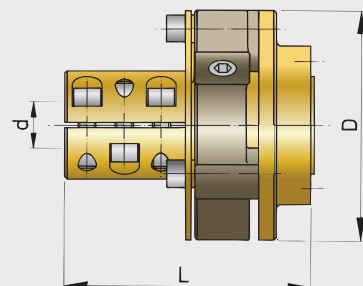
The VETUS "Bullflex" flexible coupling provides a conclusive answer to the increasing demand of greater boating comfort. The Bullflex coupling has been especially designed to ensure optimum damping of vibrations. Torsional vibrations which are due to cycle irregularities (especially at low revs) are smoothed out extremely efficiently, owing to its very flexible rubber element. This pre-tensioned rubber element ensures low-noise and vibration-free transmission, without backlash between the engine and the propeller shaft. The Bullflex coupling is secured against shearing off, both axially and radially, thus ensuring safe transmission under all circumstances.

Another strong point of the Bullflex coupling is the excellent alignment of the propeller shaft. Perfect alignment of engine and propeller shaft often tends to be a rather time consuming affair, but the Bullflex comes to the aid of the installation engineer. Even with a misalignment of 2°, the shaft will remain perfectly centered onto the flange of the reverse gearbox. On account of a special centering ring, high shaft revolutions are entirely possible and even in reverse gear, the shaft will remain perfectly centered. The nontapered clamping hub ensures easy installation and - probably even more important: easy dismantling of the shaft assembly. This in contrast with a tapered clamping hub. Costly machining of the shaft, such as tapering and keyway-cutting is no longer required. Just cut the shaft to length, free of burrs, degrease and install. Bullflex couplings no. 1, no. 2 and no. 4 have a 4" connection for the gearbox. Models no. 8, 12 and 16 feature both a 4" and a 5" connection. Bullflex model 32 is provided with 6 threaded M16 holes on a pitch circle diameter of Ø 120,65 mm (4.75 inch). This enables mounting of the Bullflex couplings to most models of gearboxes, made by Hurth, Velvet, TD, ZF and P.R.M.

If required, VETUS can also supply the required fastenings for installation of the Bullflex onto the gearbox.

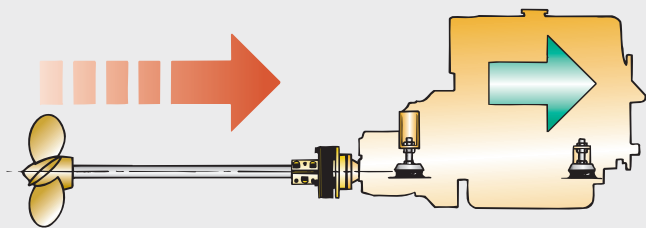
Technical data:

Type Bullflex	DIN 6270 B = pleasure craft kW (HP)/ 100 shaft RPM	DIN 6270 A = commercial craft kW (HP)/ 100 shaft RPM	maximum torque Nm		max. r.p.m. at zero misalign- ment	max. r.p.m. at 2° misalign- ment	D mm	L mm	d mm	d inch
			DIN 6270B	DIN 6270A						
1	0.8 (1.1)	0.5 (0.7)	75	45	7000	3500	100	85	20, 25	1.00
2	1.6 (2.1)	0.9 (1.3)	150	90	6500	3250	120	120	20, 25	1.00
4	3.1 (4.3)	2.1 (2.8)	300	200	6000	3000	150	152	25, 30	1.00
8	6.3 (8.5)	4.3 (5.8)	600	410	5000	2500	170	166	30, 35, 40	1.25, 1.50
12	9.8 (12.8)	7.1 (9.6)	900	540	4000	2000	200	177	35, 40, 45	1.50, 1.75
16	12.6 (17.1)	9.8 (13.3)	1200	935	4000	2000	205	197	40, 45, 50	1.50, 1.75, 2.00
32	23.0 (31.3)	18.6 (25.3)	2200	1780	3600	1800	260	263	40, 50, 60, 70	1.75, 2.00



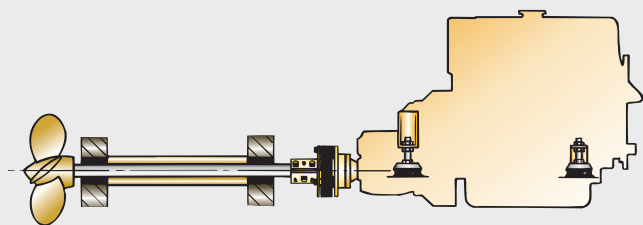


The Bullflex coupling has a built-in thrust damper, thus reducing axial vibrations. This ensures smooth transmission of the thrust onto the engine and engine mountings, which are thus subjected to lower loadings. Result: less vibrations.

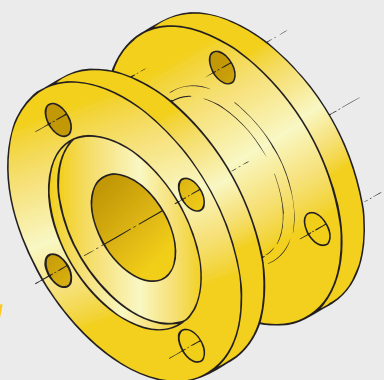


An engine on flexible mountings will by definition, always move. When the propeller shaft is installed rigidly - which means to say: supported by two or more non-flexible bearings - the propeller shaft should not be affected by engine movements.

If this should happen, damage of engine mounting, coupling and sealing of the shaft may result. Where a rigid shaft assembly is installed, the centering ring can be removed from the Bullflex coupling. This must be done if the distance between the output FLANGE of the gearbox and the first shaft bearing is less than 20 times the shaft diameter. Pendulum movements of the flexibly mounted engine will then not be transmitted onto the propeller shaft, but will be effortlessly absorbed by the Bullflex coupling. Naturally, removal of the centering ring has no adverse effects on the vibration damping properties. Where the propeller shaft is supported by one rigid bearing only, the Bullflex coupling - with its centering ring installed - will function as a flexible ball joint. The propeller shaft will thus be supported and centered inside the Bullflex coupling, regardless of any engine movements.



The hydraulic pump unit of some hydraulic gear boxes is positioned in such a way that it will be impossible to install the flexible coupling directly onto the output FLANGE of the gearbox. In such cases, an intermediate FLANGE will have to be fitted as well.



FLANGE

Advantages of the VETUS Bullflex coupling

- very high flexibility.
- optimum damping of vibrations.
- secured against shearing off (axially and radially).
- misalignment of up to 2° permissible.
- excellent centering of the shaft, allowing for high shaft revolutions, even at 2° misalignment.
- the shaft will remain centered even in reverse gear.
- possibility to remove the centering ring.
- built-in thrust damper.
- non-tapered clamping hub, for perfect centering and easy assembly/dismantling.

BULFL0120	Type Bullflex 1	shaft Ø 20 mm
BULFL0125	Type Bullflex 1	shaft Ø 25 mm
BULFL0220	Type Bullflex 2	shaft Ø 20 mm
BULFL0225	Type Bullflex 2	shaft Ø 25 mm
BULFL0425	Type Bullflex 4	shaft Ø 25 mm
BULFL0430	Type Bullflex 4	shaft Ø 30 mm
BULFL0830	Type Bullflex 8	shaft Ø 30 mm
BULFL0835	Type Bullflex 8	shaft Ø 35 mm
BULFL0840	Type Bullflex 8	shaft Ø 40 mm
BULFL1235	Type Bullflex 12	shaft Ø 35 mm
BULFL1240	Type Bullflex 12	shaft Ø 40 mm
BULFL1245	Type Bullflex 12	shaft Ø 45 mm
BULFL1640	Type Bullflex 16	shaft Ø 40 mm
BULFL1645	Type Bullflex 16	shaft Ø 45 mm
BULFL1650	Type Bullflex 16	shaft Ø 50 mm
BULFL3245	Type Bullflex 32	shaft Ø 45 mm
BULFL3250	Type Bullflex 32	shaft Ø 50 mm
BULFL3260	Type Bullflex 32	shaft Ø 60 mm
BULFL3270	Type Bullflex 32	shaft Ø 70 mm
BULFL011	Type Bullflex 1	shaft Ø 1"
BULFL021	Type Bullflex 2	shaft Ø 1"
BULFL041	Type Bullflex 4	shaft Ø 1"
BULFL0814	Type Bullflex 8	shaft Ø 1¼"
BULFL0812	Type Bullflex 8	shaft Ø 1½"
BULFL1212	Type Bullflex 12	shaft Ø 1½"
BULFL1213	Type Bullflex 12	shaft Ø 1¾"
BULFL1612	Type Bullflex 16	shaft Ø 1½"
BULFL1613	Type Bullflex 16	shaft Ø 1¾"
BULFL162	Type Bullflex 16	shaft Ø 2"
BULFL3213	Type Bullflex 32	shaft Ø 1¾"
BULFL322	Type Bullflex 32	shaft Ø 2"
BUL16SET	Set studs & bolts	(7/16" UNF) for couplings type Bullflex 12 and 16
BUL32SET	Set studs & bolts (M16)	for couplings type Bullflex 32
TMCSET	Set studs & bolts	for couplings type Uniflex/Bullflex with Technodrive Gearbox
UNIS4T/5	Set studs & bolts (M10)	for couplings type Uniflex and Bullflex 1 - 8, for flange 4"/5"
FLANGE1	Adapter FLANGE	for Yanmar KM2C; KMP2P; KM3P, Kanzaki KC30; KC45 and KC100
FLANGE2	Adapter FLANGE	for Volvo MS10A/L; MS15A/L & MS25A/L
FLANGE2A	Adapter FLANGE	for Volvo MS; MSB and all types MS2
FLANGE3	Adapter FLANGE	for Yanmar KM4A; KM4A1; KMH4A; KBW20-1; KBW21 and Kanzaki KC180



Cathodic protection by means of anodes is a "must" for the protection of all metal parts under water. Therefore, not only for steel boats, but also for wooden, fibreglass and aluminium hulls, anodes are required. The material of VETUS zinc anodes is of the highest possible standard, the U.S. mil.-A-18001 K. specifications. Anodes which do not meet these specifications have little or no effect at all. VETUS aluminium anodes consist of an aluminium-indium-zinc alloy Mil - A - 24779 (SH). All VETUS anodes are streamlined and mounted either with specially made studs, which can be welded to a steel hull, or special through-hull bolts for fibreglass and wooden boats. **We supply these studs and bolts separately.**

When ordering, please always specify the material of the hull. All metal parts must have a direct contact with the anode. Therefore the bolts supplied for e.g. fibreglass hulls must have a wire-connection, so that contact can be made with the metal parts. (See drawing B). On fibreglass and wooden boats only the **metal** parts must be protected. For anodes type 8 you need **one** (1) connection kit and for types 15, 15S, 25, 25S and 35 you need **two** (2) of these. All VETUS anodes have a protective layer of paint at the mounting side to prevent damage to the paint work of your boat.



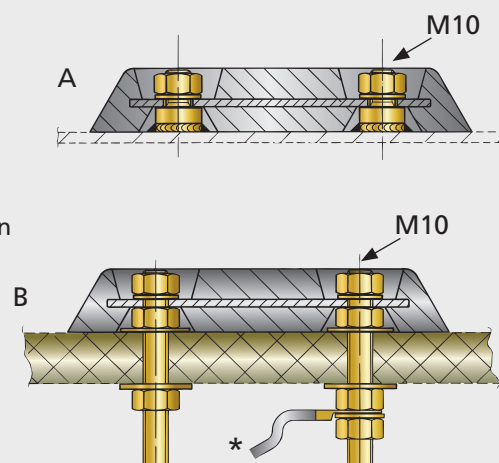
Zinc-anodes for VETUS bow thrusters
See pricelist.

How to install weld-on studs for steel hulls

Anodes that are installed by means of studs are much easier to replace than anodes that are welded directly to the ship's hull.

For fibreglass and wooden hulls.

* Copper wire to connect parts to be protected.



Shaft anodes, for installation directly to the propeller shaft

VETUS shaft anodes are designed to create a perfect fit on the shaft. Even as the anode is eroded, it cannot come loose. An interlock system is incorporated in both halves, to ensure that the bolt holes are in perfect alignment. The material around the holes is also increased to prevent the bolts becoming loose.

Shaft anodes are not recommended on high speed vessels. They create turbulence in the water flow around the propeller and as they erode, can cause imbalance in the propeller shaft. These problems do not occur when using the VETUS propeller nut with integrated zinc anode.

On a project basis, shaft anodes are supplied with a metal bracket.

Type	Shaft diameter	Anode diameter	Length	Weight
ZINKVAS25C	25 mm	58 mm	56 mm	0,50 kg
ZINKAS30C	30 mm	58 mm	60 mm	0,55 kg
ZINKAS35C	35 mm	65 mm	65 mm	0,68 kg
ZINKAS40C	40 mm	81 mm	71 mm	1,30 kg
ZINKAS45C	45 mm	81 mm	71 mm	1,10 kg
ZINKAS50C	50 mm	81 mm	71 mm	1,00 kg
ZINKAS60C	60 mm	105 mm	96 mm	2,60 kg

Type	Shaft diameter	Anode diameter	Length	Weight
ZASA1C	1"	54 mm	55 mm	0,40 kg
ZASA1¼C	1.25"	61 mm	60 mm	0,53 kg
ZASA1½C	1.5"	70 mm	66 mm	0,74 kg
ZASA1¾C	1.75"	80 mm	70 mm	1,07 kg
ZASA2C	2"	90 mm	74 mm	1,40 kg



Aluminium or zinc anodes?

For vessels, which mostly cruise on **inland (fresh)** waters, we recommend **aluminium** anodes, since aluminium has a greater difference of potential with other metals than zinc. This is very important, as fresh water provides a higher electrical resistance than salt water. For sailing on **salt water or brackish water**, we recommend the use of zinc anodes. Aluminium anodes also function well in salt water, but are sacrificed at a much faster rate. We do not recommend the use of **magnesium** anodes, as the difference of potential with other metals is too great, which could cause damage to the hull paint, especially when sailing in brackish or salt waters.

ALU35C

ZINK35C

ALU25C

ZINK25C

ALU15C

ZINK15C

ALU25SC

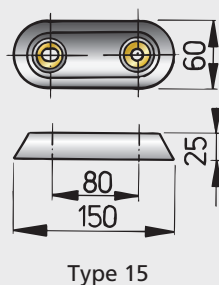
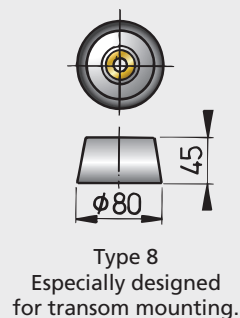
ZINK25SC

ALU15SC

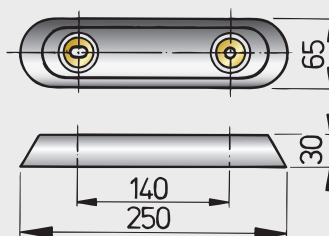
ZINK15SC

ALU08C

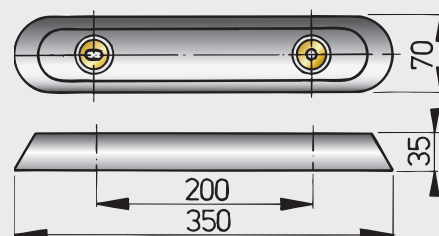
ZINK08C



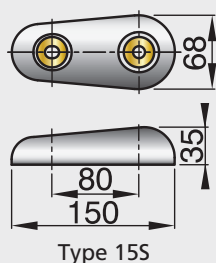
Type 15



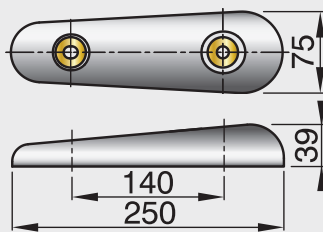
Type 25



Type 35



Type 15S



Type 25S

Weights of the aluminium and zinc anodes

	Type 8	Type 15/15S	Type 25/25S	Type 35
Zink-anode	1,0 kg	1,0 kg	2,3 kg	4,5 kg
Aluminium anode	0,45 kg	0,45 kg	1,1 kg	2,0 kg

Directives for the protection of steel hulls:

Exposed surface protected per anode, both aluminium and zinc.

Type	Adequate paint system	Worn out paint	Unpainted bare
8	12 m ²	6 m ²	3,5 m ²
15/15S	14 m ²	7 m ²	3,5 m ²
25/25S	24 m ²	12 m ²	6,5 m ²
35	40 m ²	20 m ²	10,5 m ²

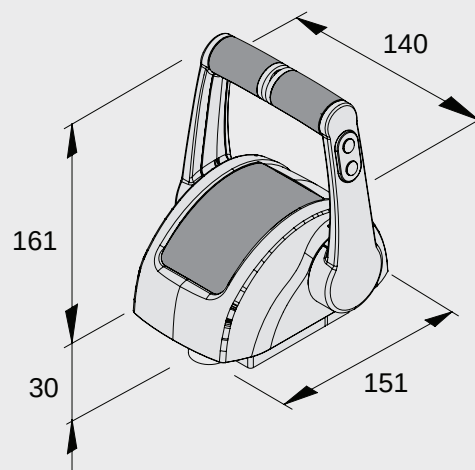
NEW



EC4

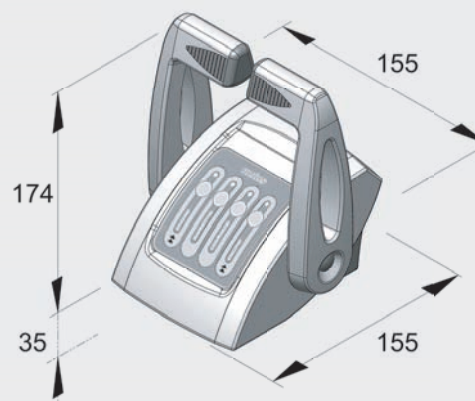
This new high quality electronic engine control lever is suitable for both power and sailing yachts. Made from high grade **stainless steel**, it is equipped with the latest technology and the following features:

- Easy installation and configuration.
- Casing in hand-polished stainless steel (AISI 316).
- Communication via CANbus protocol.
- Suitable for mechanically controlled engines.
- Suitable for combination mechanical /electronic engine control.
- Suitable for fully electronic engine control.
- Suitable for mechanical or hydraulic gearboxes and stern drives.
- Suitable for operating 1 or 2 engines.
- Waterproof (IP67).
- Multiple helm station possibilities.
- Identical controls at all helm stations.
- Optional trolling valve control.
- Optional trim tab or bow thruster control.



EC3

Model EC3 is the predecessor to the EC4. The housing of this simpler model is made from composites. All other technical specifications are the same as the EC4.

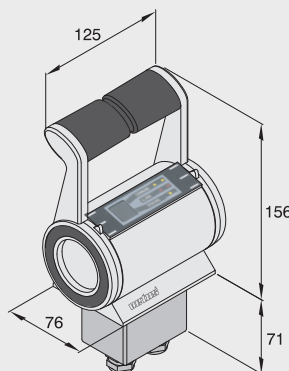


REXROTH is possibly the foremost German control manufacturer, renowned for the design and build of electronic remote controls for large commercial craft. It goes without saying that these are highly sophisticated and extremely reliable engine control systems. In close cooperation with Rexroth, VETUS offers a version of these controls for pleasure craft and smaller commercial vessels.

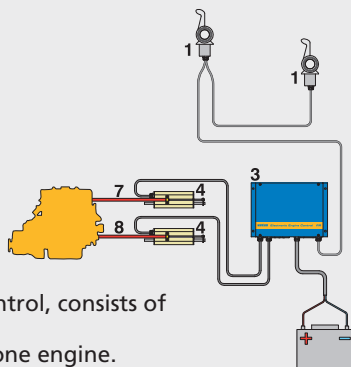
The main advantages of this VETUS-REXROTH electronic remote control system are:

- Installation is simple and fast compared with mechanical systems.
- This system offers superior performance and fingertip control compared with conventional push-pull cables, especially where long cables and/or multiple control stations are fitted.
- Electric cabling is much easier to install than push-pull cables, as there are no limitations in length or bending radius.
- The inevitable lost movement and mechanical friction of push-pull cables is completely eliminated.
- The control levers are **absolutely watertight** according IP66 and can be fitted externally.
- The control handles are available in the colours silver/grey or black.

The controls handles for one engine or for two engines are externally very similar in appearance.



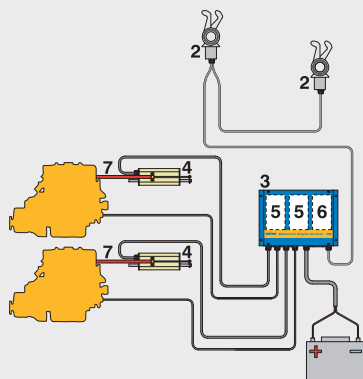
Installation of one engine and two control positions. Both the throttle and the gearbox are mechanically operated.



The VETUS electronic engine control, consists of the following components:

1. Two single lever controls for one engine.
3. One central control unit.
4. One servo motor to control the mechanically operated gearbox and another servo motor to control the mechanically operated throttle.
7. One push-pull cable to the fuel injection pump.
8. One push-pull cable to the gearbox.

Installation of two engines and two steering positions. The throttle is mechanically controlled and the gearbox is electrically operated. An interface card for autosynchronisation of the two engines is also included.



The VETUS electronic engine control, consists of the following components:

2. Two single lever controls for two engines.
3. One central control unit.
4. Two servo motors for the mechanically operated fuel injection pumps.
5. Two interface cards for the electrically operated gearboxes.
6. One interface card for auto-synchronisation of the two engines.
7. Two push pull cables to the fuel injection pumps.

Single lever control handle for one engine (throttle and gearshift) (1)

RECO1

RECO1S



Single lever control handle for two engines (Throttle and gearshift) (2)

RECO2

RECO2S





VETUS single lever remote control for side mounting, with stainless steel (AISI 316) handle and housing.

The push-pull cables may be installed both horizontally and vertically.
Dimensions:
142 x 122 x 85 x 200 mm
(l x w x h x handle length from centre).
Mechanism length: 243 mm from centre.

SISCO

VETUS single lever remote control for side mounting with stainless steel (AISI 316) handle and plastic housing.

The push-pull cables may be installed both horizontally and vertically.
Dimensions:
147 x 127 x 85 x 200 mm
(l x w x h x handle length from centre).
Mechanism length: 243 mm from centre.

SICO



Top-mounting



VETUS single lever remote control for top mounting. The housing and the handle are made of high-gloss polished stainless steel (AISI 316).

Dimensions:
162 x 104 x 237 mm.
(l x w x h) incl. handle
Mechanism depth: 208 mm.

RCTOPS

Top-mounting for 2 engines

VETUS single lever remote control for top mounting. The housing and the handles are made of high-gloss polished stainless steel (AISI 316).

Dimensions:
162 x 200 x 237 mm.
(l x w x h) incl. handle
Mechanism depth: 208 mm.

RCTOPTS



With cast aluminium housings and stainless steel (AISI 316) handle.

Dimensions:
162 x 104 x 237 mm
(l x w x h)
Mechanism depth: 208 mm.

RCTOPB

With cast aluminium housings and stainless steel (AISI 316) handles.

Dimensions:
162 x 200 x 237 mm
(l x w x h)
Mechanism depth: 208 mm.

RCTOPTB



All remote controls shown above, have as standard, a neutral safety switch, which prevents the engine from being started whilst the gearbox is engaged.

All stainless steel handles are provided with a red knob. A black knob is available as an extra; please see the price list.

NEW



Additional option for remote controls shown on this page: complete stainless steel handles.

RC03RG

RC06RG

Push-pull cables

Type LF "low friction"

This high quality cable utilises a multi-strand wire core for superb strength and flexibility. The core is provided with a ribbed synthetic sheath, ensuring that contact with the outer casing is kept to a minimum. Therefore, LF type cables are ideal for long and complicated runs and for dual station installations. This cable can be used with VETUS, Morse, Teleflex, Ultraflex and other engine remote controls.

- Lengths from 0.5 to 10 metres in half metre steps.
- Lengths up to 17 metres available to special order.
- Nominal travel: 75 mm.
- Minimum bend radius: 165 mm.
- Standard rod 10-32 UNF threaded ends.

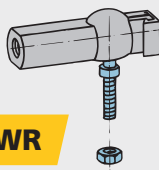
CABLE

Stroke: 76,2 mm (3")
Thread: 10-32 UNF



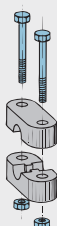
As an extra we can supply ball joints and cable clamps for our VETUS push-pull cables.

KOGELGEWR



Ball-joint

KABELKL



Cable clamp

Shut-off control type DC

To be used with our VETUS push-pull cables.

- Corrosion free.
- 30° mounting bracket.
- Easy installation both horizontally and vertically.

DC

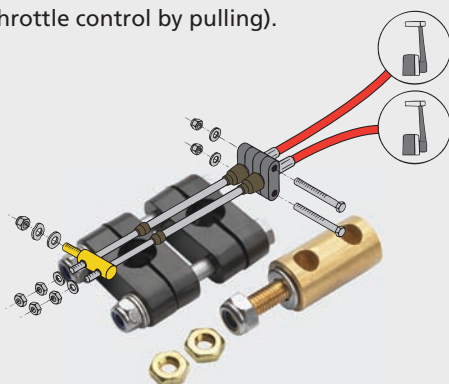


Dual station units type DS

These units combine the action of the single lever control from either of two command stations and provide a single output to the engine throttle lever or the gearbox lever. Per engine two dual station units are needed, one for the gearbox (type DS-UNIT) and one for throttle (type DS-KITF).

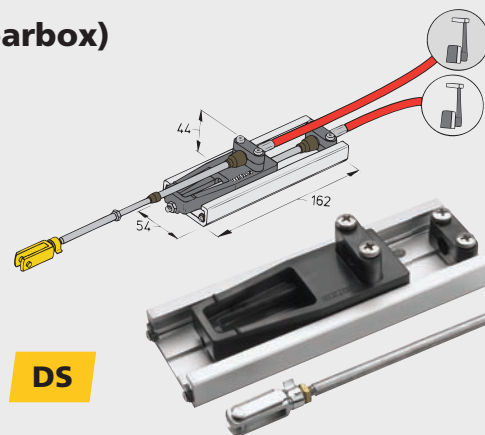
DS-kit throttle

(only suitable for throttle control by pulling).



DSKITF

DS-unit (gearbox)



DS

Black/silver plastic housings with black metal and plastic levers

(without neutral safety switch)

AFSTTOP

Top mounting



AFSTTOPT

Top mounting for 2 engines





All VETUS cooling water strainers are provided with a **transparent** cover, allowing easy inspection of the filter without dismantling. Cleaning of the filter can be achieved quickly and easily. Due to the large active surface however, the filter seldom needs to be cleaned.



This water strainer is available with **three** different hose connections.

Materials:

Housing = Polypropylene GF
Filterelement = HD Polyethylene
Cover = Styrol/Acrylnitril SAN

internal hose Ø		recommended input l/min.
mm	inches	
12,7	1/2	23
15,9	5/8	35
19,1	3/4	51

Also ideal for use with shower drain pumps

This water strainer is suitable for only one hose diameter.

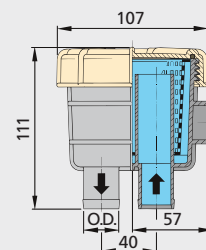
Materials:

Housing = Polypropylene GF
Filter element = Polyamide
Cover = A.B.S

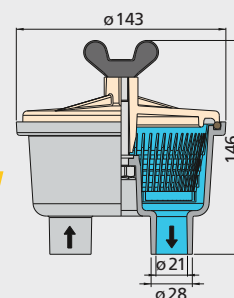
internal hose Ø		recommended input l/min.
mm	inches	
28,5	1 1/8	114

With these connection parts 2 water strainers type 330/32 or 470/32 can be interconnected. Maximum total capacity 460 L/min. Type 470 in this case is not 360° adjustable.

CONN330

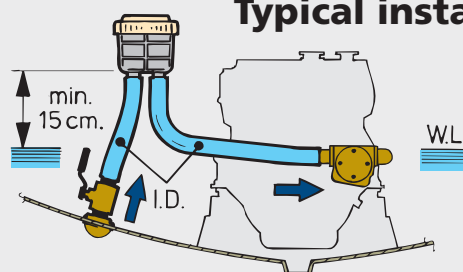


FTR140



FILTER150

Typical installation

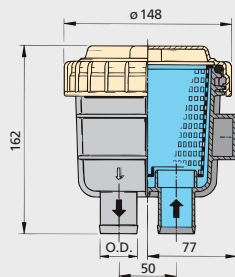




This water strainer is available with **six** different hose connections.

Materials:

Housing = Polypropylene GF
Filterelement = HD Polyethylene
Cover = Styrol/Acrylnitril SAN



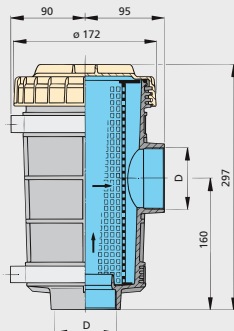
FTR330

internal hose Ø		recom- mended input l/min.
mm	inches	
12,7	1/2	23
15,9	5/8	35
19,1	3/4	51
25,4	1	91
31,8	1 1/4	143
38,1	1 1/2	200

Available with 3 different threaded connection diameters. The water strainer type 1320 is provided with adjustable brackets for bulkhead mounting.

Materials:

Housing = Polypropylene GF
Filter element = Polypropylene
Cover = A.B.S.



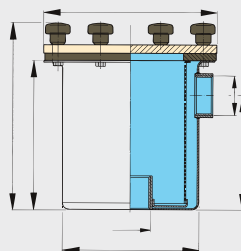
FTR1320

D	internal hose Ø		recom- mended input l/min.
	mm	inches	
G 1 1/2	38	1 1/2	205
G 2	50	2	365
G 2 1/2	63	2 1/2	570

Available with G 1 1/2 threaded connections: A set of mounting brackets (not shown) can be supplied as an option. Please see pricelist.

Materials:

Housing = stainless steel.
Filter element = stainless steel.
Cover = acrylic.



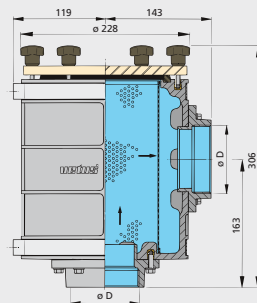
FTR525

D	internal hose Ø		recom- mended input l/min.
	mm	inches	
G 1 1/2	38	1 1/2	205

Available with 2 different threaded connection diameters. Filter 1900 comes complete with adjustable mounting brackets for bulkhead installation.

Materials:

Housing = polyethylene.
Filter element = stainless steel.
Cover = acrylic.



FTR1900

D	internal hose Ø		recom- mended input l/min.
	mm	inches	
G 2 1/2	63	2 1/2	570
G 3	76	3	820

Cooling water hose

Applications:

- Suction and transportation of cooling water from outside (such as, connection skin fitting - cooling water strainer - cooling water pump)
- Transportation of warm cooling water (e.g. between engine and keel cooler)
- Suitable for suction and pressure
- Suitable for salt and fresh water
- Suitable for all cooling fluids
- Temperature resistant between -30°C and +120°C
- Made of EPDM-rubber, with synthetic fabric and spiralled steel reinforcement
- Operating pressure: 2,5 bar maximum
- Suitable for use as exhaust hose

Code	Internal dia	External dia	Weight	Max. pressure	Bending radius
MWHOSE19	19 mm 3/4"	28 mm	0,39 kg/m	2,5 bar	29 mm
MWHOSE25	25 mm 1"	34 mm	0,51 kg/m	2,5 bar	38 mm
MWHOSE32	32 mm 1 1/4"	41 mm	0,71 kg/m	2,5 bar	48 mm
MWHOSE38	38 mm 1 1/2"	47 mm	0,88 kg/m	2,5 bar	57 mm
MWHOSE51	51 mm 2"	60 mm	1,15 kg/m	2,5 bar	77 mm

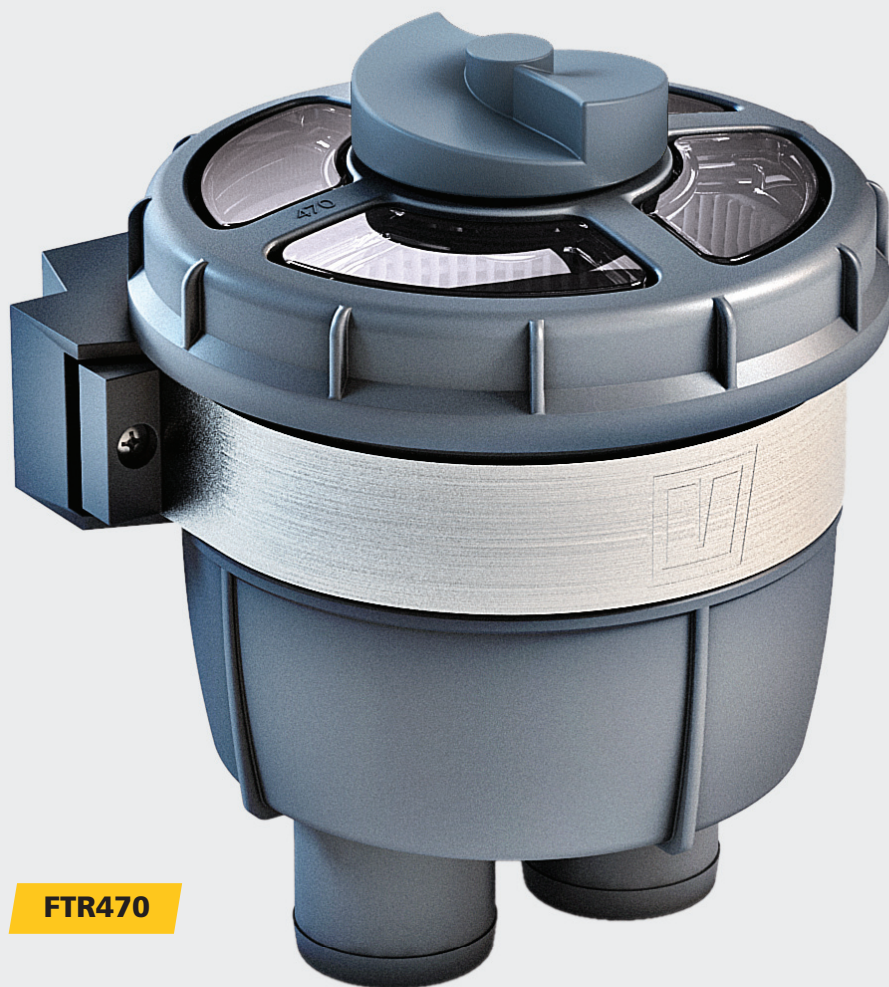
MWHOSE



Type FTR470

Like other VETUS water strainers the cover is transparent, allowing easy inspection for blockages. The cover is removable by simply unscrewing a single central knob.

The strainer can be easily mounted using the separate wall bracket supplied and can be rotated 360° to align the hose connections. The polished stainless steel mounting bracket clamps it securely in place.



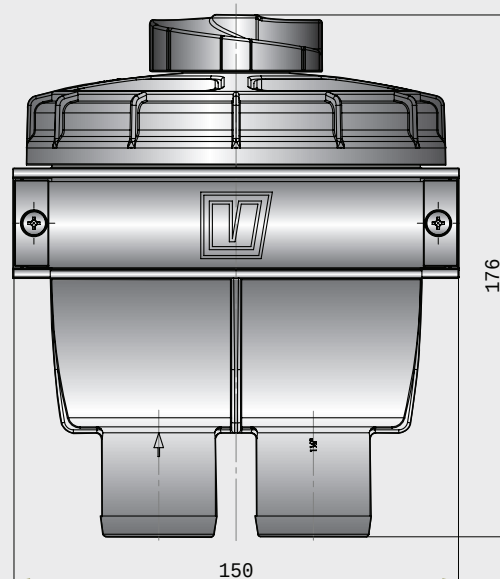
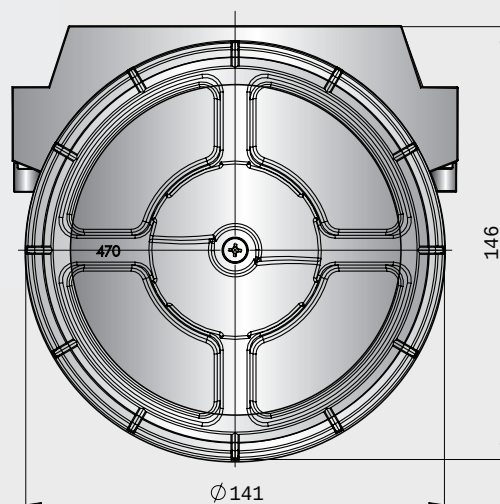
FTR470

- Easily removable cover.
- Rotatable.
- Very easy installation.

Materials:

Housing	: Polypropylene GF
Filter element	: HD Polypropylene
Cover	: Polypropylene GF
	/Polycarbonate
Mounting bracket	: Stainless steel

Internal hose Ø		recommended input l/min.
mm	inches	
12,7	½	23
15,9	⅝	35
19,1	¾	51
25,4	1	91
31,8	1¼	143
38,1	1½	200



Type FTR210

For installations where the cooling water strainer must be mounted close to or below the waterline and for commercial applications, VETUS bronze cooling water strainers are an ideal solution. Like other VETUS water strainers the cover is transparent, allowing easy inspection for blockages. The cover is removable by simply unscrewing a single central knob.

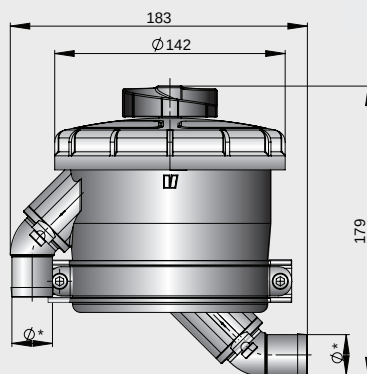
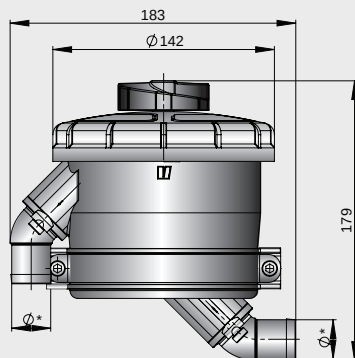
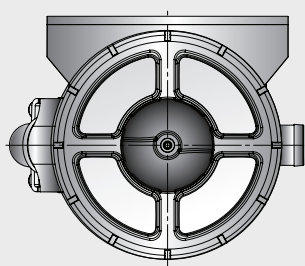
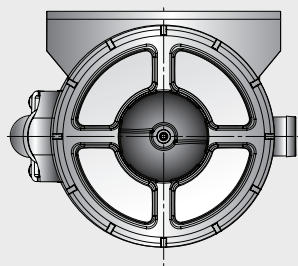
Three models of strainer are available for hose diameters of ½", ¾" and 1". The hose connections are angled 45° and rotate through 360°. The strainer can be either base or side mounted. A water drain is provided for winterisation.

Suitable for 0.5 bar under pressure to 5 bar over pressure Fresh or saltwater maximum water temperature 55°C.

FTRF210



FTRW210



Internal hose Ø		recommended input l/min.
mm	inches	
12,7	½"	23
19,1	¾"	51
25,4	1"	91

Materials:

Filter housing, cover frame

and hose connections : nickel plated bronze

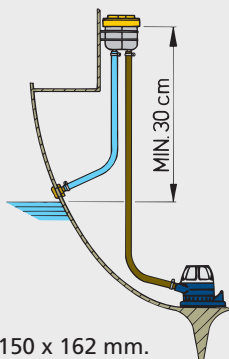
Cover : polycarbonate

Filter element : polyethylene

Mounting bracket : stainless steel

Bilge water/oil separator

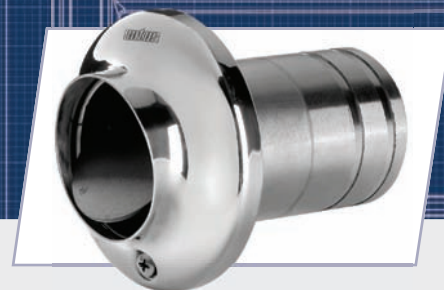
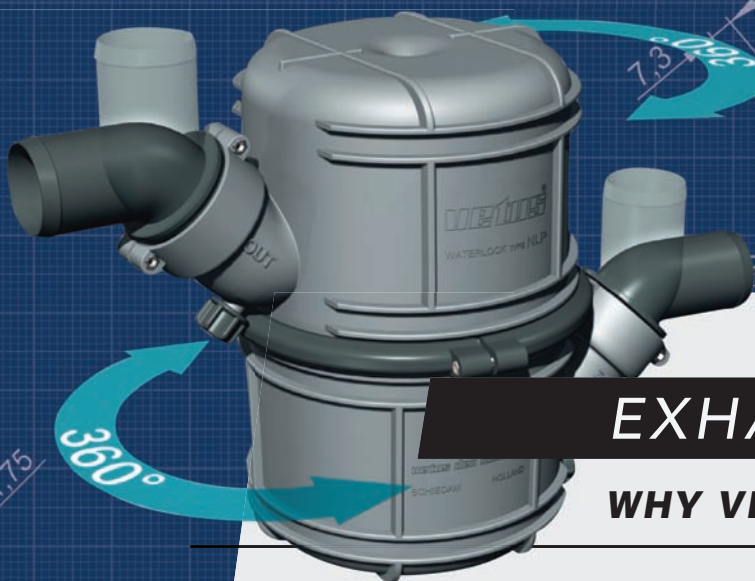
This VETUS separator collects and retains oil and grease from the bilge water. The filter element is replaceable and has a capacity of 320 grams, which is the average quantity of oil in 8.000 litres of bilge water. It will remove 95% of oil in the bilge water, with a maximum contamination level of 300 mg/l (p.p.m.) The bilge pump to be used in combination may have a maximum capacity of 25 litres/ minute. The connections are for Ø 19 mm hoses.



Dimensions:
l x b x h: 148 x 150 x 162 mm.

BISEP19

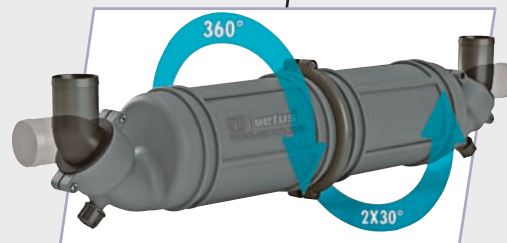




EXHAUST SYSTEMS

WHY VETUS EXHAUST SYSTEMS?

- Meet ABYC standards.
- Rotating connections and bodies for easy installation of hoses from any angle.
- Excellent noise reduction combined with minimal back pressure.
- Combination of gooseneck/muffler and waterlock/muffler.
- Airvent ASD the only one on the market with virtually no maintenance.
- Can be easily dismantled by hand for cleaning.





VETUS, creators of...

VETUS has a rich history in developing exhaust systems. When developing a new exhaust component, obviously the main goal is to reduce the sound level as much as possible. The challenge is that the back pressure may not become too high. Excessive back pressure can have damaging consequences for the engine.

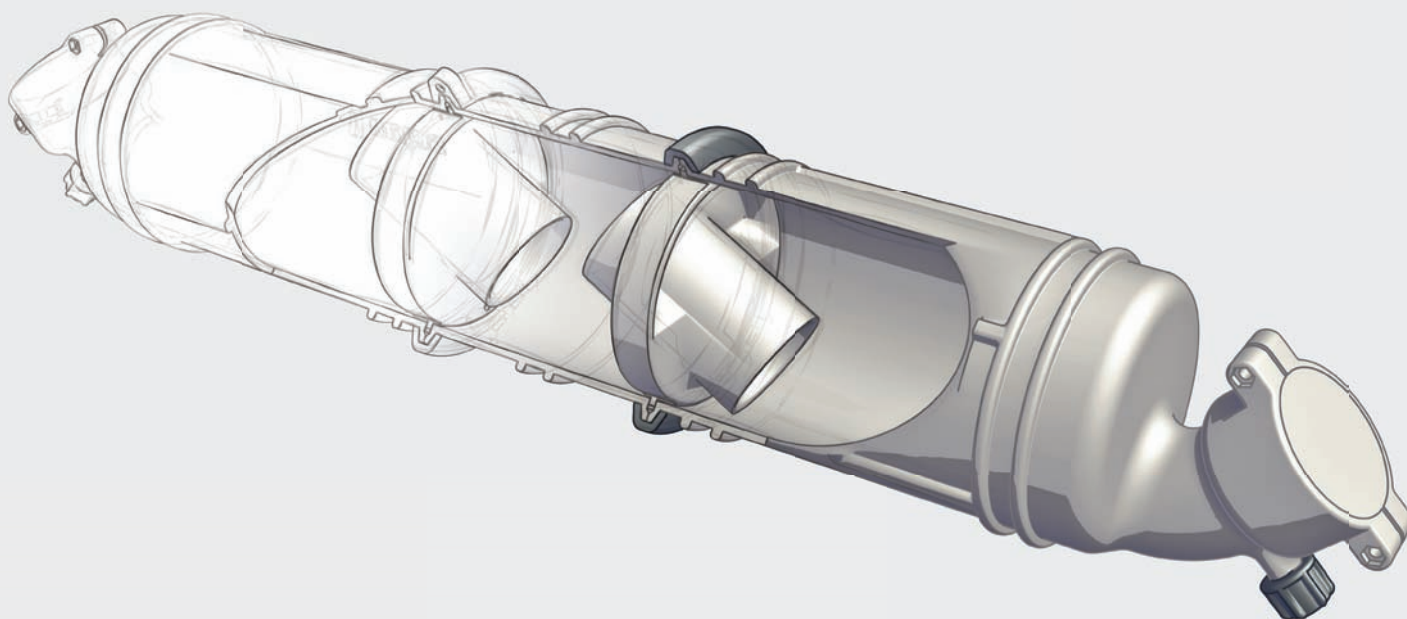
Various models

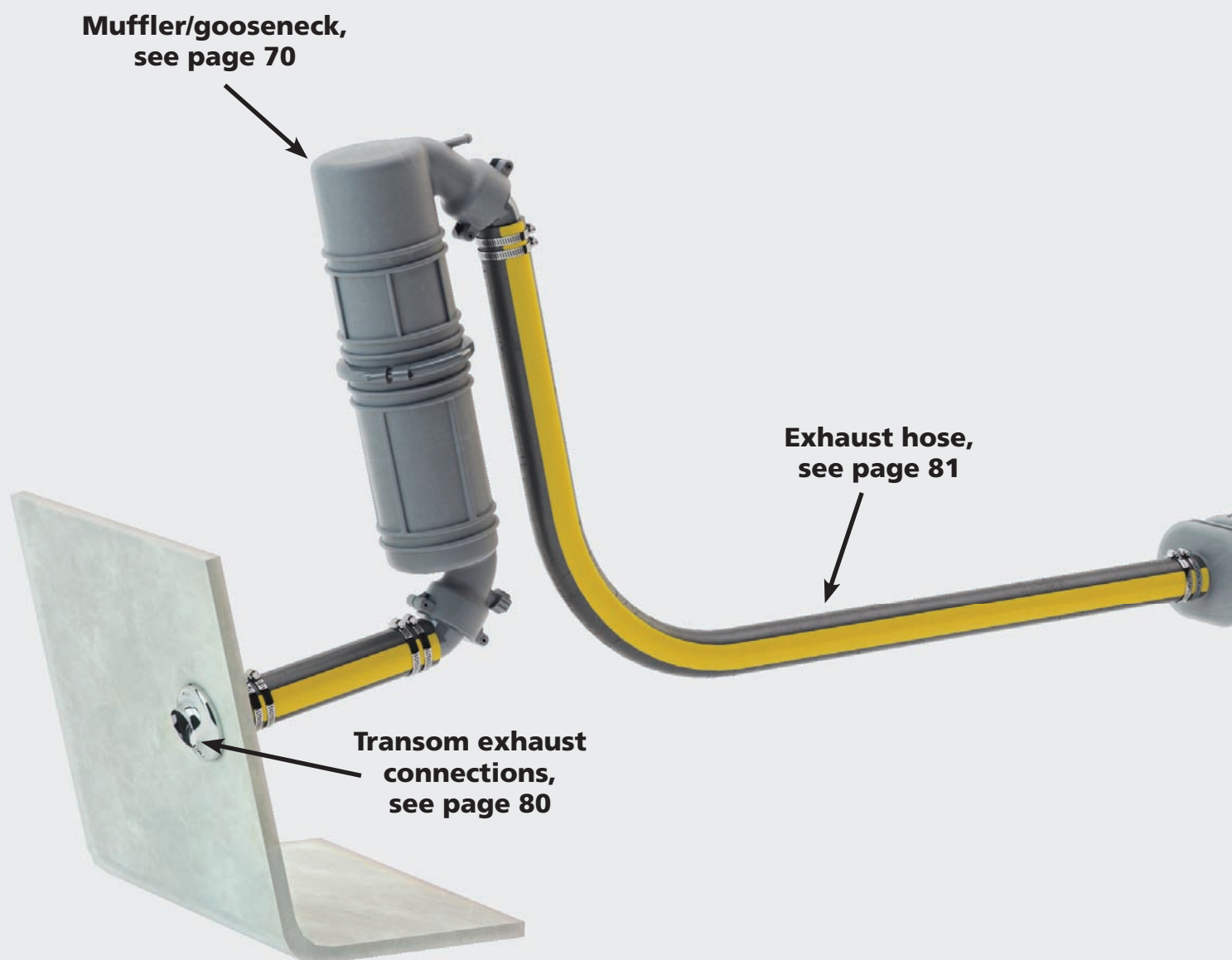
Because not every boat or every engine space is the same, over the years VETUS has developed a wide range of models to suit different applications. For example, in addition to the NLP which is installed vertically, there is also the NLPH which can be used when a horizontal installation is easier. Following the successful introduction of a two chamber waterlock, VETUS now launches a new model which reduces the sound level even further.

10 dBA higher noise reduction

With the view that optimal noise reduction was not yet reached, VETUS engineers have worked hard to develop a three chamber waterlock. As more chambers create more back pressure, this was a huge challenge. Nevertheless, the engineers succeeded in designing a three chamber waterlock with a spectacular noise reduction of 10 dBA more than the two-chamber version, whilst maintaining acceptable back pressure.

A true innovation in the field of exhaust systems!





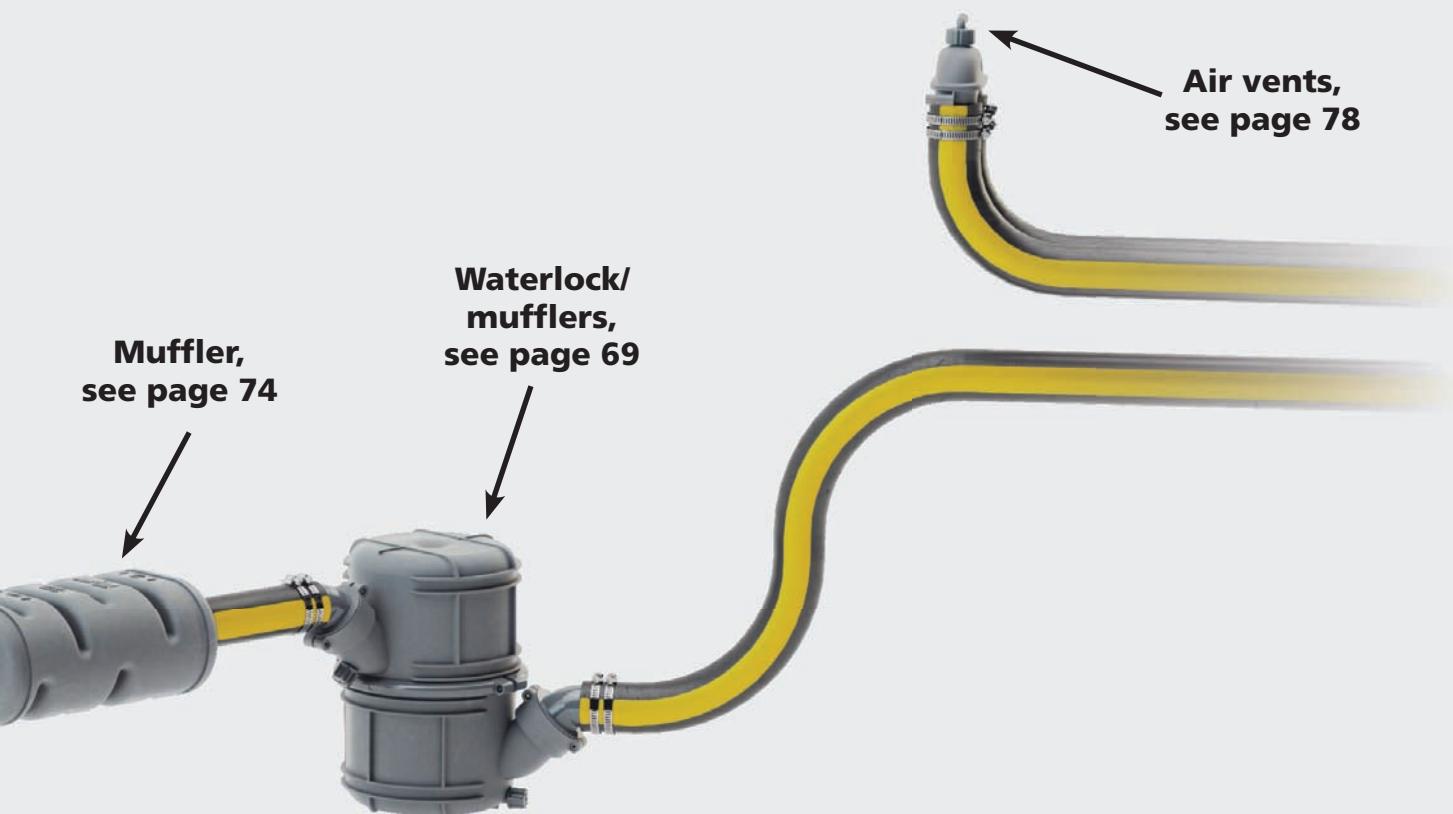
**Muffler/gooseneck,
see page 70**

**Exhaust hose,
see page 81**

**Transom exhaust
connections,
see page 80**

The right combination of engine/silencer ensures optimum sound attenuation. The table below shows the optimal combinations.

mm	Exhaust mm	Type LP, MF, NLP, LSS, LSL	Type MV	Type MGP, MGS, MGL, LSG
30	30	13,6 hp / 10 kW		
40	40	24,5 hp / 18 kW		
45	45	30 hp / 22 kW		
51	51	38 hp / 28 kW		
60	60	53 hp / 39 kW		46 hp / 34 kW
76	76	86 hp / 63 kW		75 hp / 55 kW
90	90	121 hp / 89 kW	141 hp / 103 kW	105 hp / 77 kW
102	102	155 hp / 114 kW	181 hp / 133 kW	136 hp / 100 kW
102	127			173 hp / 127 kW
127	127	241 hp / 177 kW	281 hp / 206 kW	211 hp / 155 kW
127	152			256 hp / 188 kW
152	152	345 hp / 254 kW	403 hp / 296 kW	302 hp / 222 kW
152	203			420 hp / 308 kW
203	203			539 hp / 396 kW
203	254			691 hp / 508 kW
254	254			844 hp / 620 kW





Why use a water-injected "wet" exhaust system?

The following factors are of great importance:

- 1) Exhaust gas **temperatures** can reach very high levels. A diesel engine can easily produce an exhaust gas temperature of 600°C or more.
- 2) The **speed** with which sound can be transmitted through air is dependent on the temperature of the air. This applies to exhaust gases as well. The higher the exhaust temperature, the higher the speed of sound through the gas.
- 3) The **sound level**, i.e. the relative volume of sound as experienced by the human ear, is in turn dependent on the speed of sound. As the speed of sound transmission reduces, so the sound level will reduce proportionally.

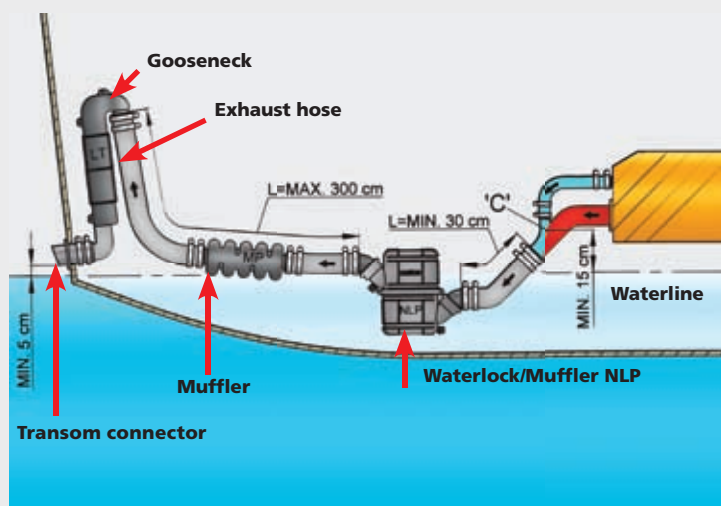
In the past, many boats used a "dry" exhaust system, in which the exhaust gases were transported to outside the hull without any form of cooling. The resultant hot exhaust pipe had to be thoroughly insulated, but even so, it produced a tremendous amount of noise. However, reduction of exhaust gas temperature to about 40° or 50°C can be achieved by injecting the engine cooling water into the exhaust line. This is how a "wet" exhaust system works. In addition, the typical diesel exhaust smell is also considerably reduced. A further major advantage of reducing the temperature, is the fact that all exhaust components downstream from the engine outlet can be made from rubber or synthetic materials. This permits greater design sophistication and weight reduction and ensures freedom from corrosion.

What requirements must be fulfilled by a "wet" exhaust system?

In its simplest form, a rubber hose, running from the engine directly to the transom of the boat, seems adequate enough. However, the following issues must also be taken into consideration:

- After the engine is stopped, the cooling water in the exhaust system must not be able to flow back into the engine.
- Water outside the boat must be prevented from entering the exhaust system and therefore the engine, through the transom connection.

In order to fulfil these requirements, VETUS offers a complete range of exhaust components made of synthetic materials, such as:



Exhaust system with the water injection point "C" **15 cm or more** above the waterline.

A waterlock (see pages 69 to 71) will collect the cooling water present in the system when the engine is stopped. In addition, a waterlock has great sound-deadening capabilities and acts as a very efficient muffler. The size of the waterlock is not only determined by the diameter of the exhaust hose, but also by the quantity of water that must be collected. Therefore, VETUS offers waterlocks with extra large capacity for systems with long exhaust runs.

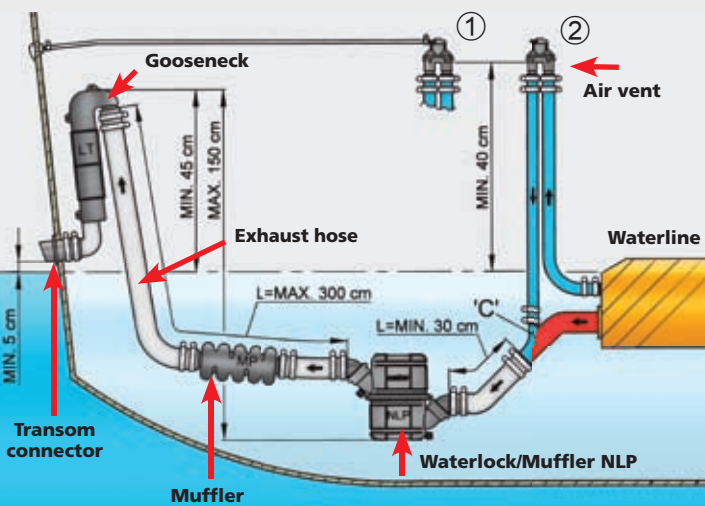
A **gooseneck** (see page 74) raises the exhaust hose above the waterline, so that water cannot backfill the exhaust system. After the engine is stopped, all cooling water in the exhaust hose will run to the lowest point of the system, which is where the waterlock should be situated. In order to limit the quantity of water, the gooseneck should be fitted as closely as possible behind the waterlock. But, if required, it may also be fitted directly onto the transom exhaust connection.

The **transom exhaust connection** (see page 80) should be fitted **above** the waterline, as a general rule.

We recommend VETUS **rubber exhaust hose** (see page 81) for all water-injected exhaust systems: VETUS exhaust hose is extremely flexible but it cannot collapse when subjected to heat and is resistant to exhaust gases, temperatures up to 100°C, and oil residues. These hoses are Lloyd's approved and satisfy the SAE J2006 R2 directives.

Always fit an **exhaust temperature alarm** (see page 75) in order to warn off excessive temperature in the exhaust system. This can happen if the cooling water flow is restricted or blocked altogether. VETUS marine diesel engines have an exhaust temperature alarm fitted as standard.

The height of the cooling **water injection** point into the exhaust system, relative to the external waterline, is of great importance. If the **water injection point is 15 cm or more above the waterline**, the cooling water may be injected directly into the exhaust system. However, if the **water injection point is less than 15 cm above the waterline (or even below it)** there is a risk that the cooling system will siphon water through the intake, once the engine is stopped. This water will fill up the exhaust system and eventually get back into the engine cylinders via the exhaust valves. This siphon action may be prevented by having a **breather hose** (1) in the cooling water line or by fitting an **air vent** (2).



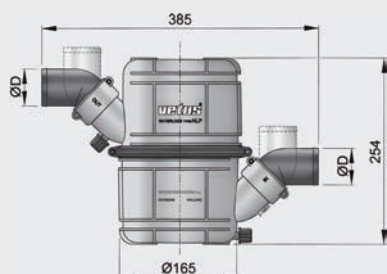
Exhaust system with the water injection point "C" **less than 15 cm** above the waterline.

Waterlock/mufflers type NLP (Ø 40-45-50-60-75-90 MM)

The NLP waterlocks are of **dual stage construction**, featuring **upper and lower** chambers with a horizontal partition plate and a riser tube through the centre. Compared with single stage waterlocks using only one chamber, these NLP waterlocks offer superior silencing of exhaust noise with minimal back pressure. Since the top chamber may be rotated through 360° and both the inlet and the outlet connectors can rotate through 360°, installation of the exhaust assembly even in confined engine spaces is greatly simplified.

How these waterlocks operate

The rotatable inlet of the waterlock is connected to the engine exhaust manifold, using VETUS exhaust hose (see page 81). The exhaust gases, mixed with cooling water are forced from the lower chamber into the upper one, via the central riser tube and then through the (also rotatable) outlet connector at the top. This outlet connector is coupled to the transom connector, again by means of VETUS exhaust hose. For optimum silencing of exhaust noise, we recommend installation of a VETUS muffler and gooseneck NLPG (see page 70) in the exhaust line, after the NLP waterlock.

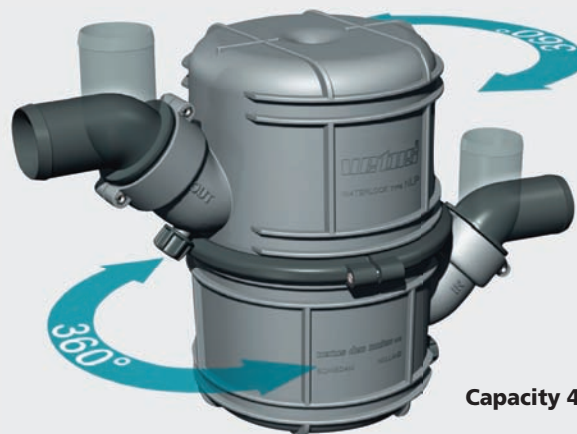


NLP40

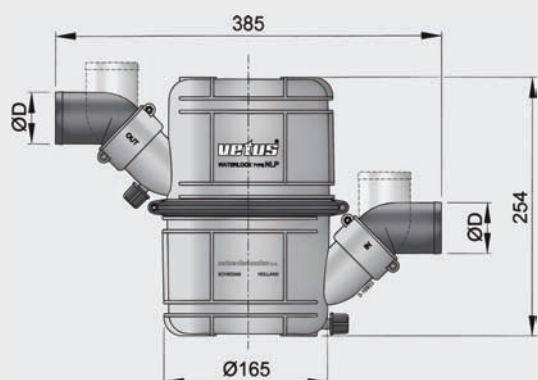
NLP45

NLP50

Suitable for exhaust hose with inside diameter of resp. Ø 40 mm, Ø 45 mm, Ø 51 mm, Ø 60 mm, Ø 76 mm or Ø 90 mm. Provided with drain plugs (for winter storage). Straps to secure the waterlock to the boat are supplied as standard. Capacity 4.5 and 10 litres.



Capacity 4.5 litres



NLP50S*

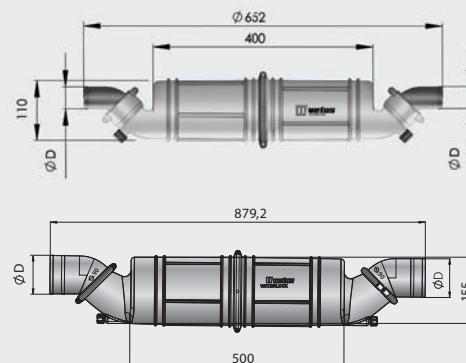
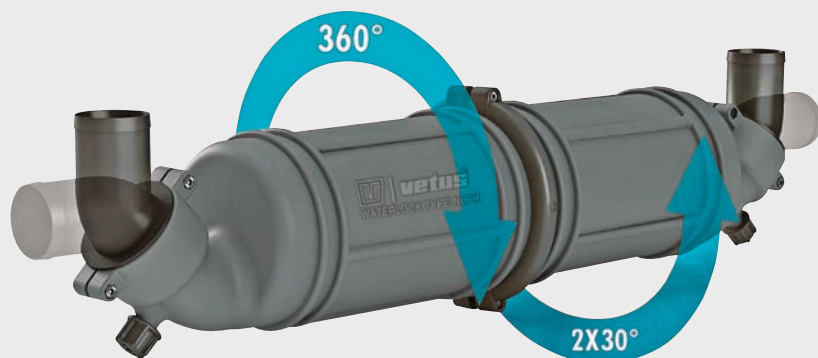
NLP60

NLP75

NLP90



Capacity 10 litres



NLPH40

NLPH60

Capacity 3 litres (40-45-50)
Capacity 10 litres (60-75-90)

NLPH45

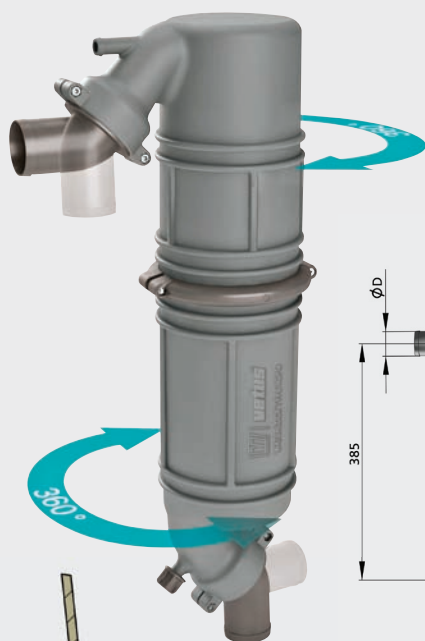
NLPH75

NLPH50

NLPH90

Waterlock / muffler, type NLPH

The construction of this new VETUS waterlock / muffler consists of two rotatable components. The hose connections are also fully rotatable, ensuring simple and time-saving installation in a wide range of applications. This combined exhaust component is designed for **horizontal** installation. Available with hose connections of Ø 40, 45, 51, 60, 76 or 90 mm.



NLPG40

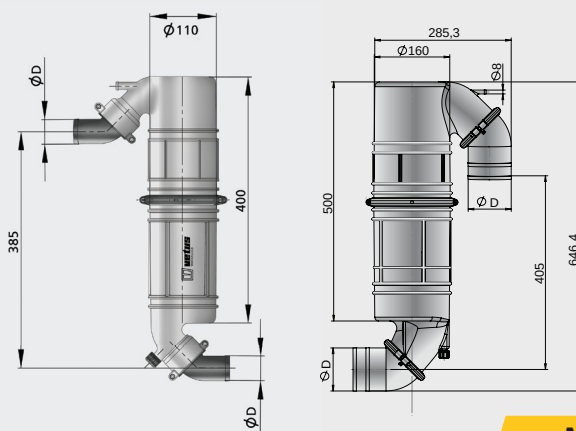
NLPG60

NLPG45

NLPG75

NLPG50

NLPG90

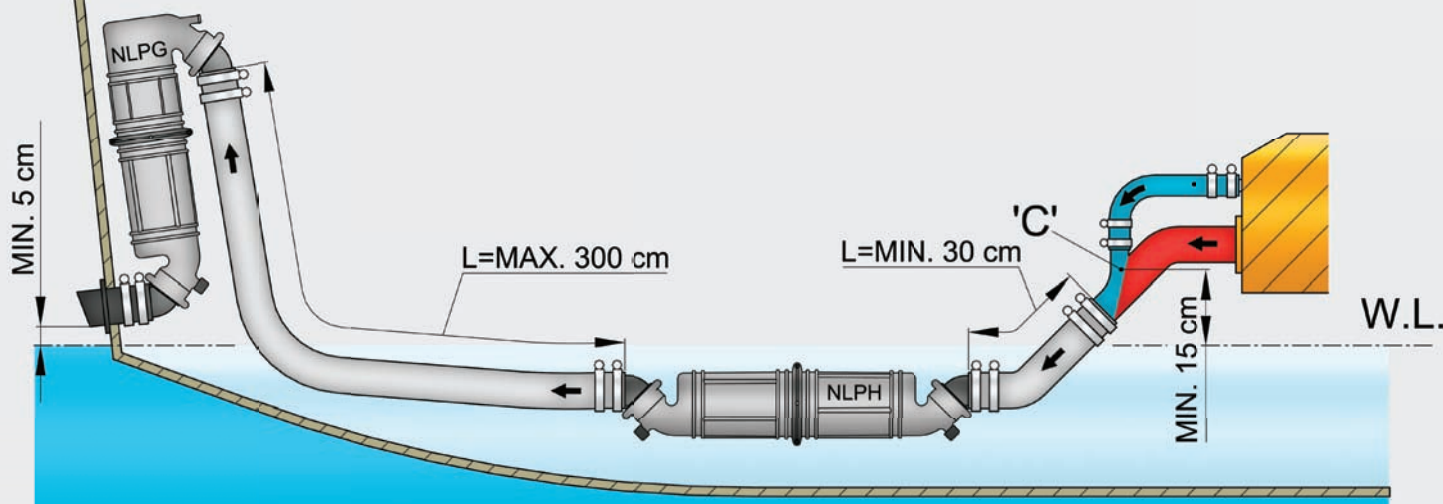


Muffler / gooseneck, type NLPG

Combining the functions of a muffler and gooseneck saves installation time and space whilst maintaining the essential qualities of a good exhaust system. The gooseneck prevents water back filling the exhaust and the muffler creates additional water mixing to further reduce exhaust noise.

The results are impressive and all with negligible back pressure in the system. Both the sections and the hose connections of this new model are fully rotatable, ensuring ease of installation. A hose stub to connect an air vent is standard. Available with hose connections of Ø 40, 45 or 51 mm.

NEW



Exhaust system with the water injection point "C" **15 cm or more** above the waterline.

Waterlock / muffler type NLP3

Maximum sound reduction

The NLP3 waterlock / muffler is the quietest in the world.

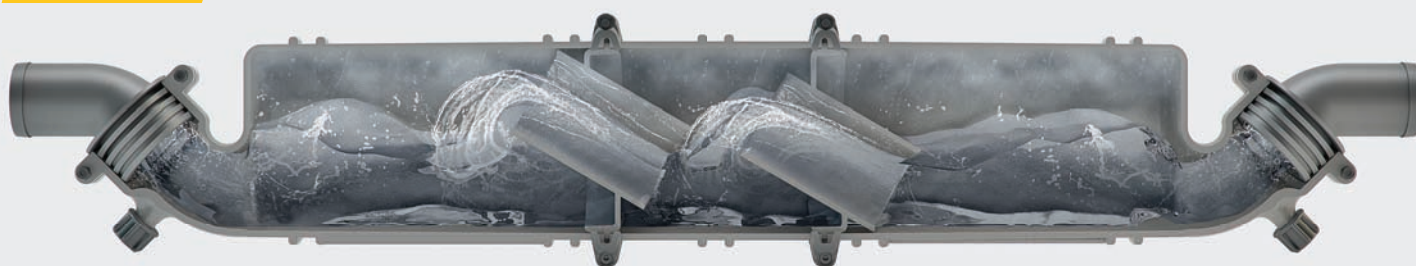
Due to its unique three chamber construction the sound attenuation is an incredible 10 dB more than that achieved with a two chamber waterlock. **No other waterlock on the market reduces the sound better.**

The NLP3 has rotatable chambers as well as rotatable hose connections, ensuring quick and simple installation in even the most confined spaces. It is available with hose connections to suit internal hose diameters of Ø 40 mm, Ø 45 mm or Ø 50 mm.

Provided with drain plugs for winter storage. Straps to secure the waterlock to the boat are supplied as standard.

Capacity 4 litres.

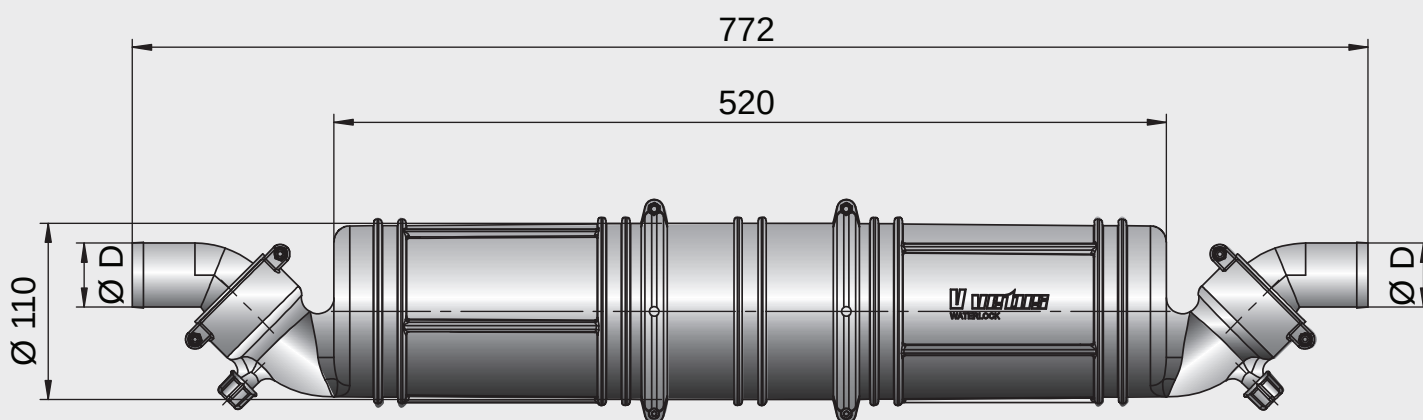
NEW



NLP340

NLP345

NLP350



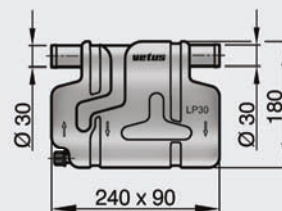
	NLP340	NLP345	NLP350
Ø D	40	45	50

Waterlocks



WLOCKLP30

Capacity 2.3 litres



Suitable for exhaust hose with 30 mm I.D.
Provided with a drain plug for winter storage.

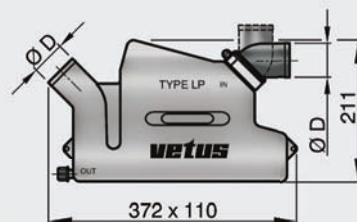


WLOCKL40R

WLOCKL45R

WLOCKL50R

Capacity 4.3 litres



For exhaust hose with internal diameters of 40 mm, 45 mm or 51 mm I.D. Provided with a plug for draining during winter time. The inlet connection of these 3 models will **revolve through 360°**, which greatly facilitates the installation of the exhaust assembly. There is a larger waterlock for 51 mm I.D. hose (shown below) which is recommended for assemblies with longer length exhaust hose (more than 4 metres total hose length).



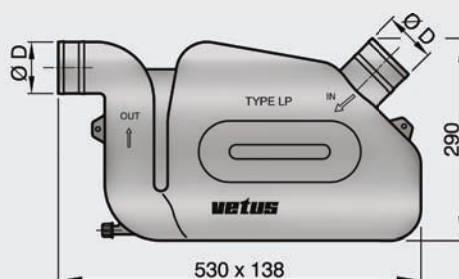
WLOCKL50S

WLOCKLP60

WLOCKLP75

WLOCKLP90

Capacity 10.5 litres

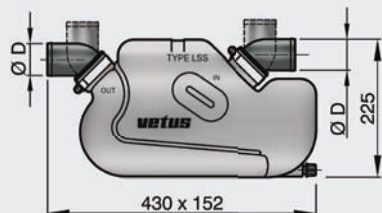


For exhaust hose with internal diameters of 51 mm, 60 mm, 76 mm or 90 mm I.D. The smaller model L50R, shown above, is to be used when the exhaust line is relatively **short**, whereas the larger model LP50S should be used with a **long length** of exhaust hose. These waterlocks are provided with a drain plug.

Waterlocks for long exhaust systems

Sometimes, notably in the case of sailing yachts, the exhaust line is so long that an extra large waterlock is needed to prevent the large volume of water in the line from running back into the engine once it has been stopped. VETUS waterlocks type LSG, LSS and LSL are the ideal solution for boats sailing in rough waters, without the engine running. To simplify installation of models LSS and LSG, both the inlet and outlet stubs will rotate through 360 degrees. They are also fitted with a drain plug for winter storage. It is possible to fit a sensor for an exhaust temperature alarm into the inlet hose connection of the LSG. Model LSS features a reduced height of 225 mm, thus enabling easy installation under floor.

Hose connection Ø 40, 45 or 51 mm. Inlet and outlet stubs will rotate through 360 degrees. One securing strap is standard supply.

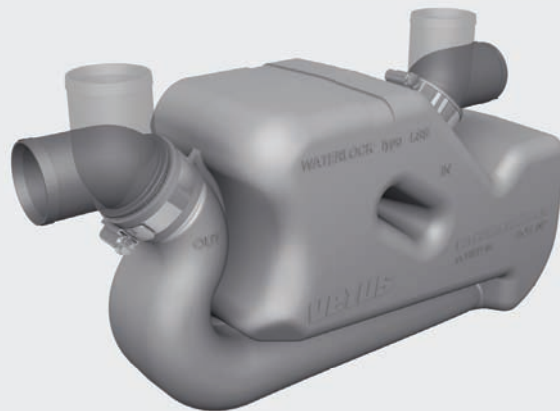


LSS40A

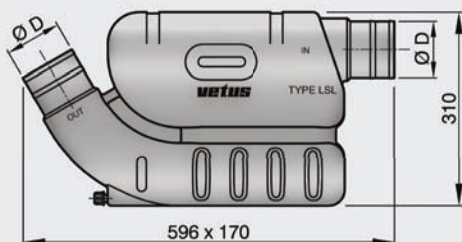
LSS45A

LSS50A

Capacity 7½ litres



These waterlocks are designed for long relatively straight exhaust runs, for example in sailing boats. They have fixed (non-rotating) inlet and outlet connections and are available for Ø 60 mm, 75 mm or 90 mm internal diameter exhaust hose. Two securing straps are standard supply.



LSL60

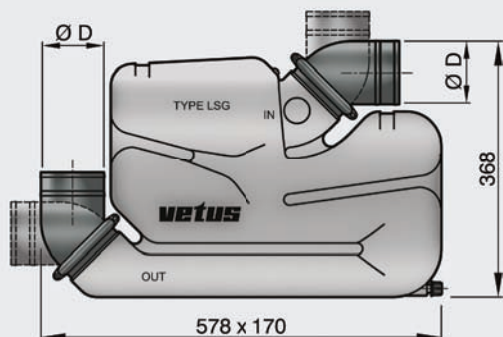
LSL75

LSL90

Capacity 16 litres



Hose connection Ø 60, 76 or 90 mm. With check valve and the inlet/outlet stubs will rotate through 360 degrees. Two securing straps are standard supply.



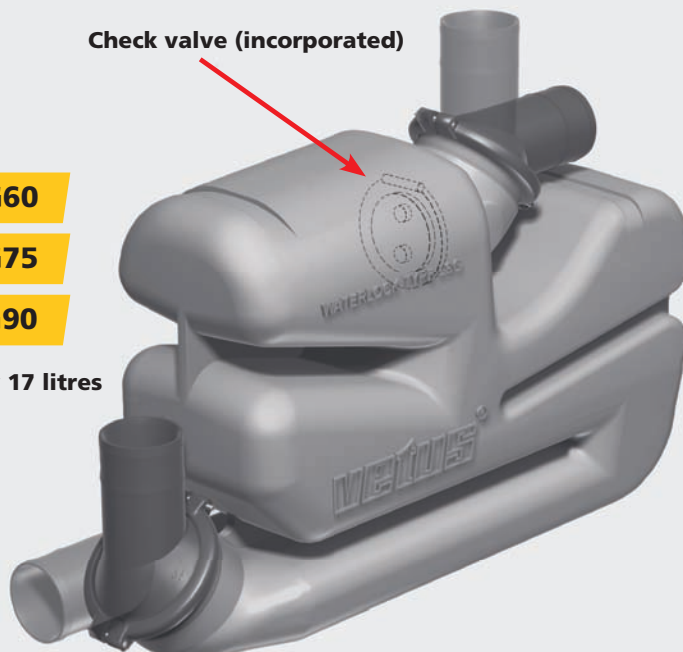
LSG60

LSG75

LSG90

Capacity 17 litres

Check valve (incorporated)



Exhaust systems with water injection from 40-152 mm internal diameter



DEMPMP40

DEMPMP45

DEMPMP50

DEMPMP60

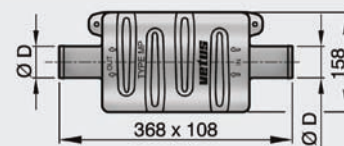
DEMPMP75

DEMPMP90

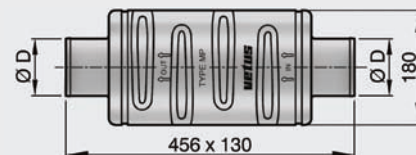
DEMPMP100

Muffer

Available for exhaust hoses of $\varnothing$ 40 mm, 45 mm, 51 mm, 60 mm, 75 mm, 90 mm or 102 mm I.D. This muffer creates additional mixing of the water inside the exhaust line, which results in even better noise reduction. The construction of the muffer causes almost no resistance to the free flow of the exhaust gases.



MP 40 ($\varnothing$ 40 mm)
MP 45 ($\varnothing$ 45 mm)
MP 50 ($\varnothing$ 51 mm)
MP 60 ($\varnothing$ 60 mm)



MP 75 ($\varnothing$ 76 mm) 456 x 130 x 180
MP 90 ($\varnothing$ 90 mm) 456 x 130 x 180
MP 100 ($\varnothing$ 102 mm) 580 x 168 x 202



WLOCKLT40

WLOCKLT45

WLOCKLT50

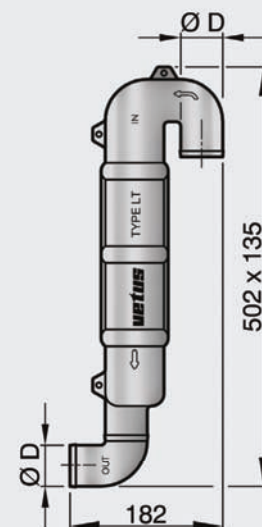
WLOCKLT60

Gooseneck

LT 40 / LT 45 / LT 50 / LT 60

Available for exhaust hose of $\varnothing$ 40 mm, $\varnothing$ 45 mm, $\varnothing$ 51 mm or $\varnothing$ 60 mm I.D.

An engine with a water injection exhaust elbow with an external diameter of 57 mm (2¼") may be connected to $\varnothing$ 60 mm VETUS exhaust hose. In this case VETUS waterlocks, mufflers, goosenecks and transom connections with a size of $\varnothing$ 60 mm can be used as well.



LT6565

LT6575

LT7575

LT9090

LT90110

LT110110

LT102

LT127

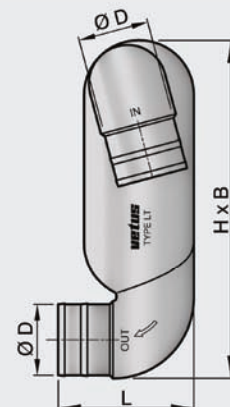
LT152

Gooseneck

LT 75 / LT 90-90 / LT 102 / LT 127 / LT 152

Available for exhaust hose of $\varnothing$ 76 mm, $\varnothing$ 90 mm, $\varnothing$ 102 mm, $\varnothing$ 127 mm or $\varnothing$ 152 mm I.D.

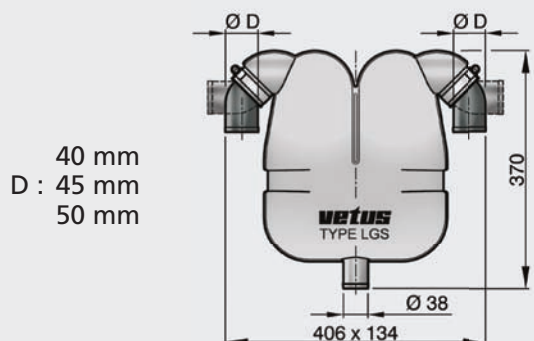
Stainless steel fastening brackets are supplied as standard with these goosenecks.



$\varnothing$	D	B	L	H
LT 65	65	235	155	500
LT 75	75	235	155	500
LT 90	90	300	210	525
LT 102	102	300	210	525
LT 110	110	300	210	525
LT 127	127	380	275	565
LT 152	152	380	275	565

Gas/water separator for marine engines and generator sets

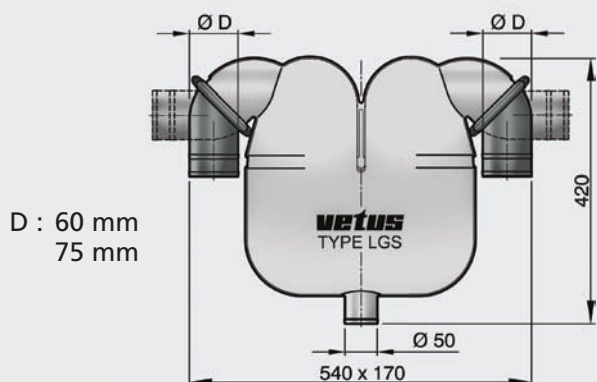
Generator sets and **marine diesel engines** often produce disturbing, gurgling **exhaust noises**. The VETUS gas/water separator type LGS offers the ultimate solution, because it separates the injected raw cooling water from the exhaust gases. In addition, the LGS gas/water separator has great sound-deadening capacities and it functions as a gooseneck as well. The models LGS 40/45/50 are supplied with hose connectors with diameter Ø 40, 45 or 50 mm, which can **rotate through 360°** and they have a capacity of 7 litres. The cooling water drain pipe has a diameter of Ø 38 mm. The models LGS 60/75 have 360° rotatable connectors, with a diameter of Ø 60 or 75 mm. The capacity is 12 litres and the cooling water drain pipe has a diameter of Ø 50 mm. A stainless steel mounting bracket with synthetic straps is supplied standard with all models.



LGS4038

LGS4538

LGS5038

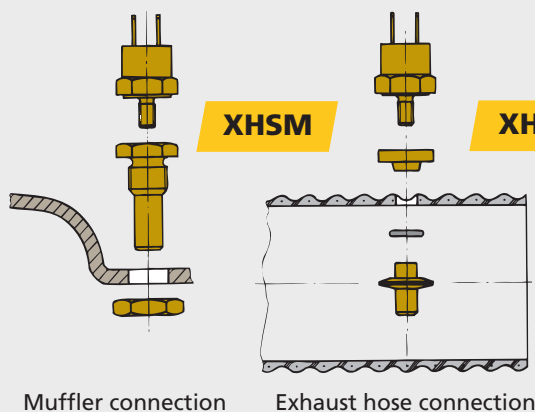


LGS6050

LGS7550



Exhaust temperature alarm



A blockage in the engine water intake or a damaged pump impeller will result in complete loss, or severe reduction in the volume of cooling water in the exhaust system. In this case the temperature of the exhaust will rise much faster than the temperature of the engine. We recommend that a VETUS exhaust temperature alarm is always installed in the exhaust line. This alarm is designed for water injected exhaust systems. It provides a visual and an audible alarm when the temperature inside the exhaust hose or the muffler exceeds an acceptable level.

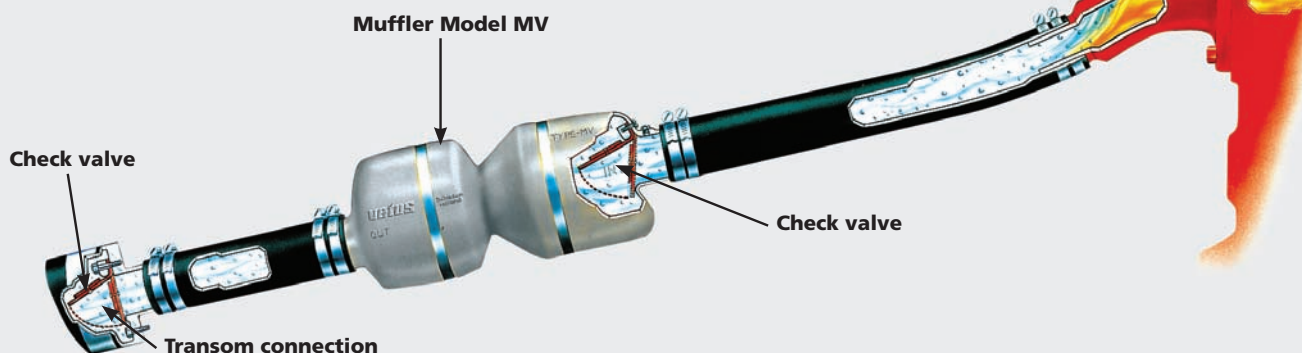
The temperature sensors, to be fitted into the exhaust hose or the waterlock/muffler, and the **alarm unit** must be ordered separately. In the case of a twin engine installation 2 sensors may be connected to 1 alarm unit, if so required. One sensor may also serve two alarm units, e.g. in the case of a second steering position. Cut-out dimensions: Ø 52 mm. Outside dimensions: Ø 62 mm. Available for 12 and 24 Volt D.C.



XHI

Exhaust systems for high-performance craft

Specially developed for fast craft with powerful engines, where very often there is no space available for installation of a waterlock and/or gooseneck.



- Application in combination with **water-injected** exhaust systems only.
- All parts are made of synthetic materials (no corrosion).
- Tremendous reduction of exhaust noise.
- Back pressure is absolutely minimal.
- Compact dimensions and light-weight.
- Stainless steel mounting brackets for the muffler are standard supply.
- The transom connection can be stainless steel (model TRCVS), or reinforced black plastic, with a stainless steel band (model TC). Both types are provided with a check valve.
- For muffler model MV a temperature sensor for a raw water

alarm is optional and can be supplied with the muffler. The muffler and the transom connection of this exhaust system may only be installed when the transom connection is positioned at least **5 cm lower** than the outlet of the engine's exhaust manifold, in which case the flow of the seawater, injected into the exhaust bend, will always be directed away from engine.

Both the muffler and the transom connection are provided with a **check valve** ("flapper"), which ensures that **under no circumstances** (e.g. when in waves or manoeuvring astern) can the seawater flow towards the engine. Therefore, this system makes the installation of a gooseneck unnecessary.

Each MV muffler features a connection for a temperature sensor, which triggers an audible alarm if the temperature of the exhaust gases/cooling water mixture exceeds an acceptable level. This ensures the best protection for the engine, as it provides an immediate warning when the raw water flow is impeded, long before the coolant in the engine itself becomes overheated. VETUS marine engines, though, do not require such (an additional) security device, as they all feature an exhaust temperature alarm as standard equipment.



Temperature sensor

Model MV

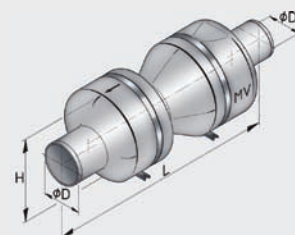
D	H	L
Ø 90	Ø 210	702
Ø 100	Ø 210	702
Ø 125	Ø 320	910
Ø 150	Ø 320	910

MV090

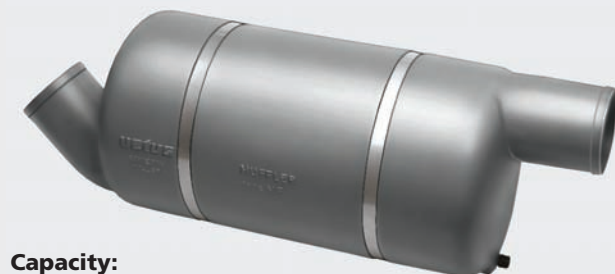
MV100

MV125

MV150



Muffler model MF



Capacity:
Ø 90 and 100 approximately 13 litres
Ø 125 and 150 approximately 43.5 litres

- For hose diameters 90 mm and 102 mm: volume 13 litres
- For hose diameters 127 mm and 152 mm: volume 43.5 litres

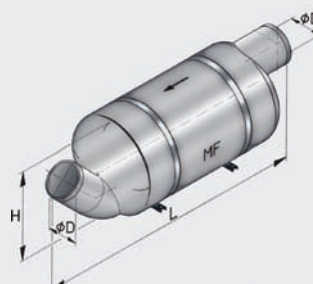
D	H	L
Ø 90	Ø 210	728
Ø 100	Ø 210	735
Ø 125	Ø 320	940
Ø 150	Ø 320	959

MF090

MF100

MF125

MF150



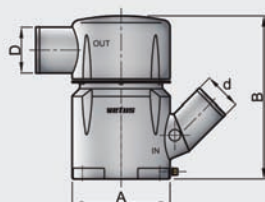
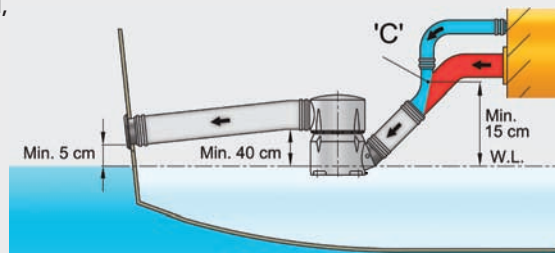
MIXER

These VETUS MV and MF mufflers are to be installed solely in combination with approved reinforced rubber exhaust hose (see page 81).

In some boats the (VETUS) exhaust muffler must be positioned so closely behind the engine's exhaust manifold (this is especially true in the case of near horizontal exhaust assemblies), that the injected cooling water does not always mix properly with the hot exhaust gases. This often results in the exhaust hose and/or the muffler becoming overheated. Installation of a VETUS water mixer directly behind the exhaust manifold will overcome this problem. The water mixer is available for exhaust hoses with inside diameter of 90, 100, 125 or 150 mm.

Waterlocks for exhaust of Ø 90 - Ø 250 MM

Often in a modern high performance boat, with one or two large engines installed, there is very little space to spare in the engine room. VETUS waterlocks, model MG are designed to make even the most awkward installation possible. The outlet connection at the top will rotate through 360° and the inlet connection is at an angle of 45° upward. For a minimum order quantity of 10 pieces, we can supply these waterlocks with the inlet or outlet connection at an angle of 0°, 15° or 30°. VETUS waterlocks, type MG, may only be installed in water injected exhaust systems. They are made entirely of synthetic materials (no corrosion or galvanic action), have excellent sound reduction properties and cause minimal back pressure. The clamp bands are made of stainless steel. Provided with a drain valve for winter storage.



Type	d	D	A	B
MGP9090	Ø 90	Ø 90	Ø 270	450
MGP102102	Ø 102	Ø 102	Ø 270	450
MGP5455	Ø 127	Ø 127	Ø 270	450
MGP102127	Ø 102	Ø 127	Ø 270	450

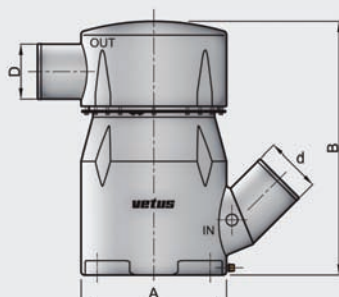
Capacity: approx. 23 litres

MGP9090

MGP5455

MGP102102

MGP102127



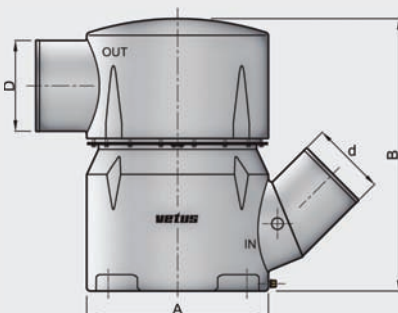
Type	d	D	A	B
MGS5455A	Ø 127	Ø 127	Ø 400	700
MGS5456A	Ø 127	Ø 152	Ø 400	700
MGS6456A	Ø 152	Ø 152	Ø 400	700

Capacity: approx. 75 litres

MGS5455A

MGS5456A

MGS6456A



Type	d	D	A	B
MGL6458A	Ø 152	Ø 203	Ø 500	750
MGL8458A	Ø 203	Ø 203	Ø 500	750
MGL84510A	Ø 203	Ø 250	Ø 500	750

Capacity: approx. 130 litres

MGL6458A

MGL8458A

MGL84510A



These flexible mountings can be used to minimise the noise caused by engine induced vibrations in the waterlock. They are suitable for waterlock models MGP, MGS and MGL.

MGVI45 For waterlock MGP
MGVI55 For waterlocks MGS and MGL

NEW

MGVI45

MGVI55



Air vents

If the point where the cooling water is injected into the exhaust is less than 15 cms above the waterline, then when the engine is stopped, there is a risk that cooling water will siphon into the exhaust system and subsequently into the engine itself. Such siphoning may be prevented by fitting a VETUS air vent at least 40 cm above the waterline.

Two different models are available: type ASD and type AIRVENT. Both models can be connected to hoses with internal diameters of Ø 13, 19, 25 and 32 mm (½", ¾", 1" and 1¼"). Version ASD38 connects to hose with internal diameter of Ø 38 mm (1½").

With pressure valve

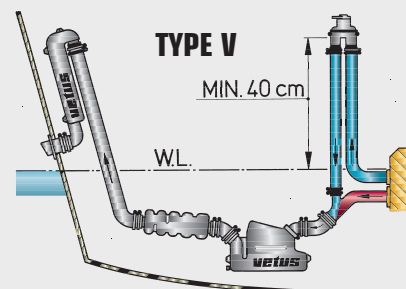
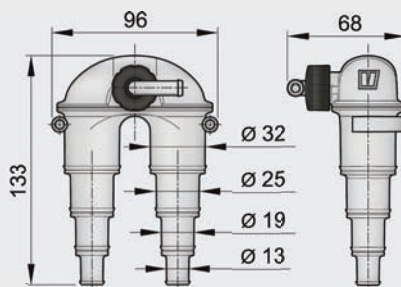
Type V has a reliable antisiphon pressure valve and is self-contained. However, it requires periodic maintenance to prevent clogging with salt crystals.

Airvent ASD

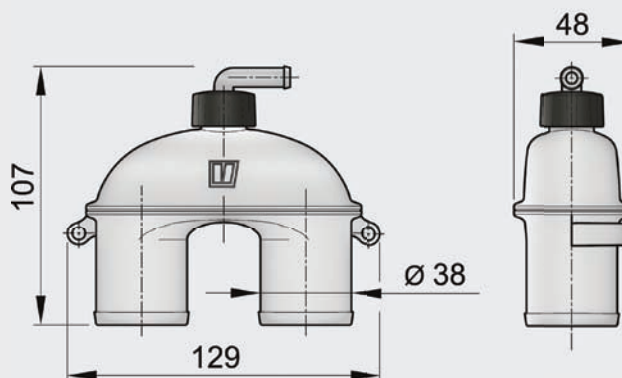
The only one on the market with virtually **no maintenance**. Can be easily dismantled by hand for cleaning.



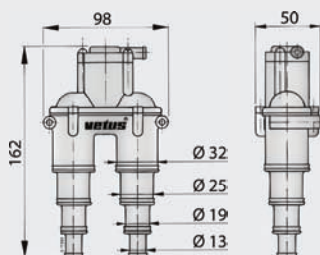
ASDV



ASD38V



AIRVENTV



ASDV	Anti Syphon Device with valve	13/19/25/32 mm
AIRVENTV	Anti Syphon Device with valve	13/19/25/32 mm
ASDH	Anti Syphon Device with hose	13/19/25/32 mm
AIRVENTH	Anti Syphon Device with hose	13/19/25/32 mm
ASD38V	Anti Syphon Device with valve	38 mm
ASD38H	Anti Syphon Device with hose	38 mm

Model ASD is interchangeable with type AIRVENT and has the same fixing hole centres. It has the advantage that the air bleed connection rotates through 360°. In addition, the valve can be maintained without removing the vent from the wall and no tools are required to do this. For replacement, a set with 5 valves is available as a spare part.

Materials

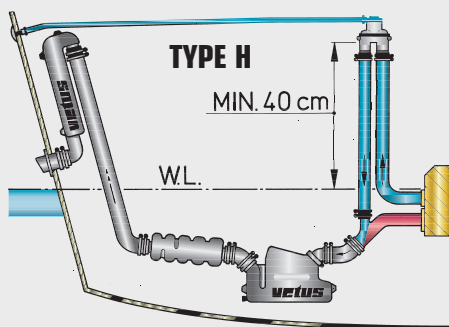
Housing : All models made of synthetic material
Valve : Model ASD made of synthetic material

Model AIRVENT made of synthetic and stainless steel. Mounting brackets are available for both types of air vent, to facilitate installation onto surfaces clad with sound insulation, see page 95.

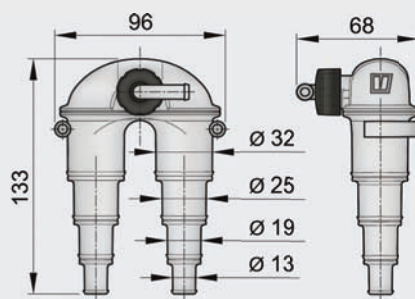
This mounting bracket is supplied with bolts, washers and self-locking nuts to mount the airvent.

With ventilation line

Type H has a hose connection to the outside of the hull. There is a constant bleed off of cooling water through this hose whilst the engine is running. Type H comes complete with a skin fitting, hose clamps and 4 metres of hose.



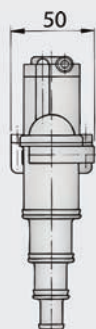
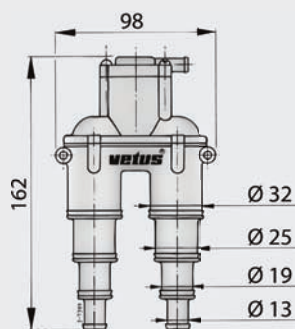
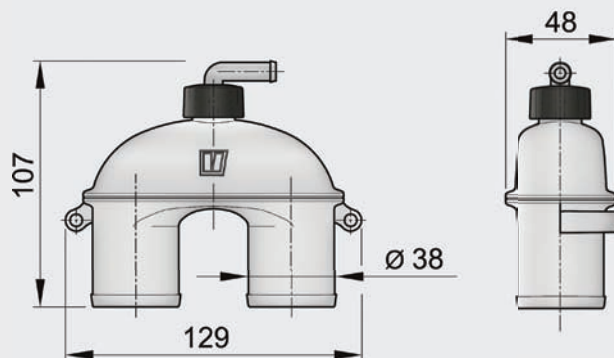
ASDH



Airvents suitable for Ø 38 (1½") mm hose. These are ideal for toilets or holding tanks which are installed below the waterline. Comes complete with a skin fitting, hose clamps and 4 metres of breather hose.

A VETUS airvent type ASDH is also suitable for use with under-waterline toilets and/or the discharge pipe of a waste water tank.

ASD38H



AIRVENTH





Transom exhaust connections



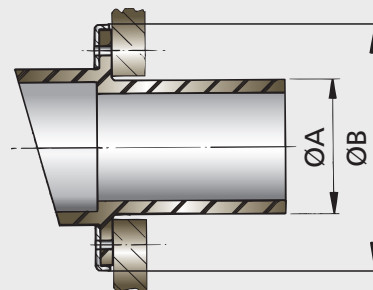
TRC40R

TRC45R

TRC50R

TRC60R

TRC7590R



Type	For exhaust hose (I.D.)	A=hole size	B
40	40 mm	Ø 53 mm	Ø 86 mm
45	45 mm	Ø 58 mm	Ø 114 mm
50	51 mm	Ø 63 mm	Ø 114 mm
60	60 mm	Ø 73 mm	Ø 114 mm
76/90	76 en 90 mm	Ø 111 mm	Ø 164 mm

Transom exhaust connections(EPDM rubber) Ø 40 - 90 mm.

Can be mounted to the transom easily and flexibly. The rubber connector is mounted to the outside of the transom by means of a 2 mm thick stainless steel polished mounting ring. VETUS mufflers and goosenecks with corresponding dimensions can be fitted directly. For connection of the exhaust hose, a plastic hose connector is required.

Transom exhaust connections with check valve (synthetic) Ø 40 - 90 mm.

The exhaust hose can be fitted directly to this transom connection.



TRC40PV

TRC45PV

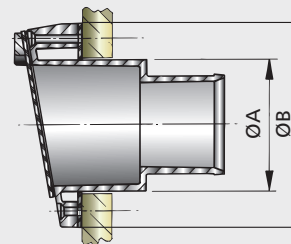
TRC50PV

TRC60PV

TRC90PV

TRC75PV

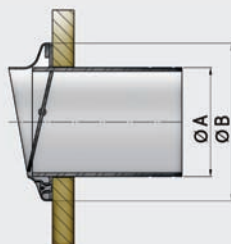
Ø 40
Ø 45
Ø 50
Ø 60



Type	For exhaust hose (I.D.)	A=hole size	B
40	40 mm	Ø 52 mm	Ø 88 mm
45	45 mm	Ø 52 mm	Ø 88 mm
50	51 mm	Ø 68 mm	Ø 104 mm
60	60 mm	Ø 68 mm	Ø 104 mm
75	76 mm	Ø 97 mm	Ø 140 mm
90	90 mm	Ø 97 mm	Ø 140 mm

Transom exhaust connections with check valve (Stainless steel AISI 316) Ø 40 - 150 mm.

The exhaust hose can be fitted directly to this transom connection.



TRC40SV

TRC45SV

TRC50SV

TRC60SV

TRC75SV

TRC90SV

TRC100SV

TRC125SV

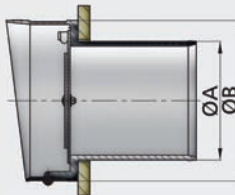
TRC150SV

Type	For exhaust hose (I.D.)	A=hole size	B
40	40 mm	Ø 41 mm	Ø 74 mm
45	45 mm	Ø 46 mm	Ø 79 mm
50	51 mm	Ø 51 mm	Ø 84 mm
60	60 mm	Ø 61 mm	Ø 94 mm
75	76 mm	Ø 77 mm	Ø 110 mm
90	90 mm	Ø 91 mm	Ø 123 mm
100	102 mm	Ø 103 mm	Ø 140 mm
125	127 mm	Ø 128 mm	Ø 169 mm
150	152 mm	Ø 153 mm	Ø 194 mm

Transom exhaust connections with check valve (synthetic) Ø 90-150 mm.

The exhaust hose can be fitted directly to this transom connection. Made from glass filled reinforced synthetic material (colour: black), with a decorative stainless steel band. The exhaust hose can be fitted directly to this transom connector.

Type	For exhaust hose (I.D.)	A=hole size	B Ø mm
90	90 mm	Ø 93 mm	141
100	102 mm	Ø 103 mm	155
125	127 mm	Ø 128 mm	178
150	152 mm	Ø 153 mm	203



TC090

TC125

TC100

TC150



Rubber exhaust hose

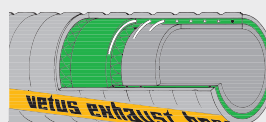
Thanks to increased spiral reinforcement and a more supple type of rubber, VETUS exhaust hoses are now even stronger, as well as more flexible. Exhaust hoses with an internal diameter of up to Ø 152 mm inclusive, have a bending radius of no more than 1.5 x the diameter. Exhaust hoses with an internal diameter of more than Ø 152 mm, have a bending radius of two times the diameter of the hose. By virtue of this increased flexibility, valuable installation time will be saved. VETUS exhaust hoses have Lloyd's Register of Shipping approval and also meet the requirements of the SAE J2006 R2 standard. They are temperature resistant between -30° and + 100°C, with brief peak temperatures of 115°C. VETUS exhaust hose approved by RINA is also available to special order (please see pricelist).

