

INNOVATION ENGINEERING INTEGRATION



1
COMFORT

2
PROPULSION

3
e-PROPULSION

Technical support for the maritime sector



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COMFORT



CHARGERS

The main function of a battery charger is to charge the battery when the charger is connected to shore power. WhisperPower's battery chargers convert any AC voltage or frequency to a smooth 12, 24 or 48 VDC voltage. Using WhisperPower's battery chargers ensure a FAST and COMPLETE charge of the battery. As a result, the life time of the battery is much longer. Range of Whisper Power's chargers consists of our low power HANDY series, the multiple output SUPREME series and our heavy duty, high output DC POWERCUBE series.



The WhisperPower ORANGE label, is given to equipment developed specifically for recreational applications: small, lightweight, easy to operate and at an affordable price. The label includes, among other things, a range of switch mode battery.

WP-BC SUPREME SWITCHED MODE BATTERY CHARGERS.

PERFECT SOLUTION FOR CHARGING MULTIPLY

- › For a fast and reliable charge of your batteries
- › Extends battery life time
- › Multiple outputs to charge 3 batteries
- › Fully automatic 3-stage charge method
- › Temperature sensor plus cable included
- › Adjustable for GEL, AGM or Lithium flooded lead acid
- › Auto ranging input from 90-260VAC, 50 / 60Hz
- › Connectable to any AC generator
- › Fully protected against short circuit, overtemperature, etc.

Model Article no.	12V/20A W07-61112302	12V/40A W07-61112304	12V/60A W07-61112306	24V/30A W07-61124303
Charger Output:				
Output current (Maximum)	20A	40A	60A	30A
Output Voltage Range:	100	60	120	25
Charge		14.2 - 15.5V		28.4 - 31V
Float		13.4 - 13.8V		26.8 - 27.6V
Equalize		16.0V		23.0V
	Three stages (Bulk/Absorption/Float)			
Charging Control	Two stages (Bulk/Absorption)			
	Constant Power Supply (Program Setting)			
DC Output Bank	Three			
Selectable Battery Type	Gel, AGM, Flooded, Lithium, Program			
Parasitic Current	<2 mA			



To select the correct charger size for AGM and GEL batteries, please assume its power from 10% to 20% of the battery capacity.

WBC HANDY

PLUG AND PLAY BATTERY CHARGER FOR SMALLER BATTERIES.

Fully automatic charger for all types of lead-acid batteries. Suitable for cars, trucks, motor bikes, boats, caravans, campers etc. They can be used in wet environments (IP 65 class) and are designed to charge AGM, GEL and wet batteries quickly and completely.

Model Art. no. Europe	WBC_Handy 20* W07-61112002	WBC_Handy 70 W07-61112007	WBC_Handy 150 W07-61112015
Technical Specifications			
Input Voltage	220-240 VAC ± 10%	220-240 VAC ± 10%	220-240 VAC ± 10%
Input current	0.3 A	0.9 A	1.5 A
Charging Voltage	≤1mA	≤1mA	≤1mA
Charging Voltage Supply	13,7 VDC	13,7 VDC	13,7 VDC
Charging Current	Max, 2A	Max, 7A	Max, 15A
Lead-acid battery types	AMG/GEL, Wet Batteries	AMG/GEL, Wet Batteries	AMG/GEL, Wet Batteries



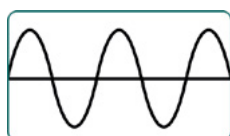
INVERTERS WP-SINE SERIES

AC POWER FROM THE BATTERY WITHOUT GENERATOR.

The WP-Sine inverter opens up a world of opportunities as it enables the use of practical home appliances, such as coffee machines, microwaves and other kitchen equipment, to be used on board, also they are suitable for powering electronic devices.

- › Choice of 600, 1000, 2000 or 3000 Watt models
- › Can be connected to a 12 V or 24 V battery
- › Plug and play: AC output socket (EU, UK, USA) and DC terminals
- › Negligible power loss in conversion from battery to AC power
- › USB connection at front to charge telephone etc. (no charger needed)
- › Peak power capability of 200%
- › Remote on/ off facility, built in LED display on front (DC and AC information)
- › 3000 Watt model has automatic switching from shore/ land power to inverter power.

SINE WAVE POWER OUTPUT



Select a fuse or circuit breaker with a minimum of:

63A DC (12/600)
150A DC (12/1000)
300A DC (12/2000)
150A DC (24/2000)



Available: 12/600 W and 24/500 Watt.



Available: 12/1000 Watt.



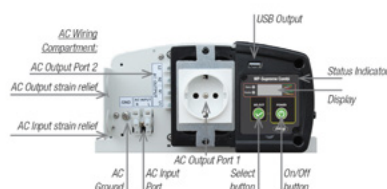
Available: 12/2000 W, 24/2000 W and 12/3000 Watt.

WP-SINE-12/600	WP-SINE-12/1000	WP-SINE-12/2000	WP-SINE-XFR 12/3000	WP-SINE-24/500	WP-SINE-24/2000
W07-61120600 EU Socket	W07-61121500	W07-61122500	W07-61123500 EU-Socket	W07-61140500	W07-61142500

COMBI INVERTERS/CHARGERS LIGHT WEIGHT, COMPACT

WP-COMBI "AC POWER FROM THE BATTERY". SILENT AC POWER, WHENEVER YOU NEED IT. WITHOUT A GENERATOR! INTEGRATED BATTERY CHARGER TO RECHARGE THE BATTERY.

- › Up to 3 kW 230 VAC/ 50 Hz power
- › Silent and clean operation
- › Ideal to operate with solar and wind systems
- › Automatic switching from shore/ land power to inverter power
- › Fully automatic 3-stage battery charging
- › Adjustable to work with limited land or genset power
- › Available for 12, 24 and 48 VDC batteries



Article no.

W07-61112280	WP-COMBI 12V/2000 VA - 80A + 3A SLAVE / 230V / 50 Hz
W07-6124360	WP-COMBI 24V/3000 VA - 60A + 3A SLAVE / 230V / 50 Hz

WHISPERSOLAR CHARGERS

Model	WP-SUNTRACK DUO - 50A	WP-SUNTRACK DUO - 30A
Article no.	W07-60111430	W07-60111431
OUTPUT RATING		
Output Current (Maximum)	50A	30A
Output Voltage	12V Nominal	24V Nominal
Output Power	775W	930W

WP-SUNTRACK 50 (W07-60111436)

MPPT Solar Charge Controller The WhisperPower Suntrack 50 MPPT Solar Charge controller is connecting solar panels (PV) to a 12, 24 or 48 VDC battery. The advanced MPPT technology applied ensures a fast **and complete charge, even under cloudy and fluctuating** weather circumstances. The Suntrack 50 comes with a monitoring APP (Ecosolar) and bluetooth connection.



BLUETOOTH CONNECTION

THE WHISPERPOWER SUNTRACK DUO

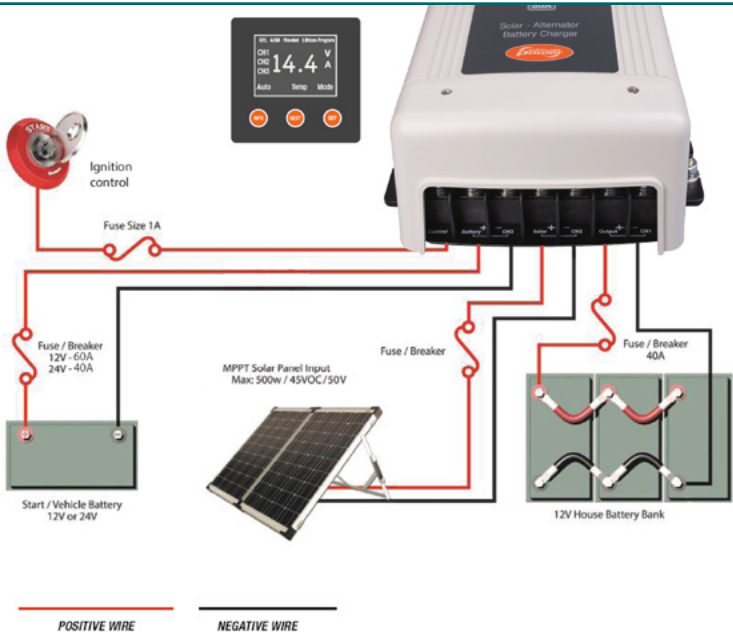
The WhisperPower Suntrack DUO will offer you reliable service for providing a multi-stage, multi-input battery charger to charge the different types of batteries you have installed in either your home, boats, RV caravan, 4WD or commercial vehicle. The Solar - Alternator Battery Charger is a fully automatic multi-stage, multi- input battery charger with the ability to charge from either an alternator linked to a battery, or via solar power with the Maximum Power Point Tracking (MPPT) Solar Controller.



MAXIMUM POWER POINT TRACKING (MPPT)

BATTERY WIRING: CONNECTING THE BATTERIES THE RIGHT WAY

- Positive wire
- Negative wire
- Temperature sensor cable (sold separately)
- Remote cable (sold separately)



GENERATORS

SILENT, COMPACT, LIGHT-WEIGHT AND EXTREMELY POWERFUL FOR MARINE APPLICATIONS.

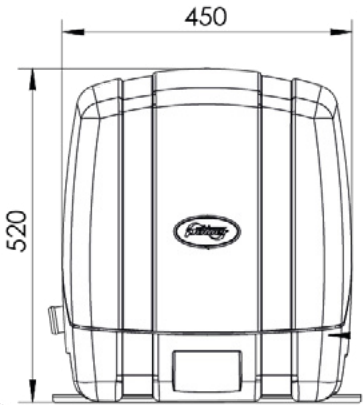
PICCOLO 5 MARINE

- › 1-cylinder Permanent Magnet generator with external PMG box (power module)
- › 5 kVA (4.0 kW) continuous 230 V power from your programmable speed generator system
- › High efficiency and strong 200% peak power
- › Outstanding voltage stability and a pure sine wave
- › Saving fuel and ensuring smooth running of your genset
- › Parallel use possible with the TWIN power solution.
- › Impressive dimensions 461*450*520mm, with dry weight 68 kg
- › Available power 4-12 kW
- › We can connect generators parallel to increase power

The most silent and compact generator in the market: it's Piccolo 5 produced by WhisperPower!



ARTICLE NO.	WP-SINE-12/1000
W07-49003005	Piccolo 5 MARINE 230 V / 50 Hz - speed adjustable
W07-49013005	Piccolo 5 MARINE 230 V / 50 Hz - automatic speed control
W07-49003006	Piccolo 5 MARINE 230 V / 50 Hz - ungrounded



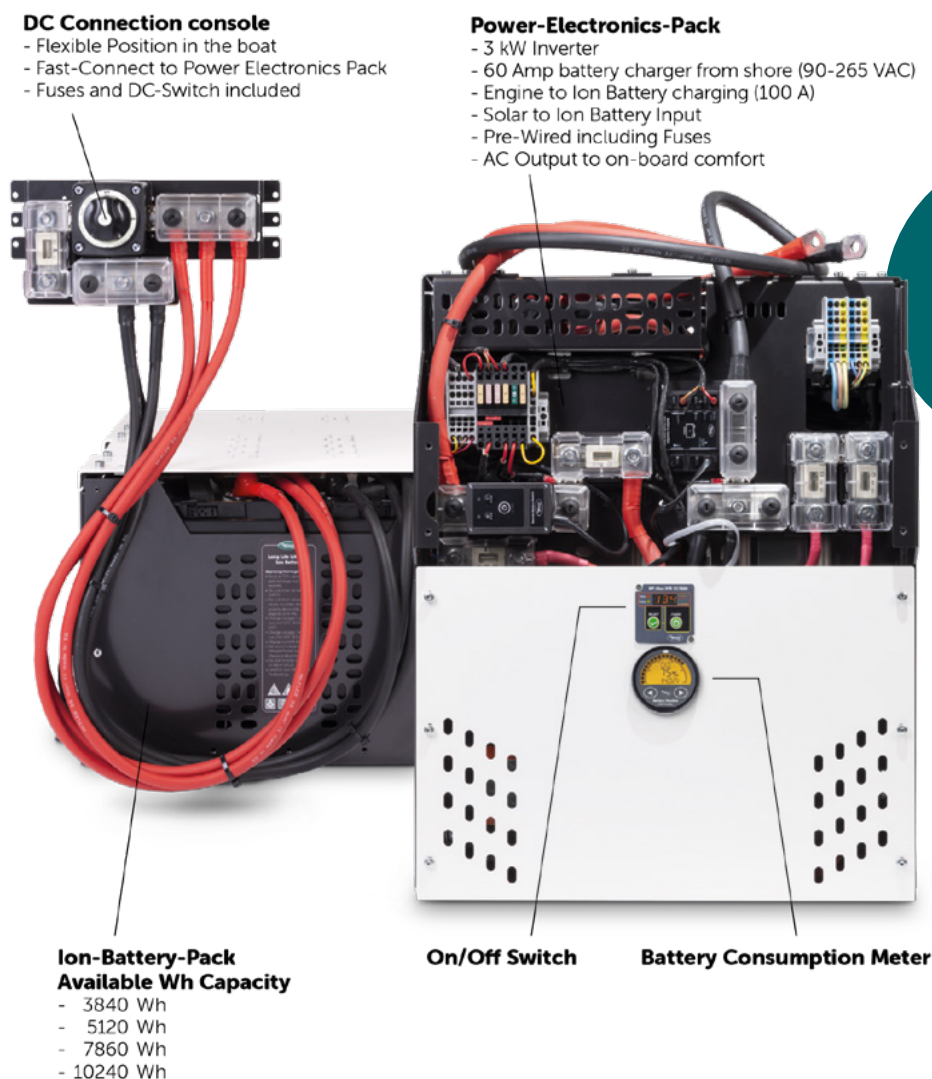
QUIETER THAN WASHING MACHINE!



GENERATOR POWER, THE BEST CHOICE FOR YOUR ENERGY SUPPLY.

OctoPower 3 kW

“GENERATOR WITHOUT ENGINE”



GENERAL DESCRIPTION

Battery-based power system for the provision of AC power (DC power is optional). Consists of one power electronics module and one or two Lithium Ion battery packs. All components have been pre-installed/mounted in the WhisperPower factory.

This unit is supplied as an easy plug and play installation, with connections to: AC power (land/shore) input, solar panel(s) input, connection to outboards or inboard starter battery or vehicle starter battery. The maximum charge power from this source is 1kW (100 Amps / 12 V). There are outlets for 230 VAC and (optional) 12 VDC. A 120 VAC 60 Hz output is also available.

APPLICATIONS

Marine - diesel or gasoline generator replacement, 230 V 50 Hz (120 V 60 Hz) power source for:

- › Air conditioning, 6.000 – 16.000 Btu.
- › Electric hob, cooking, oven, microwave, entertainment
- › Coffee machine (Nespresso, Dolce Gusto, Senseo), water cooker
- › Various household equipment, cell phone/ laptop chargers

OctoPower

OctoPower 3	OctoPower 3 12 VDC
Indoor / Outdoor	Indoor
Article number	42001210
GENERAL SYSTEM SPECIFICATIONS	
Inverter power / zero-emission modus	3.0 kVA (6 kVA peak)
Inverter output voltage / Hz (117 VAC - 60 Hz Optional)	230 V 50 Hz +/- 0.01%
DC charging / grid input	60 A
AC voltage / grid input (or auxiliary genset)	90 – 265 VAC, 47 – 63 Hz
DC SYSTEM SPECIFICATIONS	
Battery type	ION Power Basic 2000-4000 cycles
DC voltage	12 VDC
Battery charger output	60 A
Solar charger output MPPT	1 x 50 A - 12 VDC
DC-DC booster / converter	2 x 50 A - 12 VDC = 100 A
Power sharing / DC control	-
Connectable to	2 Outboard engines, 2 inboards
SINE WAVE INVERTER SPECIFICATIONS	
Model	WP – Sine XFR 12 / 3000
Power rating	0 – 6000 VA Max, 3 kVA cont. at 25 C
Stand-by consumption	1.6 W
Efficiency	93%
Power of transfer switch	3 KW
Power sharing / DC control	-
BATTERY SPECIFICATIONS	
Battery chemistry	Lithium ION Basic LiFe Po4
Capacity in kWh (Selectable)	3,8 - 5,1 - 7,6 - 10,2 kWh
Nominal voltage	12 VDC
MONITORING & CONTROL READ OUT	
Panel model & size	WBM Battery Monitor - Smart Shunt
Read-out information	DC V/A/Time remaining / SOC
Remote monitoring via UTP / Router / Cell Phone	Bluetooth / App
MECHANICAL SPECIFICATIONS (MODULAR VERSION)	
Battery pack size (h x w x d in mm)	300 x 488 x 720 (5,1 kWh)
Power electronics pack size (h x w x d in mm)	277 x 480 x 600

(*) Specifications may be changed without prior notice

READ-OUT MONITORING BY

- Accurate Ah Battery Monitor



- Ion Battery App





Solar



Out- or inboard engine



Shore- Grid power



Pure Sinewave
AC Power



- Air-conditioning
- Cooking Hob
- Comfort Equipment

PLUG & PLAY

- Auto start stop connection (see also WPC – BSI)
- Connection for Temperature Sensor (to be put on battery)
- WPC Bus interface connection to Remote panel (RCC/ Touch)
- Connection for RS 232 Data Logger Module

SAFETY FIRST

- Galvanic input to output separation
- Earth stud
- Completely protected against overload and overtemperature

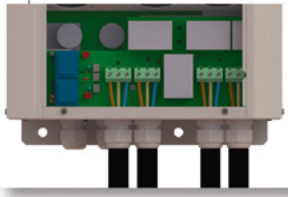
SYSTEM COMBI'S WPC series

THERE IS A 24V OPTION

EASY TO INSTALL

- As standard supplied with 2 metres of marine grade DC cables
- Hard wiring connection of all AC & DC connections
- Optional plug-in slave charger of 5 A, three step
- External holes for wall mounting

• AC Output Gen/Grid/Inv.