Code	Internal diam.	External diam.	Weight	Max pressure	Bending radius
SLANG30	30 mm 1 ³ / ₁₆ "	38 mm	0,55 kg/m	4 bar	45 mm
SLANG40	40 mm 1 ⁹ / ₁₆ "	48 mm	0,79 kg/m	4 bar	60 mm
SLANG45	45 mm 1 ³ / ₄ "	53 mm	0,88 kg/m	4 bar	68 mm
SLANG50	51 mm 2"	59 mm	1,1 kg/m	4 bar	77 mm
SLANG57	57 mm 2 ¹ / ₄ "	65 mm	1,1 kg/m	3,3 bar	86 mm
SLANG60	60 mm 2 ³ / ₈ "	68 mm	1,2 kg/m	3,3 bar	90 mm
SLANG65	65 mm 2 ⁹ / ₁₆ "	73 mm	1,3 kg/m	3,3 bar	98 mm
SLANG75	76 mm 3"	84 mm	1,4 kg/m	3,3 bar	114 mm
SLANG90	90 mm 3 ¹ / ₂ "	98 mm	1,9 kg/m	2 bar	135 mm
SLANG100	102 mm 4"	110 mm	2,3 kg/m	2 bar	153 mm
SLANG110	110 mm 4 ¹ / ₃₂ "	119 mm	2,8 kg/m	2 bar	165 mm
SLANG125	127 mm 5"	137 mm	3,3 kg/m	2 bar	191 mm
SLANG150	152 mm 6"	163 mm	4,4 kg/m	2 bar	228 mm
SLANG200	203 mm 8"	218 mm	6,8 kg/m	2 bar	406 mm
SLANG250	254 mm 10"	270 mm	8,5 kg/m	2 bar	508 mm
SLANG300	305 mm 12"	323 mm	10,8 kg/m	2 bar	606 mm



SLANG

In order to reduce back pressure in the engine, the inside of all VETUS exhaust hoses is **completely flush and smooth**.



An engine with a water injection exhaust elbow with an external diameter of 57 mm (2¹/₄") may be connected to 60 mm VETUS exhaust hose. In this case VETUS waterlocks, mufflers, goosenecks and transom connections with a size of Ø 60 mm can be used as well.

Plastic hose connections

Hose connectors, made of synthetic material. Available as straight connectors or 60° bend, for exhaust hose with internal diameters from 40 mm to 150 mm inclusive. Available with 90° bend for exhaust hose with internal diameters 127, 152, 203 or 254 mm.



SLVBR

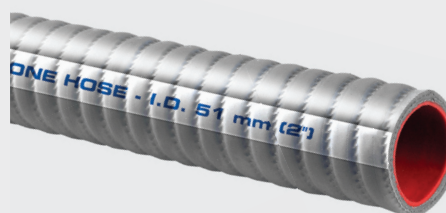


SLVBG

Silicone hose

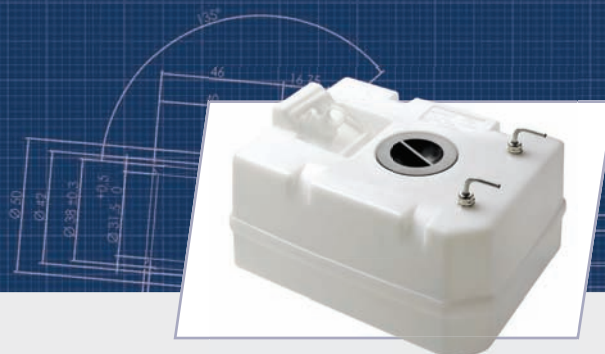
VETUS silicone hose is made from high grade silicone rubber with woven synthetic and spiraled steel wire inlays. It is suitable for a wide range of applications such as exhaust hose, cooling water hose or waste water hose.

Due to the smooth gloss external finish, this type of hose is ideal for use in areas where appearance and cleanliness is important. The hose is extremely flexible, facilitating installation and is highly resistant against aging. It has a tremendous temperature range and can be used continuously from - 54° to + 177°C (intermittently up to 250°C). VETUS silicone hose fulfills all requirements of the ISO13363 type Class B and SAE J 2006 R1 standards.



SIHOSE

Code	Internal diam.	External diam.	Weight	Max pressure	Bending radius
SIHOSE25	25 mm 1"	35 mm	0,60 kg/m	5 bar	62 mm
SIHOSE32	32 mm 1 ¹ / ₄ "	41 mm	0,73 kg/m	4,5 bar	80 mm
SIHOSE38	38 mm 1 ¹ / ₂ "	47 mm	0,85 kg/m	4 bar	95 mm
SIHOSE51	51 mm 2"	61 mm	1,31 kg/m	4 bar	150 mm
SIHOSE63	63 mm 2 ¹ / ₂ "	74 mm	1,60 kg/m	3,5 bar	190 mm
SIHOSE76	76 mm 3"	87 mm	2,06 kg/m	3,5 bar	225 mm
SIHOSE102	102 mm 4"	113 mm	2,70 kg/m	2 bar	360 mm



FUEL SYSTEM

WHY A VETUS FUEL SYSTEM?

- The fuel **"Splash Stop"** protects the environment.
- **Fuel tanks** are made from synthetic material, therefore less condensation and no corrosion.
- **Fuel tanks** are ready for easy installation and include a flange with bolt holes for the gauge sender.
- **Fuel filters** have a CE & ABYC approved clear bowl.
- **Fuel filters** have up to 5 times larger filtering surface, owing to a patented full-flow system.
- VETUS **fuel filters** have O-ring sealing for leak-free element replacement.
- The **"Fuel-safe"** provides complete protection against fuel theft and at very low cost.





VETUS, creators of ...

Dependable fuel systems

The saying that a chain is only as strong as its weakest link is certainly applicable to the propulsion system on a boat. Everyone who has experienced the helpless feeling when the engine stops unexpectedly (always at the critical moment), will know the stress that this can create.

One not to be underestimated link in this chain is the fuel system, a system in which VETUS can truly call themselves specialists!

Complete systems

VETUS supplies tanks in various different sizes, with or without fittings, filters, hoses and gauges. In short ... from deck filler to engine and everything in between is in our programme. And because these connect perfectly with other VETUS systems in the propulsion chain, you can be assured of optimum performance.

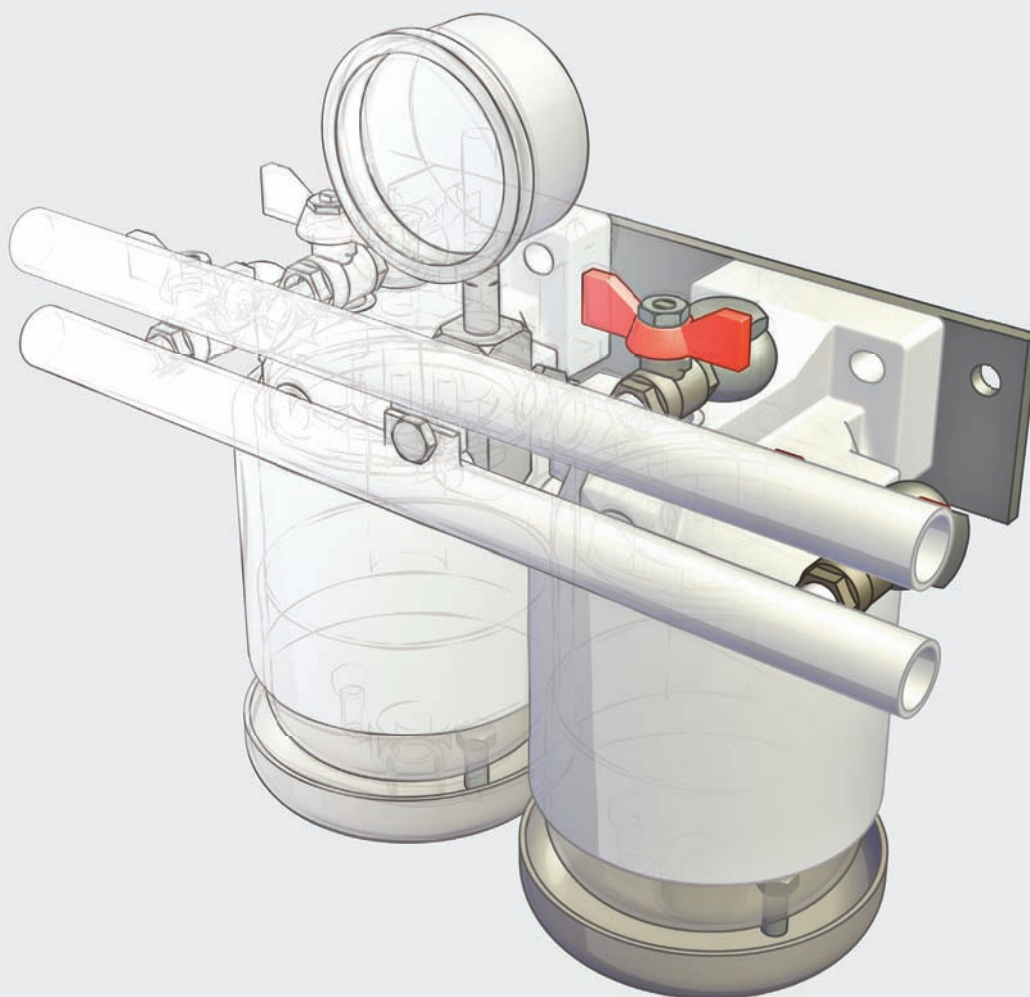
Bio fuel and the environment

Naturally, VETUS keeps a close eye on environmental regulations coming along, with a view to making new developments. The fuel system is no exception to this policy.

For example, the spillage of fuel in the water is something which always needs to be prevented. The VETUS "Splash Stop" was developed specifically with this in mind and of course, this product also fulfils the current CE and ABYC regulations.

In addition, the increase in the use of bio fuel is something which will certainly have consequences for the boat owner!

Bio fuel is very susceptible to so called "diesel bug" and the longer the turn round cycle of the fuel, either on the boat or whilst in the bunker, the worse this problem becomes. Therefore it is reassuring to know that the engineers from VETUS have already found an answer and that your VETUS dealer can help you with the right advice and the right system.



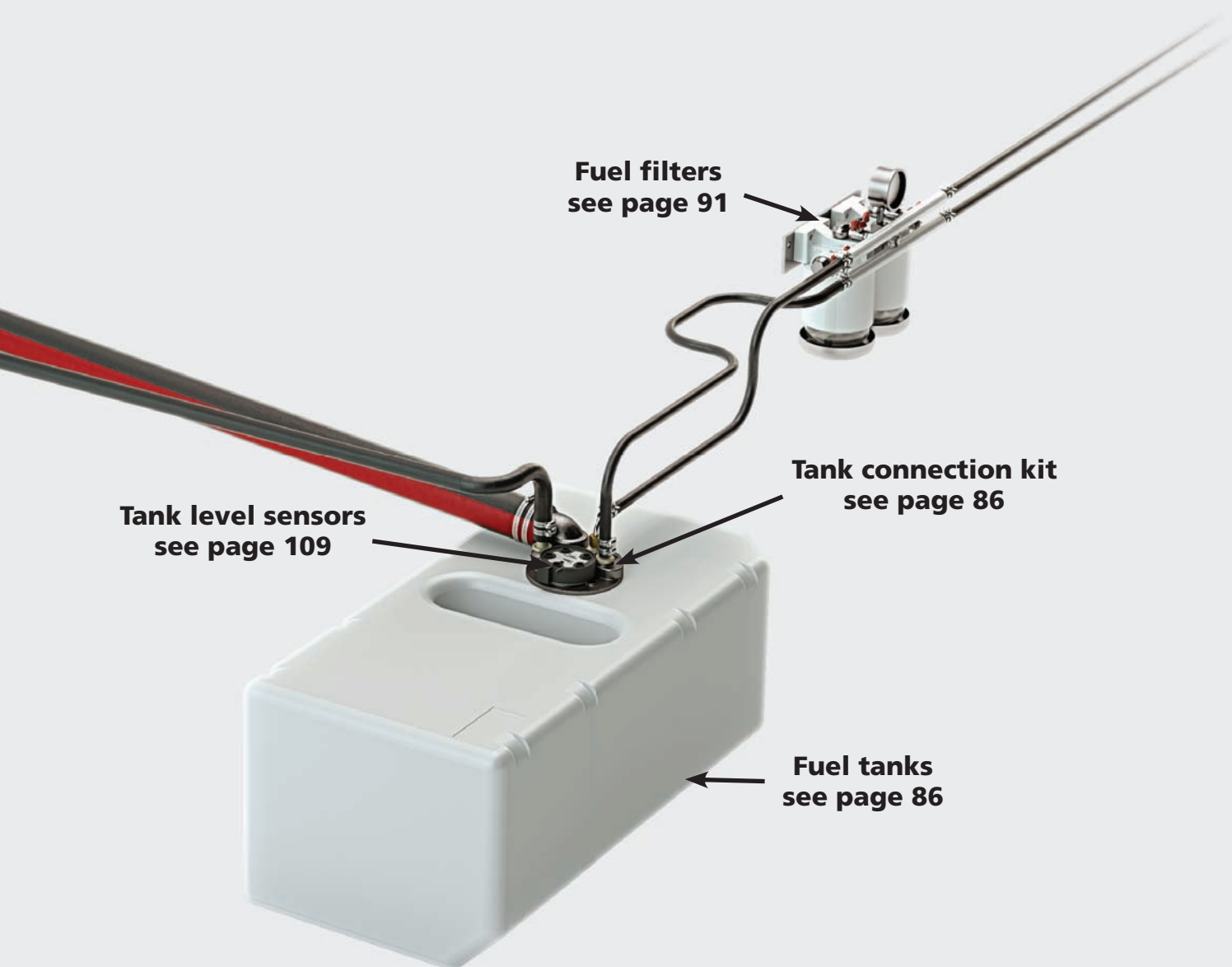


Fuel splash-stop
see page 89

**No-smell
diesel filter**
see page 90

Fuelsafe
see page 90

Fuel filler hose
see page 88



Fuel filters
see page 91

Tank level sensors
see page 109

Tank connection kit
see page 86

Fuel tanks
see page 86



Rigid tanks for diesel fuel

This range of rigid VETUS tanks is designed for diesel fuel. The high-grade linear polythene materials used are the same as all other rigid VETUS tanks and they are available with capacities of 40, 60 or 80 litres. The centre point for an SAE flange gauge sender is incorporated in the moulding together with 5 blind bolt holes. The relevant gauge sender should be ordered separately and the appropriate hole cut in the tank. These tanks will save considerable installation time.

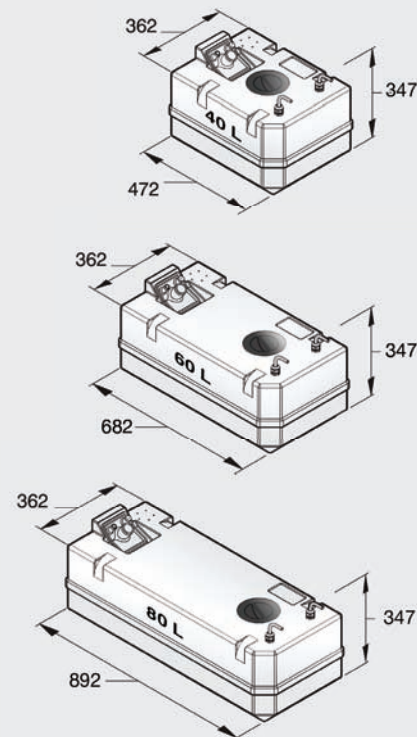


Each tank is supplied with the following connections:
Fixed hose connector Ø 38 mm for filling. Fixed hose connector Ø 16 mm for the breather line. Rotating hose connectors Ø 8 mm or Ø 10 mm with pick-up pipe, for fuel suction. Rotating hose connectors Ø 8 mm or Ø 10 mm for fuel return.

FTANK..A

FTANK..B

FTANK40A	Plastic diesel fuel tank	40 l.	for 8 mm fuel hose
FTANK60A	Plastic diesel fuel tank	60 l.	for 8 mm fuel hose
FTANK80A	Plastic diesel fuel tank	80 l.	for 8 mm fuel hose
FTANK40B	Plastic diesel fuel tank	40 l.	for 10 mm fuel hose
FTANK60B	Plastic diesel fuel tank	60 l.	for 10 mm fuel hose
FTANK80B	Plastic diesel fuel tank	80 l.	for 10 mm fuel hose



Dimensions: plus or minus 2%

Connection kit for rigid fuel tanks

This connection kit is designed to save considerable installation time. The set contains all the required connections and only a single hole, with a diameter of 114 mm needs to be cut in the top of the fuel tank. There is no need to cut additional recesses or drill extra holes.

The anodized, salt water resistant aluminium lid is provided with a counter flange and a rubber seal. The unit is inserted in the hole and the lid screwed down so that the fittings are orientated as required. Tightening of just three bolts compresses the rubber seal to ensure a perfect seal.



FTL

The lid is supplied with the following connections:

- Filling hose: 38 mm (1½") or 51 mm (2").
- Tank ventilation hose: 16 mm (5/8").
- Fuel suction pipe according to model selected:
8 mm (5/16"), max. tank depth 440 mm.
10 mm (3/8"), max. tank depth 850 mm.
15 mm (5/8"), max. tank depth 970 mm.
- Fuel return according to model selected:
8 mm (5/16"), 10 mm (3/8") or 15 mm (5/8").
- Mounting flange for a tank level sensor.
This connection is suitable for sensors with a 5-hole SAE flange.
- Terminal tag (6.3 mm) for earth wire.

Each connection kit is supplied with two mounting straps. This connection kit is also suitable for other fuel tanks made from plastic, metal or GRP.

An interconnection kit is also available for installation of twin tanks. The lid of this set has two hose connections of 16 mm (5/8") for tank ventilation. Two brass skin fittings (G3/4") and a coupling are supplied to connect the tanks.

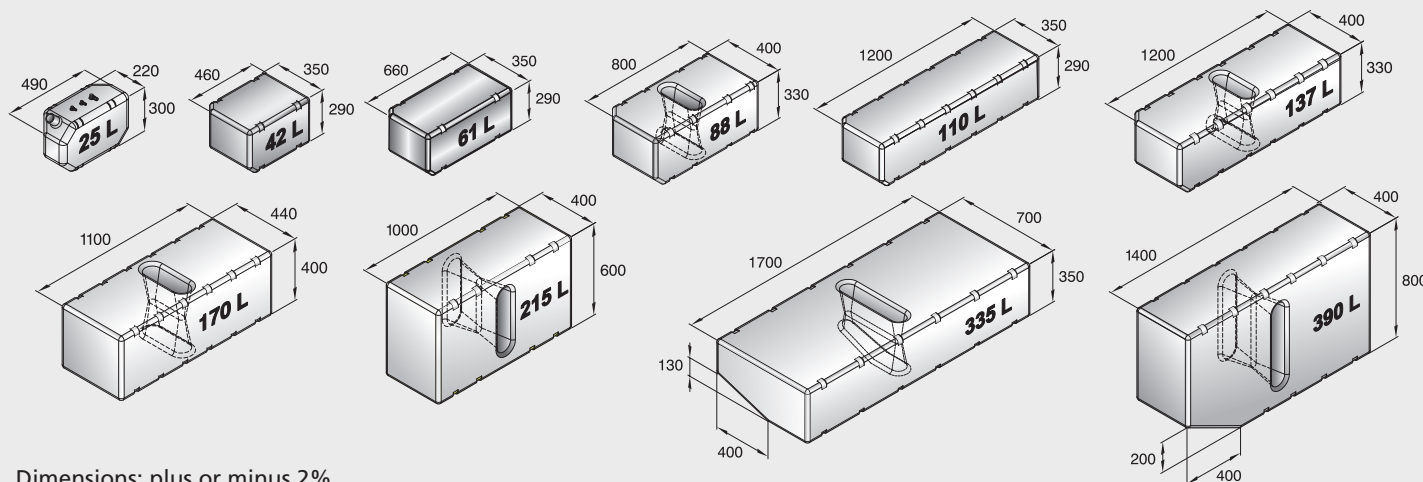
Both kits are suitable for use with diesel and petrol fuel.

Rigid tanks for diesel fuel

This range of tanks is made from high-grade linear polythene, which is both rust free and less prone to condensation compared with metal tanks. The construction of the tank is seamless and therefore, can never leak. The fuel level can be seen from outside for easy checking and the tank is easily cleaned through the connection plate. A connection kit should be ordered separately for each tank except the 25 litre model.

FTANK25	Plastic diesel fuel tank 25 l.	(incl. installation kit)
FTANK42	Plastic diesel fuel tank 42 l.	(excl. installation kit)
FTANK61	Plastic diesel fuel tank 61 l.	(excl. installation kit)
FTANK88	Plastic diesel fuel tank 88 l.	(excl. installation kit)
FTANK110	Plastic diesel fuel tank 110 l.	(excl. installation kit)
FTANK137	Plastic diesel fuel tank 137 l.	(excl. installation kit)
FTANK170	Plastic diesel fuel tank 170 l.	(excl. installation kit)
FTANK215	Plastic diesel fuel tank 215 l.	(excl. installation kit)
FTANK335	Plastic diesel fuel tank 335 l.	(excl. installation kit)
FTANK390	Plastic diesel fuel tank 390 l.	(excl. installation kit)

FTANK



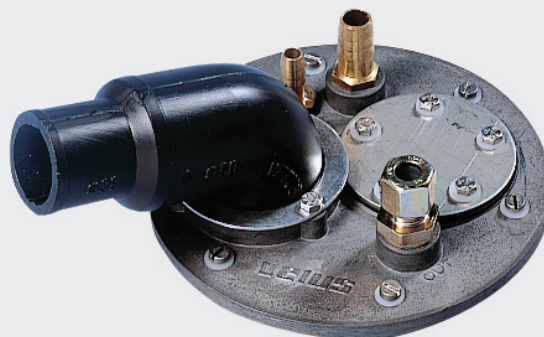
Dimensions: plus or minus 2%

The 88, 137, 170, 215, 335 and 390 litre models are provided with **baffles**, as a **standard** construction element.

Connection kit for diesel fuel tanks

The FTKIT is the precursor of the FTL connection kit. Three versions of this kit may be supplied: two types for smaller engines and one for more powerful units. Each connection kit consists of an **aluminium cover with the following connections for:**

FTKITA	FTKITB	FTKITC
filling, Ø 38/Ø 50 mm (rotates through 360°)	filling, Ø 38/Ø 50 mm (rotates through 360°)	filling, Ø 38/Ø 50 mm (rotates through 360°)
ventilation, Ø 16 mm	ventilation, Ø 16 mm	ventilation, Ø 16 mm
blind cover for tank gauge sender	blind cover for tank gauge sender	blind cover for tank gauge sender
supply line, Ø 8 mm	supply line, Ø 10 mm	supply line, Ø 15 mm
return line, Ø 8 mm	return line, Ø 10 mm	return line, Ø 15 mm



Each connection kit comes with two mounting straps. When fitting an ultrasonic sensor type **SENSOR A** or **SENSOR B**, adaptor **SENSORSR** must also be ordered.

The required connection kit should be ordered separately from the tank.



Interconnection kit



FTKITD

Twin tank installation

VETUS fuel tanks can be interconnected by means of an interconnection kit (optional supply). The interconnection skin fittings are G^{3/4}.

Fuel hoses

For transportation of fuel, from tank to e.g. fuel filter, or to serve as ventilation line. Available as quality type A1, suitable for both petrol (E15 = max. 15% Ethanol) and diesel (B7 = max. 7% biodiesel) fuels. Inside made of NBR rubber, outside of CR rubber.

Fuel hoses which fulfil the requirements of Marine Fuel A1 have been successfully subjected to a fire test for 2.5 minutes and have a maximum permeability of 4 grams/m²/ hour. Fuel hoses which fulfil the requirements of Marine Fuel A2 have been successfully subjected to a fire test for 2.5 minutes and have a maximum permeability of 12 grams/m²/ hour.



FUHOSEA

Code	Internal dia	External dia	Weight	Max pressure	Bending radius
FUHOSE06A	6 mm 1/4"	13 mm	0,16 kg/m	10 bar	25 mm
FUHOSE08A	8 mm 5/16"	16 mm	0,24 kg/m	10 bar	30 mm
FUHOSE10A	10 mm 3/8"	18 mm	0,28 kg/m	10 bar	35 mm
FUHOSE13A	13 mm 1/2"	22 mm	0,39 kg/m	10 bar	50 mm
FUHOSE16A	16 mm 5/8"	25 mm	0,45 kg/m	10 bar	60 mm
FUHOSE19A	19 mm 3/4"	28 mm	0,52 kg/m	10 bar	80 mm
FUHOSE25A	25 mm 1"	35 mm	0,73 kg/m	10 bar	110 mm

Meets the CE standard: ISO 7840 marine fuel A1

Fuel hoses A1-15



FUHA115

Code	Internal dia	External dia	Weight	Max pressure	Bending radius
FUHA11506	6 mm 1/4"	13 mm	0,23 kg/m	17,2 bar	25 mm
FUHA11508	8 mm 5/16"	16 mm	0,24 kg/m	17,2 bar	30 mm
FUHA11510	10 mm 3/8"	18 mm	0,30 kg/m	17,2 bar	35 mm
FUHA11513	13 mm 1/2"	22 mm	0,25 kg/m	17,2 bar	50 mm

Meets the highest CE standard: ISO 7840 marine fuel A1-15

Fuel filling hose (extremely flexible)



FFHOSE

This type of hose is made of NBR rubber with spiralled steel inlay. Suitable for both petrol (E15 = max. 15% Ethanol) and diesel (B7 = max. 7% biodiesel) fuels. Temperature resistant between -30°C and +100°C.

Meets the requirements of SAE J 1527 and ISO 7840-MARINE FUEL A2. Extremely flexible. Available in coils of 20 m.

Meets the highest CE standard: ISO 7840 marine fuel A2.

Code	Internal dia	External dia	Weight	Max pressure	Bending radius
FFHOSE38	38 mm 1 1/2"	50 mm	1,1 kg/m	4 bar	76 mm
FFHOSE51	51 mm 2"	63 mm	1,5 kg/m	4 bar	102 mm

Water separator/fuel filter

For maximum separation of dirt and water from fuel. (See pages 91-95).



See page 107 to 109 for fuel level indicators.

Splash-stop for fuel

This new VETUS Splash-Stop for fuel meets all the latest CE and ABYC standards. It is connected directly under the deck filler plate and ensures that overflowing fuel or foam cannot come back out, thereby soiling the deck and possibly polluting the water. The housing and hose connection of this Splash-Stop are made of anodized aluminium and all materials comply with the relevant CE and ABYC directives. It is suitable for both diesel and petrol fuels.

The fill and vent lines, as well as the hose clamps should be ordered separately. The type of hose used should conform with or exceed ISO 7840 Marine Fuel A2 or SAE J1527 A2. All VETUS fuel hoses meet these requirements. In addition to the Splash-Stop, a matching stainless steel deck entry is also required.

Three models are available:

FSA3816 for fuel filling hose Ø 38 mm breather line 16 mm.

FSA5116 for fuel filling hose Ø 51 mm breather line 16 mm.

FSA5119 for fuel filling hose Ø 51 mm breather line 19 mm.

Excess fuel is collected in a parallel hose, which functions as a reservoir. The capacity of the reservoir is determined by the length and diameter of the hose. A Ø 38 mm reservoir hose has a capacity of 1.1 litres per metre and a Ø 51 mm hose, a capacity of 2 litres per metre. For a tank of 40 litres we recommend a minimum reservoir capacity of 0.6 litres and for a 400 litre tank a minimum capacity of 2 litres.

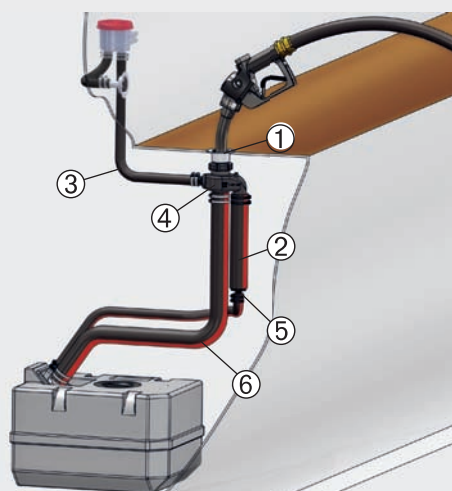
The excess fuel is returned from the reservoir hose back into the tank. A no-smell filter for diesel fuel may be fitted in the tank breather line, to prevent unpleasant smells on deck. This is not suitable for use with petrol. If the filter is located well above the deck entry, the breather line may exit lower than the deck level, if required.



FSA

Dimensions:
Length : 146 mm
Width : 86 mm
Height overall : 121 mm

Fitting a VETUS "Fuel Safe" into the Splash-Stop is also easy and offers low cost protection against expensive fuel theft.



- 1 Deck entry
- 2 Reservoir / overflow hose and breather line
- 3 Tank breather line to outside
- 4 Splash-Stop
- 5 Hose connection
- 6 Fuel filling hose



FSA3816	Fuel "splash-stop" FSA, for filler cap and fuel filling hose Ø 38 mm	breather 16 mm
FSA5116	Fuel "splash-stop" FSA, for filler cap and fuel filling hose Ø 51 mm	breather 16 mm
FSA5119	Fuel "splash-stop" FSA, for filler cap and fuel filling hose Ø 51 mm	breather 19 mm
FS3816	Fuel "splash-stop" for filler cap Ø 38 mm, fuel filling hose 38 and 51 mm	breather 16 mm
FS5116	Fuel "splash-stop" for filler cap Ø 51 mm, fuel filling hose 38 and 51 mm	breather 16 mm
FS5125	Fuel "splash-stop" for filler cap Ø 51 mm, fuel filling hose Ø 51 mm	breather 25 mm



FS3816

FS5116

FS5125

VETUS Splash-Stop model FS is directly connected to a deck entry plate, with a diameter of 38 or 51 mm (optional equipment) ①.

It ensures that overflowing diesel fuel and froth will not come out of the deck entry - soiling your deck and polluting the water, but will be neatly caught inside the reservoir (with a capacity of

approx. 2 litres). Excessive fuel will flow back into the main tank through connection ②.

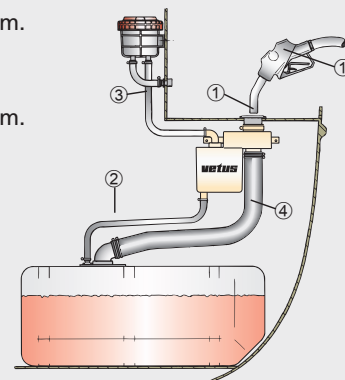
This connection also serves as the necessary tank ventilation. The breather line to outside is to be installed to connection ③. A VETUS diesel smell filter may be installed into this breather line as well.

Three models are available:

Filler hose connection: Ø 38 and Ø 51 mm.
Breather connection: Ø 16 mm.

VETUS deck entry: Ø 51 mm.
Filler hose connection: Ø 38 and Ø 51 mm.
Breather connection: Ø 16 mm.

VETUS deck entry: Ø 51 mm.
Filler hose connection: Ø 51 mm.
Breather connection: Ø 25 mm.



If the diesel smell filter is positioned well **above** the deck, the breather line may exit below the deck level, if so required. Supplied with connections for Ø 38 mm or for Ø 51 mm fuel filling hose ④.



FUELSAFE

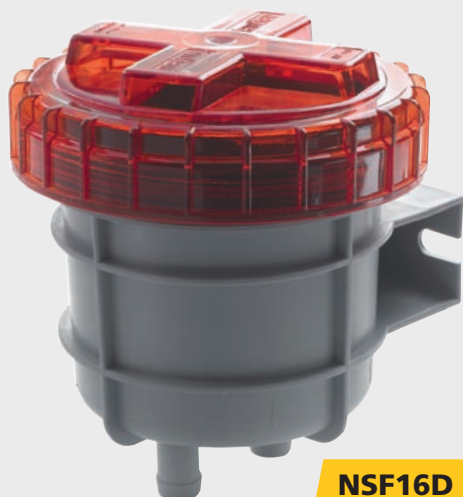
Fuel safe

With ever increasing fuel prices, the theft of fuel from boats is becoming a far more common occurrence. A VETUS FUEL SAFE overcomes this risk simply and cheaply, by making it impossible to insert a siphon hose into the tank through the filling hose. Think about the value of fuel in your tank or the inconvenience of running out unexpectedly?

- Installation of this safety device is very simple.
- No dismantling is required.
- The synthetic packing material is also used to insert the device.
- Suitable for hoses with internal diameters of 38 mm (1 ½") and 51 mm (2").
- Material: Petrol and diesel resistant synthetic.
- Dimensions: Ø 55 mm x 72 mm.

No-smell filters for diesel tanks

Dimensions: l x w x h:
148 x 150 x 162 mm.



NSF16D

NSF19D

NSF25D

Model NSFDS is suitable for Ø 16 mm vent hose only.
Dimensions: l x w x h:
107 x 111 x 111 mm.



NSF16DS

Through the breather line, which is required for all fuel tanks on board boats, unpleasant diesel fuel smells may escape. Installation of a VETUS no-smell filter is the perfect remedy to this problem. The filter housing features Ø 16 mm, Ø 19 mm or Ø 25 mm connectors and the VETUS fuel hose (see page 88) is suitable as a breather line. The filter element can be replaced and must be exchanged once a year.

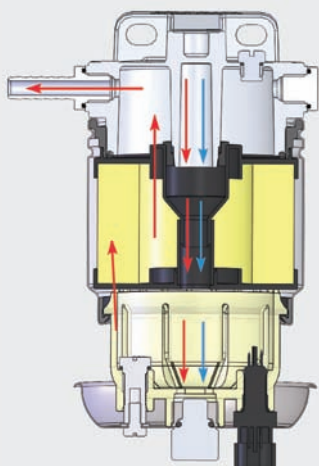
Attention: diesel fuel and froth must NOT enter into the filter housing and its element. It is therefore imperative that the no-smell filter is installed in combination with the VETUS Splash-Stop. As the name already indicates, the VETUS diesel smell filter should **NOT** be used for petrol tanks.

Fuel filters for diesel, for marine use

Many people are totally unaware of the problems that water in fuel can cause. Droplets of water in fuel are the ideal carriers of dirt, rust and micro-organisms through narrow pipes. One small drop of water may cause blockage of the fuel pump, cutting off of the fuel supply and result in poor starting or rough running. Water may also be the cause of rust in the fuel pump and the injectors, resulting in blockage, additional wear and tear and expensive repairs. Modern common rail injection systems, operating at very high pressures and with very narrow tolerances, are particularly sensitive to water and dirt in the fuel. Fuel tanks in boats often contain some water, which seeps in whilst filling, or which is formed by condensation. The tank also usually contains more dirt contamination than the primary fuel filter on the engine can handle. Trapped and stale water becomes an ideal breeding place for micro-organisms which create dark sludgy substances and even more problems in the engine fuel system. A VETUS fuel filter / water separator fitted between the tank and the fuel lift pump will prevent damage to the engine and ensure easy starting and smooth running. These filters are split into 2 major groups:

1. **Spin On filters with approval.** These filters fulfill all CE and ABYC requirements, relating to installation in the engine room. One of the requirements is that the filter can withstand a fire test of 2.5 minutes. Remarkably, these VETUS filters are provided with a transparent bowl, which allows easy checking for water contamination. Most other makes of filter on the market only pass the abovementioned fire test when supplied with a metal bowl.
2. **Centrifugal filters with cartridge element.** These filter types are specially developed for high output engines. **They are supplied with CE, ABYC and SOLAS (IMO) approval** and are therefore suitable for commercial use. In common with the spin on filters, they also have a transparent bowl which withstands all stipulated fire tests.

The spin on filter types are as follows:



- These filters conform with all CE, ABYC and IMO standards.
- The range is suitable for all diesel engines up to 5000 hp.
- The transparent bowl allows easy checking for water contamination.
- The patented fuel flow system increases the effective filtering surface by up to 5 times, compared with conventional filters.
- Spin-on filters may be changed without the use of tools.
- The filters come complete with all connectors.
- Spin-on elements and bowls are replaced as a single unit. Therefore no more spills or leaks
- Multi-filters can be replaced whilst the engine is still running.
- All fittings feature O-ring sealing, for fast and leak-free installation without the use of tape or liquid gaskets.



330VTEB

340VTEB

350VTEB

Connection kit



Filter models 330, 340 and 350 are supplied with a connection kit, consisting of:
2 hose pillars M14 x 1,5 with a stub for Ø 10 mm hose. 1 blind plug M14 x 1,5 to blank off one of the outlets. All these components feature O-ring sealing, for fast and leak-free installation

Alarm sets for fuel filters

Unexpected problems due to water contamination or filter blockage can be avoided by fitting an alarm set to Vetus fuel filters.

For single filters, set FMSETS consists of a water level sensor, a low fuel pressure sensor to detect filter blockage and a dashboard instrument with warning lights, which indicates which of the values has been exceeded.

For double filters, set FMSETD consists of two water level sensors, a low fuel pressure sensor and a dashboard instrument with warning lights.



FMSETD

For boats that sail offshore, we strongly recommend these dual filter systems. In rougher sea conditions, dirt and water accumulated in the fuel tank becomes agitated and can rapidly clog the filter with little warning.

This may result in loss of engine power and all the dangers that may present. However, simply turning the changeover valve will switch over to the clean spare filter, without even having to stop

the engine. These dual filters are supplied with a vacuum gauge as standard. When the gauge shows in the yellow zone (-0,2 to -0,38 kg/cm²), the recyclable filter element should be replaced.



75330VTEB

75340VTEB

75350VTEB

All single spin on filters may be supplied with a manual pump for easy bleeding of the system.



330VTEPB



340VTEPB



350VTEPB

Spin-on filters with approval

Maximum capacity l/hr (g/hr)	190 (42)			380 (84)			460 (102)		
VETUS code	330VTEB	330VTEPB	75330VTEB	340VTEB	340VTEPB	75340VTEB	350VTEB	350VTEPB	75350VTEB
Version	single	with pump	double	single	with pump	double	single	with pump	double
Connections	M14 x 1,5	M14 x 1,5	R ¹ / ₂	M14 x 1,5	M14 x 1,5	R ¹ / ₂	M14 x 1,5	M14 x 1,5	R ¹ / ₂
Height (mm)	205	205	305	265	265	365	325	325	425
Width (mm)	120	120	310	120	120	310	120	120	310
Depth (mm)	120	120	167	120	120	167	120	120	167
Weight (kg)	1,3	1,3	4,7	1,45	1,45	5	1,6	1,6	5,3
Replacement element	VT33EB	VT33EB	2x VT33EB	VT34EB	VT34EB	2x VT34EB	VT35EB	VT35EB	2x VT35EB
Filter grade	10 micron (blue) or 30 micron (red)								
Replace filter	When vacuum gauge indicates between -0.2 and- 0.38 kg/cm ² , or once a year								
Certified	CE + ABYC								

The maximum capacities shown for the double filters assume that one filter is always kept as a spare.
If both filters are used together, then the capacity may be doubled.

Petrol fuel filter

This water separator petrol fuel filter is designed for use with outboard motors, but is also suitable as a pre-filter for inboard petrol engines. The maximum capacity is 120 litres hour and it can be fitted to petrol engines with a maximum output of 500 hp. The filter is supplied complete with all connector fittings for Ø 10 mm hose. The filter mesh is T10 micron.
Replacement filter: VT32

Dimensions:
Length: 157 mm
Width: 104 mm
Height: 112 mm



320VTNB

Remote oil filter kit

When installation space is tight, it is often difficult to reach the engine oil filter for routine maintenance. For VETUS Mitsubishi and VETUS Deutz engines we offer a remote oil filter kit, allowing the existing filter to be relocated in a more accessible position.

Applicable to the following engines:

SET0211	SET0213
M2.02	DT4.70
M2.06	DTA4.85
M3.28	-
M4.15	-
M4.17	-
M4.55	-



SET0211

SET0213



75100VTE

This modular system may be ordered in combinations of 2 to 6 filters for engines of up to 5000 hp. The fuel inlet and outlet can be configured on the same side or opposite sides, depending on the installation requirements. When determining the required capacity it is always assumed that one filter is held in reserve. So, with a dual filter only one element is in use and the other is in reserve. With a 6 filter configuration, 5 elements are in use and one is in reserve.

All these filters have a patented fuel flow system. The fuel passes from the top of the unit to the bottom and from the outside to the inside providing the most effective filtering and longest filter life possible. The filtering stages are as follows:

- Centrifugal separator removes water and large solids.
 - Coalescent stage removes suspended water & small particles.
 - Fine paper element filters to 30 microns as standard.
- A 10 micron element is available on request.



91100VTE

Maximum capacity l/hour (g/hour)	720 (160)	1440 (320)	2160 (480)	2880 (640)	3600 (800)
VETUS code	75100 VTE	79100 VTE	83100 VTE	87100 VTE	91100 VTE
No. of filter elements	2	3	4	5	6
Connections	R ¾	R 1	R 1½	R 1½	R 1½
Height (mm)	540	540	540	540	540
Width (mm)	465	630	788	940	1100
Depth (mm)	335	335	335	335	335
Weight (kg)	12,5	20	27,6	35	41
Replacement element	2020 VTR = 30 micron (red) 2020 VTB = 10 micron (blue)				
Filter grade, standard	30 micron				
Replace filter	When vacuum gauge indicates between -0.2 and- 0.38 kg/cm², or once a year				
Certified	CE + ABYC + SOLAS (IMO)				

The maximum capacities shown above assume that one filter is always kept as a spare.
E.g.: 5 filters - 4 in use & 1 spare. If all filters are used together, 720 l/hour (180 g/hour) may be added to the capacity.

Filter models WS180 and WS720 are suitable for both petrol and diesel fuels and comply with the fire resistance test according to ISO 1008.

These water separator/filters should be installed as close as possible to the fuel tank and in a vertical position.



WS 180



WS 720

Technical data

Model	Maximum capacity	Recommended capacity	Connection ports	Pipe connectors	Weight	Contents of receiver bowl	Heat deflection shield	Suitable for diesel engines	Suitable for petrol engines	Replace filter elements
	lph (gph)	l/hour	Female thread	around	kg	cm ³				No. of service hours**
WS180	180	110	M14 x 1,5 mm	8 mm	0,7	170	✗	✓	✓	200
WS720	720	440/640*	M18 x 1,5 mm	15 mm	1,5	170	✗	✓	✓	200

* With rotary fuel injection pump (as is the case with VETUS DEUTZ engines)

** In any case: replace filter elements once a year

Mounting brackets

In most engine spaces it is necessary to fit ancillary equipment to the bulkheads and panels. However, when these are clad with sound deadening material, it is difficult to fix things neatly. To overcome this problem, VETUS has developed special mounting brackets which can be used to fix amongst other things: Cooling water strainers, No-smell filters, Fuel filters / water separators, Bilge oil / water separators, Anti-siphon vents. These brackets come complete with bolts, washers and self-locking nuts. Fixings to mount the bracket itself are not supplied. Suitable for use with sound deadening materials up to 40 mm thick. Material stainless steel.



MBSET04



BOAT INSTRUMENTS

WHY VETUS BOAT INSTRUMENTS?

- VETUS boat instruments are double glazed, **to avoid internal condensation.**
- All instrument panels are **watertight.**
- All instrument panels have plug connectors **for quick and reliable installation.**
- An instrument panel **can be extended with** the aid of VETUS extension panels.
- The key switch on all **instrument panels** has a watertight cover.
- The VETUS programme includes **ultrasonic level sensors**, both analogue and using BUS technology.
- All **switch panels** are supplied pre-wired.





VETUS, creators of...

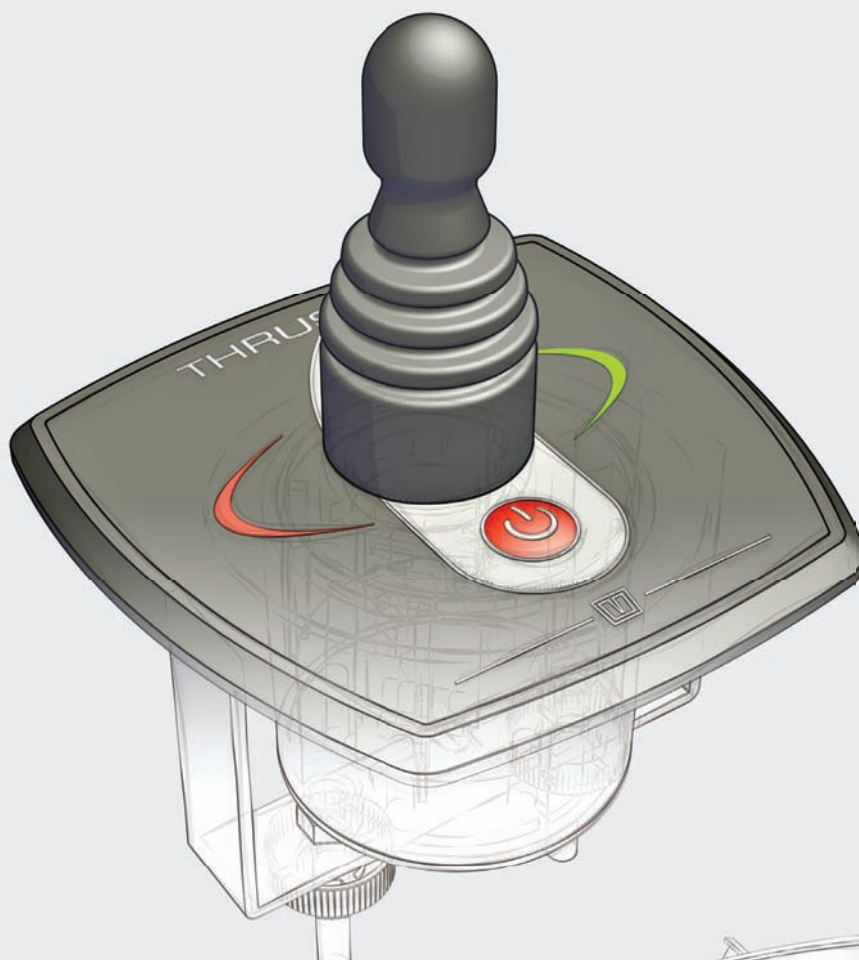
A dashboard with a modern appearance and a single style: an often heard request from our customers. In order to answer these questions, VETUS has developed a new line of deluxe instrument panels. In addition to the contemporary styling, the use of high quality materials enable these panels to withstand any type of weather.

The line consists of an aluminium bow thruster and switch panels.

For installing other individual gauges, there is a panel which is available with a chrome, black or white surround, the same as the bezels supplied with the gauges, enabling these to all match together. In addition this panel is also available with an aluminium surround. Therefore, whatever combination and appearance is chosen, it can all be delivered in one single style.

All VETUS panels are designed so that no screws or fastenings are visible when the panel is installed. The panels are watertight according to IP66 when installed.

The new bow thruster panels, types BPAS and BPAJ are backwards compatible with other VETUS bow thruster panels. That is to say; both the connector plug and the hole size are the same. Models BPSR and BPJR have the same connector plug, but the hole size is different.



In development

In addition to this new range of bow thruster panels, the engineers from VETUS have developed a new line of engine panels. These new panels have the same contemporary styling and use of high quality materials.

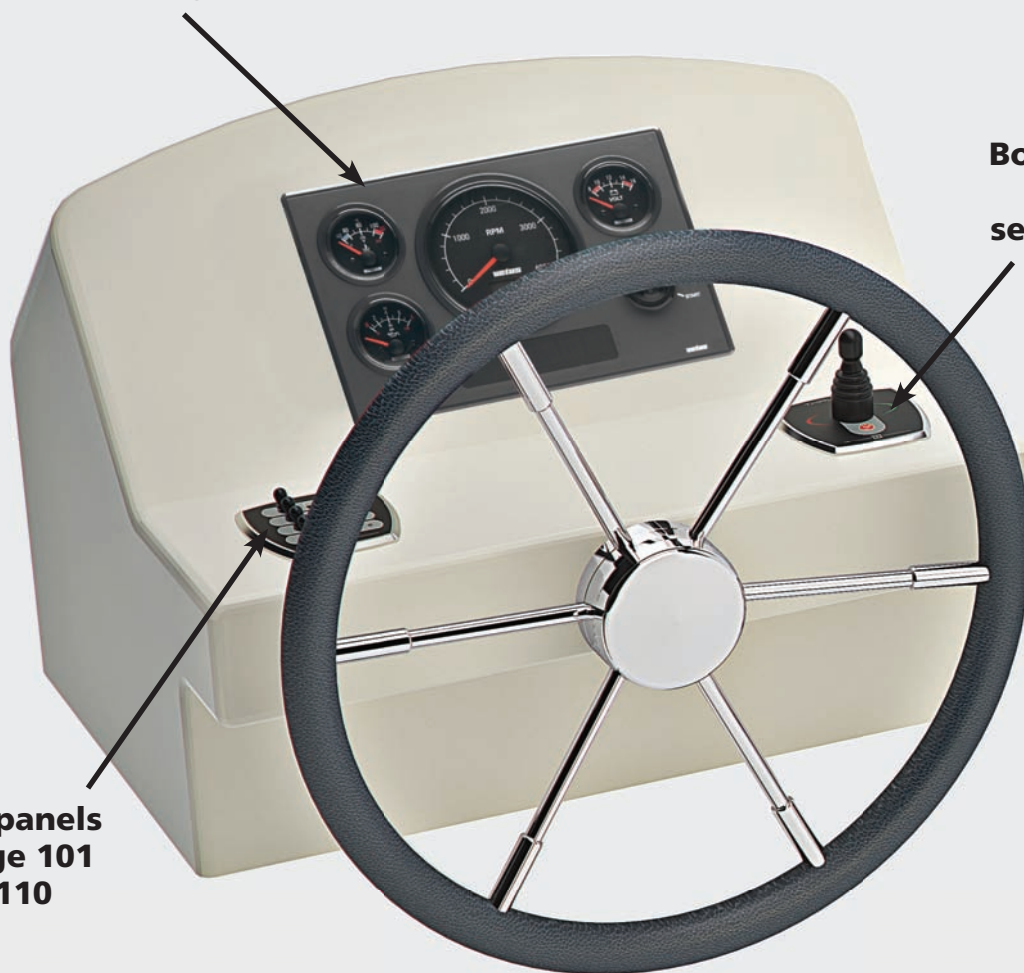


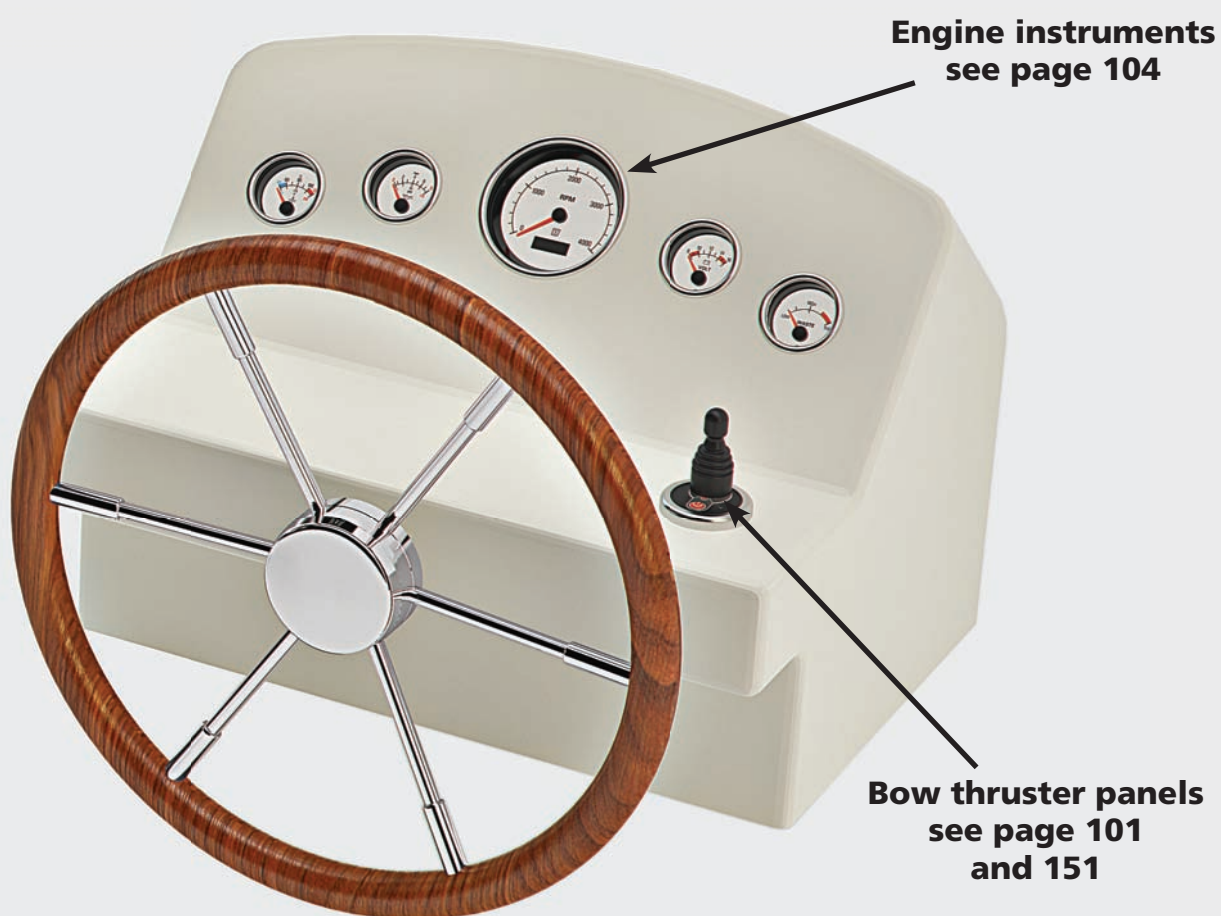


**Engine instrument panels
see page 102**

**Bow thruster
panels
see page 100
and 151**

**Switch panels
see page 101
and 110**





**Engine instruments
see page 104**

**Bow thruster panels
see page 101
and 151**



New deluxe control panels

VETUS proudly introduces this new range of control and switch panels. Beautifully formed and based on a sturdy aluminium plate with deep gloss finish to the surround, these new panels have a quality feel.

Bow or stern thruster panels

These new bow thruster panels are available in either aluminium or synthetic finish. Both types can be fitted in a 52 mm diameter hole, making installation quick and easy using a hole saw. The round synthetic version is supplied with the same bezel rings as other VETUS boat instruments and is therefore ideal to be mounted alongside these. It can also be fitted in an engine panel in place of an instrument. The panels are provided as standard with a switched outlet (max 3 A) for switching extra equipment and are waterproof to IP66. The new bow thruster panels, types BPAS and BPAJ are backwards compatible with other VETUS bow thruster panels. That is to say; both the connector plug and the hole size are the same. Models BPSR and BPJR have the same connector plug, but the hole size is different.

Aluminium bow thruster panel
Dimensions: 95 x 95 mm
Built-in depth: 85 mm

NEW



BPAS



BPAJ



Round bow thruster panel with chromed plastic bezel. Waterproof to IP66.
 Dimensions: 63 mm diameter
 Built-in depth: 75 mm

NEW

BPSR



BPJR



Switch panel

This switch panel has four toggle switches with automatic fuses and LEDs and is waterproof according to IP64. The panel is suitable for 12 or 24 Volt installations and comes with self-adhesive labels for many different functions.

Dimensions: 95 x 95 mm
 Built-in depth: 65 mm

NEW



P4AFA



Engine instrument panels (black dial)



MP34BS12A

MP34BS24A

VETUS engine instrument panel, with 6 monitoring lights, acoustic alarm, pre-heating/starter switch with removable key, combined revolution/hour counter, temperature gauge, voltmeter and oil pressure gauge. Waterproof according to IP64. Dimensions: 255 mm x 161 mm. Built-in depth 121 mm.



MP21BS12A

VETUS engine instrument panel, provided with 6 monitoring lights, combined revolution/hour counter, acoustic alarm and pre-heating/starter switch with removable key. An additional instrument can be fitted. This panel is excellently suited for installation on a fly-bridge or a second steering position. Waterproof according to IP64. Panel dimensions: 193 mm x 161 mm. Built-in depth: 121 mm.

Extension panel

Designed to receive 2 VETUS instruments with a cut-out diameter of Ø 52 mm. Dimensions: 161 x 99 mm (instruments to be ordered separately).

XTPAN252A



PWL12A

PWL24A

In order to reduce condensation as far as possible, all VETUS instrument gauges are double glazed.



All VETUS engine instrument panels featuring a key starter switch are supplied with a separate watertight cover for the switch.

Engine instrument panels (cream dial)



MP34BN12A

MP34BN24A

VETUS engine instrument panel, with 6 monitoring lights, acoustic alarm, preheating/starter switch with removable key, combined revolution/hour counter, temperature gauge, voltmeter and oil pressure gauge. Waterproof according to IP64.

Panel dimensions: 255 mm x 161 mm.
Built-in depth: 121 mm.



MP21BN12A

VETUS engine instrument panel, with 6 monitoring lights, combined revolution/hour counter, acoustic alarm and preheating/starter switch with removable key. An additional instrument can be fitted. This panel is excellently suited for installation on a fly-bridge or a second steering position. Waterproof according to IP64.
Dimensions: 193 mm x 161 mm.
Built-in depth: 121 mm.



Design your own panel with the "PWL" system

Many designers and installers wish to lay out their own instrument panel, rather than using a standard panel supplied by the engine manufacturer. This can now be easily achieved using the PWL system.

Consider the advantages:

- Choose your own instruments, black or cream and for 12 or 24 V supply.
 - All cables are bundled and colour coded: no more tracing loose wires.
 - Cable plugs and connectors are factory fitted, ready to connect to VETUS engine instruments.
- Instruments can be positioned up to 50 cm away from the key switch.

Standard system consists of:

- Control panel (130 x 35 mm) with 6 monitoring lights.
- Acoustic alarm.
- Pre-heat and starting key switch.
- Cable for revolution counter/hour counter.
- Cables for voltmeter, oil pressure gauge, water temperature gauge.
- Plugs for connection of extension cables.

Optional equipment:

- Extension cable to the engine, available in 2, 4 or 6 metre length
- Universal wiring harness
- Cable splitter to connect to a second panel

Extension panel

Designed to receive 2 VETUS instruments with a cut-out diameter of Ø 52 mm.
Dimensions: 161 x 99 mm.
(instruments to be ordered separately).



XTPAN252A



MP10B12

VETUS engine instrument panel **for sailing boats**, with 5 monitoring lights, acoustic alarm and a pre-heating/starter switch with removable key. Waterproof according to IP64.
Panel dimensions: 156 mm x 94 mm.
Built-in depth: 120 mm.

All VETUS engine instrument panels on page 102 and 103 come with a multi-pin connector as standard.



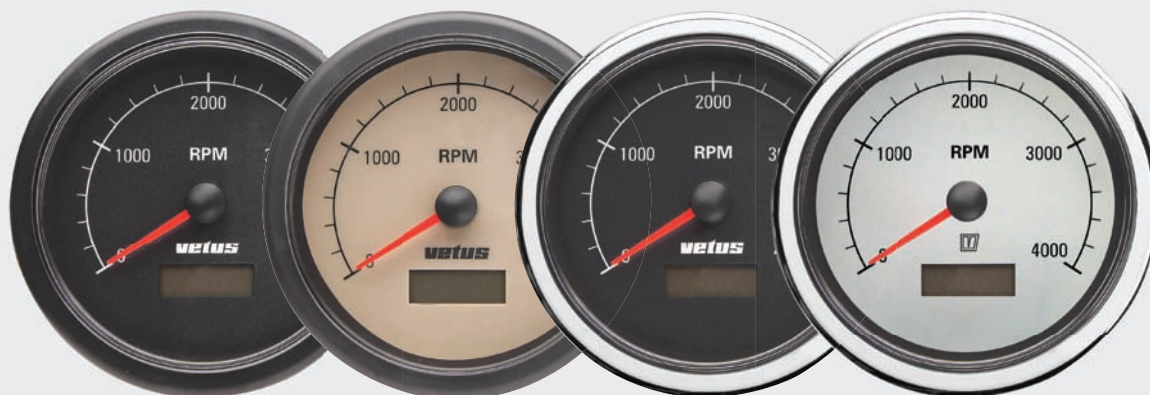
Engine instruments with black, cream or white dials

The market offers a large variety of boat instruments, in all sorts and sizes. Here are three reasons why you should choose VETUS boat instruments:

- **High degree of accuracy:** Owing to the very special suspension of the mechanism and the removable pointer, each instrument can be tested and calibrated individually. And that is exactly what is done!
- **Reliability and longevity:** The annual number of repair jobs can be counted on the fingers of one hand. Literally!
- **Smart illumination:** No solid dials with over-head illumination from the edge, but translucent dials instead, which are illuminated from below, thus offering optimum readability.

- In order to prevent condensation as far as possible, all VETUS instruments are double glazed.
- All instruments are supplied with two round bezels as standard: one black plastic and the other chrome finish plastic. White instruments with chrome finish plastic and white plastic. Height: 10 mm. The large instruments have an overall diameter of Ø 114 mm and fit a cut-out of Ø 100 mm. The small instruments have an overall diameter of Ø 63 mm and fit a cut-out of Ø 52 mm.

Code WL= white, B= black and W= cream.



TACHB

TACHWL

TACHW

Revolution counter (with hour counter incorporated)

12/24 Volt D.C., suitable for alternators with W-connection. Suitable for diesel engines. Scale calibration: 0-4000 r.p.m. Also available with scale calibration: 0-5000 r.p.m.

Exhaust temperature alarm

Designed for water injected exhaust systems. Provides a visual and an audible alarm when the temperature inside the exhaust hose or the muffler exceeds an acceptable level. The temperature sensors, to be fitted into the exhaust hose or the waterlock/ muffler and the alarm unit must be ordered separately. In the case of a twin engine installation 2 sensors may be connected to 1 alarm unit, if so required. One sensor may also serve two alarm units, e.g. in the case of a second steering position.



XHIB

XHIWL

XHIW



TEMPB

TEMPWL

TEMPW

Temperature Gauge

Can be supplied for 12 or 24 Volt D.C.
Scale calibration: 40-120°C. and 105-250°F.
Temperature sensors are available as optional equipment.



Trim gauge

For connection to the trim sensor of a stern drive or a set of trim tabs. Voltage: 12 Volt D.C. Sensor resistance range: Trim down: 10 Ohm Trim up: 180 Ohm A connection cable is available as an option.

TRIMB

TRIMWL

TRIMW



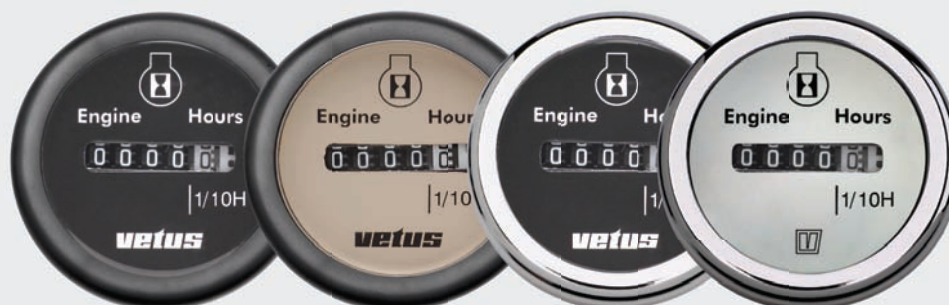
Hour counter

Analogue engine hour counter which connects to the ignition switch.

HOURL

HOURLWL

HOURLW



Voltmeter

Can be supplied for 12 or 24 Volt D.C. Scale calibration respectively: 8 -16 V and 16 -32 V.

VOLTB

VOLTWL

VOLTW



Ammeter

Scale calibration: +/- 60 A, for 12 or 24 Volt D.C., with shunt incorporated. This ammeter is also available with scale calibration of +/- 100 A, with a separate shunt.

AMPB

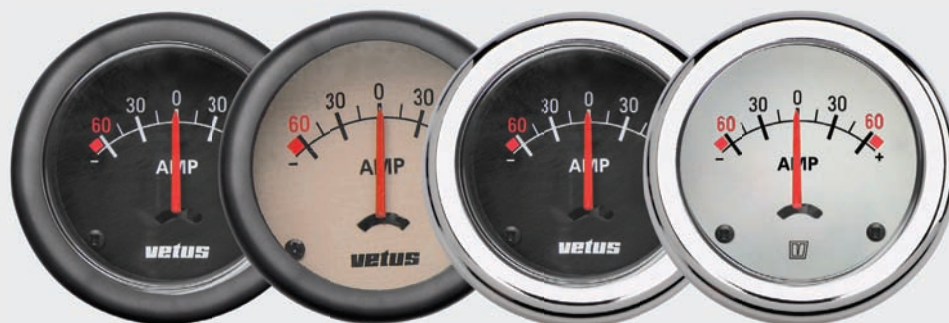
AMPSB

AMPWL

AMPSWL

AMPW

AMPSW





TACHB/TACHWL/TACHW	Revolution counter/hour counter	12/24 Volt, (0-4000 RPM)	cut-out size Ø 100 mm
HOURLB/HOURWL/HOURW	Hour counter	12/24 Volt	cut-out size Ø 52 mm
VOLT12B/VOLT12WL/VOLT12W	Voltmeter	12 Volt (10-16 V)	cut-out size Ø 52 mm
VOLT24B/VOLT24WL/VOLT24W	Voltmeter	24 Volt (20-32 V)	cut-out size Ø 52 mm
AMPB/AMPWL/AMPW	Ammeter	12/24 Volt (+/- 60 Amp)	cut-out size Ø 52 mm
AMPSB/AMPSWL/AMPSW	Ammeter with separate shunt	12/24 Volt (+/- 100 A)	cut-out size Ø 52 mm
OIL12B/OIL12WL/OIL12W	Oil pressure gauge	12 Volt (0-8 kg/cm ²)	cut-out size Ø 52 mm
OIL24B/OIL24WL/OIL24W	Oil pressure gauge	24 Volt (0-8 kg/cm ²)	cut-out size Ø 52 mm
TEMP12B/TEMP12WL/TEMP12W	Water temp. gauge	12 Volt (40-120°C)	cut-out size Ø 52 mm
TEMP24B/TEMP24WL/TEMP24W	Water temp. gauge	24 Volt (40-120°C)	cut-out size Ø 52 mm
WATER12B/WATER12WL/WATER12W	Water level indicator	12 Volt	cut-out size Ø 52 mm (excl. sensor)
WATER24B/WATER24WL/WATER24W	Water level indicator	24 Volt	cut-out size Ø 52 mm (excl. sensor)
FUEL12B/FUEL12WL/FUEL12W	Fuel level indicator	12 Volt	cut-out size Ø 52 mm (excl. sensor)
FUEL24B/FUEL24WL/FUEL24W	Fuel level indicator	24 Volt	cut-out size Ø 52 mm (excl. sensor)
WASTE12B/WASTE12WL/WASTE12W	Waste water level indicator	12 Volt	cut-out size Ø 52 mm (excl. sensor)
WASTE24B/WASTE24WL/WASTE24W	Waste water level indicator	24 Volt	cut-out size Ø 52 mm (excl. sensor)
RPI1800B/RPI1800WL/RPI1800W	Rudder position indicator	12/24 Volt	cut-out size Ø 52 mm (excl. sensor)
RPI1810B/RPI1810WL/RPI1810W	Rudder position indicator	12/24 Volt	cut-out size Ø 107 mm (excl. sensor)
RFU1718	Rudder position sensor type RFU1718	12/24 Volt	

Oil pressure gauge

Available for 12 or 24 Volt D.C. Scale calibration 0-8 kg/cm² and 0-110 p.s.i. Oil pressure sensors are available as optional equipment.



OILB

OILWL

OILW

Water

Available for 12 or 24 Volt D.C.



WATERB

WATERWL

WATERW

Fuel

Available for 12 or 24 Volt D.C.



FUELB

FUELWL

FUELW



Waste water (black or grey)

Available for 12 or 24 Volt D.C.

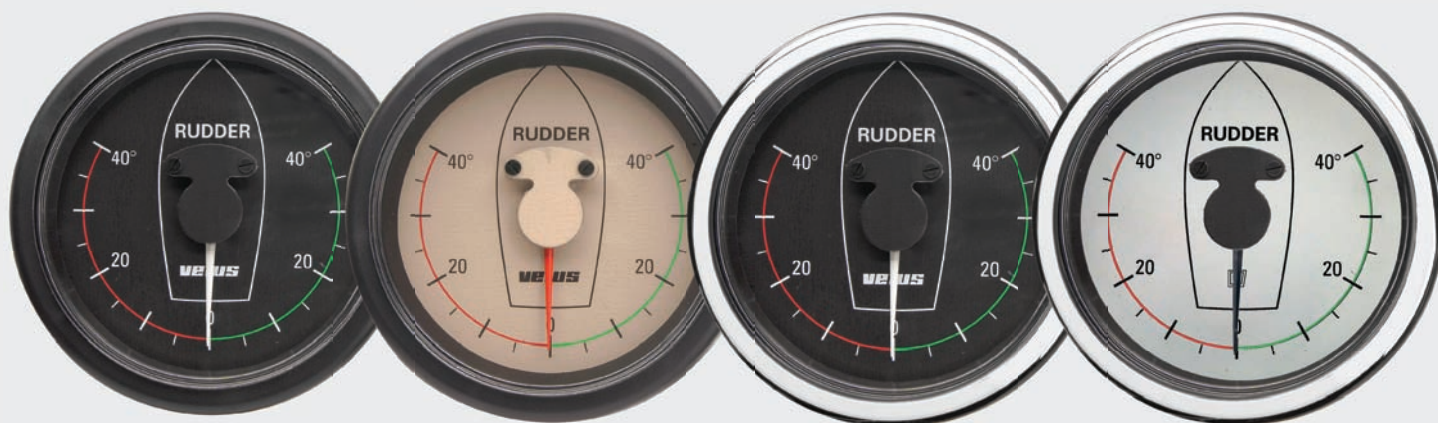
The waste water indicator can be provided with an interface (code EP412326), suitable for 12 and 24 V installations. A warning light can be connected to this interface, which will then indicate when the holding tank is almost full and that it is better not to use the toilet.



WASTEB

WASTEWL

WASTEW



RPI1810B

RPI1810WL

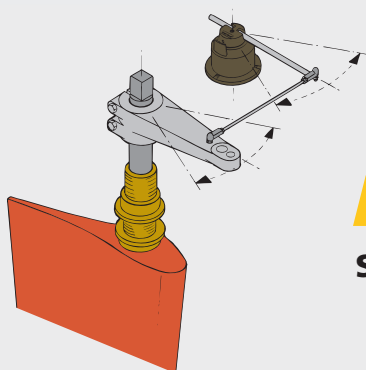
RPI1810W



RPI1800B

RPI1800WL

RPI1800W



RFU1718

Sending unit

Rudder position indicators

Both indicating units have scale illumination and are suitable for both 12 V and 24 V electrical installations.



UNIDASHW and UNIDASHB

The Unidash is a new addition to the VETUS boat instrument range and shares the same excellent quality and mechanical characteristics as all the other instruments.

The Unidash provides much more than a simple tachometer. This is the first multi-functional instrument suitable for engines with CAN bus and/or analogue sensors. It is possible to read the engine data with just one instrument and to display any alarms that may be present. In brief, it is a complete dashboard in one instrument.



UNIDASHW



UNIDASHB

Characteristics:

- Very accurate analogue tachometer with 0.1% accuracy.
- Power voltage: 9-32 Volt DC.
- back-lit display via dimmable LED.
- Just two front mounted switches for simple operation.
- RJ45 "daisy chain" connectors for the sensors or additional analogue CAN bus instruments.
- Digital readout of motor data and alarm indication.
- CAN reading of (if activated): engine hours, fuel consumption, throttle position, turbo pressure, battery voltage, pre-heat.
- For analogue engines fitted with VETUS sensors, digital readout of: engine temperature, engine oil pressure, gearbox oil pressure, fuel tank level and battery voltage.
- Indication of CAN alarms, or with analogue sensors alarms for: engine temperature, engine oil pressure, gearbox oil pressure, fuel tank level, battery voltage and alternator output.
- Possibility to connect NMEA 0183 sensors for boat speed and water depth measurement.
- Possibility to connect an external alarm siren.
- Waterproof from the front to IP66.
- Available in black (UNIDASHB) or white (UNIDASHW).
- In order to prevent condensation this instrument is double glazed.
- Hole diameter Ø 100 mm, overall diameter Ø 114 mm.

Ultrasonic level sensor - analogue version

The VETUS ultrasonic level sensor, **SENSORA** is contactless and will measure the fluid level in any type of tank. It is suitable for use with: petrol, diesel fuel, drinking water, black and grey waste water. After installation, the sensor can be calibrated very easily with the aid of a LED and a calibration wire; no other equipment is required. The sensor may be installed in any type of tank, regardless of its dimensions, but with a maximum depth of 120 cms. When fitting an ultrasonic sensor to a VETUS fuel tank filler kit type FTKIT, adaptor SENSORSR must also be ordered. The sensor may be connected to all standard VETUS analogue level indicators and also to the VETUS waste water control panel (WWCP). SENSORA and SENSORB are not suitable for use with metal tanks.

Technical data:

Voltage: 12 and 24 Volt D.C.
Current consumption: 35 mA
Interface: Analogue
Tank depth: 120 cm
Accuracy : + / - 5%
Temperature range: - 20 to + 70°C.
Flange: SAE, 5 holes
Dimensions: Ø 77 x 23 mm



SENSORA



SENSORB

Technical data:

Voltage: 12 and 24 Volt D.C.
Current consumption: 35 mA
Interface: Bus (RS485 bus).
Tank depth: 120 cm.
Accuracy : + / - 5%.
Temperature range: - 20 to + 70°C.
Flange: SAE, 5 holes.
Dimensions: Ø 77 x 23 mm.

Ultrasonic level system-bus version (RS485-bus) and graphic display

The VETUS ultrasonic level sensor, **SENSORB** is contactless and will measure the fluid level in any type of tank. It is suitable for use with: petrol, diesel fuel, drinking water, black and grey waste water. After installation, the sensor can be calibrated very easily using the graphic display. The sensor may be installed in any type of tank, regardless of its dimensions, but with a maximum depth of 120 cms. The display instrument (SENSORD) can be used to show the contents of up to 4 different tanks.



SENSORD



Universal tank float

Universal Tank float for drinking water, petrol and diesel fuel. Available in 7 sizes: 280, 320, 380, 480, 580, 680 or 780 mm in length. Every 2,5 centimetres the VETUS universal tank float indicates the difference in fluid level. Just compare this with other systems which can only show 3 positions (full - about half full - empty).

Each tube length contains the maximum number of reed contacts, instead of the bare minimum of just three (full, half full, empty). By virtue of this, maximum accuracy of your fluid gauges is ensured. Besides, the reed contacts (electronic switches) are sealed "fluid-tight".

SENSOR

Float for waste water tanks

The arm length is adjustable between 200 and 412 mm.

WWSensorA



Float for fuel tanks

Float for application in all rigid petrol and diesel fuel tanks with a height between 140 and 660 mm. Both the vertical strip and the horizontal float arm are completely adjustable.

FSensor2



Naturally, all VETUS tank level indicators are matched with our tank floats and can be connected directly to each other to give an accurate reading. To connect non-VETUS level indicators to a VETUS tank float, it is necessary to install an EP46849 signal converter in the circuit.



Switch panels

Type P8F

This panel is splash proof according to IP 64. It has 8 separate circuits, each provided with a switch, indicator LED and fuse holder and it is suitable for both 12 Volt and 24 Volt D.C. circuits.



The panel can be used with conventional automotive (ATO) fuses or with automatic fuses.

The following automotive (ATO) fuses are supplied as standard: 2 x 1A, 2 x 3A, 4 x 5A, 2 x 7.5A, 4 x 10A and 2 x 15A. Automatic fuses may be ordered as optional equipment.

The 8 fuse holders are located in a separate compartment, which can be opened at the front of the panel and either type of fuse may be fitted. **Sixty (60) self-adhesive name/symbol plates for different functions are standard supply.** There are also 2 covers supplied for the fuse compartment, depending on whether automatic fuses or conventional automotive (ATO) fuses are used.

The panel is completely pre-wired and provided with a terminal rail, for connection of the power supply and the consumer equipment. The panel is made of synthetic and non-corrosive materials.

Dimensions: 99 x 161 mm. Built-in depth: 45 mm.



P4AFA

New switch panel, see page 101

FUSE06A4	Automatic fuses 6 Amp, for P8FA	(set of 4 pcs.)
FUSE08A4	Automatic fuses 8 Amp, for P8FA	(set of 4 pcs.)
FUSE10A4	Automatic fuses 10 Amp, for P8FA	(set of 4 pcs.)
FUSE15A4	Automatic fuses 15 Amp, for P8FA	(set of 4 pcs.)
P8FA	Switch panel 12/24 V, for 8 blade fuses or automatic fuses (16 blade fuses supplied)	



P8FA

With automatic fuses.



With conventional automotive (ATO) fuses.



Switch panels

Type P6

This panel features 6 on/off switches, 6 monitoring L.E.D.'s and a choice of either 6 automatic fuses, or 6 tubular glass fuses of 10 A.

Dimensions: 94 x 156 mm.

Built-in depth: 50 mm.

Available for 12 or 24 Volt D.C. circuits.

60 Different name-plates (self-adhesive) are supplied for 6 positions.



P6CB12

automatic fuses



P6F12

tubular glass fuses

P6CB24

P6F24

P6F12	Switch panel type P 6 with	6 fuses	12 Volt
P6F24	Switch panel type P12 with	6 fuses	24 Volt
P12F12	Switch panel type P12 with	12 fuses	12 Volt
P12F24	Switch panel type P12 with	12 fuses	24 Volt
P6CB12	Switch panel type P 6 with	6 circuit breakers	12 Volt
P6CB24	Switch panel type P 6 with	6 circuit breakers	24 Volt
P12CB12	Switch panel type P12 with	12 circuit breakers	12 Volt
P12CB24	Switch panel type P12 with	12 circuit breakers	24 Volt

Type P12

This panel features 12 on/off switches, 12 monitoring L.E.D.'s and a choice of either 12 automatic fuses or 12 tubular glass fuses of 10 A.

Dimensions: 188 x 156 mm.

Built-in depth: 50 mm. Available for 12 or 24 Volt D.C. circuits. 60 different name-plates (self-adhesive) are supplied for 12 positions.



P12F12

P12F24

tubular glass fuses



P12CB12

P12CB24

automatic fuses

VETUS switch panels are supplied pre-wired. The only work required is to connect the positive and negative feeds and the various services (lights, pumps etc.). These panels are made of synthetic and non-corrosive materials.



Gas detector GD1000 with carbon monoxide detection



GD1000

Technical data GD1000 and PD1000:

Voltage:	12 or 24 Volt D.C.
Maximum relay contact ratings for extractor fan, gas solenoid valve and external alarm:	1 A for each function.

Dimensions GD1000 and PD1000:

Control panel:	85 x 85 mm.
Built-in depth:	40 mm.
Sensor	35 x 26 x 62 mm high.

The VETUS gas detector model GD1000 offers a gas detection system for a range of combustible gases including propane, butane, methane and hydrogen. In addition it will also detect poisonous carbon monoxide. A single sensor is supplied as standard, which can detect both flammable gases (such as bottled gas) and carbon monoxide. A second sensor can be fitted as an option, for gas detection in an alternative location. The push button marked "Valve" will manually actuate a remote solenoid operated gas valve, if this is installed in the system. If this solenoid valve is in the open position (or not fitted), the presence of gas is detected continuously. If the valve is closed, detection will take place intermittently. Please note, the valve itself is not supplied with the gas detector.

If the gas detector senses high concentrations of flammable gases and/or carbon monoxide, it will trigger an acoustic alarm and a LED on the control panel. Petrol fumes can trigger the alarm at extremely low concentrations, which makes this device less suitable for boats with a petrol engine(s).

The "Mute" button will silence the alarm. The gas detector is provided with three switched connections rated at 1 Amp each. In the event of an alarm situation, these will actuate (if fitted), an extraction ventilator, an external alarm or horn and a solenoid operated gas valve. The extraction ventilator can also be operated manually by means of the "Fan" button. Should the supply voltage drop too low, an acoustic alarm will be triggered and the LED on the control panel will flash. A test function confirms the correct functioning of the gas sensor(s), as well as the three switched connections for the ventilator, external alarm and gas valve. A LED on the sensor indicates when it has reached its maximum life span and should be replaced.

Gas detector PD1000

Gas detector PD1000 detects petrol vapour and carbon monoxide (CO)

In addition to gas detector model GD1000, which detects gases such as butane and propane, VETUS has developed an entirely new gas detector. This model PD1000 specifically detects petrol vapour to prevent the risk of explosion in the engine room, as well as poisonous carbon monoxide (CO).

This gas detector can be supplied with one or two sensors. Both detection functions are carried out simultaneously. Gas detector PD1000 is suitable for both 12 and 24 Volt D.C. supply and its dimensions are identical with model GD1000.



PD1000

It is recommended that the possible presence of petrol vapour and carbon monoxide be checked on a permanent basis; even when the boat is not in use! Therefore, always keep the power supply to this gas detector switched on.

Windscreen wiper control panels

If multiple windscreen wipers are installed this VETUS control panel allows up to 5 wiper motors to run synchronously, at either high or low speed. Each wiper motor is individually switched, so it is possible to select which wipers are operational. The wiper motors to be connected must have 2 speeds and an automatic parking position.

The device also features a combination switch for the functions:

- Screen wash/wipe activation.
- Speed selection and interval wipe delay.

Pressing the switch one way will start the wash/wipe function for all operational wipers. Pressing the switch the other way will select the wiper speed or one of five interval delays for all operational wipers. A LED on the panel indicates which interval position has been selected.

Option

Up to 3 **VETUS rain sensors**, type MARBO, can be connected to the control unit. The rain sensor function is activated using the supplied switch panel. With one single rain sensor fitted, it is possible to activate all five wipers simultaneously. Alternatively, sensor 1 activates one wiper motor, sensor 2 activates three wiper motors and sensor 3 activates one wiper motor. The rain sensor kit consists of a rain sensor and switch panel.

The control panel is supplied complete with the following components: 1 control unit, 5 wiper motor switches, 1 combined switch for wash/ wipe and speed selection, 1 mounting plate with locations for 6 switches and 2 blind plates. The panel is completely pre-wired. The control unit has electronic overload protection and can be DIN rail mounted.

Technical data:

Voltage: 12 and 24 Volt D.C.
Power consumption, stand-by: approx. 10 mA.
Maximum power per wiper motor: 120 W.
Internal fuses: 10A each wiper motor,
5 A for screen wash pump or solenoid valve.
Dimensions: 159 x 90 x 58 mm.
Control panel: 49 x 24 x 37,5 mm.



WPANEL



MARBO



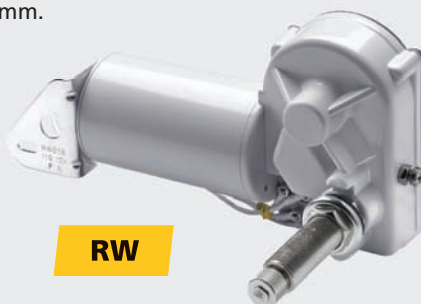
MARBO2

For smaller craft, this panel type RWPANEL 2 will control up to three switched windscreen wipers synchronously. The wipers can be set to run at high or low speed or at one of five interval wipe speeds. If required, the wipers can also be operated automatically by connecting an optional rain sensor.

- Suitable for controlling 1, 2 or 3 individually switched windscreen wipers.
- The wipers can be set at two different speeds.
- There are 5 interval wipe settings.
- A screen wash system can also be activated.
- All connected wipers will work synchronously.
- All wipers will self-park when switched off.
- The panel is suitable for both 12 Volt and 24 Volt D.C. supply.
- Up to three rain sensors (type MARBO2) may be connected, for automatic operation of the wiper(s).
- Dimensions of the control panel: 85 x 85 mm.
- Built-in depth: 40 mm.
- Control unit: 159 x 90 x 58 mm.

wipers

See pages 232 - 237.



RW



RWPANEL2



DRINKING WATER SYSTEMS

WHY VETUS DRINKING WATER SYSTEMS?

- All **tanks** are made of synthetic material, therefore no corrosion.
- VETUS **tanks** can be cleaned easily, owing to the large inspection cover.
- VETUS supplies complete water pressure systems, with integral pump and water pressure control.
- **Electrical components** are available for 12 Volt and 24 Volt systems.
- Quick and easy installation.
- **Drinking water tanks** are available with contents from 40 to 390 litres.
- **Flexible tanks** are hard wearing and with capacities of up to 220 litres.
- **Calorifiers** heat up 5-7 times faster than conventional designs and have minimal heat loss.





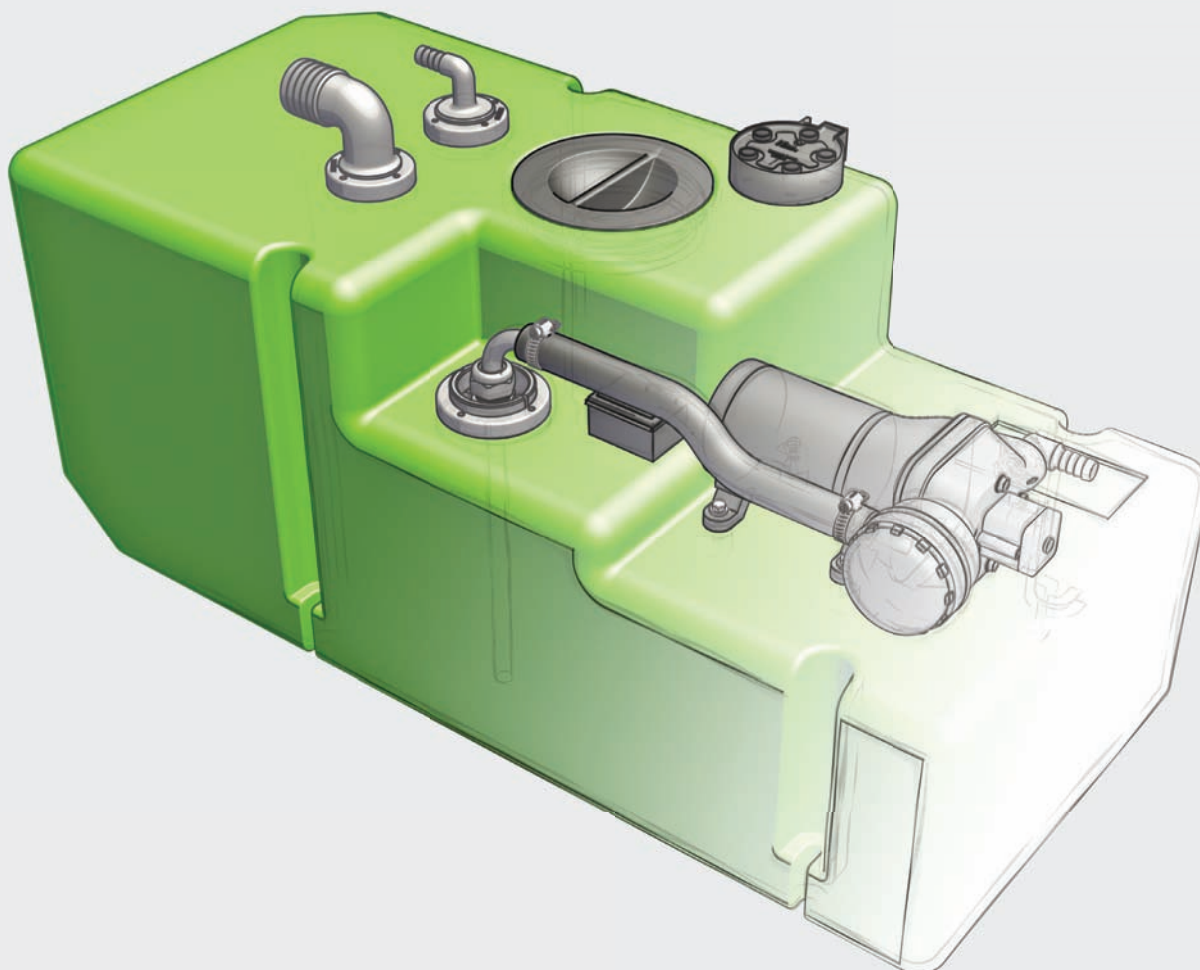
VETUS, Creators of....

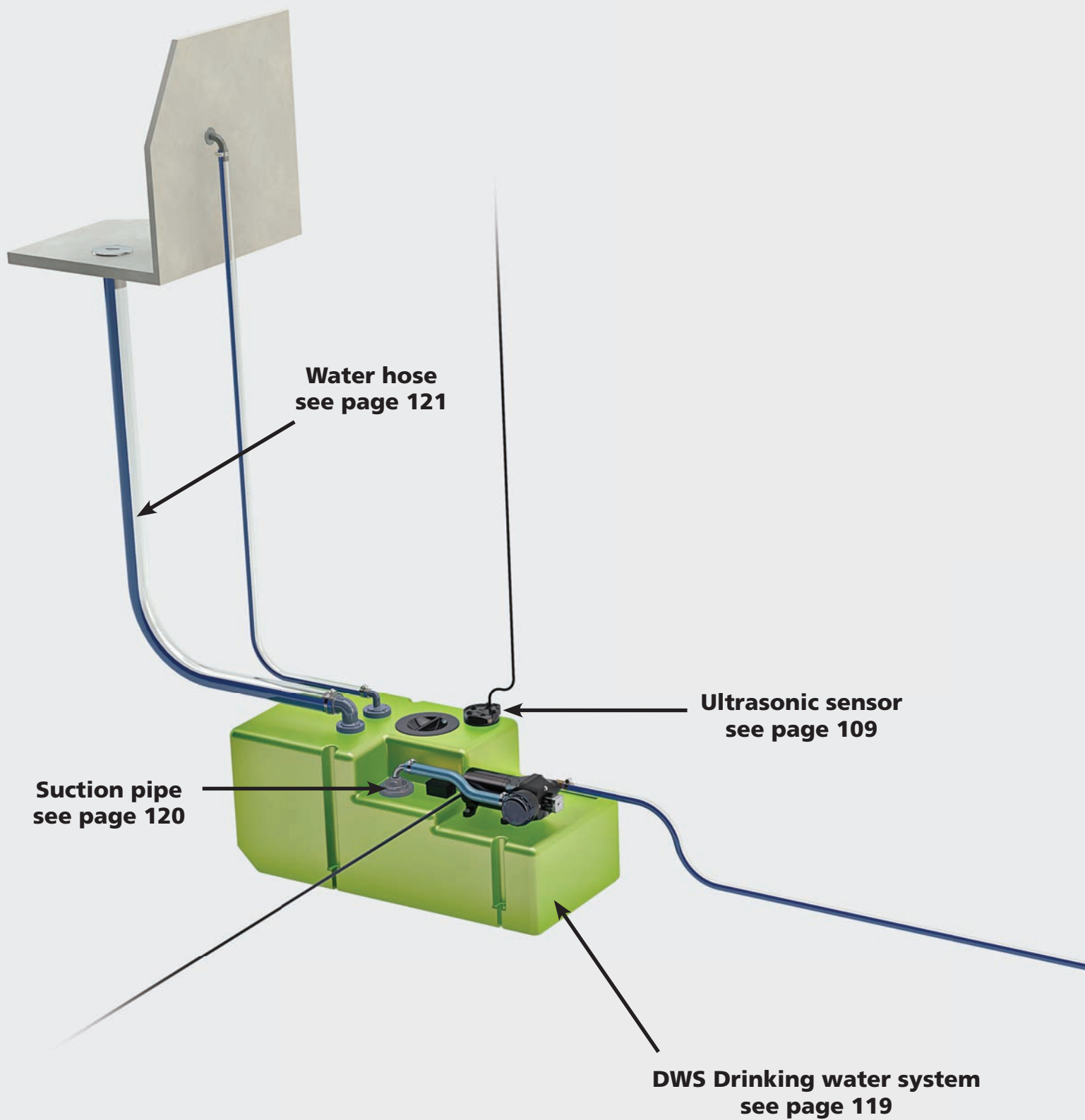
Clean drinking water is life's number one necessity. Therefore, this should also be of optimum quality on board. Due to a sophisticated choice of materials, drinking water stays useable for longer in a DWS system.

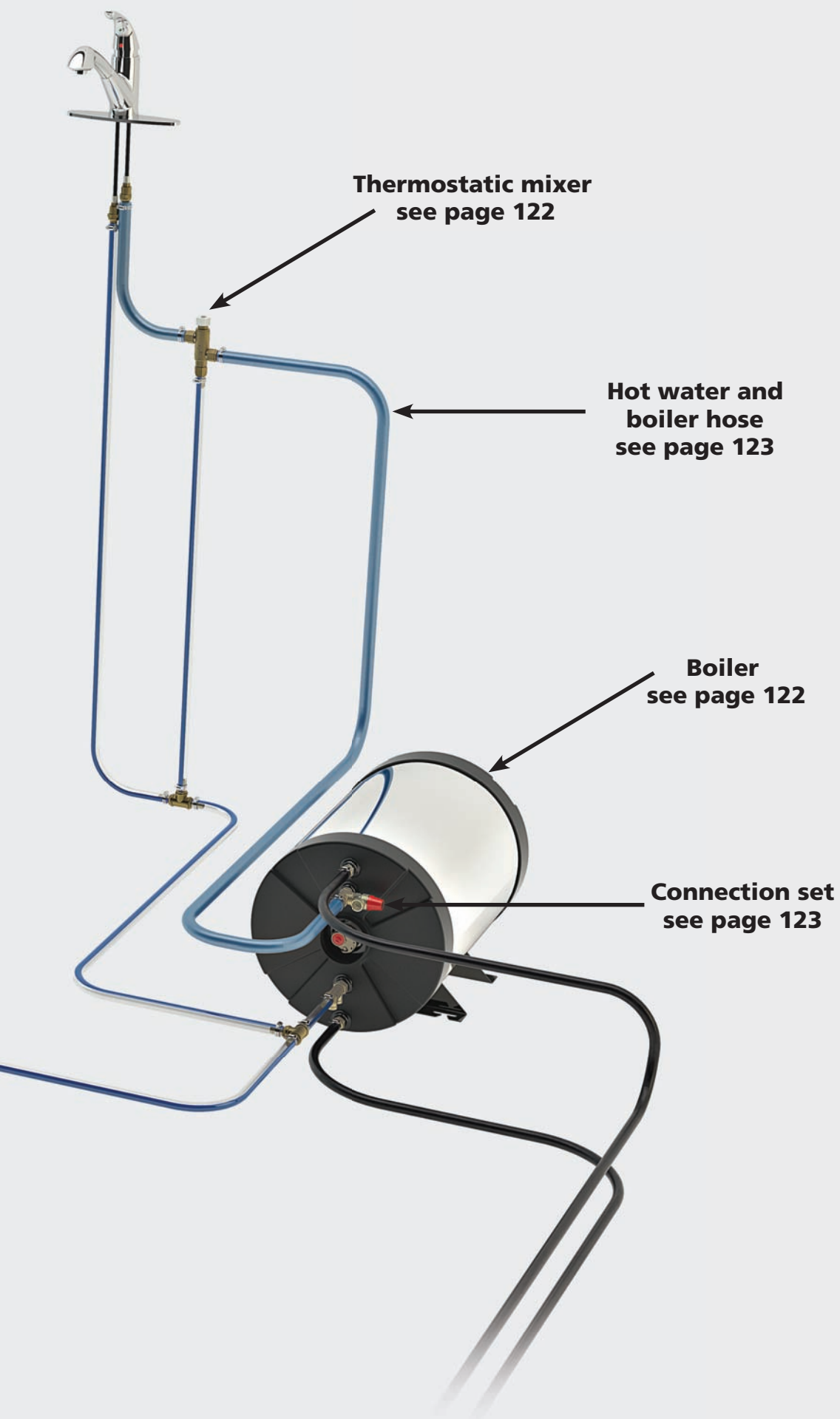
Complete combination.

Through the combination of various functions, our engineers have added a valuable product to our drinking water system range. The tank is equipped as standard with an electric water pump and an ultrasonic level sensor, which accurately senses the water level without making any physical contact with it. The tank comes complete with an inspection lid to enable easy cleaning and connections for the filler, suction and breather hoses. Additional connections are easily added if required.

The complete DWS Drinking Water System is developed for easy installation, ready to deliver clean drinking water at constant pressure.









Rigid tanks for drinking water

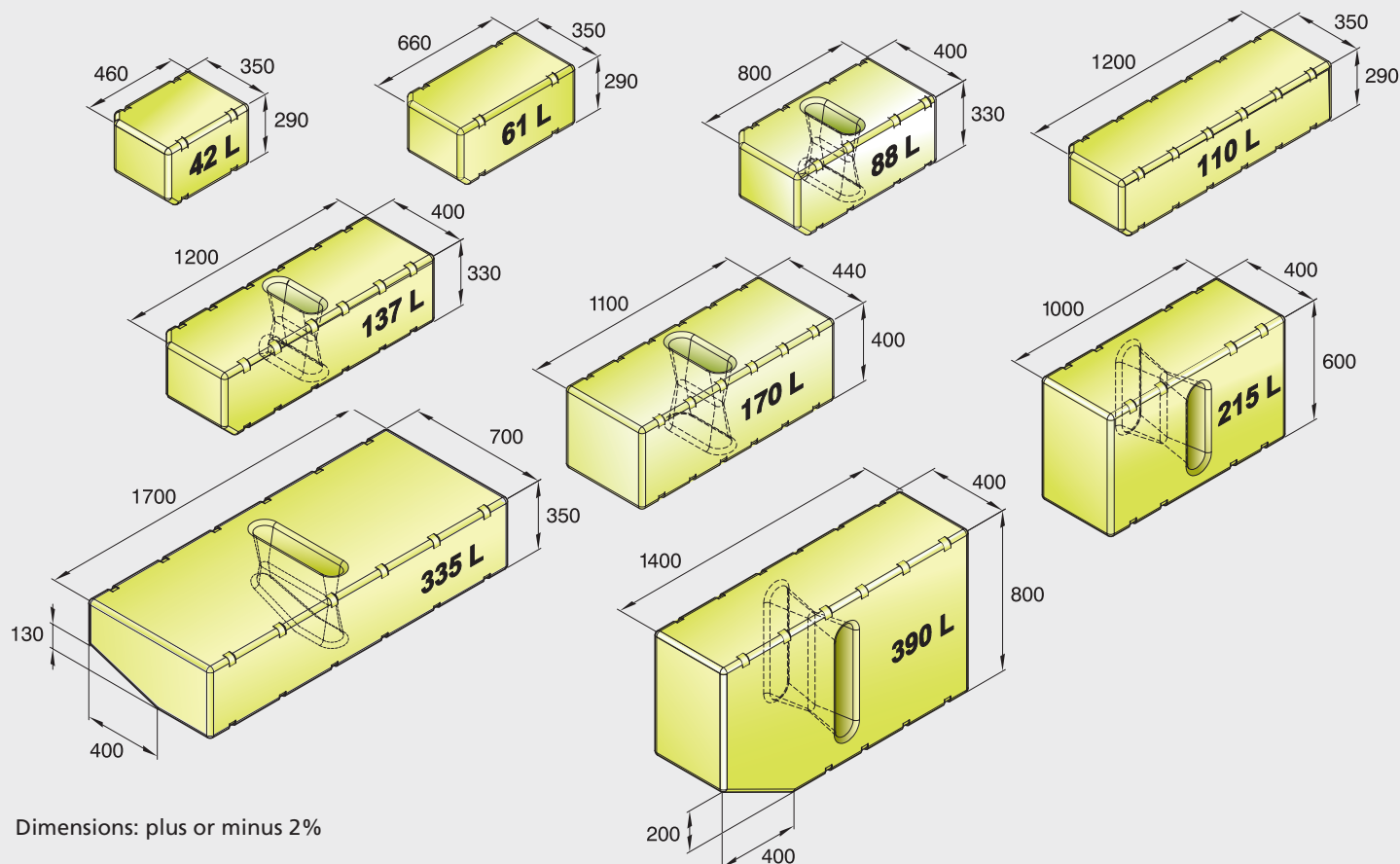
This range of rigid drinking water tanks is available in 9 different shapes and sizes. They are supplied without fittings and therefore these can be installed wherever you choose. The synthetic material is suitable for drinking water and meets the KTW standard. The construction of the tank is seamless and will never corrode or leak. The water level can be seen from outside for easy checking and the tank is easily cleaned through the inspection lid. A connection kit should be ordered separately for each tank, together with additional inspection lids if required.



WTANK42	Plastic drinking water tank 42 l.
WTANK61	Plastic drinking water tank 61 l.
WTANK88	Plastic drinking water tank 88 l.
WTANK110	Plastic drinking water tank 110 l.
WTANK137	Plastic drinking water tank 137 l.
WTANK170	Plastic drinking water tank 170 l.
WTANK215	Plastic drinking water tank 215 l.
WTANK335	Plastic drinking water tank 335 l.
WTANK390	Plastic drinking water tank 390 l.

The 88, 137, 170, 215, 335 and 390 litre models are provided with a **baffle**, as a **standard** construction element.

WTANK



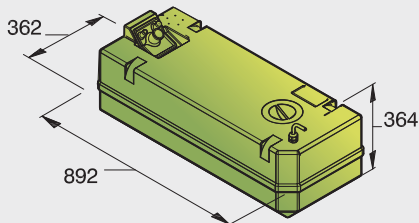
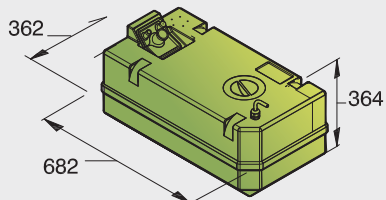
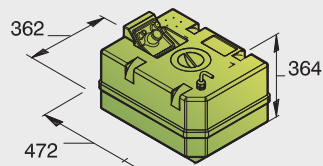
Dimensions: plus or minus 2%



Rigid tanks for drinking water

This range of rigid VETUS tanks is designed for drinking water. The high-grade linear polythene materials used are the same as all other rigid VETUS tanks and they are available with capacities of 40, 60 or 80 litres. **These tanks will save considerable installation time!**

The centre point for a SAE flange gauge sender is incorporated in the moulding together with 5 blind bolt holes. The relevant gauge sender should be ordered separately and the appropriate hole cut in the tank.



Dimensions: plus or minus 2%

Each tank is supplied with the following connections:

- Fixed hose connector Ø 38 mm for filling.
 - Fixed hose connector Ø 16 mm for the breather line.
 - Rotating hose connector Ø 13 mm with pick-up pipe, for water suction.
- These tanks come complete with a screw down inspection lid installed.

WTANK40C	Plastic drinking water tank 40 l.
WTANK60C	Plastic drinking water tank 60 l.
WTANK80C	Plastic drinking water tank 80 l.



WTANK40C

WTANK60C

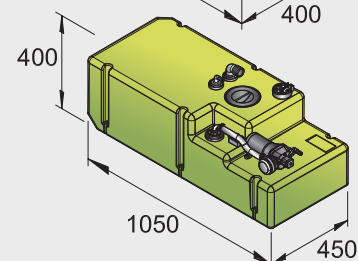
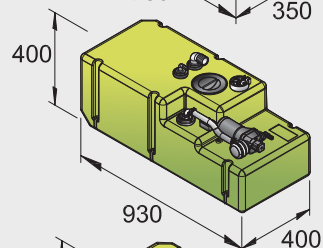
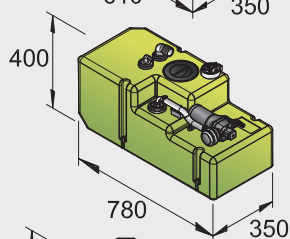
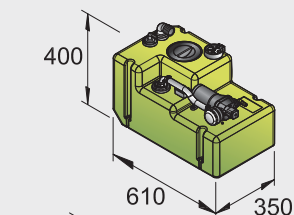
WTANK80C

Drinking water tank systems

These VETUS tank systems feature a high grade synthetic tank suitable for drinking water, together with an electric pump. Utilising a variable speed pump motor, an inbuilt sensor regulates the water pressure and ensures a steady flow. Therefore, a conventional pressurised water system is no longer required and installation time can be greatly reduced. All connections for filling Ø 38 mm, suction and ventilation Ø 16 mm are supplied installed, together with a filter in the suction line and an ultrasonic level sensor. An inspection cover, for cleaning the inside of the tank is also fitted as standard. These systems are available with a tank capacities of 42, 61, 88 or 120 litres.

The pump motor is available for 12 or 24 Volt and the output is 13.5 l/min at zero head.

"Ready to go"



Dimensions: plus or minus 2%

DWS042	Plastic drinking water tank system 42 l.
DWS061	Plastic drinking water tank system 61 l.
DWS088	Plastic drinking water tank system 88 l.
DWS120	Plastic drinking water tank system 120 l.



DWS042

DWS061

DWS088

DWS120



Suction pipe for drinking water tanks



This suction pipe can be fitted to the top surface of almost all fixed tanks with a maximum depth of 410 mm. It is suitable for Ø 13 mm drinking water systems.

WTS44513B



Ultrasonic level sensor

A VETUS ultrasonic level sensor can measure the contents in any VETUS water, fuel or waste water tank on board. Please see page 109.

SENSOR A

Inspection lid kit WTK02

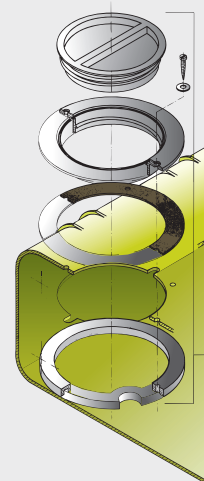
Inspection lid kit, WTK02 complete with gasket, counterflange and fastenings.

- Overall diameter 156 mm.
- Cut out diameter 115 mm.



WTK02

WTIKIT



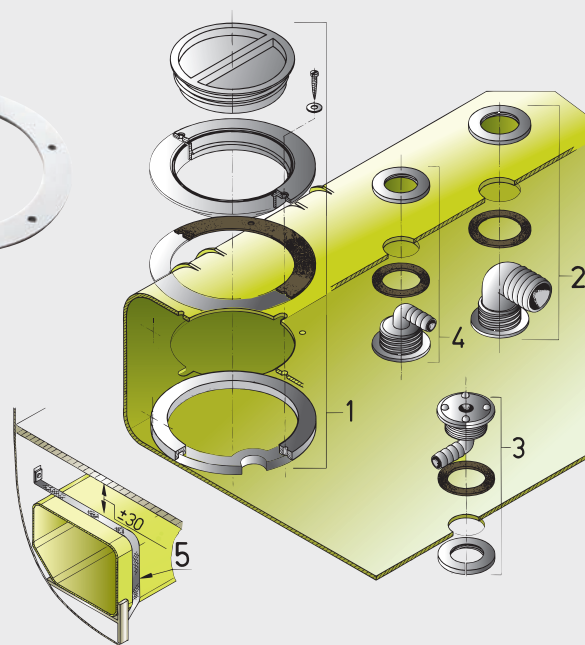
Only suitable for (waste) water tanks, not for fuel tanks.

Connection kit WTKIT

- Inspection lid (1).
- Right angle connection RT38B for filling hose, Ø 38 mm (2).
- Right angle connection RT16B to water pump, Ø 16 mm (3).
- Right angle connection RT16B for ventilation, Ø 16 mm (4).
- Two mounting straps (5).
- T-joint, for interconnection, Ø 16 mm For the 88, 137, 170, 215, 335 and 390 l. tanks, extra inspection lid kits are available (WTIKIT). An angled connection RT13B for Ø 13 mm pump hose is available as an option.



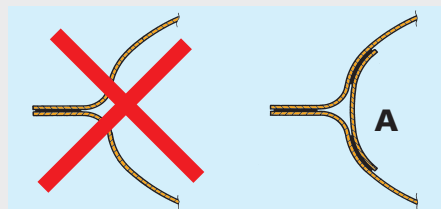
WTKIT



Additional inlet and outlet connectors in various sizes are available separately.