	WPC-2000-12*	WPC-3000-12**
Article No.	W07- 60201001	W07- 60201315
TECHNICAL SPECIFICATIONS		
INVERTER		
Nominal battery voltage	12 VDC	12 VDC
Input voltage range	9.5 .. 17 VDC	9.5 .. 17 VDC
Continuous power at 25°C	2000 VA	2500 VA
Power 30 min at 25°C	2000 VA	3000 VA
Power 5 s at 25°C	6000 VA	7500 VA
Maximum load	Fully protected up to short circuit	
Maximum asymmetric load	Up to continuous power	
Cos phi	0.1 .. 1	
Maximum efficiency	93%	93%
Consumption off / standby / on	1.4W / 1.6W / 9W	1.8W / 2.1W / 14W
Output voltage	Pure sine wave 230 V (±2%) - 120 VAC / 60 Hz available as well	
Output frequency	50 Hz ± 0.05% (crystal controlled; adjustable to 60 Hz)	
Harmonic distortion (sine)	<2% THD	
Overload protection and short circuit	Switches itself off after 3 start attempts	
Overheating protection	Warning, followed by shutdown and automatic restart	

WP-BC SUPREME PRO

Battery charger

Commercial vessels, high-end recreational vessels and off-shore platforms carry an enormous amount of electrical and electronic devices that require a safe and non-stop power provision. WhisperPower's Supreme professional battery chargers combine three vital functions.

Smooth, ripple free multiple step battery charging a power supply function to buffer DC appliances a direct way and a complete alarm and monitoring device for the entire 24 VDC system. All models are prepared to operate from 90-265 VAC/ 50-60 Hz inp and are fitted with three separate outputs.

PERFECT ALL-IN-ONE SOLUTION

- › Powerful IUoUo battery charger, suitable for all types of batteries
- › For 24 VDC batteries, available with 40, 60, 80 or 100 amp charging current
- › 3 separate DC outputs to charge multiple battery banks
- › Universal autoranging input (90-265 VAC, 50-60 Hz)
- › Industrial high-frequency, optimally interference suppressed power electronics
- › High efficiency, low heat dissipation, optimum cooling
- › Ideal as powerful central DC UPS / power supply
- › Multiple units can be used in parallel

NO LIMITATIONS



Any battery, either GEL, AGM, open lead acid, traction or semi-traction, or Lithium ION can be connected to the Supreme Pro, easy programming by dip switch USB or laptop. 3 separate batteries can be connected (1 main, 2x6 Amp, all multiple step).



CONTROL AT A GLANCE



Compact, easy to connect to remote panels, WP-Touch or LED based analogue panels, with remote adjustment feature to adjust the charge current according to the AC power availability.



	24/40-3	24/60-3	24/80-3	24/100-3
Article No.	W07- 60205440	W07- 60205460	W07- 60205480	W07- 60205401
GENERAL SPECIFICATIONS				
Nominal input voltage	120/230 V (90-265 V)	120/230 V (90-265 V)	120/230 V (90-265 V)	120/230 V (90-265 V)
Nominal input frequency	50/60 Hz (45-65 Hz)	50/60 Hz (45-65 Hz)	50/60 Hz (45-65 Hz)	50/60 Hz (45-65 Hz)
Nominal output voltage	24 V	24 V	24 V	24 V
Total charge current	40 A @ 28.8 V	60 A @ 28.8 V	80 A @ 28.8 V	100 A @ 28.8 V
Number of battery outlets	3	3	3	3
Charge current second output	6 A, ± 1 A	6 A, ± 1 A	6 A, ± 1 A	6 A, ± 1 A
Charge current third output	6 A, ± 1 A	6 A, ± 1 A	6 A, ± 1 A	6 A, ± 1 A
Charge characteristic	IUoUo	IUoUo	IUoUo	IUoUo
Charge voltage Bulk (25°C) *	28.8 V	28.8 V	28.8 V	28.8 V
Charge voltage Absorption (25°C) *	28.5 V	28.5 V	28.5 V	28.5 V
Charge voltage Float (25°C) *	26.5 V	26.5 V	26.5 V	26.5 V
Max. Absorption time *	4 hours	4 hours	4 hours	4 hours
Max. Bulk time (start @ 13.25/26.5V) *	8 hours	8 hours	8 hours	8 hours
Min. Absorption time *	15 min.	15 min.	15 min.	15 min.
Enclosure type & dimensions (h x w x d in mm)	445 x 210 x 145	445 x 210 x 145	445 x 210 x 145	445 x 210 x 145
Enclosure type & dimensions (h x w x d in inch)	17.5 x 8.2 x 5.7	17.5 x 8.2 x 5.7	17.5 x 8.2 x 5.7	17.5 x 8.2 x 5.7
Weight	6.5 kg /14.33 lbs	6.5 kg /14.33 lbs	6.5 kg /14.33 lbs	6.5 kg /14.33 lbs
Battery capacity (recommendation)	100-500 Ah	150-750 Ah	300-800 Ah	400-1500 Ah
TECHNICAL SPECIFICATIONS				
Power factor (cos phi)	>_ 0.97	>_ 0.97	>_ 0.97	>_ 0.97
Full load consumption (230VAC)	1400 VA	2000 VA	2700 VA	3375 VA
Temperature compensation	By BTS-Battery temperature sensor, standard supply			
Voltage compensation	Yes, automatic	Yes, automatic	Yes, automatic	Yes, automatic
DC consumption with connected battery	< 5 mA	< 5 mA	< 5 mA	< 5 mA
Display	LCD	LCD	LCD	LCD
Temperature range	-25 to +60°C / -13 to 140°F, above 40°C derating			
Cooling	Vario fan and natural cooling to ensure optimized cooling			
Sound level	< 52dBA @ 1 m	< 52dBA @ 1 m	< 52dBA @ 1 m	< 52dBA @ 1 m
Protection degree	IP23	IP23	IP23	IP23
Optional	Remote panel WP-SCC voor stroominstelling op afstand. Touchpaneel 5, 7 of 10 inch			

* Adjustable by Dipswitch, USB or WhisperConnect



Remote panel supplied as standard, with LED indicators



Optional remote panel with additional Charge Current Adjust button (electronic potentiometer)



Optional remote panel with additional Charge Current Adjust turning knob (potentiometer)



Optional Touch panel with full monitoring and control. Combined with WhisperCare even on mobile devices (7 or 10 inch).

Premium Lithium-Ion Batteries

from small to large systems

Over the last 20 years, this kind of battery has become incredibly popular thanks to the use of electric cars. The battery capacities have increased and there has been a significant rise in their use on board of vessels or in vehicles in recent years. WhisperPower has the right type of Lithium-ion battery for every application.

FEATURES

- › Long life time > 5000 cycles
- › Deep cycle, DOD 90%
- › Fast re-charge, up to 100 % of Ah capacity
- › Higher ambient operating temperatures allowed
- › Small and light weight, 3 times less than lead acid batteries
- › Made in the Netherlands



WHISPERCONNECT /CAN CONNECTION

- › Easy accessible communication ports
- › Plug-and-play connections between batteries and WIB box
- › Connectable in a direct way via WIB box to WP Touch panels

BATTERY MONITORING

- › Connection for WhisperPower TOUCH 7 inch
- › Simple integration into complete WhisperPower system
- › 5 inch Touch Battery Monitor optional
- › Remote read-out via Whisper Care



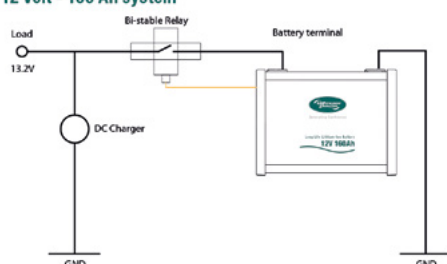
WIB INTERFACE

- › Optional WhisperInterface Box with control board for switching between multiple batteries
- › 2 x 95mm² connections per battery pole
- › Integrated fuse, 32 V-500 A
- › Can be charged with 100% of the Ah capacity
- › CANOpen port as standard for interfacing / monitoring

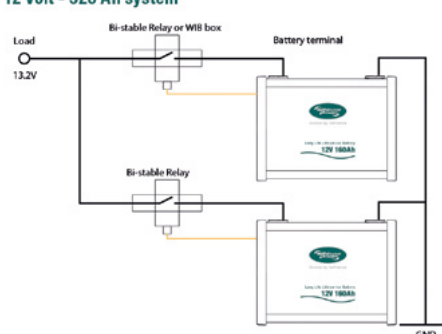


	WP ION 12 V 90 Ah	WP ION 12 V 160 Ah
Article No.	W07- 40290201	W07- 40290202
TECHNICAL SPECIFICATIONS		
Battery NR code	4IFP227/415/315	4IFP227/415/315
Height (mm)	190	313.00/314.00
Width (mm)	175	413.50 / 414.50
Depth (mm)	353	225,00 / 226.00 2
Weight	12.5kg	25kg
Nominal voltage (V)	13.2 V	13.2 V
Maximum voltage	15.4 VDC	15.4 VDC
End charge voltage	14.6 VDC	14.6 VDC
Max charge current 100/c	100 A	160 A
Max float charge current	30 A	52 A
Minimum battery voltage	8 VDC	8 VDC
Minimum float charge	10 VDC	10 VDC
Max discharge current 3/C	200 A	480 A
Prolonged discharge current (max	30 A	52 A
Pulsed discharge current (10 sec)	600 A	1280 A
Pulsed discharge current (60 sec)	400 A	800 A
Usable battery capacity at 20 °C	90 Ah/ 1200 Wh	160 Ah/ 2112 Wh
Usable battery capacity at - 20 °C	65 Ah/ 858 Wh	104 Ah/ 1372 Wh
Usable capacity / in comparison to lead acid battery	160 Ah	320 Ah
Charge method	3-step or const. voltage	Constant voltage
Temperature range (charging)	0°C to 45°C	0°C to 45°C
Temperature range (discharging)	-20°C to +60°C	-20°C to +60°C -
Temperature range (storage)	-20°C to +60°C	-20°C to +60°C -

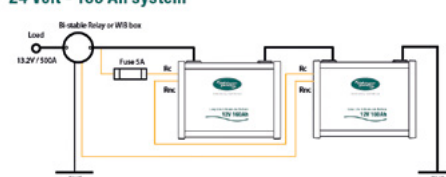
12 Volt - 160 Ah system



12 Volt - 320 Ah system



24 Volt - 160 Ah system



BATTERIES

BATTERIES ARE THE KEY TO A BETTER ENERGY BALANCE IN ANY SYSTEM, A KEY TO LOWER OPERATIONAL COSTS AND REDUCTION OF EMISSIONS.

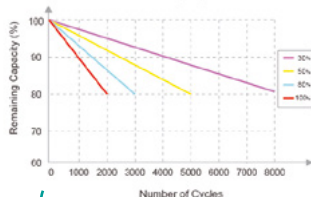
LITHIUM ION POWER BATTERY

It is a great alternative to conventional batteries in all areas. By utilizing advanced chemistry and system design, WhisperPower provides enormous energy reserves. User can relax and enjoy freedom where ever they go. Ion Power Basic battery energy management ensures lowest possible energy losses and superfast charging in combination with the safe LiFePO₄ chemistry.

	12 V 50Ah 640 Wh	12 V 100Ah 1280 Wh	24 V 100Ah 2560 Wh
Article No.	W07-40291201	W07-40291201	W07-40291201
TECHNICAL SPECIFICATIONS			
Length (mm)	257 mm	330 mm	522 mm
Width (mm)	132 mm	173 mm	240 mm
Height (mm)	200 mm	234 mm	224 mm
Weight	8,12 kg	13,6 kg	29,6 kg
Terminal connection	M6	M8	M8
CHARGE / DISCHARGE PARAMETERS			
Nominal voltage (V)	12,8 V	12,8 V	25,6 V
Charge cut off voltage	15,6 V	15,6 V	31,2 V
End charge voltage	14,6 VDC +- 0,2 V	14,6 VDC +- 0,2 V	29,2 VDC +- 0,2 V
Max charge current 1/c	50 A	100 A	100 A
Max float charge current	25 A	50 A	50 A
Minimum discharge cutt off voltage	8 VDC	8 VDC	16 VDC
Nominal discharge cutt off voltage	10 VDC	10 VDC	20 VDC
Max. discharge current 1/C	50 A	100 A	100 A

12 V 50/100 Ah / 24 V 100 Ah

Different DOD Discharge Cycle Life Curve @1C



**IT IS A GREAT
ALTERNATIVE TO
CONVENTIONAL
BATTERIES**



AGM BATTERY

These are the most economical, maintenance-free batteries designed for long life. WhisperPower AGM batteries are based on VRLA technology (Valve Regulated Lead Acid), meaning they require little ventilation, do not have to be positioned upright and do not require any maintenance. They are suitable for medium sized inverters.



	AGM 55 Ah	AGM 80 Ah	AGM 90 Ah	AGM 100 Ah	AGM 145 Ah	AGM 165 Ah	AGM 200 Ah	AGM 260 Ah
Article No.	W07-40290060	W07-40290061	W07-40290030	W07-40290031	W07-40290062	W07-40290033	W07-40290063	W07-40290064
TECHNICAL SPECIFICATIONS								
Nominal capacity	55 Ah	80 Ah	90 Ah	100 Ah	145 Ah	165 Ah	200 Ah	260 Ah
C10* or C20	C10	C10I	C10	C10	C10I	C10	C10	C10
Nominal voltage	12,0 VDC	12,0 VDC	12,0 VDC	12,0 VDC	12,0 VDC	12,0 VDC	12,0 VDC	12,0 VDC
Type	Deep discharge Absorbed Glass Mat battery with potential 10 year life span on float voltage, specifically designed for intensive cyclic use. Cyclic life 30% longer thanks to strong grid and a specific paste composition. Suitable for marine, mobile and solar energy system and as a starter battery.							
Weight ± 10%	18.0kg	24.0kg	28.5kg	30.0kg	44.0kg	47.0kg	60.0kg	74.0kg
Dimensions l x w x h (mm) (excl. poles)	229X138 X210	350X167 X180	307X169 X235	328X172 X222	340X173 X280	483X170 X240	522X240 X219	520X268 X220
Terminal type	M6 rvs		M8 rvs					
Number of cells	6	6	6	6	6	6	6	6





Inverter/Charger

SUPREME COMBI

12 V 3000 W
- 100 A



12 V 2000 W -
80 A

LIGHT WEIGHT, COMPACT AND POWERFUL INVERTER / CHARGER

Features / benefits

- › Convert 12 V battery power to alternating current (230 V, 50 Hz)
- › Sine wave output power is ideal for demanding electrical motors, sensitive electronics and rechargeable devices
- › Multi-stage charger ensures batteries are charged safely and efficiently
- › Suitable for microwaves, air-conditioning, computers, televisions, power tools and more
- › Detachable control display (Power Sharing)
- › Grid power control button
- › Ideal for self installation
- › WhisperConnect Can connection

Model name	WP-SUPREME COMBI 12/2000-80	WP-SUPREME COMBI 12/2000-80
Article No.	W07- 61122080	W07- 61123001
INVERTER		
AC output power 25°C (continuous)	2000 W	3000 W
AC output current	8.6 A	13.0 A
AC peak power (2 sec)	4000 VA	6000 VA
AC output voltage/Hz	230 V - 50 Hz /60 Hz	230 V - 50 Hz /60 Hz
AC Voltage wave form	pure sine wave (<3% THD)	pure sine wave (<3% THD)
AC SWITCHING RELAY		
Switching time	<30ms	<30ms
Capacity switching relay	16 A	16 A
AC SWITCHING RELAY		
Connection display	RJ12	RJ12
Inverter info	input voltage, output power	input voltage, output power
Charger info	status, battery voltage	status, battery voltage
CHARGER		
AC input voltage	230 VAC - 50Hz	230 VAC - 50Hz
Load Voltage Range	13.8 - 14.8 VDC	13.5 - 14.8 VDC
Float Voltage Range	13.0 - 14.4 VDC	13.4 - 14.4 VDC
Charge current (max)	80 ADC	100 ADC
Charge current settings	80	5, 15, 35, 55, 75, 100
Battery type	GEL, Flooded, AGM, Lithium, Programmable, Power Supply	
Charge characteristics	bulk / absorption / float	bulk / absorption / float
Efficiency	>80%	>80%
SAFETY & ENVIRONMENT		
Conformity marking	CE	CE
Operating temperature	0°C to 40°C	0°C to 40°C
Storage temperature	-20°C to 60°C	-20°C to 60°C
Relative humidity	5-90% non-condensing	5-90% non-condensing
Usage height	up to 3.000m above sea level	up to 3.000m above sea level
WEIGHT AND DIMENSIONS		
Weight	8 kg	10.8 kg
Dimensions	400 x 302 x 105 mm	400 x 302 x 105 mm
POWER SUPPLY		
Available plug sockets	EU - UK - AUS	EU - UK - AUS

Essential installation equipment for a generator systems.