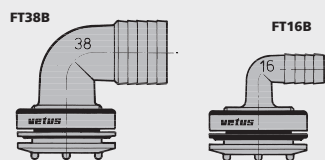
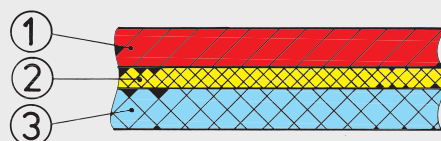
These tanks can be installed easily and quickly; they assume the shape of the space, in which they are placed and they can be positioned in places that are normally difficult to reach. Also, generally speaking, there is no need for any additional installation parts. In fact, fitting the outlet nipple and connecting the hoses for inlet and outlet are the only things to be done.



We not only weld the seams, but in addition we also weld an extra strip (see drawing A). This makes the VETUS flexible tank resistant against much higher pressures, especially if the contents are moving when the boat is rolling or pitching.



TANKW

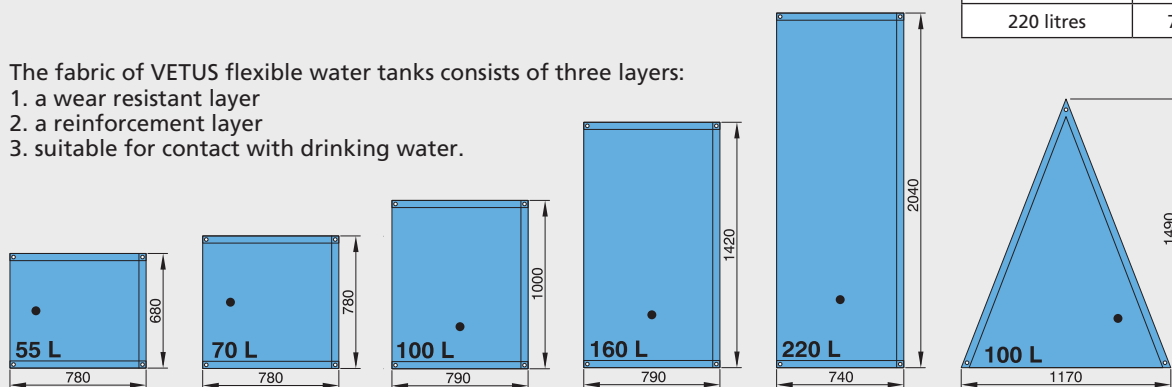


Each VETUS flexible drinking water tank has two right angle nipples as standard supply: one for connection to the filling pipe (Ø 38 mm) and the other one for connection to the pump hose (Ø 16 mm). The filler nipple comes fitted to the top of the tank and the other one is supplied loose for easy fitment in any desired position. Additional nipples can be supplied as an option. See price list.

Capacity (appr.)	Dimensions (appr.)	Height filled (appr.)
55 litres	68 x 78 cm	25 cm
70 litres	78 x 78 cm	27 cm
100 litres	79 x 100 cm	27 cm
100 litres (Δ)	117 x 149 cm	24 cm
160 litres	79 x 142 cm	27 cm
220 litres	74 x 204 cm	27 cm

The fabric of VETUS flexible water tanks consists of three layers:

1. a wear resistant layer
2. a reinforcement layer
3. suitable for contact with drinking water.



Water hoses

Code	Internal dia	External dia	Weight	Pressure in bar	Bending radius
DWHOSE10A	10 mm 3/8"	16 mm	0,16 kg/m	7 5 3	20 mm
DWHOSE12A	12 mm 1/2"	18 mm	0,18 kg/m	7 5 3	25 mm
DWHOSE16A	16 mm 3/8"	22 mm	0,23 kg/m	6 4 2,5	35 mm
DWHOSE19A	19 mm 3/4"	26 mm	0,32 kg/m	5 3 2	50 mm
DWHOSE25A	25 mm 1"	33 mm	0,53 kg/m	5 3 2	60 mm
DWHOSE28A	28 mm 1 1/8"	36 mm	0,57 kg/m	4,5 3 1,5	66 mm
DWHOSE30A	30 mm 1 3/16"	38 mm	0,60 kg/m	4,5 3 1,5	70 mm
DWHOSE32A	32 mm 1 1/4"	40 mm	0,65 kg/m	4,5 3 1,5	75 mm
DWHOSE35A	35 mm 1 3/8"	44 mm	0,73 kg/m	4 2 1	80 mm
DWHOSE38A	38 mm 1 1/2"	47 mm	0,80 kg/m	4 2 1	90 mm
DWHOSE40A	40 mm 1 9/16"	49 mm	0,87 kg/m	3 1 0,7	95 mm
DWHOSE45A	45 mm 1 3/4"	55 mm	1,10 kg/m	3 1 0,7	105 mm
DWHOSE50A	50 mm 2"	60 mm	1,20 kg/m	3 1 0,7	125 mm

Temperature-proof between -5 and +65°C.

Suitable for transportation of drinking and grey water on board, both suction and pressure. Made of transparent PVC with spiralled steel inlay.



DWHOSEA



The engine coolant is circulated between the inner and the outer jacket of the VETUS calorifier, which heats up the fresh water inside the inner boiler. The insulation material used is of such high efficiency that the loss of heat in the fresh water is only around 12°C per 24 hours. VETUS calorifiers may be installed either horizontally or vertically.

A connection set and a 1kw electric heating element are supplied as standard.

The double wall of the VETUS calorifier

Technical data:

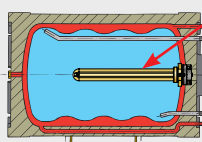
Basic materials:

Inner tank	: stainless steel, AISI 304
Outer tank	: steel 37/2
Insulation	: polyester foam, 35 mm thickness. Supplied with high polished stainless steel outer jacket.

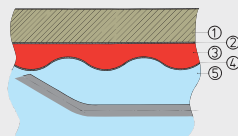
Connections:

Engine coolant	: G 1/2
Fresh water	: G 1/2
Heating element	: G 1 1/4
Setting of relief valve fresh water	: 4 bar (56 lbs/sq.inch)

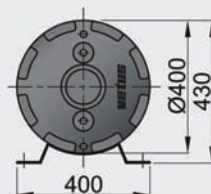
Heating element



Blue = fresh water.
Red = coolant.



- 1: insulation material
- 2: outer tank
- 3: coolant
- 4: inner tank
- 5: freshwater



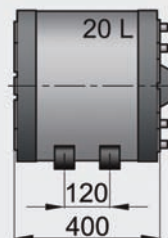
WHEL



WHMIXER

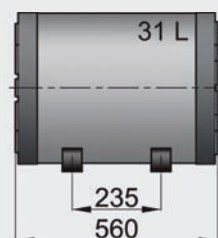
Contents of fresh water: 20 l.
Contents of coolant: 4 l.

WH20B



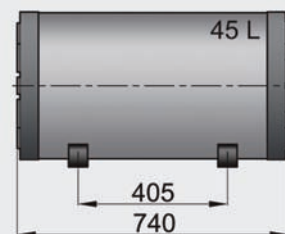
Contents of fresh water: 31 l.
Contents of coolant: 7 l.

WH31B



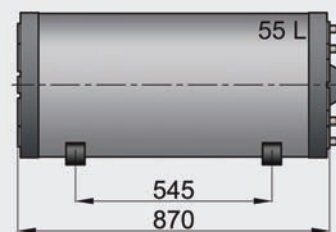
Contents of fresh water: 45 l.
Contents of coolant: 7,5 l.

WH45B



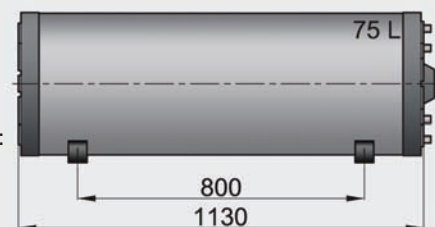
Contents of fresh water: 55 l.
Contents of coolant: 8 l.

WH55B



Contents of fresh water: 75 l.
Contents of coolant: 9,5 l.

WH75B



VETUS thermostatic mixer for calorifiers

Calorifiers which are heated by the engine coolant, can deliver their fresh water contents at temperatures of more than 90°C. There is always a risk that these high temperatures could cause scalding when washing or showering. Using a mixer tap can take too long to find a suitable temperature, with high water usage as a consequence. By fitting a thermostatic mixer, the risk of scalding is eliminated and a safe and comfortable temperature for each requirement is easily selected. So, no more hot water wastage, a constant safe temperature at the tap and energy saving. The thermostatic mixer is provided with G1/2 thread. The temperature is infinitely adjustable between 30° and 70°C.

Hose HWHOSE

Suitable for drinking water and temperature resistant between -30°C and +160°C. Therefore most suited for use with calorifier and hot water systems. Available in coils of 10 m. Made of EPDM rubber with an inlay of woven synthetic fabric.

Code	Internal dia	External dia	Weight	Max. pressure 100°C	Bending radius
HWHOSE13	13 mm 1/2"	23 mm	0,36 kg/m	8 bar	95 mm
HWHOSE16	16 mm 5/8"	26 mm	0,40 kg/m	8 bar	110 mm

HWHOSE



Connection set

The connection set consists of: 4 hose pillars G1/2 - 16 mm for Ø 16 mm water hose. 1 T-piece. 1 pressure relief valve (4 bar). 1 non-return valve with drain points.

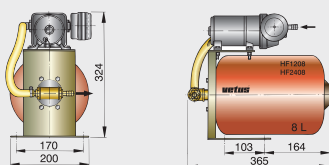
WHKIT



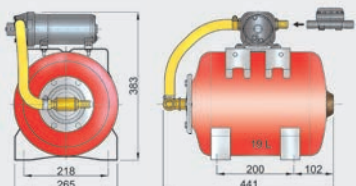
Pressurized water systems

Comparable with the piped water system at home, the VETUS pressurized water system provides constant water flow in the vessels fresh water circuit. The pressurized tank with a rubber diaphragm inside, prevents the pump motor from being started, each time a supply of water is required. This assembly ensures a minimum of noise, a constant water flow and a saving of energy.

TYPE 8



TYPE 19



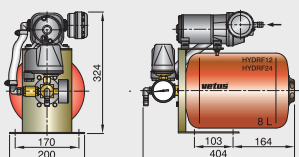
Water system	TYPE 8	TYPE 19
• Contents of pressure tank	8 liter	19 liter
• Available in	12 Volt (3,9 A) 24 Volt (2,0 A)	12 Volt (6 A) 24 Volt (2,5 A)
• Connection for hose	Ø 13 mm	Ø 19 mm
• Weight	6,2 kg	7,5 kg
• Capacity	12,5 l/min.	17 l/min.
• Max. pressure	2,5 bar (35 psi)	2,8 bar (39 psi)
• Max. suction height	3 m	3 m
• Extremely low noise level		
• Equipped with:		
- Self-priming pump		
- Inlet water-strainer		
- Pressure switch		
- Pressurized tank with rubber diaphragm and mounting bracket		
- The diaphragm is suitable for drinking water and can be replaced		



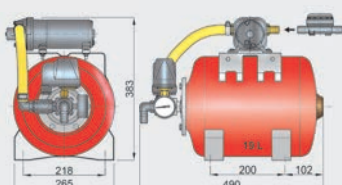
HF

Pressurized water systems with adjustable pressure switch

TYPE 8



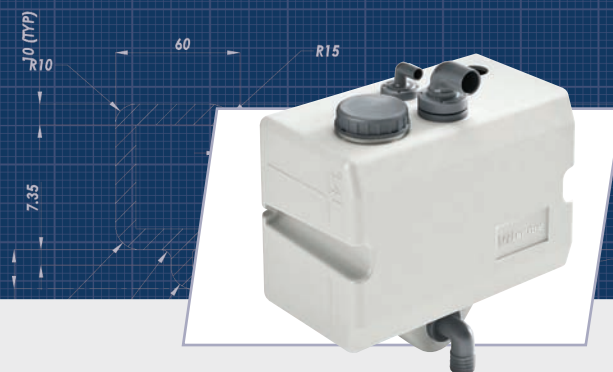
TYPE 19



Water system	TYPE 8	TYPE 19
• contents of pressure tank	8 liter	19 liter
• available in	12 Volt (3,9 A) 24 Volt (2,0 A)	12 Volt (6 A) 24 Volt (2,5 A)
• connection for hose	Ø 13 mm	Ø 19 mm
• weight	8,2 kg	9,5 kg
• capacity	12,5 l/min.	17 l/min.
• max. pressure	2,5 bar	2,8 bar
• max. suction height	3 m	3 m
• extremely low noise level		
• equipped with:		
- elf-priming pump		
- inlet water-strainer		
- adjustable pressure switch		
- manometer (pressure gauge)		
- pressurized tank with rubber diaphragm and mounting bracket		
- additional non-return valve		
- the diaphragm is suitable for drinking water and can be replaced		



HYDRF



WASTE WATER SYSTEMS

WHY VETUS WASTE WATER SYSTEMS?

WWS (waste water tank)

- Easy installation and quick to fit.
- Supplied pre-fitted with pump, discharge pipe, breather, inspection cover and gauge sender.
- Choice of inlet hose fittings.
- Robust and corrosion free.
- Capacities 42, 61, 88 and 120 litres.
- Low maintenance.
- Space saving.

EMP 140 (waste water pump)

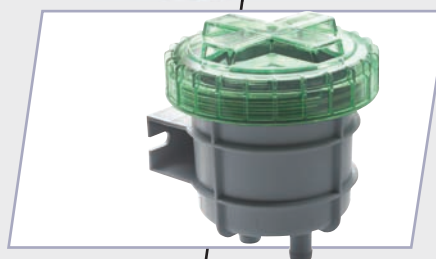
- Powerful diaphragm pump equipped with "duck bill" valves.
- Very low noise compared with rotary pumps.
- Rotatable connectors allow hose connection from any angle.
- Large capacity: 27 litres/minute.
- Suction height: 3 metres.
- Discharge height: 5 metres.
- Self-priming.

Electric Marine Toilets

- Push-button operation.
- 19 mm diameter outlet pipe.
- Very low noise macerator and pump.
- Stainless steel macerator knives.
- Low maintenance.
- Equipped with waterlock and non-return valve.
- Easy access to macerator.
- Robust wooden seat and cover.
- Low water consumption, ECO button.

WCP (electric marine toilet)

- The smallest electric toilet with built in macerator and pump on the market.





VETUS, creators of...

Research shows that reliability, comfort, environmental issues and of course price are important factors in the decision making process when choosing a marine toilet. With that in mind, the VETUS engineers developed the TMW toilet.

Powerful pulverisation

The heart of the TMW toilet is the macerator pump. With its sharp stainless steel knife the macerator cuts and macerates almost everything. Our engineers tested the macerator intensively and came to the conclusion that virtually nothing can clog the toilet.

Low water consumption

The ECO flush only uses 1.2 litres of water and the normal flush 2.2 litres. The toilet is designed use of the available resources on board such as water and electricity.

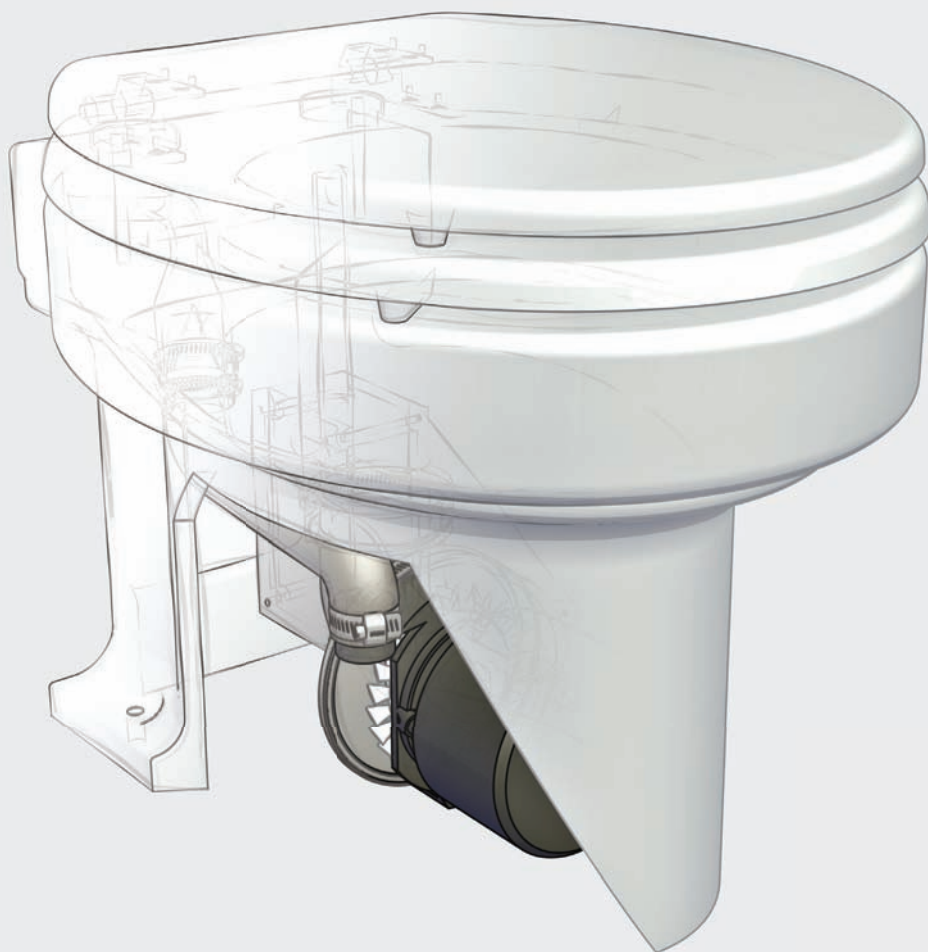
Low noise level

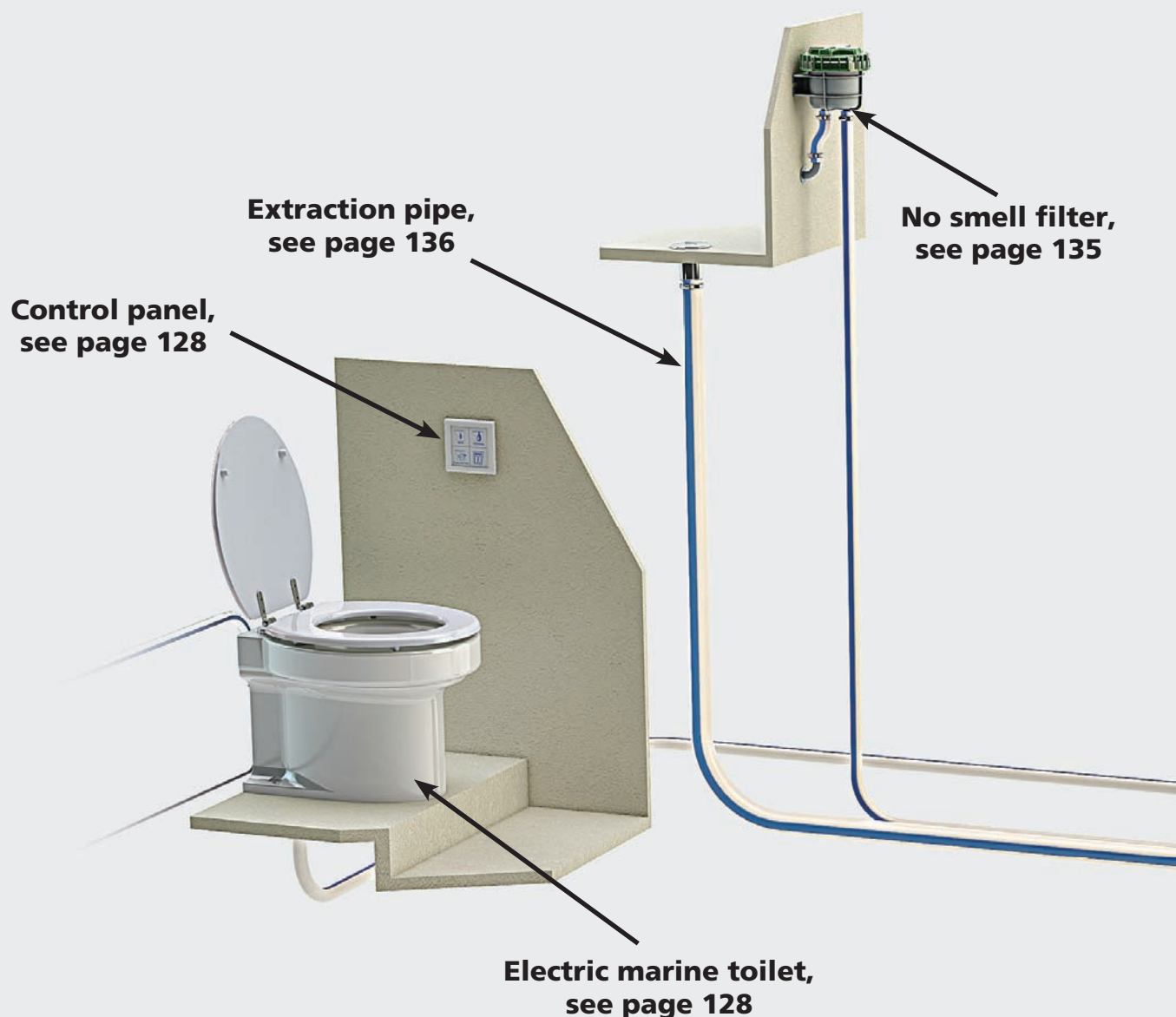
Thanks to the smooth stainless steel knife and a high rotational speed, the toilet flush noise is only 60 dB. This is similar to the volume of a normal conversation at 1 metre distance.

Odourless and efficient discharge

All VETUS toilets require a discharge hose of only 19 mm diameter, making installation very simple.

No longer will it be necessary to instruct your guests how to use a manual pump or that they must not use too much paper. With the simple push of a button the toilet flushes and the waste is whisked away.





All VETUS toilets are equipped with an electric pump, which will macerate the contents and evacuate it in about 7 seconds. They are available in 12 or 24 Volt DC versions or alternatively, for 120 or 230 Volt AC (with the exception of TMW, SMTO and WCPS). VETUS toilets are both quick and quiet in operation (61 dB(A)).

The main features of VETUS electric toilets are:

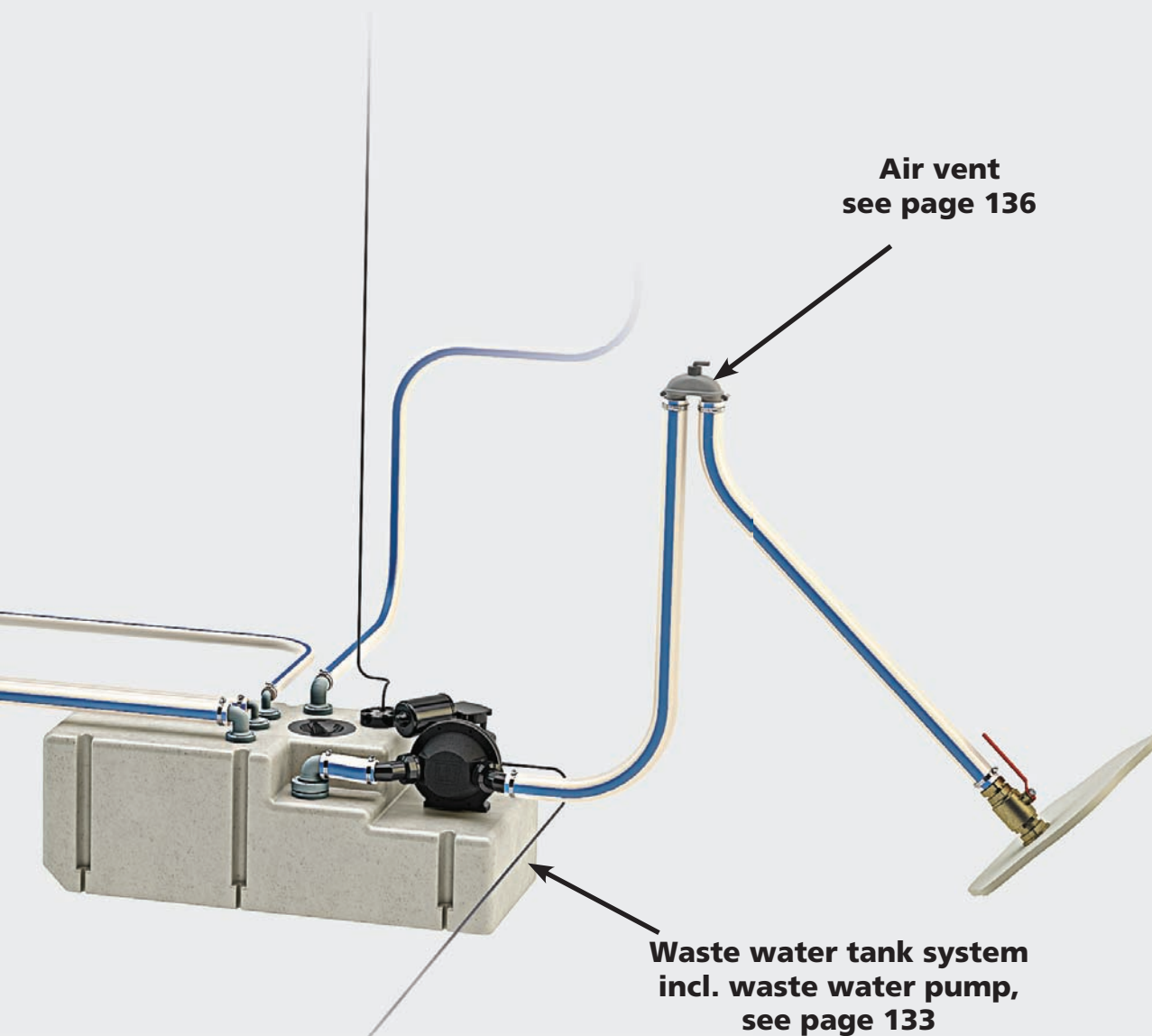
- A stylish and ergonomic porcelain bowl with an easy clean seat and lid of similar dimensions to a normal domestic toilet.
- The internal diameter of the outlet pipe is only 19 mm. This means that the toilet can be located in any convenient position aboard and can be connected simply to the waste water tank, using VETUS sanitation hose, type SAHOSE (see page 137).

- All 12 and 24 Volt VETUS electric toilets have the following specifications:

- A combined pump / macerator unit with a diameter of 96 mm.
- The pump motor power is 300 Watts and it has a capacity of 36 l/min at 3 metres head.
- A dual-flush system. The ECO button on the control panel will flush 1.2 litres of water. The NORMAL button will flush 2.2 litres. By pressing and holding the evacuation button, these toilets can be discharged without flushing. This is particularly useful to prevent overflowing on a heeled sailing boat.
- Supplied as standard with an electronic control panel or rocker switch depending on model.

- All 120 and 230 Volt AC VETUS electric toilets have the following specifications:

- A separate pump and a 98 mm diameter macerator.
- The pump motor power is 500 Watts and it has a capacity of 42 l/min at 3 metres head.



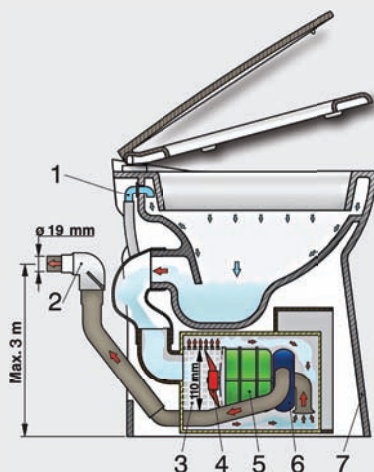
- A single flush system which flushes approximately 5.5 litres of water.
- A pneumatically operated push button.
- We recommend that the flush water be drawn from the main pressurized fresh water system. Alternatively, a separate pump and fine filter can be installed to draw seawater from outside the boat.
- The waste water holding tank may be positioned up to 3 metres above the toilet discharge connection. The maximum length of Ø 19 mm discharge hose can be up to 30 metres.
- Both discharge pump types are easily accessible for occasional cleaning if required. The pump with the separate macerator is provided with a grille to prevent coarse matter reaching the pump.
- All toilets are provided with a water lock and non-return

valve in the discharge line.

- The weights are as follows: WCS - 23 kg, WCL - 29 kg, HATO - 28 kg, WCP - 17,5 kg and SMT02 - 18 kg.
- In many countries, discharging black water in open waters is only permissible if the waste has been macerated first. All VETUS toilets comply with such directives.
- The installation of all toilets is a quick and easy procedure.

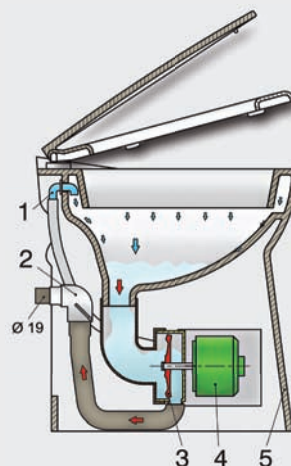


Electric marine toilets



120/230 V models

1. Flushing water inlet.
2. Discharge of waste water.
3. Protective grille.
4. Cutter knife.
5. Macerator motor.
6. Discharge pump.
7. Porcelain toilet bowl.

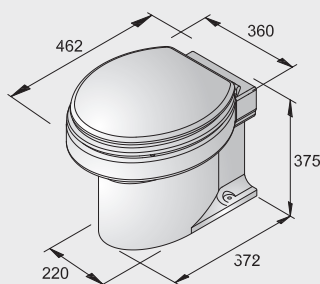


12/24 V models

1. Flushing water inlet.
2. Discharge of waste water.
3. Cutter knife.
4. Macerator motor.
5. Porcelain toilet bowl.



NEW



TMWS



TMW



The dimensions of the panel are 110 x 110 mm and the installation depth is 41 mm.

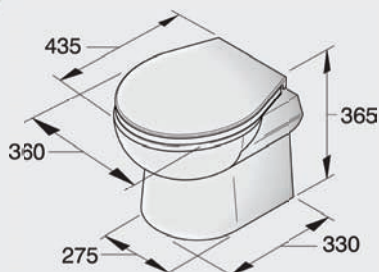
The dimensions of this panel are 45 x 75 mm.

Benefits of VETUS TMW toilet

- Compact dimensions without sacrificing comfort.
- Easy clean porcelain bowl.
- Comfortable seat.
- Lifting lid.
- Super quiet macerator / discharge pump (60 dB (A)).
- Stainless steel macerator blade.
- Large capacity discharge pump.
- Available in 12 or 24 Volt versions.
- Low energy consumption due to short cycle.
- Very low water consumption.
- Discharge hose only 19 mm internal diameter.
- Supplied with 50 cm water inlet hose.
- Supplied with a waterproof electronic operating panel (model TMW) or rocker switch (model TMWS).
- Panel has three functions:
 - Standard flush (ECO).
 - Dual flush.
 - Bowl evacuation.
- Easy to install.
- Simple maintenance.



SMT02S



Models WCPS and SMT02S are among the smallest electric toilets on the market. Due to their compact dimensions and their low weight, they are ideal replacements for your old and possibly obsolete manually operated toilet. Operated by a simple rocker switch, they are a lower price alternative to electronically controlled versions.

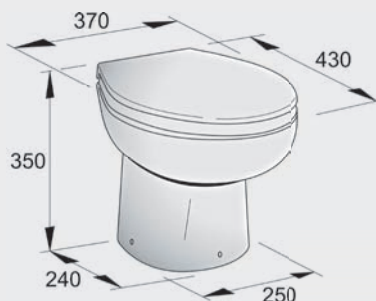
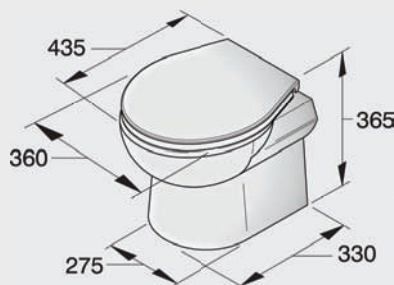
The rocker switch has two positions: fill and empty and it measures 75 x 45 mm with a built-in depth of 35 mm.



Electric marine toilets

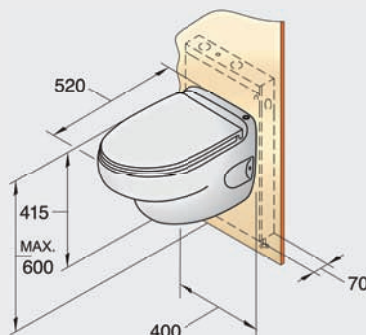
VETUS toilet type WCP is the smallest electric toilet on the market. Owing to its small dimensions and low weight, it may be the ideal replacement for older hand-operated pump toilets.

The specifications are identical with those of the other VETUS 12 or 24 Volt toilets, except that the electronic components are now mounted outside the toilet.


WCP

SMT02


SMT02S12	Toilet type SMT02S	12 Volt
SMT02S24	Toilet type SMT02S	24 Volt
WCPS12	Toilet type WCPS	12 Volt
WCPS24	Toilet type WCPS	24 Volt

This wall mounted toilet provides a solution where floor space is at a premium and enables toilet installation where a floor standing model would be impractical.


HATO2


TMW12	Toilet type TMW	12 Volt
TMW24	Toilet type TMW	24 Volt
WCP12	Toilet type WCP	12 Volt
WCP24	Toilet type WCP	24 Volt

WC12S2	Toilet type WCS	12 Volt
WC24S2	Toilet type WCS	24 Volt
WC220S	Toilet type WCS	230 Volt 50 Hz
WC110S	Toilet type WCS	120 Volt 60 Hz
WC12L2	Toilet type WCL	12 Volt
WC24L2	Toilet type WCL	24 Volt
WC220L	Toilet type WCL	230 Volt 50 Hz
WC110L	Toilet type WCL	120 Volt 60 Hz

SMT0212	Toilet type SMT02	12 Volt
SMT0224	Toilet type SMT02	24 Volt

HATO212B	Toilet type HATO	12 Volt
HATO224B	Toilet type HATO	24 Volt
HATO220	Toilet type HATO	230 Volt 50 Hz
HATO110	Toilet type HATO	120 Volt 60 Hz

The electronic control panel

- The panel dimensions are 72 x 72 mm and the build-in depth required is 21 mm.
- The edges of the panel are chromium plated.
- It is supplied with a waterproof gasket and can be easily fitted to a bulkhead.
- It is supplied completely pre-wired and terminates with a plug and 1.5 m cable. This connects to the 1.5 m harness and socket supplied with the toilet.
- The panel controls 3 functions: economy flush, normal flush and discharge only.





Electric marine toilets

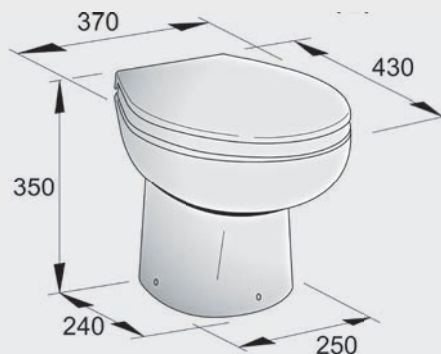


Model WCPS is not electronically controlled but operated by a simple rocker switch. This switch has two positions:

1. Fill with water
2. Macerate and empty

Switch dimensions: 75 x 45 mm
Built-in depth: 35 mm

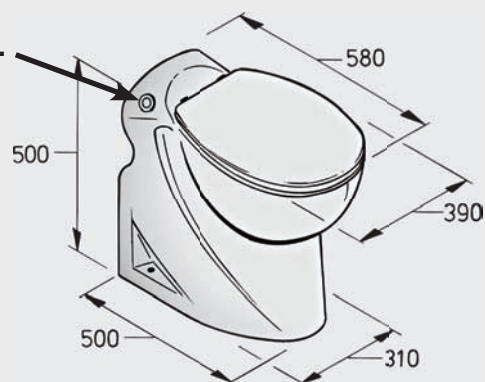
WCPS



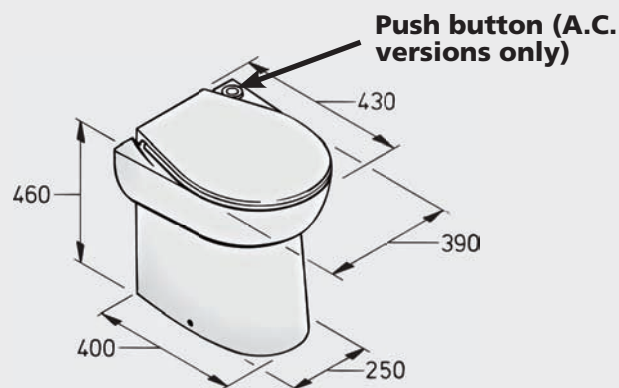
- Models WCL2 and WCS2 with 12 or 24 Volt supply are operated by an electronic control panel. Please see page 129.
- Models WCL2 and WCS2 with 120 or 230 Volt supply are operated by a push button located on the bowl.

Push button (A.C. versions only)

WCL2



WCS2



Model WCS has been tested and certified by the KIWA quality assurance organization. According to their tests, it is absolutely impossible for waste water to contaminate the drinking water supply.

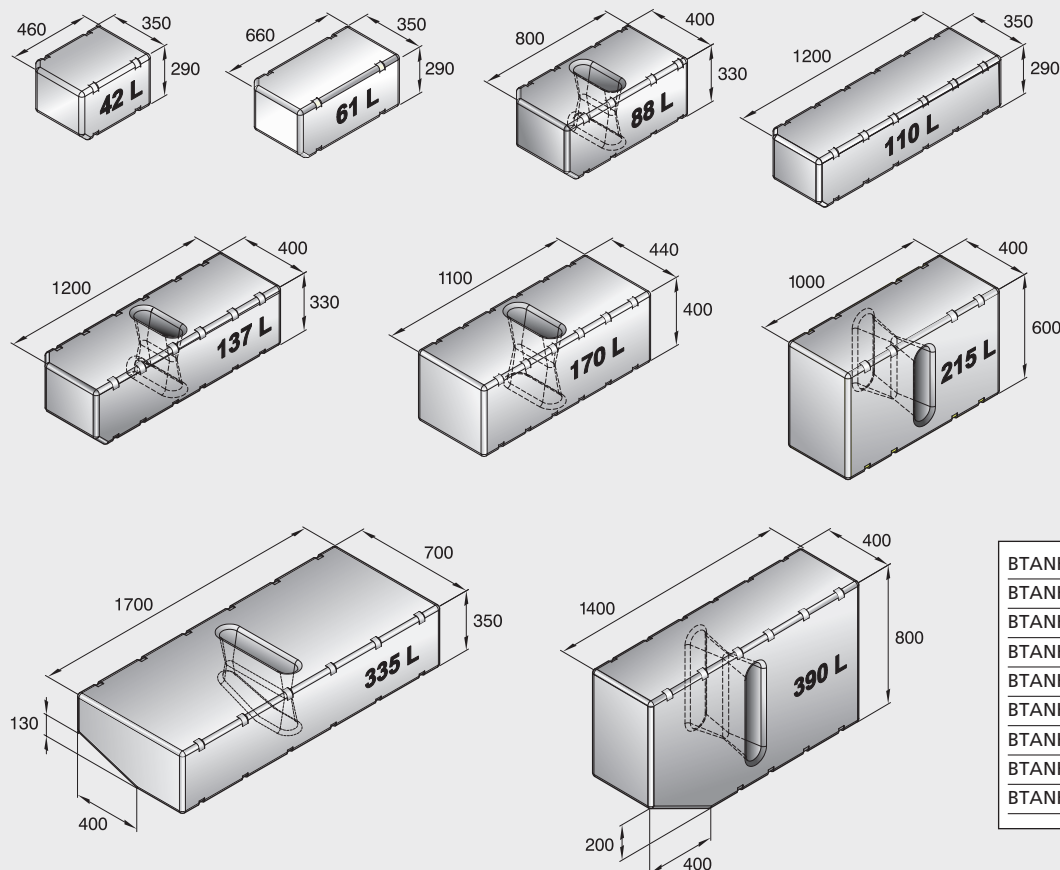


Rigid tanks for waste water

The discharge of marine toilets ("black water") and of sinks and showers ("grey water") directly overboard in yacht harbours or other sheltered water is more and more restricted nowadays. In order to overcome this problem and yet fully comply with the rules, VETUS has developed a system for temporary onboard storage of waste water. This waste can then be discharged overboard whilst sailing in open water or, referably, pumped into a holding tank or sewer at a convenient point ashore. These tanks may be installed in existing craft relatively simply, without the necessity to replace the marine toilet. Owing to the special odour impermeable material used and to the thick wall construction, these VETUS waste water tanks are designed for the temporary storage of "black water" (toilet waste). The waste water tank will need an inlet connection for each toilet, shower, washbasin etc. A connection kit BTKIT, "no-smell" sanitary hoses and angled connectors for inlet and tank ventilation in various diameters may be ordered separately to suit your requirements. Please note that to prevent unpleasant odours, we recommend the use of separate tanks for "black water" and "grey water" waste. When a marine toilet is connected to the tank the use of VETUS odour tight sanitation hose is an absolute must. Other accessories such as deck plates, extraction pipes, hoses etc. may be ordered separately as required. The use of a VETUS diaphragm pump is recommended to empty the tank. This type of pump is not prone to clogging with semi-solid waste. An electric version is shown on page 136.



BTANK



These VETUS tanks are made in 9 different shapes and sizes, with contents of about 42, 61, 88, 110, 137, 170, 215, 335 or 390 litres. Provided with ISO 8099 identification.

The 88, 137, 170, 215, 335 and 390 litre models are provided with a **baffle**, as a **standard** construction element.

BTANK42	Plastic waste water tank 42 l.
BTANK61	Plastic waste water tank 61 l.
BTANK88	Plastic waste water tank 88 l.
BTANK110	Plastic waste water tank 110 l.
BTANK137	Plastic waste water tank 137 l.
BTANK170	Plastic waste water tank 170 l.
BTANK215	Plastic waste water tank 215 l.
BTANK335	Plastic waste water tank 335 l.
BTANK390	Plastic waste water tank 390 l.

Dimensions: plus or minus 2%

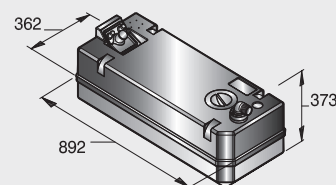
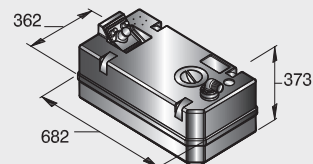
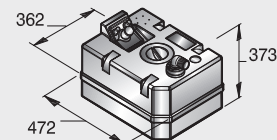
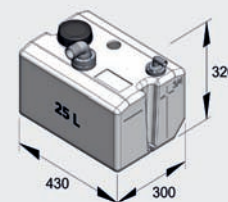
Rigid tanks for waste water

The high-grade linear polythene materials used are the same as all other rigid VETUS tanks and they are available with capacities of 40, 60 or 80 litres. The centre point for a SAE flange gauge sender is incorporated in the moulding together with 5 blind bolt holes. The relevant gauge sender should be ordered separately and the appropriate hole cut in the tank. **These tanks will save considerable installation time!**

Each tank is supplied with the following connections: Fixed hose connector Ø 19 mm for the breather line. Rotating hose connector Ø 38 mm with pick-up pipe, for waste water suction. A Ø 42 mm hole is provided for easy installation of an inlet fitting, type RT..B. This should be ordered separately according to the inlet hose diameter. If required, additional inlet fittings may also be installed. These tanks come complete with a screw down inspection lid installed. Provided with ISO 8099 identification.

BTANK25C
BTANK60C
BTANK40C
BTANK80C

BTANK25C	Plastic waste water tank 25 l.
BTANK40C	Plastic waste water tank 40 l.
BTANK60C	Plastic waste water tank 60 l.
BTANK80C	Plastic waste water tank 80 l.



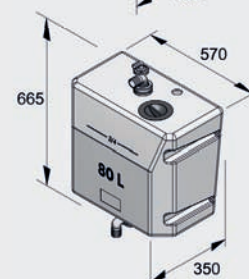
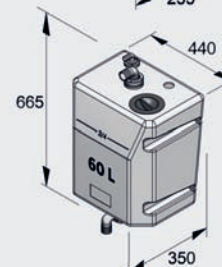
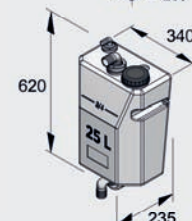
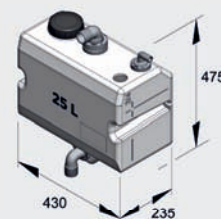
Dimensions: plus or minus 2%

Bulkhead mounted waste water tanks

These tanks are available in 3 sizes, with capacities of approximately 25, 60 or 80 litres. The tanks are made of odour impermeable polythene and the contents level can be seen from outside. They come complete with the following components installed:

- Suction pipe with Ø 38 mm angled hose connector, for connection to deck plate.
- Angled hose connector, Ø 38 mm, for discharge.
- Inspection cover.
- Angled hose connector, Ø 19 mm, for tank ventilation (breather).

Angled inlet connectors can be ordered separately; see pricelist. One hole has already been provided, to connect the inlet fitting. These tanks are suitable for mounting under the side decks, above the waterline. When permitted, the contents of the tank can be gravity discharged at sea, without the assistance of a pump. Simply opening the sea cock will empty the tank. Provided with ISO 8099 identification.


WW25WH
WW25W
WW60W
WW80W

Dimensions: plus or minus 2%

WW25WH	Bulkhead mounted waste water tank 25 ltrs
WW25W	Bulkhead mounted waste water tank 25 ltrs
WW60W	Bulkhead mounted waste water tank 60 ltrs
WW80W	Bulkhead mounted waste water tank 80 ltrs



Waste water tanks ("black" and "grey" water)

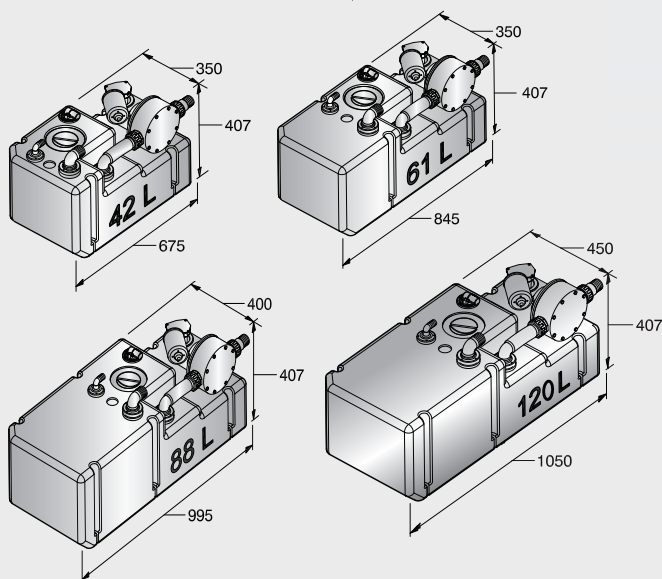
The tanks are made of odour impermeable polythene. The system comes complete with a VETUS waste water pump type EMP (12 or 24 V), an inspection cover, a tank gauge sender (the 12 or 24 Volt level gauge must be ordered separately), a plastic suction pipe with Ø 38 mm angled hose connection for discharge from ashore, two securing straps and one Ø19 mm connection for the breather. Angled connectors for the input of waste water must be ordered separately; see pricelist. One hole has already been provided, to connect the inlet fitting. These waste water systems are designed to save on space and installation time and are available with tank capacities of 42, 61, 88 or 120 litres. All input and discharge connections are accessible at the top of the tank. Provided with ISO 8099 identification. Model WWS is not only suitable for storing "black" water, but also for "grey" waste water.

"Ready to go"



WWS

Dimensions: plus or minus 2%

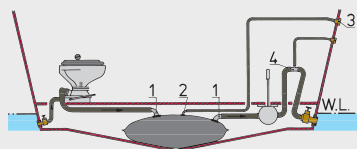


WWS4212B	Waste water tank system	42 l, incl. 12 V Pump,
WWS4224B	Waste water tank system	42 l, incl. 24 V pump,
WWS6112B	Waste water tank system	61 l, incl. 12 V pump,
WWS6124B	Waste water tank system	61 l, incl. 24 V pump,
WWS8812B	Waste water tank system	88 l, incl. 12 V pump,
WWS8824B	Waste water tank system	88 l, incl. 24 V pump,
WWS12012B	Waste water tank system	120 l, incl. 12 V pump,
WWS12024B	Waste water tank system	120 l, incl. 24 V pump,

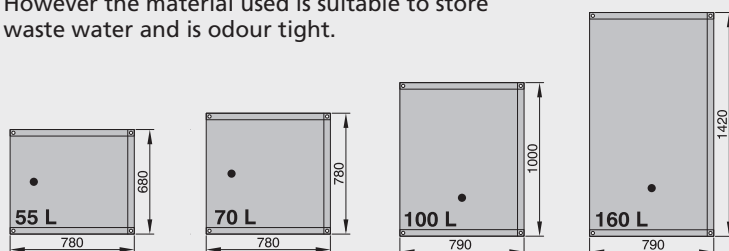
Flexible tanks for toilets and waste water

1. 2 Right angle nipples Ø 38 mm. (supplied with each tank)
2. Right angle breather nipple Ø 16 mm, already fitted.
3. Breather nipple Ø 16 mm.
4. Breather bend for anti-siphoning device, see page 136. When discharge of the tank through a deck plate is required, a Ø 38 mm tank connector is available as an option, see the price-list.

Height when filled is approx. 30 cm



VETUS flexible tanks for grey and black water are constructed in the same way as the flexible drinking water tanks. However the material used is suitable to store waste water and is odour tight.



TANKV

Sani-processor

Particularly on larger boats, owners often wish to install deluxe sanitary ware of their preferred style and colour; just like at home. In order to fulfil this requirement, VETUS has developed the Sani-Processor, with an electric macerator and a pump, so that an ordinary domestic toilet may be used on board. The Sani-Processor can be easily connected to a standard toilet, by means of Ø 102 mm hose (with a minimum fall of 50 mm per metre). When the toilet is flushed, the Sani-Processor will collect the contents, macerate them and pump the resultant slurry into a holding tank or directly overboard, through a hose of only Ø 19 mm. The whole process takes between 10 and 30 seconds and works almost silently. In the unlikely event of a blockage, the unit can be easily cleaned by removing the inspection lid. The connecting hoses must be odour-tight and we recommend the use of VETUS sanitary hose, type SAHOSE.



Technical specifications

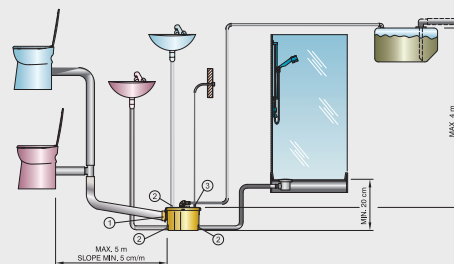
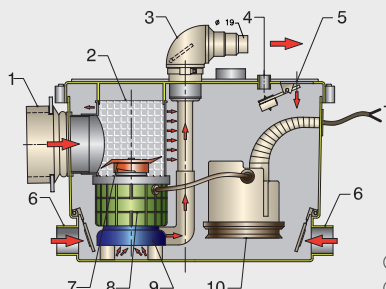
- Available for 12 or 24 Volt DC or 230 Volt/50 Hz or 120 Volt / 60 Hz.
- Macerator diameter: 98 mm.
- Nominal power consumption: approx. 370 W (12V), 435 W (24V), 580 W (110V), 400 W (230V).
- Dimensions: 420 x 120 x 360 mm (l x w x h).
- Hose from toilet to Sani-Processor: Ø 102 mm, maximum length 4 metres.
- Hose from Sani-Processor to holding tank: Ø 19 mm, maximum length 20 metres.

- The holding tank may be maximum 4 metres higher than the Sani-Processor
- Washbasin/bidet connections: Ø 40 mm
- Weight: 4.8 kg
- Pump capacity: approx. 50 l/min at 4 m head.

SAPRO12	Sani-processor	12 Volt
SAPRO24	Sani-processor	24 Volt
SAPRO220	Sani-processor	230 Volt 50 Hz
SAPRO110	Sani-processor	120 Volt 60 Hz

SAPRO

1. Toilet connection, Ø 102 mm.
2. Protective grille.
3. Waste discharge connections: male Ø 19 mm o.d. and female Ø 25/28/32 mm i.d.
4. Breather connection, Ø 19 mm.
5. Washbasin / bidet connection, Ø 40 mm.
6. Washbasin or shower connection, Ø 40 mm.
7. Cutter knife (macerator).
8. Electric macerator motor.
9. Discharge pump.
10. Float switch.



- ① Hose connection Ø 102 mm (SLVBR100K)
- ② Hose connection Ø 40 mm (SLVBR40K or HA3060)
- ③ Hose connection HA1338

In many boats it is impossible to achieve a natural fall from the shower tray or washbasin outlet into the waste water tank. In these cases, the Vetus grey water discharge system (GWDS) is the answer. The GWDS consists of a watertight housing with a discharge pump and automatic float switch. The pump produces very low noise. A non-return valve is fitted in the discharge line. The bottom of the GWDS assembly must be at least 6 cm below the shower tray or washbasin outlet. The waste water tank can be located up to 4 metres above the GWDS unit or up to 20 metres away from it. Instead of pumping the waste water into the holding tank, it can of course also be discharged directly overboard. If the system becomes clogged, the housing cover can be easily removed to clear the blockage.



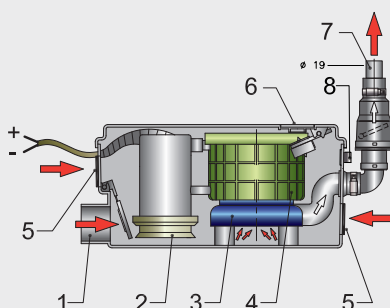
Technical specifications

- Available for 12 or 24 Volt DC or 230 Volt/50 Hz. or 120 Volt/60 Hz.
- Nominal power consumption: approx. 340 W (12V), 350 W (24V), 600 W (120V), 250 W (230V).
- Dimensions: 300 x 165 x 145 mm (l x w x h)
- Pump output: Approx. 44 litres/min.
- Outlet discharge to holding tank: Ø 19 mm.
- Inlet connections from shower or washbasin: Ø 32 or 40 mm.

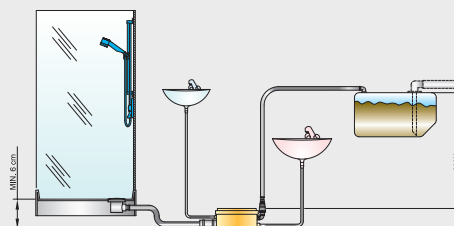
- Weight: 3.5 kg.
- Maximum permissible water temperature: 35°C.

GWDS12	Grey water discharge system, 12 Volt
GWDS24	Grey water discharge system, 24 Volt
GWDS220	Grey water discharge system, 230 V, 50 Hz
GWDS110	Grey water discharge system, 120 V, 60 Hz

1. Shower or washbasin connection Ø 40 mm.
2. Float switch.
3. Discharge pump.
4. Electric motor.
5. Washbasin connection, Ø 32 or 40 mm.
6. Breather.
7. Waste water discharge connection: male Ø 19 mm o.d.
8. Air conditioner connection, Ø 12 mm.



Hose connectors ① HA1338 and ② HA3060 are shown on page 137.





Accessories for waste water tanks

Waste water control panel

This waste water control panel provides total management of the holding tank system. It indicates the contents level in the tank and controls the pump out, either automatically or manually. The panel is connected to a VETUS level sensor in the tank. It then indicates by means of LEDs, when the tank is 25%, 50%, 75% or 100% full. When the tank is completely full, the LED will flash.

The control panel has a security lock, which prevents the pump from being activated accidentally or without permission. Once the correct code is entered, the pump can be operated fully automatically or with manual override. If the "auto" function is selected, the pump will discharge the tank automatically once it is completely full. A switched outlet on the panel can also be connected to a relay in the toilet control circuit. Therefore, if the tank is full and remains full, it is possible prevent the toilet from being flushed further.

The panel can also be connected to a remotely controlled ball valve which will open before the pump starts. In this case a LED indicates when the valve is closed. Once the tank is empty, the pump will switch off automatically, in order to prevent dry running. To prevent cycling on and off due to movement of the boat, the tank must register full for a while before the pump out commences. The waste water control panel is supplied without pump, valve or level sensor.

WWCP

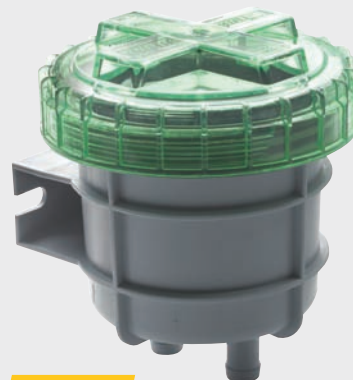


Technical data:

Voltage	: 12 or 24 Volt.
(Current consumption)	
Panel in stand-by	: 4 mA.
Electric pump	: 10 A max.
Remotely controlled ball valve	: 5 A max.
External alarm	: 1 A max.
Level sensor to be connected	: VETUS type WWSENSORA or SENSORA.
Panel dimensions	: 85 x 85 mm.
Build in depth	: 40 mm.

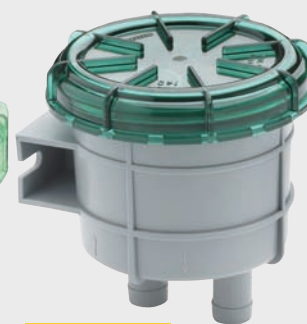
No-smell filters for toilet waste tanks ("black water")

Each waste water tank requires an air breather line, through which unpleasant odours may escape. This can be prevented by the installation of a VETUS no-smell filter into the breather line. The No-Smell filter element contains a special odour-absorbing material. The filter can be installed very easily. Model NSF is available with connectors for Ø 16 mm, 19 mm, 25 mm or 38 mm breather hose. The special VETUS waste water hose, made of reinforced PVC is excellently suited as breather hose. The filter element is exchangeable and should be renewed once a year.



NSF

Dimensions: l x w x h:
148 x 150 x 162 mm.



NSFS

Model NSFS is suitable for
Ø 16 mm vent hose only.
Dimensions: l x w x h:
107 x 111 x 111 mm.

NSF16S	Small no-smell filter, suitable for Ø 16 mm vent hose only
NSF16FES	Spare filter element for small no-smell filter
NSF16	Large no-smell filter with connections for Ø 16 mm
NSF19	Large no-smell filter with connections for Ø 19 mm
NSF25	Large no-smell filter with connections for Ø 25 mm
NSF38	Large no-smell filter with connections for Ø 38 mm
NSF16FE	Spare filter element for large no-smell filters

Vacuum operated vent valve, type VRF

If a waste water tank is being emptied using a powerful shore based pump-out station, it is possible that insufficient air enters through the vent line causing the tank to implode. To prevent this possibility, this VETUS valve type VRF will automatically open with the increasing vacuum, thus letting air into the tank.

Model VRF56 has a free flow area of more than 1100 mm² and thus fulfils the requirements of the relevant ISO 8099 standard. The hole in the tank must be Ø 56 mm, which is the same size as the hole for a VETUS extraction pipe. This valve is an indispensable safety factor if the vent line has a smaller diameter than Ø 19 mm, or for tanks of more than 400 litres, a vent line less than Ø 38 mm. By using this valve, the necessity to fit a large diameter vent line is avoided, thus saving cost and space whilst still meeting the ISO 8099 standard. This valve is made entirely from synthetic materials and therefore absolutely corrosion-free.

VRF56A





Accessories for waste water tanks

Angled fittings

Angled synthetic fittings, suitable for VETUS flexible tanks (code FT) or rigid tanks (code RT). Suitable for hoses with internal diameters of Ø 13 mm, Ø 16 mm, Ø 19 mm, Ø 25 mm or Ø 38 mm.

Required hole size:

Ø 42 mm for flexible tanks,
Ø 43 mm for rigid tanks.



RT13B	Hose connection, Ø 13 mm, right angle	for rigid tanks
RT16B	Hose connection, Ø 16 mm, right angle	for rigid tanks
RT19B	Hose connection, Ø 19 mm, right angle	for rigid tanks
RT25B	Hose connection, Ø 25 mm, right angle	for rigid tanks
RT38B	Hose connection, Ø 38 mm, right angle	for rigid tanks
FT13B	Hose connection, Ø 13 mm, right angle	for flexible tanks
FT16B	Hose connection, Ø 16 mm, right angle	for flexible tanks
FT19B	Hose connection, Ø 19 mm, right angle	for flexible tanks
FT25B	Hose connection, Ø 25 mm, right angle	for flexible tanks
FT38B	Hose connection, Ø 38 mm, right angle	for flexible tanks

Ultrasonic level sensor

The VETUS ultrasonic level sensor, SENSORA is contactless and will measure the fluid level in any type of tank, see page 109.



SENSORA

Y-connector

Made of plastic,
Ø 38 mm.



YCONN

Three-way ball valve

Made of plastic,
Ø 38 mm.



VALVE38

VALVE38	Plastic 3-way ball valve for hose Ø 38 mm
YCONN38	Plastic Y-connector for hose Ø 38 mm

Anti-siphoning breather-kit

Breather, suitable for Ø 38 hose. Plastic housing. Comes complete with skin fitting, hose clamps and 2 metres of breather hose.

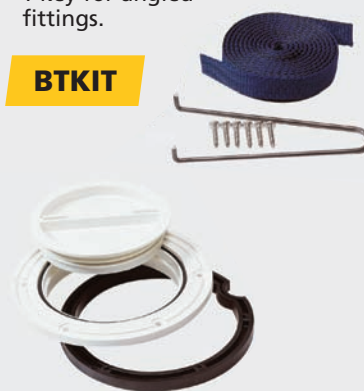


ASD38H

ASD38V	Anti Syphon Device with valve	38 mm
ASD38H	Anti Syphon Device with hose	38 mm

Connection kit consisting of:

- 2 securing straps.
- 1 inspection lid.
- 1 key for angled fittings.



BTKIT

Extraction pipes for rigid waste water tanks

For both "grey" and "black" waste water tanks, VETUS can supply extraction pipes, with the following features:

- For electrically or manually operated diaphragm pumps or direct connection to deck plate.
- With angled or straight connections of Ø 38 mm.
- With a tube length of either 370 or 780 mm (which can be cut to the required length).



WTS

WTS37038S	Extraction pipe	L = 370 mm	hose nipple Ø 38 mm	straight
WTS78038S	Extraction pipe	L = 780 mm	hose nipple Ø 38 mm	straight
WTS37038B	Extraction pipe	L = 370 mm	hose nipple Ø 38 mm	right angle
WTS78038B	Extraction pipe	L = 780 mm	hose nipple Ø 38 mm	right angle



EMP140

Waste water / bilge pump, type EMP140

Suitable for pumping "grey" and "black" waste water, this latest version of the popular VETUS waste water pump is now supplied with rotating hose connections. The connection possibilities are greatly extended and the installation time can be reduced. In common with previous models, this new pump also features reliable duck-bill valves. The pump is self priming and available in 12 or 24 Volt versions.

Capacity: 27 l/min at zero head.

Hose connections: Ø 38 mm.

Weight: 7 kg.

Max suction height:

3 metres.

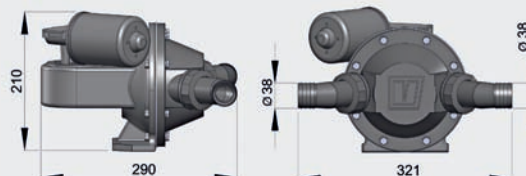
Max delivery height:

5 metres.

Current consumption:

6 A (12 Volt).

4 A (24 Volt).



Remotely controlled ball valves

There is no need to compromise the safety of your boat. By fitting these VETUS ball valves with remote control, all seacocks may now be closed or opened electrically from a single central position. The electric control units G 1/2 to G 2 can be easily unbolted from the relevant ball valve. This also facilitates the installation of the ball valve and allows the valve to be opened or closed by hand in an emergency. The valves can be powered fully open or fully closed in approximately 12-15 seconds and the rated power consumption is approximately 4-15 Watts. As standard, each electrically operated valve is supplied with a ball valve, a 12 or 24 Volt remote control unit and a switch panel. These ball valves are resistant against the influences of petrol and diesel fuels. Please consult the locally applicable directives for fitting into petrol or diesel fuel lines. The electric motor is ignition protected and complies with the directive of ISO 8846. The G-threading meets the requirements of ISO 228-1 and ISO 9093-1. Available for 12 or 24 Volt DC supply, with nickel plated brass ball valves G 1/2, G 3/4, G 1, G 1 1/2 or G 2. The housing of the electric control is **waterproof** according to IP 65.

Dimensions (without the ball valve): 110 x 74 x 80 mm (l x w x h).

The switch panel, shown here, is supplied as standard.

The monitoring lights indicate the position of the ball valve (open or closed).

The dimensions of the panel are: 78 x 47 x 19 mm.

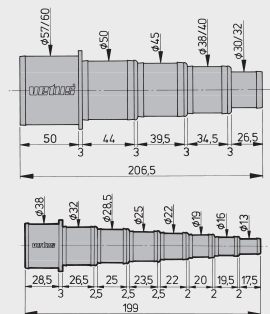

EBV

Important note

Sea cocks on board boats are often "out of service" for long periods of time. e.g. when the boat is in winter storage, with the risk that they will get stuck. It is therefore important to know that VETUS remotely controlled ball valves have sufficient torque to free even stuck valves. Of course these ball valves can always be operated manually, if so required.

Hose connectors (synthetic) to be cut to size

The larger one is ideal for interconnection of exhaust hoses.


HA1338

HA3060

Waste water hose

Made of PVC, coloured white, with steel spiral inlay. Suitable for temperatures of between - 5° C and + 65° C. Available in coils of: 30 m – Ø 8 mm to Ø 38 mm 10 m – Ø 45 mm.

Code	Internal dia	External dia	Weight	Max. pressure	Bending radius
WWHOSE16A	16 mm 5/8"	22 mm	0,23 kg/m	6 bar	35 mm
WWHOSE19A	19 mm 3/4"	26 mm	0,32 kg/m	5 bar	50 mm
WWHOSE25A	25 mm 1"	33 mm	0,53 kg/m	5 bar	60 mm
WWHOSE38A	38 mm 1 1/2"	47 mm	0,80 kg/m	4 bar	90 mm
WWHOSE45A	45 mm 1 3/4"	55 mm	1,10 kg/m	3 bar	105 mm


WWHOSEA

Impermeable sanitary hoses "no-smell"

Especially recommended for transportation of biological waste, e.g. in combination with (marine) toilet installations. Made of SBR rubber with inlays of woven synthetic fabric and steel spiral. Withstands temperatures of between - 40° C and + 70° C. Available in coils of 20 m.

Code	Internal dia	External dia	Weight	Max. pressure	Bending radius
SAHOSE16	16 mm 5/8"	26 mm	0,45 kg/m	3 bar	50 mm
SAHOSE19	19 mm 3/4"	29 mm	0,55 kg/m	3 bar	65 mm
SAHOSE25	25 mm 1"	36 mm	0,72 kg/m	3 bar	75 mm
SAHOSE38	38 mm 1 1/2"	48 mm	1,15 kg/m	3 bar	100 mm
SAHOSE102	102 mm 4"	115 mm	3,86 kg/m	3 bar	250 mm


SAHOSE

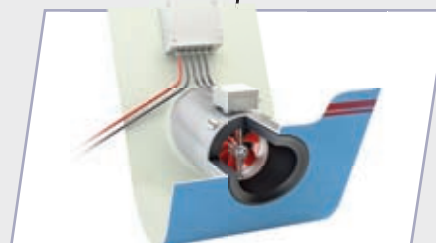
An absolute must for waste water tanks ("black" water)



MANOEUVRING SYSTEMS

WHY VETUS MANOEUVRING SYSTEMS?

- A **single** propeller creates less flow disturbance in the tunnel.
- **Unique propeller** blade design minimises cavitation noise.
- **Spiral** gears minimise transmission noise.
- **Flexible coupling** between tail piece and motor eliminates vibration.
- **Streamlined** tail piece for optimum flow.
- Strong synthetic propeller eliminates corrosion and reduces weight.
- **Easy installation**, clear installation and operation instructions.
- A new line of high quality aluminium control panels, which are interchangeable with older panels.
- A completely new bow thruster (the Rimdrive), which is proportionately controllable, continuous running and most importantly: the quietest thruster on the market!





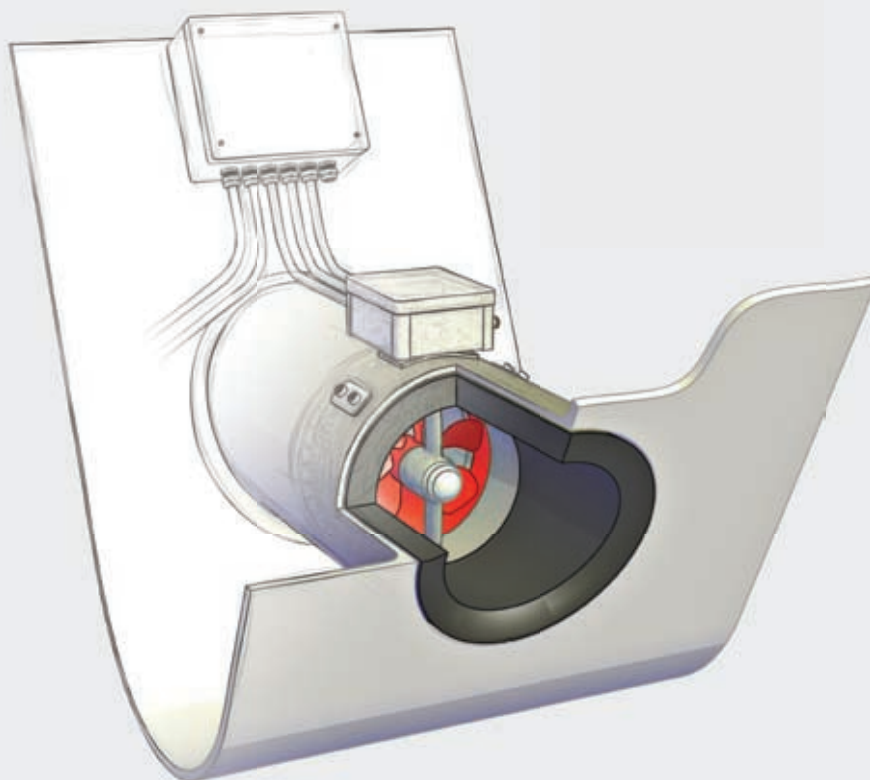
VETUS, creators of ...

In 1982 VETUS introduced the first bow thruster for pleasure boats. Since this first introduction, the bow thruster has become a firmly established concept in the boating world.

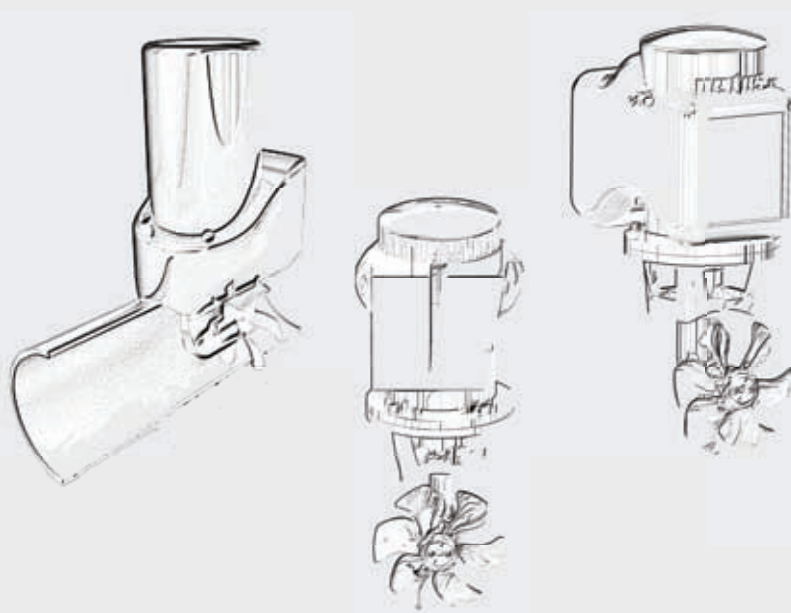
Following the first model, the development department of VETUS has been busy. By listening carefully to our customers, VETUS thrusters have improved year after year, resulting in the introduction in 2007 of the quietest bow thruster in the world.

But more is possible. VETUS now introduces an entirely new concept when it comes to the bow thruster; the RIMDRIVE.

This new line of bow and stern thrusters are very compact and extremely quiet. The RIMDRIVE is a revolutionary product in every sense. You can read about what makes this thruster so special on page 142.



Naturally VETUS is also developing the performance and design of the current range of thrusters. Besides a new series of control panels, in 2012 newly designed bow thrusters with improved performance will be introduced to the market. Alongside, you can see some conceptual drawings. If you have suggestions in this regard, please contact the engineering department at VETUS!

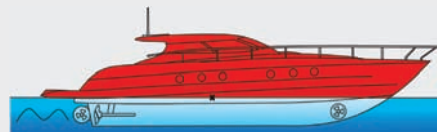


How to choose the correct bow and stern thruster

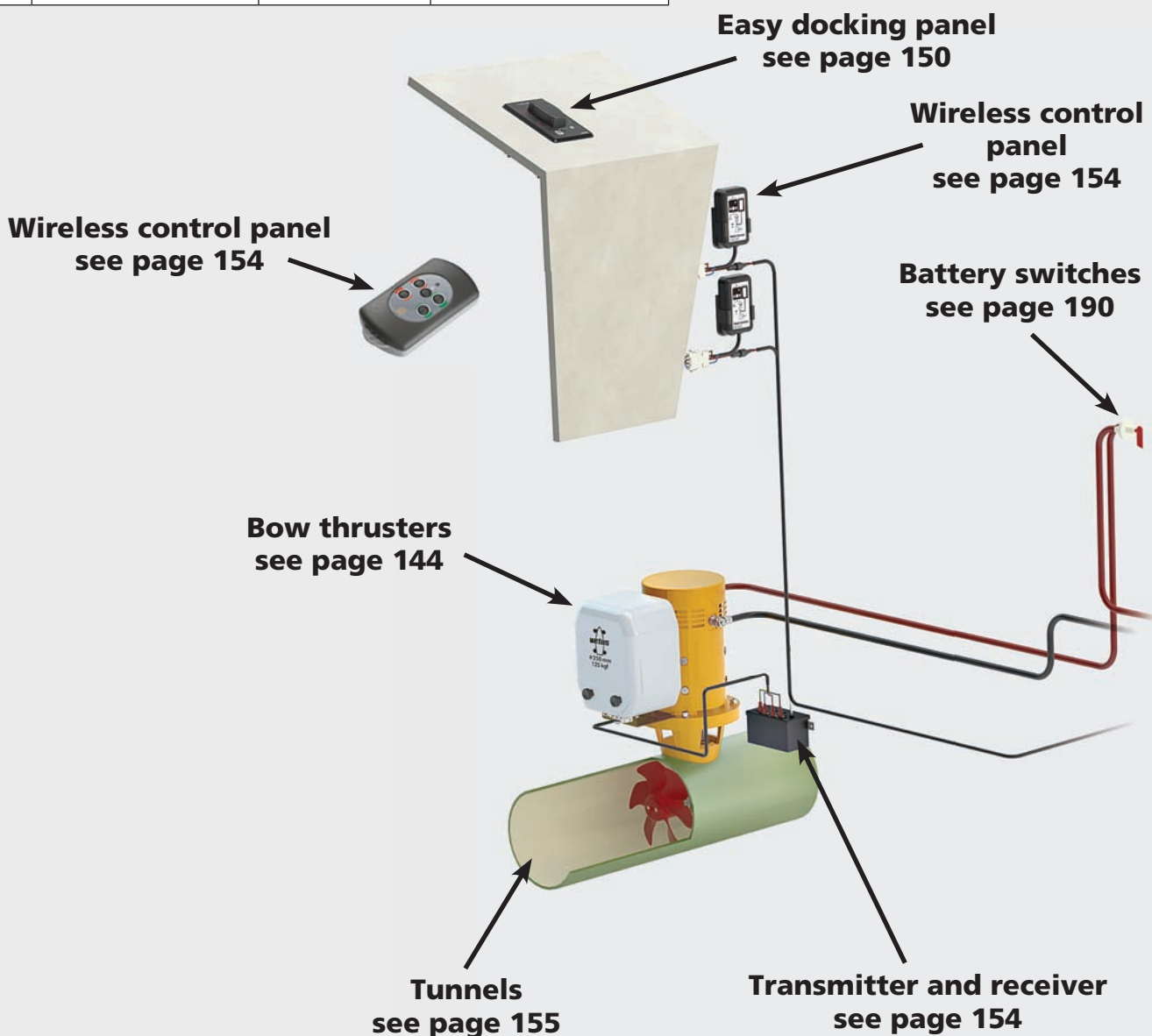
The influence of the wind

The force applied to the boat by the wind is determined by the **wind speed**, **wind angle** and the **lateral wind draft** area of the boat. If the wind blows at right angles to the boat, this wind pressure is most difficult to counter. However, this is seldom the case and as most boat superstructures are fairly streamlined, a reduction factor of 0.75 is generally applied, when calculating the wind pressure.

Wind force Beaufort	Description	Wind speed m/s	Wind pressure N/m ² - (kgf/m ²)
4	moderate breeze	5,5 to 7,9	20 to 40 - (2,0 to 4,1)
5	fresh breeze	8,0 to 10,7	41 to 74 - (4,2 to 7,5)
6	strong breeze	10,8 to 13,8	75 to 123 - (7,7 to 12,5)
7	near gale	13,9 to 17,1	125 to 189 - (12,7 to 19,2)
8	gale	17,2 to 20,7	191 to 276 - (19,4 to 28,2)

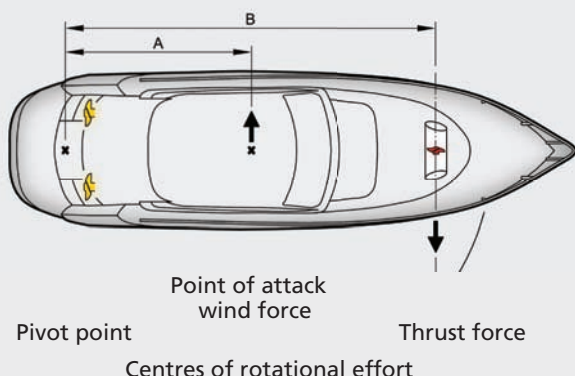


The lateral wind draft area



The thrust force

It is the thrust force which is the true measure of a bow thruster's usefulness and not the output of the electric or hydraulic motor in kW or HP. The nominal thrust force is a combination of the motor power, the shape of the propeller and the efficiency losses inside the tunnel. VETUS electrical bow thrusters have a very high thrust of between 17 and 23 kgf per kW motor power. The required thrust force to counter the effects of the wind is now calculated by dividing the turning moment by the distance (B) between the centre of the bow thruster tunnel and the pivot point of the boat. Note: the further forward the tunnel can be positioned, the greater effect the thruster will have.



Calculation example

The boat has an overall length of 11 metre and the lateral wind draft measures 18 m². It is required that the bow can be controlled easily when wind force Beaufort 5 applies. At wind force Beaufort 5, the wind pressure is: $r = 41$ to 74 N/m^2 , i.e. p (average) = 60 N/m^2 .

The required torque reads:

$T = \text{wind pressure} \times \text{wind draft} \times \text{reduction factor} \times \text{distance centre of effort to pivot point}$ (=approx. half the ship's length)

$$T = 60 \text{ N/m}^2 \times 18 \text{ m}^2 \times 0,75 \times \frac{11}{2} \text{ m} = 4455 \text{ Nm}$$

The required thrust force is calculated as follows:

$$F = \frac{\text{torque}}{\text{distance between centre of bow thruster and the pivot point of the boat (with the transom as pivot of the boat)}} = \frac{4455 \text{ Nm}}{10,5 \text{ m}} = 420 \text{ N (42 kgf)}$$

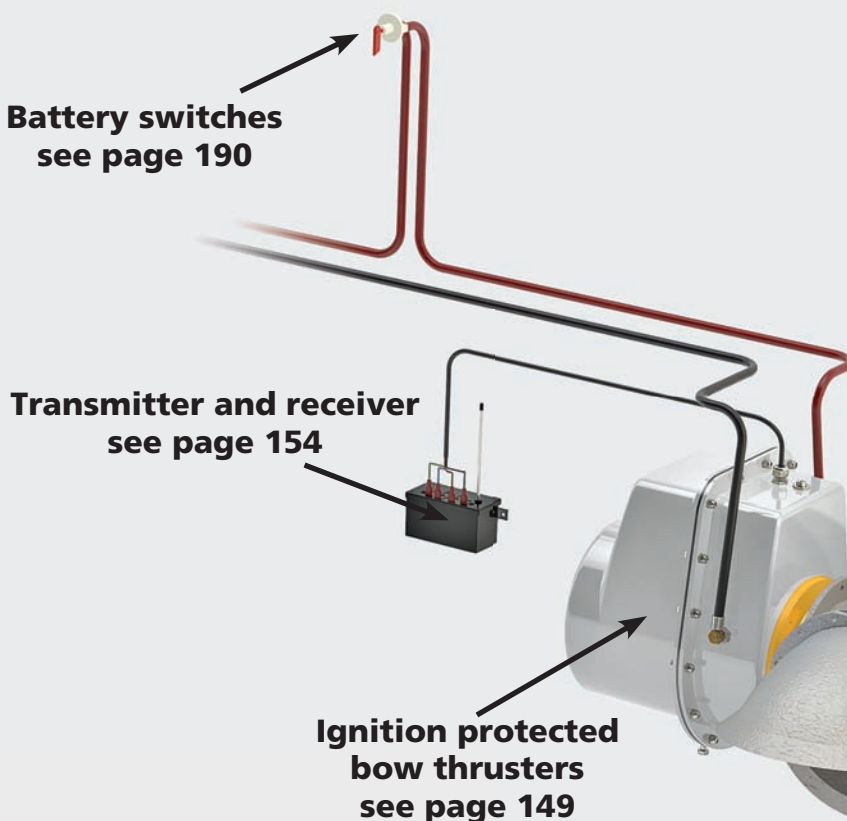
The turning moment

The turning moment is calculated by multiplying the wind force by the distance (A) between the centre of effort of the wind and the centre of rotation of the boat. In order to simplify this somewhat: for the vast majority of boats a rule of thumb may be applied that the turning moment is calculated by multiplying the wind force by half of the boat's overall length.

The VETUS bow thruster which is most suitable for this particular vessel is the 55 kgf model (25 kgf in the case of Beaufort 4 and 75 kgf in the case of Beaufort 6).

Always bear in mind that the effective performance of a bow thruster will vary with each particular boat, as the displacement, the shape of the underwater section and the positioning of the bow thruster will always be variable factors. As a rule of thumb it can be assumed that the stern thruster may be "one model smaller" than the bow thruster model, as it has been calculated. Therefore, in this case a stern thruster type 35 kgf will be the correct model.

Below is a selection table of bow thruster model against recommended boat length. Please note that this table is given for general guidance only and the calculation shown above should be used whenever possible.



Selection table thrust force – boat length

25 kgf	suitable for boats from 5,5 to 8,5 metres in length
35 kgf	suitable for boats from 6,5 to 10 metres in length
55 kgf	suitable for boats from 8,5 to 12,5 metres in length
60 kgf	suitable for boats from 9 to 13 metres in length
75 kgf	suitable for boats from 10,5 to 15 metres in length
95 kgf	suitable for boats from 12 to 17 metres in length
125 kgf	suitable for boats from 14 to 20 metres in length
160 kgf	suitable for boats from 16,5 to 22 metres in length
220 kgf	suitable for boats from 19,5 to 26 metres in length
230 kgf*	suitable for boats from 20 to 26,5 metres in length
285 kgf	suitable for boats from 22 to 29 metres in length
310 kgf*	suitable for boats from 22 to 29 metres in length
410 kgf*	suitable for boats from 27 to 34 metres in length
550 kgf*	suitable for boats from 33 to 43 metres in length

*only available as hydraulically driven bow thruster

**Stern thrusters for transom mounting
see page 158**



Rimdrive

The new VETUS rimdrive is an exciting and innovative development in bow thruster design.

In contrast with conventional thrusters, the electric motor does not take up valuable space inside the boat. Instead, the propeller forms the rotating part of the electric motor (rotor) and the fixed winding (stator) is mounted in the tunnel. This results in a very compact and self contained thruster.

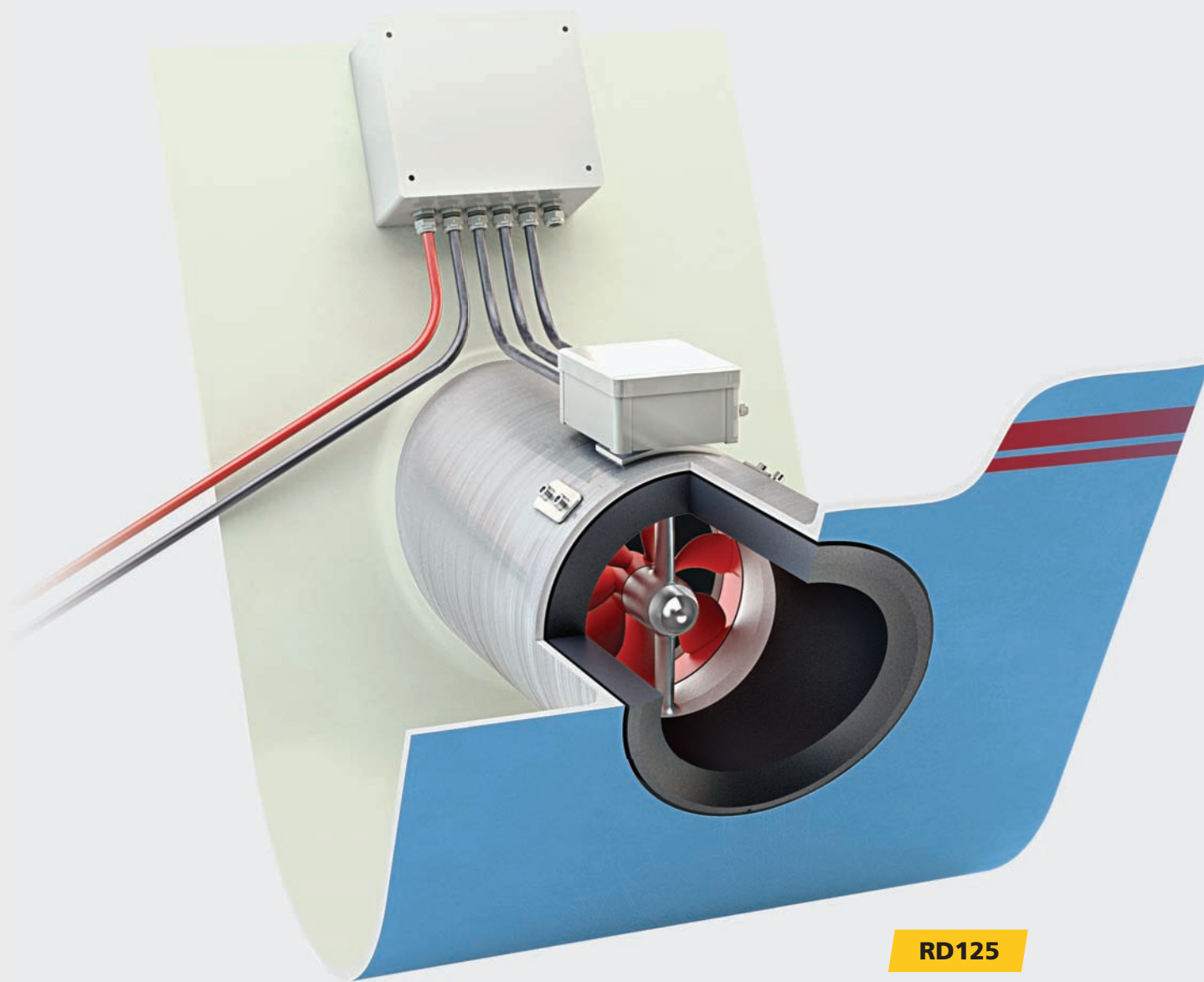
Due to careful design of the propeller blades and the ring which encloses them, this new rimdrive is virtually cavitation free and consequently, virtually silent. The familiar turbulence experienced with conventional thrusters is absent and only a gentle murmur can be heard when in operation.

The VETUS rimdrive features proportional control as standard. This means that the correct amount of thrust is always available to the helmsman, in order to cope with different manoeuvres and wind conditions. Furthermore, the rimdrive offers unlimited working time, with the only limitation being the capacity of the battery bank. With the innovative tunnel within a tunnel design, the propeller can be easily exchanged without having to dismantle the entire rimdrive.

In 2012 types RD125 and RD160 will be introduced.

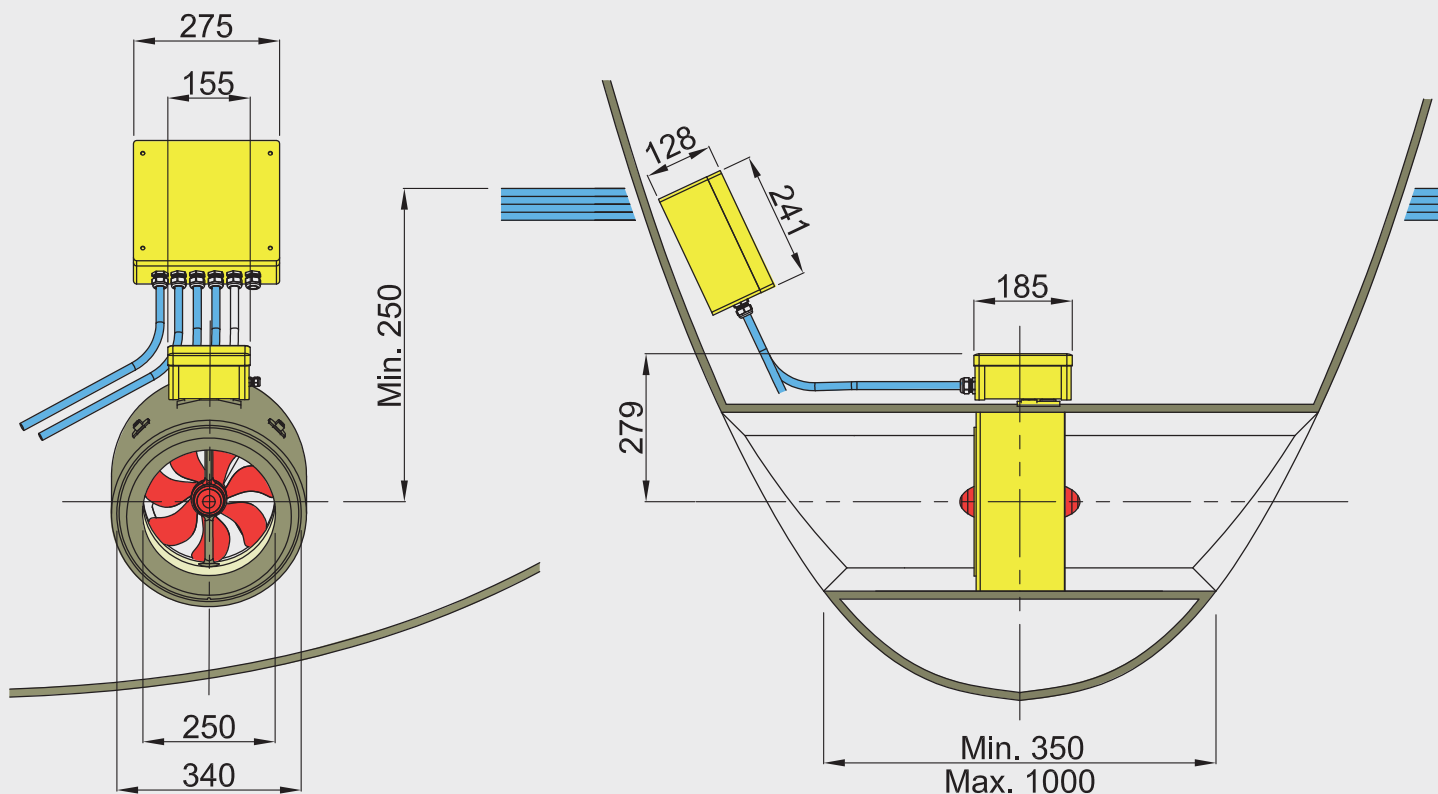
- continuous operation
- wireless control
- interchangeable propellers
- virtually silent operation

NEW



RD125

RD160



Technical data:

	RD125	RD160
Thrust, N (kgf)	0 - 1250 (125)	0 - 1600 (160)
Power kW (hp)	5,7 (8)	7 (9,5)
Motor type*	PMS	PMS
Variable speed	yes	yes
Tunnel diameter, internal, mm	250	250
Weight excluding tunnel, in kg	37	37

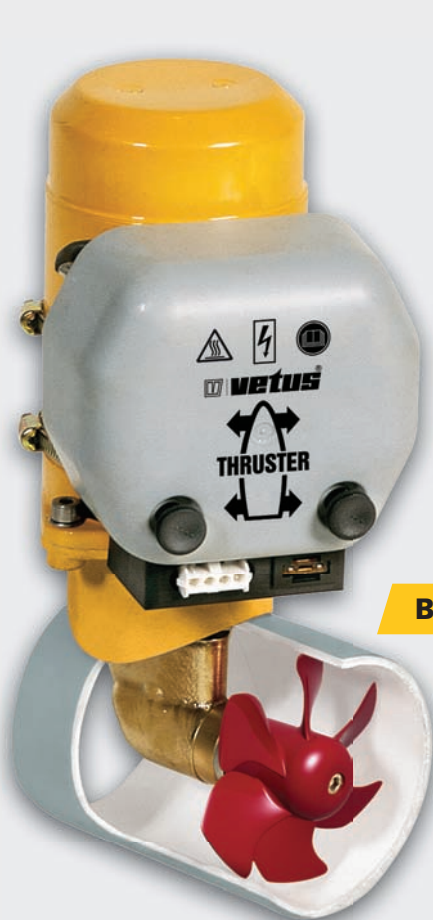
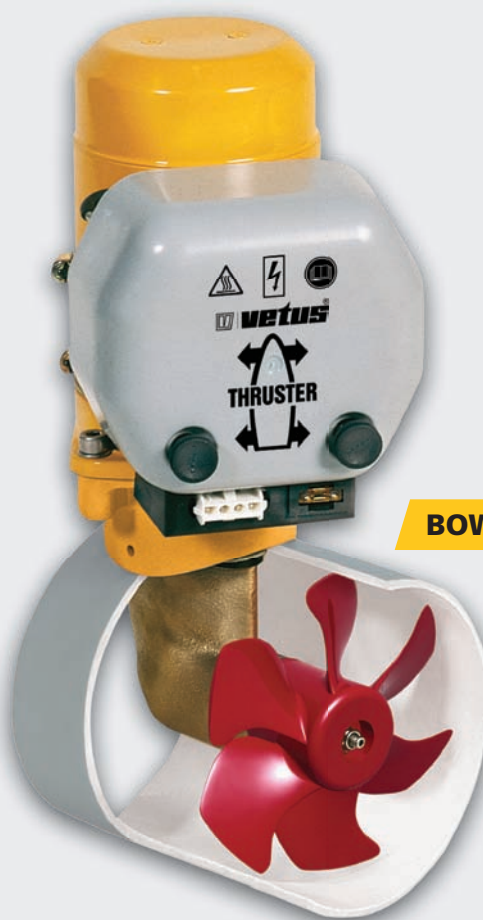
Supply Voltage : 24 Volt. Thruster Voltage : 48 Volt DC

Current consumption, (A)	180	250
Main fuse, "slow blow", (A)	200	250
Batteries, 12 Volt, min Ah	4 x 50	4 x 75
Battery cables**, total length of positive and negative cables together, m/mm ²	0-20 / 50	0-29 / 70
Battery main switch, model BATSW	250	250

* PMS = Permanent Magnet Synchronous motor.

** Based on VETUS battery cable.

Bow thrusters (electrical)


BOW2512C

BOW3512C

Technical data:	BOW2512C	BOW3512C	BOW5512C/BOW5524C	BOW6012C/BOW6024C
Thrust, N (kgf)	250 (25)	350 (35)	550 (55) - 12 V 600 (60) - 24 V	650 (65) - 12 V 700 (70) - 24 V
Power kW (hp)	1,5 (2)	1,5 (2)	3 (4)	3 (4)
Motor, reversible D.C.	yes	yes	yes	yes
Tunnel diameter, internal, mm	110	150	150	185
Weight excluding tunnel, in kg	10	12	20	22
Voltage, 12 Volt D.C.				
Current consumption, Amps	200	205	350	280
Operating time - continuously, in minutes	4	4	4	5
- maximum per hour, in minutes	4	4	4	5
Main fuse, "slow blow", Amps	125*	160*	250	200
Batteries 12 Volt D.C., min. Ah / max. Ah	1x55 / 1x70	1x55 / 1x108	1x108 / 1x200	1x108 / 1x143
Battery cables**, total length of positive and negative cables together, m / mm ²	0 - 8 / 25 8-12 / 35	0-11 / 35	0-12 / 70	0-11 / 50 11-16 / 70
Battery main switch: model BATSW / type BPMAIN	250 / 12	250 / 12	250 / 12	250 / 12
Voltage, 24 Volt D.C.				
Current consumption, Amps			200	140
Operating time - continuously, in minutes			4	5
- maximum per hour, in minutes			4	5
Main fuse, "slow blow", Amps			125	100
Batteries 12 Volt D.C., min. Ah / max. Ah			2x55 / 2x70	2x55 / 2x70
Battery cables**, total length of positive and negative cables together, m / mm ²			0-23 / 35 250 / 24	0-20 / 25 250 / 24
Battery main switch, model BATSW / type BPMAIN				

* This fuse is standard supply.

** Based on VETUS battery cable.



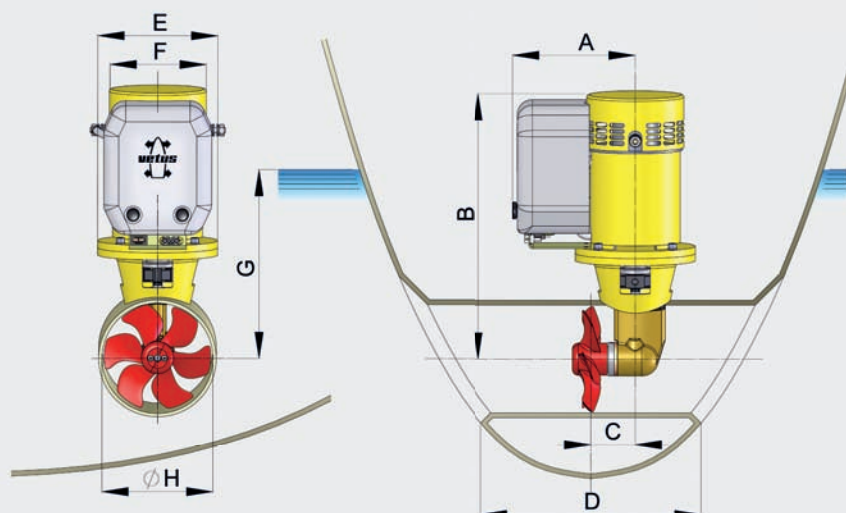
Bow thrusters (electrical)

BOW5512C

BOW5524C

BOW6012C

BOW6024C



Sizes in mm	BOW2512C	BOW3512C	BOW5512C BOW5524C	BOW6012C BOW6024C
A	138	138	143	143,5
B	297	314	377	397
C	73	79	79	77
D min./max.	220/440	300/600	300/600	370/740
E	149	149	160	160
F	Ø 112	Ø 112	Ø 130	Ø 130
G min.	110	150	150	185
H	Ø 110	Ø 150	Ø 150	Ø 185

Bow thrusters (electrical)


BOW7512C
BOW7524C

BOW9512C
BOW9524C

Technical data:	BOW7512C/ BOW7524C	BOW9512C/ BOW9524C	BOW12512C/BOW12524C	BOW16024C
Thrust, N (kgf)	800 (80) - 12 V 850 (85) - 24 V	950 (95) - 12 V 1050 (105) - 24 V	1250 (125) - 12 V 1400 (140) - 24 V	1600 (160)
Power kW (hp)	4,4 (6)	5,7 (8)	5,7 (8)	7 (9,5)
Motor, reversible D.C.	yes	yes	yes	yes
Tunnel diameter, internal, mm	185	185	250	250
Weight excluding tunnel, in kg	26	30	37	37
Voltage, 12 Volt D.C				
Current consumption, Amps	500	610	800	
Operating time - continuously, in minutes	2	3	2,5	
- maximum per hour, in minutes	2	3	2,5	
Main fuse, "slow blow", Amps	355	425	500	
Batteries 12 Volt D.C., min. Ah / max. Ah	1x120 / 1x225	1x165 / 2x143	1x225 / 2x200	
Battery cables**, total length of positive and negative cables together, m / mm ²	0 - 8 / 70 8-11 / 95 250 / 12	0 - 10 / 95 10-12 / 120 600 / 12	0 - 9 / 120 9-12 / 150 600 / 12	
Battery main switch: model BATSW / type BPMAN				
Voltage, 24 Volt D.C				
Current consumption, Amps	280	320	450	540
Operating time - continuously, in minutes	3	3,5	2,5	4,5
- maximum per hour, in minutes	3	3,5	2,5	4,5
Main fuse, "slow blow", Amps	200	200	300	355
Batteries 12 Volt D.C., min. Ah / max. Ah	2x108 / 2x143	2x108 / 2x143	2x108 / 2x165	2x165 / 4x165
Battery cables**, total length of positive and negative cables together, m / mm ²	0-21 / 50 250 / 24	0-21 / 50 250 / 24	0-20 / 70 250 / 24	0-29 / 120 600 / 24
Battery main switch: model BATSW / type BPMAN				

** Based on VETUS battery cable



Bow thrusters (electrical)

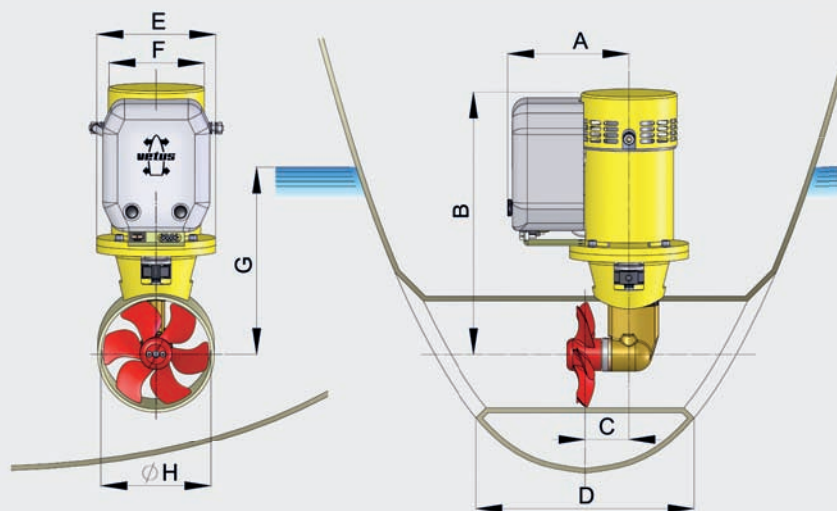


BOW12512C

BOW12524C



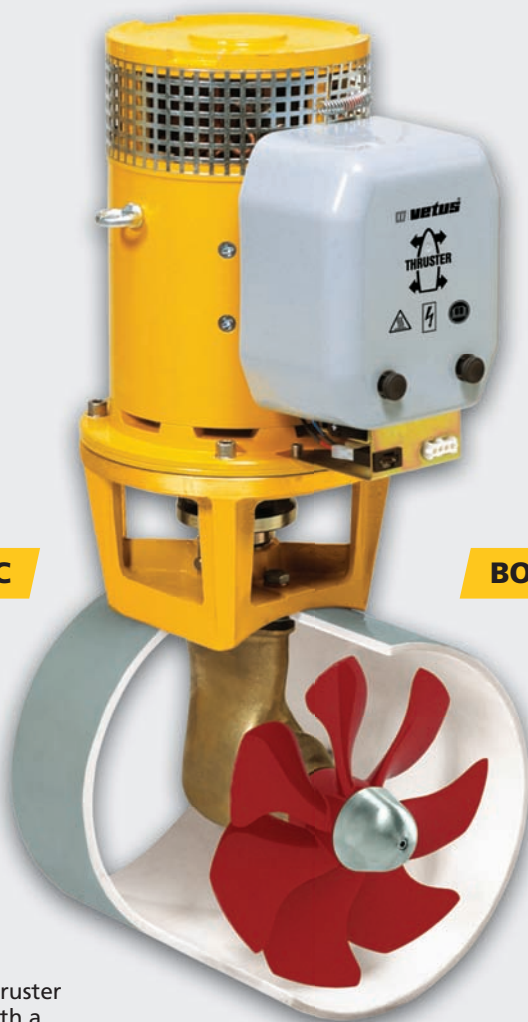
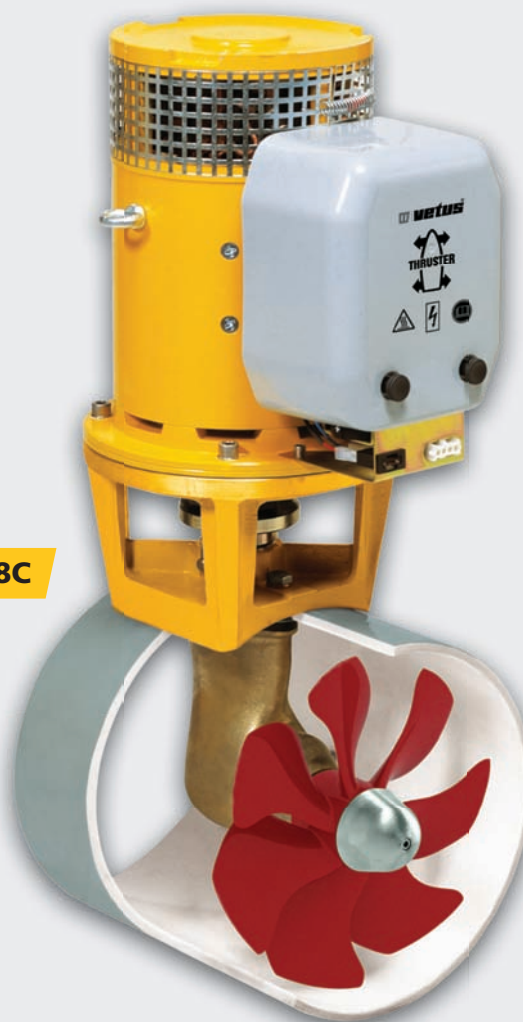
BOW16024C



Sizes in mm	BOW7512C BOW7524C	BOW9512C BOW9524C	BOW12512C BOW12524C	BOW16024C
A	155	209	209	222
B	435	443	500	548
C	77	77	108	108
D min./max.	370/740	370/740	500/1000	500/1000
E	200	200	200	240
F	Ø 135	Ø 150	Ø 150	Ø 185
G min.	185	185	250	250
H	Ø 185	Ø 185	Ø 250	Ø 250



Bow thrusters (electrical)

BOW22024C

BOW28548C


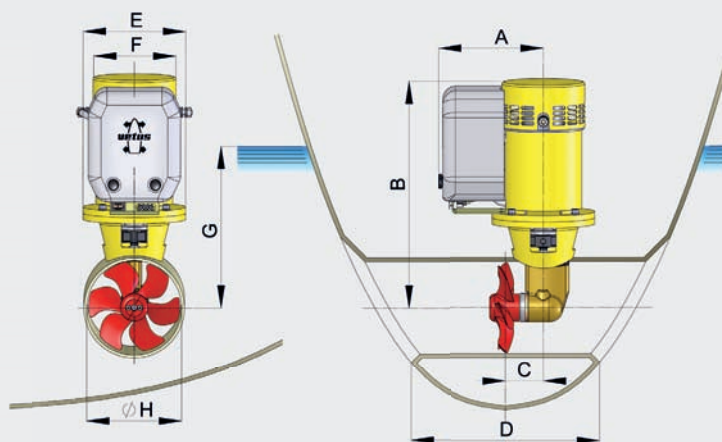
The 48 Volt bow thruster comes complete with a series/parallel switch, for switching over from 24 Volt to 48 Volt D.C.