WE RECOMMEND TO USE ONLY ORIGINAL WHISPER POWER PARTS FOR GENERATOR SYSTEMS.



The **water inlet kit** for marine generators includes a seacock, water strainer, valve and installation material.

Consisting of: Water strainer, hoses, hose clamps, through-hull fitting and seacock.



A **syphon breaker** prevents water from being syphoned backward.



A complete fuel kit comprises: fuel filter / water separator, connecting nipples, swivels and hose clamps.



The Delta Silencers/water locks protect the engine against the return flow of cooling water and reduce noise.

Consisting of: Exhaust silencer/waterlock muffler with unique rotating connections, through-hull fitting, hoses and hose clamps.



SMART AND SIMPLE BATTERY MONITOR WITH REAL-TIME BATTERY HEALTH



**TARGET
MARKET
SEGMENTS**



PICOone



STATUS

show percentage of
battery



TIME

time of battery
remaining



OVERVIEW

real-time charging
overview



ALERTS

never forget when to
charge



HEALTH

real-time battery health
algorithm™



MOBILE

remote access
via mobile apps

MAXIMUM CONNECTIONS

- UP TO 6 BATTERY BANKS
- UP TO 6 ADDITIONAL BATTERY
- VOLTAGES
- UP TO 20 CONSUMERS OR GENERATORS
- UP TO 14 TANK MODULES
- UP TO 8 TEMPERATURES

INTEGRATED BAROMETER WITH BAROGRAPH



BLACK PANEL-MOUNT



BLACK STAND-ALONE



SILVER PANEL-MOUNT



SILVER STAND-ALONE

ADVANCED BATTERY MONITOR



SIMARINE

PICO_{one}

PICO IS SIMARINE'S ADVANCED BATTERY MONITOR AND THE REAL-TIME BATTERY HEALTH™ ALGORITHM FOR PRECISE BATTERY HEALTH MEASUREMENTS.

It sets new standards for marine battery monitors in fields of design, functionality, connectivity and ease of use.

Compatible with all SIMARINE shunts and modules. Its expandable architecture allows adding up to 20 SIMARINE shunts and modules to monitor all kinds of boats, yachts and caravans – from a small one to a superyacht system with up to 6 battery banks, 14 tanks and 20 independent consumer and generators.

PICO's display unit is made of a sleek anodized aluminum casing and a thick Gorilla® Glass with Anti- Reflective coating protecting the optically bonded high-contrast 3.5 inch IPS LCD display. It's water and dust proof and can be mounted both indoors and outdoors.



The screen brightness is automatically adjusted with a light sensor. The device is operated by four water tolerant CapSense® touch buttons. The (optional) barograph gives precise air-pressure readings, trends, and history.

Free SIMARINE Android and iOS Apps are available to connect your PICO to your smartphone via Wi-Fi. The Apps allow you to monitor all battery and tank data, upload history, edit and restore settings and even upgrade the firmware with new features. Barograph function included.

Article No.

S93-P001	PICO standard standalone, czarny
S93-P002	PICO standard standalone, srebrny
S93-P003	Simarine PICO+ panel-mount / black
S93-P004	PICO standard panel-mount, srebrny
S93-P009	PICO ONE standalone, czarny (max 1 czuj lub moduł)
S93-P010	PICO ONE standalone, srebrny (max 1 czuj lub moduł)

GENERAL SPECIFICATION

- Display: LCD TFT 3,5" High resolution IPS, Gorilla Glass, anti-reflective coating
- Human interface: 4 Touch buttons, water resistant
- Enclosure: CNC-milled anodized aluminum, water- and dustproof
- Dimensions: HxWxD 98 x 83 x 10 mm



SIMARINE



SC303 COMBO QUADRO ACTIVE SHUNT

Innovative combination of shunt and tank level module. SC303 is an active combo shunt for PICO battery monitor with 2x voltages, 2x tank level or temperature, 1x socket for temperature sensor with JST connector and 1x current sensor up to 300A for up to 75V systems. It can be used for monitoring current draw of heavy consumers (inverters, bow and stern thrusters, anchor winches) and current generators (shore power chargers and solar panels). Additionally, it allows monitoring tanks for fuel, fresh and grey water.



SC503 COMBO QUADRO SHUNT MODULE

Innovative combination of shunt and tank level module. SC503 is a high precision combo shunt for PICO battery monitor with 2x voltage, 2x temperature, 1x socket for temperature sensor with JST connector and 1x current sensor up to 500A for up to 75V systems.

It can be used for monitoring current draw of heavy consumers (inverters, bow and stern thrusters, anchor winches) and current generators (shore power chargers and solar panels). Additionally, it allows monitoring tanks for fuel, fresh and grey water.



ST107 TANK LEVEL AND VOLTAGE MODULE

Looking for a highly versatile digital shunt module for monitoring smaller consumers like refrigerator and/or generators like solar, wind, hydro or shore power?

SCQ25T its an innovative combination of shunt, tank interface and voltage module with wide range of monitoring possibilities.



SCQ25 QUADRO SHUNT MODULE

SCQ25 is an innovative shunt module for monitoring individual consumers and generator with 4x current sensors up to 25A each. For 12V and 24V systems.

S93-SC303

S93-SC503

S93-T001

S93-S003



SCQ25T COMBO QUADRO SHUNT MODULE

Looking for a highly versatile digital shunt module for monitoring smaller consumers like refrigerator and/or generators like solar, wind, hydro or shore power?

SCQ25T its an innovative combination of shunt, tank interface and voltage module with wide range of monitoring possibilities.



SCQ50 QUADRO SHUNT MODULE

SCQ50 is an innovative shunt module for monitoring individual consumers and generator with 4x current sensors up to 50A each. For 12V and 24V systems.



SN01 NMEA2000 GATEWAY

Simarine SN01 SICOM NMEA 2000 Gateway module allows your PICO to transmit data of the devices connected to the PICO system. It allows control of switch banks, transmitting battery status, tank levels and some environmental information. Using the gateway, PICO can also display a range of engine and transmission parameters if they are connected to the NMEA network.



INCLINOMETER

High-resolution digital inclinometer for pitch and roll with manual calibration.

S93-S004

S93-SCQ50

S93-SW01

S93-SDI01

CREATE ATMOSPHERE WITH LED LIGHTING.
CREATE SPACE WITH LED LIGHTING.
HIGHLIGHT DETAILS WITH LED SPOT
ILLUMINATION.



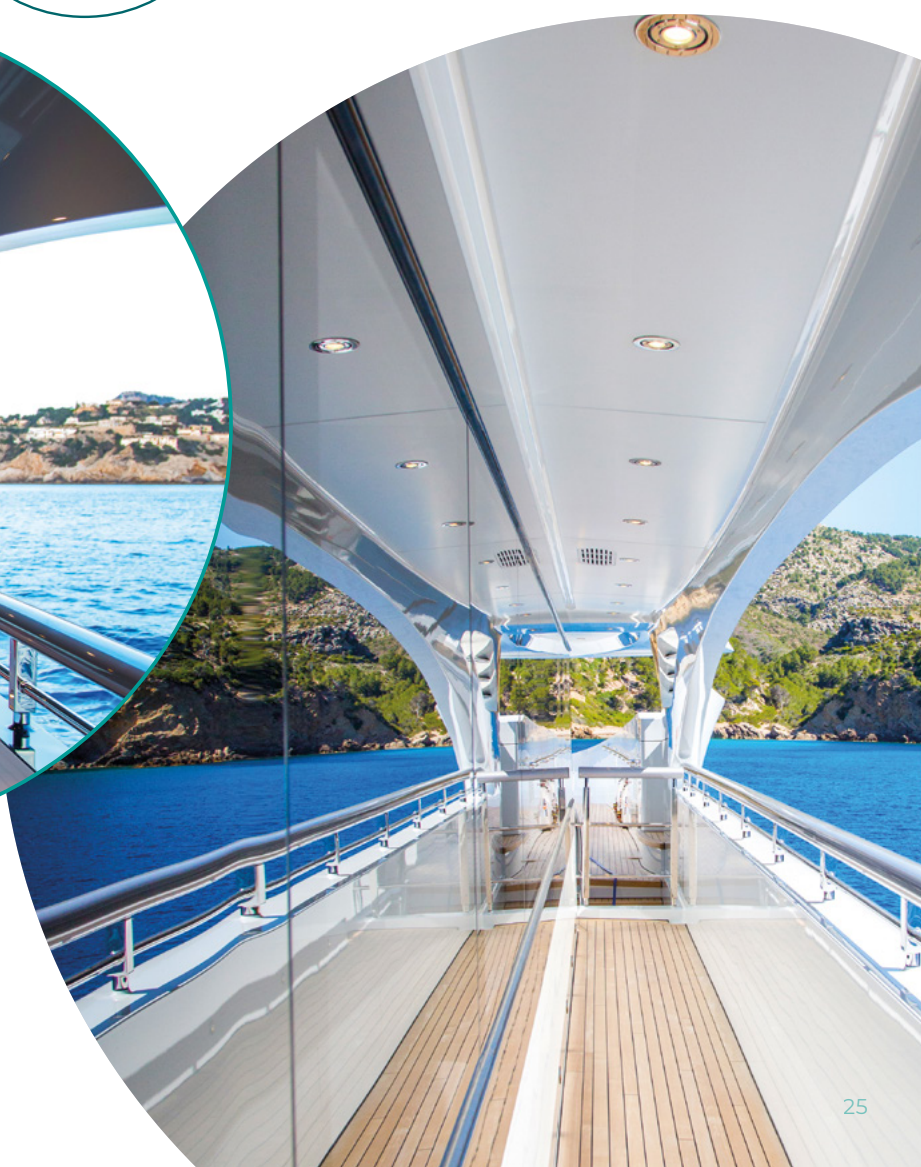
The high efficiency and directional nature of LEDs makes them ideal for boat. The LED light solutions for lower power consumption. LED offers amazing possibilities to create your own lighting atmosphere onboard. With light you can create a feeling of volume and space, enhance design and shift the atmosphere onboard, very easily.

Let's create a welcoming and homey atmosphere

in your boat by LED lighting from Batsystem. The lighting that enhance both the atmosphere, looks and value of your boat. Båtsystem is one of **Sweden's leading suppliers** of marine lighting with over 30 years in the industry.

Contact Marine Works to find out which design, function and colours are available.

ILLUMINATE
WHAT
MATTERS.



47

Ø45

Interior Lighting

SOME TIPS:

Install many different lights instead of one big. This gives you great flexibility to enhance special areas or objects, create contrasts and in all a cosier environment.

Install and hide stringlights and Dots behind railings, backrests, hidden by the floor, in cupboards and storage compartments. This will give you the illusion of a more spacious room. Try out different settings and angles. Indirect lighting in roof or on floors. Spotlighting books and tables.

Install dimmer to all lights, it gives you unlimited possibilities shifting the mood, from work light and to a softer cosy light.



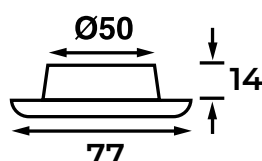
B73-9475VRVS



B73-9475CRV

Lighting series **Nova SMD LED** gives you the latest in LED technology.

- › Switch between red and white light
- › Clear lens
- › Available in chrome, matt silver, white and gold
- › Power consumption is 2W



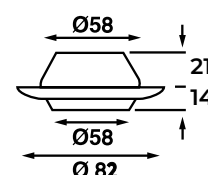
B73-9475CRV	Nova SMD LED, chrome, red/white light
B73-9475VRV	Nova SMD LED, white, red/white light
B73-9475VRVS	Nova SMD LED, white with switch, red/white light

A LED (8-30V) inset ceiling light with switch which is easy to twist and angle as needed.

Comet SMD LED works perfectly as spotlighting and creates a welcoming atmosphere due to its warm and powerful light.

B73-9480CS

Comet SMD LED
chrome with switch



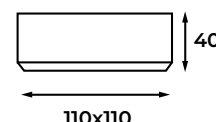
Square SMD LED

On the boat, there are plenty of dark corners. By installing lights in cupboards, stalls or wardrobes, makes it easy to find what you are looking for, even in the darkest areas.

Warm white light

Switch

Power consumption is as low as 1,2W



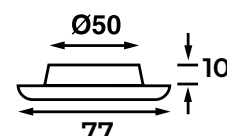
B73-94611V

Square SMD LED, white

Nova Slave, SMD LED

On the boat, there are plenty of dark corners. By installing lights in cupboards, stalls or wardrobes, makes it easy to find what you are looking for, even in the darkest areas.

- › Warm white light
- › Switch
- › Power consumption is as low as 1,2W



B73-9474V

Nova Slave, SMD LED,
40 degree lens, 12V, white



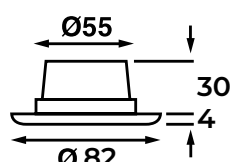
B73-9476CS



B73-9476C

Pinto SMD LED, an elegant ceiling light in a clean and modern design. Pinto provides a warm and powerful light with a good color rendering capability. Complete Pinto with a smart LED dimmer.

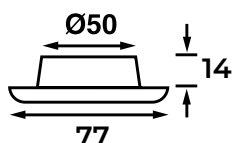
B73-9476C	Pinto SMD LED, chrome
B73-9476CS	Pinto SMD LED, chrome with switch



**B73-9485V****B73-9485C****B73-9485VS****Nova II SMD LED**

Popular ceiling lamp has been updated with a new smart format - of course, still with the same amazing warm light and color rendering as before.

Nova has an opaque lens that provides an even and soft light. The light card and lens are built into one unit, which simplifies installation, provides a 10 mm mounting dimension, and makes the light fitting watertight.



B73-9485V	Nova II SMD LED, white
B73-9485C	Nova II SMD LED, chrome
B73-9485VS	Nova II SMD LED, white with switch

Brighten up the cockpit with Steplights and Dots. They provide a cozy light and, in addition, make it easier to move around when it is dark.

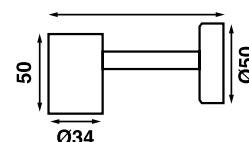
**B73-8879C****Dot 30 LED, mattsilver, IP66**

- › Dot 30 has a frame around the diodes which creates a beautiful effect. Decorative lighting effect
- › White light
- › Luminaire in chrome, matt silver or transparent
- › IP66, water resistant
- › The power consumption is 0,5W

Tube d1x cabin light with flexibel arm and usb socket.

A stylish reading lamp in a modern design with a flexible arm and aluminum luminaire.

- › Flexible arm for practical adjustments
- › Lamp foot and shade in aluminum.
- › Discreet switch
- › The power consumption is only 0,6W
- › USB-charger, 1A

**B73-2093-D1XUSB****Tube d1x cabin light with flexibel arm and usb socket****Tube d1x cabin light** with flexibel arm and usb socket.

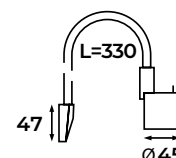
A stylish reading lamp in a modern design with a flexible arm and aluminum luminaire.

- › Flexible arm for practical adjustments
- › Lamp foot and shade in aluminum
- › Discreet switch
- › The power consumption is only 0,6W
- › USB-charger, 1A

**B73- 2093-D1USB****Tube D1 SMD LED, polished aluminium, built-in USB socket****Kurs lighting chart long flexible arm**

Chart light with a flexible arm and tiltable lamp insert. Switch between white and red light with just a simple touch.

It is easy to adjust the lighting as you needed - red light during the night and a comfortable warm white light during the day.

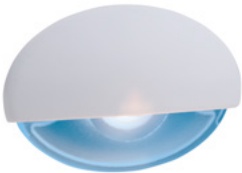
**B73-94447-130****Kurs MR11 SMD LED, mattsilver, 130 mm**

Steplights for safe walking.

ADD A PERSONAL TOUCH TO YOUR BOAT, USING DOTS ON STAIR CASES.



B73-8870C



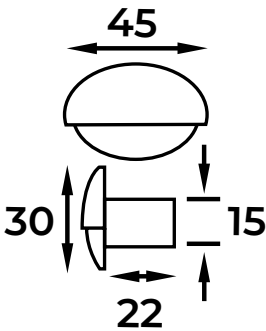
B73-8871V



B73-8871C



B73-8870V

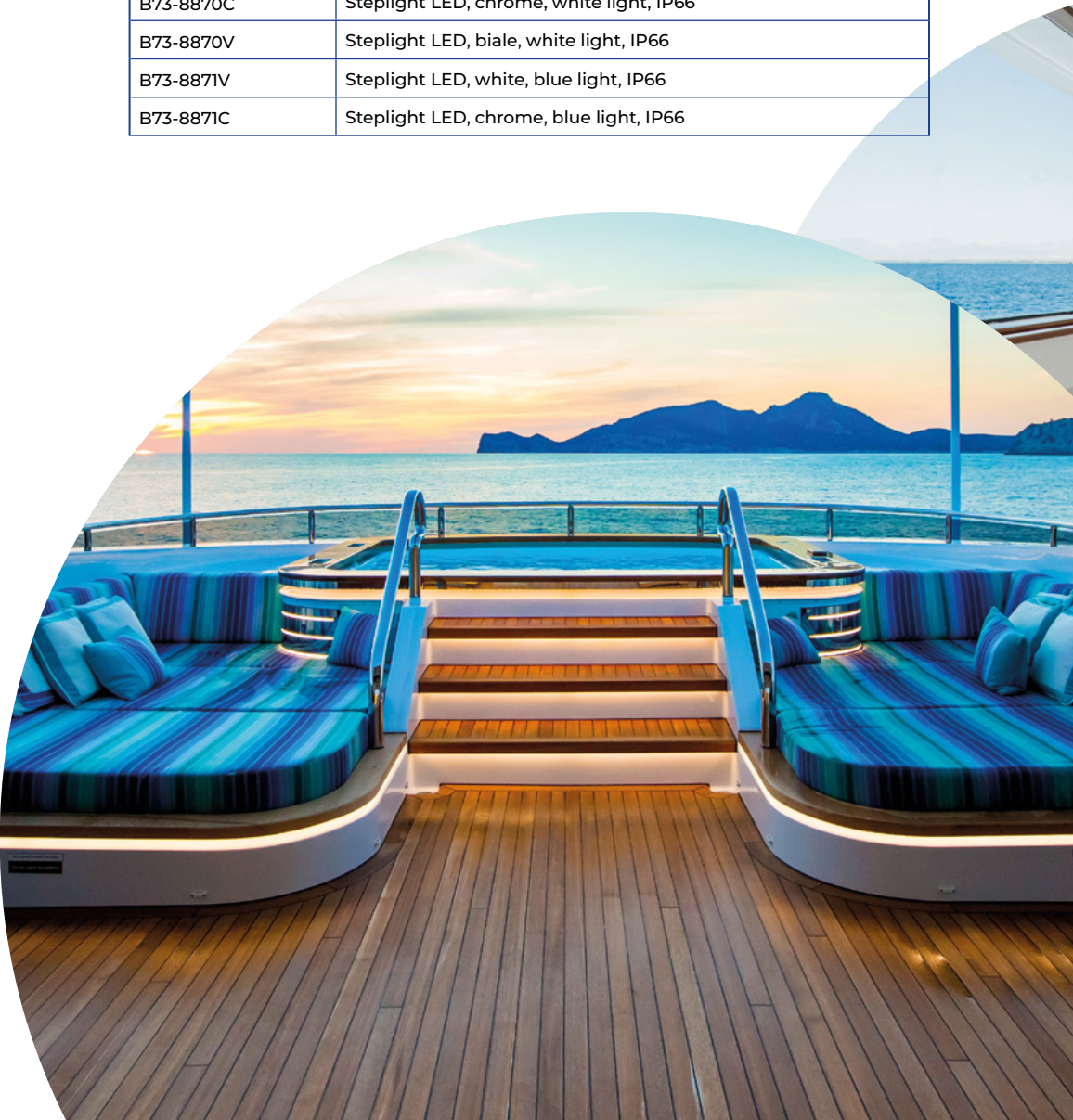


Stylish courtesy lights suitable for mounting in the cockpit or under the stairs.

Details on the luminaire cause the light to fall nicely down on deck. This creates a beautiful contrast while it makes it safer to walk around on deck during dark hours.

- › Details in chrome or white
- › IP66, watertight
- › The power consumption is 0,25W

B73-8870C	Steplight LED, chrome, white light, IP66
B73-8870V	Steplight LED, chrome, blue light, IP66
B73-8871V	Steplight LED, white, blue light, IP66
B73-8871C	Steplight LED, chrome, white light, IP66



Switches & Dimmers

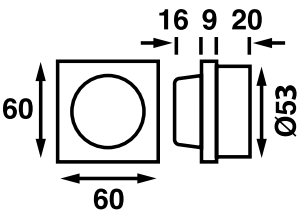
By using a dimmer makes it possible to create a warm and atmospheric light while it is also functional.
A dimmer makes it possible to customize the light according to your needs and activity. It also makes it possible to switch between a working light and a more cozy light.



CUSTOMIZE
THE LIGHT.

LED-dimmer with a rotary switch.

- › In: 8-30V
- › Out: 12V
- › Max power: 24W
- › Max ampere: 2A



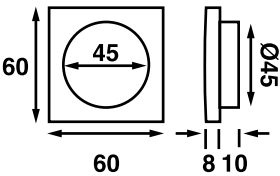
Retractive single switch, with frame and a unit.

- › 1-pole
- › In: 250V
- › 16A



Double switch, with frame and a unit. Two single-pole switches with a joint feed.
In: 8-30V

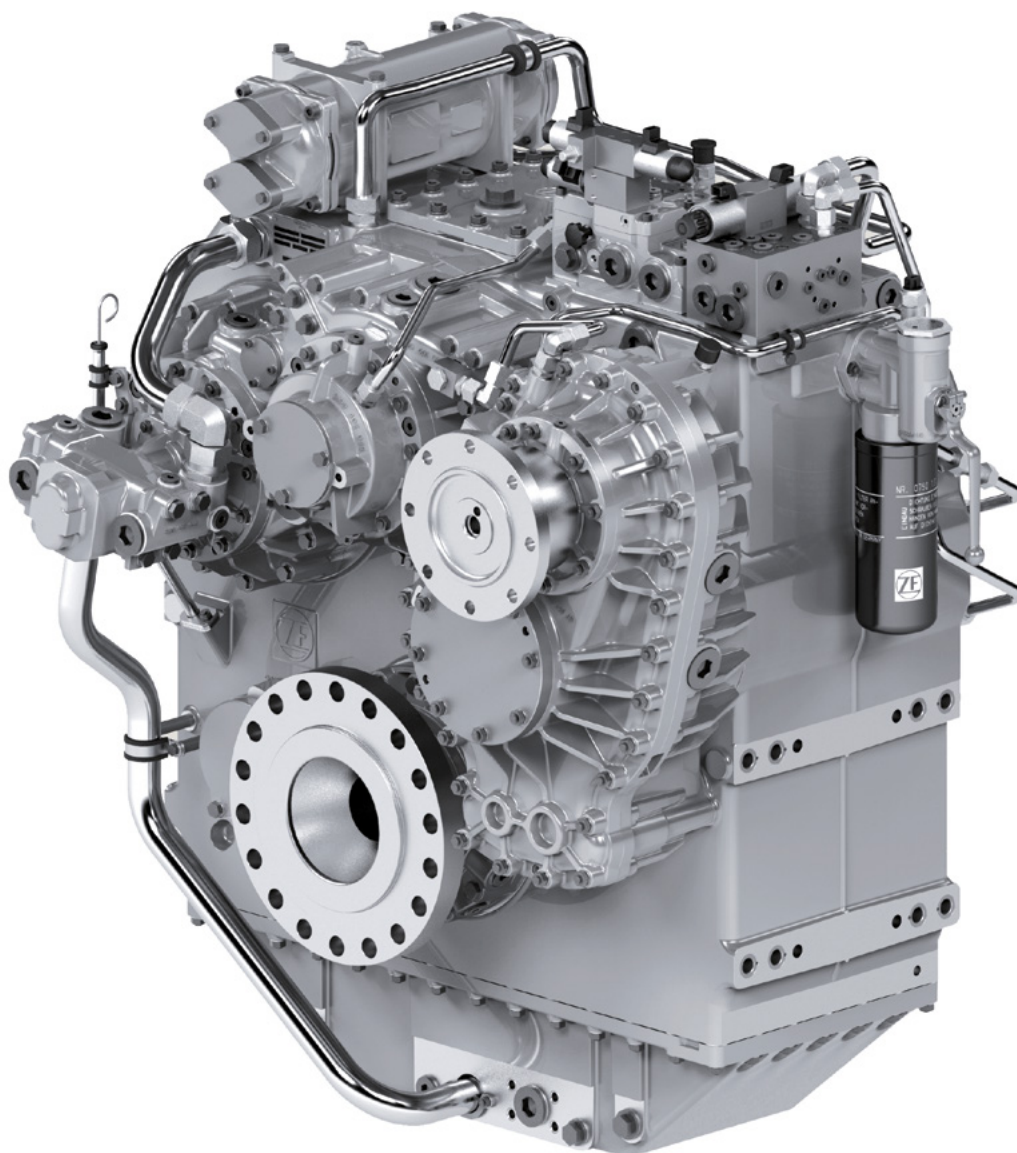
- › In: 250V
- › 16A



B73- BD1206C	Twilight dimmer 12V/24V, 24W LED, chrome
B73-BD1206V	Twilight dimmer 12V/24V, 24W LED, white
B73-BE5850-1V	Single switch white, B mobil
B73-BE5850-2V	Double switch white, B mobil

PROPULSION

**WE WILL SUPPLY YOU WITH A COMPLETE
FULLY-INTEGRATED PROPULSION SYSTEM**





PROPELLER SHAFTLINE COMPONENTS

Blokland, CJR, Tor-marine

Aquadrive

Propellers

- SPW,
- Michigan



TRANSMISSIONS

e-PROPULSION

- Description
- Electric drive
- Hybrid drive
- Exaples of systems



STEERING/MANEUVRE SYSTEMS

- ZF
- Vetus

PROPULSION



ENGINE ROOM

- cooling(Blokland),
- fuel/water separators (Parker Racor)
- exhaust sytems



Transmission

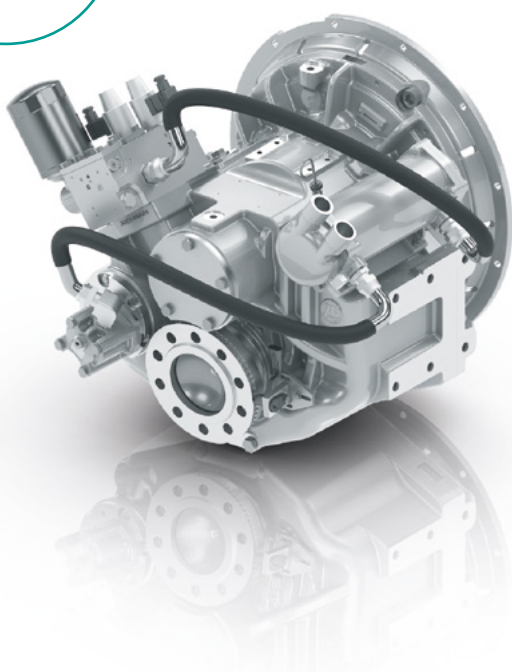
Wide range of ZF Marine Gearboxes from ZF Padova and ZF Friedrichshafen. The product portfolio includes a comprehensive range of transmission such as reversing, non-reversing, hybrid, in a following duty classification, Pleasure Duty, Light Duty, Medium Duty, Continuous Duty.

Contact Marine Works for assistance in determining an appropriate system in case of particular applications and requirements. We will supply complete systems with flexible couplings, pumps.

see. think. act.



**POWER
RANGE UP
TO 735 KW**



A wide range of applications for both **yachts** and **commercial vessels**.

ZF 400 series - a marine transmission family for a power range up to 735 kW.

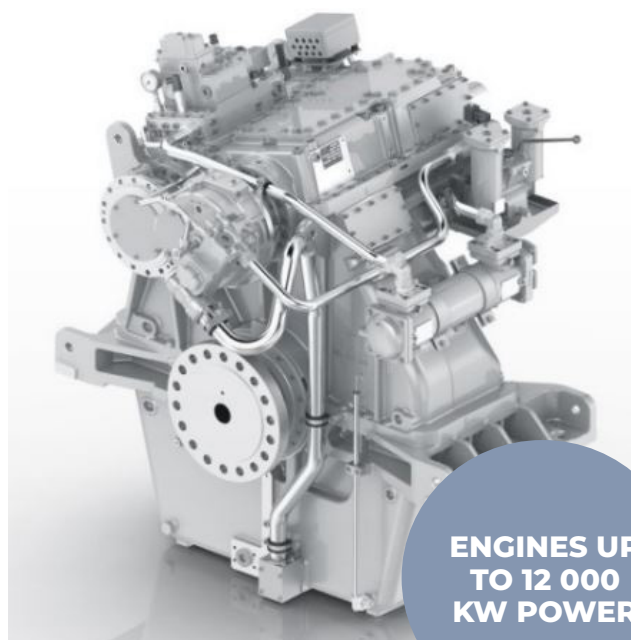
- › Lightweight and robust aluminum alloy casing
- › Case hardened and precisely ground gear teeth for long life and smooth running
- › Output shaft thrust bearing designed to take maximum propeller thrust
- › Possibility to integrate further smart alert functions for predictive scheduled maintenance
- › An optional embedded electronic unit to better control the proportional valves for smoother shifting/trolling

SUPERSHIFT2

Reliable propulsion for **commercial craft** applications.

These transmissions can be matched to all types of medium-speed diesel engines up to 12.000 kW power.

- › Broad product range for all types of commercial craft
- › Wide range of available accessories like PTI, PTO, trolling equipment
- › Robust design
- › Highest availability
- › Ease of installation and maintenance



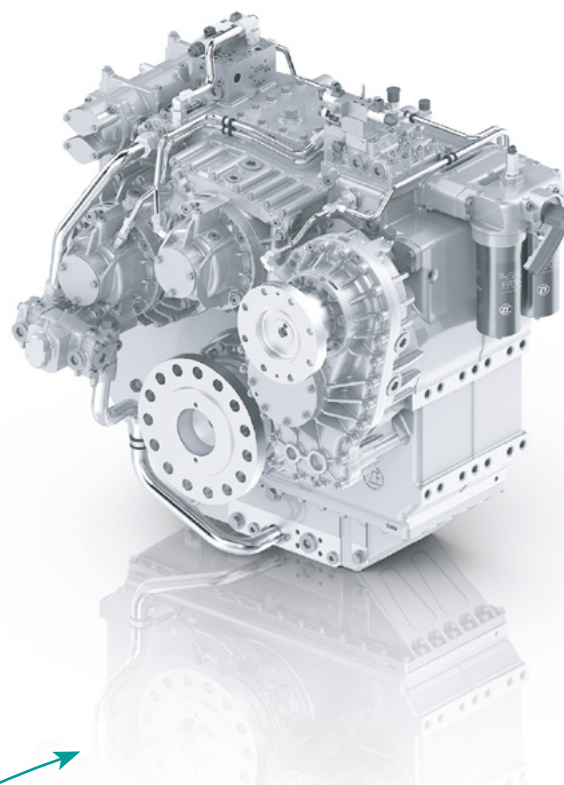
**ENGINES UP
TO 12 000
KW POWER**

ZF hybrid transmissions for an emission-free future at sea.

A broad portfolio of hybrid transmissions with a power range from 600 kW to 11,500 kW.

We will supply complete systems with flexible couplings, electric pumps, inverters and electric control units.

- › Reduced noise thanks to low-vibration
- › Reduction of fuel consumption
- › High environmental compatibility through reduced emissions
- › Highest installation flexibility through PTI configuration
- › Low life cycle costs thanks to long maintenance intervals
- › Robust design guarantees a long service life



**POWER
RANGE FROM
600 KW TO
11,500 KW.**



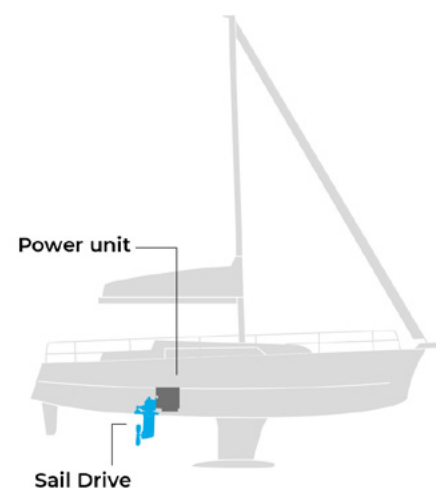
Sail Drive

The ZF SailDrive offers skippers a highly efficient and comfortable system for motoring while not under sail.

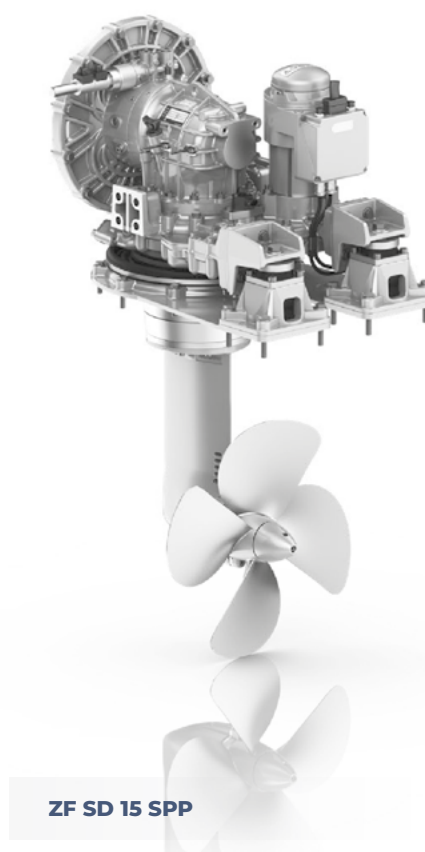
The system, designed to allow the engine to be positioned facing the bow or stern, offers boat builders significant design flexibility. The system is robust and reliable, and can be matched with a large range of fixed or foldable propellers, moving the vessel power and security.