Technical data:	BOW22024C	BOW28548C
Thrust, N (kgf)	2200 (220)	2850 (285)
Power kW (hp)	11 (15)	16 (21,5)
Motor, reversible D.C.	yes	yes
Tunnel diameter, internal	300	300
Weight excluding tunnel, in kg	68	68
Voltage, 24 Volt D.C.		
Current consumption, Amps	760	
Operating time - continuously, in minutes	2,5	
- maximum per hour, in minutes	2,5	
Main fuse, "slow blow", Amps	500	
Batteries 12 Volt D.C., min. Ah / max. Ah	2x200 / 4x165	
Battery cables**, total length of positive and negative cables together, m/mm ²	0-21 / 120	
Battery main switch: model BATSW / type BPMAIN	600 / 24	
Voltage, 48 Volt D.C.		
Current consumption, Amps		560
Operating time - continuously, in minutes		2,5
- maximum per hour, in minutes		2,5
Main fuse, "slow blow", Amps		355
Batteries 12 Volt D.C., min. Ah / max. Ah		4x143 / 8x120
Battery cables**, total length of positive and negative cables together, m/mm ²		0-23 / 95
Battery main switch: model BATSW, type		600

** Based on VETUS battery cables.



Bow thrusters (electrical)



Sizes in mm	BOW22024C	BOW28548C
A	247	247
B	627	627
C	136	136
D min./max.	600/1200	600/1200
E	258	258
F	Ø 212	Ø 212
G min.	300	300
H	Ø 300	Ø 300

"Ignition protected"

Installing an electric bow or stern thruster in a petrol (gasoline) engined boat can be very dangerous, due to the possibility of the electric motor igniting fuel vapour. In order to eliminate the risk, this special housing will shield the bow or stern thruster from potentially explosive vapour. The housing enables the thruster to comply with the ISO 8846 Marine "ignition protection" standard. In addition to the standard thruster, the set consists of a watertight (IP65) housing for the electric motor and relays, together with all required seals, electrical connectors and fastening components. An automatic fuse for the control loom is also supplied. This can be reset externally without opening the housing. For both 12 and 24 volt supply. They can also be used as stern thrusters, in combination with the appropriate kit.

Because the motor housing is watertight, these sets are also ideal for use where the bow or stern thruster is installed in a wet or humid space.



BOW5512I

BOW5524I

BOW7512I

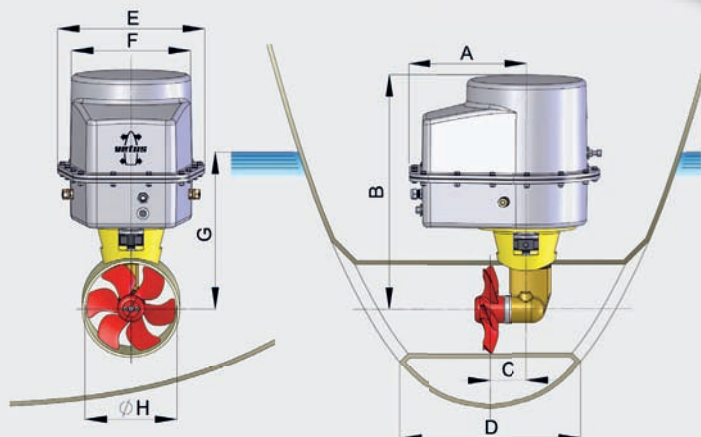
BOW7524I

BOW9512I

BOW9524I

BOW12512I

BOW12524I



Sizes in mm	BOW5512I BOW5524I	BOW7512I BOW7524I	BOW9512I BOW9524I	BOW12512I BOW12524I
A	195	238	238	238
B	412	460	460	517
C	79	77	77	108
D min./max.	300/600	370/740	370/740	500/1000
E	250	296	296	296
F	195	240	240	240
G min.	150	185	185	250
H	150	185	185	250

Control panels for bow and stern thrusters

We advise the use of VETUS control panels with VETUS thrusters for optimum safety and performance

Easy docking panel

This control panel combines the functions of twin joysticks into one easy to operate knob. The simple and intuitive control action ensures that operation of both bow and stern thruster together becomes a smooth procedure. The use of Hall effect sensors in this control panel means there are no holes in it and it is therefore completely watertight to IP67. All safety features and other technical specifications are identical to the other control panels, shown.



EZDOCK2

85 x 138 mm



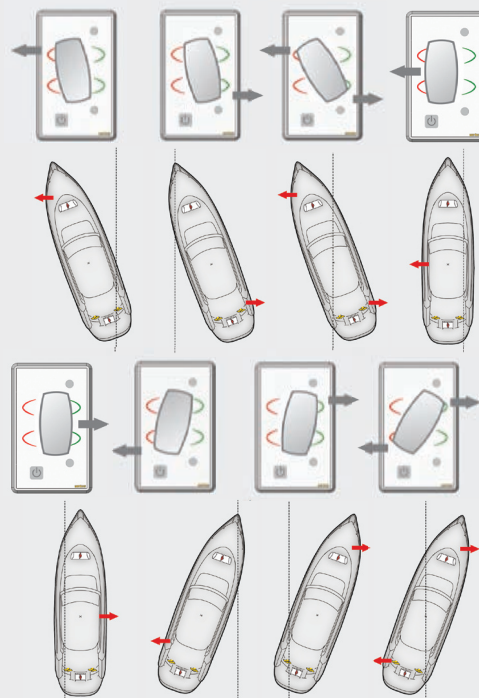
BPSE2

85 x 85 mm



BPJE2

85 x 85 mm



Models BPJE2 and BPSE2 are suitable for either one bow thruster or one stern thruster. Model BPJDE2 is suitable for a combination of bow and stern thruster.

BPJDE2

85 x 138 mm

Control panels type BPSE2, BPJE2, BPJDE2 and EZDOCK2 have identical functions to those on the adjacent page, but in addition feature:

- Built-in **time lapse** device when reversing the direction of rotation.
- Automatic switch off after 30 minutes inactivity. This feature is user selectable during installation.
- In the event of continuous running for more than 2 minutes there is a **warning** LED and buzzer and the thruster will switch off automatically. The panel will reset itself after 5 seconds.
- **Watertight** to IP 66.

EZDOCK2	Easy docking system for bow/stern thruster	with time delay
BPSE2	bow thruster touch panel	with time delay
BPJE2	bow thruster panel with joy-stick	with time delay
BPJDE2	bow & stern thruster panel with two joy-sticks	with time delay

Any control panel can fitted at any helm position and they are easily interconnected.



Control panels for bow and stern thrusters

These new bow thruster panels are available in either aluminium or synthetic finish. Both types can be fitted in a 52 mm diameter hole, making installation quick and easy using a hole saw. The round synthetic version is supplied with the same bezel rings as other VETUS boat instruments and is therefore ideal to be mounted alongside these. It can also be fitted in an engine panel in place of an instrument. The panels are provided as standard with a switched outlet (max 3 A) for switching extra equipment and are waterproof to IP66. The new bow thruster panels, types BPAS and BPAJ are backwards compatible with other VETUS bow thruster panels. That is to say; both the connector plug and the hole size are the same. Models BPSR and BPJR have the same connector plug, but the hole size is different.

Aluminium bow thruster panel

Dimensions: 95 x 95 mm

Built-in depth: 85 mm

Round bow thruster panel

Dimensions: 63 mm diameter

Built-in depth: 75 mm

NEW

BPAS

BPAJ

NEW

BPSR

BPJR

Easy docking panel 'sport'

Control panels type BPSE, BPJE, BPJDE and EZDOCKS have the following features:

- Protected against accidental or unauthorized operation.
- Panel power on indicator.

- **Warning** LED and buzzer in the event of continuous running for more than 2 minutes.
- Control circuit overload protection.
- **Watertight** to IP 66.

BPJDE

85 x 138 mm

BPSE

85 x 85 mm

BPJE

85 x 85 mm

BPA

Installation of panels BPSE2, BPJE2, BPSE or BPJE in place of an older style BPS or BPJ panel is possible using an adapter plate, available upon request.

Any control panel can be fitted at any helm position and they are easily interconnected

Pro-docker

This intelligent joystick makes manoeuvring fun!

The pro-docker brings computer control to the helmsman's fingertips and makes manoeuvring your boat not only simple, but enjoyable too. The pro-docker **simultaneously** controls the propulsion engine(s), the bow thruster and the stern thruster if fitted. Intuitive operation of just a single joy stick is all that is needed to perform the most accurate boat movements. This makes even the tightest berthing manoeuvre not only a pleasure but a source of pride. The VETUS pro-docker is the perfect assistant, allowing you to handle your boat like a true professional. The VETUS pro-docker system may be used in combination with all types of bow and/or stern thrusters, whether electrically or hydraulically driven.

As an option, it can also be interfaced with the VETUS follow-up steering system, so that the rudders can be operated too. Intuitive operation of the joystick allows **proportional** control of the bow and stern thrusters; from very slow up to full thrust, by gradually **moving the joystick to port or starboard**. By **rotating** the joystick, clockwise or anti-clockwise, the boat will rotate in the appropriate direction. The engines are controlled by **moving the joystick forwards or backwards**. Any combination of the joystick movement is possible to give you full and precise control.

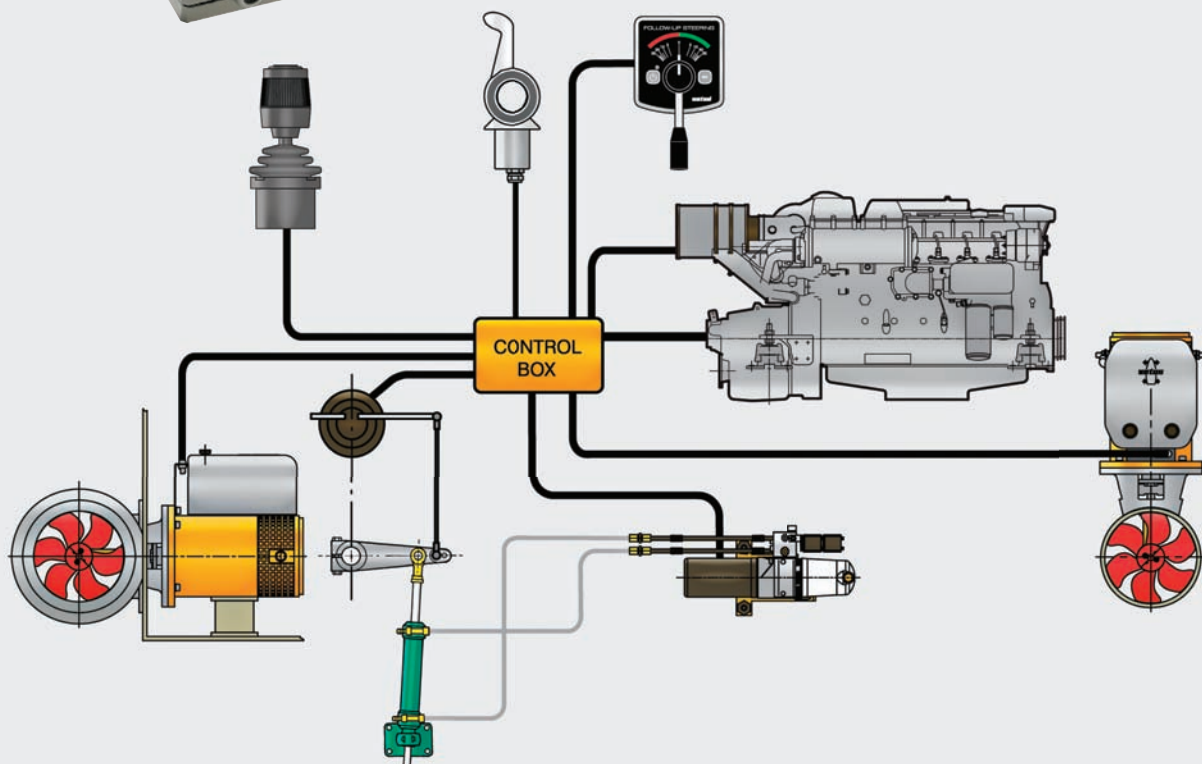


PDJS



Technical specification

- Suitable for 24 Volt electric bow and stern thrusters, with proportional control.
- Suitable for 12 and 24 Volt engine electrical systems.
- Analogous propulsion engine control.
 - Control actuators
 - Voltage controlled 0 - 5 V
 - Current controlled 4 - 20 mA
- Suitable for mechanical and hydraulic gearboxes. (However, the "trolling" function cannot be used if fitted).
- Fulfils all CE and ABYC directives.
- Dimensions Joystick: 48 x 48 x 75 mm (lxwxh).
- Dimensions Control box: 300 x 300 x 130 mm.
- Available for both electric and hydraulic bow and stern thrusters.

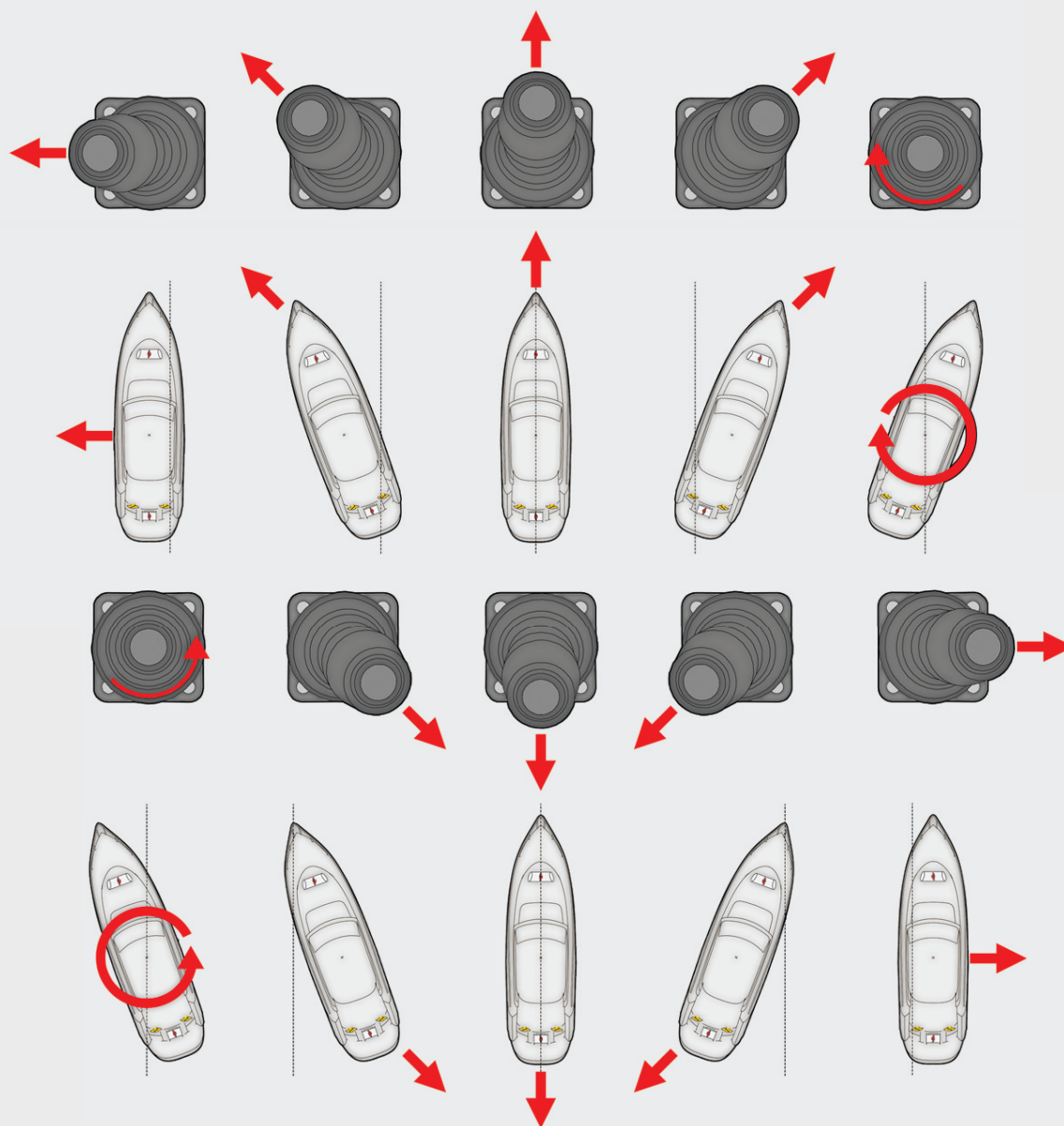




Pro-docker

Joystick positions

The various joystick positions and the effect on the boat are shown below. A memory button is also provided on the top of the joystick. During a manoeuvre this button can be pressed and the joystick released. The system will follow the chosen command until the button is pressed again, thus making short handed berthing simplicity itself. Hall-effect sensors in the joystick ensure minimal mechanical components and the highest levels of reliability and longevity.



Why a VETUS pro-docker?

- Combined electric and hydraulic thruster possibilities.
- Suitable for use with single engine boats.
- Proportional control of both electric and hydraulic thrusters.
- VETUS is the only manufacturer to supply the complete system; propulsion engine, thrusters and controls.
- Installation is possible in existing boats.
- Automatic heading and way-point tracking, together with electronic anchoring functions.





Accessories for bow and stern thrusters

Wireless control panel



With the aid of this radio connection a bow thruster (or a stern thruster) may be controlled using one of the VETUS control panels, without the need to install an interconnecting cable from the thruster to the panel. Installation of the thruster, particularly as a retro-fit, will be much simpler and less time consuming, as running a connection cable between the thruster motor and the control panel is no longer necessary. The installation kit of this radio control device consists of a transmitter and a receiver, complete with connection plugs. It is suitable for 12 and for 24 Volt D.C. installations and has a maximum capacity of 25 A. Two different sets are available: model **RCBP** for single station control and model **RCBP2** for dual station control. The distance between the transmitter and receiver should not exceed 15 metres. **This type of control cannot be used with the joystick models BPJH5, BPJ5D or BPJ5TH5.**

Time lapse device

Only necessary for BPJSTA, BPSM, AFSTFR and AFSTFG. Eliminates the risk of the bow thruster being switched over too quickly. Highly recommended for hire craft to prevent motor damage.



This **electric remote control** consists of: a rocker switch with a capacity of 6 A, suitable for 12 and 24 Volt D.C., and a three-core spiralled wire of 3,5 metres in length, complete with watertight plug and socket. This remote control comes in handy for the operation of: bow and stern thrusters, anchor windlasses, remote controlled gangways, electric cranes, hydraulic steering systems, etc. A stainless steel hanger loop is fitted on the back.



Radio remote control

This radio control may be used for remote operation of a bow thruster, stern thruster, anchor windlass or other electrical equipment.

Two models are available:

- **Model RCM2:** Consisting of a receiver and a 2 channel wireless hand-held control to operate a single thruster.
- **Model RCM4:** Consisting of a receiver and a 4 channel wireless hand-held control to operate a bow and stern thruster or a bow thruster and e.g. an anchor winch. When using the RCM4, both thrusters can be operated simultaneously. A second optional wireless receiver can be added to save even more time wiring the stern thruster.

This wireless remote control system can be used to control all regular bow and stern thrusters as well as other electrically driven equipment on board. It can be used as the only control or in addition to a conventional control panel.

For VETUS electric thrusters order connection kit RCMCAB.

For VETUS hydraulic thrusters, order the REMCOH interface kit in addition to the RCMCAB.

If the receiver is placed in an environment which can cause signal loss, it is advisable to connect an optional external antenna to the receiver. For example: when the receiver is placed near the thruster in the bow of a steel vessel. The RCMANT consists of an external antenna with 10 metres of cable hard wired to the antenna.

Additional hand-held controls, receivers and other accessories can be ordered separately, please see the price-list.



Technical specifications:

Frequency	: 433.92 Mhz.
Power supply	: 12 or 24 V D.C.
Guaranteed open air range	: 15 metres.
Range with external antenna	: up to 50 metres when unimpeded.
Maximum switching current	: 3 A (12/24 V).
Hand held control	: watertight according to IP65.
Dash mount cradle	: supplied as standard.
Hand held power supply	: 2 x 1.5 V AAA battery.
Max number of remote controls	: 5 per receiver.
Approval	: FCC and CE approved.

RCM2	Remote control for thruster or anchor windlass 12/24 V.
RCM4	Remote control for bow and stern thruster , or bow thruster and anchor windlass 12/24 V.
RCMTX2	Extra 2 button wireless transmitter for remote control.
RCMTX4	Extra 4 button wireless transmitter for remote control.
RCMRX2	Extra 2 channel receiver.
RCMRX4	Extra 4 channel receiver.
RCMANT	Optional external antenna to extend the transmitting range.
RCMCAB	Thruster connection cable L = 0,5 m with connector.
REMCOH	Cable for connection of radio remote receiver to a hydraulic bow thruster.

Accessories for bow and stern thrusters

Wireless remote control

With this robust, waterproof and attractive hand unit, both the bow thruster and stern thruster can be wirelessly controlled. The control has a range of 10 to 25 metres depending on the location of the receiver. This remote control can also be used to operate any other electrically operated equipment on board, for example an anchor windlass.

Power supply	: 12 or 24 V D.C.
Guaranteed open air range	: 10 metres.
Maximum range	: up to 25 metres when unimpeded.
Hand held control	: watertight according to IP67.
Receiver	: watertight according to IP55.


NEW
R&C

Bow thruster tunnels, nominal dimensions			
	internal diameter	external diameter	
glassfibre reinforced polyester:	110 mm	120 mm	
steel:	112,5 mm	121 mm	
aluminium:	112 mm	120 mm	
glassfibre reinforced polyester:	150 mm	160,6 mm	
steel:	150 mm	159 mm	
aluminium:	150 mm	160 mm	
glassfibre reinforced polyester:	185 mm	195,6 mm	
steel:	182,5 mm	193,7 mm	
aluminium:	185 mm	196 mm	
glassfibre reinforced polyester:	250,6 mm	264,6 mm	
steel:	252,8 mm	267 mm	
aluminium:	250 mm	264 mm	
glassfibre reinforced polyester:	300 mm	320 mm	
steel:	303 mm	318 mm	
aluminium:	300 mm	320 mm	
glassfibre reinforced polyester:	400 mm	424 mm	
steel:	397 mm	419 mm	

Both the internal and the external diameters may vary slightly from the given dimensions.

Tunnels for bow thrusters

Tunnels are available in glassfibre, steel and aluminium. Available in standard lengths or per metre.

BP110...
BP150...
BP185...

BP250...
BP300...
BP400...

BP110G75	G.r.p. tunnel	Ø 110 x 750 mm
BP110G10	G.r.p. tunnel	Ø 110 x 1000 mm
BP110G30	G.r.p. tunnel	Ø 110 x 3000 mm
BP110S75	Steel tunnel	Ø 110 x 750 mm
BP110S10	Steel tunnel	Ø 110 x 1000 mm
BP110S30	Steel tunnel	Ø 110 x 3000 mm
BP110A75	Aluminium tunnel	Ø 110 x 750 mm
BP110A10	Aluminium tunnel	Ø 110 x 1000 mm
BP110A30	Aluminium tunnel	Ø 110 x 3000 mm
BP150G75	G.r.p. tunnel	Ø 150 x 750 mm
BP150G10	G.r.p. tunnel	Ø 150 x 1000 mm
BP150G15	G.r.p. tunnel	Ø 150 x 1500 mm
BP150G30	G.r.p. tunnel	Ø 150 x 3000 mm
BP150S10	Steel tunnel	Ø 150 x 1000 mm
BP150S15	Steel tunnel	Ø 150 x 1500 mm
BP150S30	Steel tunnel	Ø 150 x 3000 mm
BP150A10	Aluminium tunnel	Ø 150 x 1000 mm
BP150A30	Aluminium tunnel	Ø 150 x 3000 mm
BP185G75	G.r.p. tunnel	Ø 185 x 750 mm
BP185G10	G.r.p. tunnel	Ø 185 x 1000 mm
BP185G15	G.r.p. tunnel	Ø 185 x 1500 mm
BP185G20	G.r.p. tunnel	Ø 185 x 2000 mm
BP185G30	G.r.p. tunnel	Ø 185 x 3000 mm
BP185S10	Steel tunnel	Ø 185 x 1000 mm
BP185S15	Steel tunnel	Ø 185 x 1500 mm
BP185S20	Steel tunnel	Ø 185 x 2000 mm
BP185S30	Steel tunnel	Ø 185 x 3000 mm
BP185A10	Aluminium tunnel	Ø 185 x 1000 mm
BP185A30	Aluminium tunnel	Ø 185 x 3000 mm

BP250G10	G.r.p. tunnel	Ø 250 x 1000 mm
BP250G15	G.r.p. tunnel	Ø 250 x 1500 mm
BP250G20	G.r.p. tunnel	Ø 250 x 2000 mm
BP250G25	G.r.p. tunnel	Ø 250 x 2500 mm
BP250G30	G.r.p. tunnel	Ø 250 x 3000 mm
BP250S10	Steel tunnel	Ø 250 x 1000 mm
BP250S15	Steel tunnel	Ø 250 x 1500 mm
BP250S20	Steel tunnel	Ø 250 x 2000 mm
BP250S25	Steel tunnel	Ø 250 x 2500 mm
BP250S30	Steel tunnel	Ø 250 x 3000 mm
BP250A10	Aluminium tunnel	Ø 250 x 1000 mm
BP250A30	Aluminium tunnel	Ø 250 x 3000 mm
BP300G10	G.r.p. tunnel	Ø 300 x 1000 mm
BP300G15	G.r.p. tunnel	Ø 300 x 1500 mm
BP300G30	G.r.p. tunnel	Ø 300 x 3000 mm
BP300S10	Steel tunnel	Ø 300 x 1000 mm
BP300S15	Steel tunnel	Ø 300 x 1500 mm
BP300S30	Steel tunnel	Ø 300 x 3000 mm
BP300A10	Aluminium tunnel	Ø 300 x 1000 mm
BP300A15	Aluminium tunnel	Ø 300 x 1500 mm
BP300A30	Aluminium tunnel	Ø 300 x 3000 mm
BP400G20	G.r.p. tunnel	Ø 400 x 2000 mm
BP400G25	G.r.p. tunnel	Ø 400 x 2500 mm
BP400S20	Steel tunnel	Ø 400 x 2000 mm
BP400S25	Steel tunnel	Ø 400 x 2500 mm

Accessories for bow and stern thrusters


BPSM

BPJSTA

BP29

Bow thruster control Panel for side mounting

With on/off switch and rocker switch.
Diameter: 102 mm.
Build-in depth: 79 mm.
Watertight to IP 65.

Joystick switch only for dashboard mounting. **Watertight** to IP 65.

Panel connection cables

Panel connection cables with multi-plugs fitted are available in different lengths (see below).

Remotely controlled battery main switch and emergency stop

BPMAIN


Modern electrical installations are intrinsically very reliable. However a remotely operated battery switch is now required by law in many countries. This VETUS battery main switch can be either remotely controlled electrically or activated by hand in an emergency. This makes it ideal for use with bow thrusters, anchor windlasses or other high current consumers. The switch should be fitted as close as possible to the battery of the bow thruster or other consumer, but always in a position where the red emergency stop button is within easy reach. For remote switching on and off, a control panel is supplied. The standard loom is pre-wired with multi-plugs. Extension looms and control panels are available as an option. In an emergency or if the remote control is inoperable, the battery bank can be isolated by pressing the red button. This battery main switch/emergency stop is available in combination with 12 or 24 Volt D.C.

Attention:

When a 24 Volt bow thruster is connected to a 12 Volt circuit by means of a series/parallel switch, a 12 Volt battery main switch must be selected. When a 48 Volt bow thruster is connected to a 24 Volt circuit by means of a series/parallel switch, a 24 Volt main switch must be used. Maximum loads: 250 A continuous or 800 A for 3 minutes.

BP29	Connection cable	6 m control panel/bow thruster
BP2910	Connection cable	10 m control panel/bow thruster
BP2916	Connection cable	16 m control panel/bow thruster
BP2918	Connection cable	18 m control panel/bow thruster
BP2920	Connection cable	20 m control panel/bow thruster
BPJSTA	Joystick only	for bow thrusters (excl. connection cable)
BPSM	Bow thruster control panel for side mounting with toggle switch Ø 102 mm	
BPMAIN12	Remotely controlled battery main switch and emergency stop 12 Volt	
BPMAIN24	Remotely controlled battery main switch and emergency stop 24 Volt	
BPMEC	Extension cable	6 mtr for BPMAIN
BPMRC	Remote control	for BPMAIN

Accessories for bow and stern thrusters

Waterproof foot switches

These **waterproof** foot switches are designed for operating the anchor windlass, but are also ideal to operate the bow thruster on a sailing yacht. On such boats it is often difficult to find a location for a conventional control panel, where it won't get damaged and is easily reached from behind the wheel.

They are heavy duty and completely waterproof (IP65), with a red or grey UV resistant diaphragm. The electrical connections are made of nickelplated copper to ensure reliable and corrosion free operation. Suitable for 12 and 24 Volt D.C. The switches are available with a UV resistant synthetic cover or a polished stainless steel cover.

FSWR	Foot switch white/red	watertight
FSWG	Foot switch white/grey	watertight
FSBR	Foot switch black/red	watertight
FSBG	Foot switch black/grey	watertight
FSSR	Foot switch St.st.316/red	watertight
FSSG	Foot switch St.st.316/grey	watertight



Series/parallel switch

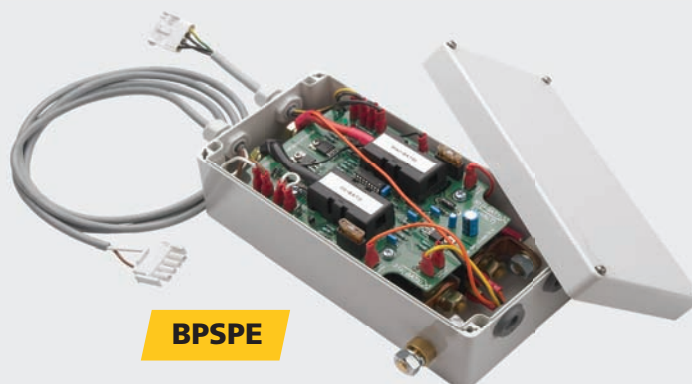
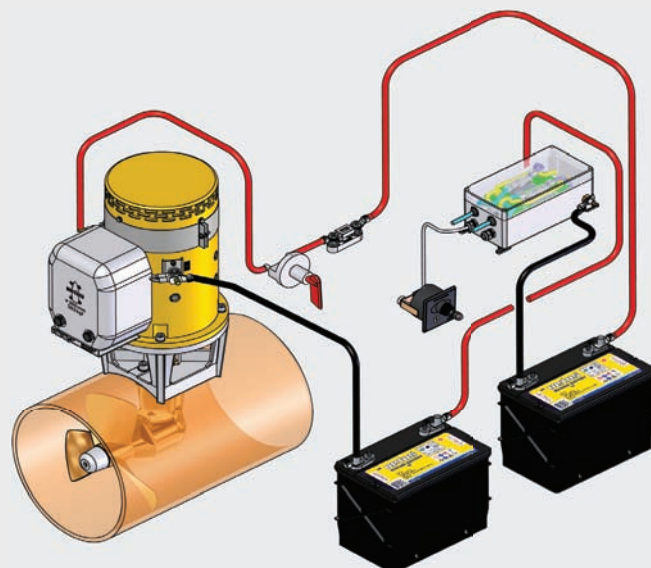
The 160 kgf and 220 kgf bow thrusters are only available with a 24 Volt DC electric motor. By installing a series/parallel switch in a 12 volt main power supply system it is possible that:

- The 24 Volt bow thruster will work using 12 Volt batteries connected in series, so as to obtain the required 24 volt voltage.
- For charging, the 12 Volt batteries are automatically connected in parallel and linked to the 12 Volt charging system.

This series/parallel switch comes complete with pre-assembled auxiliary relays to ensure easy connection between the battery bank and the bow thruster. When the batteries installed for the bow thruster are also used for other 12 Volt consumers, it should be remembered that the current is supplied via the charging contacts of the series/ parallel switch.

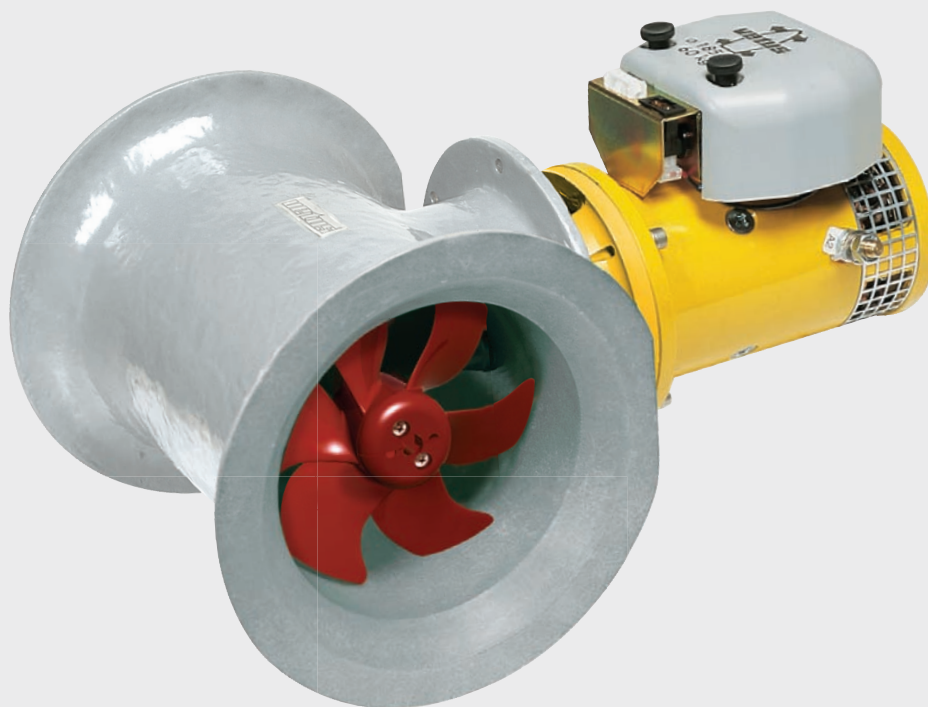
These contacts have a continuous duty rating of 100 Amps, and an intermittent 20% rating of 150 Amps. As a consequence, never use these batteries as starter batteries and never connect an anchor windlass to them. The series/parallel switch functions completely automatically and therefore the operation of the bow thruster is as usual.

The 285 kgf – 48 Volt DC bow thruster has a series/parallel switch supplied as standard, to permit connection to a 24 Volt battery bank. This 48 Volt series/parallel switch is also available separately (code: BP3008).





Stern thrusters (for transom mounting)

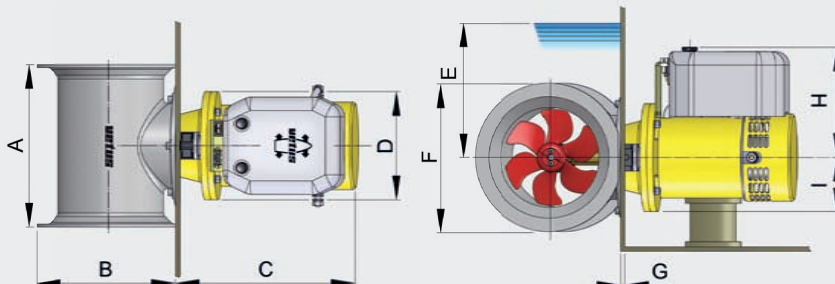


A VETUS stern thruster, in combination with a VETUS bow thruster will provide even greater manoeuvrability of your boat in locks or harbours. The availability of a side-directional thruster in the bow and another side-directional thruster at the transom makes mooring, sailing away and finding the right spot in the lock or the marina child's play. The effects of wind and current can be effectively countered, except in extreme situations. Installation of a VETUS stern thruster is a simple operation. The electric motor and the other electric components are fitted internally to the transom of the boat. The tunnel and the propeller are installed externally on the transom.

A range of six different stern thruster kits is available, with tunnel diameters of 110, 150, 185, 250, 300 or 400 mm. For technical details of the matching bow thruster units, see pages 144, 145, 146, 147 and 148.

These stern thruster installation kits may also be used with "ignition protected" thrusters.

STERN110P	G.r.p. stern thruster	tunnel diam. 110 mm
STERN150P	G.r.p. stern thruster	tunnel diam. 150 mm
STERN185P	G.r.p. stern thruster	tunnel diam. 185 mm
STERN250P	G.r.p. stern thruster	tunnel diam. 250 mm
STERN300P	G.r.p. stern thruster	tunnel diam. 300 mm
STERN400P	G.r.p. stern thruster	tunnel diam. 400 mm



The matching bow thruster unit is to be ordered separately.

A **stern thruster installation kit** comprises a tunnel with shaped end fairings to ensure optimum performance. The mounting flange is integral and the whole assembly is manufactured in strong and maintenance free GRP. The mounting kit is supplied complete with mounting flange.

	STERN110P	STERN150P			STERN185P				STERN250P			STERN300P				STERN400P	
Combined with																	
Sizes in mm	BOW 25	BOW 35	BOW 55	BOW 55 HYDR.	BOW 60	BOW 75	BOW 95	BOW 95 HYDR.	BOW 125	BOW 160	BOW 160 HYDR.	BOW 220	BOW 230	BOW 285	BOW 310 HYDR.	BOW 410	BOW 550 HYDR.
A	230	270	270	270	300	300	500	300	460	460	460	540	540	540	540	740	740
B	155	215	215	215	268	268	268	268	360	360	360	437	437	437	437	543	543
C	232	219	282	163	267	305	313	151	313	373	168	416	242	416	242	0	0
D	149	149	160	160	160	200	200	200	200	240	240	258	258	258	258	0	0
E min.	110	150	150	150	185	185	185	185	250	250	250	300	300	300	300	400	400
F	Ø 180	Ø 240	Ø 240	Ø 240	Ø 275	Ø 275	Ø 275	Ø 275	Ø 370	Ø 370	Ø 370	Ø 450	Ø 450	Ø 450	Ø 450	Ø 550	Ø 550
G max.	25	19	47	47	33	26	26	26	58	92	92	50	50	50	50	unlimited	
H	138	138	143	80	143	155	209	100	209	222	120	237	129	237	129	0	0
I	87	117	117	117	111	111	111	111	111	154	154	172	172	172	172	200	200

Stern thrusters (for transom mounting)

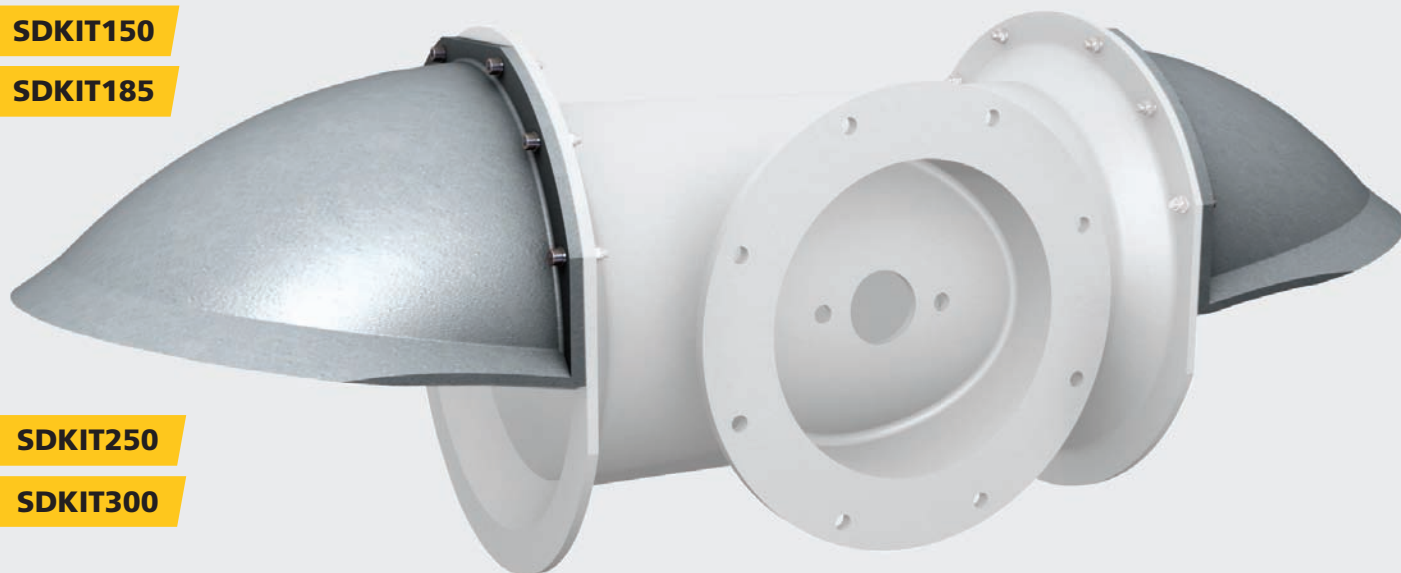
Extension kit for stern thrusters

SDKIT150

SDKIT185

SDKIT250

SDKIT300

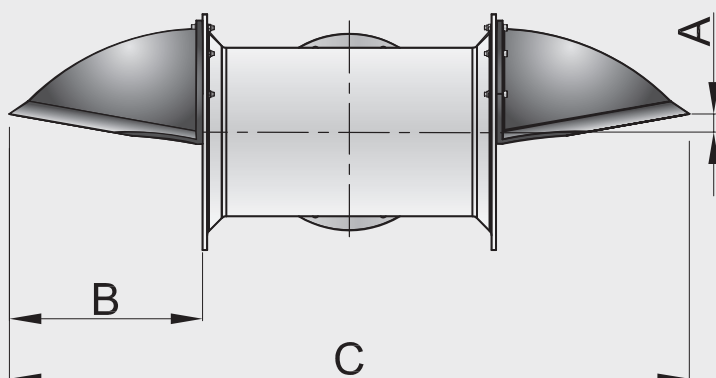
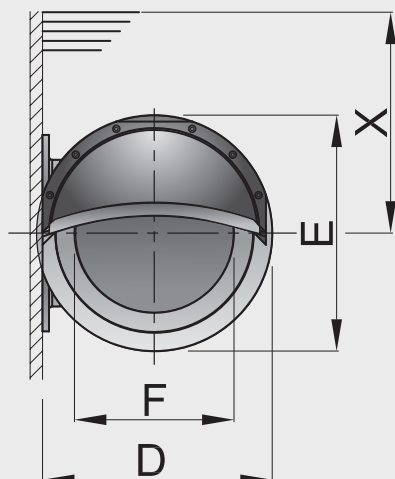


SDKIT150	Stern thruster extension kit for shallow draft boats, tunnel diam. 150 mm
SDKIT185	Stern thruster extension kit for shallow draft boats, tunnel diam. 185 mm
SDKIT250	Stern thruster extension kit for shallow draft boats, tunnel diam. 250 mm
SDKIT300	Stern thruster extension kit for shallow draft boats, tunnel diam. 300 mm

For the stern thruster to function correctly, it is important that the propeller is submerged well below the waterline. If this is not the case, the propeller may suck air into the tunnel, with a considerable loss of thrust power as a consequence. However, on some boats this is not really feasible, because the draft at the stern is too shallow and because the thruster assembly should never protrude beneath the bottom of the boat. In order to ensure both tunnel openings are sufficiently below the waterline, VETUS has developed an extension kit for stern thrusters with tunnel of Ø 150, 185, 250 or 300 mm.

This kit consists of two shells made of GRP, together with all the necessary stainless steel fastenings. The kit can be easily retrofitted to existing installations. This extension kit should be used if the transom is fitted with other equipment, which may prevent unhindered water flow through the tunnel. It is also ideal for so-called "house boats", which in general have a very shallow draft both at the bow and at the stern.

	A	B	C	D	E	F	X (= ½ F + A)
SDKIT150	27	195	650	220	232	Ø 150	Min. 102 mm
SDKIT185	17	237	774	268	275	Ø 185	Min. 110 mm
SDKIT250	28	303	1066	360	370	Ø 250	Min. 153 mm
SDKIT300	39	365	1270	437	450	Ø 300	Min. 189 mm



Hydraulic bow and stern thrusters



There are seven models of hydraulic bow thrusters in the VETUS sales programme, featuring as standard a hydraulic motor. This hydraulic motor is driven by a hydraulic pump.

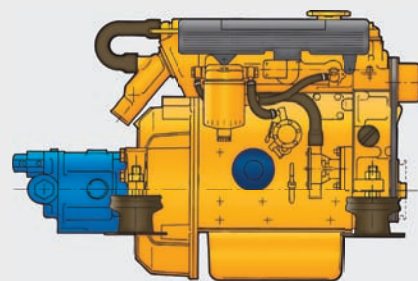
If a hydraulic pump and associated tank are already installed on board, then, in most cases, this assembly can be used for driving the bow thruster too.

Some marine engine manufacturers, e.g. VETUS DEUTZ, supply as standard a special P.T.O. (Power Take Off) connection, which greatly simplifies the installation of the hydraulic pump. In addition to the pump and the hydraulic storage tank, VETUS can also supply the required load sensing and control devices, as well as the high-pressure hydraulic hoses, complete with end fittings.

All these hydraulic bow thrusters may be fitted to GRP steel or aluminium tunnels or used as a stern thruster using the appropriate installation kit.

The three most powerful VETUS hydraulic bow thrusters can also be driven in a safe and efficient manner, using a specially prepared diesel engine, instead of a pump on the main engine.

In this case, the matching hydraulic pump will be supplied as part of the powerpack. Installing a powerpack on board can considerably reduce the required generator set capacity, by operating hydraulic functions which are normally electrically powered.



A VETUS powerpack type PM415 of 24.3 kW (33 hp) is suitable to drive a VETUS bow thruster of 310 kgf. The 410 kgf bow thruster can be powered with the VETUS powerpack type PM417 of 30.9 kW (42 hp) and the 550 kgf model requires the VETUS powerpack type PVH465 of 48 kW (65 hp).

BOW55HMB	Hydraulic bow thruster	55 kgf incl. hydro motor	3,5 kW,	for tunnel diam. 150 mm
BOW95HMB	Hydraulic bow thruster	95 kgf incl. hydro motor	6,0 kW,	for tunnel diam. 185 mm
BOW160HMB	Hydraulic bow thruster	160 kgf incl. hydro motor	9,5 kW,	for tunnel diam. 250 mm
BOW230HMB	Hydraulic bow thruster	230 kgf incl. hydro motor	12,5 kW,	for tunnel diam. 300 mm
BOW310HMB	Hydraulic bow thruster	310 kgf incl. hydro motor	20,0 kW,	for tunnel diam. 300 mm
BP1053	Bronze propeller for BOW22024/BOW230HM			
BP1182	Bronze propeller for BOW300HM/310HM			
BOW410HM	Hydraulic bow thruster	410 kgf, incl. hydro motor	22 kW,	for tunnel diam. 400 mm
BOW550HM	Hydraulic bow thruster	550 kgf, incl. hydro motor	33 kW,	for tunnel diam. 400 mm

Control panels for hydraulic bow and stern thrusters



Hydraulic bow thruster two step joystick for operation at half power (no panel).
Watertight to IP 65.

BPJSTH5



Hydraulic bow thruster panel with on/off switch and two step joystick for operation at half power or full power.
Watertight to IP 65.

BPJ5

85 x 85 mm



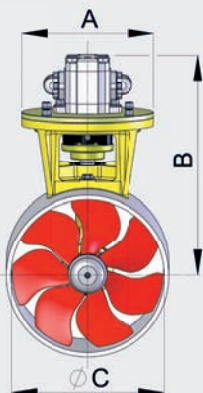
Hydraulic bow and stern thruster panel with on/off switch and twin two step joysticks for operation at full or half power.
Watertight to IP 65.

BPJ5D

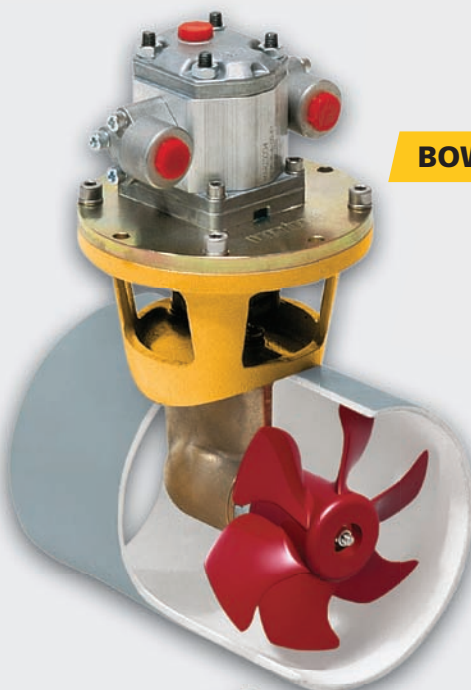
85 x 136 mm

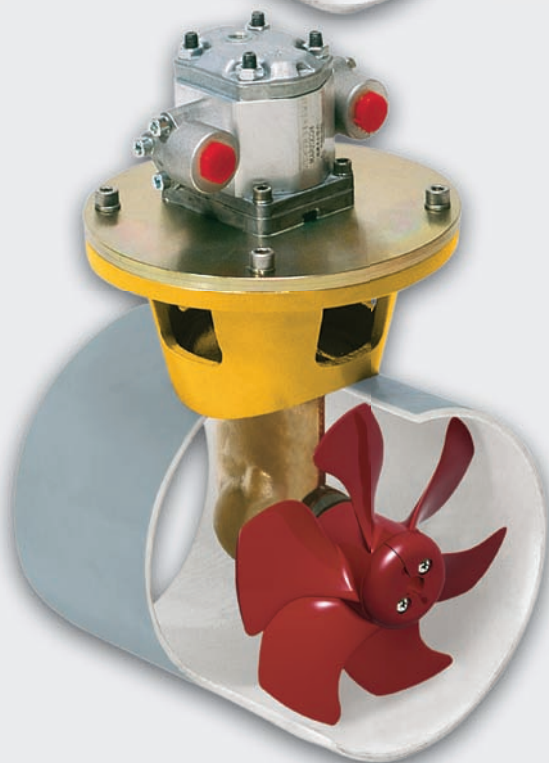
BPJ5	Bow thruster panel with joystick, for hydraulic bow thruster (5 positions)
BPJ5D	Bow thruster panel with two joysticks, for hydr. bow and stern thruster (5 positions)
BPJSTH5	Joystick only for hydraulic bow thruster (5 positions).

Hydraulic bow and stern thrusters


Technical data:

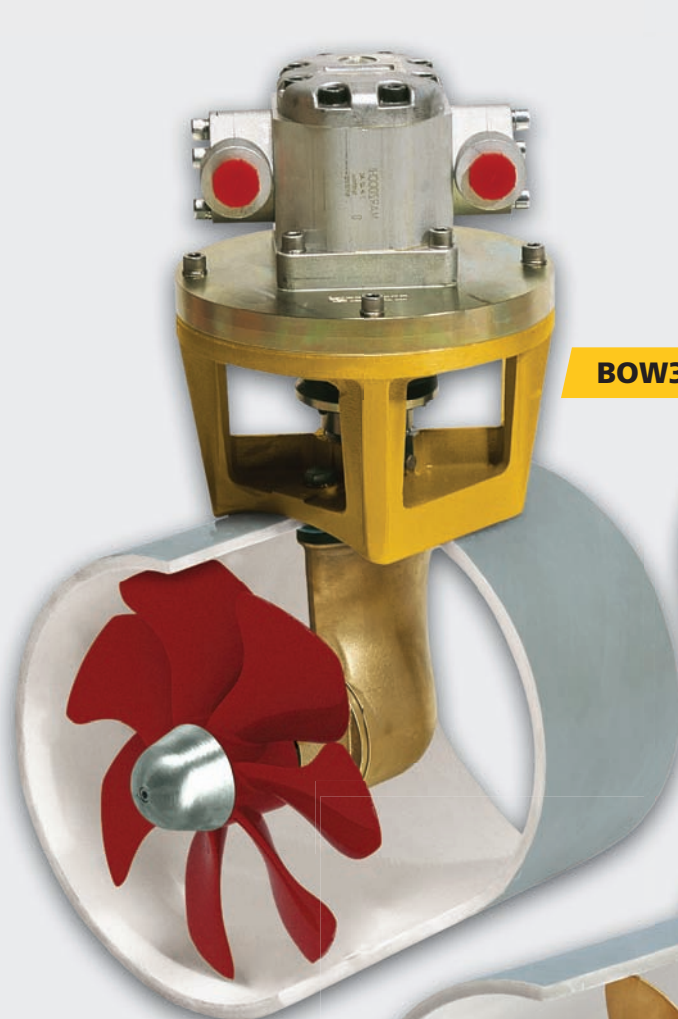
	BOW55HMC	BOW95HMC	BOW160HMC	BOW230HMC	BOW310HMC
Thrust, N (kgf)	550 (55)	950 (95)	1600 (160)	2300 (230)	3100 (310)
Hydraulic motor power, kW	3,5	6,0	9,5	12,5	20
Hydraulic motor speed, rpm	3000	4100	3300	1900	2000
Hydraulic motor capacity, cm ³ /rev	4,2	4,2	7,0	16,8	27
Flow rate, l/min	13	18	24	33,5	57
Operating pressure, bar	165	230	250	230	220
Internal tunnel diameter, mm	150	185	250	300	300
A, mm	Ø 160	Ø 200	Ø 240	Ø 258	Ø 258
B, mm	258	276	345	431	455
C, mm	Ø 150	Ø 185	Ø 250	Ø 300	Ø 300


BOW55HMC

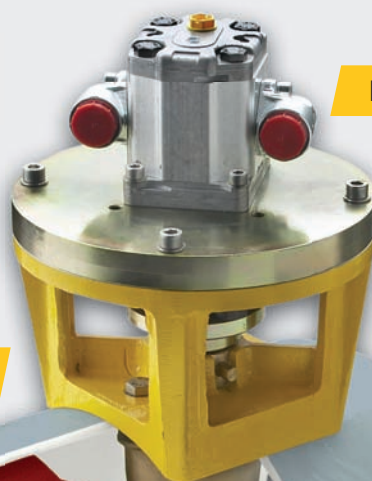
BOW160HMC

BOW95HMC



Hydraulic bow and stern thrusters



BOW310HMC



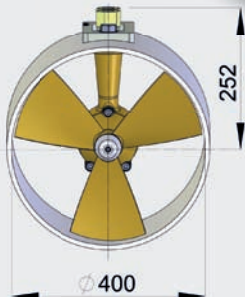
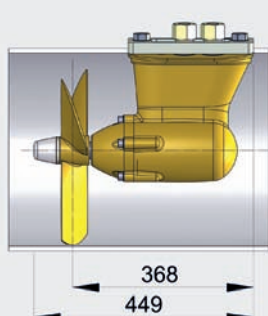
BOW230HMC



BOW410HM

BOW550HM

The hydraulic motor for models BOW410HM and BOW550HM is located within the tailpiece.



Technical data:

	BOW410HM	BOW550HM
Thrust, N (kgf)	4100 (410)	5500 (550)
Hydraulic motor power, kW	22	33
Hydraulic motor speed, rpm	1920	1920
Hydraulic motor capacity, cm ³ /rev	45	45
Flow rate, l/min	92	92
Operating pressure, bar	180	280
Internal tunnel diameter, mm	400	400

Hydraulic retractable bow and stern thruster

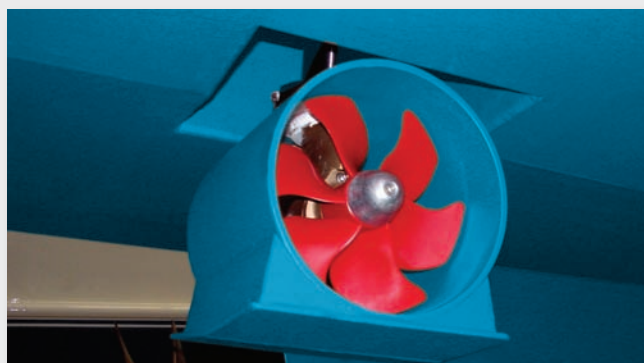
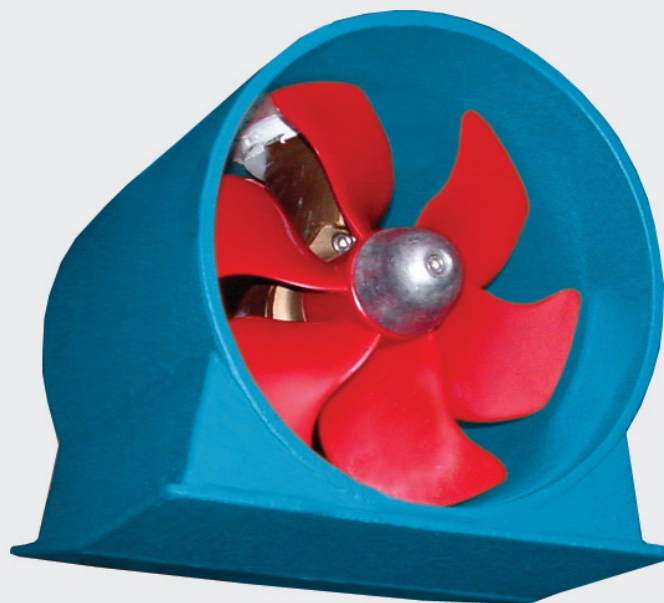
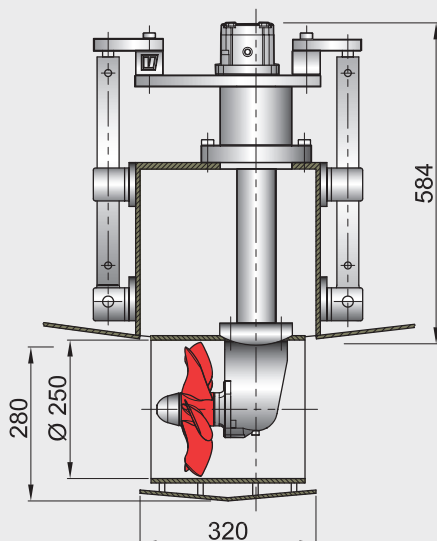
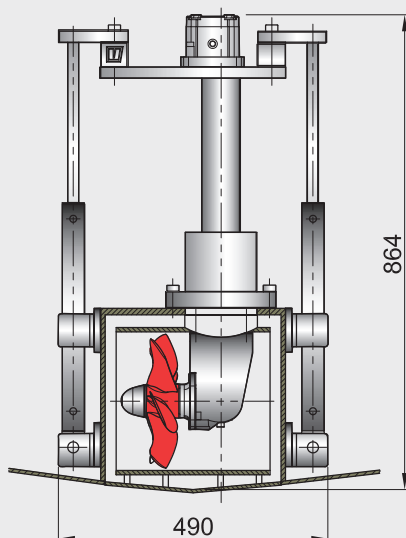
The usable output of a bow or stern thruster depends on various different factors. One of the most important is that the tunnel is sufficiently deep in the water and located so that the developed thrust is unimpeded as possible.

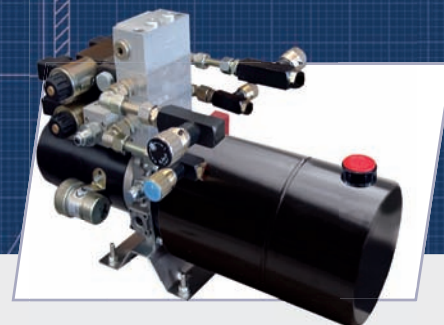
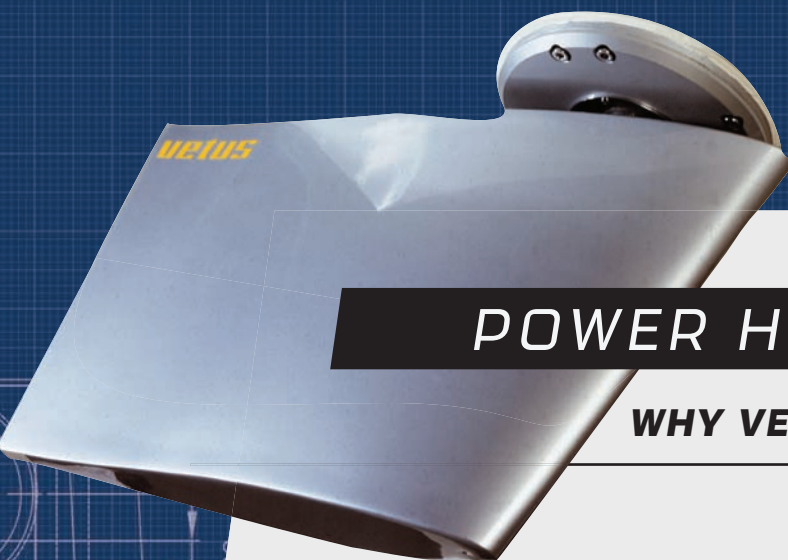
The location of the bow thruster is usually not a problem and the stern thruster of a single engine boat can often be mounted in the keel, right above the propeller shaft. This location is very effective for the stern thruster. However, with a twin engine boat there are two smaller skegs where the shafts exit the hull and usually no central keel. In this situation, a linear retractable thruster is the ideal solution to maximise the thrust.

The trunk of the retractable thruster is mounted internally on a relatively flat area of the hull. When the thruster is deployed, two hydraulic cylinders extend it down into clear water below the boat.

After use, the thruster retracts back into the trunk and the hull surface is completely closed again. A retractable thruster is also an excellent solution in the bow of a sailing yacht with a shallow forefoot, or when it is preferable not to have a tunnel opening. As the hull surface is closed and fair when the thruster is not in use, there will be no vortices or increased resistance, as is inevitable with a fixed tunnel thruster.

The retractable version is available for VETUS model BOW160HM and it is in development for the BOW310HM.

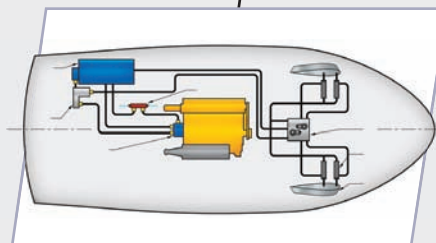
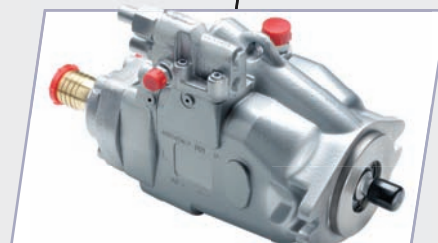




POWER HYDRAULICS

WHY VETUS "POWER HYDRAULICS"?

- A VETUS power hydraulics installation is a reliable and powerful system that is easily retro-fitted to most boats.
- It has the benefits of **great flexibility** in component location and can be run at full load almost limitlessly.
- VETUS offers a **wide range of hydraulic pumps** with an extremely low noise level.
- VETUS supplies **power take offs** for VETUS Deutz engines and also brackets to suit many other engine makes.
- The **control units** are available for 12 V and 24 V installations.
- **Power hydraulic systems** are suitable for retro-fitting.
- VETUS supplies hydraulic **stabiliser systems** with adjustable damping.

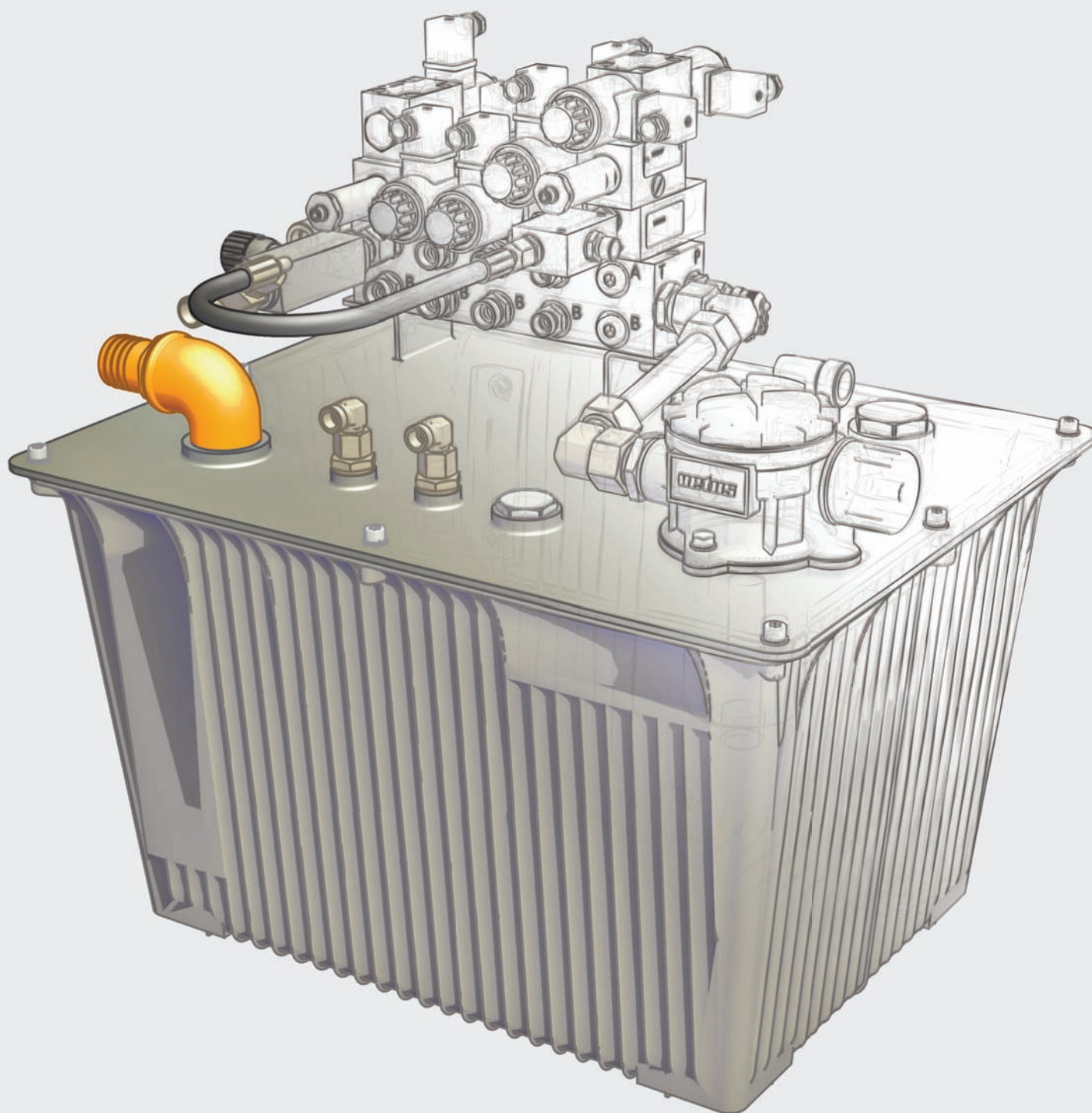


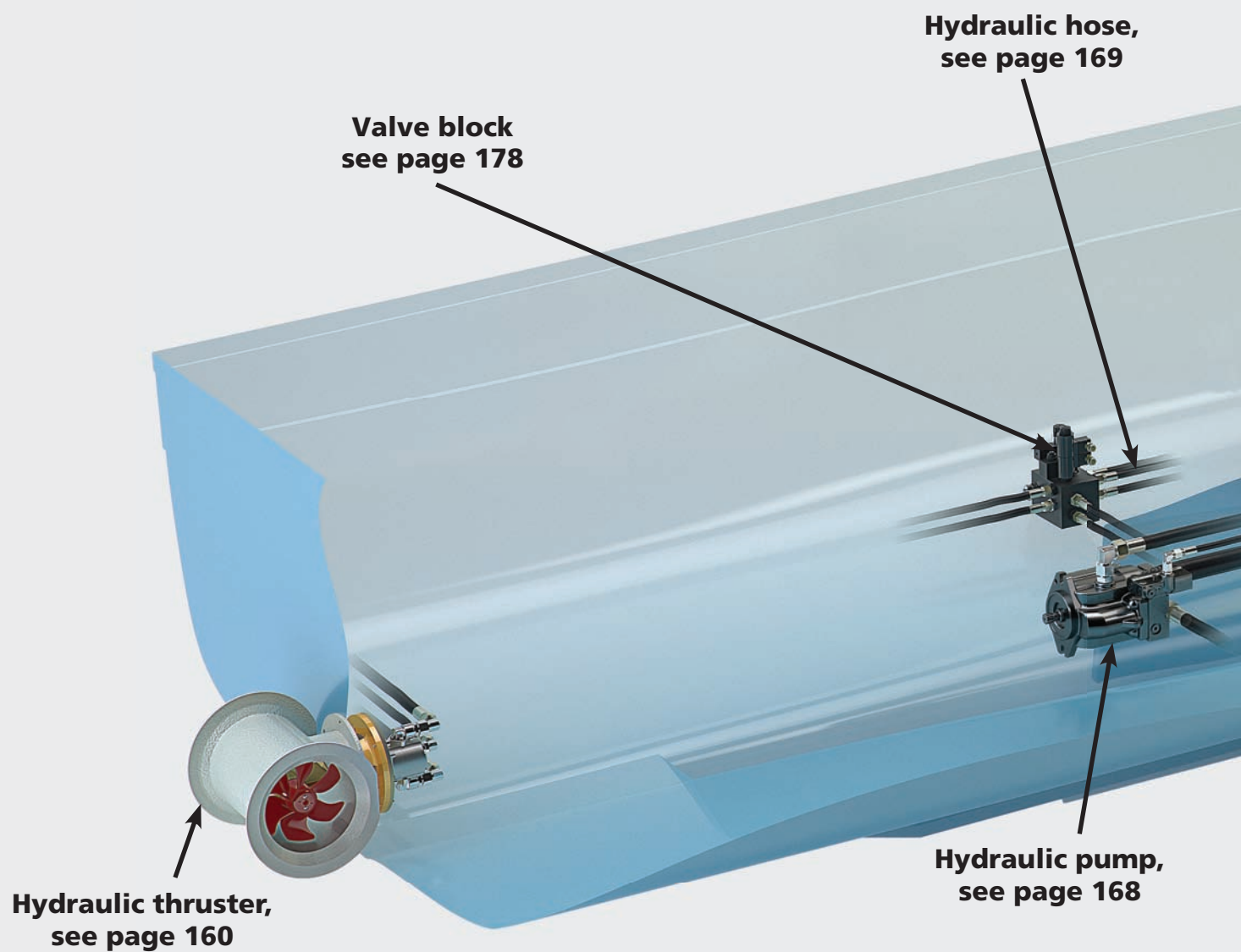


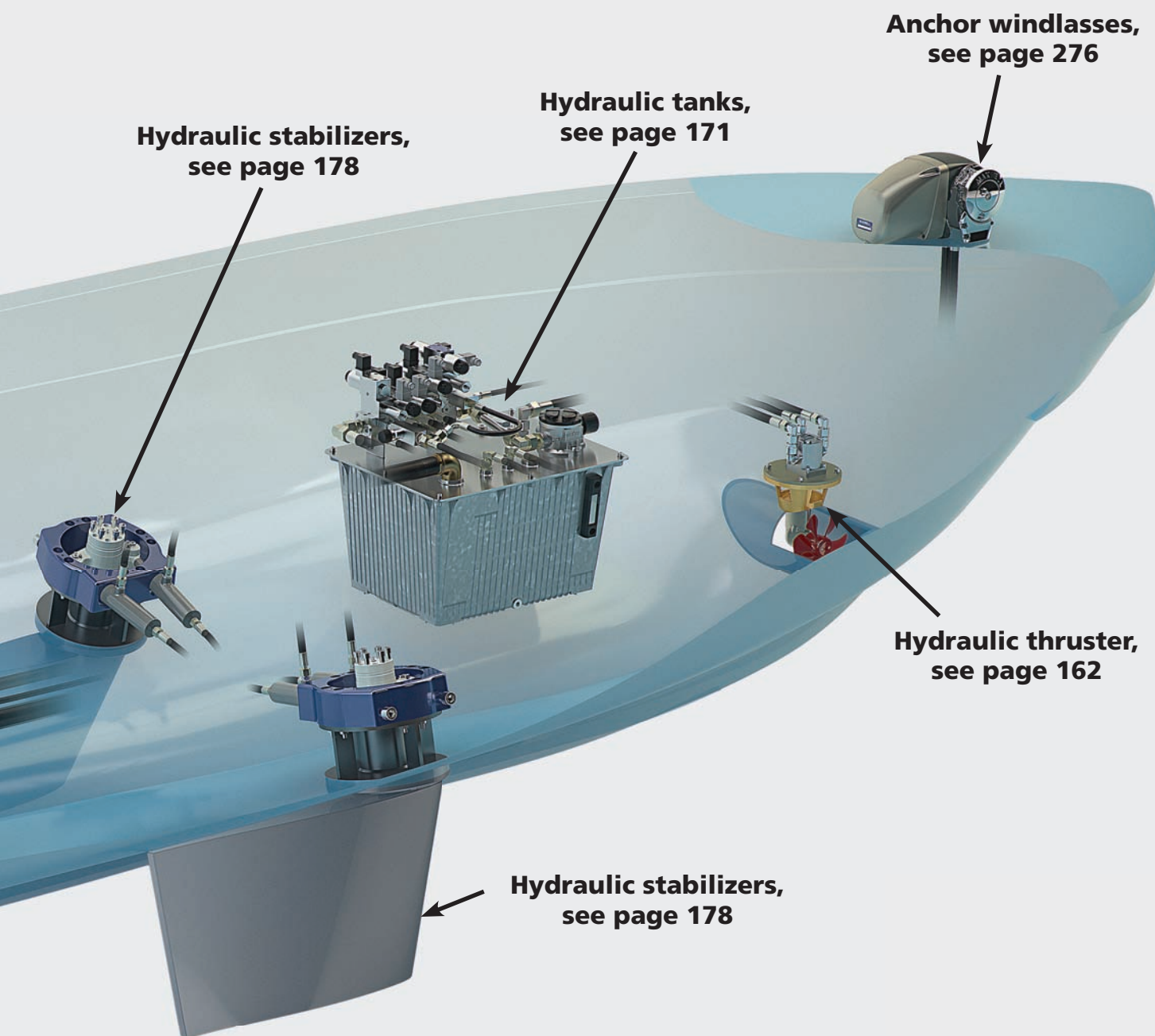
VETUS, Creators of

Power hydraulics is a highly specialized field. VETUS has a very complete range of power hydraulics, from pumps to tanks and propulsion to power packs.

It becomes apparent that VETUS has a great deal of knowledge about this field from the detailed description of the products in this catalogue. Because the installation of hydraulic systems requires extensive knowledge, VETUS has a dedicated team that focuses on developing the right solutions for each application. Therefore, customised solutions are no problem for the VETUS power hydraulics team!









Hydraulic pumps for installation on propulsion or auxiliary engines

All VETUS **power** hydraulic systems use a variable and adjustable piston pump, which operates according to the constant pressure principle. This type of pump continuously varies its output to provide the ideal balance between the required flow rate and the maximum operating pressure ("load sensing"). If no hydraulic flow is required, the pump will simply freewheel, in which case the power drain and wear and tear will be negligible.

Low noise pumps (with cast iron body)

HT 1015E62



Capacity : 62 cc.
Sense of rotation : Left handed.
Connection : SAE-B flange, 13 spline shaft. Rear connection for suction and pressure. Fits VETUS DEUTZ engines and PRM gearboxes.
Maximum r.p.m. : 2.880.

HT 1017E62



Capacity : 62 cc.
Sense of rotation : Right handed.
Connection : SAE-B flange, 13 spline shaft. Side connection for suction and pressure. Fits Twindisc gearboxes.
Maximum r.p.m. : 2.880.

HT 1022SD

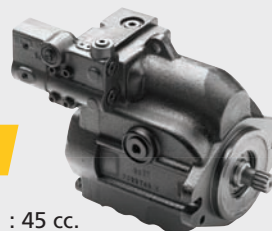
HT 1023SD



Capacity : 75 cc.
Sense of rotation : Left handed.
Connection : SAE-C flange, 14 spline shaft. Side connection for suction and pressure. Fits Twindisc gearboxes.
Maximum r.p.m. : 2.880.

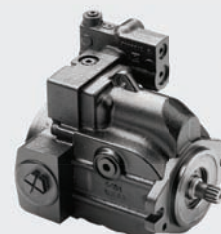
For John Deere engines, pump model HT 1027 has an extension shaft, for connection to the water pump.

HT 1015SD2



Capacity : 45 cc.
Sense of rotation : Left handed.
Connection : SAE-B flange, 13 spline shaft. Rear connection for suction and pressure. Fits VETUS DEUTZ engines and PRM gearboxes.
Maximum r.p.m. : 2.800.

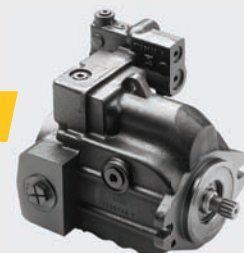
HT 1016SD1



Capacity : 30 or 45 cc.
Sense of rotation : Left handed.
Connection : SAE-B flange, 13 spline shaft. Side connection for suction and pressure. Fits PRM gearboxes.
Maximum r.p.m. : 3.600 SD1.
2.800 SD2.

HT 1016SD2

HT 1017SD1



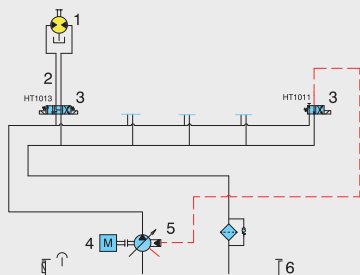
Capacity : 30 or 45 cc.
Sense of rotation : Right handed.
Connection : SAE-B flange, 13 spline shaft. Side connection for suction and pressure. Fits Twindisc gearboxes.
Maximum r.p.m. : 3.600 SD1.
2.800 SD2.

HT 1017SD2

Diagram of a single hydraulic drive

It is possible to connect various equipment devices to one hydraulic pump.

1. Hydraulic motor.
2. High pressure pump.
3. Solenoid control valve.
4. Propulsion engine.
5. Hydraulic pump.
6. Storage tank hydraulic fluid.



Which pump is required for my engine?

In order to determine this, the manufacturer's specification for the engine must be consulted. If the engine or the gearbox is provided with a Power Take Off (P.T.O.), the smaller hydraulic pumps may be connected directly to it via the SAE -B flange. If no P.T.O. is available, please consult VETUS. Pump models HT1015 to HT1017 all have a SAE -B flange with different rotation and hose connection possibilities. Model HT1022 has a SAE-C flange and is designed for belt drive with a bearing block. We can supply the required supports. One pump can be used to power various hydraulic devices on board.



Hydraulic load sensing and control devices (for installation on top of the hydraulic tank)

In order to direct the oil flow from the hydraulic pump to the equipment to be driven, load sensing and control devices, which are built up in modular construction segments, are used. These ensure the correct speed and sense of rotation of the equipment to be driven. Supplied as standard for 24 Volt electric installations, 12 Volt on request.

Single step load sensing device (24 Volt). Gives zero or full flow rate, depending on whether a load is sensed or not. Used for e.g. bow and stern thrusters.

HT 1011



Solenoid control unit (24 Volt) for bow and stern thrusters.

HT 1013



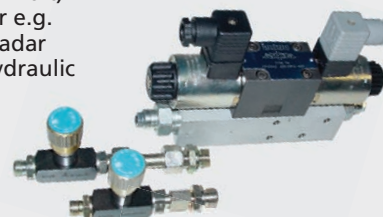
Dual step load sensing device (24 Volt). Gives zero, partial or full flow rate, dependant on load sensed. Used for e.g. bow and stern thrusters.

HT 1012



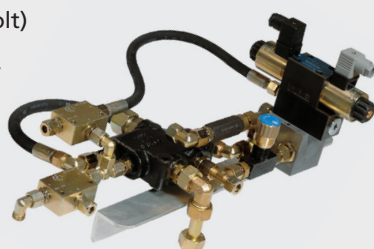
Solenoid control unit (24 Volt) with counterbalance, for e.g. mast lowering, hinged radar support (or any other hydraulic cylinder for numerous applications).

HT 1014



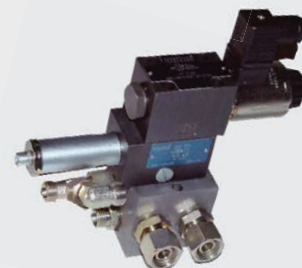
Solenoid control unit (24 Volt) for use with a hydraulically powered steering system or an automatic pilot.

HT 1019



Solenoid control unit (24 Volt) for use with a set of stabilisers.

HT 1024

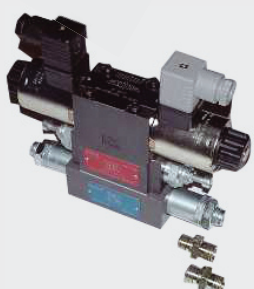


HT 102311

Single step solenoid control unit (24 Volt) for use with anchor windlasses.

HT 102312

Dual step solenoid control unit (24 Volt) for use with anchor windlasses.



An extension of the basic block necessary if more than 5 solenoid control devices are required.

HT 1026



Hydraulic Hose

Hose for hydraulic drives, complete with connector nipples fitted. This type of hose is available in various lengths and diameters to order.

HH



Oil

We recommend the use of the following hydraulic fluids: VETUS Hydraulic oil HT (HLP ISO-VG46).



VHT1

VHT4

VHT20

Option

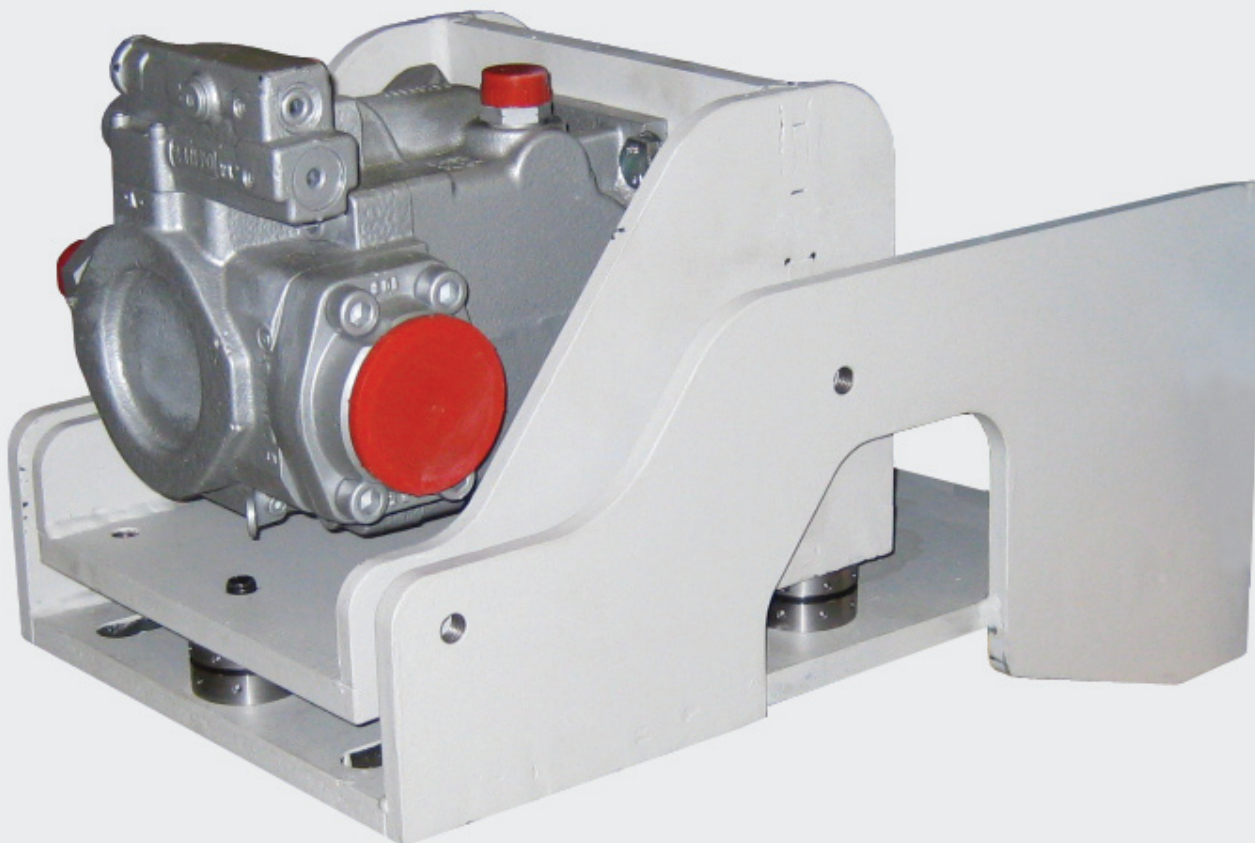
All VETUS DEUTZ engines except DT4.70 and DT4.85 have a P.T.O. connection for a hydraulic pump as standard. A P.T.O. bracket is available for most other popular engine models on the market as an option.



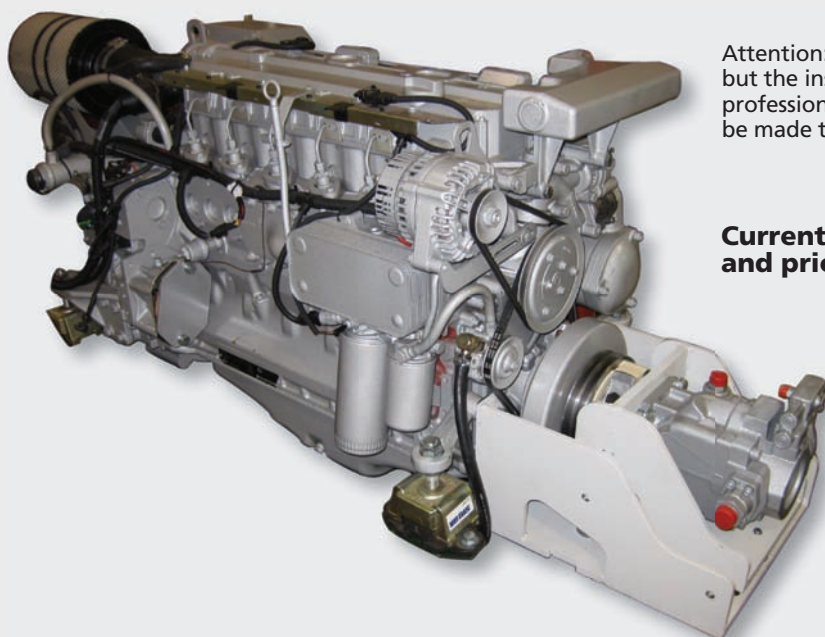


Brackets

A hydraulics pump is an essential part of any hydraulics system. This pump can be installed on the PTO of the main engine or the gearbox if this is possible. However, if there is no PTO, or if the PTO does not have an SAE-B or SAE-C flange, it is often possible to install the pump on the front of the engine using a pump bracket. This is a complicated job, which requires considerable skill and expertise.



To simplify this task, VETUS has developed pump mounting brackets for a number of popular engines, in particular higher horsepower models. We supply an accurate and custom made plate package for the pump bracket (pump bracket SAE- B and SAE- C), which is pre- bored and tapped with all necessary holes. The bracket is supplied un-welded and unpainted. The kit also includes a crankshaft adaptor and a flexible coupling to suit the hydraulic pump and your particular engine.



Attention: This package includes all the required components, but the installation of a hydraulic pump in this way requires professional expertise. In some cases small adjustments must be made to the appendages, etc.

**Currently available for the various engines
and prices available on request.**



Hydraulic tanks

Hydraulic systems require the installation of a hydraulic tank, as a reservoir for storage of the hydraulic fluid on board. This tank serves as a buffer tank for the hydraulic fluid, and at the same time, cools the fluid which has become heated during use. The lid of this hydraulic tank serves as the base plate for all control units required to operate the various hydraulic devices. VETUS supplies this hydraulic tank ready to use and with complete installation of all control units, as ordered. Additional control units can be supplied as separate components, if and when required. The choice of tank depends on the required solution. Contact your VETUS dealer for advice on the correct size.

Examples of VETUS aluminium hydraulic tanks

The dimensions of the bare tank (without control units) are: 61.5 cm (L) x 47.5 cm (W) x 36 cm (H). Tank content 70 litres.



HT 1010

A hydraulic tank for one pump and one hydraulic device



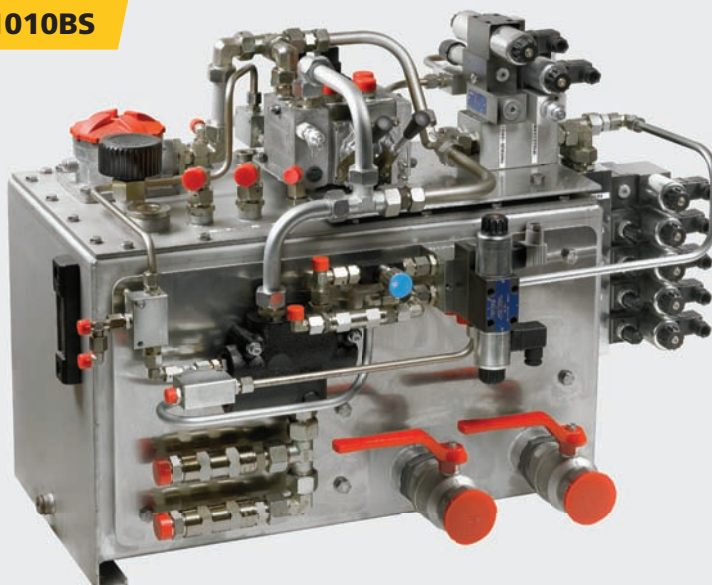
A hydraulic tank for one pump and four hydraulic devices.

Examples of VETUS stainless steel hydraulic tanks

The dimensions of the bare tank (without control units) are: 70 cm (L) x 41 cm (W) x 46 cm (H). Tank content 130 litres.



HT 1010BS



Hydraulic tank for one pump and four hydraulic devices plus hydraulic power steering.



Hydraulic power steering

For larger boats, VETUS hydraulic power steering is a most comfortable and extremely safe steering system. The effort required at the helm is only about 10% of a non-powered steering system. In other words: the boat can be steered literally with one finger. Because of this, the steering wheel diameter can be considerably smaller than normal; a wheel diameter of just Ø 360 mm will usually suffice.

HT1018

HT1020

HT1025



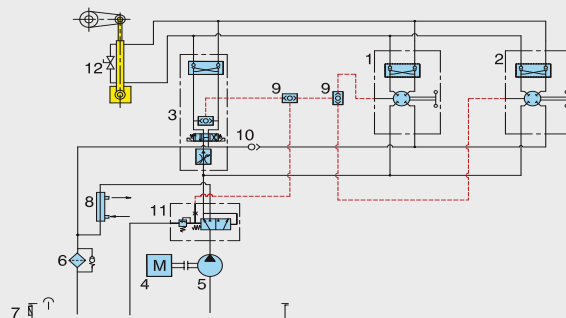
The external flange of the steering pump is made of seawaterresistant aluminium, hand polished and anodised. The steering wheel shaft is made of stainless steel, type 1-4462, with a Ø 19 mm, tapered 1:12.

The VETUS hydraulic power steering has been developed for application within the "VETUS Power Hydraulics" programme, which is based on the "constant pressure" (load sensing) principle. If your boat is equipped with a hydraulic system which does not operate on this principle, VETUS will gladly advise on how to adapt your system, in order to enable installation of this type of steering.

VETUS hydraulic power steering is also extremely safe. Should there be a power assistance failure, then the steering system will still operate unassisted, only with somewhat greater effort.

The pump unit is in fact a rotating proportional valve. By turning the wheel, this control valve opens and directs oil under pressure to the steering cylinder connected to the rudder. The volume of hydraulic fluid that is circulated, is dependent on the model of steering pump, the number of wheel revolutions and the speed at which the wheel is turned. The VETUS steering pump has a closed mid position, ensuring that there will be no oil flow as long as the wheel remains untouched. To connect one or more VETUS steering pumps and/or an automatic pilot to a VETUS hydraulic system, a control unit model HT 1019 must be used.

Schematic based on "load sensing" pump



- 1: Steering pump with non-return valve.
- 2: Steering pump with non-return valve (second steering position).
- 3: Control unit.
- 4: Propulsion engine.
- 5: Hydraulic pump.
- 6: Filter.
- 7: Hydraulic tank.
- 8: Oil cooler.
- 9: Shuttle valve.
- 10: Non-return valve.
- 11: Priority valve.
- 12: Cylinder with by-pass.

HT1020	Hydraulic power steering 75 cm³/rev	for cylinders up to MTC175
HT1018	Hydraulic power steering 95 cm³/rev	for cylinders up to MT230
HT1025	Hydraulic power steering 145 cm³/rev	for cylinders up to MT345
HT1021	Dual non-return valve for hydraulic power steering	



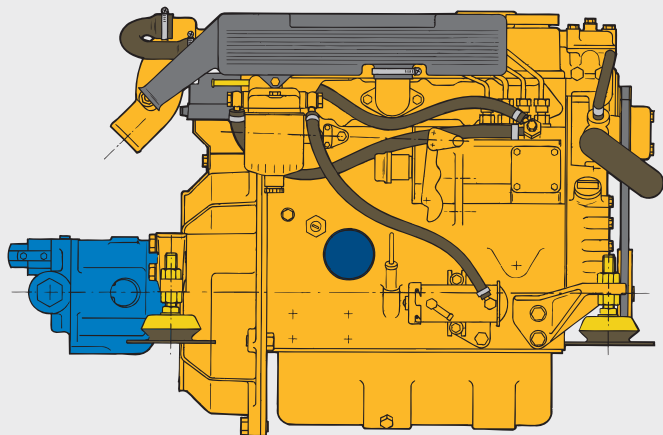
The size of the cylinder is determined according to the size of the rudder or better still: according to the rudder torque. (How to calculate this rudder torque is shown on page 198 and 199).

Pump type Assuming 4 – 6 steering wheel revolutions from port to starboard	Cylinder volume in cm³	VETUS cylinder model	Oil flow to steering pump litre/min.	Pipe diameter mm
HT1020 (75 cm³/rev.)	300 to 450 cm³	up to MTC175	30 ltr./min.	Ø 10 mm
HT1018 (95 cm³/rev.)	380 to 570 cm³	up to MT230	30 ltr./min.	Ø 18 mm
HT1025 (145 cm³/rev.)	580 to 870 cm³	up to MT345	30 ltr./min.	Ø 18 mm

VETUS will be pleased to offer technical advice and to provide the required installation instructions and diagrams.



Powerpack



A "powerpack" can be useful for driving the following equipment:

- A hydraulic bow or stern thruster.
- A "Get you home" emergency hydraulic drive system connected to the propeller shaft(s) in case of main engine failure.
- Hydraulic power steering.
- Air conditioning; direct drive, without the need for electricity.
- A variety of other hydraulic applications on board, such as: hatch lifters, furlers, passerelles, lifting cranes, stabilizers, etc.
- Hot water provision via a calorifier.
- And many other possible applications.

The modern tendency is towards larger and larger boats that have requirements for more and more complex auxiliary power systems. The traditional approach has been to use electric power components, but these have disadvantages of cost, weight and size as the loads increase. There comes a point where a central hydraulic "Powerpack", which is of more compact dimensions, becomes a most attractive alternative. The VETUS "Powerpack" consists of a marine diesel engine, fitted with a 30 cc **hydraulic pump**. This may then be used to power a variety of **auxiliary installations** on board.

What are the advantages of a "powerpack"?

Conventionally, provision of auxiliary power applications on large vessels (such as windlasses, bow thrusters, furling systems etc.) has been by made using electric motors or hydraulics driven from the main engine or an electro-hydraulic pump. However, running a separate electric generator set, and/or a hydraulic pump driven by the main propulsion engine, has possible disadvantages, which may be avoided if a "Powerpack" is installed. In order to satisfy the energy requirements of an all electric boat, a generating set will have to run **almost permanently**, which means to say: **permanent noise** both on board and for the neighbouring vessels. Even if hydraulic systems are installed using a pump connected to the main propulsion engine, this may need to be started, just to provide a relatively small and short-term amount of power. The answer is a "Powerpack"; a small diesel unit providing enough power to supply all hydraulic functions on board and easily started even for the quickest job. Apart from that, there will be only peace and quiet on board! It is also possible that the application of a "Powerpack" and hydraulic functions will permit the installation of a much smaller generator set than normal.

By having a hydraulic "Powerpack" on board, the electric generator set may be **much smaller than if all auxiliary functions** had been electric or electro-hydraulic. Therefore, the total cost of providing auxiliary power on board using a "Powerpack" is little different and with the added benefit of more security, flexibility and comfort!

A VETUS "powerpack" consists of a marine diesel engine, to which a hydraulic pump is connected, instead of the usual gearbox. VETUS powerpacks are built using Mitsubishi or Hyundai engines, which combine excellent power to weight ratios with very compact dimensions. By virtue of this, a powerpack is easily installed on board.

Accessories included as standard

Four flexible engine mounts



Motor engine start panel and cable loom type MP22

Optional additional panels for a second station are available.



Available as an option

Throttle control lever

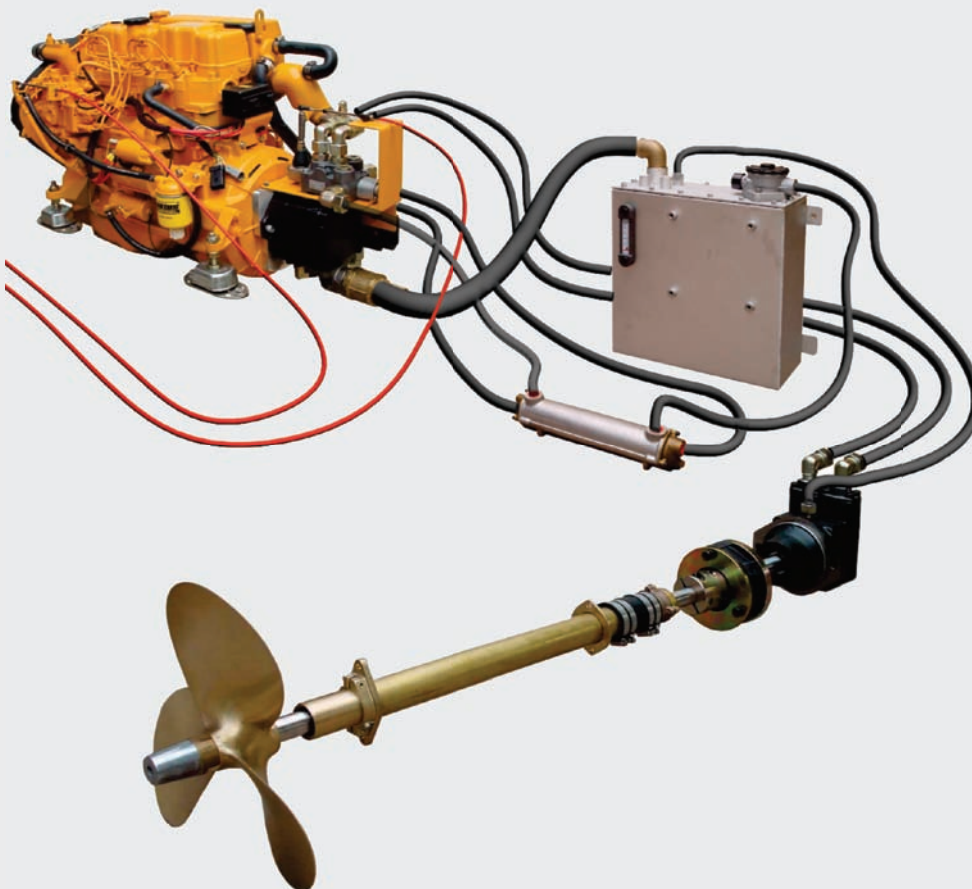
By controlling the RPM of the engine, the output of the attached hydraulic pump may be regulated.





Hydraulic propulsion

In many cases it may be preferable to drive the propeller shaft by means of a hydraulic motor, instead of using the conventional set up of engine and gearbox.



How it works

A hydraulic vane pump is fitted to the engine in place of the gearbox. This pump draws hydraulic fluid from a storage tank and delivers it under pressure to the speed and direction control valve. The control valve determines the direction and volume of hydraulic flow to the hydraulic vane motor, which can then rotate clockwise or counter clockwise as selected. This hydraulic motor drives the propeller shaft via a flexible coupling. The VETUS system uses a hydraulic pump and motor with fixed swept volumes. The transmission ratios (reduction) in the propulsion system are achieved by the difference in volume between the vane pump and the hydraulic motor. The reduction between the engine RPM and the shaft RPM is 2:1 for models HPM4.15, HPM4.17 and HPM4.55 and 1.9:1 for model HPH4.65. The maximum permissible engine power is 50 kW (67 HP), with a maximum engine speed of 3,000 RPM. In most cases a shaft diameter Ø 25 mm will suffice. The output flange of the VETUS hydraulic motor fits all VETUS flexible couplings.

VETUS hydraulic vane motor



Stainless steel storage tank



VETUS hydraulic vane pump



Scope of supply

VETUS hydraulic propulsion is available in 4 versions: **MODEL HPM4.15** has a VETUS M4.15 marine diesel engine of 24.3 kW (33 hp).

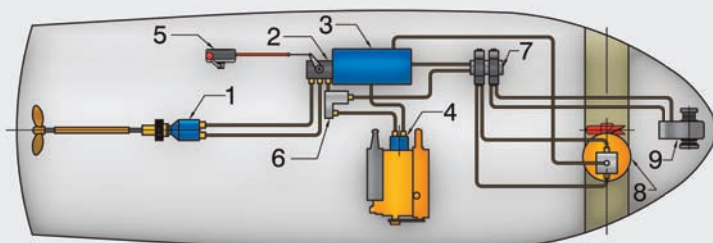
MODEL HPM4.17 has a VETUS M4.17 marine diesel engine of 30.9 kW (42 hp).

MODEL HPM4.55 has a VETUS M4.55 marine diesel engine of 38 kW (52 hp).

MODEL HPH4.65 has a VETUS VH4.65 marine diesel engine of 48 kW (65 hp).

All versions include:

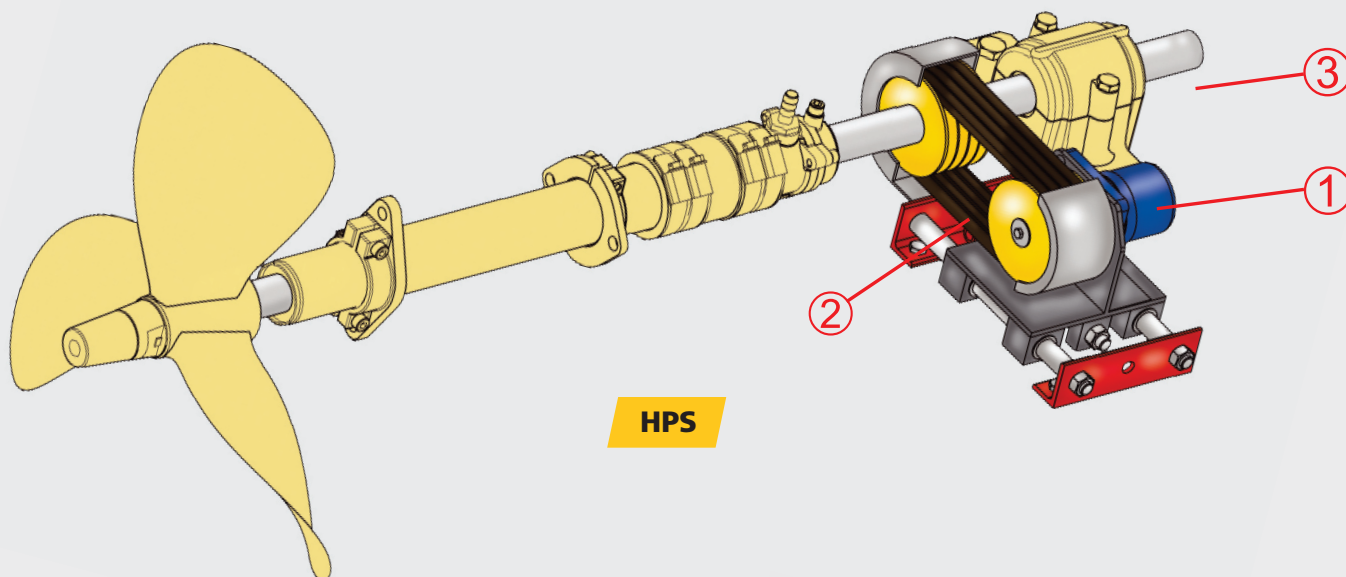
- Hydraulic vane pump.
- Adapter flange and coupling to fit the pump to the relevant engine.
- Hydraulic vane motor.
- 35 litre hydraulic oil tank.
- Oil cooler.
- Control valve.
- Flexible engine mounts.
- Engine instrument panel and loom.



1. Hydraulic vane motor.
2. Mechanically operated control valve.
3. Stainless steel storage tank.
4. Hydraulic vane pump.
5. Remote control handle with cable.
6. Connection for ancillary devices.
7. Control unit for ancillary devices.
8. Bow thruster.
9. Anchor windlass.



Hydraulic propulsion system (HPS)

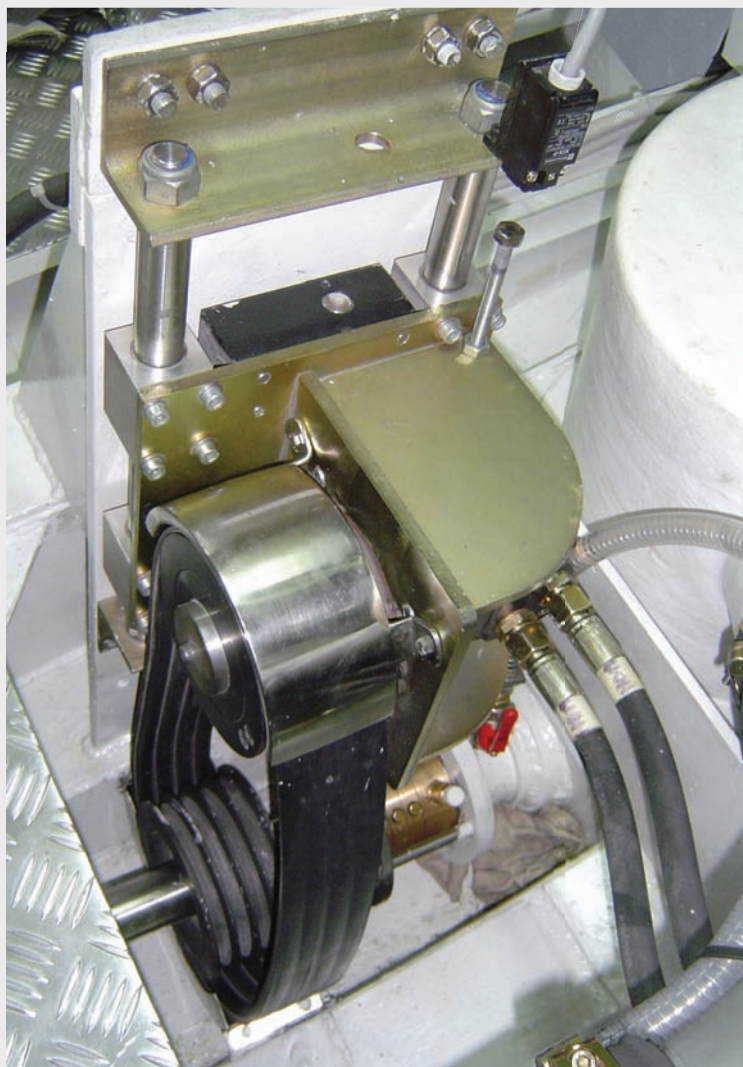


HPS

The VETUS diesel-hydraulic propulsion system can be used to propel the boat at very low speeds on inland waterways where wash is detrimental to the environment or when low trolling speeds are required. Of course, it can also be used as an emergency propulsion system, in case of main engine trouble. The propulsion system may only be used with propeller shafts that have a separate thrust bearing.