Advantages of the ZF sail Drive:

- › Excellent hydrodynamic efficiency
- › Ease of installation
- › Reduced gear noise and vibration



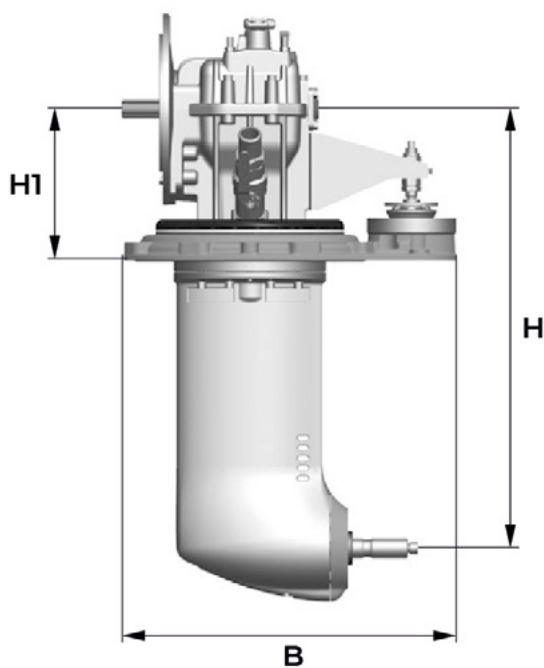
ZF SD 15



ZF SD 15 SPP

Model	Clamp ring flange dia. - A		Clamp ring flange dia. - B		Drop H		Height H1		Weight	
	mm	inch	mm	inch	mm	inch	mm	inch	kg	lb
ZF SD 10	378	15	463	18	605	24	210	9	40	88
ZF SD 12	378	15	463	18	605	24	210	9	40	88
ZF SD 12 SPP*	550	22	650	26	803	32	295	12	120	265
ZF SD 15*	550	22	650	26	868	34	295	12	90	198
ZF SD 15 SPP*	550	22	650	26	868	34	295	12	130	287

* Dimensions and weight could vary.



Model	Clutch type		Type	Ratios	Power factor		Input Power Capacity		Max. rpm	
	3200 rpm	3600 rpm			3200 rpm	3600 rpm				
	mechanical	hydraulic	steerable (SPP)		kW/rpm	hp/rpm	kW	hp	kW	hp
ZF SD 10	•			2.23 2.49	0.0153 0.0153	0.0208 0.0208	50 50	67 67	55 55	75 75
ZF SD 12	•			2.23 2.49	0.0188 0.0188	0.0256 0.0256	60 60	82 82	68 68	92 92
ZF SD 12 SPP		•	•	2.23 2.49	0.0188 0.0188	0.0256 0.0256	60 60	82 82	68 68	92 92
ZF SD 15		•		2.51	0.0315	0.0429	101	137	113	154
ZF SD 15 SPP		•	•	2.51	0.0315	0.0429	101	137	113	154

Functions & components



JOYSTICK

The ZF Joystick Maneuvering System operates off of the SmartCommand control system, and offers simple and intuitive vessel control at your fingertips. JMS manages the vessel's main engines, ZF transmissions and bow thruster all through the joystick, giving the operator precise speed, smooth maneuvering and easy docking. JMS offers vessel operators the ability to move the vessel sideways, rotate 360 degrees on the vessel's axis, and hold vessel position accounting for current and wind. The control functions iAnchor (automatic positioning) and iDrift (drift speed and direction control) are unique JMS features.



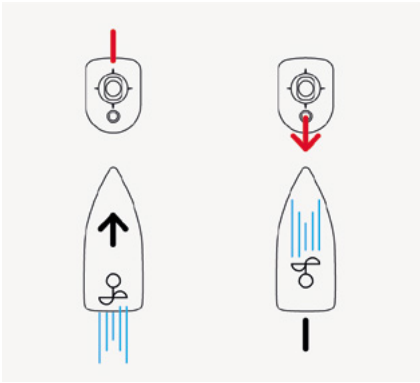
CONTROL HEAD

ZF Marine control heads are built to withstand the harshest marine environment while being attractively designed to compliment any application – from the most basic marine applications to large offshore supply vessels with highly sophisticated dynamic positioning equipment or luxury yachts. Our control heads incorporate easy to use functionality to give you complete control from up to six different stations on your vessel.

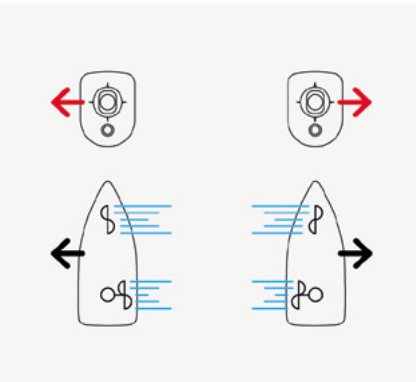
Joystick Maneuvering System JMS

ZF Joystick Maneuvering System, in conjunction with the ZF SPP system truly optimizes the handling performance of your boat. The combination of complete rotation of the submerged leg, together with the bow thruster result in simplified maneuvering even in the tightest of spaces.

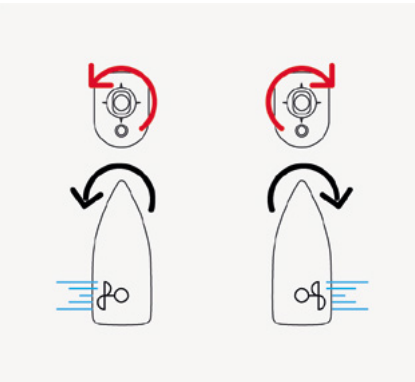
Ahead and astern



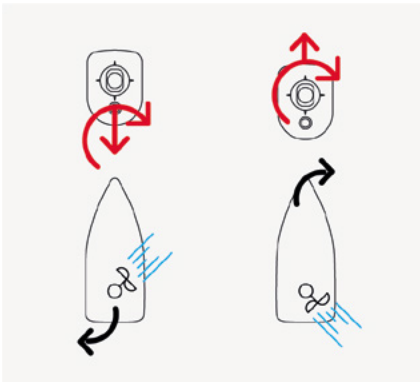
Sideways maneuvering



Pivoting – rotation on central axis



Various combined maneuvers

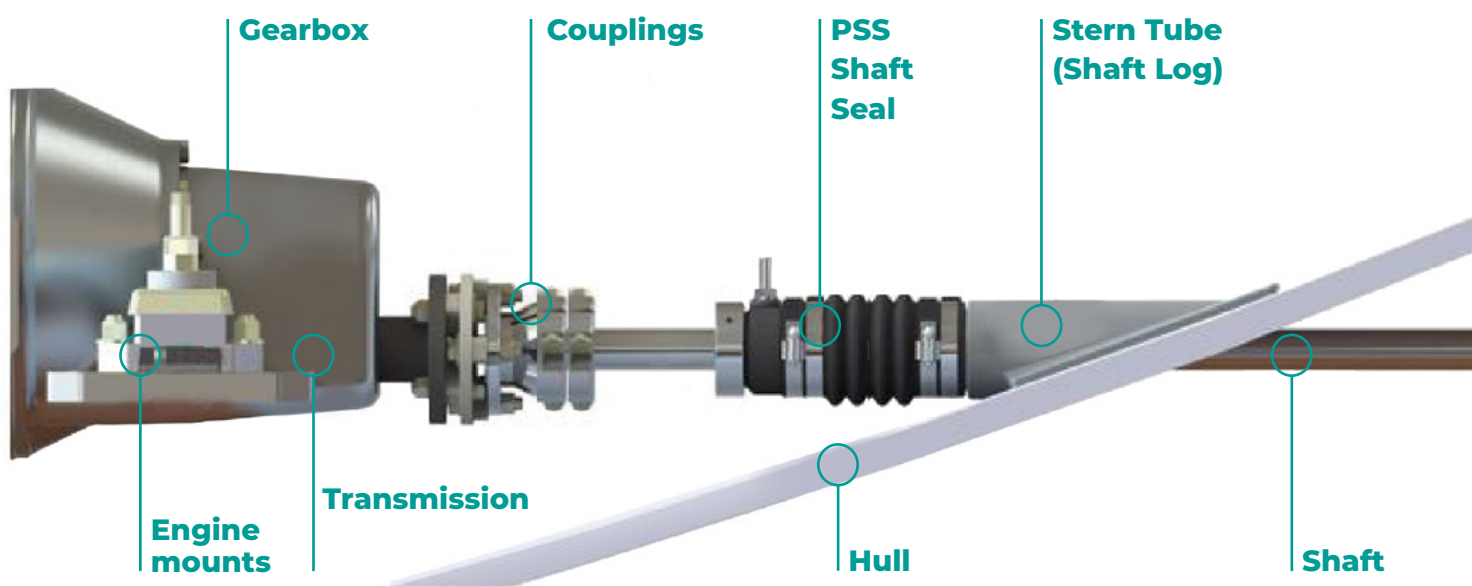
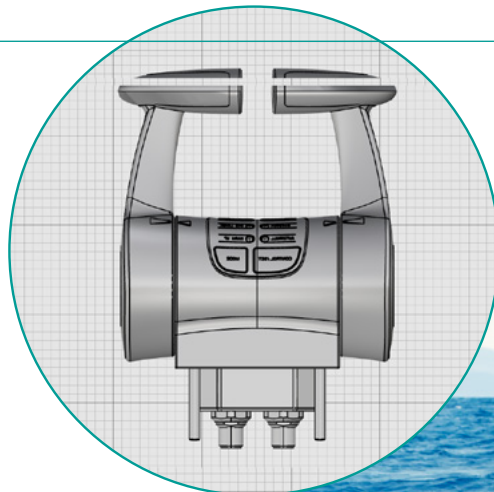


Propeller shaft line components

To create an individual propeller shaft line system **offer** the basic yacht data is needed. Please provide us with below data.

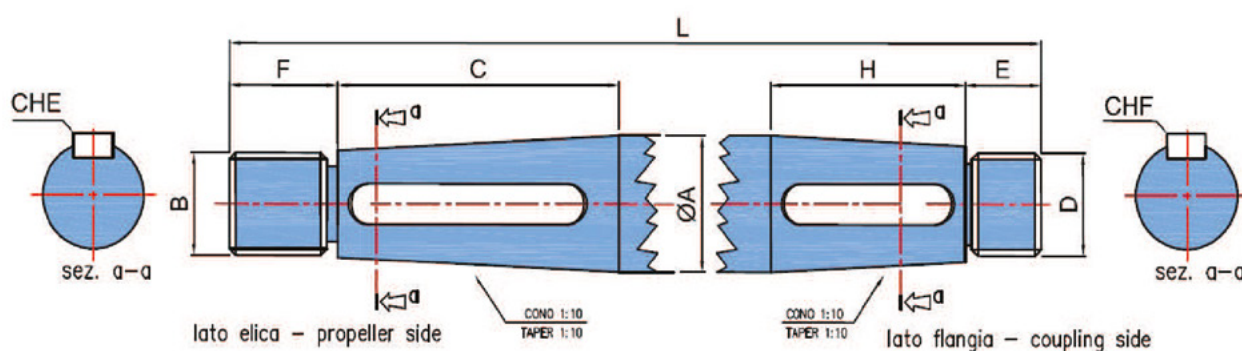
- › Engine model, power, rpm
- › Gearbox model, ratio
- › Yacht type, hull material and assumed speed
- › Shaft length and propeller max. window

Marine Works engineers team will calculate and adjust the proper parameters of the shaft line system. If you want us to make a final project, you're welcome. Just send us the general arrangement of the yacht.

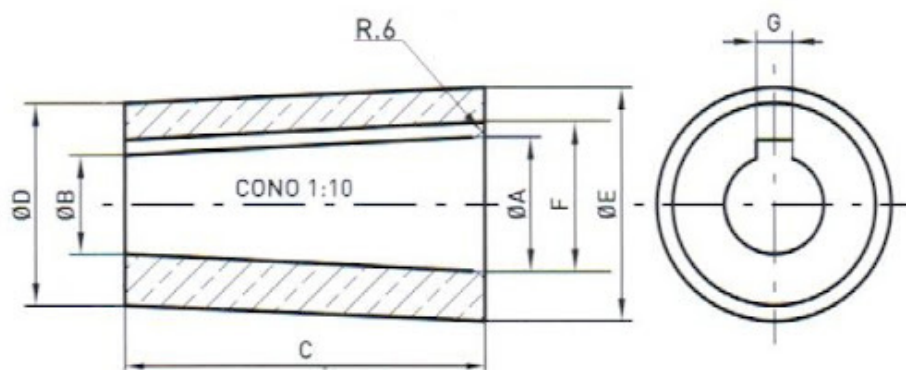


Propeller shaft

We can supply drive shafts from the smallest diameter of 25mm to the maximum diameter size you need. Both in high quality stainless steel (AISI 316 o AISI 630/ V174) with tolerance H8 is our standard or Duplex stainless steel.



The company's engineers will propose a solution to your needs, it can be either matching the cone to the propeller hub, proposing the appropriate cone, selecting the appropriate shaft diameter for a refit or new build, and many others.



Contact Marine Works for assistance in determining an appropriate system in case of particular applications and requirements.

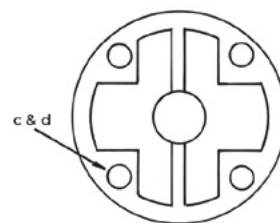
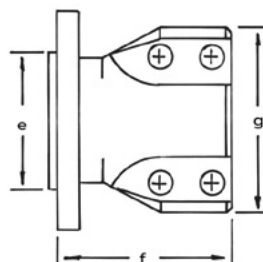
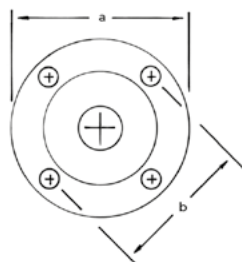


Coupling

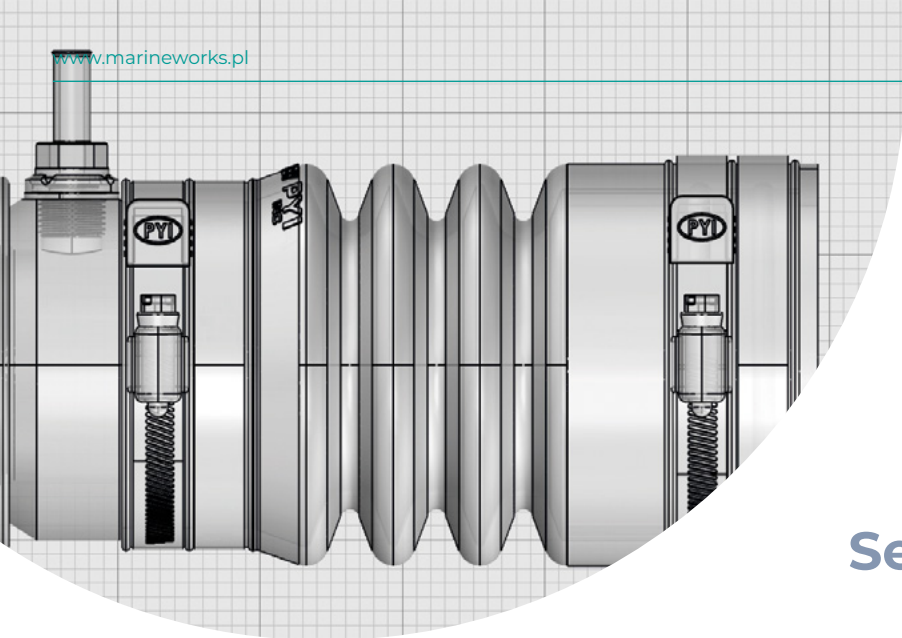
Flexible and half clamp Shaft Couplings

To calculate Power of coupling required.
Horse Power of Engine x Reduction Ratio
x 100 = HP100rpm Engine Speed

Contact Marine Works for assistance
in determining an appropriate
system in case of particular
applications and requirements.

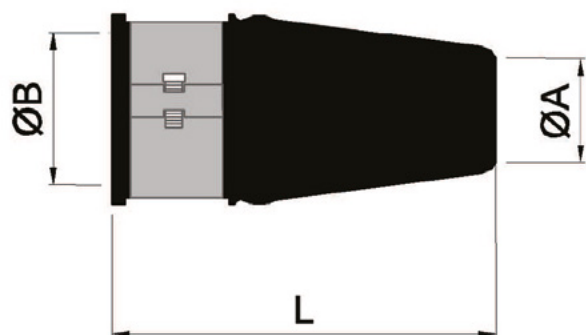


Flexible Shaft Couplings	Steel Clamp Half Couplings
For engines 5 to 1500 HP	Clamps to give a better fit than a solid coupling
Reduces engine noise and vibration transmission	Machined from solid steel
Fail safe design	Able to accommodate normal shaft tolerances
Bolts between existing shaft flanges	Available in standard sizes (Both Metric and Imperial)
Requires no machining	Easy to install and position
Simple to install	Wide range of stock
Simple to periodically check alignment	Competitively priced
Wide range of stock	In - House customization
Accepts propeller thrust	Special Half Couplings can be supplied in small batches
Impervious to salt water, diesel and lubrication oils	Worldwide availability
Fast installation time	
Electrical continuity available	
Worldwide availability	
Competitively priced	



Sealing

There are many types of shaft seals. Marine Works is offering as below.



„VOLVO TYPE” STUFFY BOX.

Easy and quick installation. Compact size. Reduced maintenance to a minimum. Effective functionality. Long life trouble free. Good solution for repowering.

Also with an option with a spout of water lubrication.

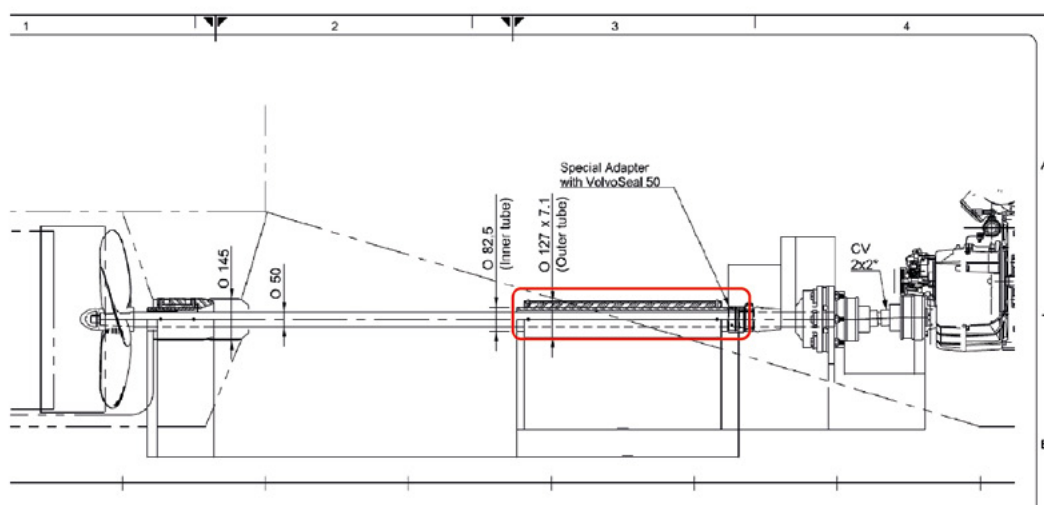
The PSS Shaft Seal.

It is the #1 selling marine mechanical seal worldwide and is installed as standard equipment by many of the world's most reputable boat builders and boat yards. The PSS Shaft Seal is also recognized as the premiere retrofit (aftermarket) seal on the world market.

Boat builders and boat yards recognize the advantages and value of installing the PSS as it eliminates the maintenance, constant adjustment & cost associated with traditional packing type glands. Aside from these benefits, the PSS Shaft Seal helps to eliminate water in the bilge (100% water tight) & wear to the propeller shaft. CERTIFICATION, ABS, RINA, Bureau Veritas.



Stern tube

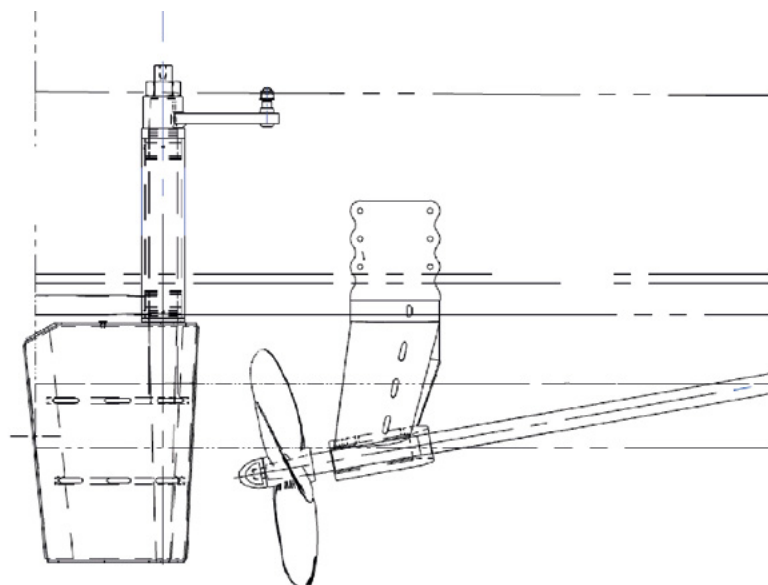


The stern tube is lubricated with the water in which the vessel floats. The water supply is connected to the connection at the front side of the stern tube. The water lubricates the rubber bearings and at the same time it flows through the flutes of the rubber bearings.

Marine Works supply modern water lubricated propulsion systems as well. These systems use high quality water lubricated rubber bearings. Under the influence of increasingly strict environmental demands, this type of lubrication is becoming more and more popular.

Water lubrication is by far the most environmental friendly solution for lubricating propeller shaft bearings and technically equal or better compared to other ways of lubrication.

CONTACT MARINE WORKS FOR ASSISTANCE IN DETERMINING AN APPROPRIATE SYSTEM IN CASE OF PARTICULAR APPLICATIONS AND REQUIREMENTS.



Strut and P-bracket

We can offer both a typical, ISO-standard strut and P-bracket and also the customize unit that meets your design assumptions.

Contact Marine Works for assistance in determining an appropriate system in case of particular applications and requirements.

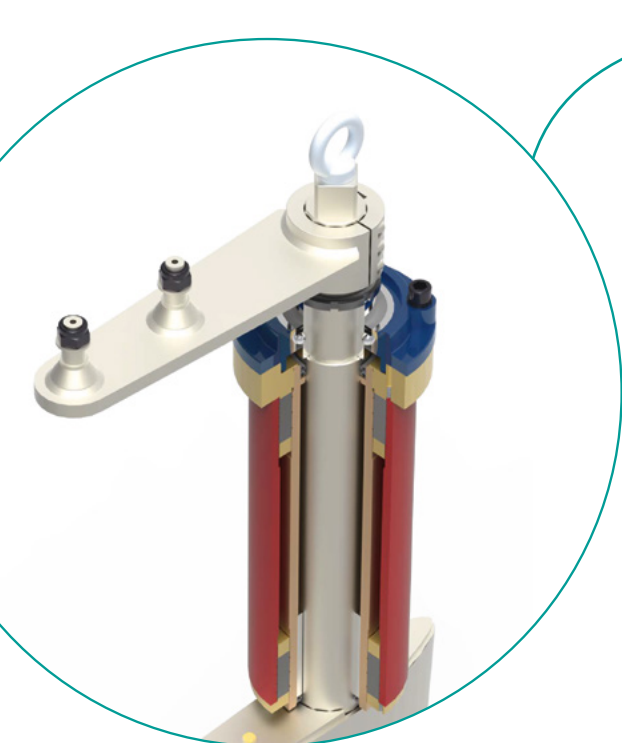
Rudder system

Marine Works can design and provide steel rudders.

A rudder system consists out of a Rudder tube and corresponding Rudder shaft.

- › For steel, aluminium and composite boats
- › Grease lubricated or self-lubricating
- › Simmering sealing rings
- › Isolation of noise and vibration
- › With or without footstep bearing
- › Rubber bearing.

For all size of propeller shaft diameter with standard and customize length, material and outer diameter.



Tiller with key.

Rudder shaft with or without flange connection

Rudder stern tube in brass with nut.

Rudder blade in steel or stainless steel.

Shaft line parts.

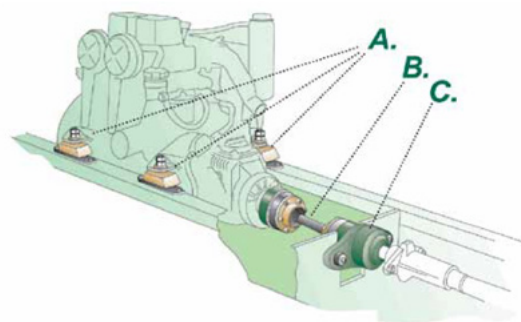
Anodes for your shaft line but also for your hull parts and other equipment.



All above spare parts you will always find on Marine Works stock. For further information please contact your local dealer.

Aquadrive

- A. – Soft engine mounts isolate engine from hull.
- B. – Constant Velocity (CV) drive shaft absorbs engine vibration and eliminates need for accurate alignment.
- C. – Thrust unit on load bearing hull section reduces stress on transmission and engine mounts. Prop pushes boat, not engine.



A. ENGINE MOUNTS

Aquadrive's proven engine mounts are softer than almost any other and should be used to take full advantage of the system. These mounts are steel hooded to prevent diesel damage and fully captive so that the engine cannot leave its frame even if the vessel is turned over.



B. CV SHAFT

The drive shaft of variable length includes two true plunging Constant Velocity joints that work independently at any angle. This eliminates the need for accurate engine alignment, either during initial installation or subsequent use.

The rolling action of the balls within the CV joints absorb all axial and radial loads, permitting the use of very soft engine mounts as well as reducing wear in connected bearings. A range of pre-machined adapter kits allow coupling to almost any marine gearbox.

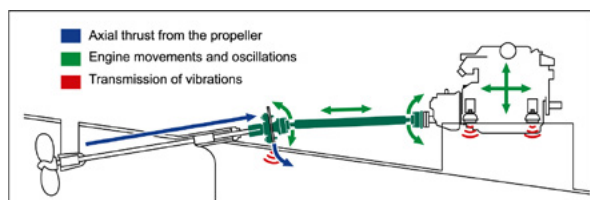


C. THRUST BEARING

Aquadrive thrust bearing with rubber mounts attach to a cross brace in the hull. Massive bearings transfer the thrust directly to the hull and not the engine. In addition, the propeller shaft is much better supported, leading to smoother running and less wear on the stern seal.

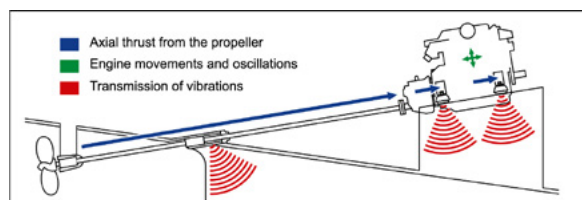


WITH AQUADRIVE



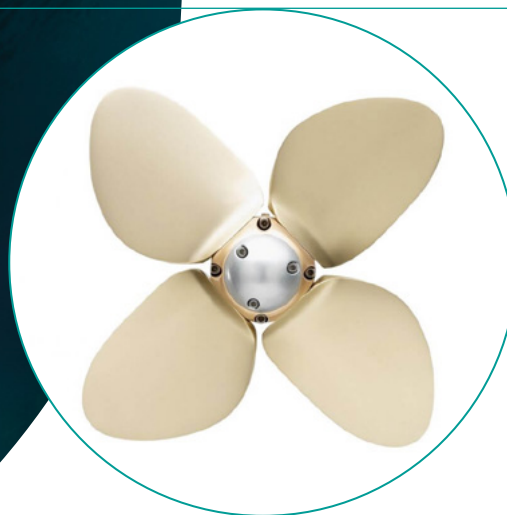
With Aquadrive the engine can be installed in a horizontal position using soft and efficient mounts. Apart from easy installation and permanent alignment, this also leads to better space utilisation while dramatically reducing vibration and noise.

WITHOUT AQUADRIVE



In traditional installations, the alignment of the propeller shaft to the engine has to be precise and subject to periodical maintenance. Stiff mounts transmit high levels of vibration to the hull, even when perfectly aligned.

Contact Marine Works for assistance in determining an appropriate system in case of particular applications and requirements.



Propellers

Marine Works can provide you with the right propeller for your boat.

Fixed Propeller Michigan

Marine Works supply with wide variety of styles and types of fixed propellers.

The inboard propeller diameter range extends from 250mm (10") up to 2600mm (102"), all are built to the highest applicable industry standards such as ISO484-2 and ISO484-1.

Features:

- › increase speed
- › minimize vibration
- › give a smooth ride

Marine Works supply with wide variety of styles and types of fixed propellers. These are examples:



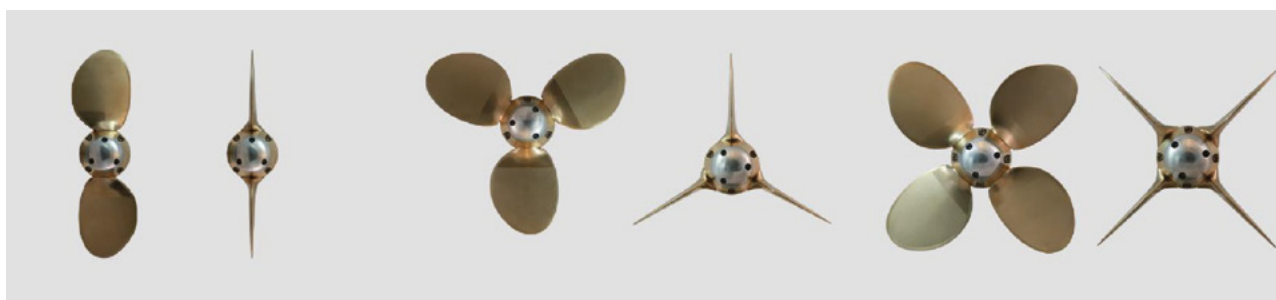
ADVANTAGES OF MICHIGAN STANDARD SERIES PROPELLER

- › The world's largest selection of standard propeller designs.
- › Advanced resistance and propulsion calculations.
- › Thrust and bollard pull predictions and propeller efficiency curves.
- › Certification of raw materials.
- › Rigorous control of the sand moulding and metal melting processes.
- › CNC high speed propeller finishing.
- › Close tolerance manufacture 100% compliant to globally recognised ISO standards.
- › Modern factory inspection equipment and gauges.

Feathering propellers SPW Variprop Marine Works will help you to find out which Variprop is the right one for your engine.

- › **15 – 20 % higher sailing speed:** The water current turns the blades into the feathering position when the engine is turned off
- › **No disturbing propeller turbulences:** Your yacht sails significantly more stable and smoother at the rudder, so you are able to sail close-hauled.
- › **Optimal thrust when motoring ahead as well as astern:** When shifting to reverse, the leading edge of the propeller blades is turned by 180°. Consequently, the efficiency rate is the same in both directions – without the obstructive “prop walk” (paddle wheel effect). If the paddle wheel effect is beneficial to you, the pitch in reverse can be adjusted accordingly. Individual manufacturing guaranteed!
- › **Improved stop performance:** This will ensure substantially more control when mooring in reverse.

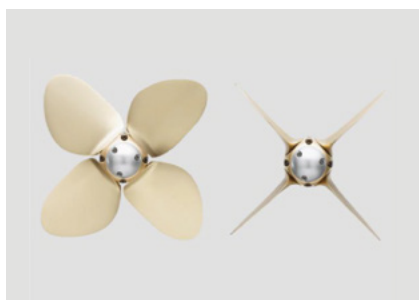
THE VARIPROP GP 2-, 3- AND 4-BLATT MODELS:



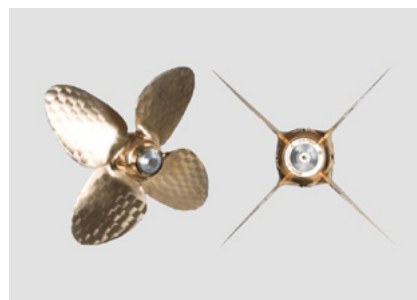
Variprop GP 2-blade
For smaller sailing yachts
with an engine power of
6-40 kW / 8-50 HP

Variprop GP 3-blade
For Cruising Yachts
with an engine power
of 6-100 kW / 8-140 HP

Variprop GP 4-blade
Pure Power
for Offshore Sailors



The Variprop „Blue Water”
4-blade
For open sea vessels
with engines above 100 hp



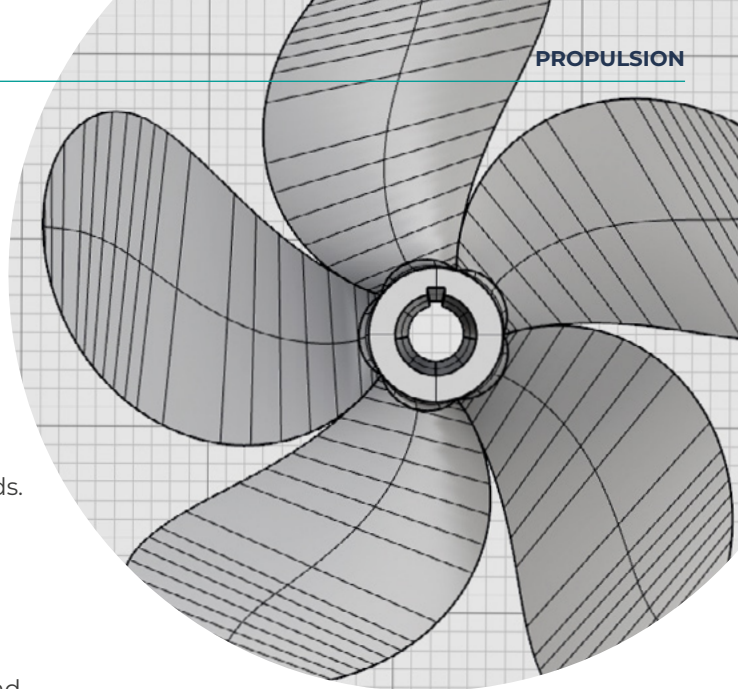
The Variprop XLS 4-blade
For tall ships
and Superyachts
any engine power

Feathering propellers SPW Variprofile

The new **VARIPROFILE** is the perfect feathering propeller for **boats and yachts with engines up to 75 hp**. Thanks to innovative production methods and construction we are able to offer the VARIPROFILE at a price that is second to none, while still conforming to our highest quality standards.