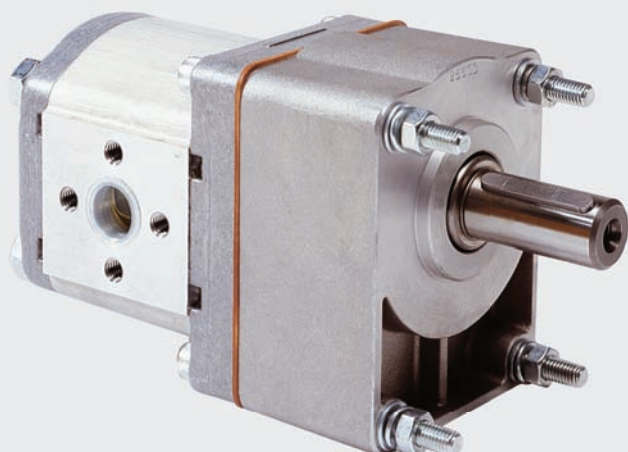
The VETUS diesel-hydraulic propulsion system consists of a hydraulic motor, which is capable of producing high radial output power, that is to say, rotating slowly but with a high torque. The required power to drive the hydraulic motor can be provided by a "Powerpack" (an engine with a hydraulic pump attached) or by a generator set with an integrated hydraulic pump. The hydraulic oil flow is regulated proportionally, which means that the propeller shaft can start turning extremely slowly and that speed is built up gradually.

This hydraulic motor ① drives the propeller shaft ③ by means of a "Power Band" ②. In this case the power band consists of 4 V-belts, vulcanized to a flat belt, forming a complete band. The hydraulic motor is mounted on a frame that can be moved on a rail, by means of a hydraulic cylinder. When not in use, the power band will be slack and hang loosely over the propeller shaft pulley under its protective cover. When the hydraulic cylinder is activated, the power band is tensioned around both pulleys, thus creating mechanical transmission between the hydraulic motor and the propeller shaft.





HT1029



Hydraulic pump

VETUS provides a hydraulic pump for the HPS system the actuator is made through a V belt such as the engine.

Although the engine manufacturer will often supply the hydraulic pump, VETUS can also offer a fixed volume hydraulic pump, which is belt driven off the main engine.

This VETUS pump has a built in bearing block. Its dimensions are small and are comparable with those of the alternator. The pump has a power take-off of approximately 1 kW (1.5 hp).

Dimensions (l x w x h): 220 x 90 x 112 mm.

Weight: 5 kg.

Shaft diameter: 22 mm

Maximum shaft speed: 3,500 rpm

If an existing engine driven pump is to be used, the hydraulic flow rate must be minimum 7 l/min and maximum 40 l/min, with a maximum working pressure of 70 bar.



HT3011

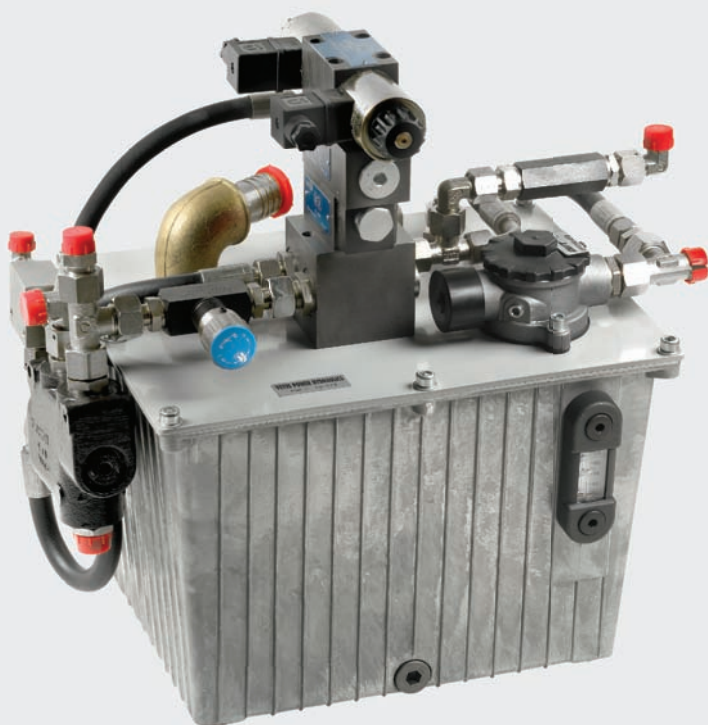
Oil cooler

If a pump with a fixed swept volume, or a high capacity is installed, or if the ambient temperature is high, a lot of heat can be generated. In these cases, the installation of an oil cooler in the return line will be required. Three different cooling water hose diameters are available:

Ø 32 (HT301132),

Ø 42 (HT301142) or

Ø 47 (HT301147).



HT1028

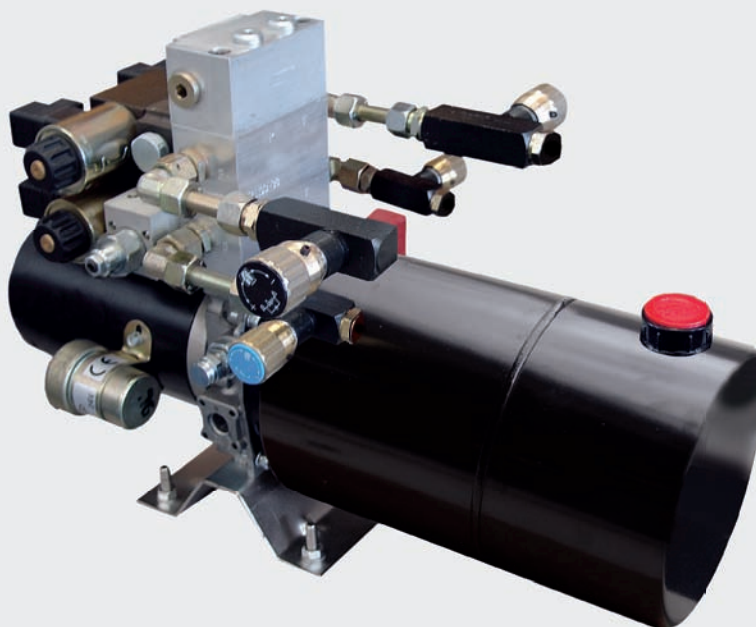
VETUS power steering can be connected to an existing on board hydraulic system. However, if one is not fitted and only power steering is required, this small hydraulic tank (contents about 20 litres) will be required. The tank comes complete with all the necessary control components mounted on the top. Dimensions of the tank (l x w x h): 460 x 300 x 470 mm.

HT1028	Hydraulic tank	for power steering (complete)
HT1029	Hydraulic pump	with bearing block, 11.3 cm³/rev
HT301132	Hydraulic oil cooler	for hose ID Ø 32 mm
HT301142	Hydraulic oil cooler	for hose ID Ø 42 mm
HT301147	Hydraulic oil cooler	for hose ID Ø 47 mm

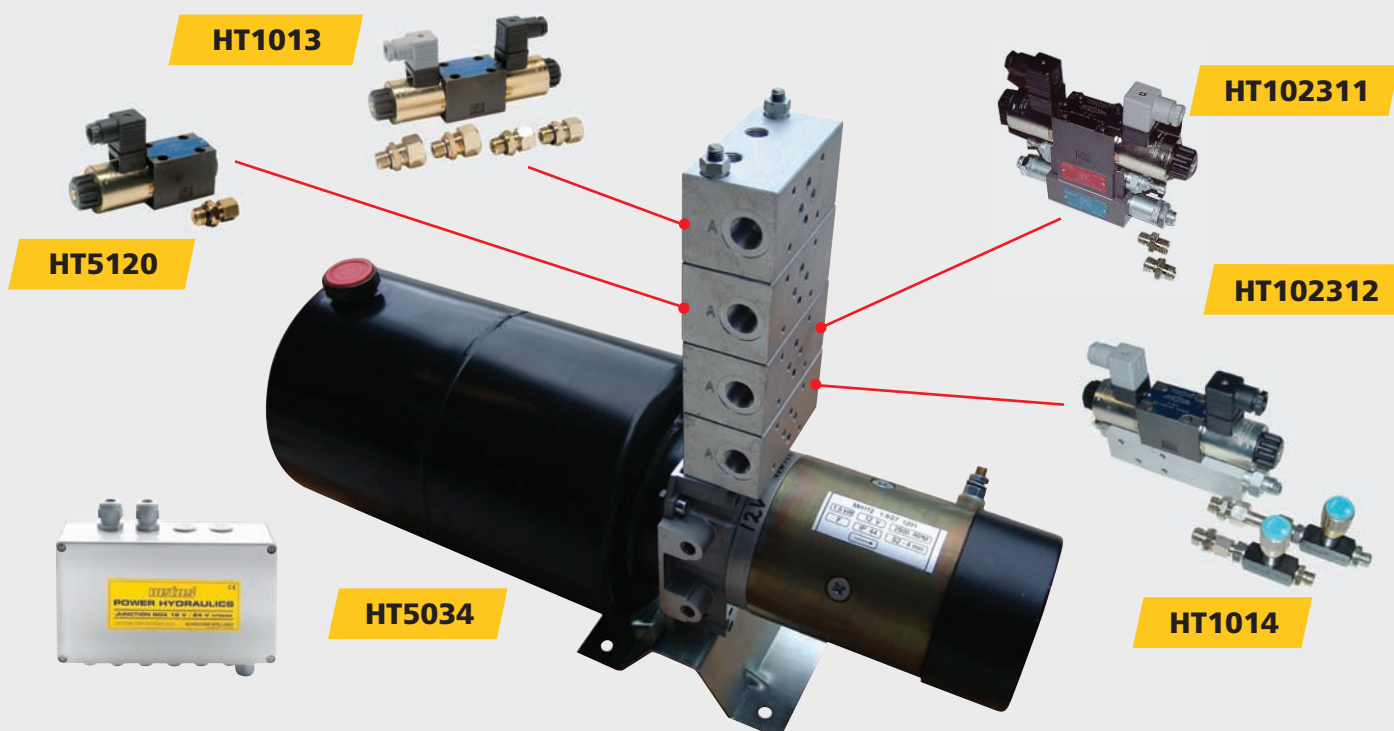


Electric power packs, 12 and 24 Volt

Most VETUS power hydraulics systems are designed to run from an engine driven hydraulic pump. With such a system on board, there can be enough power to operate many different pieces of hydraulic equipment such as bow and stern thrusters, power steering, anchor windlass, capstan, gangway etc. However, these devices can only operate when the main engine or generator are running, depending on where the pump is powered from. In certain circumstances though, it may be desirable to operate the hydraulic systems without the engine or generator running. In these cases, a VETUS electric power pack will provide the answer: either as a stand alone system or, as an additional power source in the main power hydraulics system.



These power packs can be supplied in various executions: 12 or 24 Volt D.C and with different power capacities, pump outputs, tank capacities, etc. They may also be supplied without the tank, in which case the system should be connected to the main hydraulic tank on board. The power pack can be used to operate a maximum of 4 functions. In the example shown here, the power pack is equipped with 4 NG6 base plates, to which standard VETUS solenoid control units may be connected (HT1013, HT1014, HT102311, HT102312). For electrical operation of the power pack and the control units, VETUS junction box HT5034 is required together with one or more switches.





Stabilizers (hydraulic)

Motor yachts over 10 metre length are frequently used on open waters. VETUS stabilizers are the ideal solution for drastically reducing the rolling movement of these vessels in bad weather or in heavy swells.



Stabilizers consist of a hydraulically actuated pair of fins that are fitted to a vessel's port and starboard midships sections underwater. They are controlled by an on board gyroscope and automatically react to the rolling movement of the vessel to create a damping effect. In other words, rolling motion is reduced considerably by the use of VETUS stabilizers, resulting in increased comfort and reduced risk of seasickness.

Stabilizers can to some extent, be compared with an aircraft's ailerons, which considerably reduce movement in bad weather.

Valve block

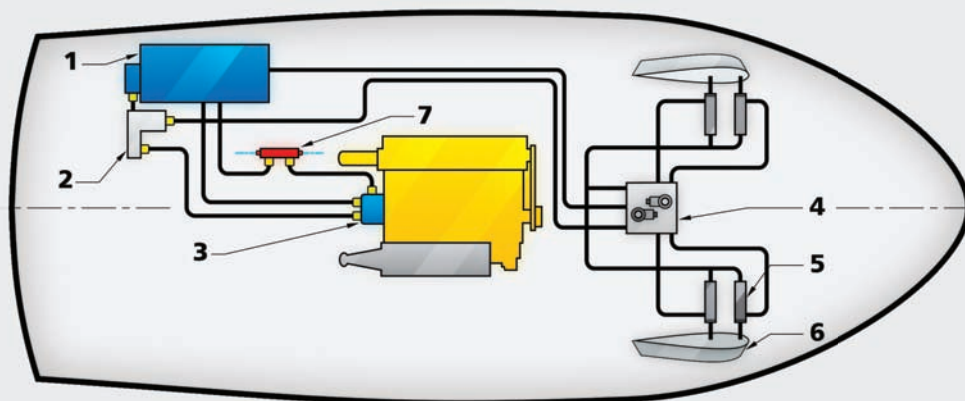


- 1 Stainless steel tank with oil cooler.
- 2 Connection for secondary drive.
- 3 Hydraulic pump.
- 4 Valve block.
- 5 Stabilizer cylinders.
- 6 Stabilizer fin.
- 7 Oil Cooler.

How do they work?

The stock for each stabilizer fin is controlled by a set of hydraulic cylinders. These hydraulic cylinders are operated by the on board hydraulic system, powered by the main engine(s) or generator set. A gyroscope detects vessel movement and electronics and a valve block control oil flow to the cylinders, generating a movement in the fins to counter the roll. The valve block contains a solenoid valve controlling the direction of the fins, a centering valve for when going astern and an oil pressure control unit.

Hydraulic hoses connect the hydraulic pump, the valve block and the hydraulic cylinders. If there is no hydraulic system already on board, then VETUS can also supply the components for this.





Stabilizers (hydraulic)

Do they affect the speed?

In smooth water with the stabilizers not in use, the speed reduction is negligible (for example: about 1 knot at 25 knots for a 25 metre vessel). In heavy seas however, a vessel using stabilizers has the advantage, because the boat rolls less and therefore has a lower wetted surface area.

Which size?

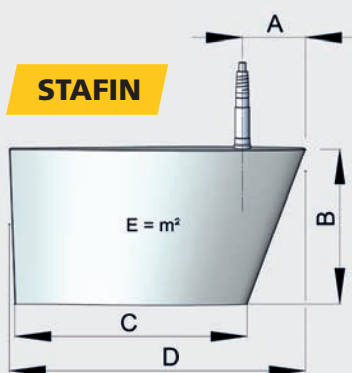
Where:

B = The waterline beam in metres.

D = The displacement in metric tons.

T = The roll period in seconds. This is the time taken to roll from starboard to port and back to starboard again. The amplitude is not important here since the roll period always remains constant. The roll period can therefore be measured fairly easily by causing the vessel to roll gently when moored alongside the quay.

V = The cruising speed in knots.



The fin size can be calculated using the following formula:

$$\text{Fin surface in m}^2 = \frac{3,5 \times B \times D}{T^2 \times V^2}$$

The recommended fin size is as follows:

$$\frac{3,5 \times 3,6 \times 23}{3,5^2 \times 8,5^2} = 0,33 \text{ m}^2$$

Thus, a fin size of 0.4 m² should be chosen or 0.3 m² if space is restricted.

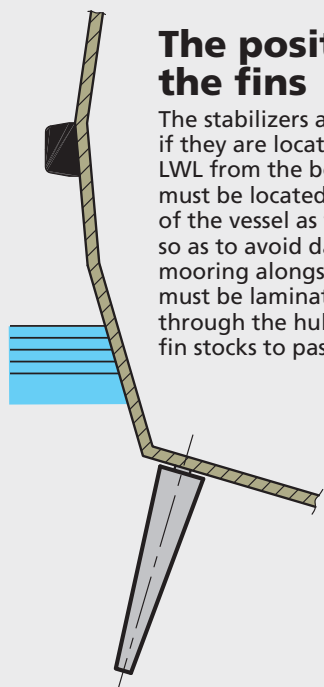
	03	04	05	06	07
A	142	176	215	250	291
B	431	497	554	600	605
C	620	716	801	873	1021
D	798	921	1024	1125	1318
E	0,3	0,4	0,5	0,6	0,7

Example

A 13.5 m motor yacht has waterline beam of 3.6 metre. The displacement is 23 metric tons and the cruising speed is 8.5 knots. Roll period is 3.5 sec.

The position of the fins

The stabilizers are most effective if they are located 40 to 50% of LWL from the bow. The fin tips must be located within the beam of the vessel as far as is possible, so as to avoid damage when mooring alongside. Guide bushes must be laminated or welded through the hull sections for the fin stocks to pass through.



Scope of supply

- A set consisting of four hydraulic cylinders with associated valve block, a control panel and a solid-state gyroscope (which registers the vessels movement). The standard power supply is 24 Volt DC (a 12 Volt to 24 Volt transformer is available as an option).
- A pair of fins. The stock and blade are made from stainless steel and the blade is filled with polyurethane. There is a choice of 5 fin sizes available: 0.3, 0.4, 0.5, 0.6 and 0.7m².
- A pair of guide bushes, available for steel, GRP or aluminum hulls. The high pressure hoses are not included and should be ordered separately to the required lengths.



STA24VA

VETUS stabilisers overview

- "Plug and Play" installation for steel, GRP and aluminum vessels.
- Fully automatic operation.
- The fin movement is automatically adjusted according to the degree of damping selected, the speed of the vessel and the sea state.
- All electronic components are solid state.

From the control panel the stabilizers can be switched on or off or centered for when going astern. The required amount of damping can be adjusted and the roll amplitude is displayed. Dimensions: 210 x 85 x 103 mm.





ELECTRICITY ON BOARD

WHY VETUS ELECTRICITY ON BOARD?

- VETUS is the only manufacturer of a combined battery charger / battery splitter.
- Solar panel battery charger, used either as a stand alone charger or in combination with the Combi-y charger / inverter.

Combi-y :

- "Load Support" function, which regulates all the supply sources depending on the load.
- Power protection feature to prevent overloading the shore supply or generator.
- Uninterrupted power supply (UPS) switches in the inverter if the shore supply or generator fails.
- Inverter output is rated up to 75°C.
- Trickle charger for second battery bank.
- Three phase supply possibility using 3 Combi-y units in parallel.
- Both series and parallel connection of multiple units are possible.

Batteries:

- VETUS 2 Volt gel batteries have very deep discharge capabilities and a high number of charge/discharge cycles.





Vetus, creators of...

Ease of use for the boat owner has played an important role in the development of Vetus inverters. What were the most important points of the development?

The circuit board

Inverters are often installed in a hot and damp engine space. Because electronics are sensitive to both heat and moisture, the circuit board is treated with an additional protective coating. This enables the inverter to give constant power output. Even up to ambient temperatures of 70°C, the inverter will produce 100% of its rated output.

The connections

The connections for both battery input and AC output are on the outside of the case, making installation simple. The 230 V output is a perfect sinus wave, enabling all AC equipment to be used on board.

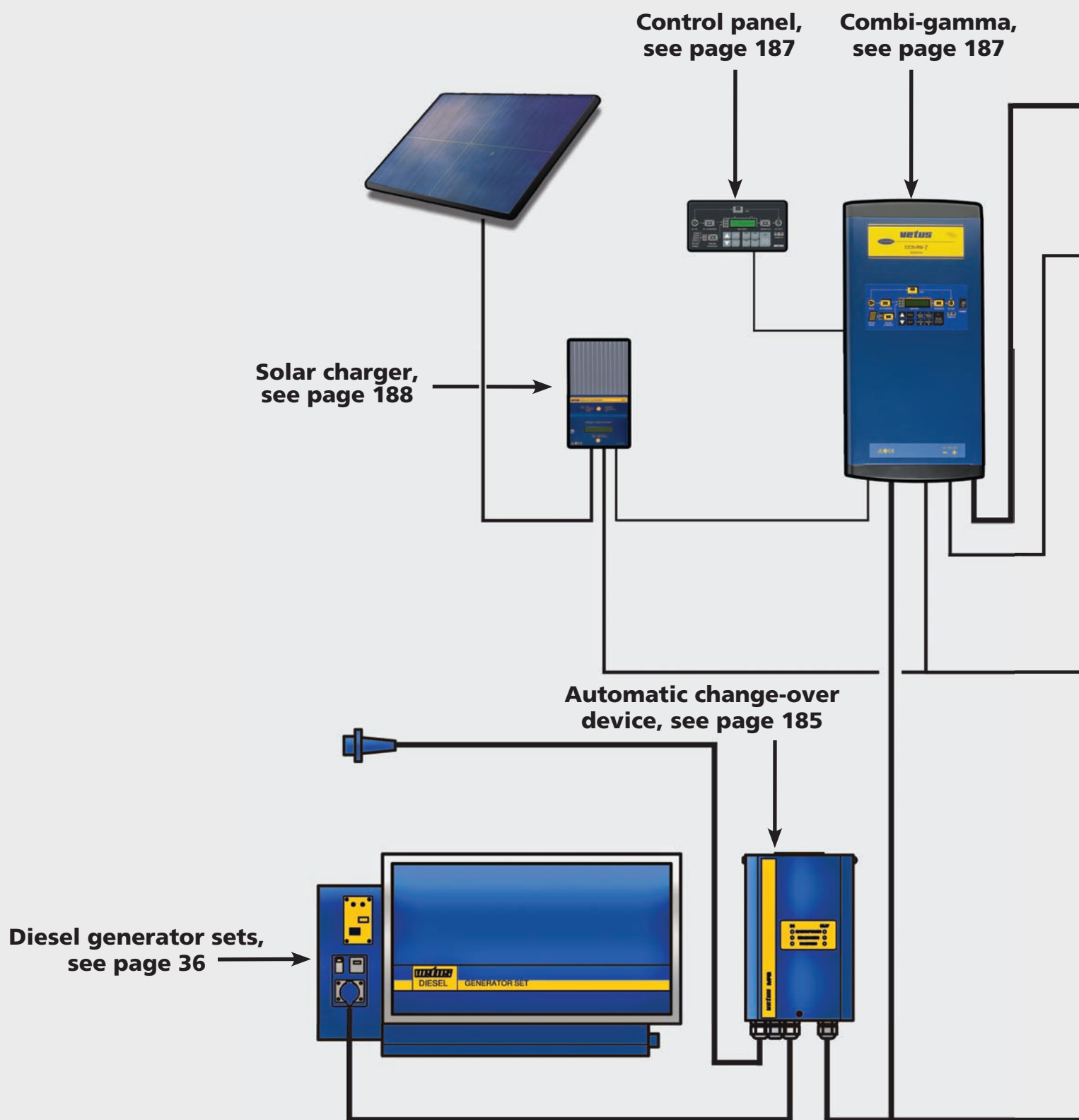
The display

On the front of the case are 2 clear LED bar displays which tell at a glance what is happening with the inverter and the batteries.

Unique to these inverters is the built in changeover relay. Shore power can be connected directly to the 230V connection on the underside of the inverter. If shore power becomes available, the inverter automatically and seamlessly switches over so that the shore power will supply the vessel. Therefore a separate changeover switch is not necessary.

VETUS inverters are genuine marine products (although also suitable for land based use).







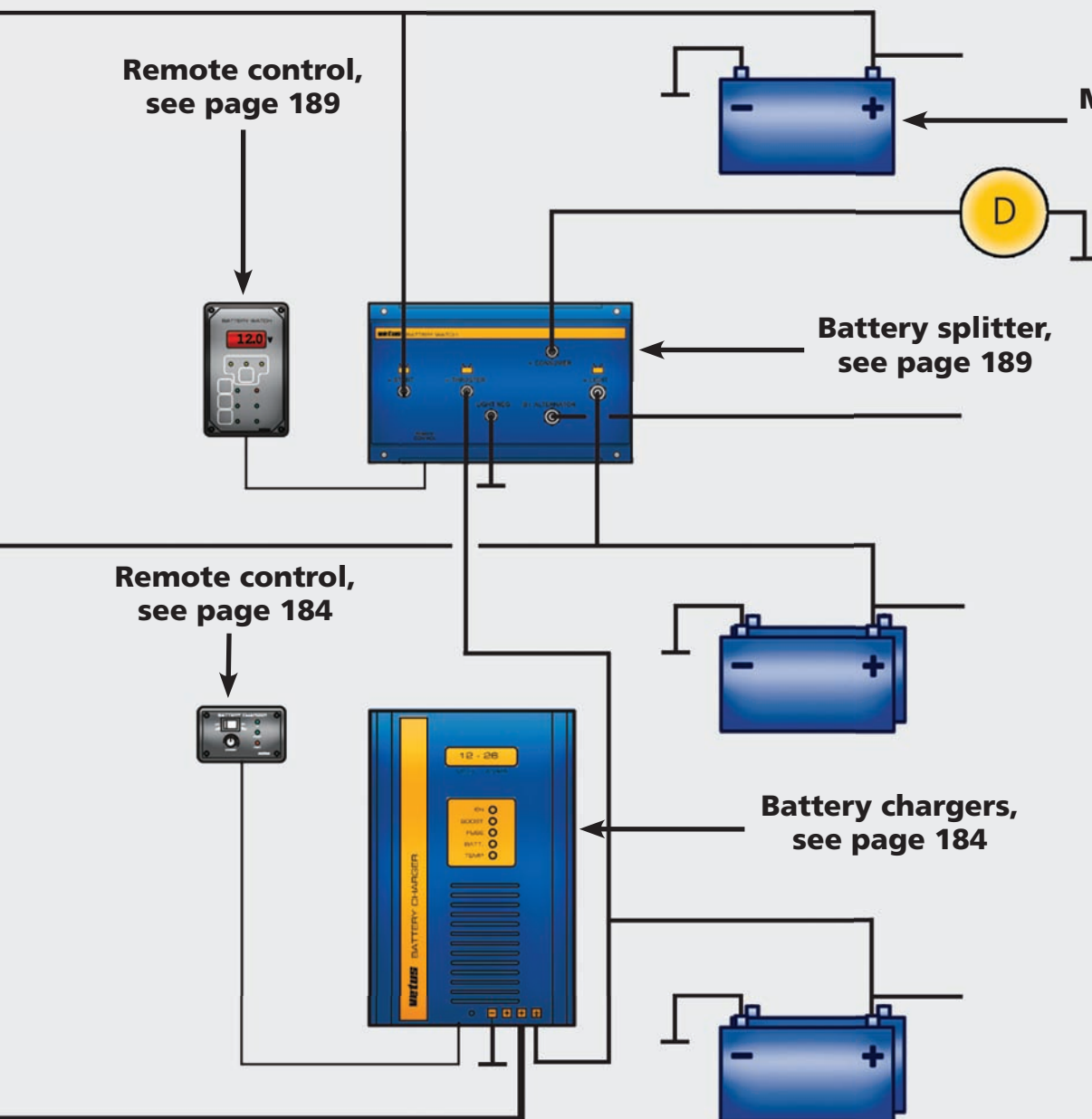
**Remote control,
see page 189**

**Marine batteries,
see page 193**

**Battery splitter,
see page 189**

**Remote control,
see page 184**

**Battery chargers,
see page 184**





Battery chargers 12 or 24 volt


BC

Attention: For charging separate battery banks using the engine alternator, a VETUS Combi-Charger-Splitter or Battery Splitter (see page 185 and 189) is the ideal appliance. VETUS battery splitters do not cause any voltage drop and compensating the output of the alternator is therefore unnecessary.

TEMPS2

Battery temperature sensor

As the battery temperature increases, the charging voltage should be reduced. An optional temperature sensor may be connected to any VETUS battery charger and will ensure that the charge voltage is always adapted to the battery temperature.

VETUS battery chargers meet all requirements of daily use on board

- They are suitable for connection to 120 or 230 Volts AC mains supply.
- Even at very low voltage, these chargers are fully operational: 80 Volts (instead of the usual 120 V) or 180 Volts (instead of the normal 230 V).
- All VETUS battery chargers – with the exception of the smallest model BC12202A – feature three outputs, allowing simultaneous charging of up to three banks of batteries (model BC12202A has 2 outputs).
- VETUS battery chargers are three-phase chargers: normal, boost and float.
- The charging characteristic can be adjusted for wet, gel filled, semi-traction or AGM (absorbed glass mat) batteries.
- Protection is built in for: Output terminal short-circuit, high or low input voltage, excessively high battery voltage and charger temperature.
- Polarity reversal is indicated by a warning LED and alarm buzzer.
- These VETUS battery chargers are high quality, thus ensuring the longest possible battery life span.
- They may stay switched on permanently, even over the winter.
- All VETUS battery chargers have the optimum "IUoU" charging characteristic, with a "float phase". With this characteristic, the charger reduces the output boost current when the so called "gas voltage" is reached. In the final charging phase, it reduces the charging current even further until the float voltage is reached, thus preventing the battery from gassing and consuming water.

This remote control panel may be connected to all battery chargers.

The panel has the following functions and indications:

- On/Off switch for battery charger.
- Output current adjustment, allowing the battery charger to work from low output shore supplies.
- Battery charge status

Fault warning LED and buzzer. The nature of the fault is then indicated on the battery charger panel itself. The remote control panel is connected to the battery charger by means of a thin UTP cable.

Dimensions of the panel: 99 x 62,5 mm.

Cut-out dimensions:
70x52 mm.

BCPANEL



	Type	BC12202A	BC12263A	BC12403A	BC12603A	BC12803A	BC24303A	BC24503A	BC24803A
Input	Supply voltage	80-130 V or 180-250 V, internally adjustable							
	Frequency	50 or 60 Hz							
	Power consumption	300 W	400 W	600 W	900 W	1200 W	900 W	1500 W	2400 W
Output	Nominal current at 230 V: at 115 V:	1,2 A 2,4 A	1,8 A 3,6 A	2,7 A 5,4 A	4 A 8 A	5,3 A 11 A	4 A 8 A	6,7 A 13,4 A	10,6 A 22 A
	Nominal Battery voltage			12V				24V	
	Charge current max. (±5%)	20 A	26 A	40 A	60 A	80 A	30 A	50 A	80 A
	Charging characteristic	IUoU							
	Number of outlets	2	3						
Adjustable for battery types:		Liquid filled, Gel filled, Semi traction, AGM							
Suitable for a battery capacity in Ah at a charging time of 11 to 14 hours:									
• Liquid filled		120-200	175-250	270-440	400-600	550-800	200-300	350-500	550-800
• Gel filled		100-200	150-250	225-440	340-600	475-800	160-300	300-525	450-800
• Deep cycle		100-200	150-250	225-440	340-600	475-800	160-300	300-525	450-800
• AGM battery		100-200	150-250	225-440	340-600	475-800	160-300	300-525	450-800
Control		Mains ON/OFF switch							Plus charge current selector 40 or 80 A
Ambient temperature		During storage: -20°C to +70°C. In use: -10°C to +50°C							
Relative humidity		Max 90%, condensation-free (all printed circuit boards are coated)							
Protection level		IP20							
Dimensions (mm)		293x180x95	293x180x95	246x305x90	340x300x90	340x300x90	246x305x90	340x300x90	340x289x181



Combined battery charger/battery splitter

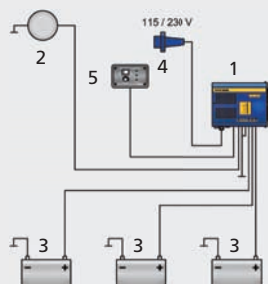
This combined VETUS Batter Charger/Battery Splitter is designed for optimum simultaneous charging of up to three banks of batteries.

The batteries can be charged in the fastest and most efficient way by both the battery charger and/or the engine alternator. Fitting a separate battery splitter (diode splitter) is no longer necessary, with the clear advantages of: lower cost, faster installation time, fewer cables and more space.

In contrast with most other makes of diode splitter, this VETUS alternative has negligible voltage drop, due to the use of mosfet transistors instead of diodes (0.1 V at 25 A, instead of 0.7 V) and compensating the output of the alternator is therefore unnecessary.



BCS



- 1 Combined Battery Charger/Battery Splitter.
- 2 Alternator.
- 3 Batteries.
- 4 Shore supply.
- 5 Remote control panel.

Technical data			
Code	Description	Dimensions in mm	Weight
BCS1225	12 V, 25 A battery charger/125 A battery splitter	300x245x115	2.5 kg
BCS1245	12 V, 45 A battery charger/125 A battery splitter	330x256x115	4.3 kg
BCS2425	24 V, 25 A battery charger/125 A battery splitter	330x256x115	4.3 kg
BCS2445	24 V, 45 A battery charger/125 A battery splitter	370x310x115	5.3 kg
Supply voltage: 80-130 V/60 Hz or 180-250 V/50 Hz			

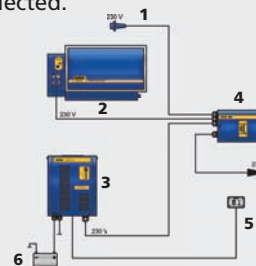
Automatic change-over device

This automatic change-over device is connected to the shore supply, the generator (if fitted) and the inverter. If the power from the shore supply or the generator is disconnected or falls outside the 180 - 250 Volt range, the change-over device will automatically switch in the inverter. Naturally, only loads up to the rated limit of the inverter and battery capacity can be supplied. The automatic change-over device constantly monitors whether power from the shore supply or generator is available again and within the correct voltage range. If so, it will then immediately switch over to that source. When both sources are available, the generator has priority. When switching over to the generator, a time lapse between 0 - 30 seconds can be selected.

Specifications:

Capacity: 4.5 kVA.
Dimensions: 290 x 180 x 95 mm.
Weight: 2.4 kg.
Nominal voltage: 230 Volt AC, 50 Hz.

1. Shore supply.
2. Generator.
3. Inverter.
4. Automatic change-over device.
5. Remote control panel.
6. Battery.
7. Consumers.



IVPS



Shore power security

When 230 Volt shore power is connected in the harbour or marina, it is essential that the maximum permitted current is not exceeded. If this happens, the shore supply breaker will trip and you will be disconnected. In most cases the harbour master or marina office must be notified to restore the power supply again. Apart from the inconvenience of having to go to the office, this may not happen immediately and in some cases, you may have to pay a fine as well. All these problems can be simply avoided, by using a VETUS "Shore Power Protector". The device provides a warning if you overload the shore supply and it will disconnect the overload before the breaker in the marina does the same. The VETUS "Shore Power Protector" is not affected by equipment with a high inrush current, such as a refrigerator or air conditioning.

Specifications:

Input voltage: 195 to 253 Volt A.C./ 50-60 Hz.
Power consumption: 5 Watt nominal.
Switch-off current: maximum 16 A.
Switching power:
- maximum 3680 Watt (resistive and weak inductive loads).
- maximum 1500 Watt (inductive loads at cos phi < 0,4).
Read out: LCD display.
Operation: within the limits of B- or C- fuse characteristics.
Operating temperature: 0 - 40°C.
Connection cable length: 2 metres.



SPP230

Sine wave inverters (from 12 or 24 Volt DC to 230 Volt AC) and control panel


IV

IVPANEL


- Pure sine wave.
- High peak power.
- Built-in UPS.
- Rated up to 75°C with no loss of power!
- Universal AC outlet socket, compatible with modern plugs worldwide.

VETUS Sine Wave Inverters, which convert 12 or 24 Volt DC to 230 Volt AC, may be used for any type of electronic equipment. These inverters produce a pure sine wave using high frequency technology. They are also compact and very lightweight. All VETUS inverters have a shore power connection and an in-built UPS (uninterruptable power supply) function. This means that, whenever the shore power is disconnected, the inverter will immediately take over the power supply without the connected equipment being affected. **The nominal power of all VETUS inverters can be supplied in full without de-rating, even with inverter temperatures of up to 75°C. The peak power ratings are also very high. For example: a 3 kW inverter can produce 3.9 kW for up to 30 minutes.** There is no need to open the inverter for installation and therefore installation is quick and easy. The inverter has a built-in LED bar for indication of the battery voltage and the power consumption.

The inverter is automatically protected against:

- overload
- too high battery voltage
- too low battery voltage
- too high temperature
- short-circuit
- reverse connection of battery polarity

With the optional remote control panel the inverter can be switched ON and OFF from a distance. The display shows the status of the battery voltage, the AC output voltage, the power output and the alarm functions.

input	Type	IV60012	IV100012	V200012	IV200012	IV300012	IV60024	IV100024	IV150024	IV150024	IV300024
	Nominal battery voltage	10 to 16 V					20 to 32 V				
	Max. input current at 10.5 resp. 21 Volt and Pnom.	67 A	112 A	167 A	223 A	334 A	34 A	56 A	84 A	112 A	167 A
output	Voltage	Adjustable: 200, 220, 230, or 240 V AC (+/-2%)									
	Frequency	Adjustable: 50 Hz or 60 Hz (+/- 0,05%)									
	Wave shape	Sinus, total harmonic distortion < 3%									
	Nominal power	Continuous at cos phi=1, at a maximum inverter temperature of 75°C									
		600 W	1000 W	1500 W	2000 W	3000 W	600 W	1000 W	1500 W	2000 W	3000 W
	Peak power*	60 min. 105-110%		30 min. 120-130%		10 min. 140-145%		5 sec. 150%		1 sec. 200%	
	Cos phi	All types of load are permitted									
	Efficiency	83 - 85%									
Input voltage UPS mode		180 - 245 V AC, Switch time < 3msec.									
Ambient temperature		During storage: -30°C to +70°C During use: 0°C to +50°C (inverter temp. 75°C)									
Relative humidity		Max. 95 %, condensation-free (all printed circuit boards are coated)									
Protection class		IP20									
Dimensions (mm)		350x285 x120	400x285 x120	450x285 x120	420x285 x185	490x285 x185	350x285 x120	400x285 x120	450x285 x120	420x285 x185	490x285 x185
Weight		5.3 kg	6.6 kg	7.5 kg	11 kg	13 kg	5.3 kg	6.6 kg	7.5 kg	11 kg	13 kg

*The peak power that the inverter can supply is intended exclusively for unforeseen situations. Always select an inverter with a nominal power that is equal to or greater than the maximum power demand, also if this maximum power demand is only for short periods.

Combi-gamma

The VETUS Combi-γ may be used:

- As an **inverter** (from 12 or 24 Volt D.C. to 230 Volt A.C.).
- As a **battery charger**
- In combination with the VETUS solar charger.

The **battery charger** has a four-stage function: boost, absorption, float and equalize. Two batteries or battery banks may be connected to it. In combination with a VETUS **solar charger**, the Combi-γ unit can exchange data and control the current supply, as well as the charging characteristics.

In addition to its major functions, the Combi-γ has many more features:

• Power Control

With the incorporated Power Control, the maximum input current from the shore supply or the generator set can be selected. This ensures that the circuit breaker on the shore supply or generator will not trip.

• Power Manager

The Power Manager function controls and regulates the entire power supply. If you need more power, the Power Manager will automatically switch in the inverter, or start the generator, in order to supply the required power. One 3 kW Combi-γ unit will therefore supply a total of 6kW (3kW via the inverter function and a further 3 kW from the shore supply or the generator).

• UPS (Uninterrupted Power Supply)

If the power supply from the shore supply or generator fails, the Combi-γ inverter function will switch in automatically.

• Parallel connection

To achieve the maximum required power levels, up to 5 Combi-γ units can be connected in parallel. This can be done via parallel box model CGP which can be ordered separately. Please see the price list.

• Three-phase functionality

A three-phase supply system may also be created with 3 Combi-γ units. Using 3 kW Combi-γ's in parallel and three-phase, a total output of 45 kW can be achieved.

Remote control panel for combi-γ "

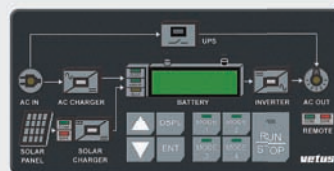
A remote control panel may be connected to the Combi-γ unit.

This panel displays the following information:

- AC input and output voltage and current.
- Battery voltage, current and power consumption.
- Charging voltage and charging current levels of Combi-γ and solar charger.
- UPS status.
- Multifunctional relay status.
- Alarms.

It also controls:

- Inverter, battery charger, solar charger ON/OFF.
- Switching levels.
- Charge voltage and current.
- Relays.
- Parallel 3-phase configuration.
- AC output voltage and frequency.



GAMPANEL



COMBI

VETUS "Combi-γ", model		COMBI1512	COMBI3012	COMBI1524	COMBI3024
input	Inverter:				
	Nominal battery voltage	10-16 V		20-32 V	
	Max. input current at 10.5V resp. 21V and P _{nom}	167 A	334 A	84 A	167 A
output	Voltage	Adjustable: 185-240 V AC			
	Frequency	Adjustable: 50 of 60 Hz ± 0.1%			
	Wave shape	Pure sine, total harmonic distortion < 3%			
	Nominal power	Continuous at cos phi =1, at a max. inverter temperature of 75°C			
		1500 W	3000 W	1500 W	3000 W
	Peak power	60 min. 105 - 110%	30 min. 120 - 130%	10 min. 140 - 145%	5 sec. 150%
	Cos phi (power factor)	All types of load are permitted			
input	Battery charger:				
	Voltage	200-250 V AC			
	Frequency	45-55 Hz or 55-65 Hz			
	Cos phi (power factor)	1			
output	Charging Current	Adjustable			
	Maximum charging current	70 A	120 A	40 A	70 A
	Charging current starter battery	4 A			
General:					
	Input power in UPS mode	180 -245, switch-over time < 3 msec.			
	Max. switching current UPS	16 A	30 A	16 A	30 A
	Max. current Power Control	10 A	20 A	10 A	20 A
	Multifunctional relay	3x			
	Ambient temperature	During storage: -30°C to +70°C. During use: 0°C to +50°C (inverter temp. 75°C)			
	Relative humidity	Max. 95%, condensation-free (all printed circuit boards are coated)			
	Protection class	IP20			



Solar charger



SL

The VETUS Solar Charger enables regulated battery charging when using solar panels. In addition to its charging function this unit ensures that, when the batteries are fully charged, the output of the solar panels can be used for other purposes (diversion regulation). In order to prevent complete discharge of the battery, the charging control function will disconnect any consumers when the battery voltage drops too low. The VETUS Solar Charger may be used as a stand alone unit, or in combination with the VETUS Combi-γ unit. In this case the Combi-γ will control the complete current supply. Up to 10 Solar Chargers may be connected in parallel formation.

The Solar Charger is protected against:

1. Short circuit.
2. Current overload from solar panel.
3. Reversed battery polarity.
4. Excess temperature.

Solar Charger, type	SL45	SL60
Maximum charging current	45 A	60 A
Charging characteristics	4-stage	
Battery voltage	12-48 V	
Maximum voltage of solar panel	125 V	
Minimum voltage of solar panel	9 V	
Ambient temperature	During storage: -55°C to +85°C During use: -40°C to +45°C	
Relative humidity	Max. 95%, condensation-free (p.c.b. is coated)	
Dimensions (H x W x D) in mm	266 x 127 x 75	
Weight	1,5 kg	

Battery watch for 2 or 3 batteries

This VETUS battery watch controls 3 separate battery banks (e.g. starter battery, lighting battery and battery for the bow thruster) and ensures that all three batteries are charged simultaneously by the engine alternator or by a battery charger. In actual fact the VETUS battery watch is:

- Three-way battery splitter, with no voltage drop.
- Safeguard/alarm when low voltage occurs.
- Switch on/off relay for the lighting battery.
- Trickle charger of the batteries for starting and the bow-thruster (limited to 3 A charging current), when using a combined charger/inverter.

The Battery Watch also features a relay that automatically disconnects the domestic (lighting) battery before it is completely discharged. This will considerably enhance the life span of the battery.



Technical data:

Suited for 12 or 24 Volt electrical installations.

Features a three-way battery splitter, suitable for an alternator with a maximum charging current of 125 A with no compensation of the alternator required.

Isolating relay 70 A for the lighting battery. May be switched on or off from the control panel. Automatic switch-off when the lighting battery reaches a too low voltage. Switch-off voltage: 10.5 Volt (22 V) with a one minute delay (impervious to brief peak loads). Switch-on voltage: 11.5 Volt (23.5 V) Dimensions of the distribution block (w x d x h): 220 x 87 x 133 mm. Weight: 1,7 kg.

BW312A

BW324A



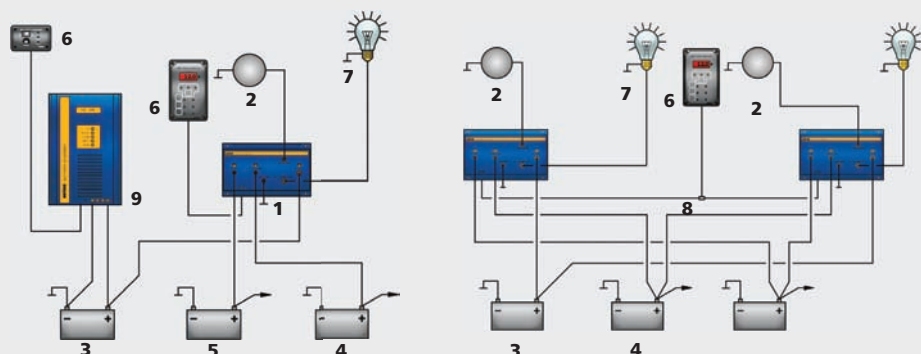
The remote control panel that is supplied as standard indicates the voltage of one of the three battery banks (domestic, bow thruster or start) by means of an LCD screen. The desired battery bank may be chosen by means of the function "Battery Select". An audible alarm will be triggered if the battery voltage drops too low. The control panel may also be used to operate the relay as a main switch for the domestic battery bank. The panel is connected to the Battery Watch by means of a thin UTP cable.

Technical data:

A 3-digit LCD screen with an accuracy of 0.1 Volt. Indicator LED's for panel on/off, alarm, relay, alternator charging and selected battery. Switch functions for: panel on/off, alarm on/off, relay on/off and battery selector.

Dimensions of panel: 161 x 99 mm.

Cut-out dimensions: 128 x 76 mm.



- | | | |
|---------------------------------|--------------------------|------------------------------|
| 1. Battery Watch. | 4. Bow thruster battery. | 7. Consumers. |
| 2. Alternator. | 5. Starter battery. | 8. Adapter. |
| 3. Domestic (lighting) battery. | 6. Remote control panel. | 9. Battery charger/inverter. |

In the case of a twin engine installation (two alternators), it will be possible to control and monitor two battery watches with one panel. To this effect, an extension set may be supplied, consisting of one additional battery watch and a cable to interconnect both battery watches. On the panel, a current charging monitoring light for one alternator only is available, but all other functions can be used in full.

Battery splitter

For simultaneous charging of 2 or 3 battery banks from any charging source, with negligible voltage drop

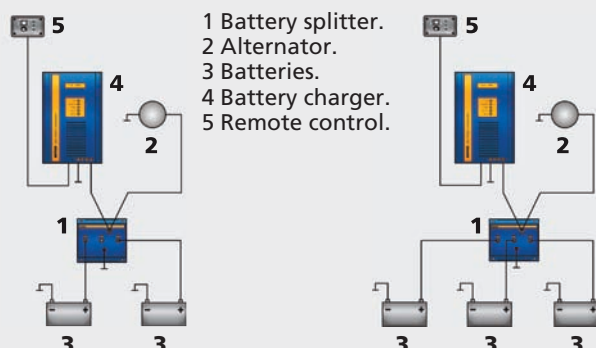
A battery splitter may be considered as an automatic battery selector switch. It ensures automatic distribution of the charging current from the alternator and/or the battery charger, to all banks of batteries, whilst keeping them insulated as supply sources. This is possible by virtue of the fact that the semiconductors employed, allow current to flow from the charging source to each of the battery banks separately and not the other way around. In other words: it is not possible for one battery bank to discharge into another. The battery for domestic services may be (almost) exhausted but the starter battery will remain unaffected. Once the engine has been started, the alternator will automatically recharge all banks of batteries. **In contrast with most other makes of diode splitter, this VETUS alternative has negligible voltage drop, due to the use of mosfet transistors instead of diodes (0.1 V at 20 A, instead of 0.7 V).** Therefore, the actual charging voltage is almost identical to the voltage provided by the alternator, ensuring optimum battery charging. There is no need to compensate the output of the alternator, even if that is possible.



BS1252

BS1253

VETUS battery splitters are suitable for 12 and for 24 Volt installations and for 2 or 3 battery banks. The maximum charging current is 125 A.



- | |
|---------------------|
| 1 Battery splitter. |
| 2 Alternator. |
| 3 Batteries. |
| 4 Battery charger. |
| 5 Remote control. |

Technical data:

Code		Dimensions	Weight
BS1252	125 A for 2 batteries	150 x 133 x 83 mm	1,05 kg
BS1253	125 A for 3 batteries	150 x 133 x 83 mm	1,10 kg



Accessories for marine batteries

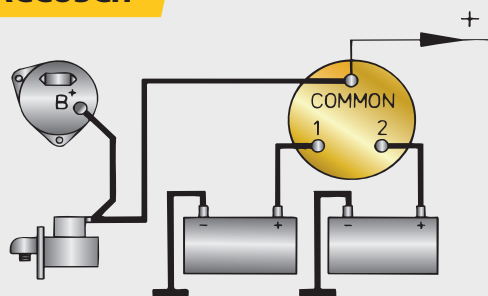


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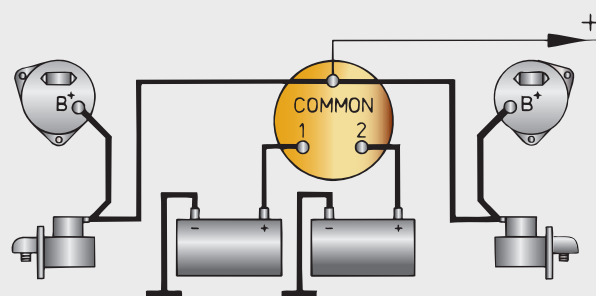
This famous VETUS battery selector switch is a multi-functional component. In the technical sense it is a sturdy rotary series switch. From the OFF position, the following batteries may be "switched on", in accordance with the switch pattern: Battery 1 only, Battery 1 plus Battery 2, Battery 2 only. The switch enables usage and charging of the batteries, both individually and in parallel connection. Dimensions: 135x135x75 mm. Capacity at 6-12-24 or 32 Volt: continuous: 175 A – interval: 300 A.

Kema and underwriters laboratories approved

The switch is provided with a red locking button, indicating and locking the switch position. This also discourages over enthusiastic operation. If a VETUS battery selector switch is fitted, there is still the freedom of choice which battery (or batteries) will supply which service(s). Normally speaking, one of 2 batteries is used for starting the engine. But if that battery is nearly discharged (or defective), the other battery can be called to the rescue. The VETUS selector switch will prove to be invaluable on such occasions. It is even possible to draw power for the starter motor from both batteries, if the switch is set in position: "Both". The switch will "make before break" and so battery selection is possible even with the engine running (do not go through the "off" position). Using a VETUS battery selector switch, the starter battery and the domestic battery may be used and charged, as desired.



one engine – two batteries



two engines – two batteries

Battery main switches

BATSW250T



BATSW600



BATSW250



BATSW075



BATSW100



May be connected to either the positive or the negative electric cable. Two positions: "on" and "off". In the "off" position the key may be removed. Provided with two M10 connectors. **Model 600: Watertight according to IP 67. The key cannot be removed.**

Five models are available:

Model	BATSW075	BATSW100	BATSW250	BATSW250T	BATSW600
Nominal operational Voltage max.:	max. 24 V	max. 24 V	max. 24 V	max. 24 V	max. 24 V
- Continuous operation	75 A	100 A	250 A	2 x 250 A	450 A
- 3 minutes' load					800 A
- 5 seconds' load	350 A	500 A	2500 A	2 x 2500 A	3500 A



Accessories for marine batteries

Fuse holders

Suitable for VETUS fuses of 40-50-63-80-100-125-160-200-250-300-355-425 and 500 Amp. The fuses to match are of the so-called "slow blow" type. They are encapsulated in glass, so as to prevent fire. We suggest that you use this holder for the storage of spare fuses as well. **The fuse holder comes with a protective cover.**

ZE040	Strip Fuse C20 - 40 Amp.
ZE050	Strip Fuse C20 - 50 Amp.
ZE063	Strip Fuse C20 - 63 Amp.
ZE080	Strip Fuse C20 - 80 Amp.
ZE100	Strip Fuse C20 - 100 Amp.
ZE125	Strip Fuse C20 - 125 Amp.
ZE160	Strip Fuse C20 - 160 Amp.
ZE200	Strip Fuse C20 - 200 Amp.
ZE250	Strip Fuse C20 - 250 Amp.
ZE300	Strip Fuse C20 - 300 Amp.
ZE355	Strip Fuse C20 - 355 Amp.
ZE425	Strip Fuse C20 - 425 Amp.
ZE500	Strip Fuse C20 - 500 Amp.
ZEHC100	Fuse holder, type C100 including cover



Strip fuses

40-50-63-80-100-125-160-200-250-300-355-425 or 500 Amp.

AFST624D

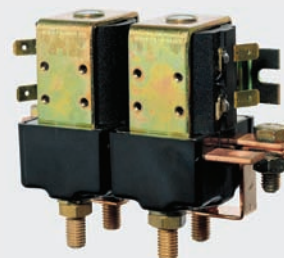
Make/break relay to reverse the direction of rotation of an electric motor (e.g. windlass), with a maximum output of 6 kW at 24 Volt.

AFST1512D

SOL324D*

SOL1512D*

AFST324D



Make/break relay to reverse the direction of rotation of an electric motor (e.g. windlass), with a maximum output of 1.5 kW at 12 Volt, or 3 kW at 24 Volt. ***Watertight** to IP66.

AFST624S

Make relay, for electric motors (e.g. windlass), with a maximum output of 1.5 kW at 12 Volt, or 3 kW at 24 Volt.

AFST1512S

SOL324S*

SOL1512S*

AFST324S



When the motor has two field windings, two of these relays may be used to operate the motor in either direction. ***Watertight** to IP66.

Battery boxes

VETUS battery boxes for VETUS batteries of 55 Ah, 70 Ah, 70 AhM, 108 Ah and 108 AhM. We can make polypropylene battery boxes for all VETUS batteries.

BATBOX055	Battery box for battery 55 Ah (L x B x H = 244 x 175 x 175 mm)
BATBOX070	Battery box for battery 70 Ah (L x B x H = 279 x 175 x 229 mm)
BATBOX108	Battery box for battery 108 Ah (L x B x H = 330 x 175 x 240 mm)

BATBOX





Maintenance-free marine batteries

VETUS batteries

VETUS batteries are specially designed for use aboard pleasure craft, a situation which makes quite different demands compared with other applications. For instance, a pleasure boat is usually out of operation for many months over the winter, without the possibility to recharge the batteries. Minimal self-discharge is therefore of prime importance during these winter months. Unlike car batteries for example, marine batteries are often heavily discharged (by lighting, pumps, ventilation, etc.) without the engine running. Therefore, the battery must be able to sustain a prolonged current drain, but still be able to start the engine again.

No more topping-up

A VETUS battery comes with a sufficient electrolyte to last the whole of its life. The casing is therefore entirely sealed with the exception of a small ventilation opening (pressure relief valve).

Minimal maintenance is required

A VETUS battery can be simply installed and connected. Topping-up with distilled water is not necessary. Thereafter the only maintenance required is limited to recharging, which can be done with a voltage sensed battery charger or an alternator.

Universal application

Often electrical systems on board are separate (starting and services) and two different types of batteries are required. The disadvantage is that the starter battery is only used a few times and consequently has a relatively short life, whereas the domestic battery suffers from too frequent discharging, which also shortens its life. The use of batteries which can withstand many charge/discharge cycles and which can also supply a high cold-cranking amperage is a much better choice. VETUS batteries are such batteries!

In order to extend the life of VETUS batteries, which is already very considerable, we recommend that you use the batteries alternatively; in conjunction with a VETUS battery selector switch.

Battery selection chart

VETUS batteries	Lead-calcium	AGM	GEL 12 V	GEL 2 V
Application:				
Engine starting	✓ ✓ ✓	✓ ✓ ✓	✓ ✓	✓ ✓
Generator starting	✓ ✓ ✓	✓ ✓ ✓	✓ ✓	✓ ✓
Bow thruster	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓
Anchor windlass	✓ ✓	✓ ✓	✓ ✓	✓ ✓
Pumps	✓ ✓	✓ ✓	✓ ✓	✓ ✓
Use with inverter	✓ ✓	✓ ✓	✓ ✓ ✓	✓ ✓ ✓
Refrigeration	✓****	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓
Air conditioning	✓****	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓
Lighting	✓****	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓
Electric propulsion	✓****	✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓
General:				
Maintenance-free	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓
Deep discharge	✓****	✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓
Typical life span	8 year	10 year	10 year	18 year
Charge/discharge cycles	350 x 35%	375 x 80%	380 x 80%	750 x 95%
Self discharge	3% / per month	3% / per month	1.5% / per month	<1.5% / per month
Electrolyte	wet acid	absorbed glass mat	GEL	GEL
Plate materials	Lead-calcium	Lead-calcium	Lead-calcium	Lead-calcium
VRLA (pressure relief valve)	no	yes	yes	yes
Series connection	yes	yes	yes	yes *
Parallel connection	yes	yes	yes	no **
Safe transportation	yes****	yes	yes	yes
Maximum angle in use	55°	55°	90°	90°
Maximum installation angle	0°	0°	0°	90°
Charging with standard charger	yes	yes	yes	yes

* To create a 12 Volt battery, 6 cells of 2 Volt each must be connected in series.

To create a 24 Volt battery, 12 cells of 2 Volt each must be connected in series.

** Parallel connection is not necessary.

*** Not recommended.

**** When properly secured to a pallet.

Maintenance-free marine batteries type lead-calcium



Battery poles

All VETUS batteries are supplied with SAE tapered positive and negative terminal poles, except for models BAT12070M and BAT12108M, which are supplied with dual terminals. In addition to the standard tapered pole, these models also have a $\frac{5}{16}$ " UNC stud with a butterfly nut.

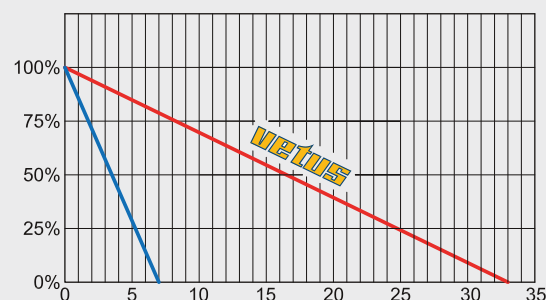


Ready for use

VETUS batteries come filled and ready charged so.... unpack, install and forget!

Very low self-discharge

The self-discharge rate of A VETUS battery is never more than 3% per month, at an ambient temperature of 25°C. In comparison, a conventional flooded lead acid battery self-discharges at about 15% per month. Therefore, charging over the winter months is not necessary and the engine will still start next season. In addition a VETUS battery, even if only charged 50%, is able to withstand temperatures of -30°C, so removal from the boat during the winter is not necessary.



Lead-calcium

This expression refers to the composition of the plate materials. By adding calcium to the lead instead of antimony, the water consumption is negligible in comparison with the volume of electrolyte. Therefore, topping-up with distilled water will never be necessary.

VETUS lead-calcium type batteries

Capacity (Ah)	55	70	70 M	90	108	108 M	120	143	165	200	225
Voltage	12	12	12	12	12	12	12	12	12	12	12
Cold cranking amps CCA (EN)	525	650	480	660	735	570	780	970	1000	1060	1060
Reserve capacity (minutes) at 25 A	90	110	115	170	180	180	230	300	320	430	440
Dimensions LxBxH (cm)	24,4 x 17,5 x 17,5	27,9 x 17,5 x 17,5	27,5 x 17,5 x 22,9	35,4 x 17,5 x 19	33 x 17,5 x 24	33 x 17,2 x 23,4	50,5 x 18,2 x 23,4	50,8 x 21,5 x 23,4	50,8 x 21,5 x 23,4	51,2 x 27,7 x 24,4	51,2 x 27,7 x 24,4
Weight (kg)	14,6	16,4	19,3	23,7	26	26,8	35,4	41	41,3	58,6	59,9

VETUS lead-calcium type batteries:

- are ready for use.
- have a very long life span.
- have a very **low self-discharge rate**.
- require no maintenance other than charging.
- are suitable for a wide range of applications.
- are provided with a carrier handle or lifting straps.



Maintenance-free marine batteries type AGM



VETUS batteries, type AGM

Like other VETUS maintenance-free batteries, Absorbed Glass Mat (AGM) batteries are fully sealed, apart from a very small ventilation opening (pressure relief valve). The plate material consists of lead - calcium and the electrolyte is completely absorbed by glassfibre mat separators, which means that the battery cannot leak, even in transport or if the casing is damaged.

VETUS batteries, type AGM

- are supplied ready for use.
- have a very long life span.
- have a very **low self-discharge** rate.
- require no maintenance other than charging.
- cannot leak even when inverted or damaged.
- are safe in transit, even by air.
- are suitable for a wide range of applications.
- are highly resistant to vibration.
- are provided with a carrier handle.

Very long life span

VETUS AGM batteries are genuine multi purpose marine batteries. They are suitable for cyclic deep discharge operation when used in the main bank to power lighting, pumps, domestic appliances etc. But the high cold cranking amp rating also makes them excellent for engine starting or powering bow thrusters, anchor windlasses and other high current consumers.

VETUS batteries, type AGM

Capacity (Ah)	65	100	128	161	214
Voltage	12	12	12	12	12
Cold cranking amps CCA (EN)	500	635	873	924	1168
Reserve capacity (minutes) at 25 A	90	165	240	310	480
Dimensions LxBxH (cm)	27,6 x 17,4 x 19	30,5 x 16,8 x 21,2	41,0 x 17,7 x 22,8	48,5 x 17 x 24,5	52,2 x 24 x 24,1
Weight (kg)	21,5	29	35	43	61



Maintenance-free GEL batteries



VETUS GEL type batteries

- are suitable for **deep discharge** without any loss of capacity.
- are delivered ready for use.
- have an extraordinary long life span.
- have an even lower self-discharge rate than other VETUS batteries.
- require no maintenance other than charging.
- 2 Volt cells may be installed horizontally.
- cannot leak even when inverted or damaged.
- are highly resistant to shock and vibration.
- are provided with a carrier handle (not 55 Ah or 2 Volt cells).

VETUS 12 V GEL batteries

Gel batteries contain a semi solid electrolyte in the form of a gel. This means that even if the casing is broken or the battery inverted, no caustic liquid can escape. They are also extremely shock resistant and have a long life span. A 12 V gel battery is ideal for use as the service battery.

VETUS 2 V GEL batteries

VETUS 2 V gel batteries have “tubular plates” instead of flat plates. These tubular plates allow even deeper discharge (up to 95%) and have an exceptionally long life span. This can be up to 18 years in normal use. The batteries can be installed vertically or horizontally as required. Our best battery, recommended for intensive service use and with electric propulsion systems.

Specifications GEL 12 V

Capacity (Ah) at 20 hours discharge	55	85	120	140	200
Voltage	12	12	12	12	12
Cold Cranking Amps CCA (EN)	383	450	750	900	1050
Reserve capacity at 25 A (mins)	91	163	218	262	404
Dimensions LxBxH (cm)	26,1 x 13,5 x 23	33,0 x 17,1 x 23,6	51,3 x 18,9 x 22,3	51,3 x 22,3 x 24,5	51,8 x 23,8 x 23,8
Weight (kg)	18,8	31	41	48	70

Specifications GEL 2 V

Capacity (Ah) at 20 hours discharge	292	436	600	852	1144
Voltage	2	2	2	2	2
Reserve capacity at 25 A (mins)	535	912	1400	2044	2745
Dimensions LxBxH (cm)	10,4 x 20,7 x 40,1	14,6 x 20,7 x 40,1	14,6 x 20,7 x 51,7	14,6 x 20,7 x 69,3	21,1 x 19,2 x 69,3
Weight (kg)	18	25	37	50	68

Each 2 Volt cell is supplied with connectors for interconnection.



STEERING SYSTEMS

WHY A VETUS STEERING SYSTEM?

- VETUS supplies complete steering systems, for both single and **dual** steering positions.
- **Steering systems** are available for rudders, outboard motors or Z-drives.
- **Steering systems** can be operated by manual pump, electro-hydraulic pump or power steering.
- In all cases: a simple and uncomplicated installation.
- VETUS steering systems are virtually maintenance-free.
- Available **with** tilting or sliding helm pumps for the ideal steering position and a choice of colours.
- VETUS offers a **stainless steel flange**, for mounting the helm pumps attractively.
- VETUS offers a wide range of quality **steering wheels**, with classical and contemporary designs.

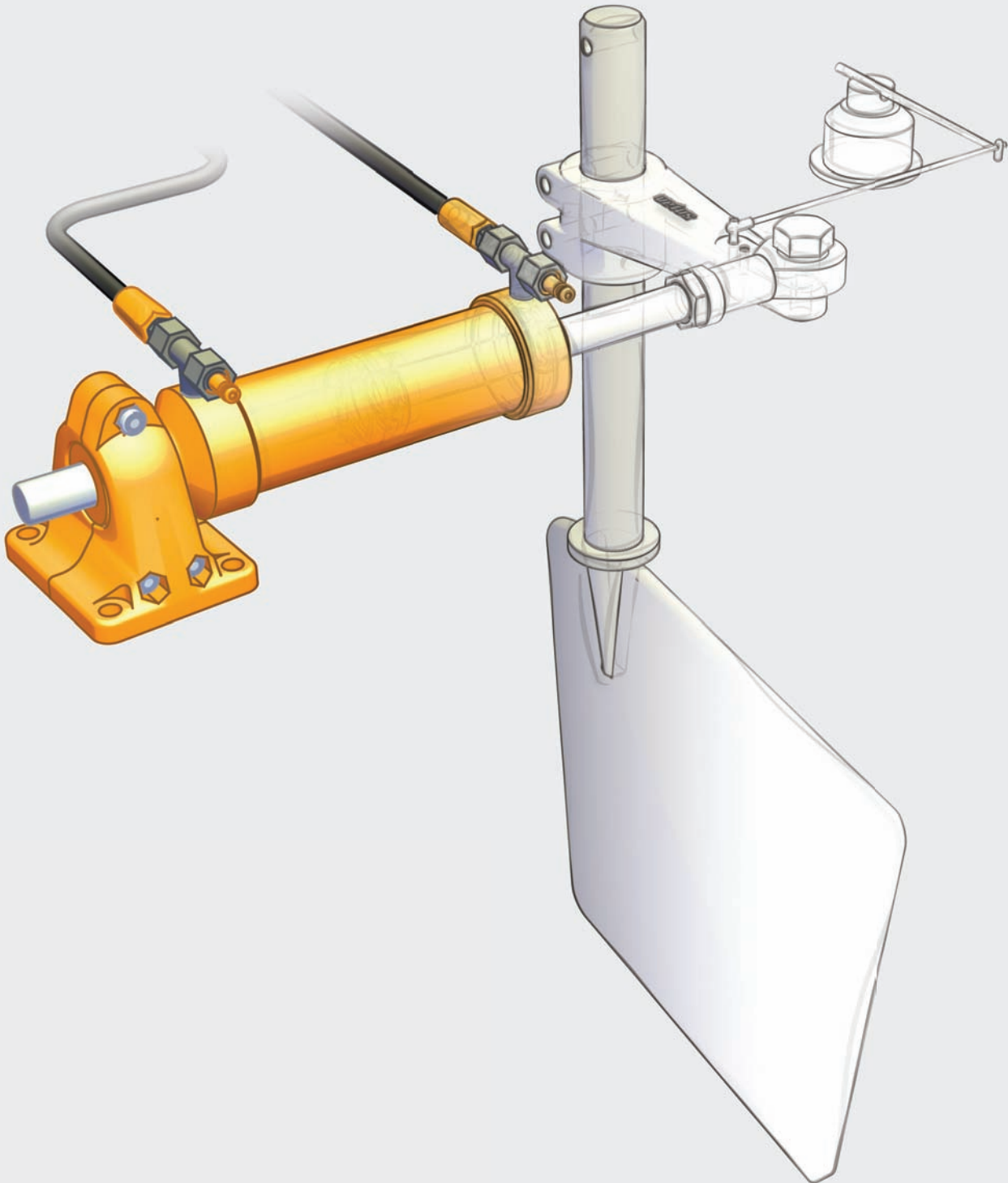




VETUS, Creators of....

VETUS has an extensive range of steering systems and accessories. For any desired application, VETUS offers a total solution.

In the development of our steering systems ease of use is paramount. Therefore VETUS developed a fully adjustable steering wheel. The position of the steering wheel is easily adjusted to give the ideal steering position, whether standing or sitting. Therefore the comfort of the skipper is greatly increased.

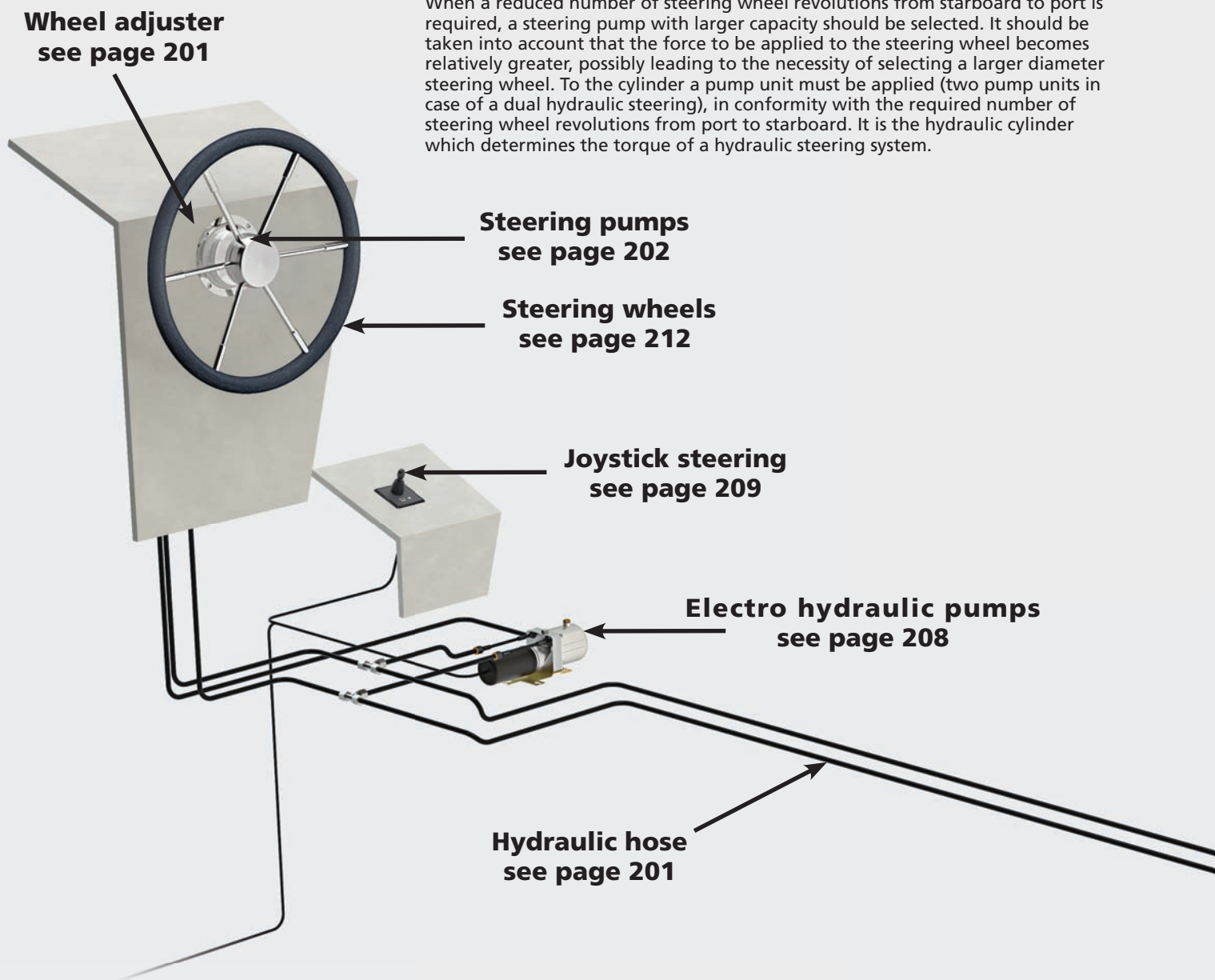




How to determine the correct VETUS steering?

The number of steering wheel revolutions

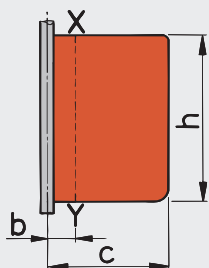
When a reduced number of steering wheel revolutions from starboard to port is required, a steering pump with larger capacity should be selected. It should be taken into account that the force to be applied to the steering wheel becomes relatively greater, possibly leading to the necessity of selecting a larger diameter steering wheel. To the cylinder a pump unit must be applied (two pump units in case of a dual hydraulic steering), in conformity with the required number of steering wheel revolutions from port to starboard. It is the hydraulic cylinder which determines the torque of a hydraulic steering system.



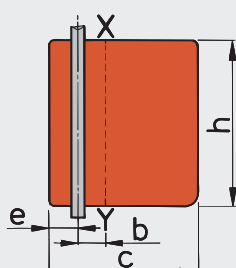


Rudder torque

As already stated, the cylinder determines the torque. The choice of the correct cylinder is determined by the rudder torque in Nm (or kgm). The rudder torque is the determining factor (Torque = force x lever). To ascertain the correct rudder torque, only the maximum speed of the vessel, the surface area of the rudder blade and the maximum rudder angle (in degrees) are of importance. Information such as length of boat and engine power are irrelevant. With a few admitted exceptions, the rudder performs best with a maximum rudder angle of 35° to either side. Contrary to what is sometimes claimed for rudders with the "usual" dimensions, a larger rudder angle does not enhance the manoeuvring capabilities of a vessel.



Rudder without balance section



Rudder with balance section

The formula to determine the rudder torque reads:

M (torque) = F x b (per rudder)

In other words: the force F, which is applied to the rudder (given in Newton = N), is being multiplied by the lever "b", being the distance between the centerline of the rudder stock and the centre of pressure which lies on the line X-Y.

F (the force applied to the central line XY) – taking into consideration a maximum rudder angle of 2 x 35° – is constituted in the following manner:

$F = 23.3 \times A \times v^2$ in **Newton (N)**, or: $F = 2.33 \times A \times v^2$ in **kgf**.

A = total surface area of rudder blade in m².

v = speed in km/hour.

A rudder **without** balance section requires the formula:

$b = 0.37 \times c$ (in metres);

A rudder **with** balance section calls for the formula:

$b = (0.37 \times c) - e$ (in metres).

Calculation example of one rudder with balance section

The maximum speed of the boat is 16 km/hour (v); the total width of the rudder blade is 57 cm (c); the width of the balance section is 9 cm (e); the height of the rudder blade is 100 cm (h).

$F = 23.3 \times 0.57 \times 1.00 \times 16^2 = 3400$ N (340 kgf)

$b = (0.37 \times 0.57) - 0.09 = 0.12$ m.

Therefore, the rudder torque amounts to $3400 \times 0.12 = 408$ Nm (41 kgm). So, the VETUS hydraulic steering to be selected in this case is model MTC52.

With a **twin rudder** installation, the required torque is 2×408 Nm = 816 Nm, which makes model MTC125 the one to choose. We recommend that you consult VETUS for an accurate calculation. We also calculate the effects of the propeller wash, as well as the torque when going astern. Because smaller vessels tend to respond quite sharply to the rudder commands, the maximum rudder torque is not used and a reduction of 10 to 20% off the calculated maximum torque is quite acceptable most of the time, especially if the boat is not sailed in heavy weather. Careful: some other manufacturers of hydraulic steerings have already taken such reduction into account when stating their capacity (torque). We, at VETUS, are of the opinion however, that the choice of whether or not such reduction should be applied, is exclusively the option of the naval architect.

Rudder position indicators
see page 107

Rudder arm
see page 210

Steering cylinder
see page 203

Rudders
see page 210



Steering systems (with axial piston pump)

Careful attention to detail and modern technology enable us to offer truly top-class hydraulic steering systems.

All parts are manufactured to the highest standards and of the best materials, for long service life, corrosion resistance and operating efficiency. Nearly 45 years of experience in this field gives us an undisputed lead over many others.

Our hydraulic steering systems consist of a hydraulic pump and cylinder, connected by means of tubes (copper, steel or nylon).

The pump is of the axial piston type, with small pistons inside, which are directly actuated by the steering wheel; certainly not the cheapest, but the only good system for safe and reliable handhydraulic steering. The cylinder is of the double-acting type and mounted on a base, allowing it to swing according to the arc described by the rudder tiller.

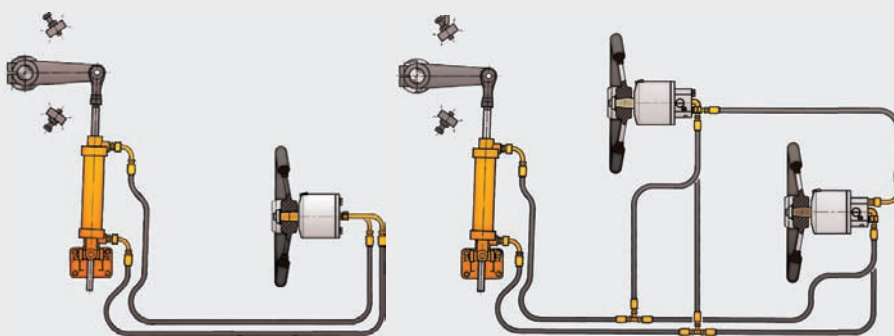


Hydraulic steering pumps type HTP and HTPR are supplied as standard:

- In the colours Off White (RAL9002) or Black (RAL 9005).
- With compression fittings for the pressure lines and a balance pipe.
- With fixing studs, nuts and washers.
- With one vented and one un-vented filler plug.

Pump types HTPR have in addition:

- Integral non-return valves with a continuous air bleeding system.
- Integral pressure relief valves, giving protection against over pressurisation of the system.
- To add embellishment to these steering pumps, high-gloss polished stainless steel flanges, type HTPF, are available.



Single station

Dual station



Nylon hose

Nylon hose Ø 6 x 8 mm, for cylinder MTC30, in rolls of 15 or 100 metres. Requires sleeve insert HS1011S - see price list.

Nylon hose Ø 6 x 10 mm, for cylinders MTC52 - MTC175 in rolls of 15, 30, 50 and 100 metres. Requires sleeve insert HS145S - see price list.

Nylon hose Ø 8 x 12 mm, for cylinders MTC52 - MTC175 in rolls of 15, 30, 50 and 100 metres. Requires hose connectors HS1031MS (straight) or HS1037MS (angled) - see price list.



Copper tubing

Copper tubing available (per roll) in three different dimensions: Ø 6 x Ø 8, length 16 m. Ø 8 x Ø 10 mm, length 20 m, Ø 15 x Ø 18 mm, length 10 m.



Non-return valve

If dual station steering is required, then it is necessary to install this non-return valve block, or to use two steering pumps with built in non-return valves (type HTPR).



K30/140

Oil

VETUS hydraulic oil. We supply suitable oil for all our VETUS hydraulic steerings in 1 ltr. cans.



VHS1

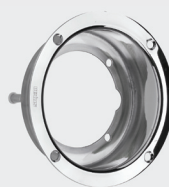
By-pass valve

If, in an emergency, a quick change-over to tiller steering is required installation of a by-pass valve is necessary.

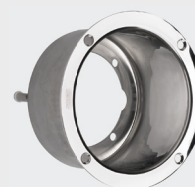


BYPASS

Embellish your steering pump, model HTP - HTP..R



HTPF



HTPF2



This polished stainless steel flange can be used to fit a pump type HTP to replace an older type MTP pump. It can also be used as a simple embellishment. Flange type HTPF will recess the pump by 38 mm. Flange type HTPF2 will recess the pump by 74 mm. Both flanges come complete with a set of 4 stainless steel bolts, washers and nuts.

For situations where the telescopic wheel adjuster may fill with water, a sealing set is available. This consists of a rubber seal and a stainless steel trim ring.



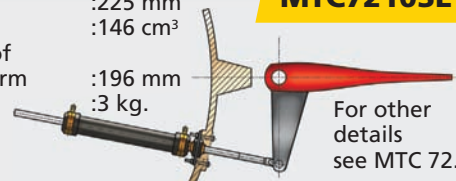
HTPF3

Hydraulic steering system for transom hung rudders



Stroke :225 mm
Volume :146 cm³
Length of rudder arm :196 mm
Weight :3 kg.

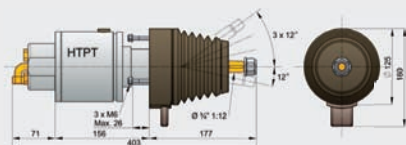
MTC7210SL



For other details see MTC 72.

Tilting steering pumps type HTPT

These steering pumps are provided with a tilt mechanism, allowing the steering wheel to be locked in 5 different positions, over an arc of 48°. This device ensures that the steering wheel can be adjusted to suit both seated and standing steering positions. The steering wheel shaft is made of stainless steel. All other visible parts are made of black rubber or corrosion free synthetic material. These pumps are supplied with built-in non return valves and pressure relief valve and feature the same technical specifications as type HTPR steering pumps. This pump is designed for through bulkhead installation. Weight: 6,6 kg.

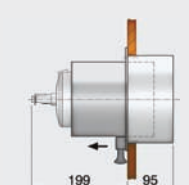
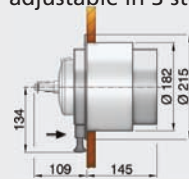


HTPT



VETUS telescopic steering wheel adjuster

For all hydraulic steering pumps, type HTP and HTPR, a telescopic steering wheel adjuster is available. This adjuster unit is fitted onto the steering pump and will greatly enhance the helmsman's steering comfort, both seated and standing. Maximum travel is 90 mm adjustable in 3 steps of 30 mm.



HS1000





Steering pumps without non-return valve

Capacity: 19,7 cm³/rev.
Number of pistons: 5
Weight without
valve: 3.3 kg
Weight with
valve: 4,1 kg



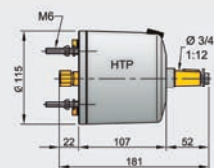
HTP 20

Capacity: 30,0 cm³/rev.
Number of pistons: 5
Weight without
valve: 3.3 kg
Weight with
valve: 4,1 kg



HTP 30

Capacity: 42,0 cm³/rev.
Number of pistons: 7
Weight without
valve: 3.3 kg
Weight with
valve: 4,1 kg

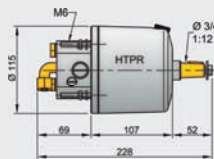
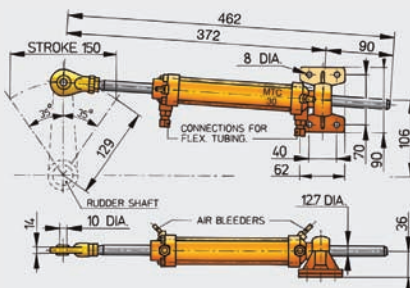
**HTP 42**

HTP

Steering pumps with integral non-return valve and pressure relief valve

**HTP 20 R**

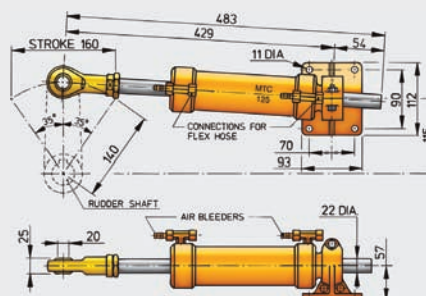
HTP 30 R

**HTP 42 R****HTPR**

MTC30

Stroke: 150 mm
Volume: 67 cm³

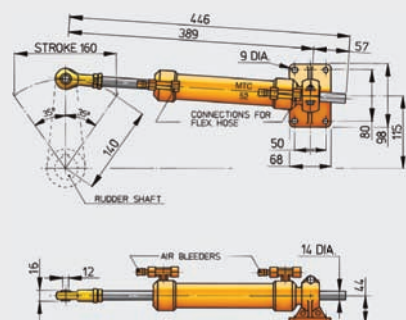
Length of tiller arm: 129 mm
Weight: 1.8 kg



MTC125

Stroke: 160 mm
Volume: 253 cm³

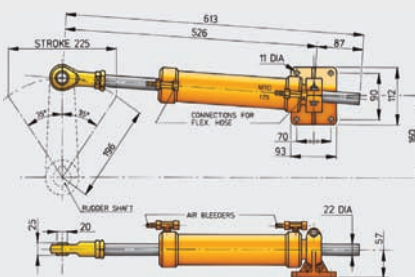
Length of tiller
arm: 140 mm
Weight: 7.1 kg



MTC52

Stroke: 160 mm
Volume: 104 cm³

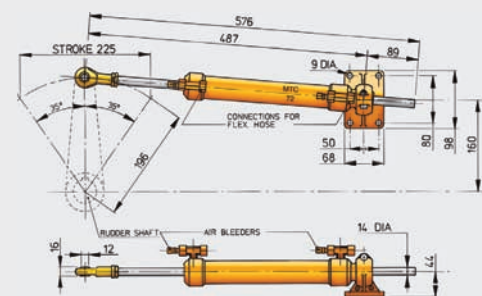
Length of tiller arm: 140 mm
Weight: 3.4 kg



MTC175

Stroke: 225 mm
Volume: 356 cm³

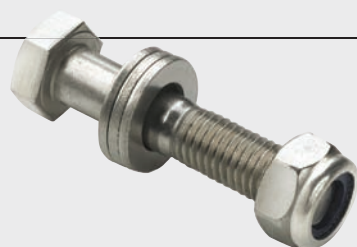
Length of tiller
arm: 196 mm
Weight: 8 kg



MTC72

Stroke: 225 mm Length of tiller arm: 196 mm
Volume: 146 cm³ Weight: 3.8 kg

MTC3008	Cylinder type MTC30	for Ø 8 mm tubing	(incl. 8 mm connectors)
MTC5210	Cylinder type MTC52	for Ø 10 mm tubing	(incl. 10 mm connectors)
MTC7210	Cylinder type MTC72	for Ø 10 mm tubing	(incl. 10 mm connectors)
MTC12510	Cylinder type MTC125	for Ø 10 mm tubing	(incl. 10 mm connectors)
MTC17510	Cylinder type MTC175	for Ø 10 mm tubing	(incl. 10 mm connectors)
HS071	Rod end M10 x 1.5	stainless steel (AISI 316)	for cylinder MTC30
HS101	Rod end M12 x 1.75	stainless steel (AISI 316)	for cylinders MTC 52-72
HS210	Rod end M20 x 1.5	stainless steel (AISI 316)	for cylinders MTC 125-175
HSET10	Connection kit M10	for rudder arm to cylinder	MTC30
HSET12	Connection kit M12	for rudder arm to cylinder	MTC52-72
HSET20	Connection kit M20	for rudder arm to cylinder	MTC125-175
HSSET	Set 2 quick release bleed couplings for hydraulic cylinders		



Connection kit for rudder arm to cylinder

HSET10

HSET12

HSET20



MTC 30

**HTP20
HTP20R**

Wheel turns: 3.4

Max. Torque:
294 Nm (30 kgm) (216 ft.lbs)
Wheel turns port - sbd: 3.4
Tubing: nylon hose
Ø 6 x Ø 8 mm
MT 30



MTC 52

Wheel turns: 5.3

Max. Torque:
510 Nm (52 kgm)
(376 ft.lbs).
Torque at 35° and
56 kg/cm²: 412 Nm
(42 kgm) (304 ft.lbs)
Wheel turns port - sbd 5.3
Tubing: nylon hose
Ø 6 x Ø 10 mm
copper Ø 8 x Ø 10 mm
MT 52



**HTP30
HTP30R**

Wheel turns: 3.5

Max. Torque:
510 Nm (52 kgm)
(376 ft.lbs).
Torque at 35° and
56 kg/cm²: 412 Nm
(42 kgm) (304 ft.lbs)
Wheel turns port - sbd 3.5
Tubing: nylon hose
Ø 6 x Ø 10 mm or
Ø 8 x Ø 12 mm
copper Ø 8 x Ø 10 mm

**HTP42
HTP42R**

MTC 72

Wheel turns: 7.5

Max. Torque:
706 Nm (72 kgm) (521
ft.lbs). Torque at 35°
and 56 kg/cm²: 589 Nm
(60 kgm) (434 ft.lbs)
Wheel turns port - sbd
7.5 Tubing: nylon hose
Ø 6 x Ø 10 mm copper
Ø 8 x Ø 10 mm
MT 72



Wheel turns: 4.9

Max. Torque:
706 Nm (72 kgm)
(521 ft.lbs).
Torque at 35° and
56 kg/cm²: 589 Nm
(60 kgm) (434 ft.lbs)
Wheel turns port - sbd 4.9
Tubing: nylon hose
Ø 6 x Ø 10 mm or
Ø 8 x Ø 12 mm
copper Ø 8 x Ø 10 mm

Wheel turns: 3.5

Max. Torque:
706 Nm (72 kgm)
(521 ft.lbs).
Torque at 35° and
56 kg/cm²: 589 Nm
(60 kgm) (434 ft.lbs)
Wheel turns port - sbd 3.5
Tubing: nylon hose
Ø 6 x Ø 10 mm or
Ø 8 x Ø 12 mm
copper Ø 8 x Ø 10 mm

MTC 125

Wheel turns: 8.5

Max. Torque:
1226 Nm (125 kgm)
(904 ft.lbs).
Torque at 35° and
56 kg/cm²: 981 Nm
(100 kgm) (723 ft.lbs)
Wheel turns port - sbd 8.5
Tubing: nylon hose
Ø 6 x Ø 10 mm or
Ø 8 x Ø 12 mm
copper Ø 8 x Ø 10 mm
MT 125



Wheel turns: 6.1

Max. Torque:
1226 Nm (125 kgm)
(904 ft.lbs).
Torque at 35° and
56 kg/cm²: 981 Nm
(100 kgm) (723 ft.lbs)
Wheel turns port - sbd 6.1
Tubing: nylon hose
Ø 6 x Ø 10 mm or
Ø 8 x Ø 12 mm
copper Ø 8 x Ø 10 mm

MTC 175

Wheel turns: 8.5

Max. Torque:
1717 Nm (175 kgm)
(1266 ft.lbs).
Torque at 35° and
56 kg/cm²: 1373 Nm
(140 kgm) (1013 ft.lbs)
Wheel turns port - sbd 8.5
Tubing: nylon hose
Ø 6 x Ø 10 mm or
Ø 8 x Ø 12 mm
copper Ø 8 x Ø 10 mm
MT 175



The cylinders on this page are available with stainless steel rod ends instead of the standard zinc plated steel.



Dual station control

All VETUS steering pumps have a $\varnothing \frac{3}{4}$ " shaft, tapered 1:12. By virtue of this, almost all steering wheels available on the market, including the VETUS wheels, can be fitted. See pages 212 and 213.



Hydraulic fluid header tank

This transparent tank can be installed with all VETUS steering pumps up to 89 cm³ per revolution. It is also recommended for electro-hydraulic hatch lifters, when operating more than one cylinder. It has a capacity of about 200 cm³ and is supplied with a large vented screw cap, for easy filling and a mounting bracket. The tank comes complete with 1 metre of $\varnothing$ 8 mm hose, two matching hose clips, one G $\frac{1}{4}$ and one G $\frac{3}{8}$ nylon hose pillar.



HTANK

How to order?

A hydraulic steering system consists of a steering cylinder: one or more steering pump(s), a separate valve block or built-in non-return valve(s), if required, metal tubing, or nylon hose and appropriate end fittings.

Dual steering position

Two steering pumps with built-in non-return valves. Alternatively: two steering pumps without non-return valves, in which case a separate dual non-return valve block must be fitted. One cylinder. Hydraulic tubing (plus end fittings, as required) Hydraulic fluid. Option: by-pass valve.

Single steering position

One steering pump with or without built-in non-return valves. One cylinder. Hydraulic tubing (plus end fittings, as required). Hydraulic fluid. Options: separate dual non-return valve by-pass valve.

HTP2008	Pump type HTP20	white	for $\varnothing$ 8 mm tubing	without non return valves
HTP2010	Pump type HTP20	white	for $\varnothing$ 10 mm tubing	without non return valves
HTP3008	Pump type HTP30	white	for $\varnothing$ 8 mm tubing	without non return valves
HTP3010	Pump type HTP30	white	for $\varnothing$ 10 mm tubing	without non return valves
HTP4210	Pump type HTP42	white	for $\varnothing$ 10 mm tubing	without non return valves
HTP2008B	Pump type HTP20	black	for $\varnothing$ 8 mm tubing	without non return valves
HTP2010B	Pump type HTP20	black	for $\varnothing$ 10 mm tubing	without non return valves
HTP3008B	Pump type HTP30	black	for $\varnothing$ 8 mm tubing	without non return valves
HTP3010B	Pump type HTP30	black	for $\varnothing$ 10 mm tubing	without non return valves
HTP4210B	Pump type HTP42	black	for $\varnothing$ 10 mm tubing	without non return valves
HS65	Automatic equalising valve	8 mm connections		
HS66	Automatic equalising valve	10 mm connections		
HTP2008R	Pump type HTP20	white	for $\varnothing$ 8 mm tubing	with integral non return/relief valve
HTP2010R	Pump type HTP20	white	for $\varnothing$ 10 mm tubing	with integral non return/relief valve
HTP3008R	Pump type HTP30	white	for $\varnothing$ 8 mm tubing	with integral non return/relief valve
HTP3010R	Pump type HTP30	white	for $\varnothing$ 10 mm tubing	with integral non return/relief valve
HTP4210R	Pump type HTP42	white	for $\varnothing$ 10 mm tubing	with integral non return/relief valve
HTP2008RB	Pump type HTP20	black	for $\varnothing$ 8 mm tubing	with integral non return/relief valve
HTP2010RB	Pump type HTP20	black	for $\varnothing$ 10 mm tubing	with integral non return/relief valve
HTP3008RB	Pump type HTP30	black	for $\varnothing$ 8 mm tubing	with integral non return/relief valve
HTP3010RB	Pump type HTP30	black	for $\varnothing$ 10 mm tubing	with integral non return/relief valve
HTP4210RB	Pump type HTP42	black	for $\varnothing$ 10 mm tubing	with integral non return/relief valve
HTP2008T	Tilting pump HTP20T	white	for $\varnothing$ 8 mm tubing	with integral non return/relief valve
HTP2010T	Tilting pump HTP20T	white	for $\varnothing$ 10 mm tubing	with integral non return/relief valve
HTP3008T	Tilting pump HTP30T	white	for $\varnothing$ 8 mm tubing	with integral non return/relief valve
HTP3010T	Tilting pump HTP30T	white	for $\varnothing$ 10 mm tubing	with integral non return/relief valve
HTP4210T	Tilting pump HTP42T	white	for $\varnothing$ 10 mm tubing	with integral non return/relief valve
HTANK	Expansion tank kit	for hydraulic steering systems		

VETUS hydraulic steering systems for outboard motors consist of a steering pump with integrated non-return and pressure relief valves, plus a steering cylinder and connection hoses. There is a choice of five hydraulic cylinders, suitable for outboard motors with an output of between 90 kW (125 hp) and 220 kW (300 hp). The steering pumps are also provided with a continuous air bleeding point. The pump and the cylinder are connected with nylon hydraulic hose.

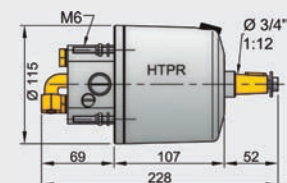
OBC cylinders

- Balanced cylinder.
- Supplied with combined. Ø 10 mm hose connections and bleed nipples.
- Piston rod has scraper seals to prevent damage from salt and dirt.

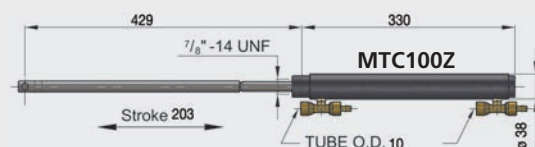
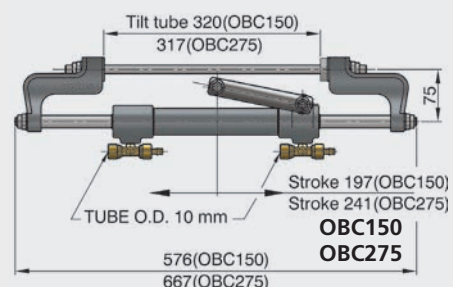
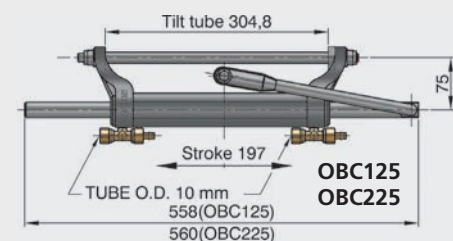


How to order?

The following components are required: One or two cylinders, type OBC or MTC. Please see page 206 for the maximum engine horsepower possibilities. One or two steering pumps, type HTP with built in non-return valves. The required length of hydraulic hose, type HHOSE8, Ø 8 x 12 mm. Straight or right angle hose connectors. Hydraulic fluid. T-pieces for Ø 10 mm pipe, when more than one pump or cylinder is installed.



This tie bar is suitable for two outboard motors of up to 300 hp each. All components are made of stainless steel. The bar has adjustable ends and the connection bolts (3/8" UNF) are supplied as standard. The maximum centre-to-centre distance between the steering arms is 915 mm and the rod can be easily cut to the required length.



OB1000

MTC100Z	Hydraulic cylinder for outboard steering and Z-Drive	(max. 300 hp)
OBC125	Hydraulic cylinder for outboard steering type OB125	(max. 125 pk)
OBC150	Hydraulic cylinder for outboard steering type OB150	(max. 150 pk)
OBC225	Hydraulic cylinder for outboard steering type OB225	(max. 225 pk)
OBC275	Hydraulic cylinder for outboard steering type OB275	(max. 300 pk)
HTP2010R	Pump HTP20, white, for Ø 10 mm tubing, with integral non return/relief valves	
HTP3010R	Pump HTP30, white, for Ø 10 mm tubing, with integral non return/relief valves	
HTP4210R	Pump HTP42, white, for Ø 10 mm tubing, with integral non return/relief valves	
HTP2010RB	Pump HTP20, black, for Ø 10 mm tubing, with integral non return/relief valves	
HTP3010RB	Pump HTP30, black, for Ø 10 mm tubing, with integral non return/relief valves	
HTP4210RB	Pump HTP42, black, for Ø 10 mm tubing, with integral non return/relief valves	
OB1000	Tie bar for outboard engines	


Technical data:
Maximum operating
pressure: 70 bar

Connections: G 1/4-Ø 10 mm

Nylon hose: Ø 8 x Ø 12 mm

Pump fitting: Front Mount

HTP 2010R

Capacity: 19,9 cm³/rev.

Number of pistons: 5

Weight: 4,1 kg


HTP 3010R

Capacity: 30,0 cm³/ rev.

Number of pistons: 5

Weight: 4,1 kg


HTP 4210R

Capacity: 42,0 cm³/ rev.

Number of pistons: 7

Weight: 4,1 kg


OBC125

Maximum rudder

torque: 643 Nm

Volume: 108,3 cm³

Maximum output

90 kW (125 hp)

Maximum speed: 85 km/h (45 knots)


Wheels turns
port -
starboard: 5,5

Wheels turns
port -
starboard: 3,6

OBC125 the piston rod moves inside the cylinder

OBC225

Maximum rudder torque:

1026 Nm

Volume: 172,6 cm³

Maximum output:

165 kW (225 hp)

Maximum speed: 85 km/h (45 knots)


Wheels turns
port -
starboard: 8,8

Wheels turns
port -
starboard: 5,8

Wheels turns
port -
starboard: 4,1

OBC225 the piston rod moves inside the cylinder

OBC150

Maximum rudder torque:

643 Nm

Volume: 108,3 cm³

Maximum output:

110 kW (150 hp)

Maximum speed: 85 km/h (45 knots)


Wheels turns
port -
starboard: 5,5

Wheels turns
port -
starboard: 3,6

OBC150 the cylinder moves over the piston rod

OBC275

Maximum rudder torque:

788 Nm

Volume: 132,6 cm³

Maximum output:

220 kW (300 hp)

Maximum speed: 110 km/h (60 knots)


Wheels turns
port -
starboard: 6,8

Wheels turns
port -
starboard: 4,4

Wheels turns
port -
starboard: 3,2

OBC275 the cylinder moves over the piston rod

MTC100Z

Maximum rudder torque: 989 Nm

Volume: 132 cm³ /163,3 cm³

Maximum output:

220 kW (300 hp)

Maximum speed: 95 km/h (50 knots)

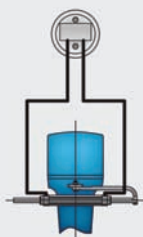
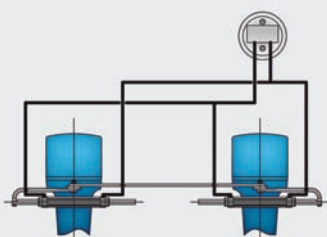
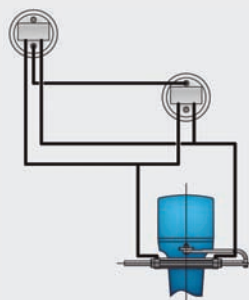
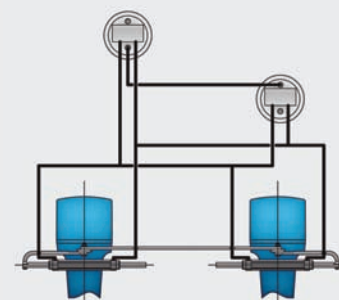

Wheels turns
port -
starboard: 8,3

Wheels turns
port -
starboard: 5,4

Wheels turns
port -
starboard: 3,9

MTC100Z for Z-drives and outboard engines

A single cylinder can operate a **twin** outboard motor installation. If both propellers rotate in the same direction, the total engine output may not exceed the maximum capacity of the selected cylinder. If the motors have handed (counter-rotating) propellers, the total output may be twice the rated capacity of the chosen cylinder.


**Single steering
position
for 1 engine**

**Single steering
position
for 2 engines**

**Dual steering
position
for 1 engine**

**Dual steering
position
for 2 engines**

For commercial craft MT 230 - MT 345 - MT 455 - MT 600 - MT 900 and MT 1200

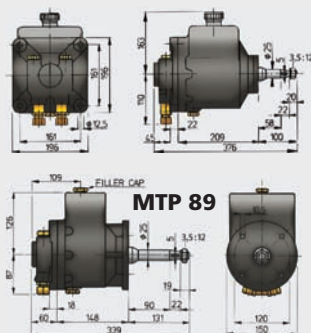


Technical data cylinders						
	MT230	MT345	MT455	MT600	MT900	MT1200
Max torque at 35° rudder angle	2207 Nm (225 kgm)	3335 Nm (340 kgm)	4415 Nm (450 kgm)	5886 Nm (600 kgm)	8829 Nm (900 kgm)	11772 Nm (1200 kgm)
Cylinder stroke	200 mm	300 mm	400 mm	200 mm	300 mm	400 mm
Max. pressure	6178 kPa (63 kg/cm²) (896 lbs/sq.inch)					
Cylinder volume	500 cm³	750 cm³	1000 cm³	1319 cm³	1978 cm³	2638 cm³
Total rudder angle	70°					
Length of tiller arm	175 mm	260 mm	350 mm	175 mm	260 mm	350 mm
Weight of cylinder	13,8 kg	15,9 kg	18 kg	35,1 kg	38,8 kg	42,5 kg
Dimensions of tubes	Ø 18 x 15 mm					
Connections	All connections are provided with G 1/2 female pipe thread.					

Technical data pump units			
	MTP 89	MTP 151	MTP 191
Capacity of pump unit	89 cm³/rev.	151 cm³/rev.	191 cm³/rev.
Number of pistons	7	7	7
Maximum pressure	63 kg/cm² (6178 kPa) (896 lbs/sq. inch)		
Dimensions of tubes	Ø 18 x 15 mm		
Connections	G 1/2 female pipe thread		
Weight of pump unit	9,1 kg	23 kg	23 kg
Min. Steering wheel diameter	65 cm	110 cm	135 cm

- Available for single and dual station control.
- Cylinder and pump can be supplied separately.
- Please see selection table for determination of steering wheel revolutions.
- Axial plunger pumps with 7 plungers
- Stainless steel steering wheel shaft, extra strong for large steering wheels.
- These steering systems are supplied complete with fittings for hydraulic tubes.
- The cylinders are provided with bleed nipples which accept a quick-release coupling for rapid bleeding.
- The piston rod is made of stainless steel.
- The cylinder is provided with a base plate with universal joint and a swivelling rod end, so that alignment mistakes can be absorbed.

These pump units and cylinders are fully interchangeable, thus enabling the builder and the owner to choose the best possible combination of price and number of steering wheel revolutions. The smaller the pump unit, the lower the price, but also: the higher the number of revolutions. The rudder torque always determines which cylinder is to be selected.



HS81



HS42

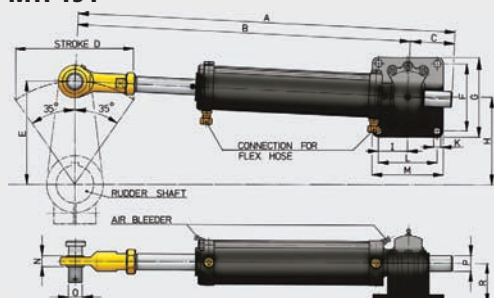


HS74

Pump unit	Cylinder					
	MT230	MT345	MT455	MT600	MT900	MT1200
MTP89	5.6	8.4	11.2	14.8	22.2	29.6
MTP151	3.3	5.0	6.6	8.8	13.1	17.5
MTP191	2.6	3.9	5.2	6.9	10.4	13.8

Both for single and for dual steering, a non-return valve is available (complete with all fittings): a **single** non-return valve, complete with by-pass (HS74), or a **dual** non-return valve (HS81). Also a pressure relief valve, complete with all fittings, can be supplied (HS42).

MTP151
MTP191



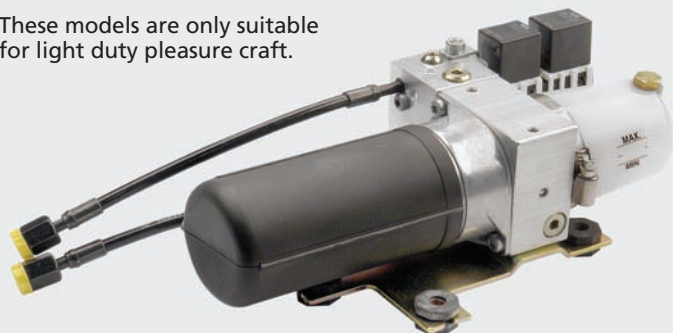
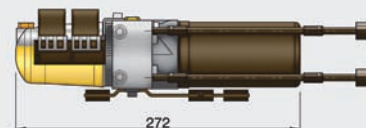
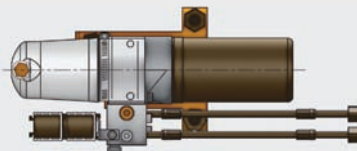
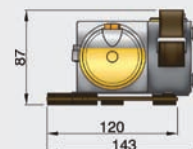
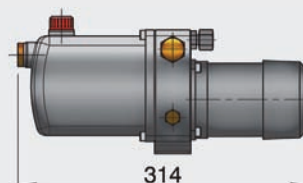
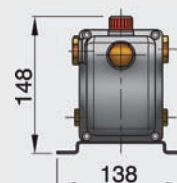
Cylinder	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	R
MT 230	733	607	127	200	175	112	140	143	36	11	72	100	31	25	28	55
MT 345	933	757	177	300	260	112	140	215	36	11	72	100	31	25	28	55
MT 455	1133	907	227	400	350	112	140	286	36	11	72	100	31	25	28	55
MT 600	735	695	40	200	175	160	198	143	71,5	18,5	143	182	25	35	40	102
MT 900	935	845	90	300	260	160	198	215	71,5	18,5	143	182	25	35	40	102
MT 1200	1135	995	140	400	350	160	198	286	71,5	18,5	143	182	25	35	40	102



A VETUS electro-hydraulic pump (EHP) consists of a reversible electric motor, an oil pump, built-in pressure relief valves and a small reservoir for the hydraulic oil. Models EHPA, EHPB and EHPC are provided with an axial plunger pump, with integrated non-return valves and a by-pass valve.

Models EHPD and EHPE feature a gear type pump with integrated non-return valves and a by-pass valve. The direction of rotation of the pump is electrically controlled.

These models are only suitable for light duty pleasure craft.


EHPA12R2
EHPA24R2
EHPB12R2
EHPB24R2
EHPC12R2
EHPC24R2

EHPD12R
EHPD24R
EHPE12R
EHPE24R


A VETUS EHP is a truly versatile piece of equipment. It can be used with "non Follow-Up" steering systems, with joy stick control and/or electric remote control, with "Follow-Up" steering systems, hatch lifters, folding swimming platforms etc.

Models EHPAR, EHPBR and EHPCR are supplied without hose fittings. Sets for Ø 8 mm tubing (MTC30) and Ø 10 mm tubing (MTC52 - MTC175 and OBC125 - OBC275) are available separately. Models EHPD and EHPE have Ø 10 mm pipe fittings as standard supply.

Selection of the hard over to hard over time for the Cylinder, in combination with an EHP

When used in combination with an automatic pilot, consult the instruction manual to select the desired hard over to hard over time. In most cases this will be between 7 and 23 seconds.

In the case of a remote steering system, either with a joystick or as a "Follow-Up" assembly, we recommend a cylinder hard over to hard over time of between 7 and 11 seconds.

Example: Cylinder MTC 72 has a capacity of 146 cm³ and a required hard over to hard over time of 20 seconds:

- Using model EHPAR the hard over to hard over time is 1.46 x 17.1 sec. = 25 sec.

- Using model EHPBR the hard over to hard over time is 1.46 x 8.5 sec. = 12.4 sec.

Therefore, model EHPBR should be selected.

Pressure relief valve settings:

40 bar for models EHPAR2 - EHPCR2

70 bar for models EHPD and EHPE

Reservoir capacity:

0.2 litres for models EHPAR2 - EHPCR2

0.95 litres for models EHPD and EHPE

Relays:

Integral and pre-wired for models EHPAR2 - EHPCR2.

A double pole relay AFST1512D (12 Volt) or AFST324D (24 Volt) should be ordered separately for models EHPD and EHPE.

There is a choice of 5 EHP models:

EHPAR2	with a capacity of 350 cm ³ /min.	17,1 sec/100 cm ³
EHPBR2	with a capacity of 700 cm ³ /min.	8,5 sec/100 cm ³
EHPCR2	with a capacity of 950 cm ³ /min.	6,3 sec/100 cm ³
EHPD	with a capacity of 1425 cm ³ /min.	4,3 sec/100 cm ³
EHPE	with a capacity of 1900 cm ³ /min.	3,1 sec/100 cm ³

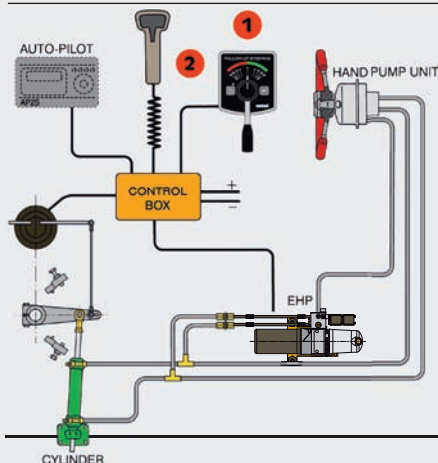
Current consumption:

EHPAR2	12 Volt	6,5 - 12 A
EHPBR2	12 Volt	7,5 - 13,5 A
EHPCR2	12 Volt	10 - 15 A
EHPD	12 Volt	16 A
EHPE	12 Volt	22 A

EHPAR2	24 Volt	5 - 6,5 A
EHPBR2	24 Volt	5,5 - 7 A
EHPCR2	24 Volt	5,7 - 10 A
EHPD	24 Volt	9 A
EHPE	24 Volt	11 A



The VETUS "Follow-Up" steering system has been derived from a type of steering that is in common use with professional inland waterways vessels. Because many pleasure craft are already equipped with a manual hydraulic steering system, this VETUS "Follow-Up" steering system can be easily added to enable remote control from any convenient position on board. By simply turning the steering handle, the rudder will exactly follow the angle of the handle. Returning the handle to the mid position will also return the rudder to midships. Manual wheel steering can be resumed at any time by simply switching the system off. In principle, the VETUS "Follow-Up" steering system is suitable for boats of 6 - 20 metres LOA.

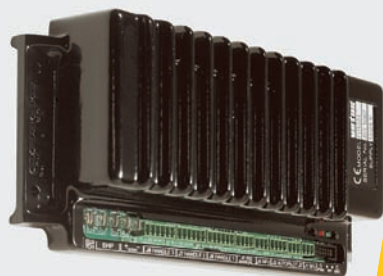


The fixed "follow up" control handle shown here, can operate any type of hydraulic steering system fitted with an electro-hydraulic pump, by means of the control box (see drawing). It may be mounted on the dashboard, or fixed to the helmsman's seat, for example. This type of remote control may be used as the main steering device (instead of a steering wheel), or as a secondary or even third steering option.
Panel dimensions: 110 x 120 mm.
Dimensions incl. handle: 110 x 190 mm.
Height: 45 mm.

Diagram of the VETUS "Follow-Up" steering system complete with automatic pilot.



FUHANDLE



FU1224

This hand held "follow-up" control has the same function as the fixed control handle shown above. The control is supplied with a 3 m spiralled cable with connection plug and socket. The mobile hand held control can only be used in addition to the fixed control. Dimensions control box: 258 x 114 x 52 mm.



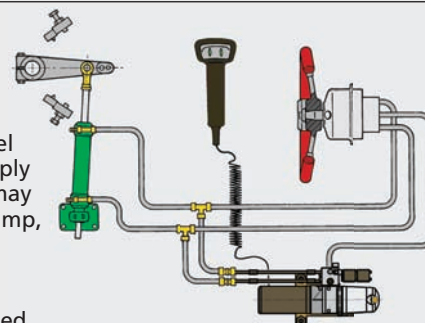
FUREM

Electric remote control steering



RECON

This remote control is equipped with a rocker switch and a 3.5 metre spiralled wire with watertight plug and deck contact. Two limit switches for the hydraulic cylinder should be ordered separately. Conventional wheel operated hydraulic steering systems can now be equipped simply and cheaply with an electrically operated remote control unit. With this unit the boat may be steered from virtually any point on board. A VETUS electro hydraulic pump, model EHPAR2, EHPBR2, EHPCR2, EHPD or EHPE is fitted in the hydraulic system (see diagram) and connected to the DC power supply. A hand held remote control, supplied with a spiralled wire, is then used to operate the pump in the required direction. The following components are to be ordered separately (see price list): Electro hydraulic pump, model EHPAR2, EHPBR2, EHPCR2, EHPD or EHPE. Hydraulic fitting set for pump. Hydraulic tubing of the required length. One or more hand held controls with spiralled wire. Two limit switches for the hydraulic cylinder.



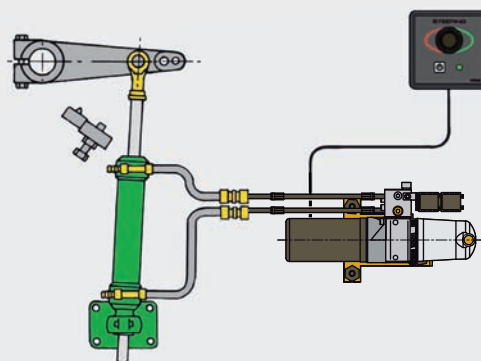
Joystick steering



EHPJSTA

The main steering position of many new inland waterways vessels nowadays, features a joystick steering device. This joystick and its associated electro-hydraulic pump replaces the normal

wheel operated steering pump. The hydraulic steering cylinder must as always be specified according to the rudder torque. For VETUS hydraulic cylinders. For a VETUS joystick steering system the following components are to be ordered separately (see price list): Electro-hydraulic pump, model EHPAR2, EHPBR2, EHPCR2, EHPD or EHPE. Hydraulic fitting set for pump. A hydraulic steering cylinder; for example one of the VETUS models MTC30 - MTC175. Hydraulic tubing of the required length. A panel with joystick control. Two limit switches.





RUDS4040

RUDS5040

These VETUS rudders have a blade made of stainless steel. They are manufactured in two different models. The blade sides are polished and need no additional finishing. Each rudder comes complete with a rudder arm (see picture), to which a VETUS hydraulic steering cylinder can be connected. **A rudder gland (type henko only) may be supplied as an extra.** The stainless steel rudder stock is provided with a hole, to facilitate the fitting of an emergency tiller.

RUDS4040	Stainless steel rudder L = 400 mm, incl. rudder arm
RUDS5040	Stainless steel rudder L = 500 mm, incl. rudder arm

The indicated speed figures are the maximum permissible speeds.

	RUDS4040	RUDS5040
With cylinder MTC30	30 knots	27 knots
With cylinder MTC52	42 knots	34 knots

Aluminium rudder arms

These rudder arms are available for rudder stocks of Ø 30, 40, 50 or 60 mm. Connection to the rudder stock is made by two clamp bolts. The Ø 30 and 40 mm rudder arms also have two locking grub screws onto the shaft and feature 4 attachment points for the steering cylinder. This makes them suitable for VETUS hydraulic cylinders MTC30, MTC52 and MTC72. The Ø 50 and 60 mm rudder arms have a stainless steel key (standard supply) and feature 3 attachment points, which match VETUS hydraulic cylinders MTC125, MTC175 and MT230. For connecting VETUS cylinder types MTC30 - MTC175, matching bolt sets are available as an option.

HELM30

HELM50

HELM40

HELM60

HELM30	Aluminium rudder arm for Ø 30 mm rudder shaft
HELM40	Aluminium rudder arm for Ø 40 mm rudder shaft
HELM50	Aluminium rudder arm for Ø 50 mm rudder shaft
HELM60	Aluminium rudder arm for Ø 60 mm rudder shaft

HENKO30L

HENKO40L

HENKO30

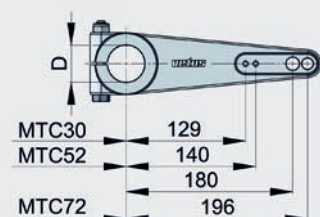
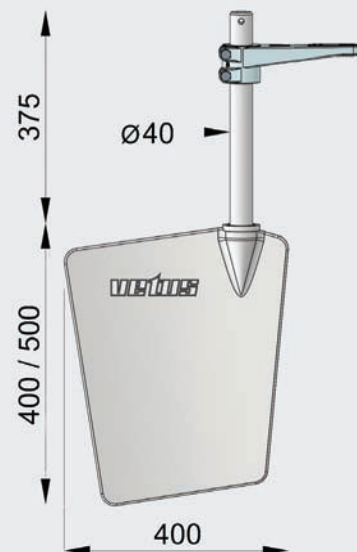
HENKO40

HENKO30	Bronze rudder gland Ø 30 mm	L = 175
HENKO40	Bronze rudder gland Ø 40 mm	L = 205
HENKO30L	Bronze rudder gland Ø 30 mm - long version	L = 275
HENKO40L	Bronze rudder gland Ø 40 mm - long version	L = 305

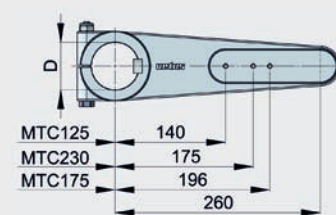
Rudder gland

Bronze rudder gland for Ø 30 or Ø 40 mm rudder stocks. Available with 2 different lengths.

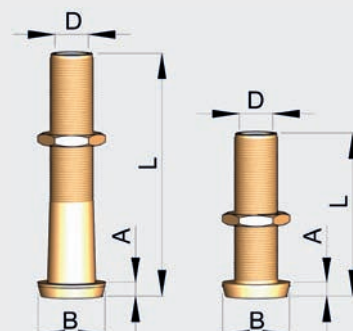
D	L	A	B
Ø 30	175	15	Ø 65
Ø 30L	275	15	Ø 65
Ø 40	205	17	Ø 80
Ø 40L	305	17	Ø 80



D	Ø 30	Ø 40
H	56	66



D	Ø 50	Ø 60
H	66	76



For lifting engine room hatches, masts, etc.

This electro-hydraulic lifting system makes opening a heavy hatch or lowering a mast or radar arch an easy affair. If necessary, two cylinders may be connected to one pump, to generate even more lifting power. The system is "stand alone" and is supplied complete with all required connection parts, as well as a waterproof control panel. It is also possible to fit a remote control as an option. VETUS hatch lifters are suitable for easy handling of the folding bathing platforms which are fitted to many modern sailing boats.

The standard system consists of:

A seawater-resistant aluminum cylinder with a stainless steel rod, an electro-hydraulic pump, a waterproof control panel, 12 metres of hydraulic piping, and all required hose connectors.

In order to calculate the required lifting power (F), the following data must be taken into consideration:

W = Width of the object to be lifted (e.g. 1300 mm).
 G = Weight of the object to be lifted (e.g. 90 kg).
 S = Stroke of the piston in mm.
 F = Required lifting power in kgf.

The formula then works as follows:

$$F = \frac{1}{2} \times \frac{W}{S} \times G = F$$

Example:

$$F = \frac{1}{2} \times \frac{1300}{500} \times 90 = 117$$

In this case, system HL12500A featuring one cylinder with a lifting power of 125 kgf will be sufficient. If two cylinders must be installed an additional connection kit will be required; please see price list. Hydraulic fluid must be always ordered separately.

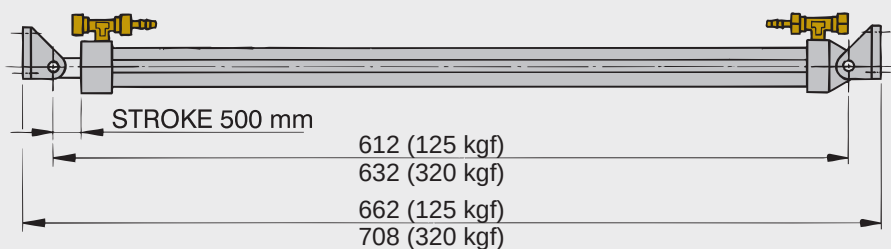
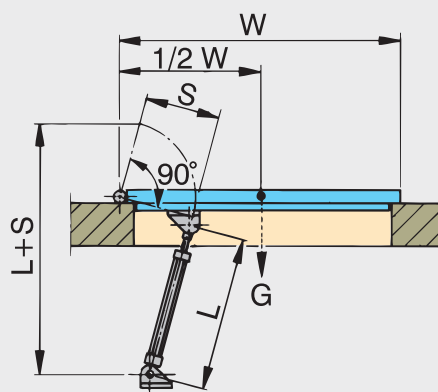


HL500A

HL500B



Code	Description	Voltage	Stroke	Lifting power
HL12500A	Complete system	12 Volt	500 mm	125 kgf
HL24500A	Complete system	24 Volt	500 mm	125 kgf
HL12500B	Complete system	12 Volt	500 mm	320 kgf
HL24500B	Complete system	24 Volt	500 mm	320 kgf
HL500	Additional cylinder		500 mm	125 kgf
HL500B	Additional cylinder		500 mm	320 kgf





PRO40P

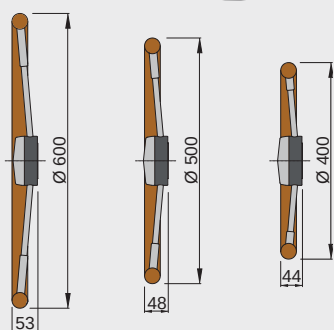
PRO50P

PRO60P

PRO40T

PRO50T

PRO60T



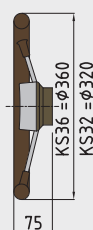
These PRO steering wheels are the perfect match for both traditional and modern boats. Type "T" features a satin-gloss varnished **teak rim**. Type "P" is resistant against all possible weather conditions and the **semi-hard** polyurethane rim (RAL 7016) will keep your hands warm. The substantial spokes and the hub cover are made from high-gloss polished stainless steel. The hub itself is made of synthetic material and bored for a $\varnothing \frac{3}{4}$ " shaft with 1:12 taper, so that it will fit most types of steering systems. The outer rim measures 32 mm in diameter, ensuring a comfortable grip in all conditions. These steering wheels are available with overall diameters of 400, 500 or 600 mm. These steering wheels fulfil all CE and ABYC directives. An alternative hub is available as an option, to suit older VETUS steering pumps. This has a shaft hole of $\varnothing 1"$ and a taper of $3\frac{1}{2}:12$. Product code: SETPS1.

With teak rim

VETUS steering wheels type KS feature stainless steel rims with a layer of **semi-hard PU-foam** which has an integral skin. Consequently **no more cold hands** with these soft-feel beautiful wheels. Spokes and cap are stainless steel. These steering wheels are absolutely resistant against all weather conditions. Type KS 38, KS 45 and KS 55 are supplied in the colours grey or black.

KS32G

KS32Z



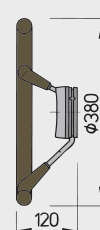
KS36G

KS36Z



KS38G

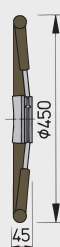
KS38Z



Steering wheel type KS 32 and KS 36, suitable for steering outboard motors with a maximum output of up to 40 kW (55 hp).

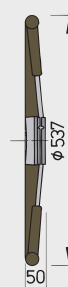
KS45G

KS45Z



KS55G

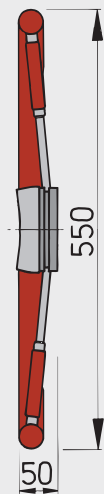
KS55Z



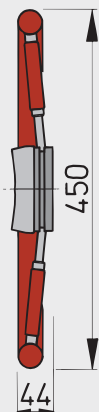
The boss of all VETUS steering wheels has a bore for $\varnothing \frac{3}{4}$ " shaft, tapered 1:12 and will therefore fit to most steering systems.

The spokes and the hub cap are made of stainless steel; the hub is made of aluminium.

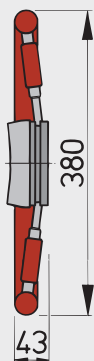
With Mahogany rim



KW 55
(Ø 550 mm)



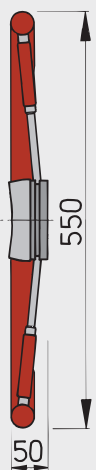
KW 45
(Ø 450 mm)



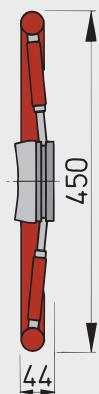
KW 38
(Ø 380 mm)



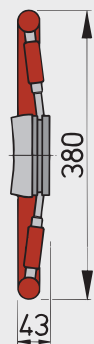
The boss of **all** VETUS steering wheels has a bore for Ø 3/4" shaft, tapered 1:12 and will therefore fit to most steering systems.



KWL 55
(Ø 550 mm)



KWL 45
(Ø 450 mm)



KWL 38
(Ø 380 mm)



For steering wheel models KS38 to KS55 and for all wheels KW and KWL, a hub with Ø 1" bore, tapered 3 1/2:12 is available as an option. (SETKS1)



BOAT WINDOWS

WHY VETUS / MAREX BOAT WINDOWS?

- **A wide range of boat windows**, windscreens, cabin entries, doors and portholes in all shapes, sizes and styles.
- In addition to the extensive range of standard VETUS hatches and portholes, Marex (a VETUS Company), can deliver **custom made** windows, windscreens and hatches.
- **Polished and anodized aluminium profiles** as standard.
- **Uniform appearance** of all portholes, windows and hatches.
- **High quality fittings and durable rubber seals.**
- All hatches and portholes available with **mosquito screen**.
- All products comply with **CE classifications A1, AII or A III.**
- High quality marine windscreen wipers featuring a powerful electric motor and separate worm wheel transmission.
- **Together, VETUS and Marex provide a total solution for all your glazing requirements.**



VETUS, creators of...

Since its inception several decades ago, Marex has become a household name in the Netherlands in the field of custom made aluminium windows. By integrating with VETUS in 2008, a great deal of expertise came together and jointly, VETUS Marex is able to offer a window programme of even higher quality and diversity.

For example, VETUS did not have a window range with an insulated profile and double glazing, whilst Marex was very strong in this area. From this knowledge, the development department at VETUS were able to improve existing and develop new product ranges.

Marex has also benefited from the years of experience that VETUS has with production in India. Custom made products are very labour intensive, but with experienced staff in our own office, VETUS Marex production could take advantage of the high standards and realistic labour costs in that country.

Digital measuring

A very important aspect in producing accurate windows is eliminating measuring errors. A window that does not fit cannot be returned and easily adapted. To reduce measuring errors as far as possible, VETUS developed a system that can digitally measure the window aperture to a high degree of accuracy (available in the Netherlands only). The data, once the measurements have been evaluated, is automatically forwarded to the production department. Partly because of this we can offer excellent delivery times.

The best of both worlds

Thanks to the expertise of Marex and the VETUS development department, an outstanding range of aluminium windows, windscreens and custom made hatches is now available. There is also an extensive line up of standard portholes and hatches available to match these. Because each part of these product ranges is designed to complement the others, you can create a totally harmonious appearance to your glazing on board.

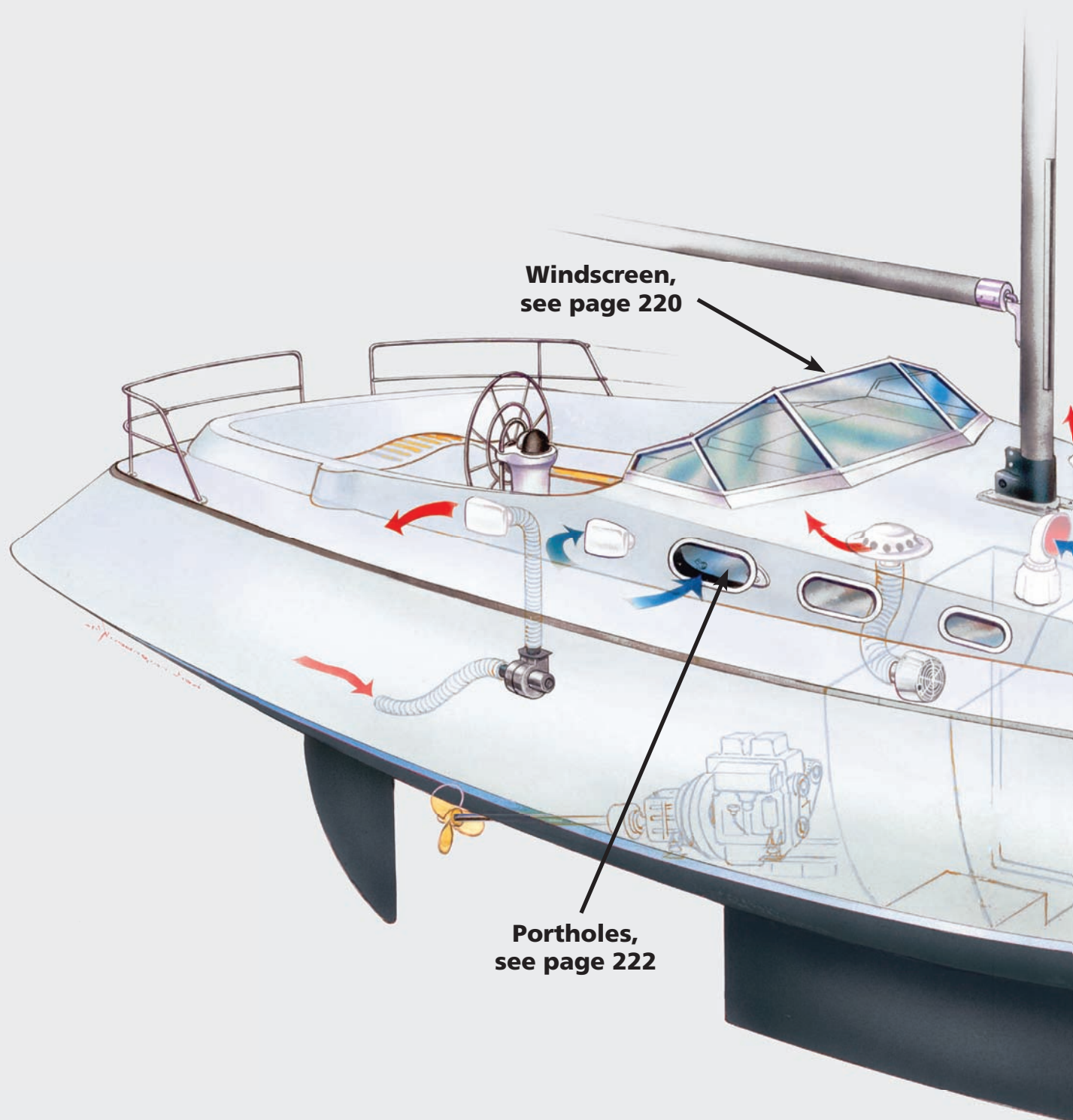
CE classifications

VETUS windows, portholes and hatches are supplied according to various CE classifications:

- AI: Approved for ocean use and fitment in any part of the hull or deck
- All: Approved for ocean use and fitment in any horizontal deck surface
- AIII: Approved for ocean use and fitment in the coachroof side

For advice on the correct product to comply with CE regulations, you can always contact your VETUS dealer.





**Windscreen,
see page 220**

**Portholes,
see page 222**



Escape, deck and ventilation hatches,
see page 225

Escape, deck and ventilation hatches,
see page 224



Marex custom made boat windows

The Marex range comprises three modern and stylish window profiles. The surface finish of the frames is extremely high quality, ensuring that they will always look like new. These windows frames withstand a thousand hour salt spray test without any observable damage.

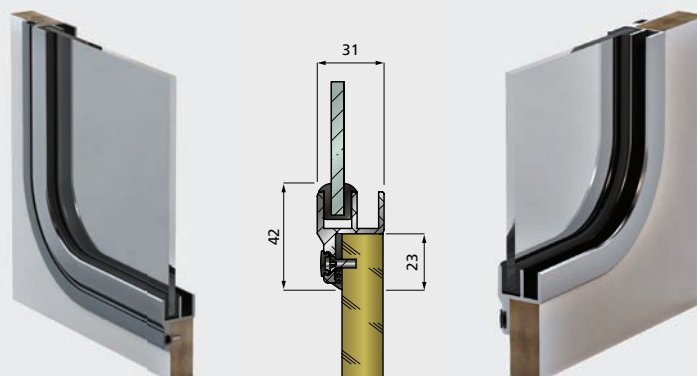
MAREX boat windows have the following characteristics:

- Each window is custom made to the dimensions or template supplied by the customer.
- Window types available: fixed, sliding, half-drop, hinged or combi windows (part fixed and part sliding).
- Glass type available: toughened single or double glazed. Glass can be clear or tinted.
- Corner types available: rounded with a choice of radii or with mitred corners.
- Corner radii available: 65, 75, 90 or 105 mm.
- Windows with rounded corners have the external frame joint invisibly brazed for strength and water tightness.
- Mitred corners are invisibly brazed wherever possible, otherwise glued and screwed together.
- All aluminium frames are polished before applying the surface finish.
- Frame finishes available: anodized clear, black or gold or powder coated in black (RAL9005) or white (RAL9010). For any other colour, please contact your dealer.
- Each window is supplied complete with sealing and fastenings.
- As an option, sliding and half-drop type windows may be provided with a mosquito screen.
- All windows are manufactured in accordance with CE-directives and a certificate of conformity is supplied with each individual window.



Marex "screw-on" range

- The Screw-On range of windows is suitable for all panel thicknesses.
- This window type is particularly suitable for wooden superstructures.
- Choice of corner radii: 65, 75, 90 or 105 mm, or mitred corners.
- A black or grey decorative strip for covering the screws is supplied.
- A polished and anodized (or powder coated) internal counter flange is available as an option.
- Available as fixed, sliding or half drop versions with single glass.



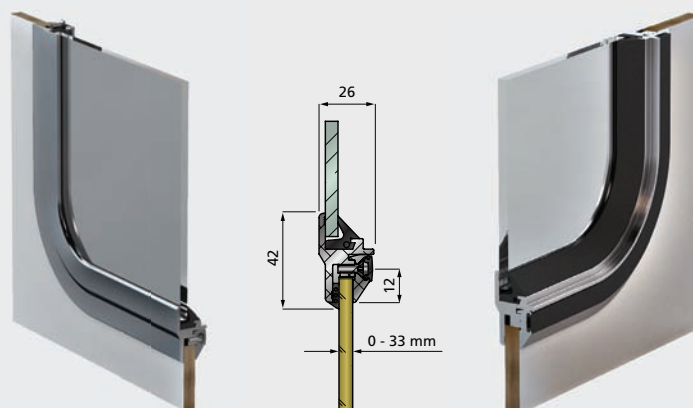
outside

screw-on range

inside

Marex "comfort" range

- The Comfort range uses a clamp profile, fastened from inside by screws through the aluminium counter flange, which is standard supply. Therefore, no screws are visible from the outside of the boat.
- Inside the boat, the screws are covered by a black or grey decorative strip, which is also standard supply.
- This profile can be used for panel thicknesses of 2.5 to 30 mm.
- Choice of corner radii: 65, 75, 90 or 105 mm, or mitred corners.
- Available as fixed, sliding, hinged, half-drop or combi versions with single glass.
- Available as fixed, hinged or combi versions with double glass.



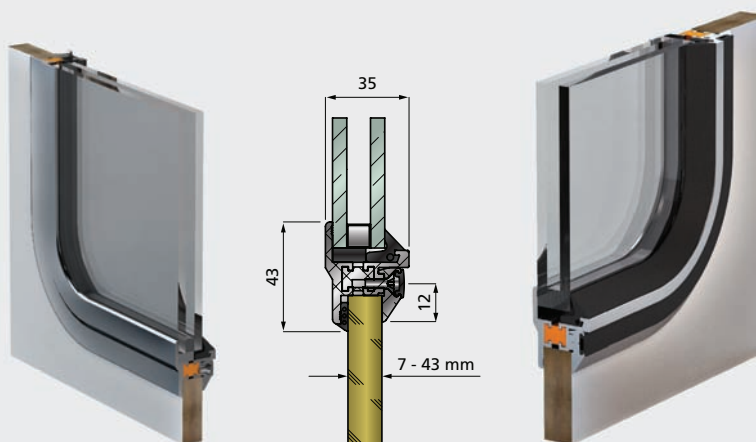
outside

comfort range

inside

Marex "exclusive" range

- The Exclusive range combines ingenious design with elegant style.
- The inner and outer halves of the aluminium frame are joined using a synthetic insulation bridge. This prevents conductivity of cold from outside and therefore the formation of condensation on the glass inside.
- The Exclusive range uses a clamp profile, fastened from inside by screws through the aluminium counter flange, which is standard supply. Therefore, no screws are visible from the outside of the boat.
- Inside the boat, the screws are covered by a black or grey decorative strip, which is also standard supply.
- The profile is exceptionally thick and can be tapped to accept fixing bolts if required.
- This profile can be used for panel thicknesses of 10 to 40 mm.
- Choice of corner radii: 75, 90, or 105 mm. Mitred corners are not available.
- Available as fixed or hinged versions with double glass only.



outside

exclusive range

inside

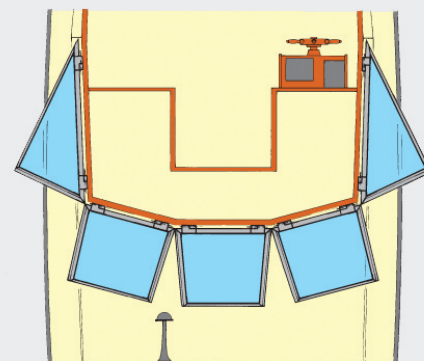


Fastening system for hinged windscreen.

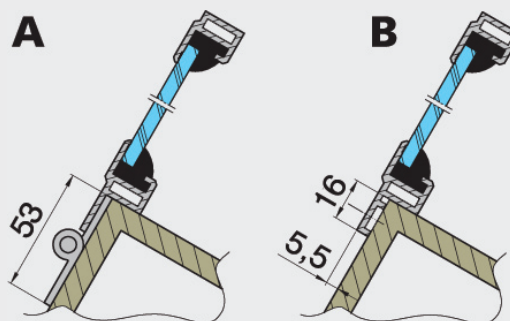


Marex windscreens are **custom made**. They are constructed from polished and anodized or **powder-coated** aluminium extrusions and toughened glass which can be supplied to your choice in the colours clear, green, grey, bronze or blue.

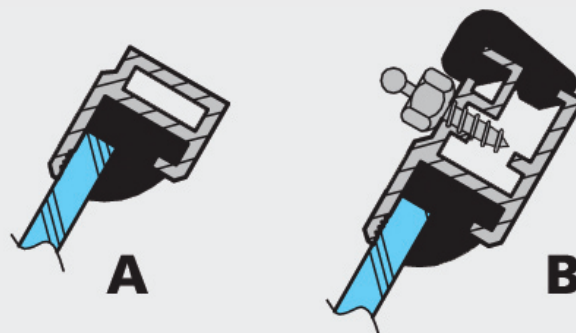
For boats which have to pass under low bridges, we can make the windscreens hinged so that each section can be lowered to the deck. The upper edges of the side screens can also be made with a large radius curve.



There are two installation possibilities: either hinged (A) or fixed (B), see drawing. This is the ideal mounting surface for a VETUS windscreen.

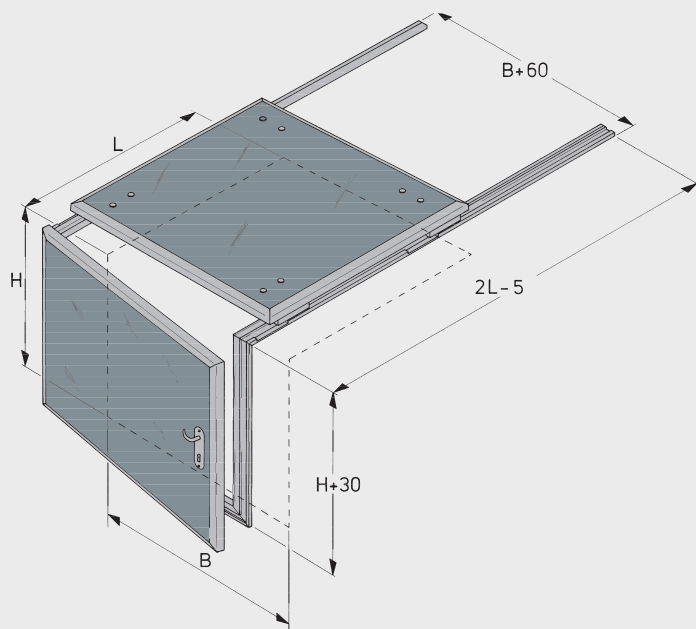


The standard profile along the top edge of the windscreen is as shown in drawing A. If a spray hood is to be fitted, we can install the profile shown in drawing B, to which standard canvas fixings can be attached.



Cabin entries (custom made)

Both the hinged door and the top cover (hinged or sliding) are made to your dimensions. CE classified: A IV.

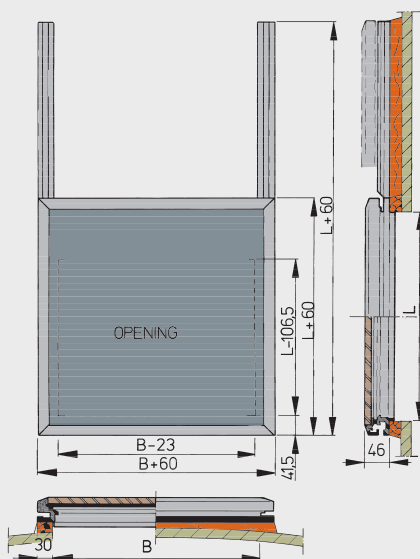


Cabin entry with sliding hatch and hinged door

Cabin entries may also be supplied without a door, also in this case sliding or hinged.

Sliding hatches (custom made)

These sliding hatches are **custom** made to your dimensions.



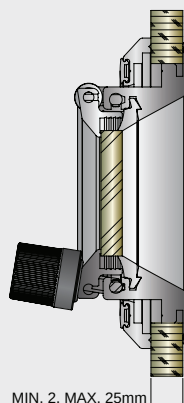
The profiles of the sliding hatches and cabin entries are all made of hand polished and anodized aluminium. The acrylic panes are 10 mm thick and in the colour "smoke".



This new line of portholes comes in two versions: a heavy duty version CE classified: AII and suitable for use in the hull side or a standard version CE classified: AIII and suitable for use in the coachroof side. Both versions have a 10 mm opening pane, colour "smoke". The pane of the AIII version is unframed and the pane of the AII version is set in an aluminium frame. These new portholes are fitted with friction type hinges, permitting them to stay open in any position. Two large diameter clamp knobs ensure that the portholes can be closed completely watertight.



CE classified: AII



The aluminium frame is satin anodized and the clamp type installation ensures that no fixings are visible internally or externally. Each version can be supplied with an aluminium framed mosquito screen as an option.

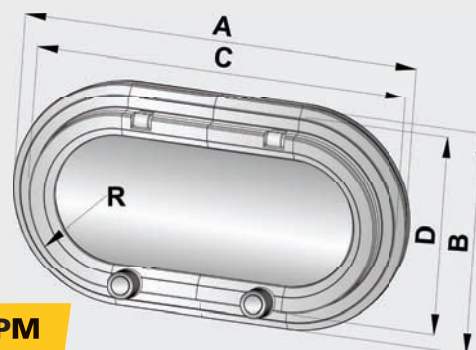


PM

CE classified: AIII



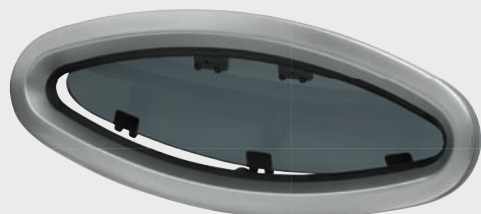
External dimensions in mm	PM111 PM113	PM121 PM123	PM131 PM133	PM141 PM143	PM151 PM153	PM161 PM163
A x B	244 x 146	294 x 172	344 x 198	362 x 146	390 x 220	399 x 199
Cut-out dimensions in mm						
C x D	220 x 122	270 x 148	320 x 174	338 x 122	366 x 196	375 x 175
Cut-out radius in mm						
R	61	74	87	61	98	87



PM

PX

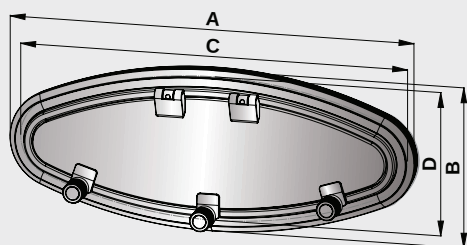
NEW



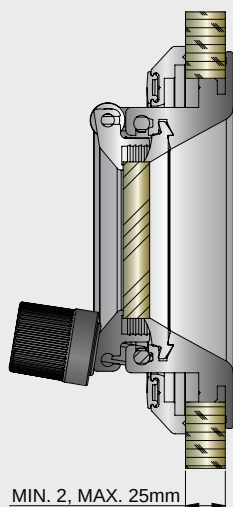
PXF



PX



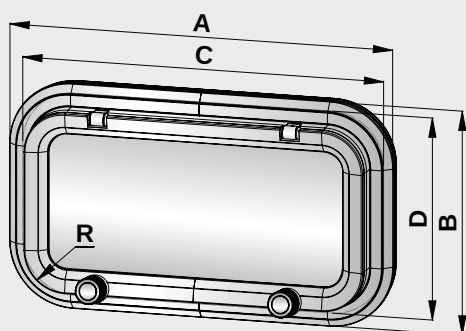
External dimensions in mm	PX45	PX46	PX47	PXF
A x B	441 x 192	492 x 205	544 x 244	521 x 215
Cut-out dimensions in mm				
C x D	417 x 168	468 x 181	520 x 200	497 x 191



PZ

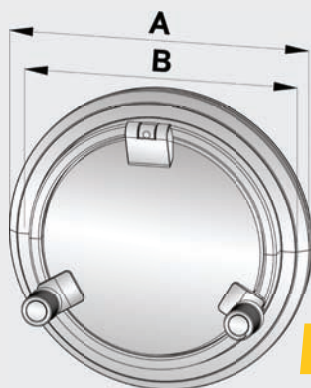


PW



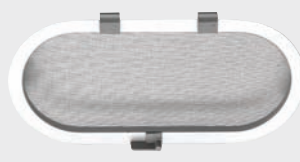
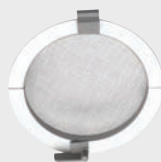
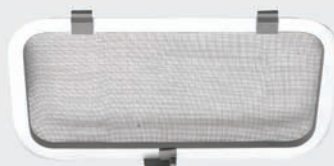
PZ

External dimensions in mm	PZ611 PZ613	PZ621 PZ623	PZ631 PZ633	PZ641 PZ643	PZ651 PZ653	PZ661 PZ663	PZ671 PZ673
A x B	301 x 164	368 x 179	622 x 197	397 x 197	399 x 190	399 x 234	451 x 274
Cut-out dimensions in mm							
C x D	277 x 140	344 x 155	598 x 173	373 x 173	375 x 166	375 x 210	427 x 250
Cut-out radius in mm							
R	54	61	61	61	54	54	54



PW

External dimensions in mm	PW201 PW203	PW211 PW213	PW221 PW223
A x B	Ø 198	Ø 220	Ø 260
Cut-out dimensions in mm			
C x D	Ø 174	Ø 196	Ø 236



HOR

Mosquito screens

For porthole types PZ, PW, PX and PM, an anodised aluminium framed mosquito screen is available as an option.

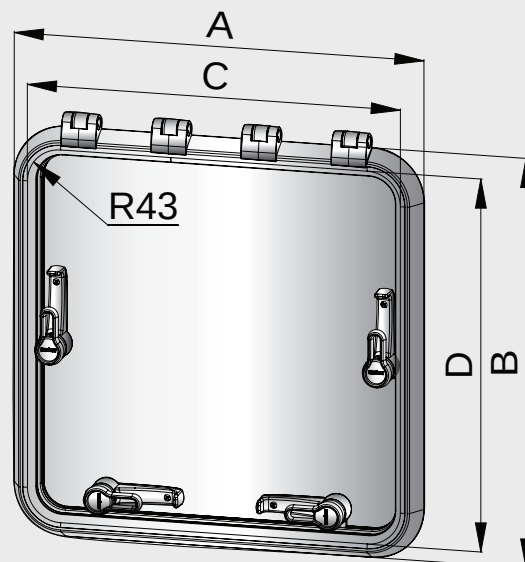
MAGNUS is a range of extra heavy duty hatches. They are CE classified: A1, which means to say that they are designed for ocean use and can be fitted in any part of the hull or deck. These hatches are provided with friction hinges, which will keep the hatch open in any position, without the need for stays. The hatch can be opened through 180° and there are virtually no obstructions in the hatch opening. Like other VETUS hatches, the MAGNUS range can be opened from inside or outside the boat. They can also be left locked; either completely watertight or in a ventilation position.

The frame profile is satin sheen anodized. The acrylic has a thickness of 10 mm and the colour is "dark smoke".

The build-in dimensions (the cut-out sizes) of the Magnus hatches are in conformity with those that are current in the market.

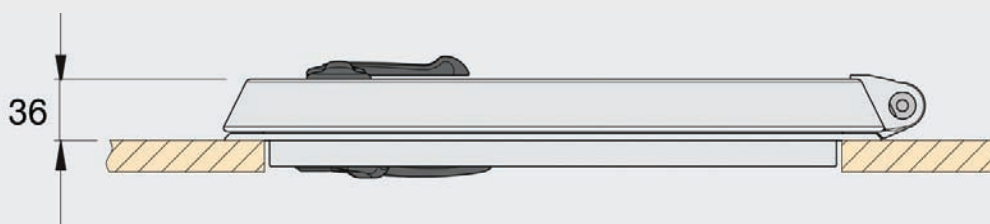


MAG



CE classified: A1

	Escape hatches			Hatches			Ventilation hatches
External dimensions in mm	MAG6363S	MAG5151S	MAG4747S	MAG4242S	MAG5038S	MAG4633S	MAG2626S
A x B	679 x 679	563 x 563	522 x 522	474 x 474	559 x 429	509 x 379	312 x 312
Cut-out dimensions in mm							
C x D	627 x 627	507 x 507	470 x 470	421 x 421	507 x 377	457 x 327	260 x 260



Handles

VETUS hatch handles have a number of advantages.

- The hatch can be opened from either **inside** or **outside**.
- The hatch can be shut completely watertight, or secured with a small air gap to allow permanent ventilation.
- An internal locking mechanism ensures the hatch cannot be opened from outside when the boat is left unattended. This operates in both the closed or ventilation positions.
- The low external profile ensures that ropes, e.g. running rigging on sailing boats, cannot foul on the handles.



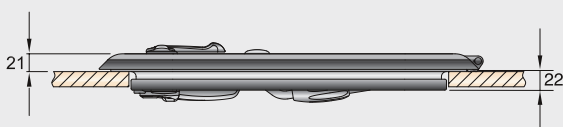
CLOSED



OPEN

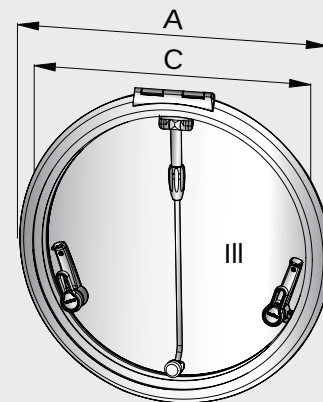
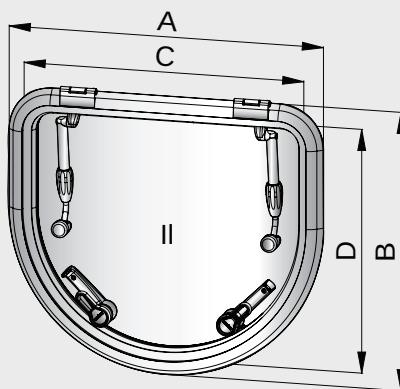
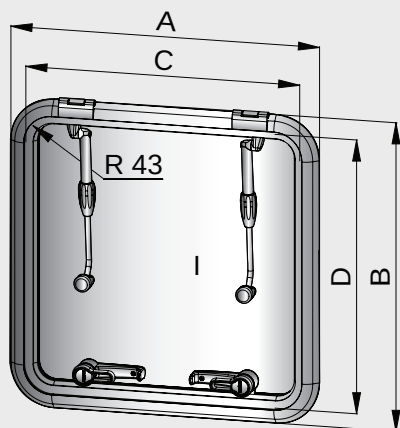
The ALTUS range features a sturdy aluminium profile which is only 21 mm high. They are CE classified: All, which means to say that they are designed for ocean use and can be fitted on deck. These hatches are provided with carefully designed hatch adjusters, which are both stylish and easy to operate. They allow the lid to be held open at any angle through ninety degrees. Like other VETUS hatches, the ALTUS range can be opened from inside or outside the boat. They can also be left locked; either completely watertight or in a ventilation position.

The frame profile is satin sheen anodized. It recesses 22 mm below the deck surface. The acrylic has a thickness of 10 mm and the colour is "dark smoke". An aluminum counter flange and a mosquito screen are available for these hatches.



ALT

CE classified: All



	Escape hatches					Hatches				Ventilation hatches	
	I			II	III	I			III	I	II
External dimensions in mm	ALT6363S	ALT5151S	ALT4747S	ALTD520S	ALTR520S	ALT4242S	ALT5038S	ALT5038S	ALTR420S	ALT2626S	ALTD420S
A x B	701 x 701	585 x 585	544 x 544	592 x 524	Ø 592	495 x 495	581 x 451	531 x 401	Ø 491	334 x 334	491 x 326
Cut-out dimensions in mm											
C x D	627 x 627	507 x 507	470 x 470	518 x 450	Ø 518	421 x 421	507 x 377	457 x 327	Ø 417	260 x 260	417 x 252

Hatch trims with mosquito screen

All VETUS hatches from the Altus and Magnus ranges can now be supplied with an adjustable depth trim complete with mosquito screen. These white synthetic trims are designed to cover the aperture between the hatch and the headlining inside the boat. The depth of the flange can be easily cut to size, to make them suitable for any deck thickness. An integral and hinged mosquito screen provides complete protection against unwelcome insects. The screen can be easily removed if required to facilitate cleaning.



Mosquito screen

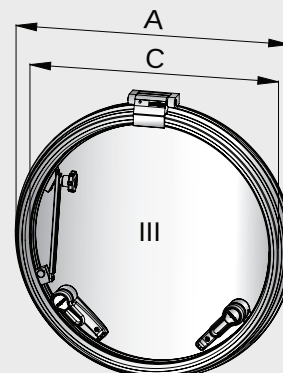
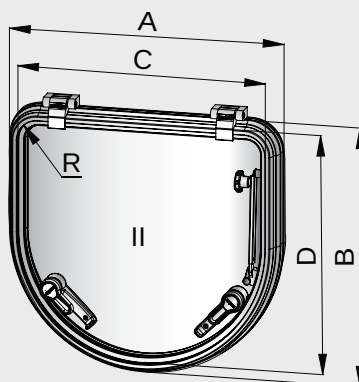
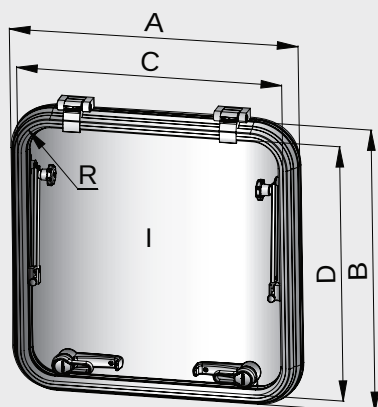


LIB

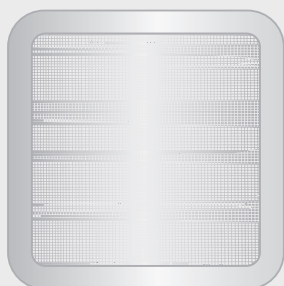
Libero hatches with hand-polished and anodized aluminium frames, 32, 55 or 235 mm corner radius and with 12 mm "smoke" coloured acrylic lid.

VETUS hatches and portholes which are hand polished prior to the anodization process, not only look higher quality, but they have the advantage that dirt, salt and grease will not accumulate on the frame and cause permanent stains. Even under the most arduous conditions, VETUS windows, portlights and hatches will still look like new!

CE classified: All

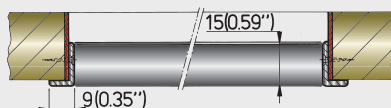


	Escape hatches				Hatches				Ventilation hatches	
	I		II	III	I		I		II	
External dimensions in mm	LIB62	LIB50	LIB470D	LIB470	LIB41	LIB37	LIB32	LIB34	LIB20	LIB470DS
A x B	680 x 680	560 x 560	530 x 505	Ø 530	470 x 470	560 x 430	510 x 380	400 x 255	260 x 260	533 x 320
Cut-out dimensions in mm										
C x D	620 x 620	500 x 500	470 x 445	Ø 470	410 x 410	500 x 370	450 x 320	340 x 195	200 x 200	473 x 260
Cut-out radius in mm										
R	55 (32)	55 (32)	32	-	55	55 (32)	55 (32)	32	32	32



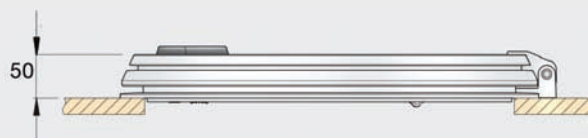
Mosquito screen

Each of the VETUS Libero deck, escape and ventilation hatches have available, as an option, an anodized aluminium counter flange and a mosquito screen.



Counter flange

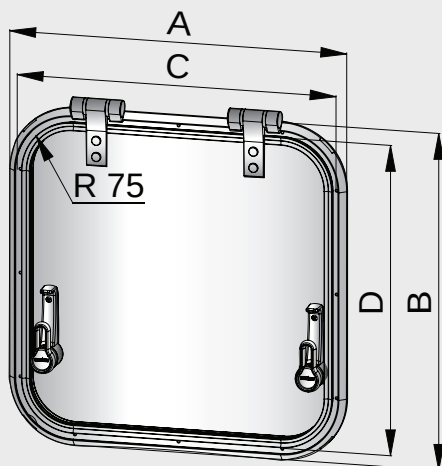
A special friction hinge allows all Libero ventilation hatches to remain open at any angle up to 180 degrees.



Planus hatches with **satin sheen anodized** aluminium frames, 75 mm corner radius and "smoke" coloured acrylic lid of 10 mm thickness.

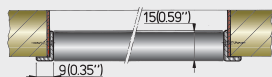
A special friction hinge allows all Planus hatches to remain open at any angle up to 180 degrees.

CE classified: All

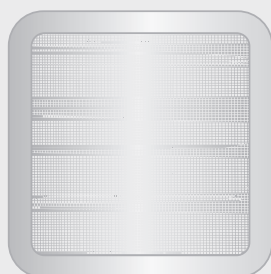


PLA

Each Planus escape, deck or ventilation hatch can be supplied as an option, with an anodized aluminium counter flange and a mosquito screen.



Counter flange



Mosquito screen

	Escape hatches		Hatches		Ventilation		
External dimensions in mm	PLA50	PLA45	PLA40	PLA32	PLA34	PLA30	PLA23
A x B	521 x 521	474 x 474	424 x 424	474 x 344	390 x 260	350 x 280	280 x 280
Cut-out dimensions in mm							
C x D	471 x 471	424 x 424	374 x 374	424 x 294	340 x 210	300 x 230	230 x 230



Handles

VETUS hatch handles have a number of advantages.

- The hatch can be opened from either inside or outside.
- The hatch can be shut completely watertight, or secured with a small air gap to allow permanent ventilation.
- An internal locking mechanism ensures the hatch cannot be opened from outside when the boat is left unattended. This operates in both the closed or ventilation positions.
- The low external profile ensures that ropes, e.g. running rigging on sailing boats, cannot foul on the handles.

CLOSED



OPEN





HMB

This new line of combination roller blind/flyscreens is designed for escape and ventilation deck hatches. One side of the unit contains an automatic roller blind and the other an automatic roller flyscreen.

The hatch can be blacked out by pushing the handle all the way to one side. Alternatively, by pushing the handle to the opposite side, the blind retracts and the flyscreen covers the aperture. Separating the magnetic clasp in the handles allows both the blind and the flyscreen to retract automatically into their housings.

All housing parts are made from anodised aluminium and will therefore last for years without discolouring. The blind and flyscreen are made from UV stabilised white PVC coated material. A simple to install finishing strip can be trimmed to size and used to cover the deck aperture up to 75 mm thickness. These blinds are particularly suitable for hatches with corner radii of 43 mm or less.

VETUS combination roller blind / flyscreens are available for all square Altus and Magnus hatches, but they can also be customized upon request. The maximum blind length is 62 cm.

Flush deck hatch

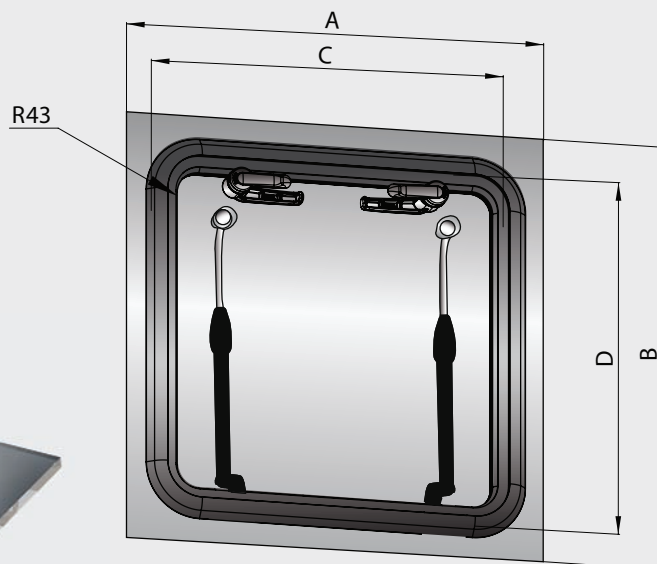
Designed specifically for new boat designs, these flush hatches are an economic and stylish alternative to conventional deck hatches.

Flush hatches are most suitable for new builds, where the deck can be specially prepared for the installation. The hatch is recessed completely into the deck and after fitting, there is only an attractive and unhindered surface, with nothing to snag lines or unwary feet.

The lid is made from 10 mm thick "dark smoke" acrylic and the frame from polished and anodised aluminium. The hatch is available in 4 standard sizes.



FGH



	Escape hatches		Hatches	
External dimensions in mm	FGH6363	FGH5151	FGH4444	FGH2626
A X B	700 X 700	580 X 580	515 X 515	330 X 330
Cut-out dimensions in mm				
C X D	627 X 627	507 X 507	442 X 442	260 X 260

These portholes are available in two different executions:

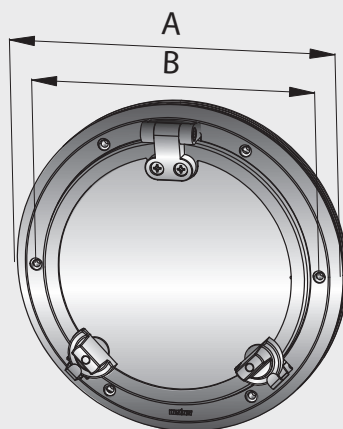
- With a stainless steel inner frame and "smoke" coloured 8 mm acrylic.

CE classified: A1.

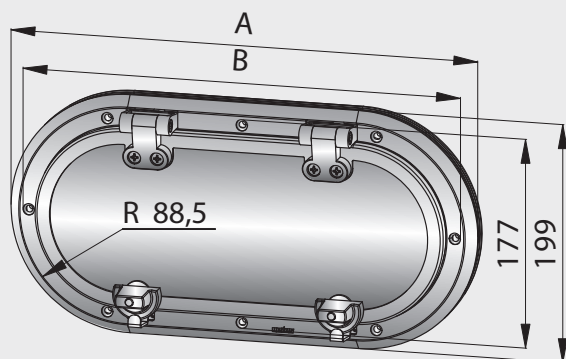
- With unframed 10 mm acrylic, colour "smoke". **CE classified:**

AIII These portholes are suitable for a panel thickness from 3 to 18 mm. For the recommended screw sizes, please see the table below.

External dimensions in mm	PWS31	PWS32
A	Ø 220	Ø 260
Cut-out dimensions in mm		
B	Ø 198	Ø 238



PWS



PMS

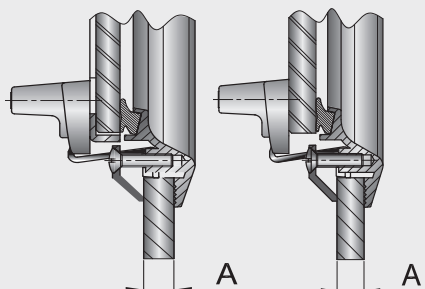


External dimensions in mm	PMS23	PMS24
A	346	390
Cut-out dimensions in mm		
B	322	366

Recommended screw sizes:

CE A I

CE A III



Panel thickness (A)

3 t/m	5 mm
5 t/m	9 mm
9 t/m	14 mm
14 t/m	18 mm

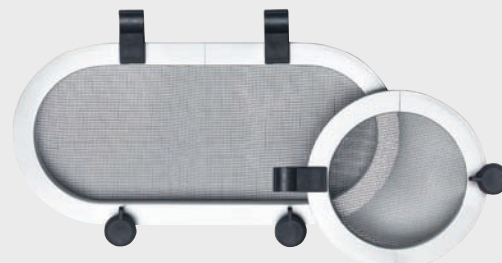
Screw

M5 x 12
M5 x 16
M5 x 20
M5 x 25

Screws available in packs of 50 pcs.

Mosquito screens

All portholes type PWS and PMS are supplied as **standard** with an anodised aluminium mosquito screen.





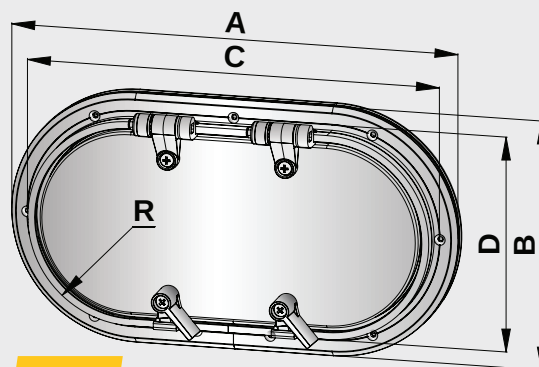
Portholes type PM and PX are supplied with hand-polished and anodized aluminium frames and "smoke" coloured acrylic of 10 mm thickness.


PM

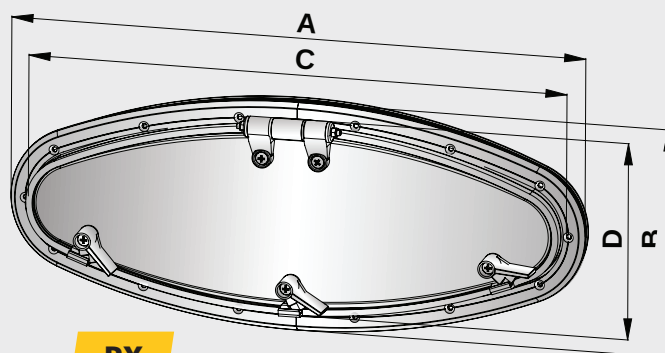
PX

CE classified: AIII

External dimensions in mm	PM21	PM22	PM23	PM24	PM25
A x B	244 X 147	294 X 172	344 X 199	362 X 147	390 X 220
Cut-out dimensions in mm					
C x D	222 X 125	272 X 150	322 X 177	340 X 125	368 X 198
Cut-out Radius in mm					
R	62,5	75	88,5	62,5	99


PM

External dimensions in mm	PX55	PX56	PX57
A X B	441 X 184	492 X 197	544 X 216
Cut-out dimensions in mm			
C X D	419 X 162	470 X 175	522 X 194

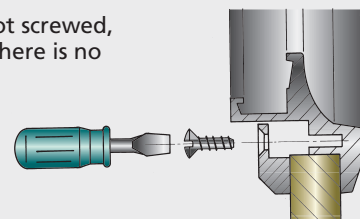

PX

HOR

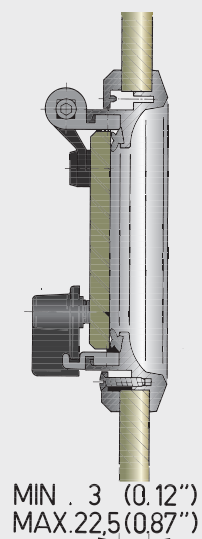
Mosquito screens

For porthole types PM, PW, PX and PZ, an anodised aluminum framed mosquito screen is available as an option.

These VETUS portholes are not screwed, but clamped. Consequently, there is no need to drill holes.



Portholes type PZ and PW are supplied with hand polished and anodized aluminium frames and "smoke" coloured acrylic of 10 mm thickness.

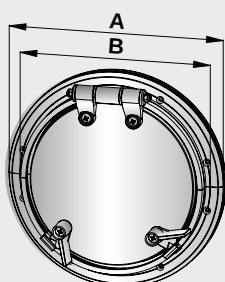


PZ



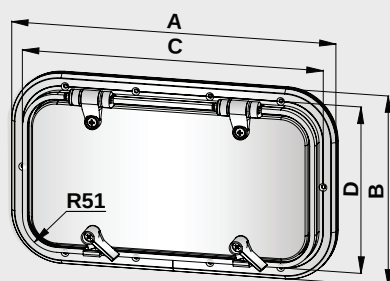
PW

CE classified: AIII



PW

External dimensions in mm	PW30	PW31	PW32
A	Ø 200	Ø 220	Ø 260
Cut-out dimensions in mm			
B	Ø 177	Ø 198	Ø 238



PZ

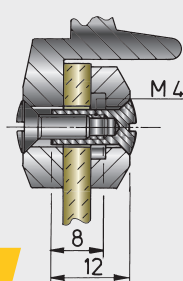
External dimensions in mm	PZ71	PZ72	PZ73	PZ74	PZ75	PZ76	PZ77
A X B	301 X 164	351 X 174	365 X 182	365 X 198	399 X 190	399 X 234	451 X 274
Cut-out dimensions in mm							
C X D	279 X 142	329 X 152	343 X 160	343 X 176	377 X 168	377 X 212	429 X 252

VETUS PQ portholes are made of **stainless steel**, have an acrylic window pane ("smoke") of 8 mm thickness, and are provided with a stainless steel counter flange. The dimensions given at the dashed lines are the cut-out sizes. **CE classified: All.**

Stainless steel internal thread screw

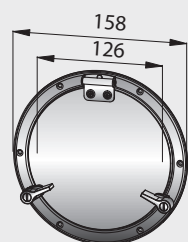


SCREWM450

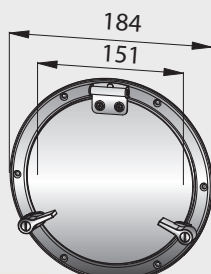


Mosquito screens

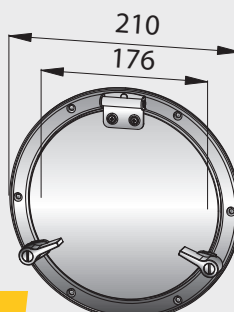
Made of ABS and available for all sizes of PQ portholes. Easy "click-in" construction.



PQ51



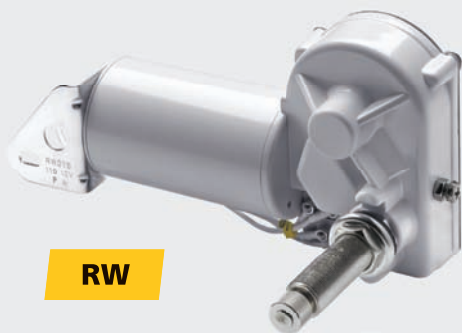
PQ52



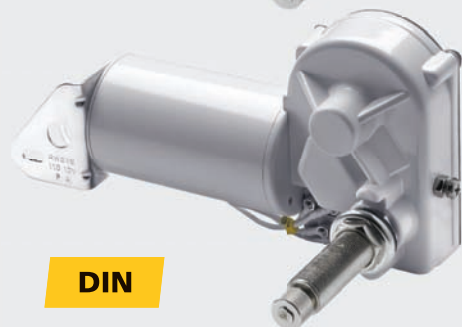
PQ53



PQ



RW

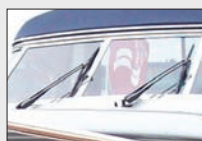


DIN

These high quality marine windscreen wipers feature a powerful electric motor and separate worm wheel transmission. The wiping angle may be adjusted to 8 different settings, which means that the ideal wiping pattern can be found for almost any shape and size of window. Motor type **RW** has a parallel 16 mm dia. push fit connection for the wiper arm. Motor type **DIN** has a tapered and knurled connection with a securing nut. This feature provides a stronger connection between the wiper arm and the motor drive shaft, resulting in a longer life span for both parts.

Other technical features of this wiper motor:

- Extremely low noise.
- Eight wiping angles to choose from: 40, 50, 60, 70, 80, 90, 100 or 110° (standard setting is 110°).
- Available for 12 or 24 Volt D.C. supply.
- Output: 30 Watt.
- Self-parking.
- Two speeds.
- Output shaft made of stainless steel.
- Suitable for panel thickness from 3 to 13 mm (short shaft version), or from 3 to 38 mm (long shaft version).
- Available with straight knurled shaft end (Ø 16 mm, 72 teeth) or tapered and knurled shaft end, according to DIN 72783.
- Colour: RAL 7035.



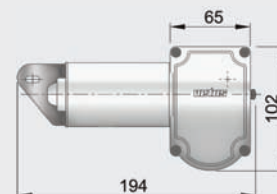
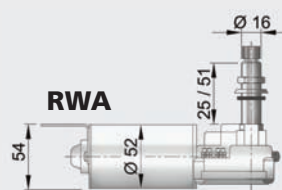
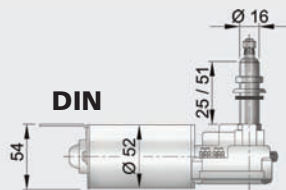
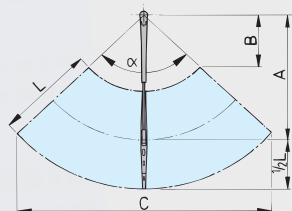
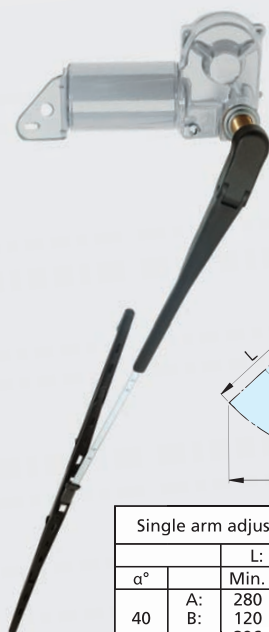
From the tables shown below the required wiping angle for practically any window can be found.

When ordering, the voltage, the panel thickness and shaft end type must be stated (see drawings). Wiper arms and blades are to be ordered separately.

Options:

- Screen washer kit
- Three position switch (OFF,1,2)
- Protective synthetic cover
- Control panel.

RW01A	Wiper motor	12 Volt 50 mm spindle	with parallel end	self-parking	2 speed
RW02A	Wiper motor	24 Volt 50 mm spindle	with parallel end	self-parking	2 speed
RW08A	Wiper motor	12 Volt 25 mm spindle	with parallel end	self-parking	2 speed
RW09A	Wiper motor	24 Volt 25 mm spindle	with parallel end	self-parking	2 speed
DIN1250	Wiper motor	12 Volt 50 mm	spindle with DIN tapered end	self-parking	2 speed
DIN2450	Wiper motor	24 Volt 50 mm	spindle with DIN tapered end	self-parking	2 speed
DIN1225	Wiper motor	12 Volt 25 mm	spindle with DIN tapered end	self-parking	2 speed
DIN2425	Wiper motor	24 Volt 25 mm	spindle with DIN tapered end	self-parking	2 speed



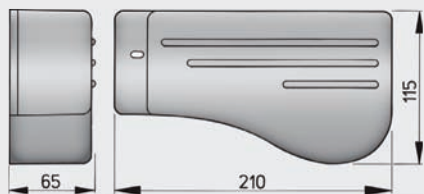
Single arm adjustable from 280 mm to 366 mm						
α°	L: 305		L: 410		L: 508	
	Min.	Max.	Min.	Max.	Min.	Max.
40	A: 280	366	280	366	280	366
	B: 120	201	70	151	24	105
	C: 296	355	332	391	365	424
50	A: 280	366	280	366	280	366
	B: 116	193	68	146	24	102
	C: 366	438	410	483	451	524
60	A: 280	366	280	366	280	366
	B: 110	185	65	139	24	97
	C: 433	519	485	571	534	620
70	A: 280	366	280	366	280	366
	B: 104	175	61	132	23	92
	C: 496	595	556	655	613	711
80	A: 280	366	280	366	280	366
	B: 98	164	57	123	20	86
	C: 556	667	624	734	686	797
90	A: 280	366	280	366	280	366
	B: 90	151	53	114	18	79
	C: 612	733	686	808	755	877
100	A: 280	366	280	366	280	366
	B: 82	137	48	103	17	62
	C: 663	794	743	875	818	925
110	A: 280	366	280	366	280	318
	B: 73	122	43	92	15	37
	C: 709	849	795	935	875	937

Single arm adjustable from 395 mm to 481 mm						
α°	L: 305		L: 410		L: 508	
	Min.	Max.	Min.	Max.	Min.	Max.
40	A: 395	481	395	481	395	481
	B: 228	309	179	259	132	213
	C: 375	433	410	469	444	503
50	A: 395	481	395	481	395	481
	B: 220	298	172	250	128	206
	C: 463	535	507	580	549	621
60	A: 395	481	395	481	395	481
	B: 210	284	165	239	122	197
	C: 548	634	600	686	649	735
70	A: 395	481	395	481	395	481
	B: 199	269	156	226	116	186
	C: 628	727	688	787	745	843
80	A: 395	481	395	481	395	481
	B: 186	252	146	211	108	140
	C: 704	814	771	882	834	888
90	A: 395	481	395	481		
	B: 171	232	134	195		
	C: 774	896	849	970		
100	A: 395	481	395	434		
	B: 156	211	122	147		
	C: 839	971	919	979		
110	A: 395	481	395			
	B: 139	188	109			
	C: 897	1038	983			

Single arm adjustable from 473 mm to 559 mm						
α°	L: 305		L: 410		L: 508	
	Min.	Max.	Min.	Max.	Min.	Max.
40	A: 473	559	473	559	473	559
	B: 301	382	252	333	206	287
	C: 428	487	464	523	497	556
50	A: 473	559	473	559	473	559
	B: 290	368	243	321	198	276
	C: 529	601	573	646	614	687
60	A: 473	559	473	559	473	559
	B: 278	352	232	307	190	264
	C: 626	712	678	764	727	813
70	A: 473	559	473	559	473	500
	B: 263	333	220	290	179	202
	C: 718	816	778	876	834	865
80	A: 473	559	473	542		
	B: 246	311	205	258		
	C: 804	915	872	960		
90	A: 473	559	473	482		
	B: 227	287	190	196		
	C: 885	1006	959	972		
100	A: 473	559				
	B: 206	261				
	C: 958	1090				
110	A: 473	530				
	B: 184	217				
	C: 1025	1118				

Plastic cover for wiper motors type RW and DIN (complete with bottom plate)

Installation of the plastic cover reduces the indicated maximum panel thickness by 3 mm. When using the wiper arm type AD, the maximum panel thickness is reduced by 6 mm and with the arm type SSAD by 3 mm.



RWCG

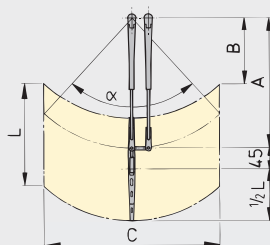
From the tables shown below the required wiping angle for practically any window can be found.

Suitable combination of arm, blade and wiping angle. In order not to overload the RW or DIN types of wiper motor, it must be checked that the combination of arm length, blade length and wiping angle is acceptable. The result of the sum: wiper blade length (mm) x arm length (mm) x wiping angle in degrees should not exceed **17.800.000**.

Example: Blade length: 410 mm
Arm length: 366 mm
Wiping angle: 120°
 $410 \times 366 \times 120 = 17.800.000$

Therefore this combination is not allowed.

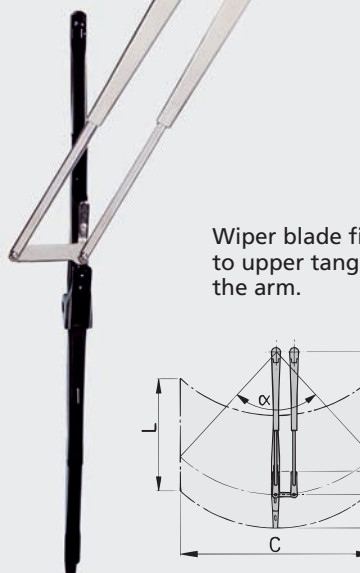
Dual arm, adjustable from 308 mm to 393 mm 45+							
α°		L: 305		L: 410		L: 508	
		Min.	Max.	Min.	Max.	Min.	Max.
40	A:	308	393	308	393	308	393
	B:	182	262	129	209	80	160
	C:	211	269	211	269	211	269
50	A:	308	393	308	393	308	393
	B:	172	249	119	196	70	147
	C:	260	332	260	332	260	332
60	A:	308	393	308	393	308	393
	B:	159	233	107	180	58	131
	C:	308	393	308	393	308	393
70	A:	308	393	308	393	308	393
	B:	145	214	92	162	43	113
	C:	353	451	353	451	353	451
80	A:	308	393	308	393	308	393
	B:	128	194	76	141	27	92
	C:	396	505	396	505	396	505
90	A:	308	393	308	393	308	393
	B:	110	170	58	118	9	66
	C:	436	556	436	556	436	556
100	A:	308	393	308	393	308	393
	B:	90	145	38	93	0	16
	C:	472	602	472	602	498	536
110	A:	308	393	308	393		
	B:	69	118	17	65		
	C:	505	644	505	644		



Wiper blade fitted to lower tang on the arm.

Dual arm, adjustable from 308 mm to 393 mm 45 -							
α°		L: 305		L: 410		L: 508	
		Min.	Max.	Min.	Max.	Min.	Max.
40	A:	308	393	308	393	318	393
	B:	92	172	39	119	0	70
	C:	211	269	211	269	218	269
50	A:	308	393	308	393	330	393
	B:	82	159	29	106	0	57
	C:	260	332	260	332	279	332
60	A:	308	393	308	393	345	393
	B:	69	143	17	90	0	41
	C:	308	393	308	393	345	393
70	A:	308	393	308	393	365	393
	B:	55	124	2	72	0	23
	C:	353	451	353	451	419	451
80	A:	308	393	326	393	390	393
	B:	38	104	0	51	0	2
	C:	396	505	419	505	501	505
90	A:	308	393	354	393		
	B:	20	80	0	58		
	C:	436	556	501	556		
100	A:	308	393	389	393		
	B:	0	55	0	3		
	C:	472	602	596	602		
110	A:	345	393				
	B:	0	28				
	C:	565	644				

Dual arm, adjustable from 386 mm to 471 mm 45+							
α°		L: 305		L: 410		L: 508	
		Min.	Max.	Min.	Max.	Min.	Max.
40	A:	386	471	386	471	386	471
	B:	255	335	203	283	154	335
	C:	264	322	264	322	264	322
50	A:	386	471	386	471	386	471
	B:	242	319	190	267	141	319
	C:	326	398	326	398	326	398
60	A:	386	471	386	471	386	471
	B:	227	300	174	248	125	300
	C:	386	471	386	471	386	471
70	A:	386	471	386	471	386	471
	B:	209	278	156	226	107	177
	C:	443	540	443	540	443	540
80	A:	386	471	386	471	386	471
	B:	188	253	136	201	87	126
	C:	496	606	496	606	496	562
90	A:	386	471	386	471	386	389
	B:	165	226	113	173	64	66
	C:	546	666	546	666	546	550
100	A:	386	471	386	471		
	B:	141	195	88	119		
	C:	591	722	591	722		
110	A:	386	471	386	471		
	B:	114	163	61	66		
	C:	632	772	632	772		



Wiper blade fitted to upper tang on the arm.

Dual arm, adjustable from 386 mm to 471 mm 45 -							
α°		L: 305		L: 410		L: 508	
		Min.	Max.	Min.	Max.	Min.	Max.
40	A:	386	471	386	471	386	471
	B:	165	245	113	193	64	144
	C:	264	322	264	322	264	322
50	A:	386	471	386	471	386	471
	B:	152	229	100	177	51	128
	C:	326	398	326	398	326	398
60	A:	386	471	386	471	386	471
	B:	137	210	84	158	35	109
	C:	386	471	386	471	386	471
70	A:	386	471	386	471	386	471
	B:	119	188	66	136	17	87
	C:	443	540	443	540	443	540
80	A:	386	471	386	471	390	437
	B:	98	163	46	111	0	36
	C:	496	606	496	606	501	562
90	A:	386	471	386	471		
	B:	75	136	23	83		
	C:	546	666	546	666		
100	A:	386	471	386	434		
	B:	51	105	0	29		
	C:	591	722	596	665		
110	A:	386	471				
	B:	24	73				
	C:	632	772				

Adjustable single wiper arms are available in 3 sizes:
S: from 280 mm to 366 mm;
L: from 395 mm to 481 mm;
X: from 473 mm to 559 mm.

Adjustable dual wiper arms are available in two sizes:
D: from 308 mm to 393 mm;
DX: from 386 mm to 471 mm.

The dual wiper arm spindle centres are 45 mm. Wiper blades may be fitted in one of two positions on the dual wiper arms, so that the wiped surface can be adjusted.

With VETUS wiper motors type RW, use wiper arms type RWA or SSA. With VETUS wiper motors type DIN, use wiper arms type DIN.

All VETUS wiper arms have a spade connector of 7.2 x 2.5 mm to fit a range of different wiper blades.



RWA

Without taper

DINP

With DIN taper

The **metal parts** of these wiper arms are made of **high-gloss polished stainless steel (AISI 316)** and the black components are made of top-grade synthetic materials.

RWAS	Black single arm	L = 280 - 366 mm	without taper
RWAL	Black single arm	L = 395 - 481 mm	without taper
RWAX	Black single arm	L = 473 - 559 mm	without taper
RWAD	Black parallel arm set	L = 308 - 393 mm	without taper
RWADX	Black parallel arm set	L = 386 - 471 mm	without taper
DINPS	Black single arm	L = 280 - 366 mm	with DIN taper
DINPL	Black single arm	L = 395 - 481 mm	with DIN taper
DINPX	Black single arm	L = 473 - 559 mm	with DIN taper
DINPD	Black parallel arm set	L = 308 - 393 mm	with DIN taper
DINPDX	Black parallel arm set	L = 386 - 471 mm	with DIN taper

WBB

WBS



Wiper blades are available in lengths of 305 mm, 410 mm or 508 mm. The metal parts of the blades are made of stainless steel, either high-gloss polished or coated black. These blades will fit **almost all makes and types of wiper arms with a tang of 7.2 x 2.5 mm.**

WBB30	Wiper blade, made of stainless steel	coated black	L = 305 mm
WBB41	Wiper blade, made of stainless steel	coated black	L = 410 mm
WBB51	Wiper blade, made of stainless steel	coated black	L = 508 mm
WBS30	Wiper blade, made of stainless steel		L = 305 mm
WBS41	Wiper blade, made of stainless steel		L = 410 mm
WBS51	Wiper blade, made of stainless steel		L = 508 mm



SSA

Without taper

DINS

With DIN taper

Stainless steel wiper arms

These arms are made entirely from **high-gloss polished stainless steel (AISI 316)**. Not only are they very strong and durable, but in combination with VETUS polished wiper blades, they will enhance the appearance of any boat.

SSAS	Single arm, made of stainless steel	L = 280-366 mm	without taper
SSAL	Single arm, made of stainless steel	L = 395-481 mm	without taper
SSAX	Single arm, made of stainless steel	L = 473-559 mm	without taper
SSAD	Parallel arm set, stainless steel	L = 308-393 mm	without taper
SSADX	Parallel arm set, stainless steel	L = 386-471 mm	without taper
DINSS	Single arm, made of stainless steel	L = 280 - 366 mm	with DIN taper
DINSL	Single arm, made of stainless steel	L = 395 - 481 mm	with DIN taper
DINSX	Single arm, made of stainless steel	L = 473 - 559 mm	with DIN taper
DINSD	Parallel arm set, stainless steel	L = 308 - 393 mm	with DIN taper
DINSDX	Parallel arm set, stainless steel	L = 386 - 471 mm	with DIN taper

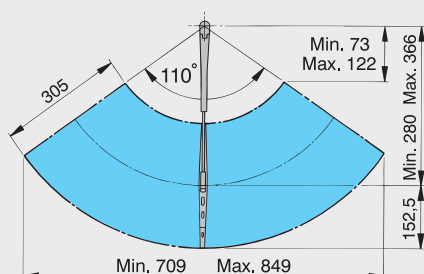
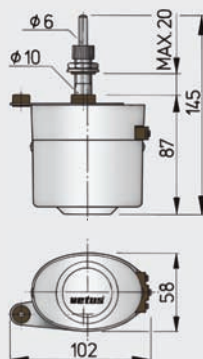
This VETUS windscreen wiper, model ORW, is only available as a complete assembly comprising motor, arm and blade.

The wiper blade is made of black plastic and is available as a spare part. It also fits other makes of wiper arms with a spade connector of 7.2 x 2.5 mm.

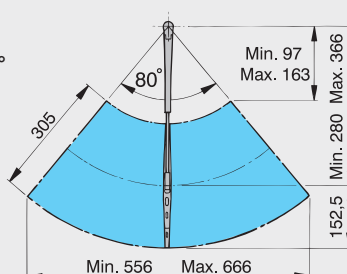
Technical details:

- Electrical supply: 12 Volt DC
- Maximum current consumption: 2 A
- Length of drive shaft: 63,5 mm
- Maximum panel thickness: 20 mm
- Single speed and self parking
- Wiping angle: 80° or 110° (standard setting)
- Wiper arm length adjustable from 280 mm to 366 mm
- Blade length, ORW12BL: 305 mm

ORW12SET Wiper motor set, incl. wiper motor, arm and blade. 12 V
ORW12BL Spare blade for wiper type ORW



Wiping angle:
standard 110°,
adjustable to 80°



ORW12SET

Clear view screens

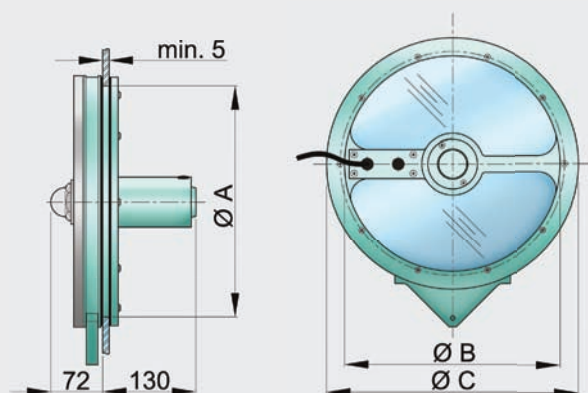
The toughened glass rotating screen reaches its maximum r.p.m. within 25 seconds. The centrifugal force enables all rain, snow and spray to be cleared instantly from the screen. Also dirt and salt will not cause any smears. As a result, your vision will remain completely clear. Available in 2 sizes and in 12 Volt or 24 Volt D.C.

Type 300 and type 350: 12 Volt max. 2,7 A (24 Volt max. 1,4 A).

As an option, these clear view screens may be equipped with a heating element.

SLR30012 Clear view screen Ø 300 mm o.a 12 Volt
SLR30024 Clear view screen Ø 300 mm o.a. 24 Volt
SLR35012 Clear view screen Ø 350 mm o.a. 12 Volt
SLR35024 Clear view screen Ø 350 mm o.a. 24 Volt

	Ø A	Ø B	Ø C
Type 300	275	250	300
Type 350	326	300	350



SLR30012

SLR30024

SLR30012

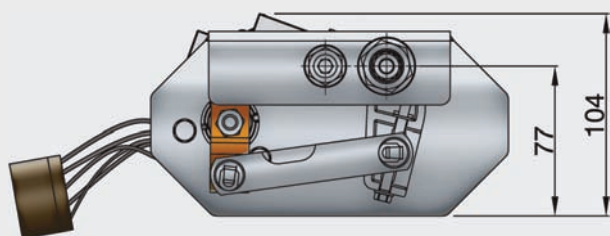
SLR30024





HDM12C

HDM24C

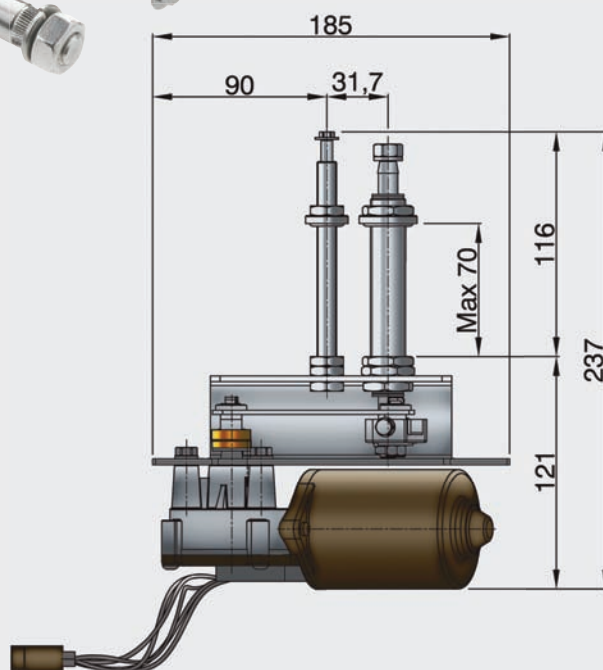


HDMC:

- extremely quiet.
- available in 12 or 24 Volt D.C.
- power: 75 Watt
- wiping angle fully adjustable between 62° and 92°
- self-parking on either side
- two-speed
- suited for panel thickness of up to 70 mm
- weight without arm and blade: 2,5 kg
- VETUS windscreen wiper model HDMC is interchangeable with previous models HDM, HDMA and HDMB.
- all visible parts of the mechanism are made of stainless steel.

HDMC windscreen wiper

This windscreen wiper has a thermal cut-out, which will protect the electric motor in the event of excessive operating temperature.



Screenwasher



HDS

Suitable for all VETUS wiper models

- available in 12 or 24 Volt
- easy installation
- comes complete with: hose, solenoid valve (12 or 24 Volt D.C.), hose pillars, switch for solenoid, spray nozzles and skin-fittings.
- Supplied by domestic pressurized water system

Stainless steel wiper arms and blades (AISI 316)

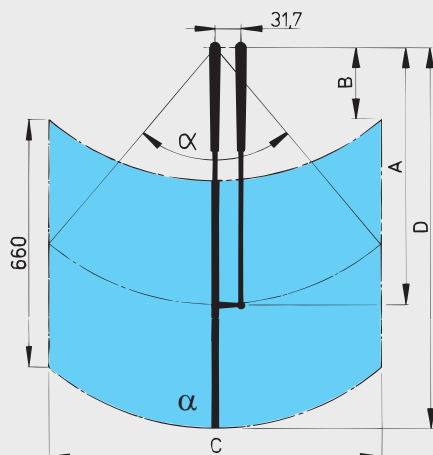
The wiper arms (SHDA) which fit the HDMC wiper motors, are supplied **as standard** in stainless steel (AISI 316). They are available in lengths of 508 or 762 mm. The matching wiper blade (model WB) has a length of 660 mm.

Arms and blade

- parallel-system
- length of arms: 508 mm Type SHDA 500 and 762 mm Type SHDA 760
- length of blade: 660 mm
- WBS66: stainless steel, polished
- WBB66: stainless steel, black

The wiping angle of this wiper is fully adjustable between 62° and 92°, by virtue of which the optimum wiping surface may be determined for each specific window size. All components of these wipers are made of corrosion-proof materials, thus ensuring long-life and trouble-free service.

Table of wiping surface of the model HDM wipers.



a	a 62° - 92°
A: 508	B: 105 - 23
D: 835	C: 523 - 731
A: 762	B: 323 - 199
D: 1092	C: 785 - 1096

WBB66

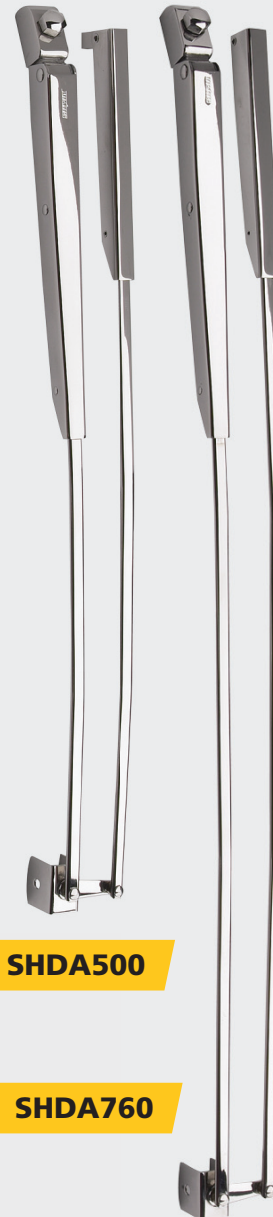


WBS66



SHDA500

SHDA760



Three-position switch (off,1,2) for one wiper motor

Type HDMSW, for two-speed wiper motors. Suitable for wiper motors RWS, DIN and HDMC. Not suitable for model ORW.

Max. switching current: 20A
Max. panel thickness:
HDMSW: 7 mm
HDMSW2: 6 mm



HDMSW



HDMSW2

Windscreen wiper control panels

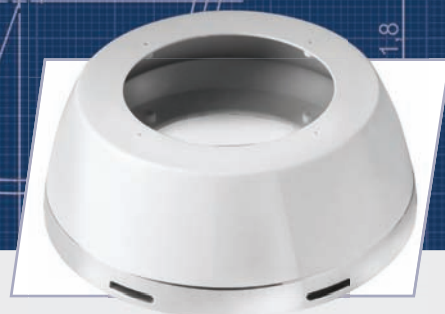
See page 113



MARBO



RWPANEL2



VENTILATION

WHY VETUS VENTILATION?

- **VETUS cowl ventilators** are available in flexible synthetic material or high-gloss polished **AISI 316 stainless steel**.
- **Cowl ventilators** are available in many shapes and sizes, to suit all boats.
- **UFO ventilators** provide permanent boat ventilation, day and night.





VETUS, creators of....

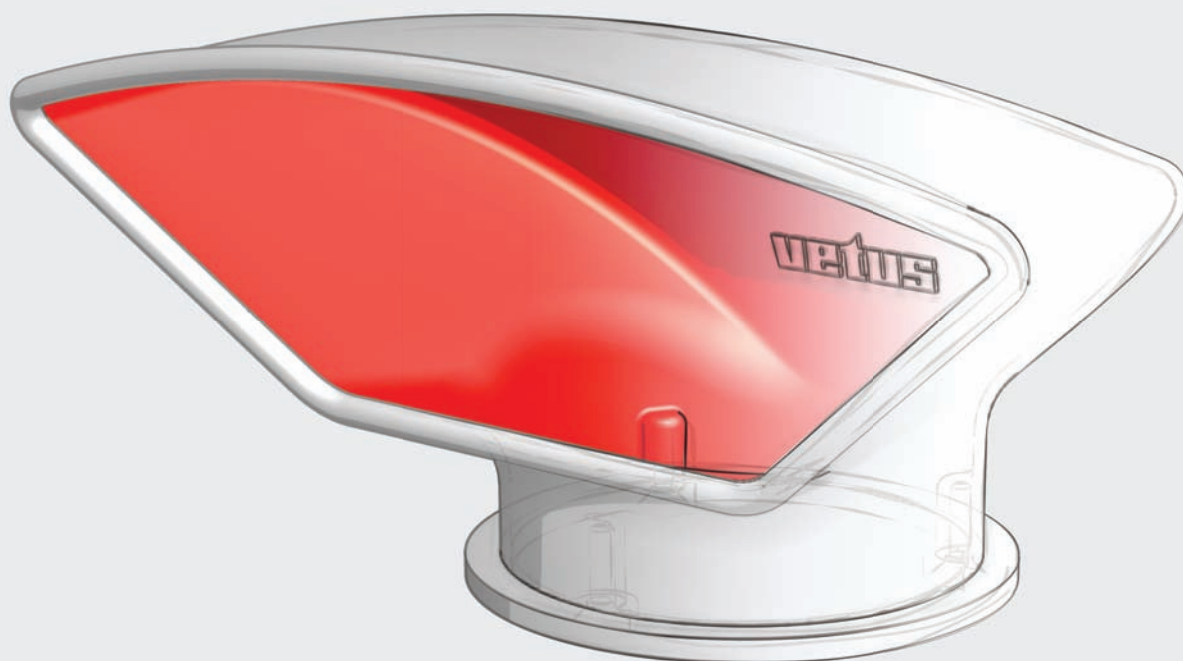
A cowl ventilator can be a real eye-catcher on the deck.

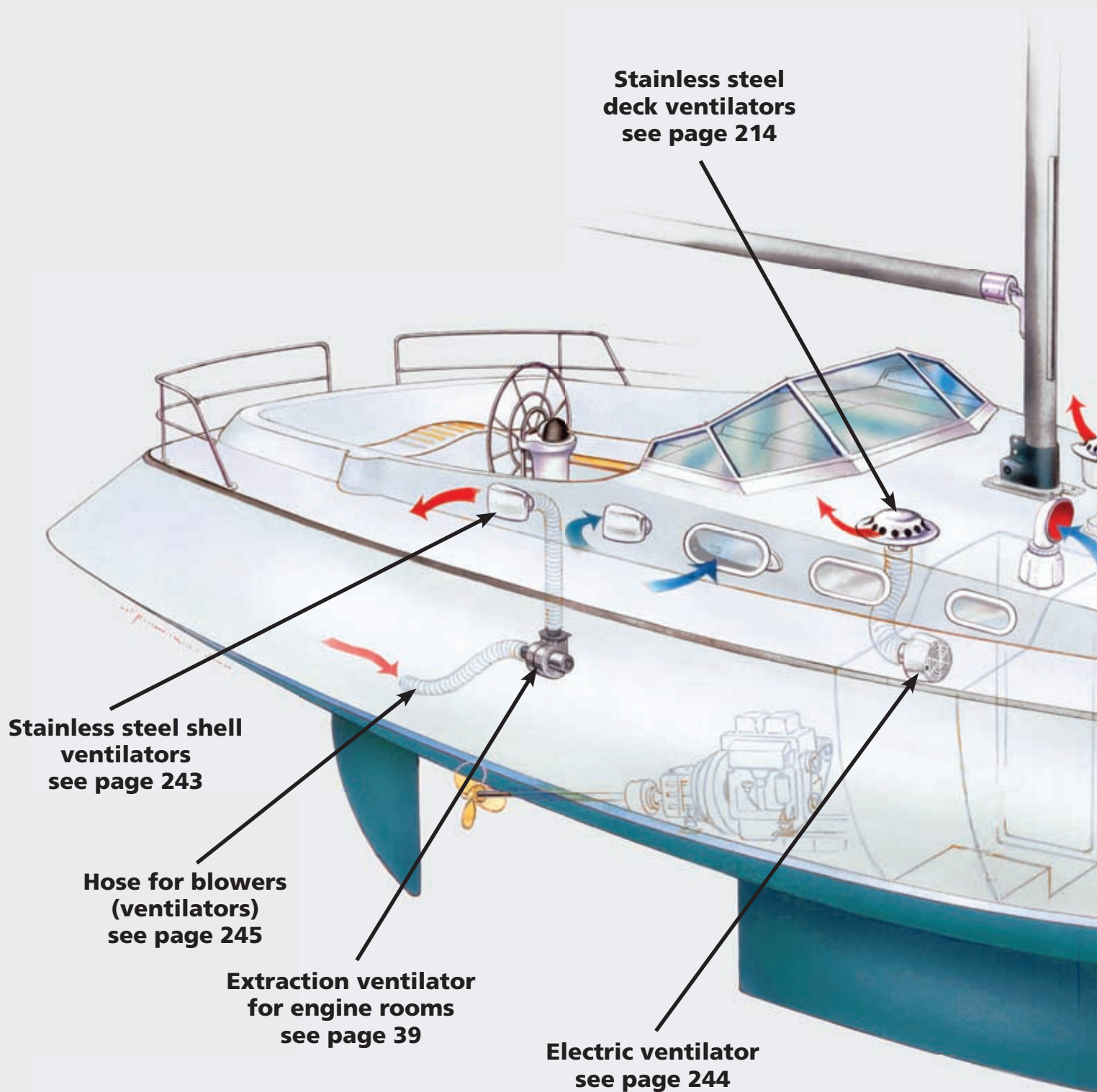
Because the design of a ventilator is a major discussion point, VETUS involves industrial designers in the development process. The starting point of the design though, is always that the ventilator not only works well, but will add value to your boat.

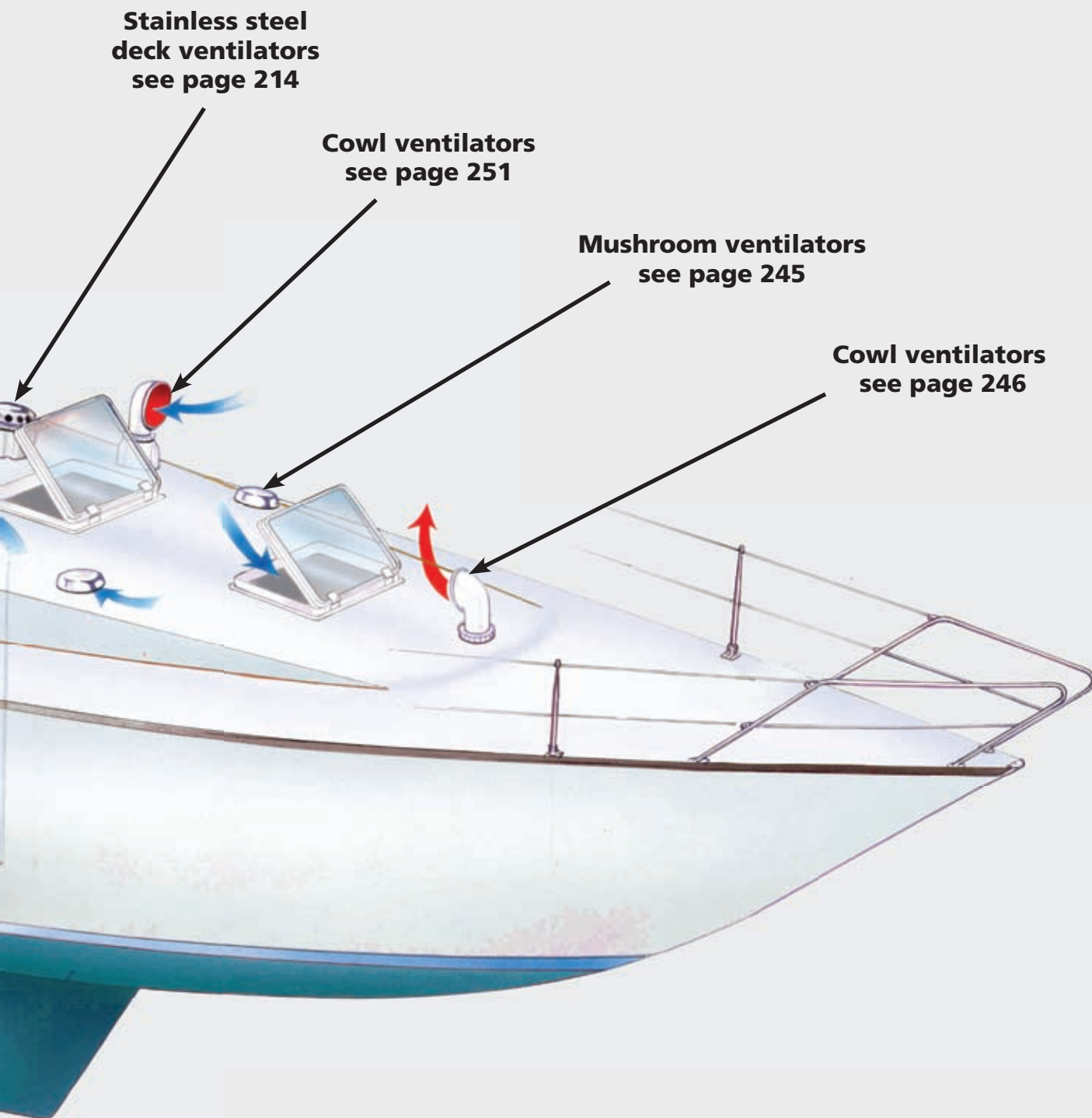
Apart from the design, the choice of materials is very important for the image of the ventilator. Our synthetic cowl vents are therefore made from a highly UV resistant material in order to prolong their resistance to weathering under the sun.

In addition to synthetic cowls, VETUS also supplies attractive stainless steel versions. Every model of ventilator can be supplied with an attractive dorade box to complete the installation.

From classic to contemporary – there is a VETUS ventilator to suit every taste.









Stainless steel AISI 316 deck and shell ventilators

Small cabins aboard boats must be ventilated adequately and be connected to the outside air on a permanent basis, especially when the temperature drops, so as to keep the air humidity inside and outside as equal as possible. This in order to prevent condensation and its devastating effects.

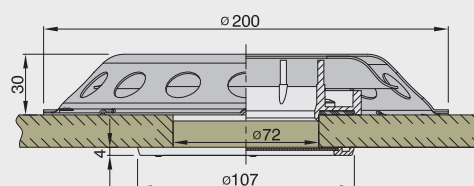
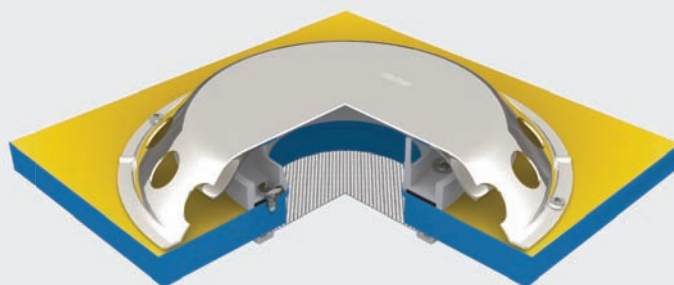
Permanent ventilators type UFO and UFOTRANS

UFO



These models are made of stainless steel and they cannot be closed, so they will ensure permanent ventilation. The TRANS version is also translucent. These ventilators are rain and splash proof and the outside is high-gloss polished. They may also be used in combination with our electric extraction ventilators, see page 244. They come complete with a mosquito screen and an interior finishing ring as standard. Free flow area: 31.8 cm².

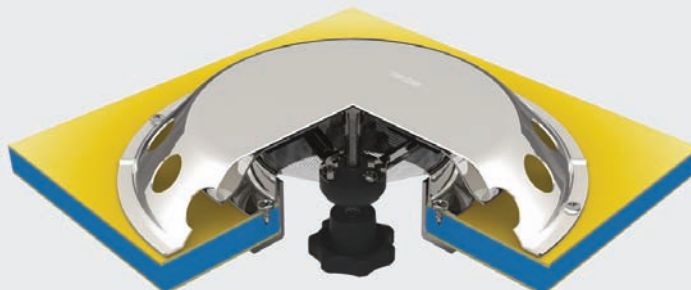
UFOTR



Closeable deck ventilator type UFO2

We have combined the cover of our well-known low profile UFO deck ventilator with an integral mushroom ventilator. This deck ventilator type UFO2, can now be closed altogether and made absolutely watertight when at sea or when power washing the boat. However, when opened, the UFO2 ensures constant ventilation whilst still remaining rain and splash proof. The cover is made from high-gloss polished stainless steel (AISI 316). The mushroom ventilator is also stainless steel and provided with an integral mosquito screen. A synthetic finishing ring is supplied as standard. Free flow area: 30 cm².

UFO2

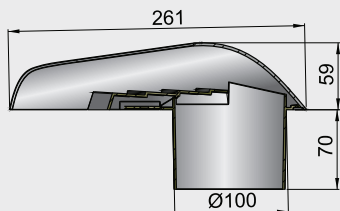
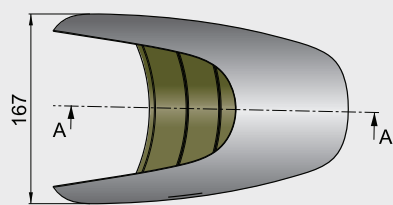
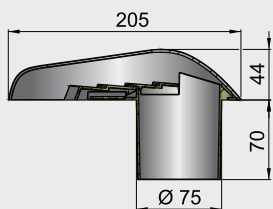
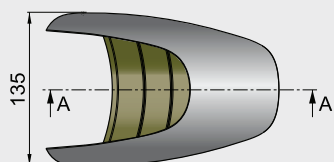


UFO	Deck ventilator type (stainless steel AISI 316) type UFO	(incl. plastic grill)
UFOTR	Deck ventilator type (stainless steel AISI 316) type UFO TRANS	(incl. plastic grill)
UFO2	Closeable deck ventilator type UFO 2	(incl. plastic trim ring)

Stainless steel shell ventilators TYPHOON

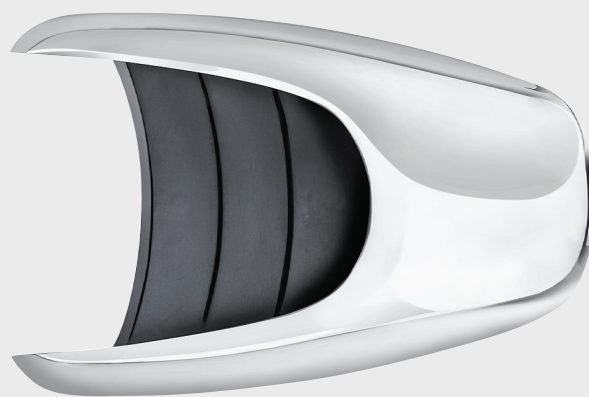
The very well-known shell ventilator is redefined and updated. The outer cover is made of high-gloss polished stainless steel (AISI 316) and all other parts are made of synthetic materials. Two sizes are available, with hose connector of Ø 75 or Ø 100 mm, see page 245.