VARIPROFILE features

- › Excellent price/performance ratio
- › Hi-Tec blades with GAWN profile to optimize thrust and efficiency while running much more quietly than others
- › Exceptional sailing characteristics through slim shape, light weight blades.
- › Separate external pitch adjustments
- › Robust construction with enclosed helical gearing for long life
- › Interchangeable hub
- › Easy mounting for the average sailor
- › Available in 2-blade and 3-blade version up to 75 hp
- › Made out of Hi-Tensile NiBrAl-Bronze (Ice-Class)
- › CNC machined for highest precision
- › Certified by Germanischer Lloyd



**ENGINES
UP TO
75HP**



THE 2-BLADE VARIPROFILE

Is the best sailing propeller for smaller sailing yachts with a maximum engine performance of 75 HP. The 2-blade VARIPROFILE is a brilliant alternative to a folding propeller because of the minimum of drag while sailing and good thrust under motor. Thanks to the blades working always with the perfect pitch in astern the manoeuvrability in harbours is extraordinary good.



THE 3-BLADE VARIPROFILE

Actually the standard propeller for sailing yachts with a maximum HP of 75. The sailing performance is thanks to the reduced drag excellent and because of the profiled blades the propeller provides maximum thrust, quiet running and stable performance even while rough see. Compared to a fixed propeller the VARIPROFILE offers more than 30% less consumption. The 3-blade VARIPROFILE works as well as the 2-blade VARIPROFILE with a perfect pitch in astern to offer precise and comfortable manoeuvrability.

Folding propellers SPW Varifold

The remarkable VARIFOLD propeller range has grown from a single two blade model to include three and four blade versions in a very short space of time. VARIFOLD is the propeller of choice for many highly respected yacht manufacturers and their customers.

- › Modern folding propeller for serial yachts
- › Cambered blades design
- › Excellent thrust
- › 2-, 3- and 4-blade version available
- › For engines from 20 to 750 HP



THE VARIFOLD 2-BLADE

VARIFOLD is suitable for all types of boat, although the propeller size must be matched up to the size of the craft and the engine output. VARIFOLD is available in sizes 12"-17" – both for shaft assemblies and for the saildrive. We would of course be happy to advise you which size of propeller is suitable for your craft.



THE VARIFOLD 3-BLADE

The VARIFOLD 3-blade is a design breakthrough in propeller technology: a winning combination of good thrust, improved performance in reverse manoeuvres and smooth, quiet running when powered. Developed especially for cruising and racing yachts, its cambered design combined with skewed blade tips ensures that maximum thrust is delivered with minimum noise and vibration.



THE VARIFOLD 4-BLADE

The VARIFOLD 4-blade propeller with a diameter of up to 920 mm is the latest SPW development. 4 strengths for on-board comfort which fulfil a modern skipper's every desire. Just as with the 2 and 3-blade series, the outstanding feature of the blades is their modern cambered design. This special blade shape not only lends the VARIFOLD exceptional visual appeal, but also unparalleled thrusts!



**SELECTION FOR WET
AND DRY EXHAUST
SYSTEMS, ALARM
SYSTEMS, PRESSURE
CALCULATION.**



Engine Room systems

Marine Exhaust systems. Noise and Vibration Control.

Managing engine noise, emissions and vibration, as well as overboard discharges, is becoming increasingly important as we all become far more responsible for the impact we have on the environment and our surroundings.

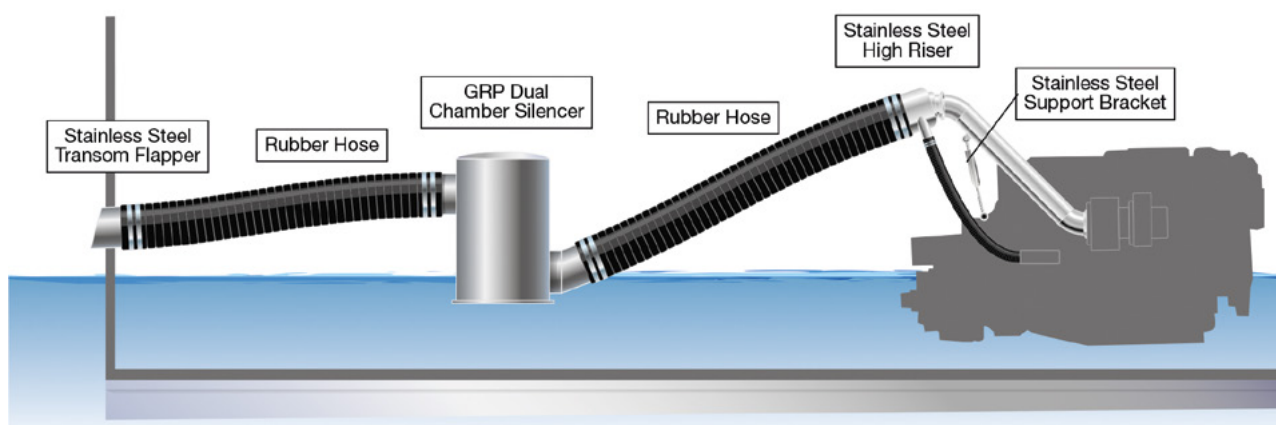
Halyard offers the most advanced products available with a range of standard and bespoke solutions designed to suit your project; yacht or cruiser, lifeboat, pilot boat, commercial vessel or superyacht, our designers will get involved from the initial stages, consulting, designing and specifying products and systems to best meet your requirements.

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

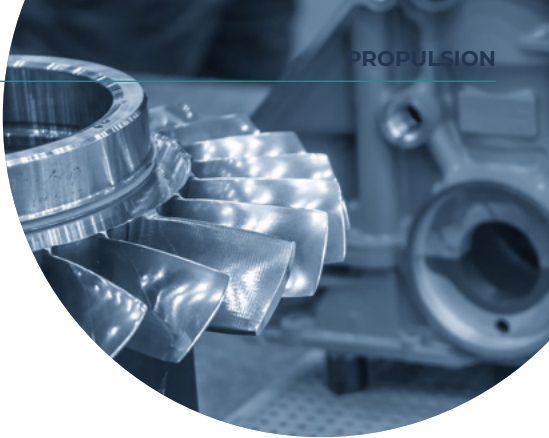


The example of wet exhaust system.

DUAL CHAMBER SILENCER WITH ABOVE WATER DISCHARGE



Marine Works provides design support in the selection of an exhaust system for main engines and power generators on ships and yachts.




PUMPS

THE MOST EFFICIENT INTEGRATED SYSTEM OF PUMPS AND BLOWERS.

WATER

PUMPS AND ACCESSORIES WATER PRESSURE SYSTEM

This is a general guideline on the main applications and materials of each product series and they are not limited to these description. We can also provide custom solution on request.

 PUMPS	ACB	CP	ACM	BMA-S	GIGETTA ACG	ENGINE PUMPS	MAXI SUB-VORTEX	ZBDR-ZBDG	HAND PUMPS	IN-FQ	FQB	MVG	MVI	BMA-G	BMA-M	VAT-IB	CVR	CB
Bilge	●	●	●	●	●	●	●	●	●									
Fire-Fighting	●	●	●	●	●	●			●									
S.W. feeding	●	●	●	●														●
Ballast	●	●	●	●	●													
F.W./S.W. Washing	●		●	●														
WPS - Hydrofore	●		●															●
F.W./S.W. Circulation		●		●														●
Oil										●	●							
Diesel oil	●	●	●						●	●	●							
Grey water		●					●	●				●	●	●	●	●	●	
Emptying					●		●	●										
Black/Waste water								●				●	●		●	●	●	

APPLICATIONS

Bilge	●	●	●	●	●	●	●	●	●									
Fire-Fighting	●	●	●	●	●	●			●									
S.W. feeding	●	●	●	●	●													●
Ballast	●	●	●	●	●													
F.W./S.W. Washing	●		●	●														
WPS - Hydrofore	●		●															●
F.W./S.W. Circulation		●		●														●
Oil										●	●							
Diesel oil	●	●	●						●	●	●							
Grey water		●					●	●				●	●	●	●	●	●	
Emptying					●		●	●										
Black/Waste water								●				●	●		●	●	●	

TENUTA MECCANICA DI ALTA QUALITÀ
HIGH QUALITY MECHANICAL SEAL

GIRANTE BRONZO
BRONZE IMPELLER
Marine Bronze as Standard
Custom construction see sec.18

CORPO POMPA BRONZO
BRONZE BODY PUMP
Marine Bronze as Standard
Custom construction see sec.18

CORPO POMPA BODY PUMP
Disponibile in / Available in
1. GB: ghisa / cast iron
2. B: bronzo / bronze

MOTORE ELETTRICO
efficienza IE3-IE4
Caratteristiche elettriche
24Vdc
110÷120Vac 1~ 60Hz
208÷250Vac 1~ & 3~ 50/60Hz
360÷440Vac 3~ 50 & 60Hz
IP22/55 – Ins.Class.B/F
ELECTRIC MOTOR IE3-IE4 efficiency
Electric motor features
24Vdc
110÷120Vac 1~ 60Hz
208÷250Vac 1~ & 3~ 50/60Hz
360÷440Vac 3~ 50 & 60Hz
IP22/55 – Ins.Class.B/F

DIFFUSORE BRONZO
BRONZE DIFFUSER
Marine Bronze as Standard
Custom construction see sec.18
208÷250Vac 1~ & 3~ 50/60Hz
360÷440Vac 3~ 50 & 60Hz
IP22/55 – Ins.Class.B/F

LEVA ESTRAIBILE IN ALLUMINIO
ALUMINIUM REMOVABLE LEVEL

PARTI INTERNE
INTERNAL PARTS
Disponibile in / Available in
1. GB: ghisa / cast iron
2. B: bronzo / bronze

WATER PRESSURE SYSTEMS



WATER

Automatic system with electronic control

GENERALITY

Pump groups composed of two or more pumps working in parallel, controlled by an automatic system. Depending on water consumption, one or more pumps are controlled at variable speed, in order to guarantee the required water flow at the set pressure.

The system ensures:

- › Protection against dry running
- › Automatic sequential “start-up and shut off” as demand of water varies
- › Protection against overload
- › Automatic reset and restart
- › Balanced pumps wear by inversion of starting orders
- › Working status signals

The standard “Control Pump” system is made with horizontal or vertical multistage self-priming el/pumps with body and impeller made in bronze ACM and ACB series, it is also possible to realize with other pump types and/or different numbers. The system is supplied assembled, set and tested, ready to be installed on board.



ECOINOX C.E.

CONSTRUCTION FEATURES

- › Stainless steel base on rubber mounts
- › Control box with RPM controller (frequency inverter)
- › Control box fixing support (optional)
- › Membrane type 20 litres stainless steel tank, flexible pipe included
- › Hydraulic components (manifold, valves, manometer, pressure transducer)
- › Electric components (digital alarm, EMC-filter, internal fuse block, protection against over voltage and over



2 JET C.E.

Automatic system with mechanical control

MAIN FEATURE

- › Jet type self-priming el/pumps in bronze or s/steel
- › Includes pressure switch, membrane tank, pressure gauge and no-return valve
- › Painted steel with s/steel flange or totally s/steel tank
- › Tanks with capacity from 5 to 100 litres

APPLICATIONS

Pressurized fresh water system (salt water as option)

PORT SIZE

From ½" to 1" ½ BSP



**IDROMINI
ECOJET**



**IDRO
ECOINOX**



**IDROMAXI
JET**

VENTILATION SYSTEM



AIR

BLOWERS AND ACCESSORIES



ELL

AXIAL EL/BLOWERS

MAIN FEATURE

- › Good delivery at low pressure
- › Reversible impeller in die-cast aluminium
- › Protection grill
- › Painted steel

APPLICATIONS

- › Engine room
- › Technical room

GENERALITY

The system, based on a frequency inverter, regulates with precision and fastness the blower's speed according to the plant's demands. Speed regulation, according to the installed model, can be done in the manual mode and/or in automatic mode.

The G-touch panel display and allows to modify the system's status and parameters. The units are fully programmable which allowing the use of a wide range of blowers in different applications. The Control Fan, is built in a compact and modular configuration in order to allow an easier installation and startup.

APPLICATIONS

The Control Fan is a Speed Regulation System used as a variable frequency drive controller for blowers; ideally used in engine rooms for yachts and mega yachts. This system, designed and manufactured exclusively by Gianneschi Pumps and Blowers for specific ventilation control in order to get and maintain the best temperature in engine room.

VERSIONS

The Control Fan system is realized in Manual, Semi-Automatic and Automatic versions.

MANUAL

- Manual Control

SEMI-AUTOMATIC

- Manual Control
- Temperature Control

AUTOMATIC

- Manual Control
- Temperature Control
- Pressure Control
- RPM Engine Control



C

CENTRIFUGAL EL/BLOWERS

MAIN FEATURE

- › Good delivery at medium pressure
- › Curved blades impeller in forward positioning
- › No-spark /ATEX version (optional)

APPLICATIONS

- › Engine room
- › Toilet
- › Technical room
- › Kitchen hood



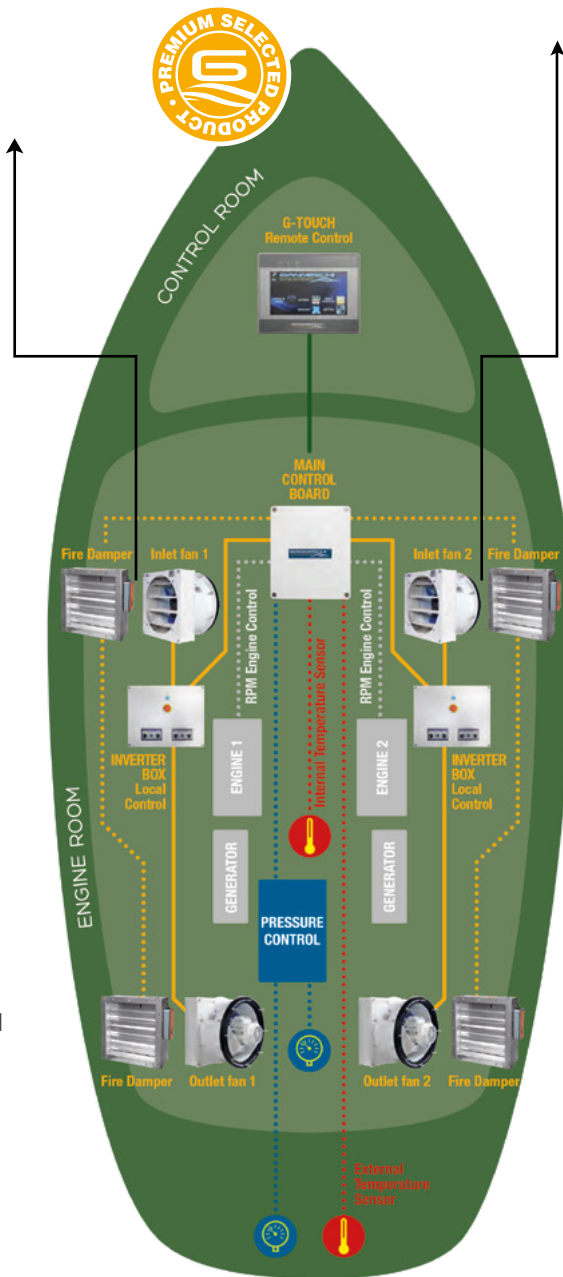
S/STEEL FIRE DAMPERS

MAIN FEATURE

- › Special multi-wings design
- › Wide range with customized dimensions
- › Variable pitch blade to maximize "flow through"
- › Available with electrical, pneumatic and explosion proof actuators
- › Integrated thermo-electric tripping device (temperature sensitive trigger)
- › Built in Stainless steel AISI 304 or AISI 316
- › Homologation A0-A60 in accordance with IMO certification



MED AND US COAST GUARD APPROVED



ACCESSORIES



FROM 22
TO 2000
LITERS.

Marine Water Heaters

MAIN FEATURE

- > Built in s/steel inox AISI 316L
- > Long lasting thanks to the resistance in incoloy that is driven by a dual thermostat
- > Horizontal and vertical versions
- > Heating coil (optional)
- > Standard series from 22 to 2000 liters
- > Custom sizes on request
- > Magnesium anode against corrosion
- > Coil re-circulation (optional)

APPLICATIONS

Hot water circulation system

Circulation Pump

MAIN FEATURE

- > Bronze body and connections
- > Wet rotor at three type speed
- > Threaded or flanged connections

APPLICATIONS

Hot water circulation system



THREE
TYPE
SPEED

HEATING
ELEMENT



Marine Boiler Mini

MAIN FEATURE

- > Hot water (DHW) production/storage tank with heating element and heat exchanger.
- > Verticals and horizontals.
- > Stainless steel AISI 316L marine grade with higher resistance at stress to rupture and tensile strenght at elevated temperatures.