When installation is completed, no screws are visible. The unit is suitable for horizontal or vertical use. Ø 76 mm. Free flow area: 30 cm², Ø 100 mm Free flow area: 41 cm².



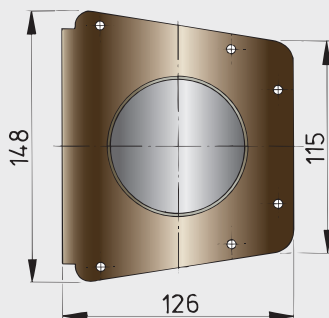
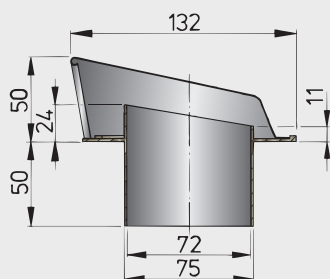
TYP75

TYP100



Stainless steel shell ventilator SCIROCCO

The Scirocco can be screwed directly on to hull or superstructure. A plastic base plate, complete with water guard and hose connection (Ø 76 mm) is standard supply. The whole unit can be installed both horizontally or vertically. The ideal solution for ventilation openings to the engine room. Free flow area: 38,5 cm².



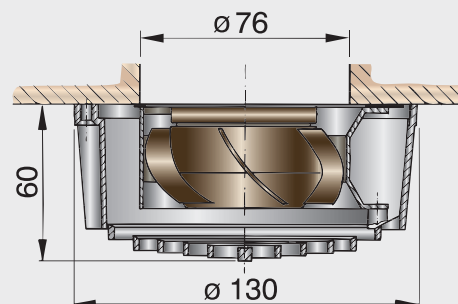
SCIROCCO

TYP75	Shell ventilator type Typhoon Ø 75 mm
TYP100	Shell ventilator type Typhoon Ø 100 mm
SCIROCCO	Shell ventilator type Scirocco (incl. plastic baseplate)



Electric ventilator type FAN

Designed for saloons, cabins and toilets aboard boats. Ideally suited for heat extraction near refrigerator. Hardly audible and suitable for installation to both ceiling and wall. Can also be used together with VETUS deck ventilators Ufo, Ufo-Trans, Typhoon and Scirocco. With the **extremely low energy consumption of 0.19 A at 12 Volt (when running 6 hours continuously for instance, only 1.14 Ah is used)**, this VETUS ventilator is particularly suitable for boats. The special long-life computer motor has a **life-time of not less than 50,000 hours**. Since the motor does not have carbon brushes, the noise level is extremely low. Consequently the ideal ventilator for ventilation of cabins, for instance at night, for in total only approx. 1.3 Ah continuously, keeping the cabin free of mosquitos as well.



FAN12

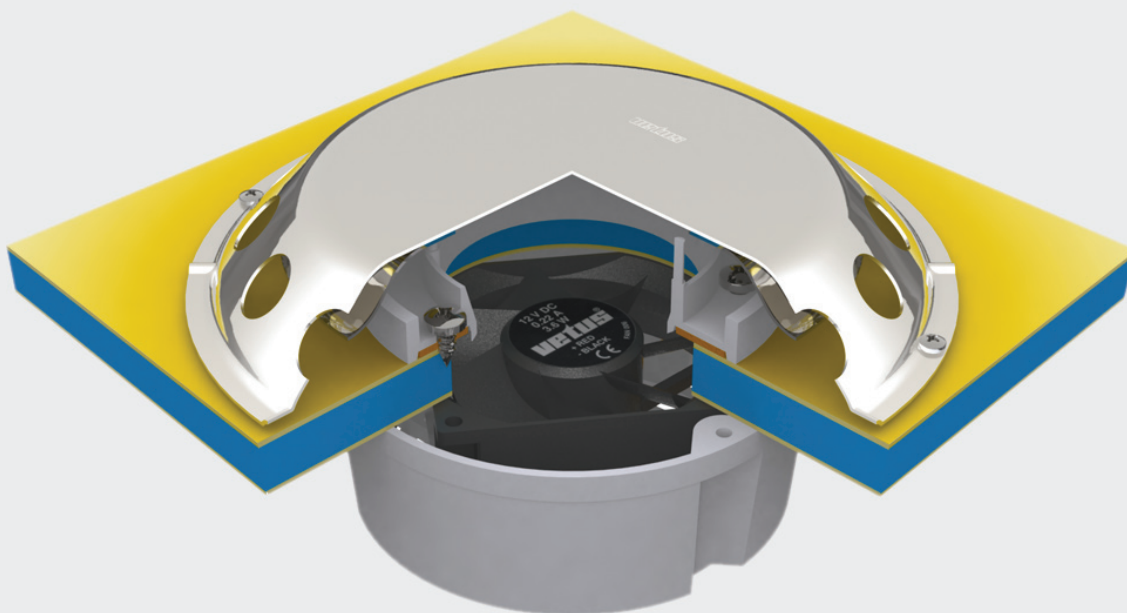
FAN24

This VETUS electric ventilator is ideal for under deck installation, in combination with the rain and splash proof UFO permanent ventilator, see page 242.

Technical details:

- The motor is a **long-life** computer motor, which can run continuously.
- Available in 12 or 24 Volt.
- Consumption is **only** 0.19 A at 12 Volt and 0.11 A at 24 Volt.

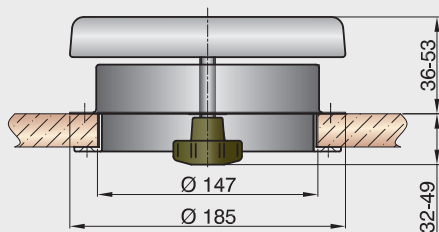
- **Very low noise level** (no carbon brushes).
- Life expectancy is at least 50.000 hours of operation.
- The capacity is 72 m³/hour (42 cfm) (every area should be ventilated 3 to 4 times per hour).
- Provided with a switch **for 2 speeds**.
- Static pressure: 6 mm H₂O.



Mushroom ventilators

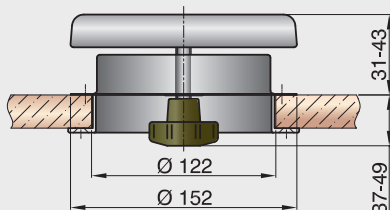
Mushroom ventilators, made of stainless steel, type AISI 316, polished high-gloss, including mosquito screen and counter flange, made of synthetic material.

Free flow
area
76 cm²



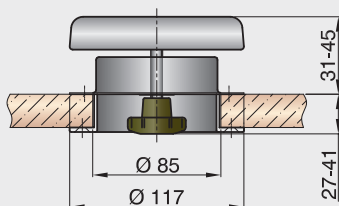
DARTAGN1

Free flow
area
45 cm²



ATHOS1

Free flow
area
30 cm²



PORTOS1

FAN12	Electric ventilator 12 Volt	
FAN24	Electric ventilator 24 Volt	
PORTOS1	Mushroom ventilator type PORTOS 1	(incl. plastic trim ring)
ATHOS1	Mushroom ventilator type ATHOS 1	(incl. plastic trim ring)
DARTAGN1	Mushroom ventilator type D'ARTAGNAN 1	(incl. plastic trim ring)

Hose for blowers (ventilators)

This type of hose is made of a woven glass fibre fabric, impregnated with PVC. Suitable for VETUS shell ventilators and extraction ventilators. Withstands temperatures of between -20°C and +100°C. Available in coils of 10 m.

Bending
radius
0.6 x internal
diameter

Code	Internal dia	Length
BLHOSE310	76 mm 3"	10 m
BLHOSE410	102 mm 4"	10 m



BLHOSE



Cowl ventilators



Type LEVANter, MISTral, MARIN and BOREAS

The classical cowl ventilator has been in production for many years, with few changes to its appearance in that time. These new and sophisticated cowl ventilators from VETUS have deck openings of Ø 75, 100 or 125 mm. They are available in four executions:

- LEVANter. Cast stainless steel cowl with red interior.
- MISTral. Cast stainless steel cowl with white interior.
- BOREAS. White synthetic cowl with red interior.
- MARIN. White synthetic cowl with red interior.

The stylish securing ring can be fastened by hand, or with a special tool, which is supplied as standard. If the tool is used for fastening, the risk of theft is almost eliminated.

Levanter colour red (RAL 3020)

LEVA125

LEVA100

LEVA75

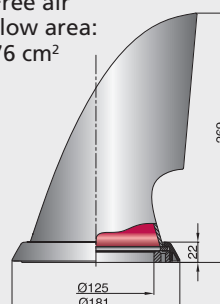
Mistral colour white (RAL 9003)

MIST125

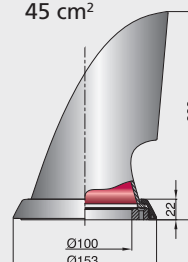
MIST100

MIST75

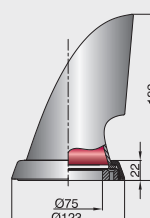
Free air
flow area:
76 cm²



Free air
flow area:
45 cm²



Free air
flow area:
30 cm²



LEVA75	Cowl ventilator Levanter	S/S 316 red interior	Ø 75 mm (incl. ring and nut)
LEVA100	Cowl ventilator Levanter	S/S 316 red interior	Ø 100 mm (incl. ring and nut)
LEVA125	Cowl ventilator Levanter	S/S 316 red interior	Ø 125 mm (incl. ring and nut)
MIST75	Cowl ventilator Mistral	S/S 316 white interior	Ø 75 mm (incl. ring and nut)
MIST100	Cowl ventilator Mistral	S/S 316 white interior	Ø 100 mm (incl. ring and nut)
MIST125	Cowl ventilator Mistral	S/S 316 white interior	Ø 125 mm (incl. ring and nut)

Cowl ventilators

This synthetic cowl with red interior is available in two versions. Type MARIN has a hard plastic clamping ring. Type BOREAS has a stainless steel clamping ring.

A set consisting of a stainless steel mosquito screen and storm cover plate is available as an option.



BORE75

BORE100

BORE125

**Marin colour
red (RAL 3020)**



MARIN125



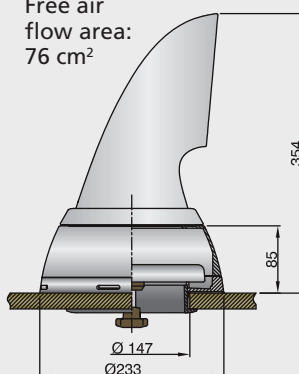
MARIN100



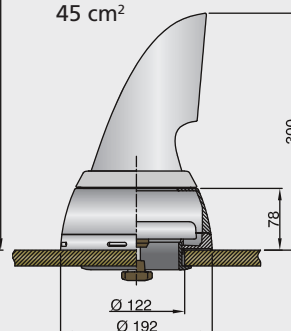
MARIN75

MARIN75	Cowl ventilator	Marin synthetic Ø 75 mm with plastic ring and nut
MARIN100	Cowl ventilator	Marin synthetic Ø 100 mm with plastic ring and nut
MARIN125	Cowl ventilator	Marin synthetic Ø 125 mm with plastic ring and nut
BORE75	Cowl ventilator	Boreas synthetic Ø 75 mm with S/S ring and nut
BORE100	Cowl ventilator	Boreas synthetic Ø 100 mm with S/S ring and nut
BORE125	Cowl ventilator	Boreas synthetic Ø 125 mm with S/S ring and nut

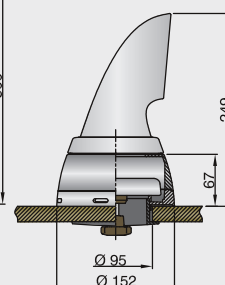
Free air flow area:
76 cm²



Free air flow area:
45 cm²



Free air flow area:
45 cm²



For all VETUS cowl ventilators (except type S), we can supply a plastic or stainless steel (AISI316) dorade box as an option. This drains off any water entering the ventilator and can be closed off entirely by means of the incorporated stainless steel mushroom ventilator. The mushroom ventilator also includes a mosquito screen.

BOX75

BOX100

BOX125



Upperside



Underside



BOXS75

BOXS100

BOXS125

Cowl ventilators stainless steel (AISI 316)

Red (RAL 3020)



YOG316R



TOM316R



JER316R



DON316R

Both the cowls and the rings are made of cast stainless steel. These cowls are revolving and removable. The clamping ring can be fastened by hand, or with a special tool, which is supplied as standard. If the tool is used for fastening, the risk of theft is almost eliminated. A Monel mosquito screen and a stainless steel cover plate to close off the cowl ventilator, can be supplied as an option. Comes complete with threaded ring nut and male deck ring.

DON316R	Cowl ventilator Ø 75 mm ID	Donald	S/S 316 red interior	(incl. ring and nut)
JER316R	Cowl ventilator Ø 75 mm ID	Jerry	S/S 316 red interior	(incl. ring and nut)
TOM316R	Cowl ventilator Ø 100 mm ID	Tom	S/S 316 red interior	(incl. ring and nut)
YOG316R	Cowl ventilator Ø 125 mm ID	Yogi	S/S 316 red interior	(incl. ring and nut)

Cowl ventilators stainless steel (AISI 316)

White (RAL 9003)



YOG316WR



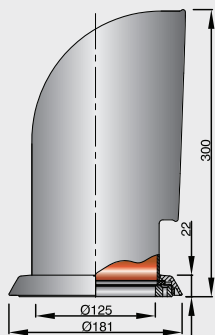
TOM316WR



JER316WR

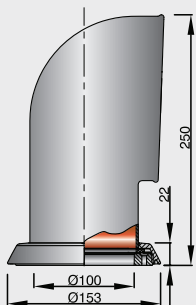


DON316WR



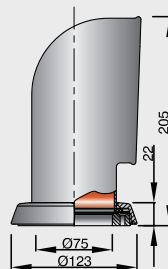
YOGI

free flow area 122,8 cm²



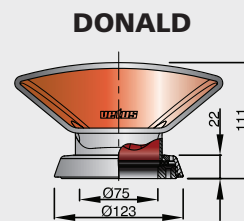
TOM

free flow area 78,6 cm²



JERRY

free flow area 44,2 cm²



DONALD

free flow area 44,2 cm²

DON316WR	Cowl ventilator Ø 75 mm ID	Donald	S/S 316 white interior	(incl. ring and nut)
JER316WR	Cowl ventilator Ø 75 mm ID	Jerry	S/S 316 white interior	(incl. ring and nut)
TOM316WR	Cowl ventilator Ø 100 mm ID	Tom	S/S 316 white interior	(incl. ring and nut)
YOG316WR	Cowl ventilator Ø 125 mm ID	Yogi	S/S 316 white interior	(incl. ring and nut)



Cowl ventilators



- These cowl ventilators are made from flexible PVC (Polyvinylchloride) and have the highest level of UV resistance. The ring nuts and mating deck flanges are made of hard plastic.
- The cowl ventilators can **revolve** and are **removable**. No tools are required, the ring nut can be loosened easily by hand.
- A Monel mosquito screen and a stainless steel cover plate to close off the cowl ventilator, can be supplied as an option.
- For the dimensions, please see adjacent page.



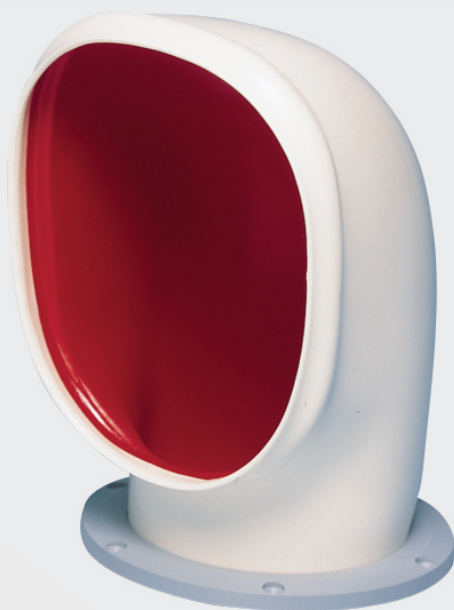
A set consisting of a stainless steel (AISI 316) ring nut and male deck ring is available for each size of cowl ventilator. The key to fasten the ring is supplied as standard.

DONALDS	Cowl ventilator Ø 75 mm ID, type Donald S	(incl. fixed plastic ring)
JERRY5	Cowl ventilator Ø 75 mm ID, type Jerry S	(incl. fixed plastic ring)
TOMS	Cowl ventilator Ø 100 mm ID, type Tom S	(incl. fixed plastic ring)
YOGIS	Cowl ventilator Ø 125 mm ID, type Yogi S	(incl. fixed plastic ring)
DONALD2	Cowl ventilator Ø 75 mm ID, type Donald 2	(incl. plastic ring and nut)
JERRY2	Cowl ventilator Ø 75 mm ID, type Jerry 2	(incl. plastic ring and nut)
TOM2	Cowl ventilator Ø 100 mm ID, type Tom 2	(incl. plastic ring and nut)
YOGI2	Cowl ventilator Ø 125 mm ID, type Yogi 2	(incl. plastic ring and nut)
SET75	Cover plate and mosquito screen S/S 316	for cowl Ø 75 mm
SET100	Cover plate and mosquito screen S/S 316	for cowl Ø 100 mm
SET125	Cover plate and mosquito screen S/S 316	for cowl Ø 125 mm
BOX75	Dorade box for cowl ventilator Ø 75 mm ID	
BOX100	Dorade box for cowl ventilator Ø 100 mm ID	
BOX125	Dorade box for cowl ventilator Ø 125 mm ID	
DJBOX	Dorade box for DONALD/JERRY	including mushroom ventilator
TBOX	Dorade box for TOM	including mushroom ventilator
YBOX	Dorade box for YOGI	including mushroom ventilator
RING75	Ring and nut S/S 316, for cowl ventilator Donald/Jerry	
RING100	Ring and nut S/S 316, for cowl ventilator Tom	
RING125	Ring and nut S/S 316, for cowl ventilator Yogi	
VE87	Key for smooth screw rings for cowl vents	

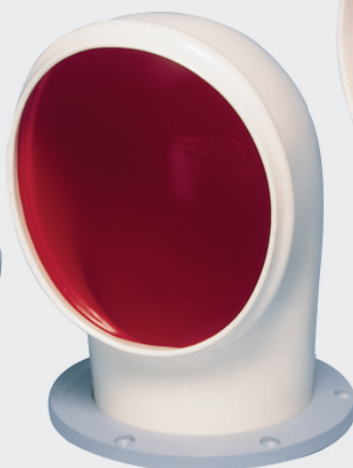
Cowl Ventilators

An alternative version of these cowl ventilators have a screwed down plastic ring.

Red (RAL 3020)



YOGIS



TOMS

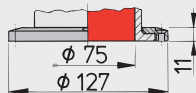


JERRYS

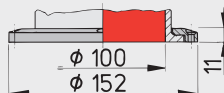


DONALDS

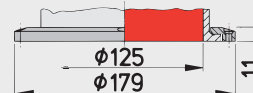
**Ring Donald-S
and Jerry-S**



Ring Tom-S



Ring Yogi-S



For VETUS cowl ventilators, types YOGI, TOM, JERRY and DONALD, we can supply a plastic dorade box. This drains off any water entering the ventilator and can be closed off entirely by means of the incorporated stainless steel mushroom ventilator. The mushroom ventilator also includes a mosquito screen. The male deck rings, made of either stainless steel or plastic, can be easily fitted to the dorade box using the nuts and bolts supplied.

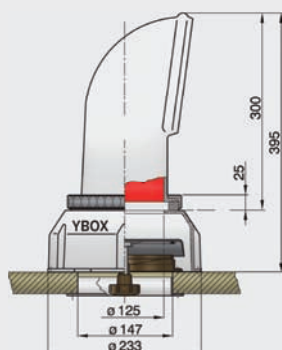


DJBOX

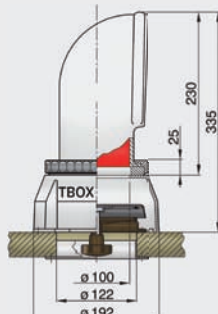
TBOX

YBOX

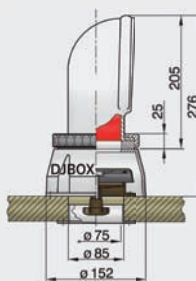
Free flow
area 76 cm²



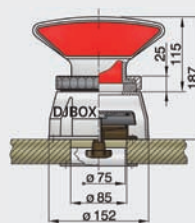
Free flow
area 45 cm²



Free flow
area 30 cm²



Free flow
area 30 cm²





THE MAXWELL MARINE STORY

WHY VETUS MAXWELL?

For over four decades the name Maxwell has been synonymous with the highest standards of excellence in marine engineering. By providing superior anchoring solutions for pleasure boats, superyachts and commercial vessels, Maxwell has earned a global reputation for quality without compromise. A reputation built upon ongoing research and development, innovation in design and a commitment to style that is unparalleled in the industry.

Maxwell has become an industry leader by analysing the needs of boats and boat owners around the world and producing equipment that consistently exceeds customer expectation.

Maxwell Marine has enjoyed a period of expansion and broadened horizons. As a company trusted for delivering on the promise of Anchoring Excellence, Maxwell Marine continues to supply a growing product range.

Maxwell Marine is represented by a strong international distribution network, a proven track record and a portfolio of products that are at home on many of the world's finest and most admired boats. The quality of Maxwell Marine products and their performance as a company is assured by its certification under the stringent requirements of ISO9001 and CE. In addition to their head office in Auckland, New Zealand, Maxwell Marine has a separate sales and distribution office in Maryland, USA which services North and South America. All of Australia is covered from Brisbane, Queensland; while distributors and customers in Europe, the Middle East and Africa are serviced from Schiedam in Holland. An extensive global dealer and service network supports these main centres.

When it comes to securing your investment, selecting the right anchor winch for your vessel is one of the most important decisions you will make. A windlass too small for the job will not only result in frustration when the going gets tough but could ultimately compromise vessel and crew safety. Choosing the right anchor winch is crucial for peace of mind and trouble free boating. Refer to pages 256 and 257 for Maxwell's easy to follow chart and guide to windlass and capstan selection.



MAXWELL, creators of...

New: RC12

Following the successful introduction of the Maxwell RC series windlasses in recent years, the range has been extended with the development of the new RC12.

The all new RC12 series features Maxwell's patented automatic rope/chain technology. The modern and functional design of the deck unit and the technically advanced motor and gearbox, makes the RC12 series suitable for vessels up to 22 metres LOA.

The deck unit is developed from the successful RC6, RC8 and RC10 models and like the rest of the RC series, made entirely from high gloss polished AISI316 stainless steel.

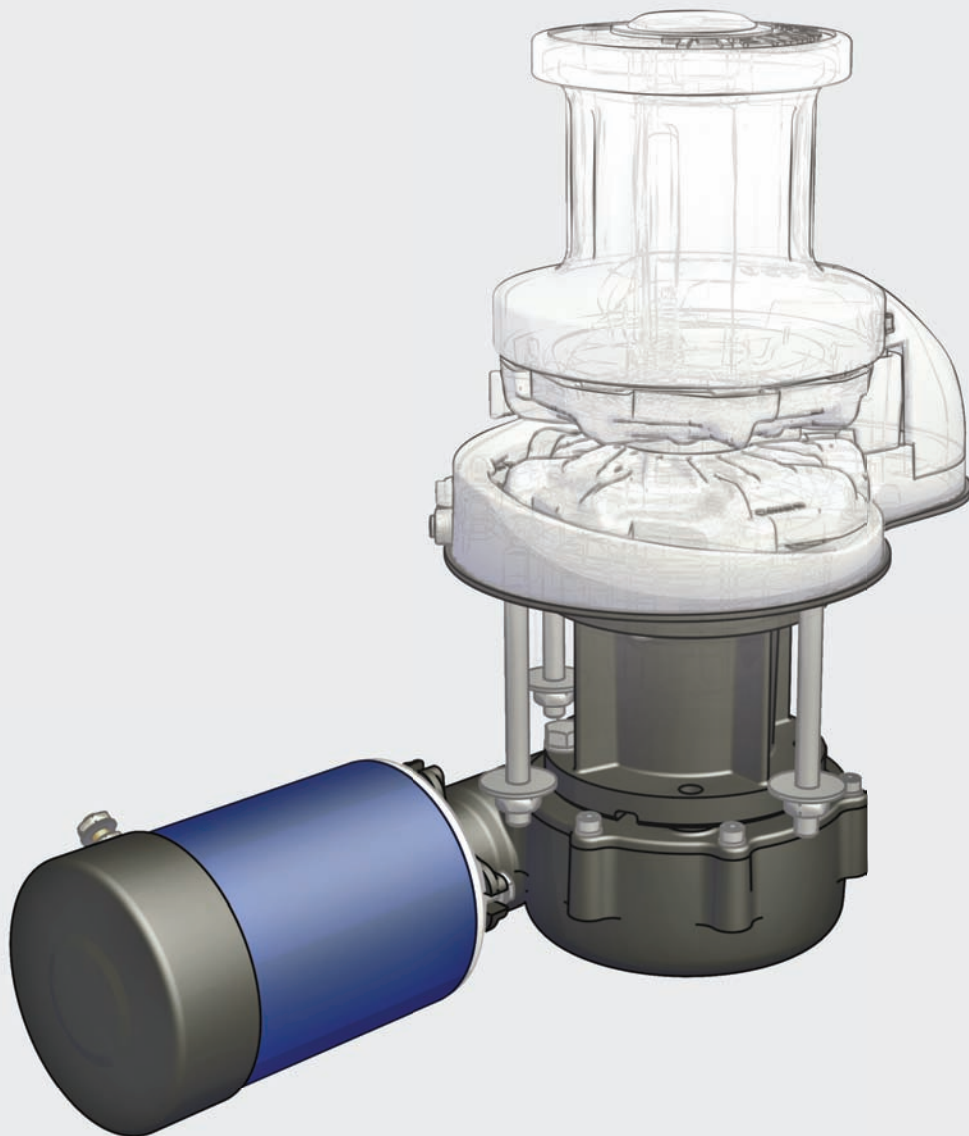
Just as with the other models in the range, convenience, performance and safety were paramount in the design.

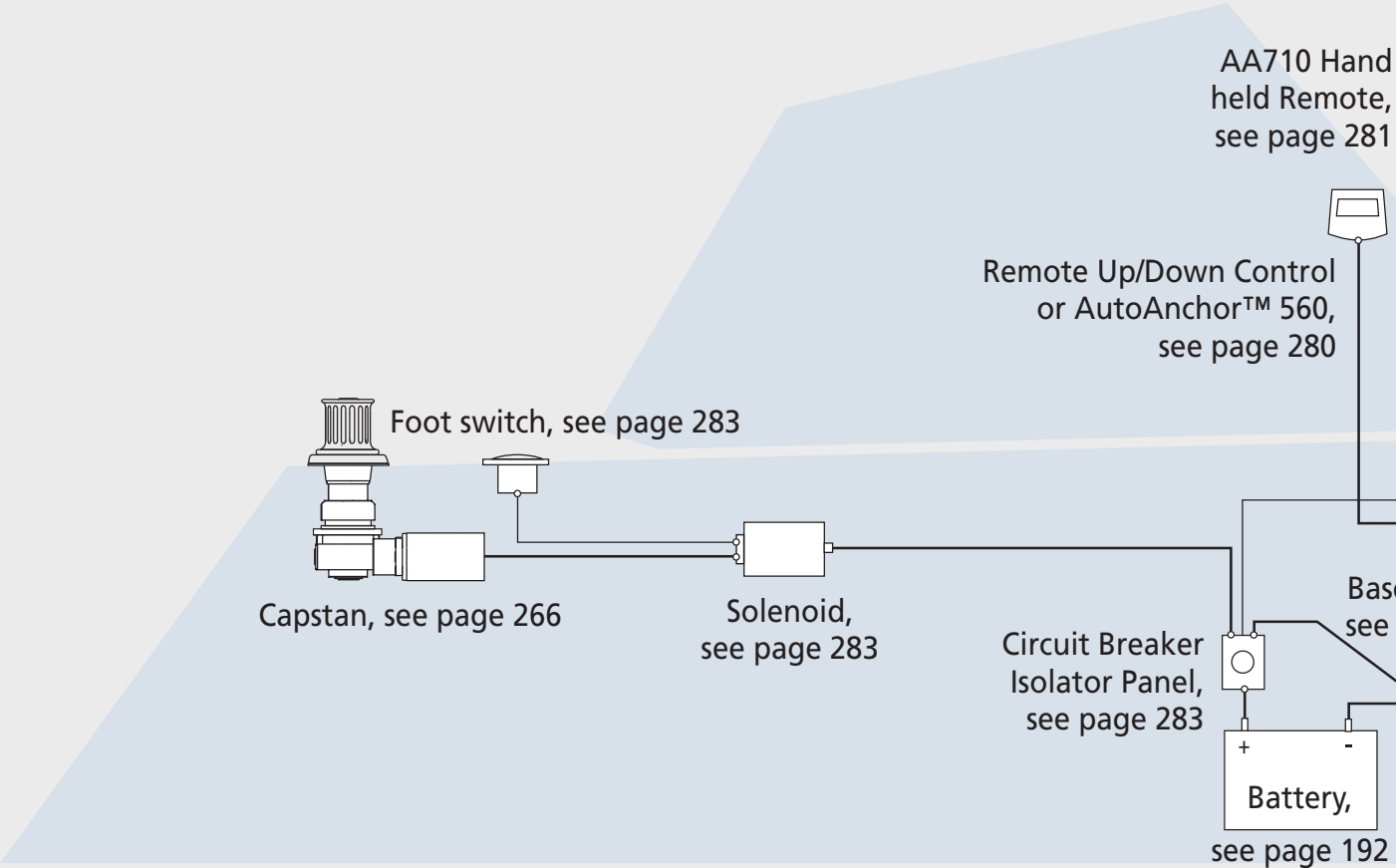
New: Footswitches

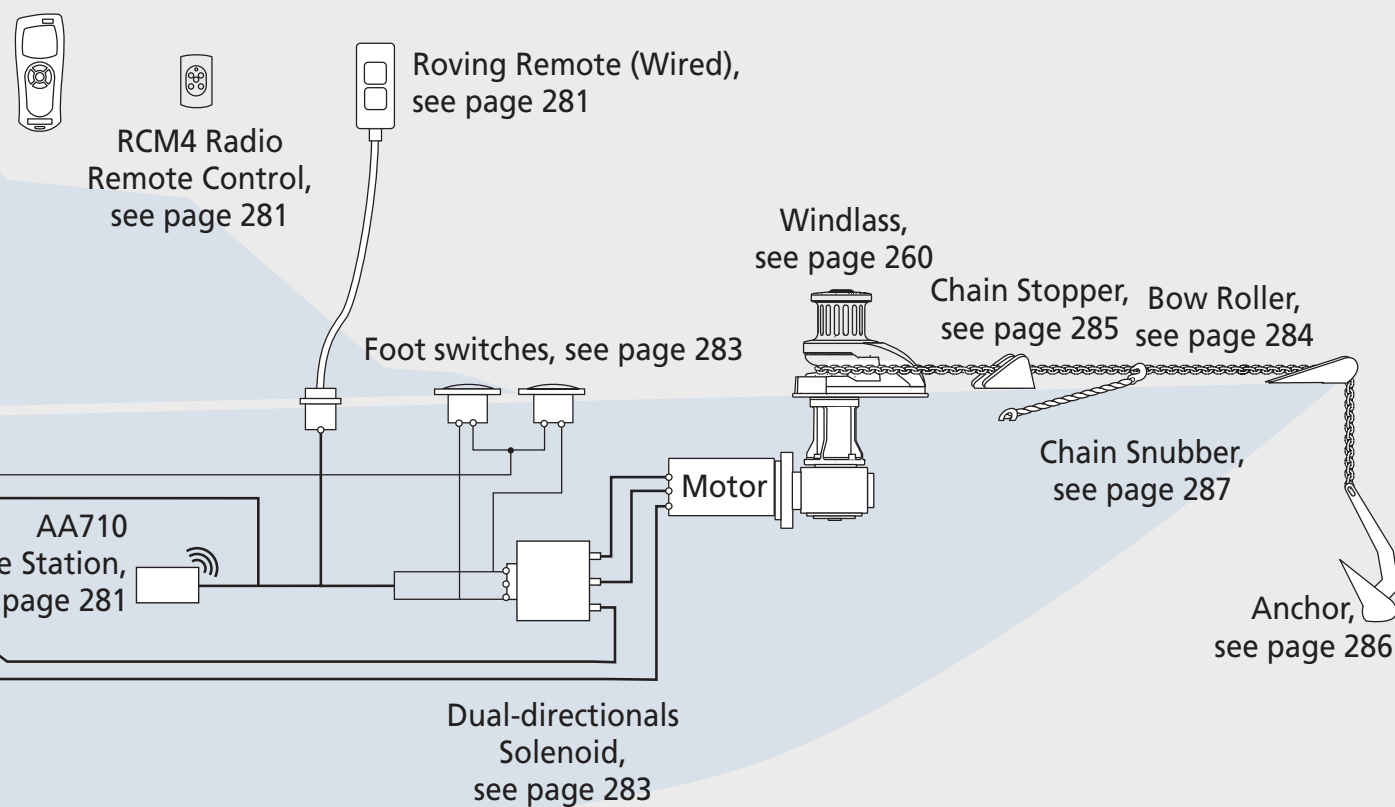
For 2012 Maxwell introduces a new anchor windlass footswitch. With this compact footswitch the anchor can be simply foot operated. Connecting the footswitch to a relay enables just a small diameter wire to be run to the switch, thus simplifying installation. The foot switch is available in two versions: with white or black cover.

In development

Maxwell's engineers also have in development the HRC12, a horizontal version of the RC12. The HRC12 is a larger version of HRC10 and will be launched in the course of 2012.





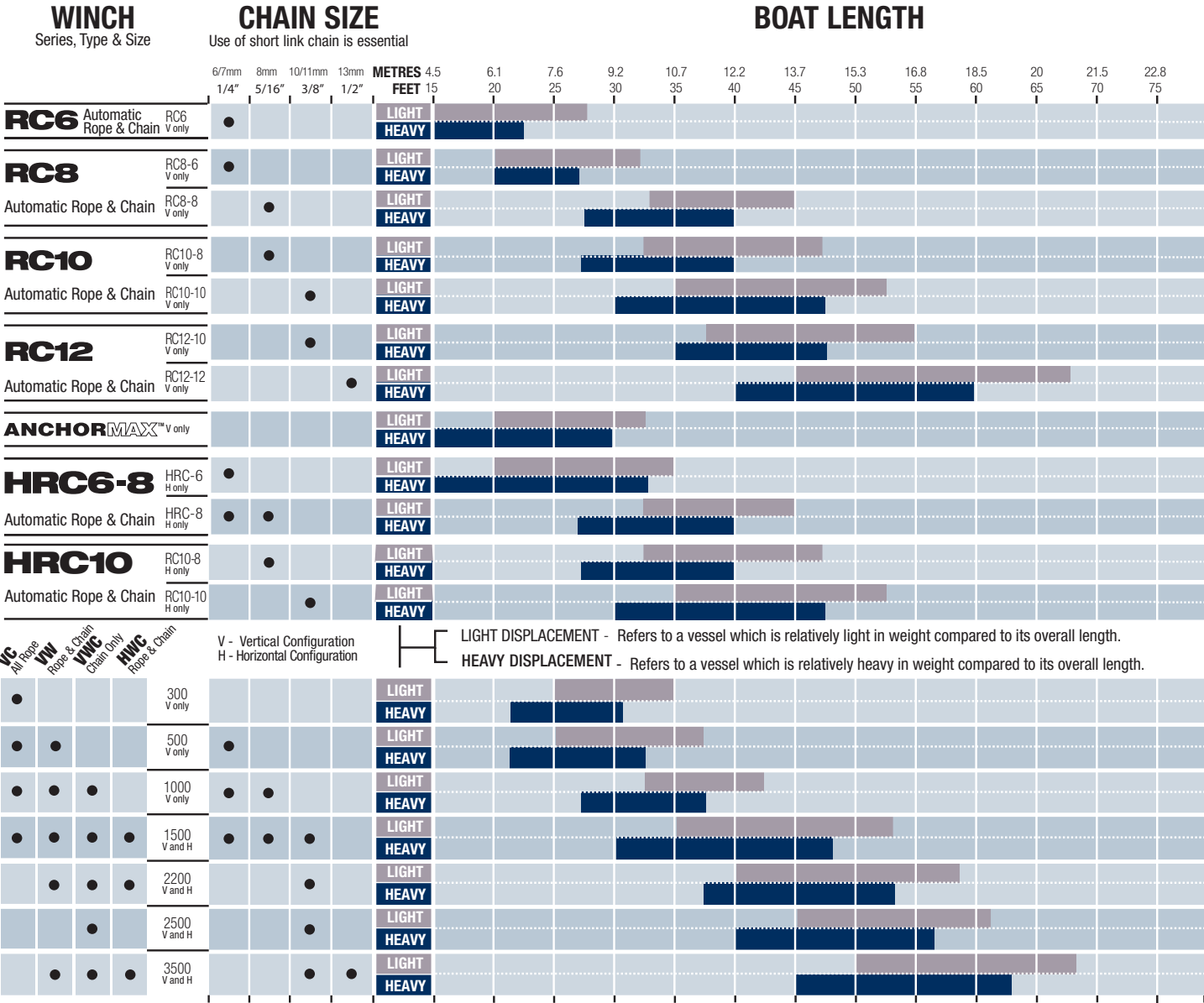


WINDLASS AND CAPSTAN SELECTION CHART

This chart serves as a basic guide to assist in selecting the appropriate anchor winch system for your boat.

Please note: Size, displacement and type of vessel, as well as anchoring conditions, must be taken into consideration when selecting an anchor winch. Vessels of heavy

displacement and/or high windage will require larger windlasses. All systems assume the use of a chain stopper, chain snubber or mooring cleat to remove the load when setting or breaking the anchor loose. The maximum pulling capacity of the windlass should not be less than three times the total weight of the ground tackle. Should you require any assistance or information, please do not hesitate to contact Maxwell Marine or any one of our distributors or service centres world-wide.



This chart refers to anchor windlass selection only. When selecting a stern capstan for the same boat, Maxwell uses one size smaller drive, or down to a minimum of 50% of the pull rating of the windlass (unless specified otherwise).

ALL MAXWELL WINDLASSES ARE ROPE COUNTER READY WITH SENSOR HOLE DRILLED AND MAGNET FITTED



WHICH WINCH? *(Italicised items - refer to glossary, see page 289)*

There are a number of important criteria to be considered in selecting the correct anchor winch. These include the vessel size, displacement, windage, anchor size and *rode* selection. Practicalities such as locker space and depth of fall for the rode also play a part in deciding which *windlass* is ideal for you.

Maxwell Marine's range of windlasses and capstans is extensive, with models to suit boats up to 100 metres (over 300 feet). This section aims to simplify the selection process by taking you step by step through all the criteria that needs to be considered when choosing a windlass or capstan.

WHAT SIZE WINDLASS OR CAPSTAN FOR MY BOAT?

Consider the overall length and displacement (either light or heavy) of your boat and use the chart on the opposite page to identify the most suitable windlass or capstan for your vessel.

VERTICAL OR HORIZONTAL CONFIGURATION?

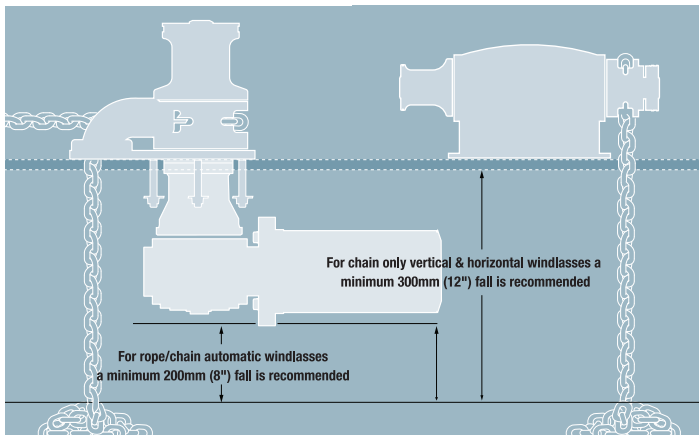
The two basic types of windlasses are differentiated by the drive shaft orientation. Deck thickness and underdeck space are the two main considerations when deciding which of the two types to fit.

Vertical windlasses make up the majority of anchor winch sales. They are characterised by situating the *capstan* and/or *gypsy* (topworks) above the deck and the motor and gearbox below. Vertical windlasses provide a 180° wrap of the anchor rode around the chainwheel giving optimal chain control, minimising slippage and jumping.

Horizontal windlasses are mounted completely above deck with gypsy and capstan located to either side. They provide a 90° wrap of the anchor rode around the chainwheel.

HOW MUCH SPACE DO I NEED IN MY CHAIN LOCKER?

Deck thickness and locker space play an important role in deciding whether to install a *vertical* or *horizontal* windlass. Estimating or measuring the depth of fall of the rode into the anchor locker may dictate which type of windlass is most suitable for your vessel. Calculating the depth of fall differs for horizontal chain only windlasses and for vertical chain or rope/chain windlasses (see diagram below).



Recommended minimum fall distances are measured from the top of rode pile (chain or rope/chain) after complete retrieval of the anchor.

RODE SELECTION

Rope and, particularly chain, selection is extremely important. Deciding on the right anchor winch for your boat depends on the size, not only of the boat, but also the ground tackle. Maxwell anchor winches and capstans are designed to take chain only, rope only or a combination of both. Automatic rope/chain systems are now commonly used on boats up to 20 metres (65 feet). Consequently, Maxwell's HRC6, HRC8, HRC10, RC6, RC8, RC10 and the NEW RC12 automatic rope/chain systems have become increasingly popular, as they offer the added benefit of less weight in the bow with the ability to carry an increased amount of rode. Chain only systems remain popular on heavier displacement sail and motor yachts.

There are two main types of anchor chain. Short link chain is most commonly used on small

and medium sized boats while stud link chain is generally used on much larger vessels such as Superyachts. The latter is characterised by a stud (bar) joining the two sides of the link preventing them from deforming when overloaded. High test or calibrated short link chain should always be used. Long or regular link chain should not be used with anchor windlasses.

There are a wide variety of both metric (mm) and imperial (inches) chain sizes available and these will have bearing on your final windlass decision. It is important that the right size and right grade of chain is used to ensure a correct fit of the links to the gypsy. If the chain is not matched to the chainwheel problems may occur, such as the chain jumping off the gypsy or the chain jamming as it will not feed smoothly through the chain pipe.

As chain to chainwheel compatibility is so important, Maxwell Marine supplies chainwheels to fit just about every known chain available on today's international market. (Refer to page 287)

DC, AC OR HYDRAULIC?

The wattage of a DC electric motor is not the important factor. Rather it is the efficiency of the whole winch, including the gearbox and motor, which counts. With the increasing popularity of powerful and compact on-board generators, AC powered winches are becoming a practical consideration for bigger boats. Hydraulic systems provide another power source well worth considering as they have the advantage of constant speed under all load conditions and can be run almost constantly while coupled with safe guards such as pressure relief valves. Modern hydraulic systems offer an integrated, low maintenance and efficient, centrally managed, power pack.

WHAT PULL CAPABILITY WILL I NEED?

The only meaningful way to rate anchor winch performance is by looking at what it will lift and at what speed. The two things to consider are (a) the *maximum pull* capability and (b) the *working load* of the winch. Maximum pull (sometimes referred to as stall load) is the maximum short term or instantaneous pull of the winch. Working load is generally rated at about one third of the maximum pull and is usually considered to be the load that the winch is pulling once the anchor is off the bottom. To determine your required maximum pull capability, complete the calculation below.

1. Calculate ground tackle weight (anchor + chain + rope = ground tackle)

eg:	ANCHOR	+	18m/60ft CHAIN	+	61m/200ft ROPE	=	GROUND TACKLE
	30kg/66lbs		45kg/100lbs		12kg/26lbs		87kg/192lbs

2. Calculate the maximum pull (total ground tackle x 3 = Maximum pull)

Safety guidelines suggest that the pulling capacity of the windlass should not be less than 3 times the total weight of the ground tackle.

eg:	GROUND TACKLE	x 3 =	MAXIMUM PULL
	87kg/192lbs		261kg/576lbs

In this instance an **HRC8, HRC10, RC8, RC10, or VW1000** would be suitable, providing the chain and rope size is applicable to the windlass being considered. The maximum pull of 261kg/576lbs is well within the capability of all these anchor winches.

SAFETY AND SECURITY TIPS

Circuit breaker/isolators are used in the installation of any DC electric windlass to provide protection to motor and cables should the windlass be overloaded. Accessories such as *chain stoppers* or chain snubbers must be used for safe anchoring, the avoidance of unintentional self-launching of the anchor and for the prevention of damage to your anchor winch.

You should never anchor off your winch or use your winch to pull your boat to the anchor spot. The anchor winch is designed to lift a dead weight and should not be subjected to the strain of your boat riding at anchor.

If you think the winch you are considering may be too small, then go to the next size up. Better to have excess lifting capacity than not enough!

Maxwell Marine and their agents or distributors offer free and helpful advice should you have any questions. Alternatively, check out Maxwell's website: www.maxwellmarine.com

Maxwell Product Innovation

Maxwell equipment is born of innovation and backed by years of experience in the manufacture of the world's highest quality anchor windlasses, ancillary deck gear and stern handling products.

Maxwell's innovative approach to design resulted in the introduction of automatic rope/chain windlasses to the global marine market during the mid 1990's. These were a radical departure from all other windlasses, revolutionary in design and technical features. Building on the success of these products, Maxwell has recently designed and developed an exciting new RC range of automatic rope/chain windlasses. But it doesn't stop there! In the early part of 2012, Maxwell will be releasing their totally new RC12-10 and RC12-12 Vertical Series of rope/chain windlasses, complementing the existing, highly acclaimed RC Series windlasses introduced in 2010.

Maxwell has broken the design barriers yet again with the development of a vertical and horizontal rope/chain windlass range incorporating two unique and internationally patented features. The new RC and HRC Series attest to Maxwell's ongoing commitment to innovative design and development.



New Maxwell Compact Foot Switches

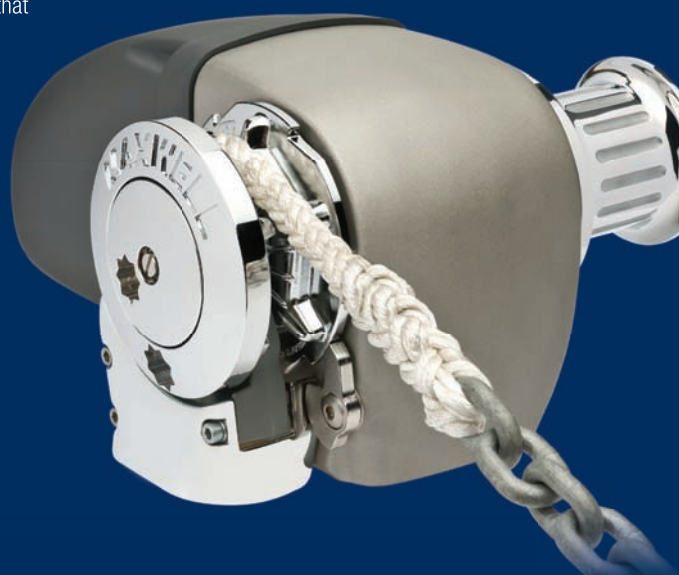


Maxwell has continued to evolve its existing range of proven windlasses and capstans. The new RC12 is the culmination of Maxwell's evolution of a full range of automatic rope/chain windlasses suitable for use on vessels from 4.5metres (15 feet) to over 20 metres (65 feet).

Maxwell's ongoing commitment to product development can also be seen in the upgrading of their 'traditional' and continually popular vertical VWC Series. Stalwarts since the early nineties, the VWC windlasses were always great performers and now, with advanced engineering features incorporated into their improved designs, they work even better.

Maxwell recognises that boat owners not only want equipment that works flawlessly, they want products that look good as well. To this end, Maxwell designers spend countless hours improving the look, functionality and robustness of all Maxwell products, as well as introducing new and highly innovative products such as the popular HRC6, HRC8, HRC10, RC6, RC8, RC10 and NEW RC12 Series.

With an ongoing commitment to excellence, product innovation, research and development, you can count on Maxwell to secure your investment!



HRC6-8

The all new compact HRC6 and HRC8 are Maxwell's horizontal versions of their latest innovative vertical RC6 and RC8 automatic rope/chain windlasses. Packed with original and proven features, such as automatic 'Free Fall' and including the patented rode management technology developed by Maxwell, the new HRC6 and HRC8 are destined to become industry icons.



RC12

The all new RC12 Series incorporates Maxwell's latest stylish innovation in automatic rope/chain technology. Retaining the classic open design styling more appropriate on larger boats, the RC12 Series represents the next generation of rope/chain windless evolution in every respect.

HRC10

Maxwell's all new HRC10 Horizontal Series represents yet another breakthrough in performance and anchor handling excellence. These horizontal, fully automatic rope/chain windlasses have been designed to meet the demands for use on larger vessels up to 16 metres (52 feet), which require a completely above deck installation system. The HRC10's flawlessly handle rope up to 16mm (5/8") and chain up to 10mm (3/8") in size, including the thick rope to chain splice. The modern appearance of the HRC10 Series retains the classic good looks of previous Maxwell horizontal windlasses, while incorporating design features years ahead of its competitors.

An Introduction to Maxwell's Products

To make the proper selection in anchor-handling equipment it is important to give careful consideration to the style and size of boat, the anticipated anchoring conditions, and the weight and type of ground tackle. (Refer to 'Which Winch' article on page 257)

Maxwell has an extensive range of windlasses for all types of ground tackle, bow configurations, locker spaces and power requirements including:

- The vertical stainless steel RC Series and the horizontal HRC Series automatically handle rope/chain combination rodes and are suitable for boats from 4.5 metres (15 feet) up to about 20 metres (65 feet).
- The NEW RC12 Series automatically handles rope/chain combination rodes and is suitable for lighter displacement vessels up to about 20 metres (65 feet).
- The multipurpose VC (Vertical Capstan) Series, which can be used for all types of line handling.
- The traditional rope and chain VW (Vertical Windlass) Series, designed for manually handling a rope and chain combination anchor rode.
- The VWC (Vertical Windlass/Capstan) and HWC (Horizontal Windlass/Capstan) Series, which handle chain only rodes automatically.

VERTICAL OR HORIZONTAL - MAXWELL OFFERS BOTH

Vertical systems have several advantages: They take up less space on deck and are easier to maintain. They are less expensive than equivalent horizontal models. Chain, or rope/chain, alignment with the bow roller, while not as critical as horizontal windlass alignment, should be within a tolerance of about +/- 2% for smooth retrieval of chain or rope/chain. Rode (rope/chain) alignment with RC Series winches is more critical (consult Owner's Manual). With vertical systems more chain is in contact with the chainwheel thus minimising the possibility of chain jump. Line-pull on the warping drum can be in any direction, as opposed to fore and aft only on horizontal models.

Horizontal models have the advantage of being better suited to applications where there is extreme deck thickness (over 200mm - 8"), limited below deck accessibility or when two anchors must be handled from one winch.

Maxwell rates its anchor winches at the stall load. The loads that the winch will normally be subjected to are substantially less. Each winch is available with a circuit breaker/isolator of appropriate size to provide electrical protection during normal operation of the winch.

Maxwell capstan winches and anchor windlasses, fitted with chromed bronze capstan drums are manufactured with Maxwell's unique and registered MAX-grip™ finish. Units fitted with fluted stainless steel capstan drums equally ensure the best possible grip and control of rope lines or rodes.

Distributed and supported worldwide by an extensive service network.





Features and benefits

- The combined stainless steel and chromed bronze RC6 Series utilises 6mm/7mm (1/4") chain spliced to 12mm (1/2") three strand or 8-braid (plait) rope.
- The RC6 features Maxwell's revolutionary, and patented, new Wave Design™ chainwheel. Refer below for more information about this innovative feature.
- Providing most of the features of the larger RC8 (refer pages 262 and 263), the RC6 has been designed with the smaller, trailer boat market in mind.
- The in-line, vertical gearbox and motor means quick and easy installation by either the boat yard or the DIY aftermarket customer.
- An inexpensive, high performance and great looking windlass; the RC6 is built for durability and years of trouble free use.
- The RC6 is a Low Profile unit (no optional capstan drum).

Every Maxwell automatic rope/chain windlass is available with all the necessary components for fully automatic dual direction control in a competitively priced package.

RC6



RC6 showing, 'fast install', in-line vertical gearbox and motor

STANDARD EQUIPMENT REQUIRED FOR DUAL DIRECTION CONTROL

Circuit breaker/isolator panel
Up/Down remote control panel
Emergency 'free fall' activation lever
Dual Direction Solenoid

OPTIONS

AutoAnchor™ Equipment
Compact Remote
Foot Switches
Chain Stopper
Chain Snubber

Every Maxwell RC6 automatic rope/chain windlass comes with top works, motor/gear box and dual direction solenoid. Switches and circuit breaker are available and need to be ordered separately. Refer chart on page 282.

Important: Maxwell windlasses must be used in conjunction with a chain stopper and/or alternative snubbing device to take the load off the windlass while laying at anchor. The chain stopper and alternative snubbing system should also be used to secure the anchor in the fully raised position while under way.

3YEAR
Limited Warranty

The combined stainless steel and chromed bronze RC6 automatic rope/chain anchor winch is Maxwell's smallest version of the highly successful vertical RC Series Windlass Range.

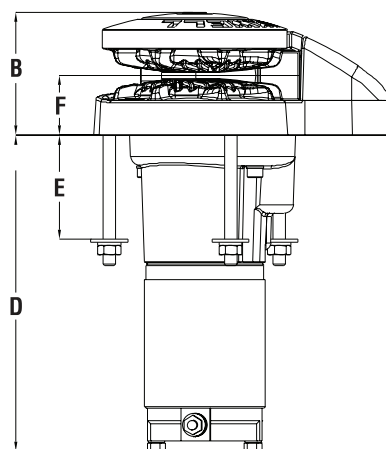
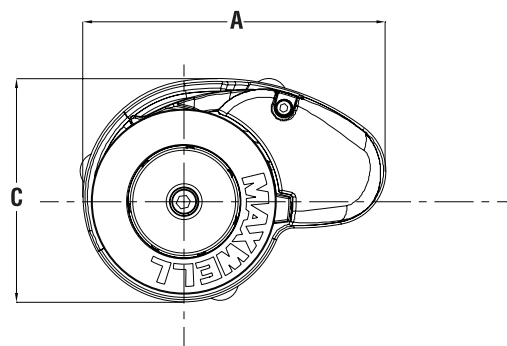
SPECIFICATIONS

Model	RC6
Maximum Pull/Lift	350kg 770lbs
Static Hold	700kg 1540lbs
Chain Short Link	6mm/7mm 1/4"
Rope Size (Nylon)* (3 strand or 8 plait recommended)	12mm 1/2"
Chain Speed (Anchor Retrieval)	24m/min 79ft/min
Rope Speed (Anchor Retrieval)	21m/min 69ft/min
Power Supply (DC)	12 or 24V
Motor Power	500W
Net Weight	8.5kg 18.7lbs

* refer to owners manual for rope size variations.

DIMENSIONS

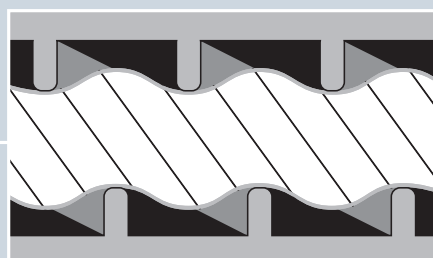
Model	RC6
A	196mm 7 3/4"
B	80mm 3 3/16"
C	145mm 5 3/4"
D	209mm 8 1/4"
E	65mm 2 1/2"
F	39mm 1 9/16"



MAXWELL'S REVOLUTIONARY NEW CHAINWHEEL

Maxwell once again leads the market in innovative thinking with the introduction of their latest Wave Design™ chainwheel. This patented rope/chain wheel incorporates two unique design concepts that greatly improve the handling and control of the rope/chain spliced rode. The outer ribs of the chainwheel are angled slightly forward ensuring that the rope and the chain are smoothly guided in the wheel during anchor retrieval.

As the rope pulls into the wheel, the opposite facing inner ribs grip the rope in an undulating manner, securing the rope more firmly in a 'wave pattern' action that is far superior to the traditional 'jam cleat' manner of holding the rope compared to all other products on the market. Not only does this Wave Design™ hold the rope more securely, it is also kinder on the rope resulting in increased longevity of your anchor rode.





3YEAR
Limited Warranty



RC8

- Unique spacer tube design allows installation through virtually any deck thickness and the multiple mounting positions and self aligning gearbox ensure optimal location of gearbox and motor in virtually all installation situations.
- The RC8 features Maxwell's revolutionary, and patented, new Wave Design™ chainwheel. Refer RC6 pages for more information about this innovative feature.
- The heavy duty stainless steel pressure arm is designed to effectively help grasp the rope/chain splice, giving the RC8 an unparalleled level of performance. In combination with a heavy duty, large wire diameter, stainless steel pre-loaded spring, the pressure arm always exerts maximum control pressure.
- The RC8 works just as effectively with all-chain rodes.
- Huge, through deck hawse pipe throat ensures easy entry of the rope/chain rode into and out of the anchor locker.
- Full disassembly capability of the topworks utilising only the handle provided and an Allen key.
 - Manual override and 'Free Fall', using the emergency crank/clutch handle provided.
 - Sealed oil bath and marine-grade hard anodised, alloy gearbox provides maximum output via a precision worm and worm wheel.

Features and benefits

- The combined stainless steel and chromed bronze RC8-6 fully automatic rope/chain windlass is designed to effortlessly retrieve and deploy 6mm/7mm (1/4") chain spliced to 12mm (1/2") three strand or 8-braid (plait) rope.
- The more powerful RC8-8 can be used with 8mm (5/16") chain spliced to 14mm three strand or 8-plait rope.
- The ingenious Wave Design™ rope/chain gypsy (chainwheel) is able to accommodate a wide range of chain pitch differences within the specified chain size diameters suitable for use with the RC8 Series.
- A sleek, Low Profile version and a fluted stainless steel capstan drum version, are available.
- Simple two piece installation saves time and money and allows easy retrofitting without disassembly of the windlass.



RC8 Capstan Version

SPECIFICATIONS

Model	RC8 6/7mm - 1/4"	RC8 8mm - 5/16"
Maximum Pull/Lift	350kg 770lbs	600kg 1320lbs
Static Hold	1200kg 2640lbs	1200kg 2640lbs
Chain Short Link	6mm/7mm 1/4"	8mm 5/16"
Rope Size (Nylon)* (3 strand or 8 plait recommended)	12mm 1/2"	14mm - 16mm 5/8"
Chain Speed (Anchor Retrieval)	28m/min 92ft/min	32m/min 105ft/min
Rope Speed (Anchor Retrieval)	24m/min 79ft/min	28m/min 92ft/min
Power Supply (DC)	12 or 24V	12 or 24V
Motor Power	600W	1000W
Net Weight	12.5kg 27.5lbs	16.5kg 36.3lbs

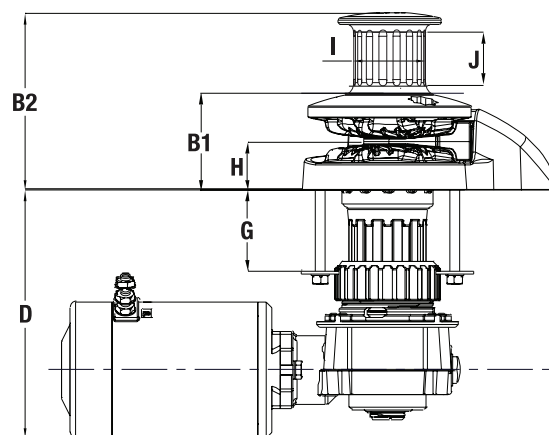
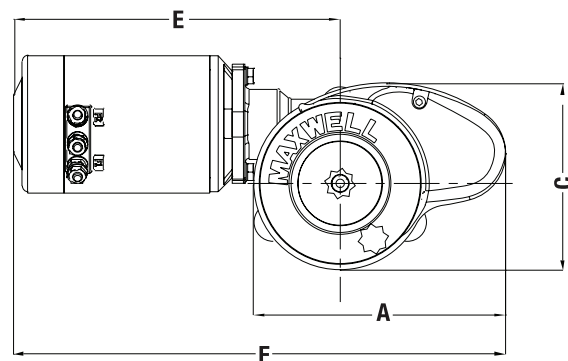
* refer to owners manual for rope size variations.

DIMENSIONS

Both Models	RC8 6/7mm - 1/4"	RC8 8mm - 5/16"
A	210mm 8 5/16"	210mm 8 5/16"
B1	83mm 3 5/16"	83mm 3 5/16"
B2 (with Capstan)	146mm 5 3/4"	146mm 5 3/4"
C	156mm 6 3/16"	156mm 6 3/16"
D	200mm 7 7/8"	208mm 8 1/4"
E	245mm 9 5/8"	272mm 10 3/4"
F	383mm 15"	410mm 16 1/4"
G (Std deck clearance) ^	65mm 2 1/2"	65mm 2 1/2"
H	40mm 1 5/8"	40mm 1 5/8"
I	66mm 2 5/8"	66mm 2 5/8"
J	44mm 1 3/4"	44mm 1 3/4"

^ extra deck clearance models available. Contact your Maxwell dealer.

The combined stainless steel and chromed bronze RC8 Series of automatic rope/chain anchor winches are Maxwell's mid-range additions to the highly successful RC Series Windlass Range.



STANDARD EQUIPMENT REQUIRED FOR DUAL DIRECTION CONTROL

Circuit breaker/isolator panel
Dual direction solenoid pack
Up/Down remote control panel
Emergency crank/clutch release handle

OPTIONS

AutoAnchor™ Equipment
Compact Remote
Capstan model
Foot Switches
Chain Stopper or Chain Snubber

Every Maxwell RC8 automatic rope/chain windlass comes with top works, motor/gear box and dual direction solenoid. Switches and circuit breaker are available and need to be ordered separately. Refer chart on page 288.

Every Maxwell automatic rope/chain windlass is available with all the necessary components for fully automatic dual direction control in a competitively priced package.

Important: Maxwell windlasses must be used in conjunction with a chain stopper and/or alternative snubbing device to take the load off the windlass while laying at anchor. The chain stopper and alternative snubbing system should also be used to secure the anchor in the fully raised position while under way.



Simple two piece installation

RC8 with gearbox and motor



RC10 Capstan Version



3 YEAR
Limited Warranty

Features and benefits

- The combined stainless steel and chromed bronze RC10 fully automatic windlass series is designed to effortlessly retrieve and deploy 8mm (5/16") and 10mm (3/8") short link chain and 14mm and 16mm (5/8") three strand or 8-braid (plait) rope.
- A sleek, Low Profile version and a fluted stainless steel capstan drum version, are available.
- Simple two piece installation saves time and money and allows easy retrofitting without disassembly of the windlass. Unique spacer tube design allows installation through virtually any deck thickness and the multiple mounting positions and self aligning gearbox ensure optimal location of gearbox and motor in virtually all installation situations.
- Full disassembly capability of the topworks utilising only the handle provided and an Allen key.
- The RC10 is manufactured from marine-grade 316 stainless steel and chromed bronze for long term durability. The heavy duty stainless steel pressure arm, coupled with the unique rope/chain gypsy, is designed to effectively grasp the splice between rope and chain, giving the RC10 an unparalleled level of performance.
- In combination with a heavy duty, large wire diameter, stainless steel pre-loaded spring, the pressure arm pivots on a trouble free bearing, thereby exerting maximum control pressure on the rope and splice.
- The RC10 works just as effectively with all chain rodes for those who desire a Low Profile, elegantly styled windlass on their foredeck.
- Huge, through deck hawse pipe throat ensures easy entry of the rope/chain rode into and out of the anchor locker.
- Cone type clutch/brake mechanism permits manual, 'Free Fall' anchoring.
- Sealed oil bath and marine-grade hard anodised, alloy gearbox provides maximum output via a precision worm and worm wheel.

SPECIFICATIONS

Model	RC10 8mm - 5/16"	RC10 10mm - 3/8"
Maximum Pull/Lift	700kg 1540lbs	850kg 1870lbs
Static Hold	1500kg 3300lbs	1500kg 3300lbs
Chain Short Link	8mm 5/16"	10mm 3/8"
Rope Size	14mm - 16mm 5/8"	16mm 5/8"
Chain Speed (Normal Working load)	24m/min 79ft/min	24m/min 79ft/min
Rope Speed (Normal Working load)	20m/min 65ft/min	20m/min 65ft/min
Power Supply (DC)	12 or 24V	12 or 24V
Motor (Watts)	1000W	1200W
Net Weight	19kg 42lbs	20kg 44lbs

DIMENSIONS

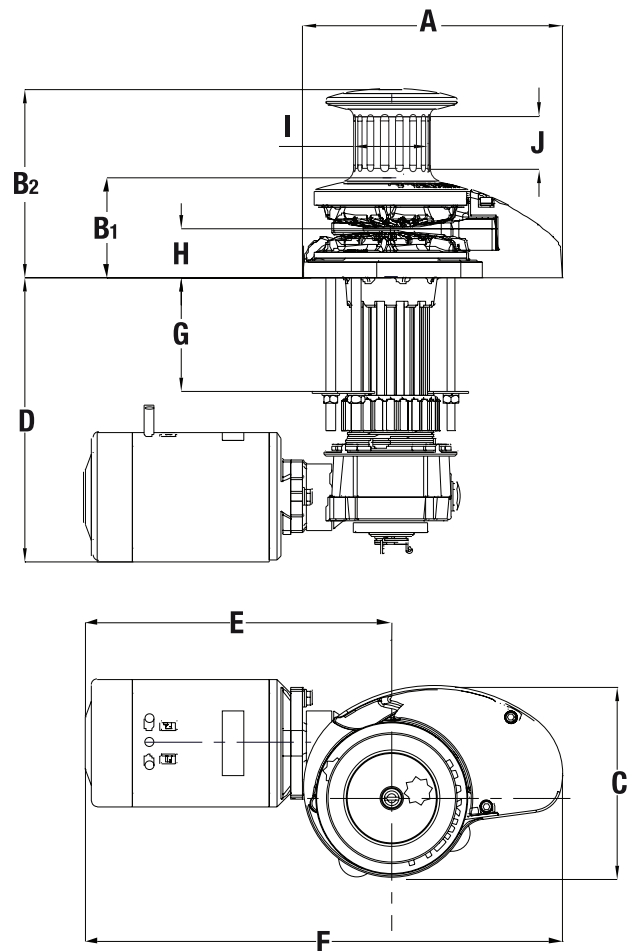
Model	RC10 8mm - 5/16"	RC10 10mm - 3/8"
A	230mm 9 1/8"	230mm 9 1/8"
B1	89mm 3 1/2"	89mm 3 1/2"
B2 (with capstan)	168mm 6 5/8"	168mm 6 5/8"
C	170mm 6 3/4"	170mm 6 3/4"
D	251mm 10"	251mm 10"
E	272mm 10 3/4"	272mm 10 3/4"
F	424mm 16 3/4"	424mm 16 3/4"
G (Std deck clearance) ^	100mm 4"	100mm 4"
H	43mm 1 3/4"	43mm 1 3/4"
I	66mm 2 5/8"	66mm 2 5/8"
J	44mm 1 3/4"	44mm 1 3/4"

^ extra deck clearance models available. Contact your Maxwell dealer.

Important: Maxwell windlasses must be used in conjunction with a chain stopper and/or alternative snubbing device to take the load off the windlass while laying at anchor. The chain stopper and alternative snubbing system should also be used to secure the anchor in the fully raised position while under way.



The combined stainless steel and chromed bronze RC10 Series windlasses are Maxwell's upper mid-range additions to the highly successful new RC Series Windlass Range.



STANDARD EQUIPMENT REQUIRED FOR DUAL DIRECTION CONTROL

Circuit breaker/isolator panel
Dual direction solenoid pack
Up/Down remote control panel
Emergency crank/clutch release handle

OPTIONS

AutoAnchor™ Equipment
Compact Remote
Capstan model
Foot Switches
Chain Stopper or Chain Snubber

Every Maxwell RC10 automatic rope/chain windlass comes with top works, motor/gear box and dual direction solenoid. Switches and circuit breaker are available and need to be ordered separately. Refer chart on page 288.

Every Maxwell automatic rope/chain windlass is available with all the necessary components for fully automatic dual direction control in a competitively priced package.



**NEW
FOR 2012**



RC12 Capstan Model

3YEAR
Limited Warranty

Features and benefits

- The RC12 fully automatic windlass series is designed to effortlessly retrieve and deploy 10mm (3/8") short link chain and 16mm (5/8") to 20mm (3/4") three strand or 8-Plait rope (RC12-10) and 13mm (1/2") short link chain and 16mm (5/8") to 20mm (3/4") three strand or 8-Plait rope (RC12-12).
- With a maximum pull of 1590 kg (3500 lb), and an anchor retrieval rate of 15m/min (50ft/min), the RC12-12 is one of the fastest and gruntest windlasses in its class.
- A sleek, Low Profile version and a fluted stainless steel capstan drum version, are available.
- The all new RC12 is packed with patented innovative features combined with Maxwell's traditionally classic aesthetics, but reflecting the modern "form follows function" of the highly successful RC6, RC8 and RC10 series windlasses.
- The elegantly designed deckplate and chainpipe cover are manufactured in polished marine-grade 316 stainless steel, as are the heavy duty pressure arm, stripper, chainwheel and fluted capstan drum.
- The huge, through deck hawse pipe throat ensures easy entry of the rope/chain rode into and out of the anchor locker.
- Double cone-type brake/clutch mechanism permits 'Free Fall' anchoring. Cone clutches, unlike dog clutches, provide smooth progressive engagement, ensuring safe and precise operator control.
- The RC12 features Maxwell's revolutionary and patented new Wave Design™ chainwheel. Refer to RC6 page for more information about this innovative feature.
- Emergency manual retrieval is made simple and easy with Maxwell's unique "Active Latch Ratchet System" operation that prevents backwind of the windlass during manual hauling of the anchor.
- The Maxwell designed, all new and innovative black, hard anodised gearbox provides numerous advantages:
 - Fast and easy windlass installation
 - More corrosion resistant
 - Easy to maintain and service
 - Takes up less room in the anchor locker
 - 75:1 Ratio (RC12-10) or 100:1 Ratio (RC12-12), single stage design with less moving parts, for smoother and quieter operation
 - Allows for multi-positioning of the gearbox/motor.



RC12 Low Profile Model

The RC12 Series incorporates Maxwell's latest stylish innovation in automatic rope/chain windlass technology. Retaining the classic open design styling more appropriate on larger boats, the RC12-10 and RC12-12 represent the next generation of rope/chain windlass evolution in every respect.

SPECIFICATIONS

Model	RC12 10mm - 3/8"	RC12 13mm - 1/2"
Maximum Pull/Lift	1134kg 2500lbs	1590kg 3500lbs
Static Hold	2200kg 4840lbs	2200kg 4840lbs
Chain Short Link**	10mm 3/8"	13mm 1/2"
Rope Size**	16-20mm 5/8-3/4"	16-20mm 5/8-3/4"
Chain Speed	24m/min 79ft/min	15m/min 50ft/min
Rope Speed	20m/min 65ft/min	13m/min 43ft/min
Power Supply (DC)	12V or 24V	12V or 24V
Motor Power	1200W	1200W
Net Weight - DC	32kg 71lbs	32kg 71lbs
Net Weight - DC	29kg 64lbs	29kg 64lbs
Hydraulic Pressure	138bar 2000PSI	138bar 2000PSI
Hydraulic Flow	42 l/min 11USgal/min	42 l/min 11USgal/min
Net Weight - Hyd (Low Profile)	23kg/51lbs	23kg/51lbs
(Capstan version)	26kg/57lbs	26kg/57lbs

** When ordering please specify your specific rope and chain, combination rode

STANDARD EQUIPMENT REQUIRED FOR DUAL DIRECTION CONTROL

Circuit breaker/isolator panel
Dual direction solenoid pack
Up/Down remote control panel
Clutch release handle
Emergency (manual) retrieval handle.

OPTIONS

Foot Switches
Extra deck clearance kit
AutoAnchor™ Equipment
Compact Remote
Chain Stopper
Chain Snubber

Every Maxwell RC12 automatic rope/chain windlass comes with top works, motor/gear box and dual direction solenoid. Switches and circuit breaker are available and need to be ordered separately. Refer chart on page 288.

Every Maxwell automatic rope/chain windlass is available with all the necessary components for fully automatic dual direction control in a competitively priced package.

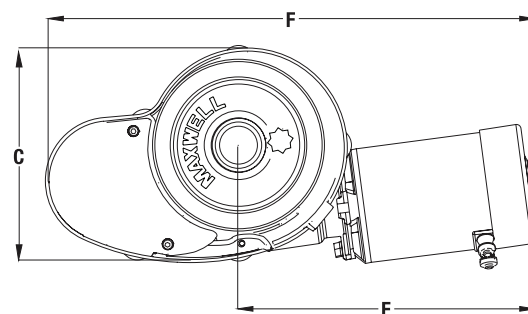
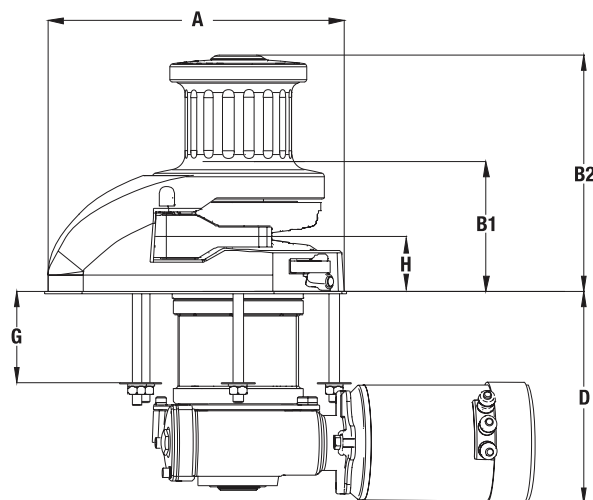
Activation of the ratcheted mechanism lever ensures the windlass can not backwind during emergency (manual) retrieval of the rode (rope and/or chain) and anchor.



Important: Maxwell windlasses must be used in conjunction with a chain stopper and/or alternative snubbing device to take the load off the windlass while laying at anchor. The chain stopper and alternative snubbing system should also be used to secure the anchor in the fully raised position while under way.

DIMENSIONS

Model	RC12 10mm - 3/8"	RC12 13mm - 1/2"
A	293mm 11 5/8"	293mm 11 5/8"
B ¹ (Low Profile version)	128mm 5 1/8"	128mm 5 1/8"
B ² (Capstan version)	233mm 9 1/4"	233mm 9 1/4"
C	206mm 8 1/8"	206mm 8 1/8"
D (Std deck clearance)	210mm 8 3/8"	210mm 8 3/8"
E	294mm 11 5/8"	294mm 11 5/8"
F	482mm 19"	482mm 19"
G (Std deck clearance)	90mm 3 5/8"	90mm 3 5/8"
H	54mm 2 1/4"	54mm 2 1/4"



VC500



**NEW
STAINLESS
STEEL MODEL**

Features and benefits

An extremely versatile vertical capstan or general purpose electric winch for use as an anchor winch, pot hauler or davit winch.

The ANCHORMAX™ has an extremely high power to weight ratio. The compact, fully sealed gearbox is driven by a vertically mounted, permanent magnet motor. Intrusion below decks is minimised making the design ideal for boats from 5m (16ft) to 10m (32ft). Fitting to the boat is simplicity itself as no dismantling of the winch is required.

The ANCHORMAX™ gear housings are marine-grade alloy and the drum is stainless steel. It is supplied as a single direction (clockwise) unit, complete with deck switch, fastenings, template and fitting instructions.

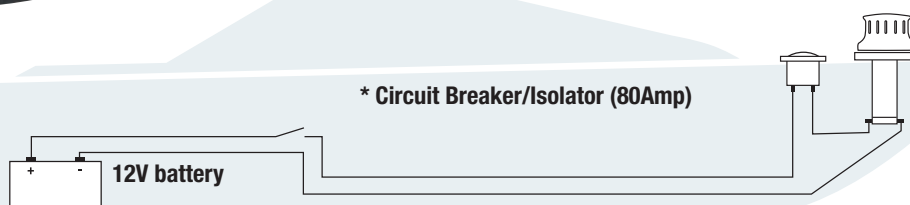
The ANCHORMAX™ is not recommended for use to haul halyards. The ANCHORMAX™ is not recommended for use to haul chain.

ANCHORMAX™



All standard and optional control accessories can be found on pages 280 to 283.

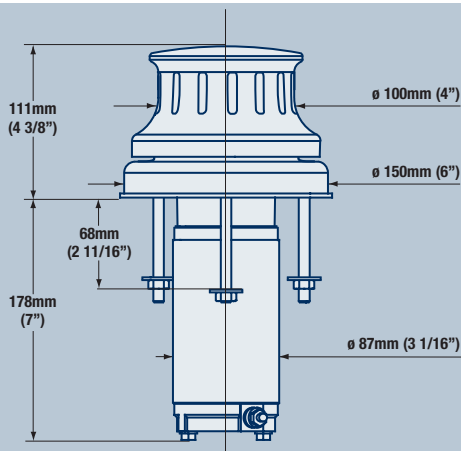
2YEAR
Limited Warranty



*Not supplied with but recommended

ANCHORMAX SPECIFICATIONS

Maximum Line Pull/Lift	386kg (850lbs)
Speed @ nominal working load (80amps with 100kg/220lb load)	24m/min (76' per min)
Voltage	12V
Power	500W
Weight	8kg (17.6lbs)
Maximum Boat LOA	10m (33')
Maximum Boat Weight	4 tonnes



The NEW stainless steel fluted capstan VC Series is designed for simple, low cost anchor recovery on smaller boats and rope hauling on larger vessels.

Features and benefits

- Vertical design suits smaller powerboats or sailboats and can be utilised for anchor rodes, as a docking capstan on larger craft, or auxiliary line hauling from any direction.
- High quality, hard wearing stainless steel above deck components.
- Functional rope hauling from any direction using fluted, snag-free warping drum for positive control of all ropes.
- Simplified through deck installation by modular design and precise alignment of gearbox to the topworks.
- Alternative gearbox/motor positions accommodate virtually all installation situations.
- Compact, reliable gearbox, made of corrosion resistant materials.
- Anodized aluminium gearbox and spacer on VC500 and VC1000 models.
- Heavy duty, dual direction motors, designed for marine winches.
- Easily disassembled for servicing.
- Can be mounted horizontally for use as a pot hauler or davit winch.

STANDARD EQUIPMENT REQUIRED FOR SINGLE DIRECTION CONTROL

Circuit breaker/isolator panel (supplied with DC units only)

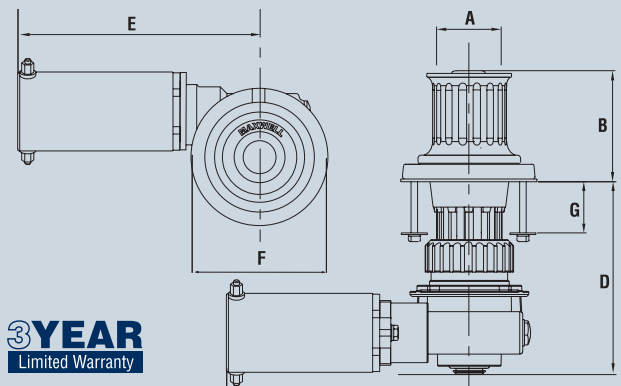
Foot Switch (supplied with DC units only)

OPTIONS

Extra deck clearance

Hydraulic motor*

All standard and optional control accessories can be found on pages 280 to 283.



SPECIFICATIONS

Model	500	1000
Maximum Pull/Lift	300kg 660lbs	700kg 1540lbs
Static Hold	Not Valid Not Valid	Not Valid Not Valid
Line Speed (Normal Working)	18m/min 60ft/min	20m/min 65ft/min
Power Supply (DC)	12 or 24V	12 or 24V
Motor (Watts)	600W	1000W
Net Weight (Electric)	10kg 22lbs	18kg 40lbs
Hydraulic Pressure	*N/A *N/A	100bar 1450psi
Hydraulic Flow	*N/A *N/A	20l/min 5.3USgal/min
Net Weight - Hyd	*N/A *N/A	11kg 24lbs

DIMENSIONS

Model	500	1000
A	65mm 2 9/16"	80mm 3 1/8"
B	106mm 4 3/16"	122.5mm 4 5/6"
D (Std deck clearance)	173mm 6 7/8"	252mm 9 15/16"
E	245mm 9 5/8"	272mm 10 3/4"
F	132.5mm 5 7/32"	160mm 6 5/16"
G (Std deck clearance) OR**	57mm 2 1/4"	100mm 4"
G (Extra deck clearance) ^	N/A N/A	150mm 6"

**For VC1000 a shorter deck clearance version is also available at 50mm (2")

^ A deck clearance increase will also increase the 'D' measurement by the same increment.



3 YEAR
Limited Warranty

Features and benefits

- Provides the versatility of operating two anchors from one winch.
- Functional rope hauling from any direction using independent MAX-grip™ snag-free warping drum with clutch disengagement of chainwheel for positive control of all ropes.
- Permits use of traditional shackle and thimble rope and chain connection.
- Allows alternative mounting horizontally on a fore and aft bulkhead inside chain locker for below deck installation.
- High-quality finish on above deck components, manufactured from marine grade 316 stainless steel and chromed bronze, for long term durability.
- Cone type brake/clutch mechanism permits manual 'Free Fall' anchoring. Cone clutches, unlike dog clutches, provide smooth progressive engagement ensuring safe operator control.
- Chainwheel locking pawl (except on VW500).
- Simplified through deck installation by modular design and precise alignment of gearbox to the topworks utilising marine-grade stainless steel bolts.
- Anodized aluminium gearbox and spacer on all models.
- Heavy duty, dual direction motor, designed for marine winches.
- Easily disassembled for servicing.

MAX GRIP™



NEW FOR 2012

The VW10 evolved from the demand for a vertical windlass that could be used in a horizontally installed configuration (refer image above), but which would also, interactively handle a rope/chain rode. The traditional VW models could be used with chain only rodes. The VW 10, capable of handling up to 10mm (3/8") chain and 16mm (5/8") rope is ideally suited for use in sailing boat anchor lockers, where space considerations are critical. Quick and easy to install and available with our without independant warping capstan, the VW10 is destined to become an instant hit in this unique niche market.



Design concept image

STANDARD EQUIPMENT REQUIRED FOR SINGLE DIRECTION CONTROL

Circuit breaker/isolator panel (supplied with DC units only)
Foot Switches (supplied with DC units only)
Chainwheel to suit chain sizes specified
Emergency crank handle and clutch control lever (except on VW500)

OPTIONS

Additional foot Switches
Dual direction solenoid pack
Chain Stopper*
Chain Snubber

Up/Down remote control panel
Extra deck clearance kit
AutoAnchor™ Equipment
Hydraulic motor (except on 500)

All standard and optional control accessories can be found on pages 280 to 283.

The VW Series of anchor winches are designed for traditional rope and chain combination anchor rodes, where manual transfer of the rode from the rope warping drum to the chainwheel is required

SPECIFICATIONS

MODEL	500*	1000	1500	2500	3500
Maximum Pull/Lift	227kg 500lbs	700kg 1540lbs	850kg 1870lbs	1135kg 2500lbs	1590kg 3500lbs
Static Hold	600kg 1320lbs	1500kg 3300lbs	1500kg 3300lbs	2200kg 4840lbs	2200kg 4840lbs
Chain Short Link	6/7mm 1/4"	6-10mm 1/4" -3/8"	6-10mm 1/4" -3/8"	9-11mm 5/16"-3/8"	10-13mm 3/8"-1/2"
Line Speed** (Normal Working)	18m/min 59ft/min	18m/min 59ft/min	18m/min 59ft/min	15m/min 50ft/min	10m/min 33ft/min
Power Supply (DC)	12 or 24V	12 or 24V	12 or 24V	12 or 24V	12 or 24V
Motor (Watts)	600W	1000W	1200W	1200W	1200W
Net Weight (Electric)	10kg 22lbs	22kg 50lbs	22kg 50lbs	38kg 84lbs	48kg 105lbs
Hydraulic Pressure	N/A	100bar 1450psi	138bar 2000psi	138bar 2000psi	138bar 2000psi
Hydraulic Flow	N/A	20 l/min 5.3USgal/min	20 l/min 5.3USgal/min	36 l/min 9.5USgal/min	42 l/min 11USgal/min
Net Weight (Hyd)	N/A	15kg 34lbs	15kg 34lbs	32kg 70lbs	40kg 88lbs

* Available USA only.

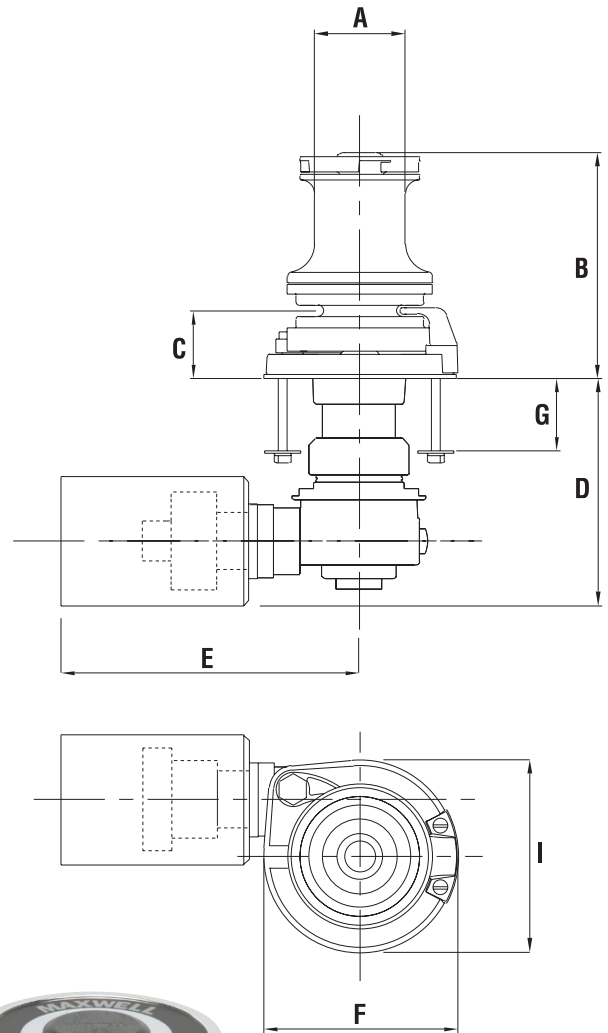
** Winch performance when hauling rope with capstan. Chain speed may vary depending on size of chain and gypsy.

DIMENSIONS

MODEL	500	1000	1500	2500	3500
A	65mm 2 9/16"	80mm 3 1/8"	80mm 3 1/8"	94mm 3 11/16"	110mm 4 5/16"
B	151mm 6"	198mm 7 3/4"	198mm 7 3/4"	251mm 9 15/16"	276mm 10 7/8"
C	40mm 1 5/8"	59mm 2 3/8"	59mm 2 3/8"	80mm 3 5/32"	83mm 3 9/32"
D	173mm 6 7/8"	252mm 9 15/16"	252mm 9 15/16"	210mm 8 5/15"	210mm 8 5/15"
E	244mm 9 5/8"	272mm 10 23/32"	272mm 10 23/32"	281mm 11 1/8"	281mm 11 1/8"
F	133mm 5 1/4"	165mm 6 1/2"	165mm 6 1/2"	190mm 7 1/2"	270mm 10 5/8"
G (Std deck clearance)**	57mm 2 1/4"	100mm 4"	100mm 4"	100mm 4"	100mm 4"
G (Extra deck clearance) ^	N/A	150mm 6"	150mm 6"	200mm 8"	200mm 8"
I	133mm 5 1/4"	165mm 6 1/2"	165mm 6 1/2"	194mm 7 5/8"	270mm 10 5/8"

**For VW1000 and VW1500 shorter deck clearance version also available at 50mm (2")

^ A deck clearance increase will also increase the 'D' measurement by the same increment.



VW2500

***Important:** Maxwell windlasses must be used in conjunction with a chain stopper and/or alternative snubbing device to take the load off the windlass while laying at anchor. The chain stopper and alternative snubbing system should also be used to secure the anchor in the fully raised position while under way.



VWC2500

3 YEAR
Limited Warranty

Features and benefits

- Fully automatic single or dual direction chainwheel operation.
- High-quality finish on above deck components, manufactured from marine grade 316 stainless steel and chromed bronze, for long term durability.
- Integral chain pipe and stripper are aligned for virtually jam-free operation providing automatic feed of chain into and out of the anchor locker.
- Port and starboard chain pipes for twin installations. (Sizes 2500 and above only.)
- Cone-type brake/clutch mechanism permits manual 'free fall' anchoring. Cone clutches, unlike dog clutches, provide smooth progressive engagement ensuring safe and precise operator control.
- Chainwheel locking pawl.
- Optional Band Brake available for 3500 series unit.
- Clutch disengagement of the chainwheel enables independent rope hauling from any direction, using the Max-grip™ snag-free warping drum for positive control of all ropes.
- Simple through deck installation by modular design and precise alignment of gearbox to the topworks utilising marine-grade stainless steel bolts.
- Anodized aluminium gearbox and spacer tube on all models.
- Heavy duty, dual direction motor, designed for marine winches.
- Low Profile configurations (no warping drum) are available.

STANDARD EQUIPMENT REQUIRED FOR SINGLE DIRECTION CONTROL

Circuit breaker/isolator panel (supplied with DC units only)
Foot Switches (supplied with DC units only)
Chainwheel to suit chain sizes specified
Emergency crank handle and clutch control lever

***Important:** Maxwell windlasses must be used in conjunction with a chain stopper and/or alternative snubbing device to take the load off the windlass while laying at anchor. The chain stopper and alternative snubbing system should also be used to secure the anchor in the fully raised position while under way.

OPTIONS

Additional foot Switches
Chain Stopper*
"Dual direction solenoid pack"
Up/Down remote control panel
Extra deck clearance kit
AutoAnchor™ Equipment
Compact Remote
Roving remote
Hydraulic motor

All standard and optional control accessories can be found on pages 280 to 283.



VWCLP3500 Low Profile configuration

The WVC Series is designed for automatic vertical handling of chain-only anchor rodes while offering an independent capstan for the retrieval of a secondary rope and chain rode or to assist with docking procedures.

SPECIFICATIONS

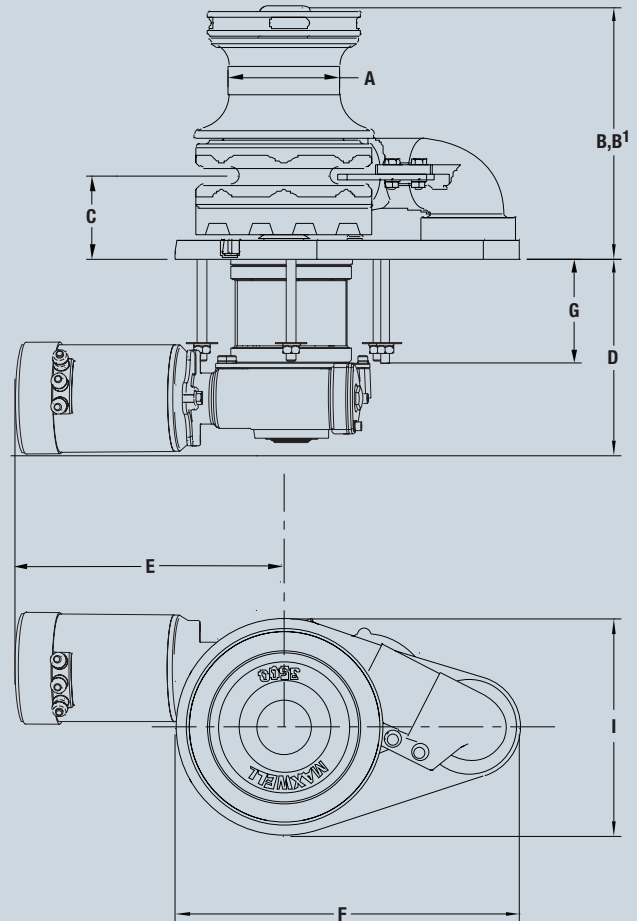
MODEL	1000	1500	2500	3500
Maximum Pull/Lift	700kg 1540lbs	850kg 1870lbs	1135kg 2500lbs	1590kg 3500lbs
Static Hold	1500kg 3300lbs	1500kg 3300lbs	2200kg 4840lbs	2200kg 4840lbs
Chain Short Link	6-10mm 1/4" - 3/8"	6-10mm 1/4" - 3/8"	9-11mm 5/16" - 7/16"	10-13mm 3/8" - 1/2"
Line Speed (Normal Working)	18m/min 60ft/min	18m/min 60ft/min	15m/min 50ft/min	15m/min 50ft/min
Power Supply (DC)	12 or 24V	12 or 24V	12 or 24V	12 or 24V
Motor (Watts)	1000W	1200W	1200W	1200W
Net Weight - DC	24kg 52lbs	24kg 52lbs	38kg 84lbs	48kg 106lbs
Hydraulic Pressure	100bar 1450PSI	138bar 2000PSI	138bar 2000PSI	138bar 2000PSI
Hydraulic Flow	20 l/min 5.3USgal/min	20 l/min 5.3USgal/min	36 l/min 9.5USgal/min	42 l/min 11USgal/min
Net Weight - Hyd	17kg 37lbs	17kg 37lbs	32kg 70lbs	40kg 88lbs

DIMENSIONS

MODEL	1000	1500	2500	3500
A	80mm 3 1/8"	80mm 3 1/8"	94mm 3 11/16"	110mm 4 5/16"
B	195mm 7 11/16"	195mm 7 11/16"	242mm 9 9/16"	254mm 10"
B ¹ (Low Profile)	98mm 3 7/8"	98mm 3 7/8"	148mm 5 27/32"	149mm 5 7/8"
C	56mm 2 7/32"	56mm 2 7/32"	80mm 3 5/32"	83mm 3 9/32"
D	252mm 9 5/16"	252mm 9 5/16"	210mm 8 5/16"	210mm 8 5/16"
E	262mm 10 11/32"	272mm 10 23/32"	281mm 11 1/8"	281mm 11 1/8"
F	224mm 8 27/32"	224mm 8 27/32"	297mm 11 23/32"	342mm 13 7/16"
G (Std deck clearance)*	100mm 4"	100mm 4"	100mm 4"	100mm 4"
G (Extra deck clearance)^	150mm 6"	150mm 6"	200mm 8"	200mm 8"
I	165mm 6 1/2"	165mm 6 1/2"	190mm 7 1/2"	215mm 8 15/32"

*For WVC1000 and WVC1500 a shorter deck clearance version is also available at 50mm (2").

^ A deck clearance increase will also increase the 'D' measurement by the same increment.



WVC3500 Band Brake featuring Maxwell's innovative 'stow-a-way' tensioning lever



WVC3500 without Band Brake

WVC3500 model is available with optional easy to use Band Brake





Features and benefits



HRC8

- Simple 'bolt down' installation ensures effortless and rapid on-deck installation and set up.
- Guaranteed trouble free rode transition from rope to chain, by means of an innovative, proven and patented pressure arm system, within a safe enclosed design.
- Integrated composite nylon, through deck hawse pipe for ease of installation and smooth, snag-free operation.
- High efficiency spur gearbox incorporating a robust non-backwind mechanism.
- High speed, jam-free retrieval of rope and chain controlled from a remote panel mounted Up/Down switch.
- Emergency 'free fall' function in the event of onboard power failure. Activated by the supplied, emergency 'Free Fall' lever.
- Revolutionary new chainwheel – see below.
- Heavy duty, dual direction motor incorporating new technology features, including integrated wiring for quick electrical installation.

STANDARD EQUIPMENT REQUIRED FOR DUAL DIRECTION CONTROL

Up/Down remote control panel
Dual direction control system
Circuit breaker/isolator panel

OPTIONS

AutoAnchor™ Equipment
Compact Remote
Foot Switches
Chain Stopper
Chain Snubber

All standard and optional control accessories can be found on pages 280 to 283.

Every Maxwell HRC6 and HRC8 windlass comes with top works, motor/gear box and dual direction solenoid. Switches and circuit breaker are available and need to be ordered separately. Refer chart on page 288.

Important: Maxwell windlasses must be used in conjunction with a chain stopper and/or alternative snubbing device to take the load off the windlass while laying at anchor. The chain stopper and alternative snubbing system should also be used to secure the anchor in the fully raised position while under way.



The all new compact HRC6 and HRC8 are Maxwell's horizontal versions of the latest innovative new vertical RC6 and RC8 automatic rope/chain windlasses. The new HRC6 and HRC8 are packed with original and proven features including patented rope management technology developed by Maxwell.

SPECIFICATIONS

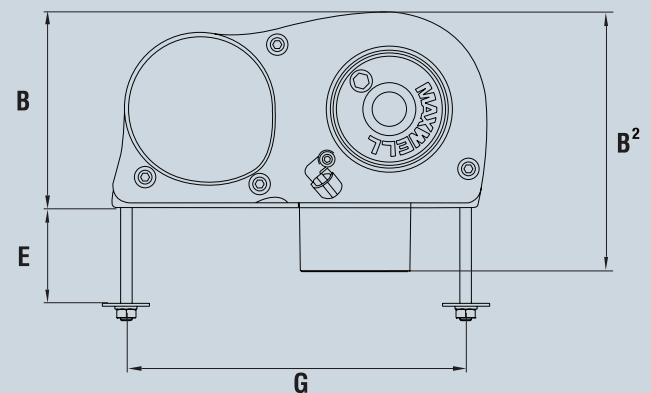
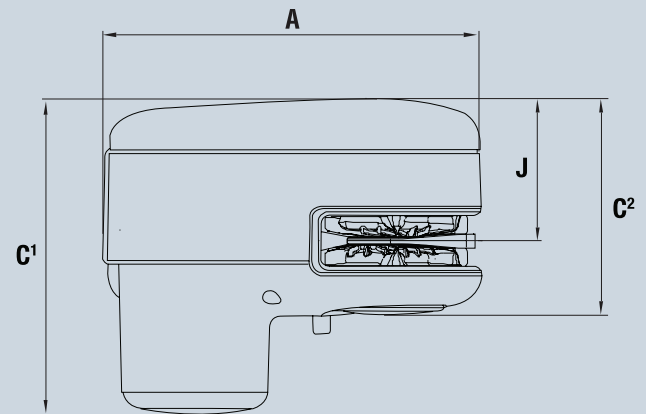
Model	HRC6	HRC8
Maximum Pull/Lift	270kg 600lbs	410kg 900lbs
Static Hold	700kg 1540lbs	700kg 1540lbs
Chain Short Link	6mm/7mm 1/4"	6mm/7mm/8mm 1/4" - 5/16"
Rope Size (Nylon)*	12mm 1/2"	12mm/14mm 1/2"
Line Speed (Anchor Retrieval)	33m/min	33m/min
Nominal 30kg working load	108ft/min	108ft/min
Power Supply (DC)	12V or 24V	12V or 24V
Motor Power	400W	600W
Net Weight	11.5kg 25lbs	11.5kg 25lbs

*refer to owners manual for rope size variations.

DIMENSIONS

Both Models	mm	inches
A	256mm	10 1/8"
B	132mm	5 11/32"
B ²	176mm	6 7/8"
C ¹	214mm	8 7/16"
C ²	147mm	5 3/4"
E	65mm	2 1/2"
G	230mm	9 1/16"
J	96.4mm	3 7/8"

Every Maxwell automatic rope/chain windlass is available with all the necessary components for fully automatic dual direction control in a competitively priced package.



MAXWELL'S REVOLUTIONARY NEW CHAINWHEEL

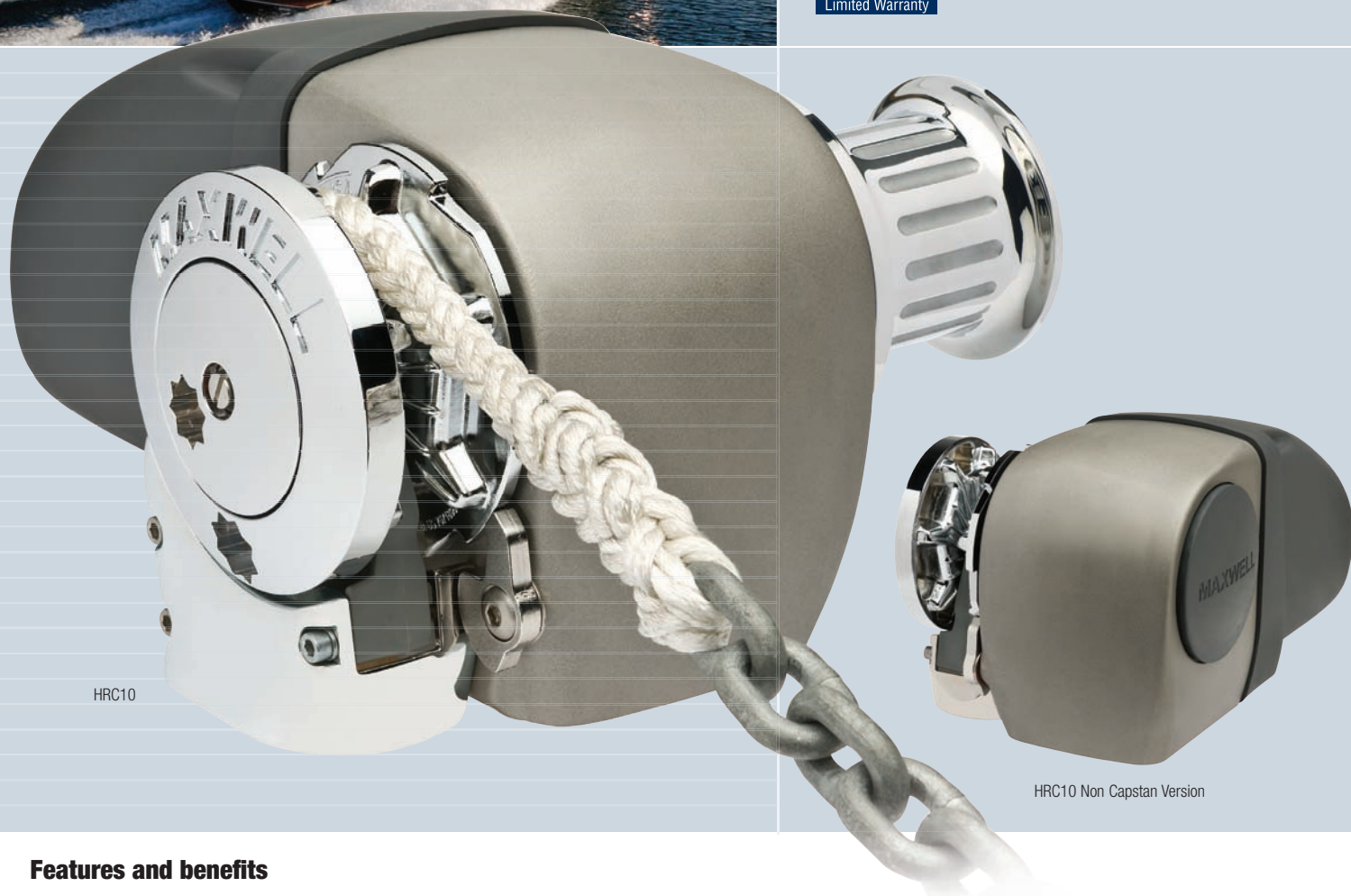
Maxwell once again leads the market in innovative thinking with the introduction of their latest Wave Design™ chainwheel. This patented rope/chain wheel incorporates two unique design concepts that greatly improve the handling and control of the rope/chain spliced rode.

The outer ribs of the chainwheel are angled slightly forward ensuring that the rope and the chain are smoothly guided in the wheel during anchor retrieval. As the rope pulls into the wheel, the opposite facing inner ribs grip the rope in an undulating manner, securing the rope more firmly in a 'wave pattern' action that is far superior to the traditional 'jam cleat' manner of holding the rope compared to all other products on the market. Not only does this Wave Design™ hold the rope more securely, it is also kinder on the rope resulting in increased longevity of your anchor rode.





3 YEAR
Limited Warranty



HRC10

HRC10 Non Capstan Version

Features and benefits

- The all new HRC10 fully automatic horizontal windlass series is designed to effortlessly retrieve and deploy 8mm (5/16") and 10mm (3/8") short link chain and 14mm and 16mm (5/8") three strand or 8-braid (plait) rope.
- The aesthetically pleasing above deck design, evolved from the philosophy of form follows function, encapsulates the motor and drive in a two part watertight case, saving space below deck.
- The two part case consists of a die cast, marine-grade hard anodised alloy front section and a rugged and easily removable composite motor cover aft section.
- This two piece watertight case allows for quick and easy, on-deck, routine maintenance.
- Simple 'bolt down' installation ensures effortless and rapid on-deck installation and set up.
- The stainless steel pressure arm always exerts maximum control pressure on the rode (rope, splice or chain).
- The new and revolutionary patented Wave Design™ chainwheel is able to accommodate a wide range of chain pitch differences, within the specified chain size diameters, suitable for use with the HRC10 Series. Refer page 275 for more information about this innovative feature.
- The unique Maxwell 'wrap around' horizontal chainwheel ensures that more than 90° of the wheel is used, allowing greatly improved rope and chain handling compared with competitor designs.
- The HRC10 works just as effectively with all-chain rodes for those who desire the added security and holding power of an all-chain anchor system.
- The integral chain pipe and huge, through deck hawse pipe throat ensures easy entry of the rope/chain rode into and out of the anchor locker.
- Cone type clutch/brake mechanism permits manual, 'free fall' anchoring and emergency crank recovery of the rode and anchor if required.
- The sealed oil bath and marine-grade hard anodised, alloy gearbox provides high efficiency output drive via precision worm and wormwheel.

SPECIFICATIONS

Model	HRC10-8* 8mm - 5/16"	HRC10-10* 10mm - 3/8"
Maximum Pull/Lift	700kg 1540lbs	850kg 1870lbs
Static Hold	1500kg 3300lbs	1500kg 3300lbs
Chain Short Link	8mm 5/16"	10mm 3/8"
Rope Size	14mm - 16mm 5/8"	16mm 5/8"
Chain Speed (Anchor Retrieval)	24m/min 79ft/min	24m/min 79ft/min
Rope Speed (Anchor Retrieval)	20m/min 65ft/min	20m/min 65ft/min
Power Supply (DC)	12 or 24V	12 or 24V
Motor (Watts)	1000W	1200W
Net Weight	19kg 42lbs	20kg 44lbs
Hydraulic Pressure	138bar 2000psi	138bar 2000psi
Hydraulic Flow	20L/min 5.3 USgal/min	20L/min 5.3 USgal/min
Net Weight - Hyd	13kg 28 1/2lbs	13kg 28 1/2lbs

Non Capstan Version. Weight is 1kg/2.2lbs less than above indicated.
*8mm - 5/16" or 10mm - 3/8" chainwheels can be used on either of the above models

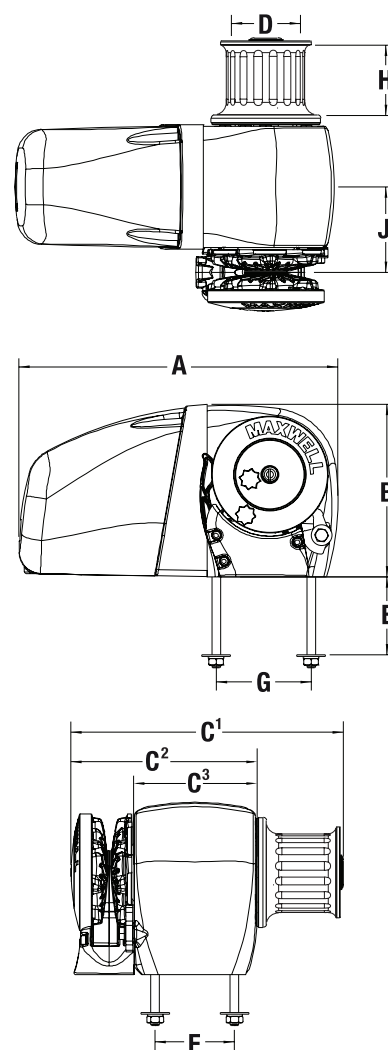
DIMENSIONS

Model	HRC10-8* 8mm - 5/16"	HRC10-10* 10mm - 3/8"
A	369mm 14 9/16"	369mm 14 9/16"
B	199mm 7 7/8"	199mm 7 7/8"
C ¹	316mm 12 1/2"	316mm 12 1/2"
C ²	225mm 8 7/8"	225mm 8 7/8"
C ³	140mm 5 1/2"	140mm 5 1/2"
D	80mm 3 3/16"	80mm 3 3/16"
E (standard deck clearance)	90mm 3 9/16"	90mm 3 9/16"
F	92mm 3 9/16"	92mm 3 9/16"
G	110mm 4 3/8"	110mm 4 3/8"
H	80mm 3 3/16"	80mm 3 3/16"
J	99mm 4"	99mm 4"

Important: Maxwell windlasses must be used in conjunction with a chain stopper and/or alternative snubbing device to take the load off the windlass while laying at anchor. The chain stopper and alternative snubbing system should also be used to secure the anchor in the fully raised position while under way.



The new improved HRC10 Horizontal Series windlasses proudly follow in the highly successful footsteps of Maxwell's previous, fully automatic rope/chain anchor winches.



STANDARD EQUIPMENT REQUIRED FOR DUAL DIRECTION CONTROL

Circuit breaker/isolator panel
Dual direction solenoid pack
Up/Down remote control panel
Emergency crank/clutch release handle

OPTIONS

AutoAnchor™ Equipment
Compact Remote
Foot Switches
Chain Stopper or Chain Snubber

All standard and optional control accessories can be found on pages 280 to 283.

Every Maxwell HRC10 windlass comes with top works, motor/gear box and dual direction solenoid. Switches and circuit breaker are available and need to be ordered separately. Refer chart on page 288.

Every Maxwell automatic rope/chain windlass is available with all the necessary components for fully automatic dual direction control in a competitively priced package.



POROSITY JET TERN



KADEY-KROEN 56'



HWC3500

STANDARD EQUIPMENT REQUIRED FOR SINGLE DIRECTION CONTROL

Circuit breaker/isolator panel (supplied with DC units only)
Foot Switches (supplied with DC units only)
Chain Pipe and chainwheel to suit chain sizes specified
Emergency crank handle and clutch control lever

OPTIONS

Vertical warping drum featuring MAX-grip™ for independent rope hauling from any direction (HWC3500 only)
Dual direction solenoid pack
Up/Down remote control panel
Hydraulic motor
Chain Stopper*
AutoAnchor™ Equipment
Compact Remote
Roving remote

All standard and optional control accessories can be found on pages 280 to 283.

3 YEAR
Limited Warranty

SPECIFICATIONS

MODEL	1500	2200	3500	HWVC3500
Maximum Pull/Lift	680kg 1500lbs	1000kg 2200lbs	1590kg 3500lbs	1590kg 3500lbs
Static Hold	1500kg 3300lbs	2200kg 4840lbs	2200kg 4840lbs	2200kg 4840lbs
Chain Short Link	6-10mm 1/4" - 3/8"	9-11mm 5/16" - 3/8"	10-13mm 3/8" - 1/2"	10-13mm 3/8" - 1/2"
Line Speed (Normal Working)	17m/min 56ft/min	17m/min 56ft/min	10m/min 33ft/min	10m/min 33ft/min
Power Supply (DC)	12 or 24V	12 or 24V	12 or 24V	12 or 24V
Motor (Power)	1200W	1200W	1200W	1200W
Net Weight - DC	24kg 52lbs	55kg 121lbs	57kg 125lbs	94.5kg 208lbs
Hydraulic Pressure	138bar 2000psi	135bar 1950psi	138bar 2000psi	138bar 2000psi
Hydraulic Flow	20 l/min 5.3 USgal/min	36 l/min 9.5 USgal/min	40 l/min 11 USgal/min	40 l/min 11 USgal/min
Net Weight - Hyd	17kg 37lbs	48.5kg 107lbs	49kg 107lbs	80kg 176lbs

DIMENSIONS

MODEL	1500	2200	3500	HWVC3500
A	390mm 15 3/8"	495mm 19 1/2"	515mm 20 9/32"	515mm 20 9/32"
B	205mm 8 1/16"	289mm 11 3/8"	316mm 12 7/16"	446mm 17 9/16"
C	382mm 15"	516mm 20 5/16"	549mm 21 5/8"	710mm 28"
D (Hole centres)	210mm 8 9/32"	234mm 9 1/4"	260mm 10 1/4"	417mm 18 7/16"
F (Hole centres)	225mm 8 7/8"	278mm 10 15/16"	308mm 12 1/8"	464mm 18 1/4"
G (Approximate hole centres)	260mm 10 1/4"	300mm 11 13/16"	348mm 13 11/16"	348mm 13 11/16"
H (Working height of drum for rope warping)	44mm 1 3/4"	60mm 2 3/8"	53mm 2 3/32"	53mm 2 3/32"
I	95mm 3 3/4"	125mm 4 15/16"	130mm 5 1/8"	130mm 5 1/8"
J	151mm 5 15/16"	194mm 7 5/8"	208mm 8 3/16"	287mm 11 19/64"

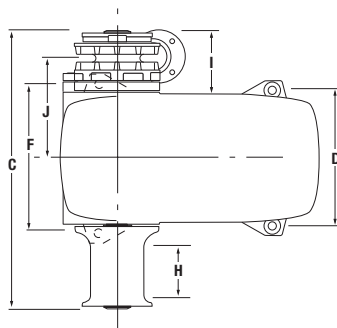
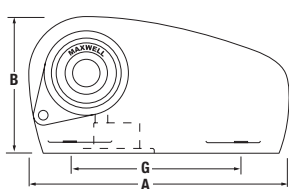
***Important:** Maxwell windlasses must be used in conjunction with a chain stopper and/or alternative snubbing device to take the load off the windlass while laying at anchor. The chain stopper and alternative snubbing system should also be used to secure the anchor in the fully raised position while under way.

The HWC Series is designed for automatic horizontal handling of chain-only anchor rodes while offering an independent capstan for the retrieval of a secondary rope and chain rode or to assist with docking procedures.

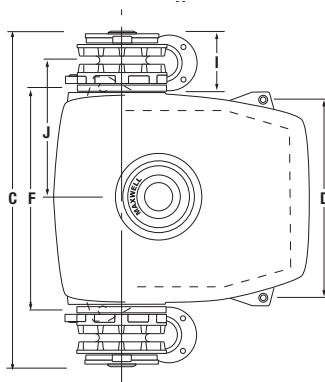
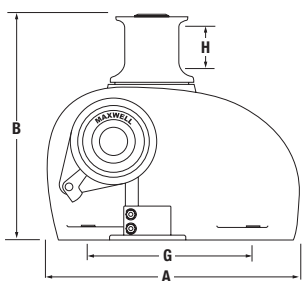


HWVC3500

HWC



HWVC



Features

- Fully automatic single or dual direction chainwheel operation, for use with chain only rodes.
- Functional rope hauling from fore and aft using independent MAX-grip™ snag-free warping drum with clutch disengagement of chainwheel for positive control of all ropes.
- Optional dual anchor handling with smooth independent control of each chainwheel via cone clutches.
- Chain pipe assembly supplied.
- Cone-type clutch/brake mechanism permits manual 'free fall' anchoring. Cone clutches, unlike dog clutches, provide smooth progressive engagement ensuring safe and precise operator control.
- Chainwheel locking pawl to assist when using warping drum independently.
- Simple deck mounted installation with no under deck parts.
- Simplified maintenance with ability to strip the running gear (chainwheel and drum) from the windlass without disturbing the windlass mounting.
- Heavy duty, dual direction motor, designed for marine winches.
- Chainwheel and warping drum of high-quality chrome finish over marine-grade bronze.
- Marine-grade alloy casing pretreated, powder coated and finished with a two component white polyurethane paint.

KADEY KROGEN 58' FITTED WITH HWVC3500





Maxwell will supply not only your anchor winch or capstan, but also a 'complete anchoring package consisting of control gear, circuit protection, anchors, rope, chain, chain stoppers, chain snubbers, swivels, shackles, bow rollers, etc.



MAXWELL AA560 PANEL MOUNT WINDLASS CONTROLLER AND RODE COUNTER (P102944)

SPECIAL FEATURES:

- Preset stopping point and docking alarm on retrieval.
- One-touch function to deploy and retrieve a preset length of rode.
- Adjustable back lit display in feet, metres or fathoms.
- Graphic LCD screen featuring intuitive user interface for simple operation.
- Displays windlass speed and direction.
- Safety lock to help protect against accidental windlass deployment.
- Logs windlass operation hours to help ensure regular windlass maintenance.
- Weather cover and choice of black or gray console.

Kit includes 1 console, 1 sensor and 1 magnet.

3 YEAR
Limited Warranty



PRODUCT FEATURES

- Windlass monitoring from the helm.
- Simple Plug & Play sensor installation.
- Accurate information for all-chain or combination rope/chain rodes.
- Flexibility of magnet and sensor gap from 3mm to 50mm.
- Easy set up.
- Multiple unit installation options – combine with other Maxwell AA products for total windlass control.
- Fits all DC, AC and hydraulic windlasses.
- Inbuilt diagnostics for troubleshooting installation issues.
- EMC protection to CE EN60945.



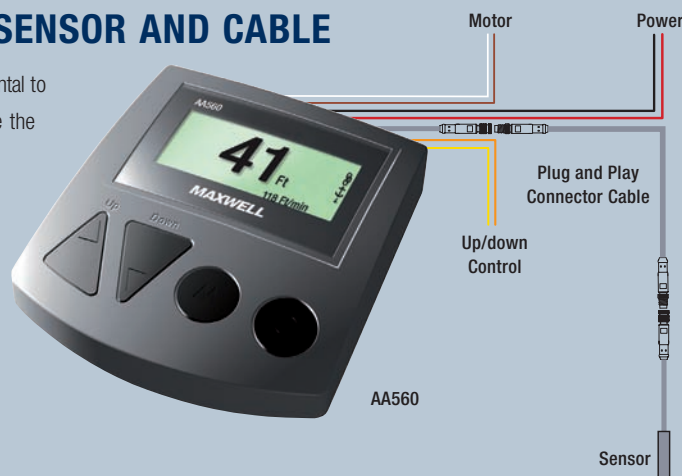
MAXWELL AA150 PANEL MOUNT RODE COUNTER (P102939)

- Docking alarm.
- Standard 60mm (2.36") marine instrument console.
- Choice of feet or metre count readout.
- Large, adjustable, backlit LCD display.

Kit includes 1 console, 1 sensor and 1 magnet.

PLUG AND PLAY SENSOR AND CABLE

Correct sensor installation is fundamental to rode counter operation. To ensure the best possible sensor installation the Maxwell AA series products come with waterproof connectors prefitted to the sensor cables. No need for solder. Make sure you order the plug and play connecting cable with your new counter.



**ALL MAXWELL WINDLASSES
ARE RODE COUNTER READY
WITH MAGNET FITTED
AND SENSOR HOLE DRILLED**

3 YEAR
Limited Warranty

Accessories

Controllers AA150 • AA560
• AA320 • AA342 • AA710 • AA730



MAXWELL AA710 WIRELESS, HAND HELD REMOTE WINDLASS CONTROLLER AND RODE COUNTER (P102981)

All the features of the AA560 plus options to control a bow thruster or deck lights and anchor wash.

- High level wireless transmission security - 2.4GHz ISM band.

- Hand held controller displays rode count plus signal strength and battery level.
- Console requires two AA batteries.
- Ergonomic shape with wrist strap connector.
- Water resistant to IP67.
- Rubber moulding for grip and non slip protection.
- Console holder and protective cover.
- Shockproof.
- IEEE 802.15.4 compliant.

Kit includes: 1 hand held remote control and 1 base station, 1 sensor and 1 magnet. Note: Two base stations can be operated by one remote to allow control of two windlasses. Plug and Play connectors, T-Connectors and Gender Adaptors are also available. Contact your Maxwell Dealer.

Electronic windlass control and rode monitoring

RCM2 and RCM4 Radio Remote Controls (P104816) (P104817)

These new, hand held wireless control units are ideal for remotely operating the up/down function of a single windlass (RCM2) or a dual windlass installation (RCM4). The RCM2 can also be used for control of a bow thruster, whereas the RCM4 can be used for controlling a windlass and a bow thruster or a bow and stern thruster simultaneously.

These units are also suitable for the operation of other on board, electrically driven equipment.



MAXWELL AUTOANCHOR WIRED ROVING REMOTE CONTROL UNITS

ANCHOR LAUNCHING OR RETRIEVAL FROM THE BOW WHEN VISION FROM THE HELM STATION IS OBSTRUCTED.

- Use for Windlasses, Davits, Thrusters and other Marine Equipment.
- Electrical protection against back-emf.
- Rubber over-moulding for shock protection and grip.
- Stowage cradle.
- Operate in parallel with all AutoAnchor™ products, toggle switches, foot switches or other control equipment.
- Connect to DC, AC and Hydraulic systems.
- Rugged 4m coiled cable and connectors.
- All products are rated to IP67 including cables, plugs and sockets.
- Deck socket with 2m flying lead reduces potential for corrosion.
- Other Maxwell AutoAnchor controllers are available, check with your local Maxwell distributor.



**AA730
With Rodecounter
(P102994)**



**AA320
Windlass
Control
(P102992)**

**AA342
Dual Windlass
Control
(P102995)**



**Gender Adaptor
Cable Connector
(SP4192)**



**Dual Installation
T Connector
(SP4155)**



Rated to IP67 the moulded deck socket has a 2m flying lead for better connectivity



ACCESSORIES POSITIONING GUIDE

The correct installation of your Maxwell windlass or capstan and all associated anchoring equipment will ensure that you get years of trouble free service. It is worth taking the time to install all accessories and electrical wiring or hydraulic connections carefully and professionally. Your Maxwell Owner's Manual will provide you with all the information you, or your service agent, needs to properly set up your specific installation. The indicative diagram gives you some idea of what is involved and is a guide only.

UP/DOWN CONTROLS

Easy to use, panel-mounted Up/Down switches for remote windlass operation from the helm, fly bridge or cockpit. Suitable for use with dual-directional solenoids.

- Manufactured from marine-grade materials.
- Splash proof.
- Suitable for 12 and 24 Volt DC use.
- Includes on/off switch and power indicator light (B only).



(A)

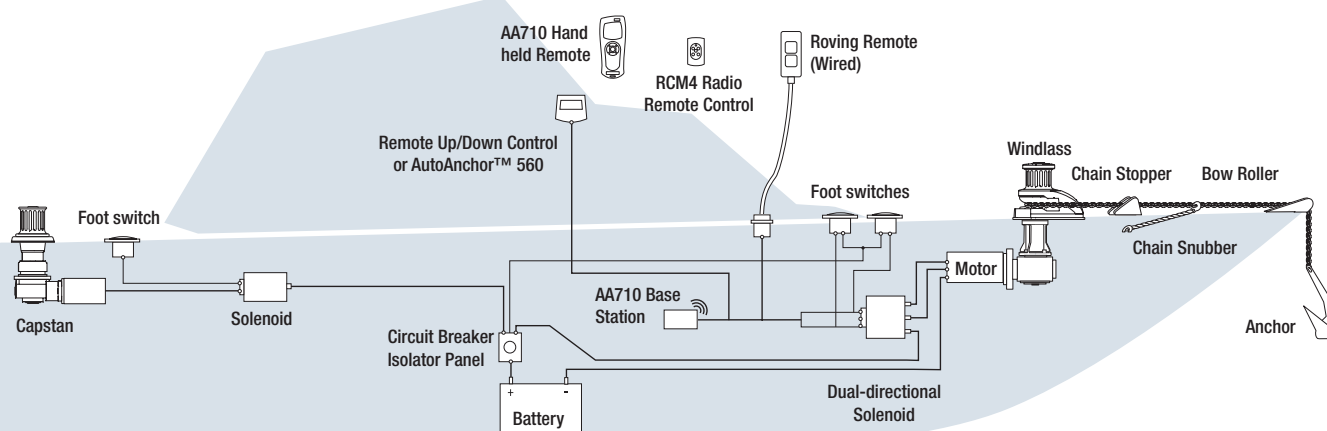
**UP/DOWN REMOTE PANEL
(TOGGLE TYPE)
(P102938)**



(B)

**UP/DOWN REMOTE PANEL
(PUSH BUTTON TYPE)
(P102983)**

Note: All the accessories shown are not necessarily available from every Maxwell warehouse. Please contact your nearest Maxwell office for availability.



When it comes to anchoring, Maxwell provides the ultimate anchoring solution backed by sound advice and after sales service. A full range of anchoring accessory items are available. Please contact your nearest Maxwell office or local distributor for helpful advice and assistance

CIRCUIT BREAKER/ISOLATOR PANELS

Maxwell circuit breaker/isolator panels are available to suit a wide range of windlasses and capstans.

- For protection of the main conductor circuit for DC winches.
- Mount as close as possible to the battery power source to ensure protection against short circuit and to reduce the risk of DC motor burn-out in the event of winch overloading.
- Enables the battery, or electrical supply, to be isolated when winch is not in use.
- Suitable for 12V or 24V DC systems.



(REFER PAGE 288 FOR PRODUCT CODES)

FOOT SWITCHES

Maxwell heavy-duty, weather resistant units have a UV stabilised water proof diaphragm and are supplied complete with mounting instructions and screws.

- Rated at 150 amps maximum current and suitable for 12V or 24V applications.
- Nickel-plated copper contacts ensure corrosion-free, reliable operation.
- Available in UV stabilised plastic or polished stainless steel covered versions.
- Uncovered plastic versions are also available.



CHROME BEZEL	P19001	BLACK PLASTIC BEZEL	P19008
BLACK COVERED	P19006	WHITE COVERED	P19007
STAINLESS STEEL COVERED	P100735		

New Maxwell, compact up and down foot switches now available in black and white cover versions. Operate via solenoids thus allowing smaller diameter wiring.

WHITE COVERED	P104809
BLACK COVERED	P104810



DUAL AND SINGLE DIRECTION SOLENOIDS

Dual Direction Solenoids are used in conjunction with remote Up/Down panel, AutoAnchor™ Rode Counters, roving hand held remote controls and/or foot switches to switch the motor in the required direction.

- Heavy-duty solenoids, suitably rated for our winch motors.
- Optional, ignition protected solenoids available.
- Available in 12V or 24V DC for permanent magnet and series wound motors.
- Installation in a dry area is always recommended.



Single Direction Solenoids should be used where only single direction motor rotation is necessary. E.g. capstan winches. The advantages of using a single direction solenoid, instead of a heavy duty switch are:

- Shorter runs of heavy duty wiring, thus saving cost
- Multiple input sources possible E.g. foot switch, remote control, etc.
- Less chance of arcing. Arcing reduces the life of electrical contacts.

(REFER PAGE 288 FOR PRODUCT CODES)

ROVING HAND HELD REMOTE CONTROL

Two button, single speed units enable the operator to visually check anchor retrieval or lowering from the bow if vision is obstructed.

HAND HELD REMOTE - PUSH BUTTON TYPE (P102933)





BOW ROLLERS

MAXWELL IS ABLE TO SUPPLY YOU WITH A VARIETY OF BOW ROLLERS FOR CUSTOM OR PRODUCTION LINE BOATS.

HINGED BOW ROLLER

(2 Sizes – refer chart below)
Suitable for rope and chain anchor rodes utilising up to 13mm (1/2") chain.



FIXED BOW ROLLER

(3 Sizes – refer chart below)
Suitable for rope and chain anchor rodes utilising up to 13mm (1/2") chain.



EXTENDABLE HINGED BOW ROLLER

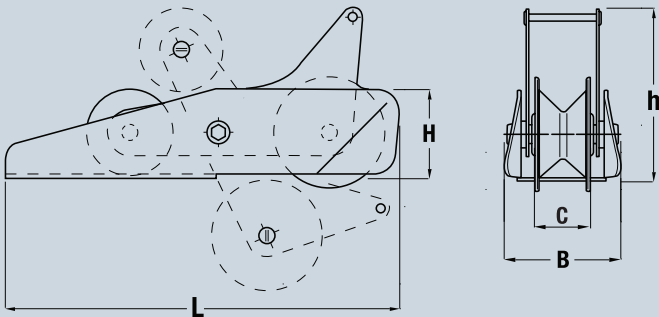


FIXED BOW ROLLER WITH ANCHOR LOOP



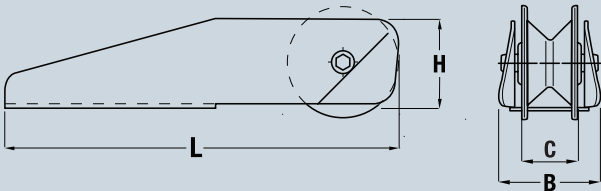
HINGED BOW ROLLER DIMENSIONS

Code	Type	L	B	H	h	C
P104330	Size 1	320mm (12 5/8")	92mm (3 5/8")	72mm (2 7/8")	133mm (5 1/4")	44mm (1 3/4")
P104331	Size 2	430mm (16 15/16)	160mm (5 5/16")	100mm (4")	190mm (7 1/2")	66mm (2 11/16")



FIXED BOW ROLLER DIMENSIONS

Code	Type	L	B	H	C
P104332	Size 1	205mm (8 1/8")	72mm (2 7/8")	74mm (3")	44mm (1 3/4")
P104333	Size 2	320mm (12 5/8")	86mm (3 7/16")	74mm (3")	44mm (1 3/4")
P104334	Size 3	444mm (17 1/2")	110mm (4 3/8")	110mm (4 3/8")	68mm (2 11/16")

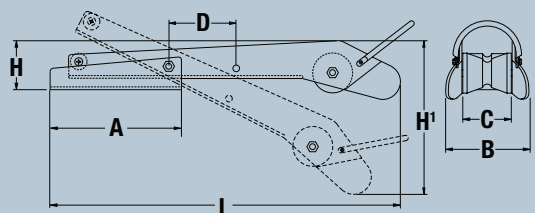


When it comes to anchoring, Maxwell provides the ultimate anchoring solution backed by sound advice and after sales service. A full range of anchoring accessory items are available. Please contact your nearest Maxwell office or local distributor for helpful advice and assistance

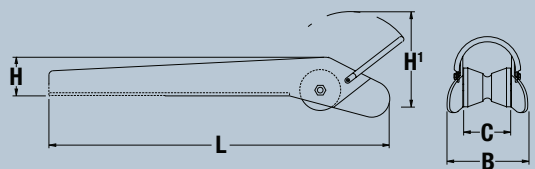
BOW ROLLER DIMENSIONS

	Bow Rollers	
	Extendable (P104340)	Fixed with Hoop (P104345)
A	198mm (7 13/16")	NA
B	125mm (4 15/16")	134mm (5 1/4")
C	73mm (2 7/8")	75mm (3")
D	101mm (4")	NA
H	75mm (2 15/16")	65mm (2 9/16")
H'	239mm (9 3/8")	155mm (6 1/8")
L	527mm (20 1/4")	460mm (18 1/8")

EXTENDABLE HINGED BOW ROLLER



FIXED BOW ROLLER WITH ANCHOR LOOP



CHAIN STOPPERS

Chain stoppers hold the chain and take the load off the windlass. They are used to set and ride on the anchor, break free the anchor or to prevent accidental 'free fall' of the anchor while under way. Also recommended for VW Series rope and chain systems to hold the chain while changing over from rope to chain. Three sizes available – refer chart below. Refer Maxwell Supeyacht catalogue for larger sizes.

CHAIN STOPPER DIMENSIONS

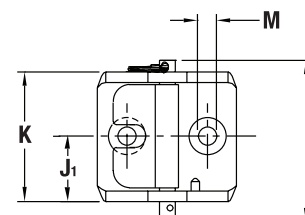
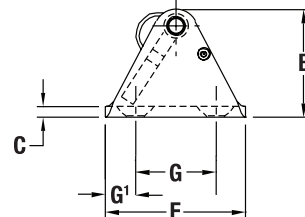
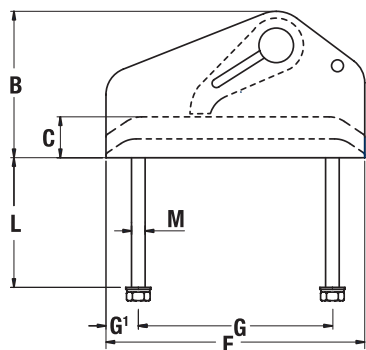
	Levered Chain Stoppers			Economy Chain Stopper
	8mm (P104372)	10mm (P104373)	13mm (P104374)	8/10mm (P102335)
B	72mm (2 7/8")	86mm (3 7/16")	105mm (4 3/16")	62mm (2 3/8")
C	20mm (7/8")	20mm (7/8")	26mm (1 1/8")	6mm (1/4")
F	152mm (6")	190mm (7 1/2")	219mm (8 5/8")	80mm (3 1/8")
G	92mm (3 5/8")	130mm (5 1/8")	159mm (6 5/16")	46mm (1 3/4")
G'	30mm (1 3/16")	30mm (1 3/16")	30mm (1 3/16")	17mm (5/8")
I	70mm (2 7/8")	86mm (3 1/2")	100mm (4")	92mm (3 5/8")
J	31.5mm (1 1/4")	44mm (1 3/4")	53mm (2 1/8")	NA
J'	10mm (7/16")	10mm (7/16")	12.5mm (1/2")	37mm (1 1/2")
K	51.5mm (2 1/8")	64mm (2 5/8")	78mm (3 1/8")	74mm (2 7/8")
L	95mm (3 3/4")	95mm (3 3/4")	130mm (5 1/8")	NA
M	M10	M10	M12	M10



Levered Chain Stopper



Economy Chain Stopper





**NEW
PRODUCT**

MAX SET ANCHORS

The NEW Maxwell "MAX SET" galvanised anchor range, based on the proven 'Plough' design is available in seven different sizes to suit boats from approximately 4m (15') to 17m (55').



Anchor	Code	Anchor Weight	Approximate Boat Size
MAX SET 6	P105000	6 kg (13lb)	4 - 5.5m (15 - 18ft)
MAX SET 10	P105001	10 kg (22lb)	5.5 - 8m (18 - 26ft)
MAX SET 16	P105002	16 kg (35lb)	9 - 11m (30 - 35ft)
MAX SET 20	P105003	20kg (44lb)	12 - 14m (38 - 45ft)
MAX SET 25	P105004	25 kg (55lb)	13 - 15m (42 - 48ft)
MAX SET 30	P105005	30 kg (66lb)	15 - 17m (48 - 55ft)
MAX SET 40	P105006	40 kg (88lb)	16 - 19m (50-60ft)

CHAIN SNUBBERS

Chain snubbers are an alternative method of taking the load off the windlass and are recommended to secure the anchor while underway. Available in rope versions with chain clevis hook (A) or snap shackle (B) and in various sizes: 6mm (1/4"), 8mm (5/16"), 10mm (3/8"), 13mm (1/2").



ANCHOR SWIVEL SHACKLES



ROPE AND CHAIN

Maxwell can supply a full range of anchor rodes including chain only, rope only or pre-spliced combination rope and chain rodes. Chain, suitable for vessels up to 100 metres (about 300 feet) is available in short or stud link variations in both metric and imperial sizes. Maxwell provides both 3-strand and 8-plait (braid) nylon rope commonly used on vessels up to 20 metres (65 feet) in length as well as ropes and hawsers commonly seen on superyachts.



The use of a swivel and joining shackles to join your anchor and rode will greatly improve anchor retrieval and help ensure that the rode lays neatly into your anchor locker. Thus, they are highly recommended for use with Maxwell's automatic rope/chain series windlasses. Two sizes (6mm - 8mm/1/4" - 5/16" and 10mm-13mm/3/8"-1/2") are available to suit vessels to 20 metres (65 feet). These robust single swivel anchor connectors, with captured pins, will not loosen under load and pull smoothly and easily over bow rollers.

When it comes to anchoring, Maxwell provides the ultimate anchoring solution backed by sound advice and after sales service. A full range of anchoring accessory items are available. Please contact your nearest Maxwell office or local distributor for helpful advice and assistance

CHAINWHEEL SELECTION GUIDE

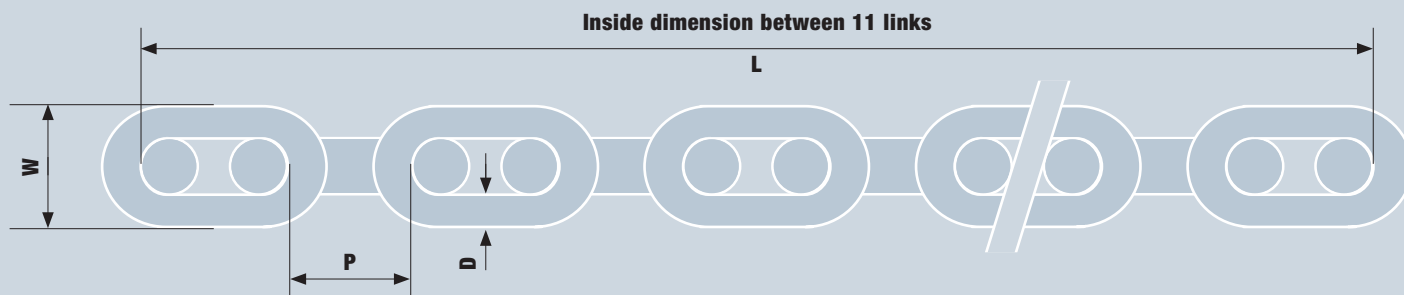
In order for your windlass to retrieve and deploy the anchor and chain smoothly, without jamming, it is vitally important that the chain and chainwheel (gypsy) match. Unfortunately all chains (whether metric or imperial) are not necessarily manufactured to the same tolerances for a given chain size. Therefore, Maxwell has devised a global chain and chainwheel spreadsheet which will help

you to figure out what chainwheel you need to order, for the chain you are using, to fit and work correctly with your Maxwell windlass.

If you know the chain size and manufacturer, then simply go to the link below in the Maxwell web site, look up your chain, scroll down to your windlass and a dot in the matrix will indicate and guide you to the chainwheel

to be used with your specific windlass and chain.

If you do not know the chain size and manufacturer, then use the illustrated chain diagram (refer below) and indicated dimensions information to 'measure' your chain. Send this information to your Maxwell dealer, who will then help you figure out what chain you are using and therefore what chainwheel must be used with your Maxwell windlass.



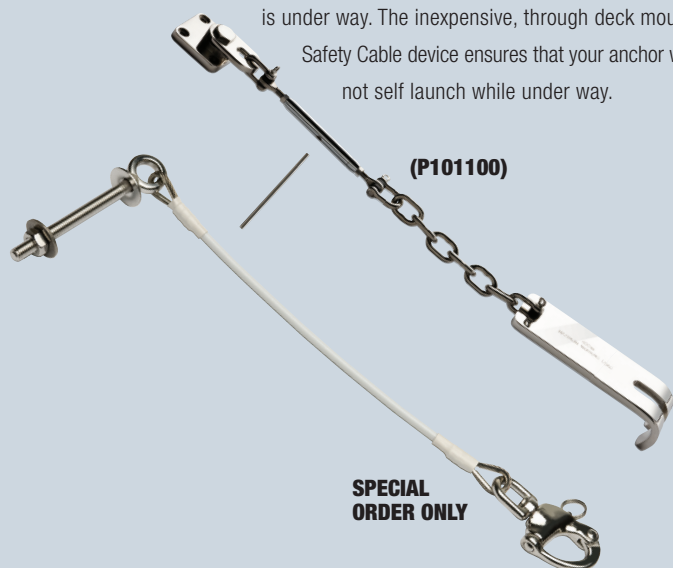
P = Pitch length inside link **D = Chain wire diameter** **W = width outside the link** **L = inside dimension between 11 links.**

Please take an 11 link section of your chain, lay it out in a stretched out straight line and measure the dimensions as indicated

DOWNLOAD THE MAXWELL CHAINWHEEL SELECTION GUIDE SPREADSHEET www.maxwellmarine.com/support_chainwheel.php

ANCHOR CHAIN TENSIONER AND SAFETY CABLE

The simple Devil's Claw, tensioner pad eye through deck mounting system allows you to secure or tighten the anchor into the bow roller or anchor pocket while your vessel is under way. The inexpensive, through deck mount Safety Cable device ensures that your anchor will not self launch while under way.



EMERGENCY CRANK/CLUTCH RELEASE HANDLES

For use with RC8, RC10 and RC12 Series anchor winches. Two sizes are available to suit the constraints of most foredeck configurations. Constructed of light weight, durable injection-moulded plastic, these handles float if accidentally dropped overboard.



Electrical Accessories Selection Guide:

Use this guide to select the electrical accessories you require and to confirm that they are suitable for use with your chosen windlass or capstan unit.

After identifying your winch, follow steps 1 through 5 below.

1. Select Solenoid (when required)

	Windlass model	Anchor Max	500VC	HRC-6*	HRC-8*	RC6	RC8-6	RC8-8	RC10-8	RC10-10	HRC10-8	HRC10-10	RC12-10	RC12-12	1000	1500	2500	3500
Part Number		500W	600W	600W	600W	400W	600W	1000W	1000W	1200W	1000W	1200W	1200W	1200W	1000W	1200W	1500W	1200W
Reversing solenoids																		
P100715	Reversing Solenoid 12V			●	●	●	●											
P11121	Reversing Solenoid 24V				●	●	●											
P19045	Reversing Solenoid 12V							●	●	●	●	●	●	●	●	●	●	●
P19046	Reversing Solenoid 24V							●	●	●	●	●	●	●	●	●	●	●
● = part of the standard windlass package																		

2. Select Circuit Breaker/Isolator (recommended)

	Circuit breaker	Anchor Max	500VC	HRC-6*	HRC-8*	RC6	RC8-6	RC8-8	RC10-8	RC10-10	HRC10-8	HRC10-10	RC12-10	RC12-12	1000	1500	2500	3500
P100789	40 Amp circuit breaker		24V			12V	24V											
P100790	80 Amp circuit breaker	12V	12V				12V	24V	24V	24V	24V	24V	24V	24V	24V	24V	24V	24V
P100791	135 Amp circuit breaker							12V	12V	12V	12V	12V	12V	12V	12V	12V	12V	12V
P102902	50 Amp circuit breaker			12V														
P102903	70 Amp circuit breaker				12V													

3. Select Switch or Combination of Switches (as required)

	Foot Switches	Anchor Max	500VC	HRC-6*	HRC-8*	RC6	RC8-6	RC8-8	RC10-8	RC10-10	HRC10-8	HRC10-10	RC12-10	RC12-12	1000	1500	2500	3500
P19001	Foot Switch With Chrome Bezel	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
P19006	Foot Switch Covered (Black)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
P19007	Foot Switch Covered (White)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
P19008	Foot Switch Plastic Bezel	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
P100735	Foot Switch Covered (Stainless Steel)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Compact Foot Switches																		
P104809	Foot Switch Covered (White)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
P104810	Foot Switch Covered (Black)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Remote Panel (Up/Down)																		
P102938	Toggle Switch			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
P102983	Push Button			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hand Held Wired Roving Control																		
P102933	Roving Control Two Button			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
P102992	AA320 Roving Control Two Button			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
P102995	AA342 Roving Control Two Button			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
P102994	AA730 Roving Control with Rode Counter			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hand Held Wireless Remote Control																		
P102981	AA710 Remote Control with Rode Counter			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
P104816	RCM2 Two Button Radio Remote Control			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
P104817	RCM4 Four Button Radio Remote Control			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

4. Select Rode Counters (when desired)

P102939	AA150 Panel Mount Rode Counter Without Control Switch			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
P102944	AA560 Panel Mount Rode Counter and Windlass Control			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

5. Select Sensor Cable Extension Packs for Rode Counters or Switches with Rode Counters (as required)

SP4154	2m (6.5 ft) Dual Installation Connection cable			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SP4156	6.5 m (21 ft)			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SP4157	15 m (49 ft)			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SP4153	20 m (65 ft)			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SP4155	Dual Installation "T" Connector			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SP4192	Gender Adaptor (to join 2 sensor cables)			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

*HRC sensor P102909 is required to fit a chain counter to the HRC6 and HRC 8 windlasses

Additional Anchoring Accessories Selection Guide

MAX Set Anchors		Chain Stoppers		Bow Rollers	
P105000	6 kg (13lb) Galvanised	P104335	Economy 8mm -10mm (5/16"-3/8") chain	P104330	Hinged # 1 up to 8mm (5/16") chain
P105001	10 kg (22lb) Galvanised	P104372	Removable Levered Pawl 8mm (5/16") chain	P104331	Hinged # 2 up to 13mm (1/2") chain
P105002	16 kg (35lb) Galvanised	P104373	Removable Levered Pawl 10mm (3/8") chain	P104332	Fixed # 1 up to 8mm (5/16") chain
P105003	20kg (44lb) Galvanised	P104374	Removable Levered Pawl 13mm (1/2") chain	P104333	Fixed # 2 up to 8mm (5/16") chain
P105004	25 kg (55lb) Galvanised	Chain Snubbers and Tensioners		P104334	Fixed # 3 up to 13mm (1/2") chain
P105005	30 kg (66lb) Galvanised	SP3174	Snubbing Hook 6/7mm (1/4") chain	P104340	Extendable hinged up to 13mm (1/2") chain
P105006	40 kg (88lb) Galvanised	SP3175	Snubbing Hook 8mm (5/16") chain	P104374	Fixed with anchor loop up to 13mm (1/2") chain
Anchor Swivels		SP3176	Snubbing Hook 10mm (3/8") chain	Crank Handles	
P104370	Stainless Steel 750 kg load 6mm-8mm (1/4"-5/16") chain	P101100	Adjustable Devil's Claw/Tensioner 13mm (1/2") chain	P103864	Short RC8, RC10 and RC12 windlasses
P104371	Stainless Steel 1500 kg load 10mm-13mm (3/8"-1/2") chain			P103865	Long RC8, RC10 and RC12 windlasses

Anchoring Tips

Books and websites on seamanship all have a section on how to properly and safely anchor your boat. Generally they reflect consistent theories and Maxwell is not about to re-write these. However, for the person reading this catalogue with the intent of purchasing an anchoring system for a boat, we felt a brief summary regarding acceptable anchoring technique could prove useful and informative.



- Before deciding where you want to anchor, slowly cruise around the anchoring site and check the boats already at anchor, to ensure you have enough room to swing.
- Allow adequate room around the spot where you wish to anchor. Remember that power vessels swing differently than yachts. Boats on rope rode swing around more than those on chain.
- Slow down and keep the bow into the wind, or current, whichever is stronger and as the boat comes to a complete stop, start to lower the anchor.
- After lowering the anchor, either drift back or slowly reverse while paying out the anchor rode, in order to ensure the anchor is properly set (holding firm).
- The amount of anchor rode you pay out should always be at least three times the depth of water in which you are anchoring.
- Do not switch off the engine until you are sure the anchor is set (holding firm), as the engine may not restart. Use buoys as reference points if they are available or, if close to shore, use prominent landmarks to check you are holding your anchored position.
- Once anchored, secure your anchor rode with the chain stopper or secure to a deck cleat or bollard with a hitch that is easy to cast off. Do not anchor off your winch.
- Have a small buoy handy, which you can tie to the end of your anchor rode in case you have to slip your anchor. You will then be able to recover your anchor and rode later.
- Your boat should always be anchored via the bow.
- Check your position frequently when at anchor to ensure that you have not dragged.

Glossary

Capstan Often referred to as a drum, rope drum, or warping drum. The capstan is primarily used for hauling rope.

Chain Stopper Similarly, chain compressor. Located between the winch and bow roller. Secures chain and anchor and takes the load off the winch/windlass. Highly recommended for systems utilising all chain and for semi-automatic rope and chain systems.

Free Fall Release of the winch clutch mechanism allowing the anchor and rode (chain or rope and chain) to run out freely with no engagement of winch gearbox or motor.

Gypsy Often referred to as chainwheel or wildcat. A special wheel with pockets, to accommodate a specified chain size, for hauling up the chain and anchor. With automatic rope/chain systems the gypsy is designed to haul both rope and chain.

Hauling Often referred to as weighing or lifting. The operation of lifting the anchor and rode.

Horizontal Pertaining to the winch or windlass. Drive shaft, capstan and gypsy are positioned horizontally to the deck.

Manual Override System Often referred to as emergency crank system. A means of manually cranking the winch to haul in the rode and anchor should a failure occur in the motor, gearbox or power supply.

Installation and maintenance

Maxwell provides a complete installation and maintenance manual with every windlass or capstan. This clear and detailed step-by-step guide, provides information on how and where to install your winch. Suggestions, practical tips and cautions provide a solid basis for usage and maintenance. These publications are available on the Maxwell website.

A good installation could mean the difference between your winch performing as it should or ending up causing you problems. Please ensure that you carefully read the Owner's Manual before installing and using your winch. Simple guidelines and advice such as greasing the clutch cones, using products such as CRC™ 'soft seal' on the motor and electrical terminals and bedding the winch to the deck with a top quality marine sealant will ensure that you get years of trouble free use from your Maxwell Marine products. If in doubt, contact your nearest Maxwell dealer.

Maxwell Three Year Warranty

Maxwell Marine provides a three year limited warranty on all windlasses, capstans and accessories for pleasure boat usage (with the exception of the AnchorMax which has a two year warranty) and a one year limited warranty for those systems used on commercial or charter vessels. Warranty, service and parts are available world-wide.



Contact your nearest Maxwell Marine office or check out the Maxwell Marine website: www.maxwellmarine.com for a complete list of service centres, agents and distributors.

www.maxwellmarine.com

Maxwell's ongoing commitment to customer service and technological excellence can be viewed online at www.maxwellmarine.com.

This fully interactive and constantly evolving website features Maxwell's easy to use winch selection guide, cad drawings, product manual downloads and up-to-date technical information regarding the latest product developments and innovations.

You can register warranties on line, ask for technical advice, find out what boat shows we are attending and locate the Maxwell office, agent or distributor nearest you.

Maximum Pull Sometimes referred to as rated lift, stall load, or simply lift/pull. The maximum pull or lift load of the winch.

Rode The line that secures the boat to the anchor. This may consist of all chain, all rope, or a combination of rope and chain.

Static Hold The maximum load that the windlass can hold. It is not recommended that the windlass be used in this manner.

Vertical Pertaining to the winch or windlass. The drive shaft, capstan and gypsy are positioned vertically to the deck.

Winch A windlass driven by a hand or power-operated crank or gearbox. Often implies to pull or lift a weight by using a winch.

Windlass A machine for raising a weight by winding a rope and/or chain around a drum or chainwheel, driven by a crank, motor, etc.

Working load Often referred to as the normal working load or the typical lift of the winch. This is usually somewhere between 25% to 35% of the maximum pull or rated lift. This workload should approximately correspond to the total weight of the anchor and rode aboard the boat.

Superyacht Windlasses and Capstans

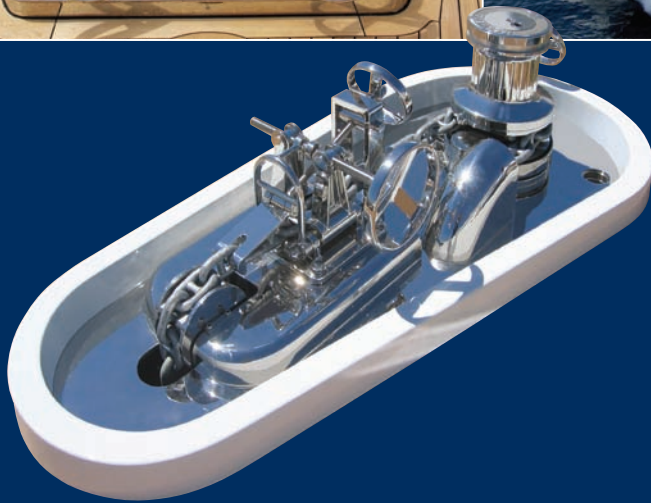
For over four decades Maxwell Marine has been supplying anchoring solutions to the global marine market. The Superyacht industry poses unique challenges. Quality, reliability and style are a must. Owners and captains depend on the finest equipment aboard their luxurious vessels to see them safely around the world or cruising in their home waters. Maxwell Marine has become the manufacturer of choice on many of the world's Superyachts.

The 21st century has presented Maxwell Marine with new opportunities and challenges. Larger Superyachts mean larger windlasses and anchor handling equipment. In response Maxwell has continued to develop and expand its highly successful 'SY' Series Superyacht windlasses. Complemented by new and innovative deck gear, such as

integrated Roller-Stopper-Tensioners, Compressor-Roller-Tensioners and Chain Pipe-Rollers, Maxwell is able to meet the demands for a complete and integrated anchoring package for Megayachts.

All Superyacht products are manufactured to the stringent international requirements of ISO9001 and are covered under the European CE standard. Maxwell Superyacht products are, and can be, certified to any of the major classification societies such as Lloyds, DNV, ABS, BV, etc.

For more information about Maxwell Marine's extensive range of Superyacht products and services, see their new Superyacht catalogue and information guide or visit www.maxwellmarine.com alternatively contact: superyacht@maxwellmarine.com.



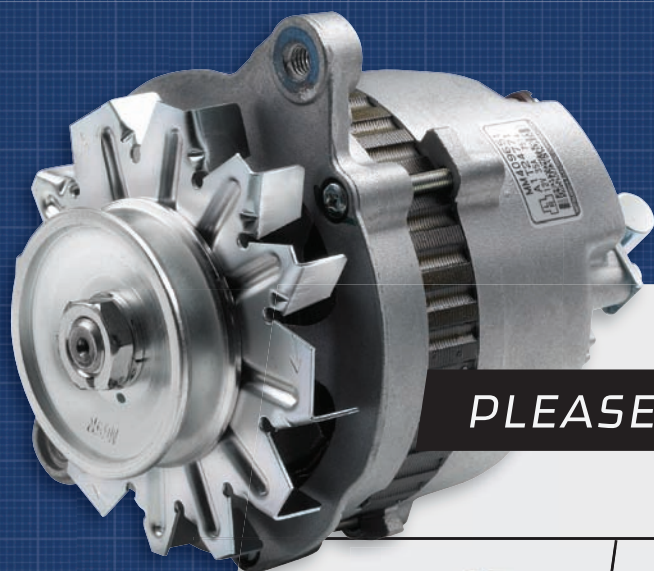
Maxwell Plots a New Course

Maxwell Marine is proud to be part of the Vetus, world wide group of companies, whose commitment to quality through innovation and design reflects Maxwell's vision of Marine Excellence:

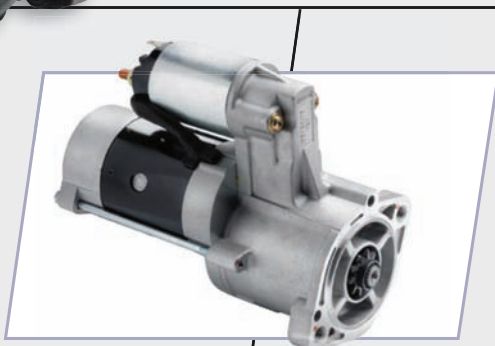
MAXWELL

A  COMPANY





PLEASE ASK FOR SEPARATE BROCHURE





With the V-Quipment line, VETUS offers a number of products which makes its range of boat equipment more complete. VETUS focuses on creating boat systems such as waste water, exhaust, manoeuvring, and drinking water systems. For anchor windlasses and custom made windows, VETUS carries the brands Maxwell and Marex. In addition to these brands, VETUS has recently launched a new program called V-Quipment - a range of products that is needed by all boat owners/builders and that is above all affordable. VETUS does not develop these products - which is the case for most of the other systems - but purchases and markets them under the brand name V-Quipment. All V-Quipment products meet VETUS' high quality requirements and are competitively priced.

For all products from the V-Quipment range VETUS' standard 3 year warranty is valid. VETUS stands behind V-Quipment!



SWSPORT



CHFUSW



AB38B



CHCBWB



BV



TUNAP



SLF80



STAINLESS STEEL CLEATS (AISI 316)

These stainless steel cleats are made of high-gloss polished stainless steel (AISI 316). All models (except TAURUS06) are mounted from the underside so that no fastenings are visible.

Maximum safe working load

Taurus01 : 575 kgf	Taurus04 : 2470 kgf
Taurus02 : 900 kgf	Taurus05 : 2470 kgf
Taurus03 : 1310 kgf	Taurus06 : 2620 kgf



TAURUS

STAINLESS STEEL BOLLARDS (AISI 316)

Maximum safe working load

Achilles080 : 620 kgf	Achilles130 : 1150 kgf
Achilles090 : 620 kgf	Achilles150 : 1800 kgf
Achilles110 : 1150 kgf	Achilles160 : 2620 kgf



ACHIL

BOLLARDS FOR DIRECT WELDING



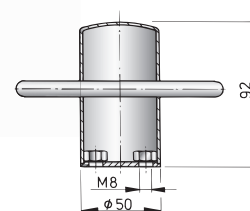
ACHILZ

The above mentioned bollards ACHIL are also available for direct welding. The sizes are similar.



ACHIL090B

A stainless steel bollard for small craft, which is fastened by means of 2 M8-bolts.



BOLPIN

Small stainless steel bollard with removable pin to fix a fender line.

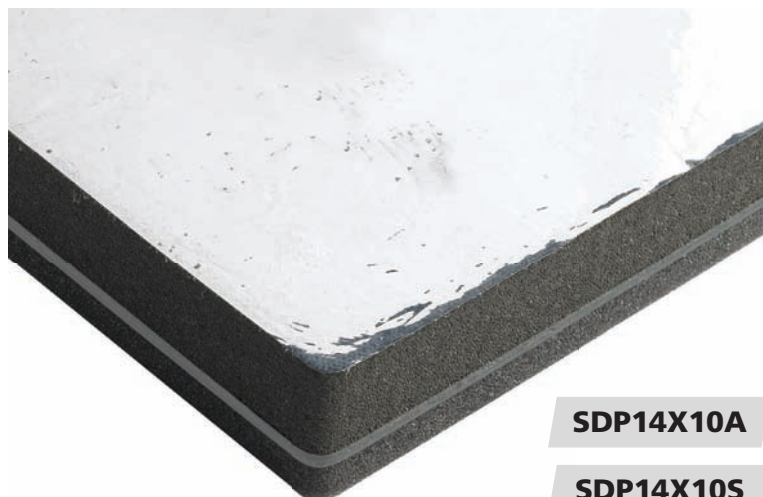


UBOLT

This 'hook' can be mounted at the bow of the boat, making it easy to pull the boat out of the water.



INSULATION MATERIAL



SDP14X10A

SDP14X10S

Sound deadening plate, type SDP

VETUS SDP plates both absorb the noise and insulate the vibrations. The structure of this plate is formed by two polyurethane foam layers, one of 10 mm and the other of 21,5 mm thickness. Between those two layers, an anti-reverberation slab of 4 mm thickness is located. The two layers of foam result in noise absorption, whereas the anti-reverberation plate eliminates vibrations. With this type of construction, it is possible to achieve the optimum sound insulation.

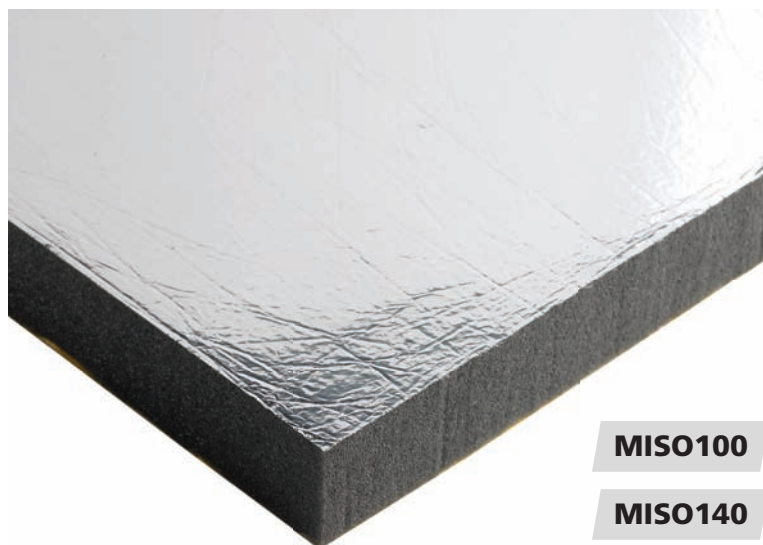
Technical specifications:

Dimensions of plates: SDP 14x10: 1380 x 980 x 36 mm.

Weight: 11,5 kg.

Temperature proof from: -30°C to +90°C.

SDP14x10A - White, SDP14x10S - Aluminum. Meets the requirements of the ISO 4589 standard, ISO / DIS 9094 Small Craft standard and the RSG Guidelines.



MISO100

MISO140

Sound deadening plates, type MISO

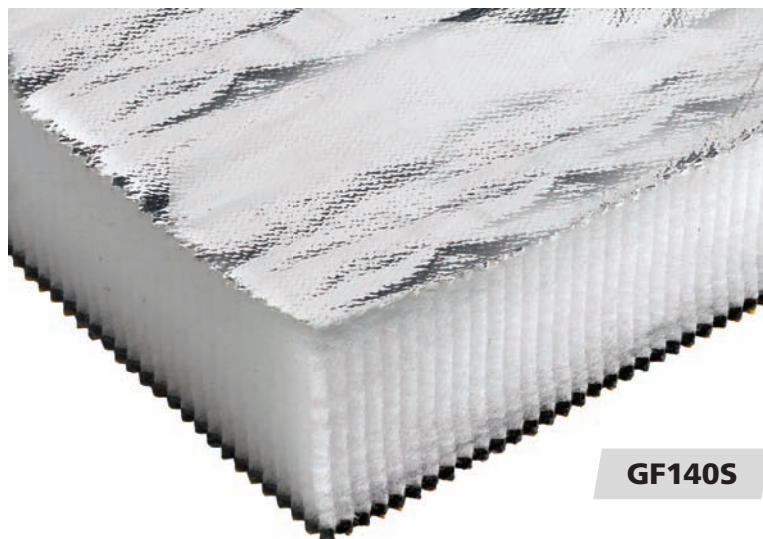
This material provides sound absorption but does not eliminate vibrations. The reverse side of the plate is self-adhesive. The material consists of a flexible, closed cell top layer (no oil absorption). Insulating plates with a so-called "egg-box" profile have definitely no better sound-deadening capacities than these flat MISO-plates.

Technical specifications:

Dimensions of plates: 1000 x 1000 x 20 mm and 1000 x 1000 x 40 mm.

Available in gray, white or aluminium layer. Meets the requirements of the ISO 4589 standard.

Temperature resistance: -30° to + 90 °C



GF140S

Sound deadening plates type GF140S

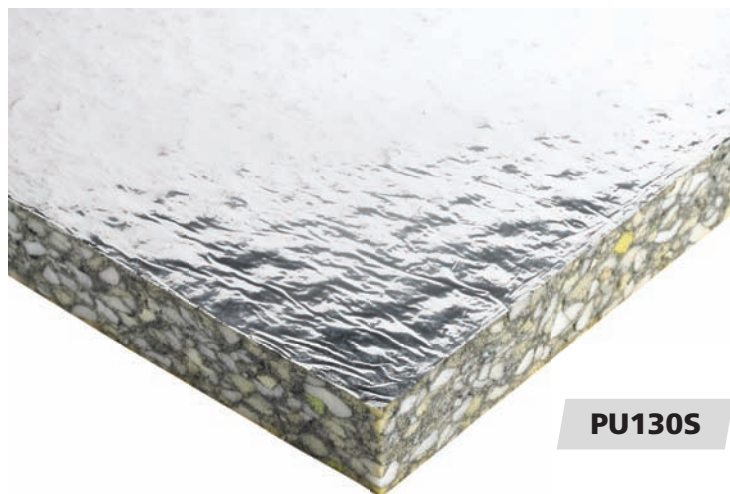
These modern light-weight sound deadening plates absorb both noise and vibration just as well as the more traditional and heavier SDP sheets. Type GF140S plates are self-adhesive and have an aluminum face layer.

Technical specifications:

Dimensions: 1200 x 800 x 40 mm.

Weight per plate: 5,6 kg.

Temperature resistance: up to 140° C.



PU130S

Sound deadening plates type PU130S

Sound deadening plates type PU130S are ideal for smaller engine installations and have excellent noise and vibration reducing qualities. They are supplied in convenient packs of 4 sheets.

Technical specifications:

Temperature Range: -30°C tot +90°C,
Brief: 115°C.
Plate Weight: 1,5 kg.

Plates are packed per 4 pieces.
Dimensions: 1000 x 500 x 30 mm.



TAPE

Tape

To provide a neat and professional finish when installing any VETUS sound deadening plate, use these self-adhesive tapes to cover the joints.

Available in the colours:

- Grey (TAPEG30)
- White (TAPEW30)
- Aluminium (TAPEA30)

The tape comes in rolls of 30 m long by 50 mm wide.



ARM10X12

Anti-reverberation material, type ARM

This VETUS plate or compound type ARM specifically reduces the structure borne sounds, e.g. caused by the ship's propeller. For best results, the thickness of the compound layer should be 2.5 times the thickness of the ship's bottom.

Technical specifications:

Plate: 8 kg (Dims. 1000 x 1200 x 4 mm).
Compound: 1 or 3 kg.

Temperature proof from: -10°C to +90°C.

Specific weight of dry compound: 1,1. Suitable for steel and aluminium.



ARMCOMP

Rosettes

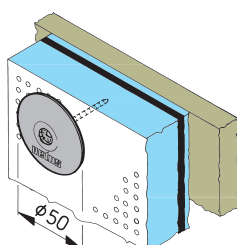
Fixing plate for easy installation of sound-deadening plates.

Technical specifications:

Screw not supplied.
Material: Polypropylene.
Pack of 15 pieces.



FIXP



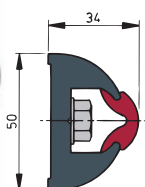
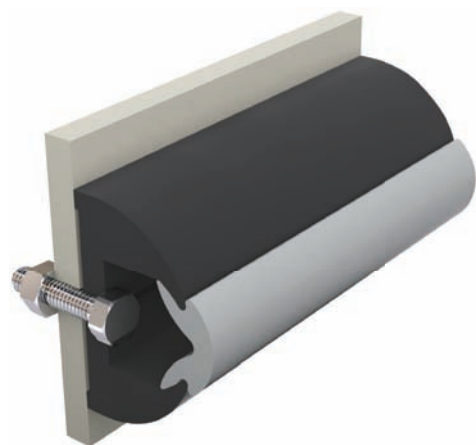


RUBBING STRAKES

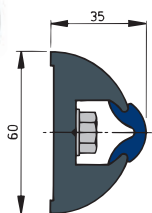
All VETUS rubbing strakes, have a black base profile, for fastening to the boat by means of bolts or screws. Type HARO, TRAP and POLY are also available with a white (RAL 9003) base profile.

The inlay strips may be supplied in the colours wine-red (RAL3004), cobalt-blue (RAL5013), light grey (RAL7035) black or stainless steel (AISI316). The inlay strips can be replaced easily. All VETUS rubbing strakes are available in lengths of 20 or 30 metres.

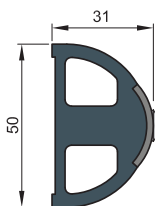
HARO



**TYPE
HARO5034**

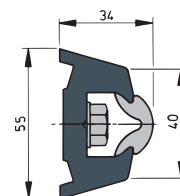
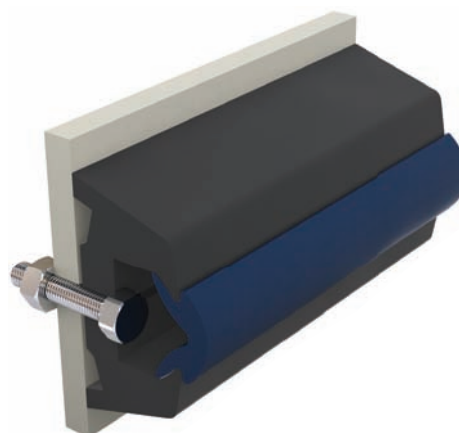


**TYPE
HARO6035**

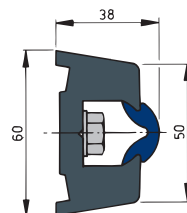
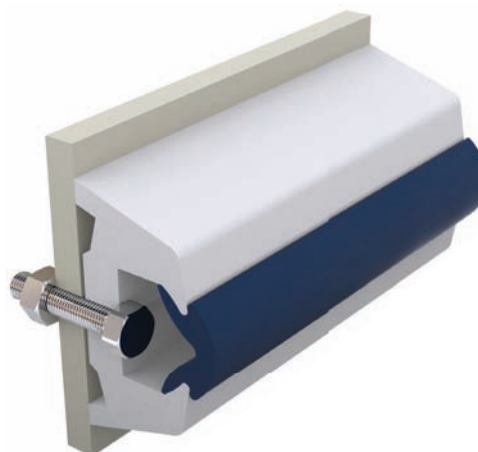


**TYPE
HARO5S**

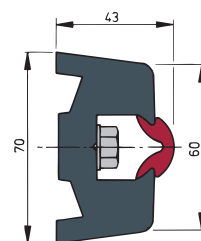
TRAP



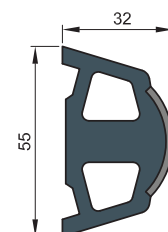
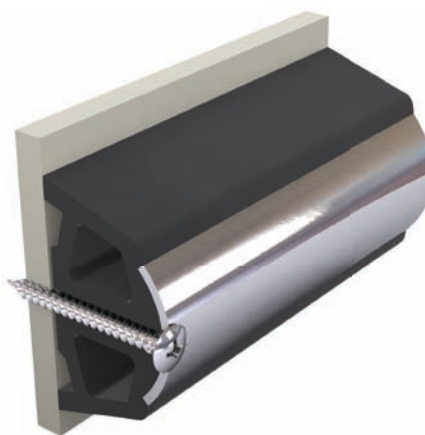
**TYPE
TRAP5534**



**TYPE
TRAP6038**



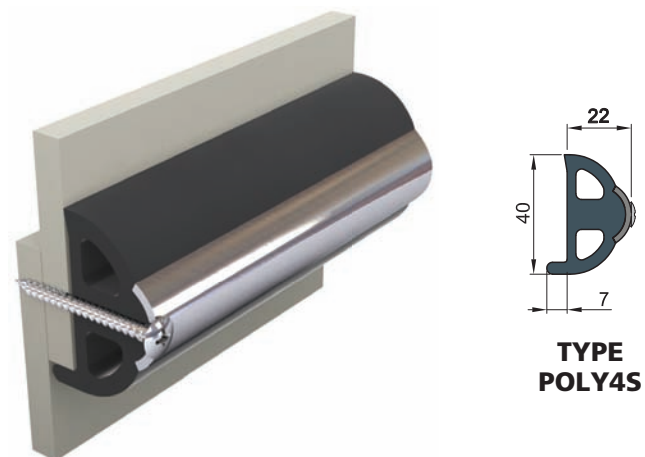
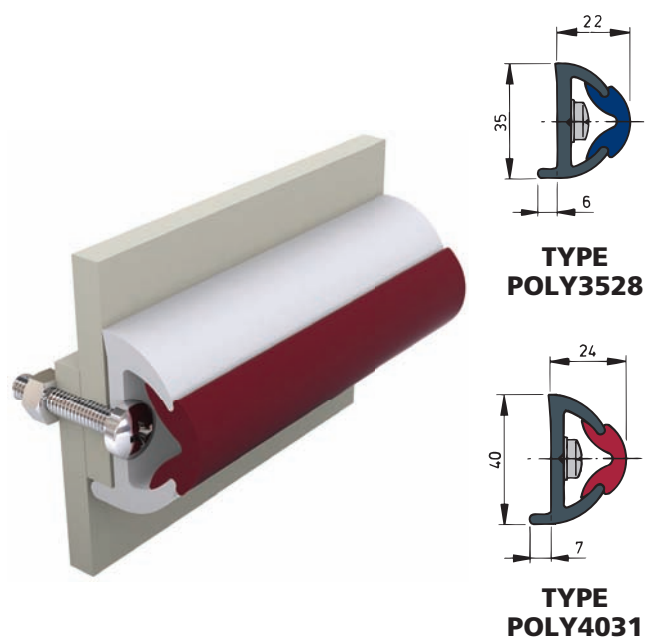
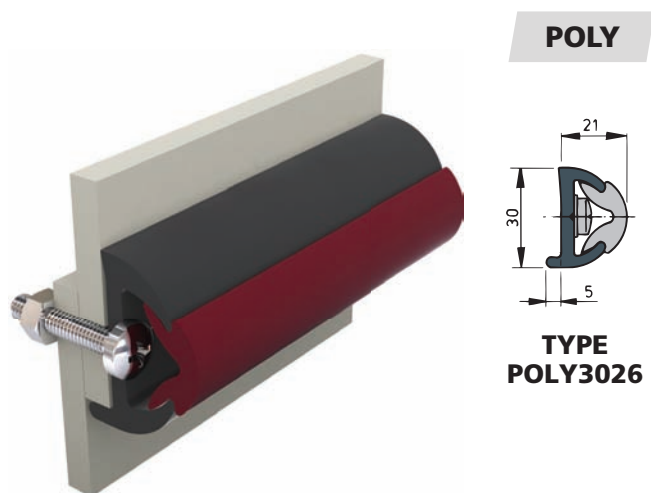
**TYPE
TRAP7043**



**TYPE
TRAP5S**

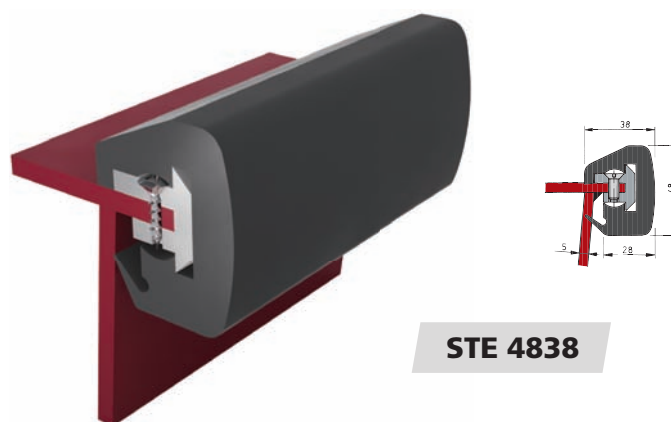


IDEAL FOR G.R.P. VESSELS



RUBBING STRAKE FOR STEEL BOATS

STE4838 comes in two sections. First the light-grey base section is fastened over the deck edge. Then the black profile is snapped over the base section.



For rubbing strake profiles, type HARO, TRAP and POLY, end covers are available in black, white or stainless steel.





POLY-WOOD

This material is excellently suited for the fabrication of all sorts of components on board. It is completely resistant against sunlight and water and is tough and durable. It is easy to process using common woodworking machinery and tools. The product is made of solid plastic and is not laminated. Poly-wood cannot rot, splinter, crack open or show discolouration and is therefore particularly suitable for outdoor use in all weather conditions.

**Each sheet is protected by a plastic masking.
We recommend that you remove the masking
when the job is done; not before.**

Code	POLY-WOOD White RAL 9010	Weight
SH06WSH	Poly-wood sheet, white, 1220 mm x 800 mm x 6 mm	6 kg
SH12WSH	Poly-wood sheet, white, 1220 mm x 800 mm x 12 mm	11 kg
SH18WSH	Poly-wood sheet, white, 1220 mm x 800 mm x 18 mm	17 kg

Code	POLY-WOOD White RAL 9010	Weight
SH06WSH	Poly-wood sheet, white, 1220 mm x 2440 mm x 6 mm	17 kg
SH12WSH	Poly-wood sheet, white, 1220 mm x 2440 mm x 12 mm	34 kg
SH18WSH	Poly-wood sheet, white, 1220 mm x 2440 mm x 18 mm	51 kg



BOATFIX1

VETUS FIX

This glue has been specially developed to bond VETUS non-slip deck covering. However, it is also very suitable for bonding P.V.C.- and polyester foil to leather and wood. Excellent adhesion is obtained as well on laminated plastics such as Formica, hard P.V.C. and ABS.

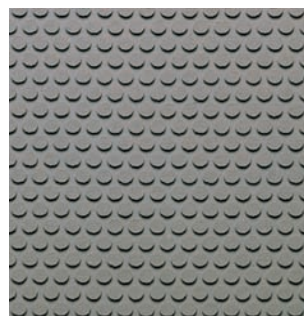
Technical specifications:

Supplied in 1 litre can. 1 litre VETUS FIX is sufficient to glue 2 to 3 m².

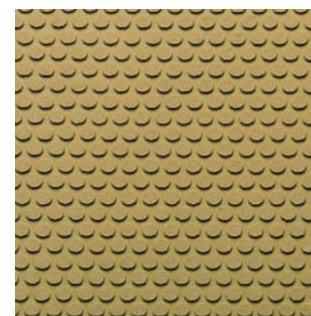
NON-SLIP DECK COVERING

Deck covering, made of rubber, cork and plastic. This material has incredibly high non-slip properties under all circumstances. It is highly resistant against sunlight, seawater and oil. Suitable for all types of decks (steel, glassfibre, wood, aluminium and concrete).

Available in sheets of: 90 x 120 cm.
90 x 240 cm.



Happy Elephant



Safari



M

ELECTRIC MARINE HORNS

- for 12 or 24 Volt electric installations.
- with high pitch or low pitch sound.
- single horn, low pitch: 320 Hz, 112 dB (A).
- single horn, high pitch: 370 Hz, 112 dB (A).
- dual horn combination of low and high pitch sound, 115 dB (A) and supplied with relay.
- made of chromium plated brass.
- mounting brackets stainless steel.
- overall length: "low pitch" 470 mm.
"high pitch" 400 mm.
"double" 470 mm.



TN

- for 12 or 24 Volt electric installations.
- with high pitch or low pitch sound.
- single horn, low pitch: 410 Hz, 109 dB (A).
- single horn, high pitch: 500 Hz, 109 dB (A).
- dual horn combination of low and high pitch sound, 112 dB (A) and supplied with relay.
- made of chromium plated ABS and stainless steel.
- mounting brackets stainless steel.
- single horn l x b x h= 80 x 79 x 90 mm.
- double horn l x b x h= 160 x 79 x 90 mm.



HORNPB

PUSH-BUTTON FOR MARINE HORN

This push button may operate marine horns, with a current consumption of 15 A maximum. Suitable for 12 and 24 Volt D.C. electrical installations.

Technical specifications:

Cut-out diameter: Ø 31 mm.

Outside dimensions: Ø 38 mm.

Watertight to IP67



STANCHCHPR



STANCHCHPS

STAINLESS STEEL STANCHION SOCKETS (AISI 316)

Ø 25 mm, 90° straight or with 6° angle.

Dimensions: (l x w x h)

90 x 67 x 60 mm.



STANCH

STAINLESS STEEL STANCHIONS (AISI 316)

Tapered with 2 wire holes at 300 mm spacing, except for 450 mm model which has only 1 hole.

Technical specifications:

Diameter: 25 mm

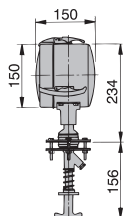
Length: 450, 500, 550, 610 and 750 mm.



SEARCHLIGHTS



Z50

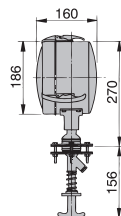


TYPE Z.50

Ø 150 mm, 12 or 24 Volt.
Complete with "sealed beam".



Z70

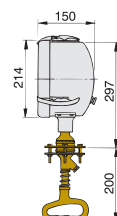


TYPE Z.70

Ø 186 mm, 12 or 24 Volt D.C.
Complete with "sealed beam".



ZN215



TYPE ZN.215

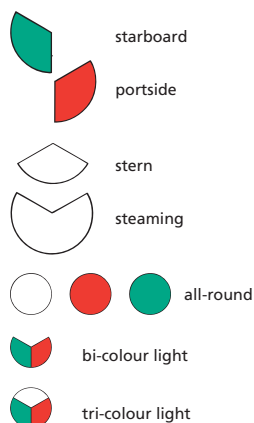
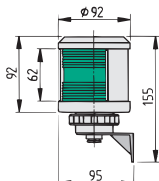
Ø 214 mm, 12 or 24 Volt DC or 230 Volt A.C.
Halogen bulbs are supplied separately.

Type	Diameter mm	Code	Voltage	Power in Watt	Range in m	Light output in candle	Beam spread	Finish
Z.50	150	Z5012	12	100	450	200.000	11°- 6°	Stainless steel
		Z5024	24	250	550	300.000	12°-11°	
Z.70	186	Z7012	12	100	475	225.000	9°- 5°	Stainless steel
		Z7024	24	170	480	230.000	9°- 8°	
ZN.215	214	ZN215	12	100	362	131.000	9°- 16°	Powder coated white
		ZN215	24	250	664	441.000	10°-14°	
		ZN215	230	300	345	120.000	15,5°-21°	

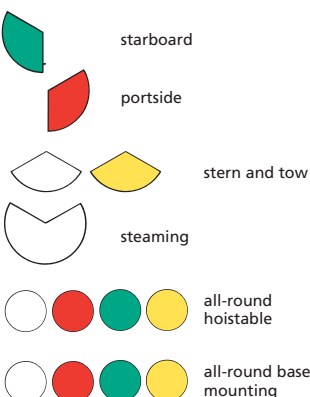
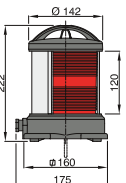
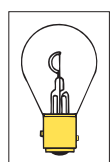
NAVIGATION LIGHTS

According to I.M.O. Specifications (international regulations for prevention of collisions at sea, colreg '72).

TYPE 35 FOR BOATS OF LESS THAN 20 METRES IN LENGTH (WITH WHITE OR BLACK COLOURED HOUSING)



TYPE 55N FOR BOATS OF LESS THAN 50 METRES IN LENGTH



In order to comply with the I.M.O. regulations, each navigation light type 35 or type 55 requires a special approved bulb, which should be ordered separately. Available for 12 and 24 V, 25 W.

Model 55N not only meets the abovementioned I.M.O. specifications, but also those of the European standard EN 14744, which will become applicable in future. For the all round lights, a set is available that allows them to be hoisted as well.



SWSPORT

Three-spoke sport steering wheel. The steering wheel is finished in carbon and has a 30 cm diameter.



SWCRUISER

Three-spoke steering wheel. The steering wheel is finished in silver aluminum accents and has a 30 cm diameter.



All seats and benches in this range are finished in maintenance free and water resistant vinyl, which is ideal for marine use. All seats are supplied without a seat base, which should be ordered separately, if required.



FLIP-UP boat seat. Front part can be folded up for steering in a standing position.

Available in white.



CHFUS



High quality helm chair. Stainless steel (304) frame, with arm rests.

Available in dark blue.

CHFASB

FLIP-UP version. Front part can be folded up for steering in a standing position. With comfortable head rest.

Available in in 2 colours:

- Dark blue with white seams.
- White with dark blue seams.



CHFUSB



CHFUSW



CHFSW



CHFSB



Deluxe foldable boat seat.

Available in 2 colours:

- White with dark blue seams.
- Dark blue with white seams.



CHFSWW



CHFSSB



Classic foldable boat seat.

Available in 2 colours:

- White with dark blue seams.
- Dark blue with white seams.



CHCASW

Classic helm chair with comfortable arm rests.

- Available in white.



CHCS



Ergonomic foldable seat. Cushions are optional.

Deluxe bench boat seat for 2 persons. Foldable model.

Available in 2 colours:

- White with dark blue seams.
- Dark blue with white seams.



DCHFSW



DCHFBSB



All seats are supplied without a seat base, which should be ordered separately, if required.



CHTBSW



CHTBSB

Helm chair with adjustable back rest.
Ideal for fast boats.

Available in 2 colours:

- White with dark blue seams.
- Dark blue with white seams.

Bench boat seat for 2 persons with adjustable back rest.

Available in 2 colours:

- White with dark blue seams.
- Dark blue with white seams.



DCHTBSW



DCHTBSB



Deluxe lightweight foldable seat with plastic frame.

Available in 2 colours:

- White.
- Blue and white.



CHCBWB



CHCW



All seats are supplied without a seat base,
which should be ordered separately, if required.



PCG3040



PCGW3447

Height adjustable aluminium seat pedestal with slide.

Available in 2 sizes:

With gas spring / 30 to 40 cm.

With gas spring / 34 to 47 cm.



PCMSW3040



PCMSW3447

Height adjustable aluminium seat pedestal with slide

Available in 2 sizes:

Manually adjustable / 30 to 40 cm.

Manually adjustable / 34 to 47 cm.



PCMS3447

Height adjustable aluminium seat pedestal with swivel.

Manually adjustable / 30 to 40 cm.

Manually adjustable / 34 to 47 cm.



PCM4363



PCM3040

Height adjustable aluminium seat pedestal with swivel.

Available in 2 sizes:

Manually adjustable / 30 to 40 cm.

Manually adjustable / 43 to 63.5 cm.



Height adjustable aluminium seat pedestal with slide.

Manually adjustable / 30 to 40 cm.

PCMSA3040



Height adjustable aluminium seat pedestal with slide.

Manually adjustable / 43.5 to 63.5 cm.

PCMS4363



Seat pedestal with swivel.

With swivel / height 135 mm.

PC13



Seat slide for direct mounting.

SCU



Seat pedestal with swivel.

With swivel / height 135 mm.

PCS15



Rotatable and foldable aluminium foot rest.

Suitable for seat pedestals with a pipe diameter from 80 to 100 mm.

RESTU



Seat pedestal with swivel.
With swivel / height 38 cm.

PCR38



Seat pedestal
with swivel.

PCRS38



Telescopic, height adjustable
table pedestal with 3 segments.
Adjustable from 29 - 69 cm.

PCMS2969



Table pedestal including base plate.
With swivel / height 68.5 cm.

PT68



Base plate for easy removal
of the table pedestal.

TBR



Fixed, flush mount
table base.

TBF



Round table with adjustable table pedestal and base plate.

Adjustable from 50 to 70 cm.
Table diameter: 60 cm.

TPM5070



Round table with table pedestal and base plate.

Can be removed from baseplate.
Fixed height 68 cm.
Table diameter: 60 cm.

PTR68



Round table with adjustable table pedestal and base plate.

Fixed height 68 cm.
Table diameter: 60 cm.

PTF68



Oval table with table pedestal and base plate.

Can be disassembled / 68 cm. Oval (45 x 76 cm) fixed height.

PTTR68



Oval table with adjustable table pedestal and base plate.

Oval (45x76 cm).
Fixed height 68 cm.

PTTF68



Oval table with adjustable table pedestal and base plate.

Can be removed from baseplate.
Fixed height 68 cm.
Oval (45 x 76 cm).

PTT5070



SL3

Telescopic stainless steel (304) boarding ladder.

3 steps.

Extended length max. 900 mm.



SLF60

Folding stainless steel (304) boarding ladder.

Unfolded length 600 mm.



SLF80

Folding stainless steel (304) boarding ladder.

Unfolded length 800 mm.



STAINLESS STEEL BREATHER NIPPLES (AISI 316)

The breathing capacity fulfils the CE requirements. Provided with an easily cleaned stainless steel gauze, which functions as a flame arrester.


AB16S

For hose
Ø 16 mm
straight.

AB16B

For hose
Ø 16 mm
angled.

AB19S

For hose
Ø 19 mm
straight.

AB19B

For hose
Ø 19 mm
angled.

AB19SL

For hose
Ø 19 mm
straight.

AB25B

For hose
Ø 25 mm
angled.

AB38B

For hose
Ø 38 mm
angled.


THRU

STAINLESS STEEL SKIN FITTINGS (AISI 316)

Available in sizes
G 1/2, G 3/4, G 1, G 1 1/4,
G 1 1/2, G 2.


HP

STAINLESS STEEL HOSE PILLARS (AISI 316)

G 1/2 x 13 mm, G 3/4 x 19 mm,
G 1 x 25 mm, G 1 1/4 x 32 mm,
G 1 1/2 x 38 mm and G 2 x 51 mm.



STAINLESS STEEL WATER SCOOPS (AISI 316)

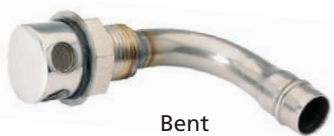
G 1/2, G 3/4, G 1, G 1 1/4,
G 1 1/2, G 2.

WCAP..S

BV

STAINLESS STEEL BALL VALVES (AISI 316)

G 1/2, G 3/4, G 1, G 1 1/4,
G 1 1/2, G 2.

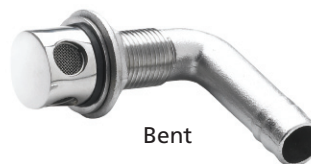


Bent

ST04H

AIR VENT NIPPLES FOR TANKS

Chromium plated brass for
Ø 16 mm internal diameter hose.



Bent

ST04HS

Stainless steel (AISI 316) tank
breather nipples. Hose connection
Ø 16 mm, straight or 90° angled.



Straight

ST04


Straight

ST04S


KRAAN
**NICKEL PLATED BRASS
FULL BORE BALL VALVES**

G 1/4, G 3/8, G 1/2, G 3/4, G 1, G 1 1/4, G 1 1/2,
G 2, G 2 1/2 and G 3.
Suitable for water and diesel fuel.


HPM
**BRASS 90 DEGREE
HOSE PILLARS**

G 1/2 x 13 mm, G 3/4 x 19 mm,
G 1 x 25 mm, G 1 1/4 x 32 mm
and G 1 1/2 x 38 mm.


KRA
**NICKEL PLATED BRASS
3-WAY FULL BORE BALL
VALVES**

Ball valve G 1/2 L, G 3/4 L, G 1 L,
G 1 1/4 L and G 1 1/2 L.
Suitable for water and diesel fuel.

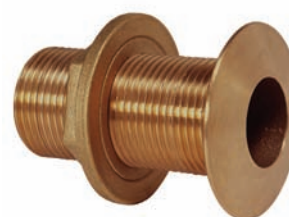

HPB
**BRONZE
HOSE PILLARS**

Bronze: ISO CuPb5Sn5Zn5

G 1/2 x 13 mm,
G 3/4 x 19 mm,
G 1 x 25 mm,
G 1 1/4 x 32 mm
and G 1 1/2 x 38 mm.


DOORB
**BRASS
SKIN FITTINGS**

G 3/8, G 1/2, G 3/4, G 1,
G 1 1/4, G 1 1/2, G 2, G 2 1/2


THRUB
**BRONZE
SKIN FITTINGS**

Bronze: ISO CuPb5Sn5Zn5

G 1/2, G 3/4, G 1,
G 1 1/4, and G 1 1/2.


SLP
BRASS HOSE PILLARS

G 1/4 x 8 mm, G 1/4 x 16 mm,
G 3/8 x 10 mm, G 3/8 x 15 mm,
G 1/2 x 13 mm, G 1/2 x 16 mm,
G 1/2 x 19 mm, G 3/4 x 16 mm,
G 3/4 x 19 mm, G 3/4 x 25 mm,
G 1 x 25 mm, G 1 x 32 mm,
G 1 1/4 x 32 mm, G 1 1/4 x 38 mm,
G 1 1/2 x 32 mm, G 1 1/2 x 38 mm,
G 1 1/2 x 45 mm, G 2 x 51 mm,
G 2 1/2 x 60 mm, G 3 x 76 mm.


WCAPB
**BRONZE
WATER SCOOPS**

Bronze: ISO CuPb5Sn5Zn5

G 1/2, G 3/4, G 1, G 1 1/4, and G 1 1/2.


WCAP
**BRASS
WATER SCOOPS**

G 1/2, G 3/4, G 1,
G 1 1/4, G 1 1/2, G 2,
G 2 1/2 and G 3.


BVB
**BRONZE
BALL VALVES**

Bronze: ISO CuPb5Sn5Zn5

G 1/2, G 3/4, G 1, G 1 1/4, and G 1 1/2.

For continuous immersion in salt water, we advise against the use of brass fittings.


MAN

Manifolds

VETUS fluid manifolds enable a number of pipes to be connected to a single through-hull fitting. These manifolds are made of seawater resistant bronze.

Four models are available with the following threaded connections:

- 1 x G $\frac{3}{4}$ internal and external thread 2 x G $\frac{1}{2}$ internally threaded.
- 1 x G $\frac{3}{4}$ internal and external thread 3 x G $\frac{1}{2}$ internally threaded.
- 1 x G1 internal and external thread 2 x G $\frac{3}{4}$ internally threaded.
- 1 x G1 internal and external thread 3 x G $\frac{3}{4}$ internally threaded.

They may also be connected to an underwater skin fitting with ball valve for raw water intake. In this case again, only one fitting will be needed instead of three or four. It is not recommended to connect multiple engines or generating sets to one raw water intake. But other equipment such as a deck wash pump, toilet, sink or fish well are easily connected to a VETUS manifold, saving time and installation costs. Any connections which are not used may be blanked off.

STAINLESS STEEL DECK ENTRIES (AISI 316) WITH HIGH-GLOSS POLISHED WATERTIGHT COVER


CAPW38S

CAPG38S

CAPF38S

CAPF51S

CAPWC38S

KEY1

Key for slotted stainless steel deck entries. Also suitable for deck entries with an octagonal recess.



These stainless steel deck entries (AISI 316) are also available with a winch handle socket.


HCHD

"HEAVY DUTY" HOSE CLAMPS

Material: galvanised steel AISI 430, bright passivated. Suitable for hoses between Ø 34 and Ø 329 mm.


HCHDS
STAINLESS STEEL HOSE CLAMPS HEAVY DUTY

Suitable for hoses between
Ø 34 and Ø 329 mm.


HCS
STAINLESS STEEL HOSE CLAMPS

Suitable for hoses between
Ø 8 and Ø 170 mm.


BV1 1/2 L
LOCKABLE STAINLESS STEEL BALL VALVE G1 1/2

In a number of countries it is a legal requirement that the toilet or holding tank outlet can be locked to prevent the accidental discharge of black water in port. This stainless steel (AISI 316) ball valve with G1 1/2 thread, can be padlocked if required. The padlock itself is not supplied.


DOORN
DELFIN (WHITE) SKIN FITTINGS

G 1/2 x 16 mm, G 3/4 x 19 mm,
G 1 x 25 mm, G 1 1/4 x 32 mm,
G 1 1/2 x 38 mm


FCAPWATER
FCAPDF38
FCAPDF50
CAPWC38
DECK PLATES

Chromium plated brass G 1 1/2 female thread.
Water Ø 38 mm
Fuel Ø 38 mm
Fuel Ø 51 mm
Waste water Ø 38 mm
Fullfills the requirements of ISO 8099.


THRH
SKIN FITTINGS

Straight skin fitting for hose.
Ø 16 mm (5/8"), 19 mm (3/4"),
25 mm (1"), 28 mm (1 1/8"),
32 mm (1 1/4"), 38 mm (1 1/2").


THRH..BH
SKIN FITTINGS, ANGLED 100°

Angled skin fitting with high flange, for hose Ø 25 mm (1"), 28 mm (1 1/8").


THRHL
SKIN FITTINGS WITH L- FLANGE

Skin fitting with L-flange for hose.
Ø 16 mm (5/8"), 19 mm (3/4"),
25 mm (1"), 28 mm (1 1/8"),
32 mm (1 1/4"), 38 mm (1 1/2").


THRH..BL

Angled skin fitting with low flange for hose Ø 25 mm (1"), 28 mm (1 1/8").


TPC
T-PIECES

T-piece for hose Ø 16 mm (5/8"),
19 mm (3/4"), 25 mm (1"),
28 mm (1 1/8").

These 6 items are suitable temperatures up to +83 ° C.


BULKH
BULKHEAD CONNECTORS

Bulkhead connector for hose
Ø 16 mm (5/8"), 19 mm (3/4"),
25 mm (1"), 28 mm (1 1/8"),
32 mm (1 1/4"), 38 mm (1 1/2").



VTF1

VETUS TRANSMISSION OIL

VETUS Transmission Oil is suitable for all types of marine transmissions which specify Automatic Transmission Fluid (ATF) Dextron IID or ATF Suffix A. This oil contains additives which protect the internal metal parts of the transmission against corrosion and wear, even at high operational temperatures. It is also suitable for hydraulic systems, for which this oil quality is specified. May not be used in applications where APIGL4 or GL5 are specified.

VETUS Transmission Oil exceeds the requirements of:
Dexron IID ZF TE-ML-03D/04D/11A/14A/17C GM Dexron IID.

Technical specifications:

Can: 1 litre contents.

Colour: red.



VBT05

VETUS SPECIAL GEARBOX OIL

VETUS Special Gearbox Oil is recommended for use in bow thruster drive legs, anchor windlass gearboxes and outboard motor drive legs if compliant with the manufacturer's specifications. This oil contains additives which offer full protection against wear and tear, as well as metal to metal contact which may occur under extreme loadings. It has excellent anti-corrosion properties and resistance to ageing. May be mixed with other API GL4 and GL5 oil types.

VETUS Special Gearbox Oil exceeds the requirements of:
API GL-5, SAE 80W-90 ZF TE-ML-05A/07A/16B/17B/19B MIL-L-2105 D.

Technical specifications:

Can: 0.5 litre contents.

Colour: beige.



VMD15

VETUS MARINE DIESEL ENGINE OIL 15W-40

VETUS Marine Diesel Engine Oil 15W-40 is suitable for all modern marine diesel engines and generator sets. It also meets the very high requirements of turbo-charged engines and engines with modern valve technology. This mineral oil provides low oil consumption, excellent rust and internal corrosion protection and detergents to maintain engine cleanliness. As a result, optimal combustion and low exhaust emission values are ensured. Also perfectly suitable for use in all gearboxes, for which a lubrication oil, type 'SAE 20W-40 CD' is prescribed as well as petrol engines requiring lubrication oil, type "APISL" or "ACEA A3/B4" or "MB229.1".

VETUS Marine Diesel Engine Oil 15W-40 exceeds the requirements of: API CI-4, ACEA A3/B3, A3/B4, E7, MB 228.3/229.1, MAN M3275, Volvo VDS-3, Cummins CES 20071 / 20072 / 20076 / 20077, CAT ECF-1-a.

Technical specifications:

Cans: 1 or 4 litres contents.

Colour: beige.



VHS1

VETUS HYDRAULIC STEERING OIL HF 15

VETUS Hydraulic Steering Oil HF15 is a low viscosity oil for hydraulic steering systems with optimum results at all temperatures. This oil has a very low coagulation point and a very high viscosity index. May be mixed with other hydraulic mineral oils.

Viscosity: 22 cSt at 20° C.

Viscosity index: 353 DIN 51524

Technical specifications:

Can: 1 litre contents.

Colour: green.



VHT

VETUS HYDRAULIC OIL HT

VETUS Hydraulic Oil HT is a fluid suitable for power hydraulic systems. The product has extremely high EP properties and provides optimum protection against wear and tear and corrosion together with a long service life. Additives in this oil reduce foam formation and ageing and ensure excellent water separation properties.

Viscosity: ISO VG 46.

VETUS Hydraulic Oil HT exceeds the requirements of: DIN 51524, 2 HLP, FZG 12, Vickers Vane Pump.

Technical specifications:

Cans: 1, 4 or 20 litres contents.

Colour: neutral.



VMD10

VETUS MARINE DIESEL SYNTHETIC ENGINE OIL 10W-40

VETUS Marine Diesel Synthetic Engine Oil 10W-40 represents the highest quality synthetic oil, especially developed for modern high output marine diesel engines and generator sets. This state of the art engine oil is recommended for the new generation marine diesel engines, ensuring low fuel and oil consumption, optimum protection against wear and tear and corrosion and a long service life. The product is ideal for use in diesel engines with very low exhaust gas emissions, in combination with modern low sulphur fuels. Also suitable for use in all gearboxes for which lubrication oil type "SAE 20W-40 CD" is prescribed, as well as petrol engines requiring lubrication oil, type "API SL" or "ACEA A3/B4" or "MB229.1".

VETUS Marine Diesel Synthetic Engine Oil 10W-40 exceeds the requirements of: API CF/SL; ACEA A3/B4, E4, E7; MB 228.5/229.1; MAN M3277CRT; VW 505.00; Volvo VDS-2.

Technical specifications:

Cans: 1 or 4 litres contents.

Colour: beige.



VOC

VETUS ORGANIC COOLANT -38

Vetus Organic Coolant -38 is suitable for all types of engine, made of cast iron, steel, or aluminium. It is provided with anti-corrosion additives and must be used undiluted. This coolant can be used all year long and does not affect seals or hoses. It is also ideal for use in heating and air conditioning systems, as well as hydraulically operated remote controls. May be mixed with other modern cooling liquids.

VETUS Organic Coolant -38 Organic cooling liquid Protection down to -38° C, do not dilute.

Technical specifications:

Cans: 1 or 4 litres contents.

Colour: light yellow.

All 0.5 and 1 litre cans are provided with a pull out spout for easy filling and to prevent environment pollution.



Content: 375ml

TUNAP883

TUNAP883

Diesel additive to protect the injection system

This is an active fuel additive suitable for all diesel engines and is designed to optimize lower quality diesel fuels.

Properties:

- Extends the system lifetime by improving the lubricating ability of diesel fuel and thus reducing wear. Proven with HFRR test (ISO 12156).
- Prevents deposits caused by oxidation by using antioxidants and mild dispersants.
- Improves the storage stability of diesel fuel.
- Protects the system against corrosion.
- Improves ignition by increasing the cetane number within the safety margin.
- Reduces fuel related knocking.
- Neutralizes and binds acid condensate.

Area of application:

- For all boat diesel engines, particularly modern common rail and direct injection systems.
- To secure the overall fuel quality.
- After repairs of the fuel injection system (improves running-in of new parts).
- After each service.
- After system cleaning.

Usage:

- Add the content of the can to the tank (sufficient for 150 litres of diesel fuel).



Content: 100ml

TUNAP885

TUNAP885

Diesel Protection

Ensures the quality of diesel and biodiesel fuels, increases the fuel storage time and protects the fuel system from contamination and "diesel bug".

Properties:

- Protects diesel and biodiesel fuels against sludge and diesel bug.
- Applicable to all conventional diesel engines as well as modern common rail and direct injection systems.

Area of application:

- For marine diesel engines.
- For stationary aggregates.
- Prevention for biodiesel and in case of high humidity.

Usage:

- If system is already infected, perform basic cleaning and apply shock dose (1 can per 100 litres of fuel).
- Replace diesel filter.
- As a preventive measure use one can per 500 litres of fuel.
- Highly recommended for protection during against any winter storage and all longer breaks.

Avoid overdose!

Mixing ratio

Shock dose
100 ml per 100 litres (1 : 1000).

Preventive measure
100 ml per 500 litres (1 : 5000).



BATC

Battery cables

Technical specifications:

- Neoprene rubber insulation jacket with a temperature range of -20°C to +85°C (6 mm² PVC).
- Insulation jacket available in black for negative and red for positive direct current (CE).
- Extremely flexible. The minimum bending radius is no more than 6 times the diameter.
- Available with a cross sectional area of 6, 10, 35, 50, 70, 95, 120 or 150 mm² (150 mm² only available in black).



BATCC

Cable tags for battery cables

For cable cross-sections, see pricelist.

BATCC0606	Cable tag for	6 mm ²	cable with hole M6	(set of 10 pieces)
BATCC0608	Cable tag for	6 mm ²	cable with hole M8	(set of 10 pieces)
BATCC0610	Cable tag for	6 mm ²	cable with hole M10	(set of 10 pieces)
BATCC1006	Cable tag for	10 mm ²	cable with hole M6	(set of 10 pieces)
BATCC1008	Cable tag for	10 mm ²	cable with hole M8	(set of 10 pieces)
BATCC1010	Cable tag for	10 mm ²	cable with hole M10	(set of 10 pieces)
BATCC3506	Cable tag for	35 mm ²	cable with hole M6	(set of 2 pieces)
BATCC3508	Cable tag for	35 mm ²	cable with hole M8	(set of 2 pieces)
BATCC3510	Cable tag for	35 mm ²	cable with hole M10	(set of 2 pieces)
BATCC5006	Cable tag for	50 mm ²	cable with hole M6	(set of 2 pieces)
BATCC5008	Cable tag for	50 mm ²	cable with hole M8	(set of 2 pieces)
BATCC5010	Cable tag for	50 mm ²	cable with hole M10	(set of 2 pieces)
BATCC7006	Cable tag for	70 mm ²	cable with hole M6	(set of 2 pieces)
BATCC7008	Cable tag for	70 mm ²	cable with hole M8	(set of 2 pieces)
BATCC7010	Cable tag for	70 mm ²	cable with hole M10	(set of 2 pieces)
BATCC9508	Cable tag for	95 mm ²	cable with hole M8	(set of 2 pieces)
BATCC9510	Cable tag for	95 mm ²	cable with hole M10	(set of 2 pieces)
BATCC9512	Cable tag for	95 mm ²	cable with hole M12	(set of 2 pieces)
BATCC1210	Cable tag for	120 mm ²	cable with hole M10	(set of 2 pieces)
BATCC1212	Cable tag for	120 mm ²	cable with hole M12	(set of 2 pieces)
BATCC1510	Cable tag for	150 mm ²	cable with hole M10	(set of 2 pieces)
BATCC1512	Cable tag for	150 mm ²	cable with hole M12	(set of 2 pieces)



BATT

Battery terminal sets

For cables with a cross section between 16 and 35 mm² and for cables with a cross section between 50 and 95 mm². With M10 bolt, for cable up to 150 mm².

BATT1635	Terminal set for cable 16-35 mm ² (set of 2 pieces)
BATT5095	Terminal set for cable 50-95 mm ² (set of 2 pieces)
BATT150	Terminal with M10 bolt, for cable up to 150 mm ² (set of 2 pieces)



GAS STRUTS

There are many applications on board where the assistance of a gas strut will reduce the effort required. For example, heavy deck hatches or locker doors. VETUS gas struts are specifically designed for marine use. All external parts are made of stainless steel (AISI 316) or synthetic materials and the special seals guarantee long service life. When fitted vertically, make sure that the piston rod is pointing downward.

These gas-filled cylinders are supplied complete with fixings.

In order to calculate the maximum admissible weight which can be supported, the following data is required:

W = Width of the object to be lifted in mm.

G = Weight of the object to be lifted in N.

S = Length of stroke in mm.

F = Force of the gas strut in N.

The calculation goes as follows:

$$\frac{1}{2} \frac{W}{S} \times G = F$$

Example:

The weight of a hatch is 11.2 kg (110 N). The width of the hatch is 600 mm. One single gas strut type GASSP44 can lift a hatch with

a weight (G) of 96 N $\left(\frac{1}{2} \times \frac{600}{160} \times G = 180 \text{ G} = 96 \text{ N}\right)$.

Therefore when opening the hatch, you will have to lift an additional weight yourself of $110 - 96 = 14 \text{ N}$ (1,4 kg).

In the case of 2 gas struts GASSP38, a hatch with a weight (G) of 126 N can be lifted.

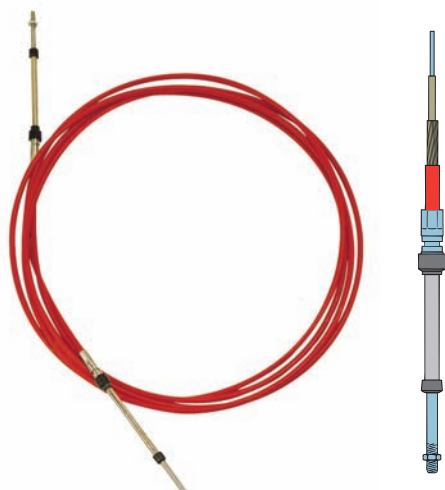
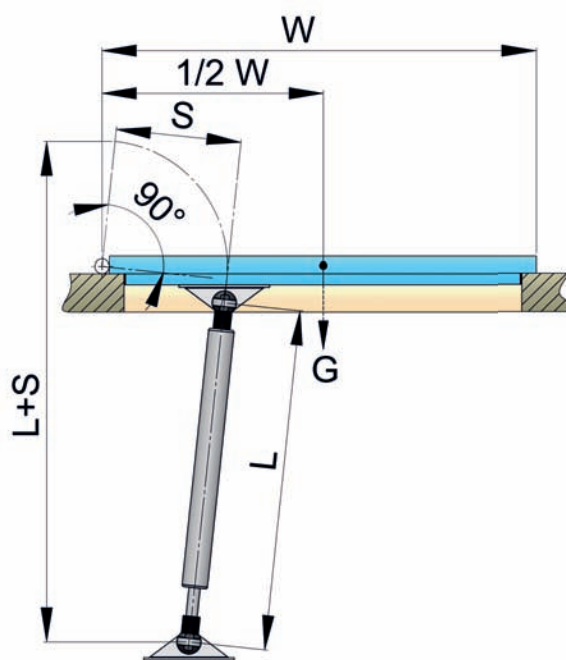
$\left(\frac{1}{2} \times \frac{600}{140} \times G = 2 \times 135 \text{ G} = 126 \text{ N}\right)$.

In this case you will have to hold the hatch down with a force of $126 - 110 = 16 \text{ N}$ (1,6 kg).

Type	Force in N	Stroke S in mm	Length L in mm	Length L+S in mm
GASSP25	180	74	180	254
GASSP30	135	85	220	305
GASSP38	135	140	240	380
GASSP44	180	160	280	440
GASSP51	270	205	305	510



GASSP



TYPE 33C

A mid range cable that is recommended for shorter and simpler cable runs. This cable can be used with VETUS, Morse, Teleflex, Ultraflex and other engine remote controls.

Technical specifications:

Bending radius: 130 mm

Stroke: 76,2 mm (3")

Thread: 10-32 UNF

CABLE

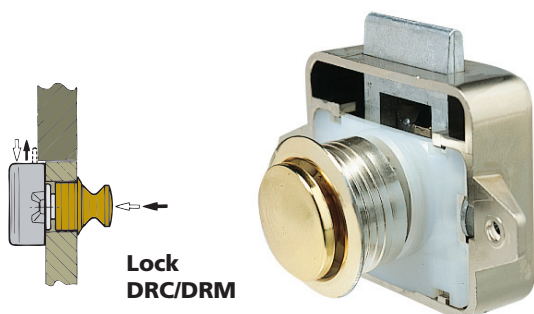


STAINLESS STEEL HATCH ADJUSTERS (AISI 316)



UITSTEL

Type	Min.length	Max. length
PH	202 mm	368 mm
FE	261 mm	485 mm

Lock
DRC/DRM

LOCKDR

Push-button lock

Made of plastic with chromium or brass coated push-button.
Dimensions: 78 x 45 x 20 mm.



SC

Watertight plug and socket

Watertight plugs and sockets are available in 2 versions:
For cable with a cross sectional area up of to 0,75 mm² (AWG18) max. 3 Amp. or a larger model for cables of up to 2,5 mm² (AWG12) max. 5 Amp. A rubber gasket and a synthetic cover are standard supply.
Material: chromium plated brass.



CARTERP

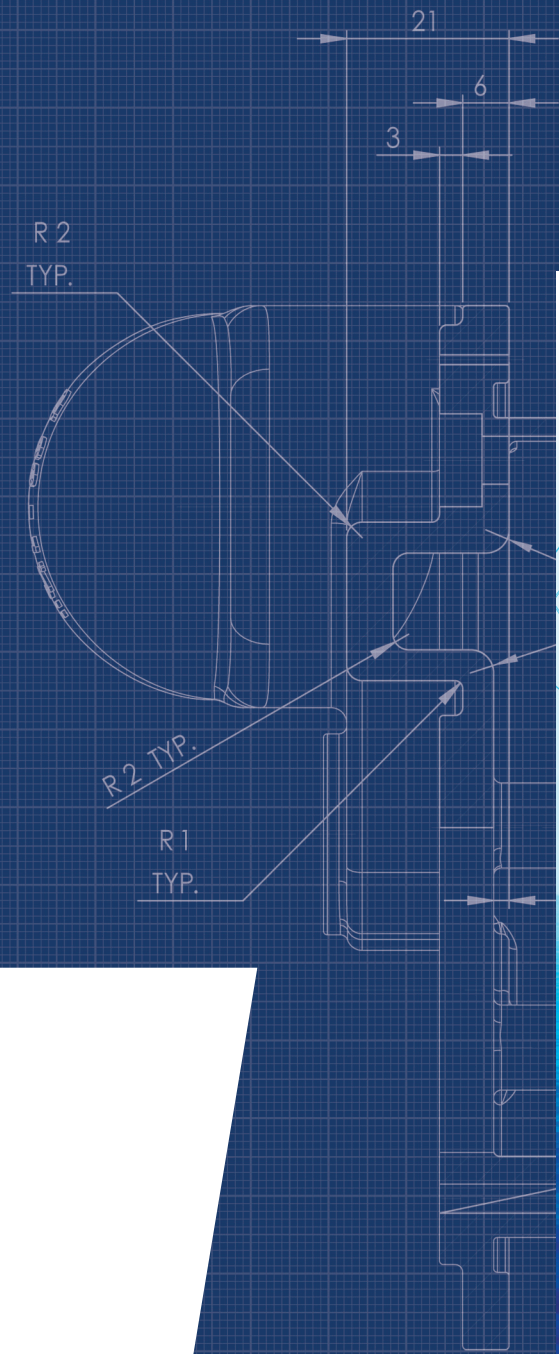
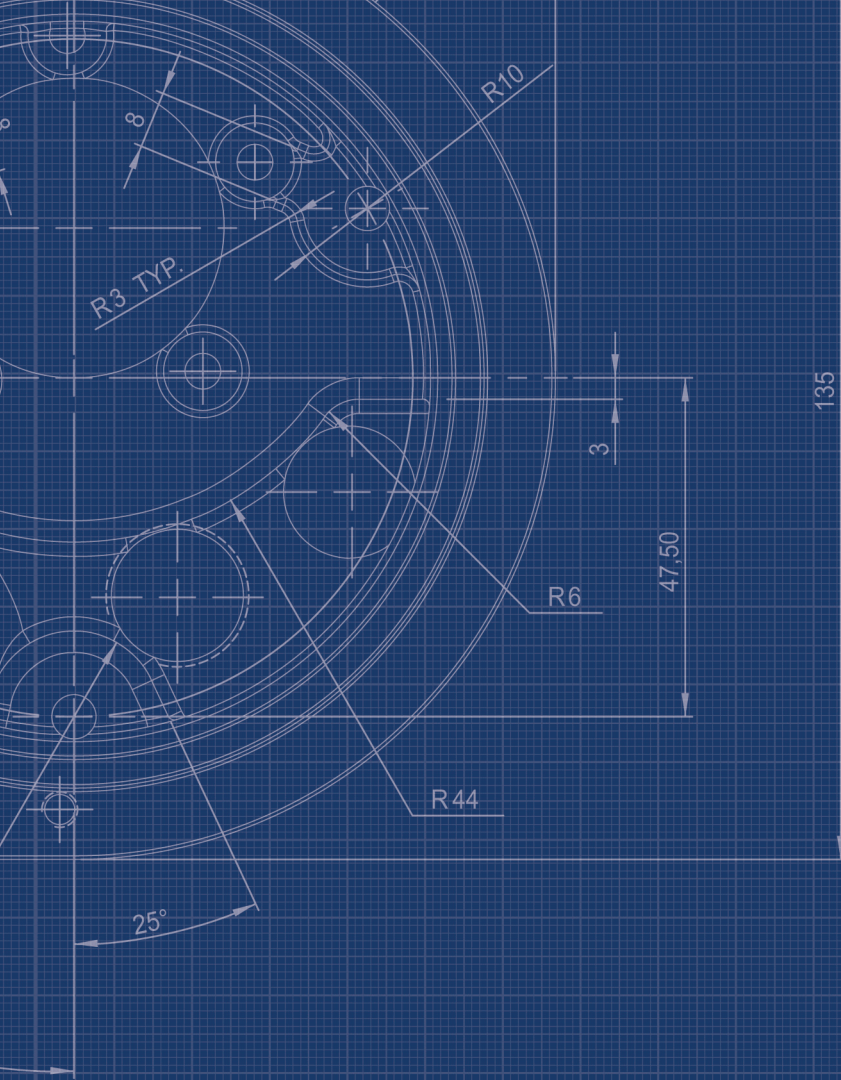
SUMP-PUMP

A seawater resistant manual sump-pump, for emptying the engine sump, the gearbox, etc. Complete with tubing.



vetus

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