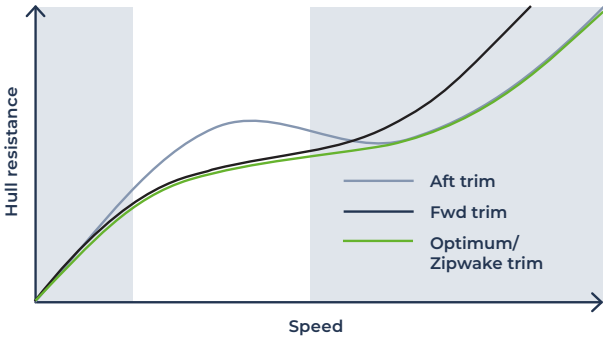
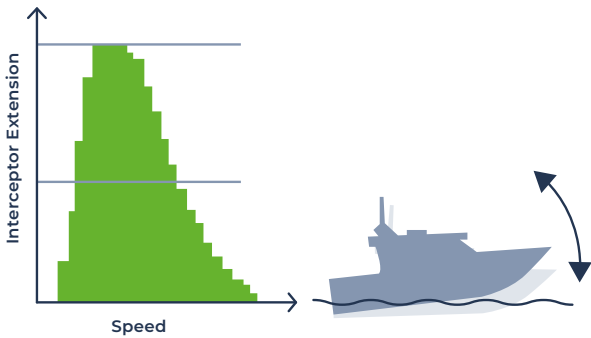
ZIPWAKE

The world's first inexpensive dynamic trim control system, incorporates a state of the art series of durable, fast-acting interceptors. Dedicated for planing and semi-planing boats between 20- 60 feet.

The system is fully automatic and significantly enhances performance, fuel economy, comfort and safety.

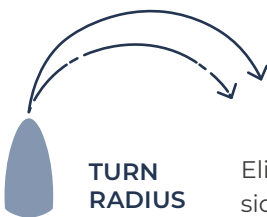
AUTOMATIC TRIM CONTROL (PITCH)

The system calculates the Auto Pitch Curve using the boat's lenght, beam and weight. We can modify this curve manually when feedback it after sea trails. Interceptors activity is major during getting on plane. Than, deploying of interceptors is smaller up to 0 when boat is in on plane already.

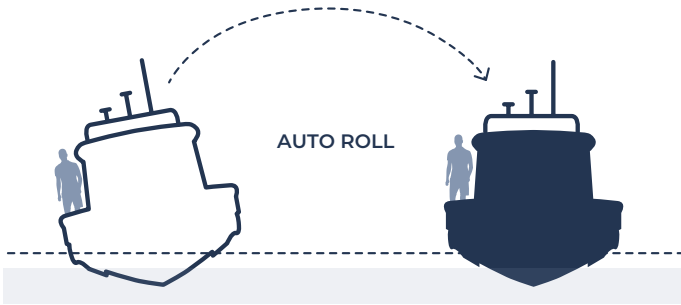


AUTOMATIC ROLL CONTROL

COORDINATED TURN



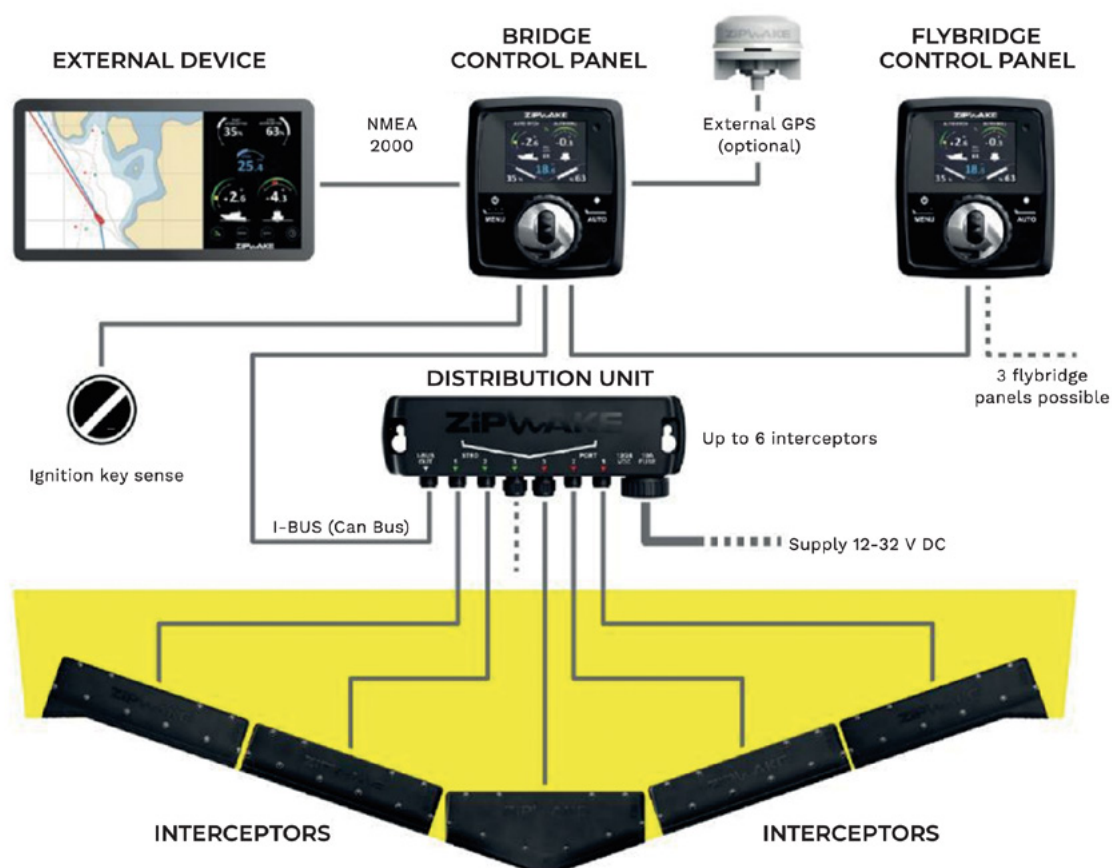
Eliminates strong side heels in the between bends and enables tighter turns.



Automatically levels the boat as on assistant to the helmsman

Regardless of severity and weather conditions

Reduces the boat's reaction due to waves



Availability of the various interceptors shapes makes Series S versatile for any type of motorboat:



STRAIGHT INTERCEPTORS

Series S:
300 mm, 450 mm,
600 mm, 750 mm

Series E:
600 mm, 800 mm,
1000 mm



CHINE INTERCEPTORS

Series S:
300 mm, 450 mm

Series E:
600 mm



V-SHAPED INTERCEPTORS

Series S:
450 mm
Different dovetail
angle



TUNNEL INTERCEPTORS

Series E:
600 mm
Different radii

All in one box.

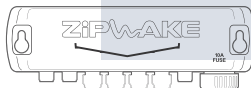
A Kit Box includes all parts needed to install a Dynamic Trim Control System with one pair of fast-acting interceptors.

INTERCEPTOR



2x Interceptors with Cable 3 m & Cable Covers

DISTRIBUTION UNIT



1 x Distribution Unit with Power Cable 4 m



CONTROL PANEL

1 x Control Panel with Standard Cable 7m

1 extension cable 1,5 m / 3 m



- + Operator's manual
- + Warranty Card
- + Installation Guide
- + Drill Templates
- + Operator's Quick Guide
- + Startup Checklist

Model	Part No.	Description
KB300-S	Z90- 2011145	Kit Box 300 S 1 395
KB450-S	Z90- 2011146	Kit Box 450 S 1 525
KB600-S	Z90- 2011147	Kit Box 600 S 1 695
KB750-S	Z90- 2011148	Kit Box 750 S 1 850
KB300-SCHINE	Z90- 2011732	Kit Box 300 S Chine 1 514
KB450-S CHINE	Z90-2011733	Kit Box 450 S Chine



Any base installation can be expanded with one center-mounted Series E interceptor or up to two Series S interceptors, without any need for additional connectors or power supply.

CP-S	Z90- 2011238	Control Panel S with Standard Cable 7 m
DU-S	Z90- 2011239	Distribution Unit S with Power Cable 4 m
IT300-S	Z90- 2011232	Interceptor 300 S with Cable 3 m and Cable Covers
IT450-S	Z90- 2011233	Interceptor 450 S with Cable 3 m and Cable Covers
IT600-S	Z90- 2011234	Interceptor 600 S with Cable 3 m and Cable Covers
IT750-S	Z90- 2011235	Interceptor 750 S with Cable 3 m and Cable Covers
IT450-S	Z90- 2011482	Interceptor 450 S V13 with Cable 3 m & Cable Covers
IT450-S	Z90- 2011483	Interceptor 450 S V16 with Cable 3 m & Cable Covers
IT450-S	Z90- 2011484	Interceptor 450 S V19 with Cable 3 m & Cable Covers
IT450-S	Z90- 2011485	Interceptor 450 S V22 with Cable 3 m & Cable Covers
IT300-S	Z90- 2011701	Interceptor 300 S Intermediate with Cable 3 m & Cable Covers
IT300-S	Z90- 2011702	Interceptor 300 S Chine Port with Cable 3 m & Cable Covers
IT300-S	Z90- 2011703	Interceptor 300 S Chine Stbd with Cable 3 m & Cable Covers
IT450-S	Z90- 2011704	Interceptor 450 S Chine Port with Cable 3 m & Cable Covers
IT450-S	Z90- 2011705	Interceptor 450 S Chine Stbd with Cable 3 m & Cable Covers
EC1.5-M12	Z90- 2011258	M12 Extension Cable 1.5 m
EC3-M12	Z90- 2011259	M12 Extension Cable 3 m
EC5-M12	Z90- 2011260	M12 Extension Cable 5 m
EC10-M12	Z90- 2011261	M12 Extension Cable 10 m
SC7-M12	Z90- 2011257	M12 Standard Cable 7 m
CP COVER	Z90- 2011381	Control Panel Cover, White
CP COVER	Z90-2011382	Control Panel Cover, Light Gray
CP COVER	Z90-2011383	Control Panel Cover, Mid Gray
CP COVER	Z90-2011384	Control Panel Cover, Dark Gray
CP COVER	Z90-2011385	Control Panel Cover, Black
GPU	Z90-2011240	Global Positioning Unit with Cable 5 m & Mount kit7
GB	Z90-2011622	Gimbal Bracket for Control Panel

3 e-PROPULSION



Design assumptions (where to start when selecting the electric/ hybrid drive).

- At the initial design stage, the type and purpose of the vessel is determined – whether it will be a commercial or a leisure boat, a monohull or a catamaran. The availability of shore charging infrastructure may vary from one area to another and the distance between suitable locations may affect the determination of the boat's autonomy.
- The next step is a preliminary description of the hull characteristics and performance requirements.
- One of the key information about the boat and the capabilities of its hull, gives us a resistance curve showing the dependence of speed that the hull can achieve with the power supplied by the drive.
- With the data collected, we can estimate in advance what power the engine or main engines set should have and what capacity the drive battery bank should have.

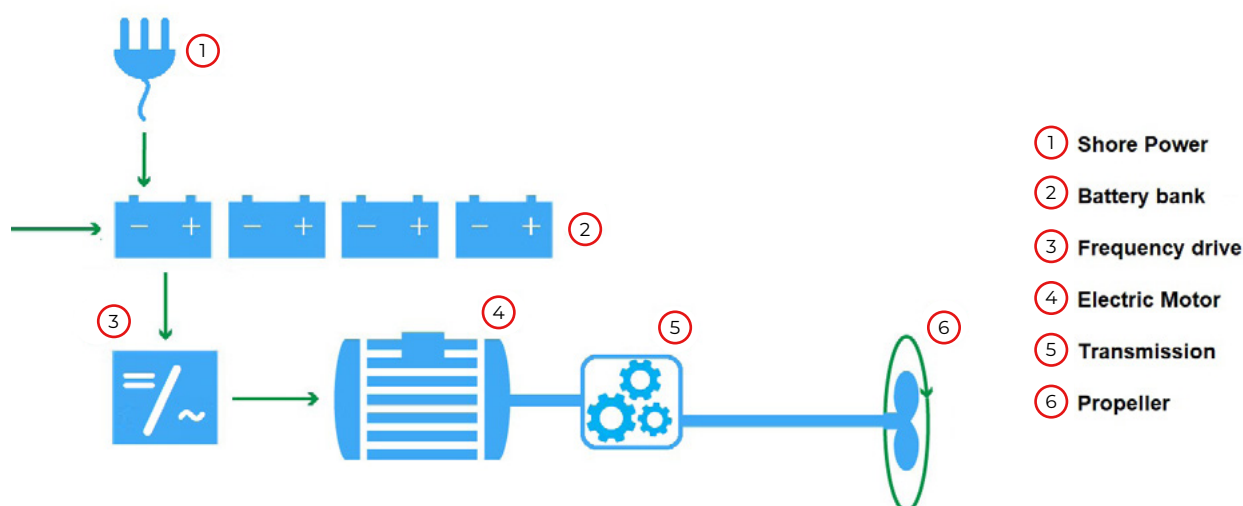
WHICH TYPE OF DRIVE WILL WORK FOR YOUR BOAT

ELECTRIC MOTOR DRIVE TYPES / VARIANTS

YOU WILL FIND
A SELECTION
FORM ON 67
PAGE.

Electric drive

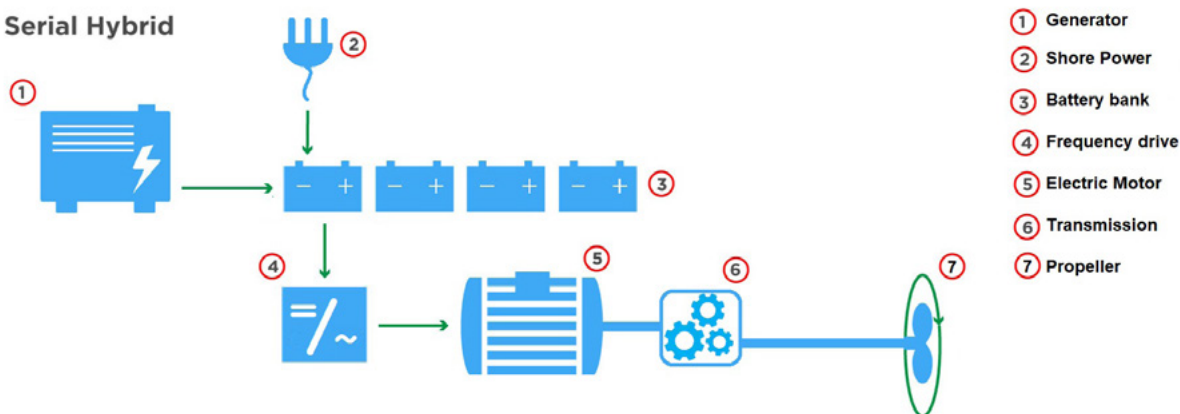
- The power delivered to the drive propeller is supplied from the **electric motor as the drive source**. The operation of a typical AC electric motor is managed by the motor controller, taking the DC current from the driving battery bank and transmitting it in appropriate parameters to the motor.
- The choice of the size and type of battery bank depends, among other things, on the required autonomy-the number of hours of sailing for different speeds, the available space and the permissible weight by which the vessel can be increased.
This is one of the main aspects of the project, and since it depends on many factors, an important part of the design stage is the cooperation of all parties to the project-the supplier, the shipyard, the shipowner, the designer.



Serial hybrid

- As in an electric drive system, an electric motor is responsible for driving the unit. The issue of autonomy of the unit, in addition to the size of the battery bank also **depends on the added generator**. In such a solution, it is possible to reduce the battery bank due to the additional charging source of the generator, and autonomy will be based in part on the capacity of the fuel tank of the generator.

Serial Hybrid

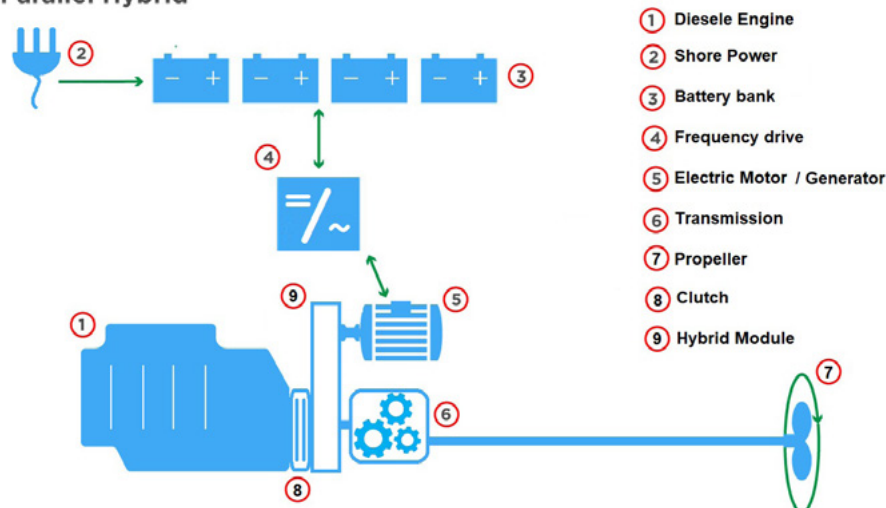


Parallel hybrid

- Hybrid parallel drive, as **the most advanced of the hybrid drive types**, combines the advantages of the internal combustion engine and electric using their advantages in the appropriate boating mode. An internal combustion engine is used for cruising and maximum speeds, with optimum operating ranges.

- For take-offs, low speeds and manoeuvres, the electric motor takes over the drive, after prior disengagement of the internal combustion engine. While the internal combustion engine is running, the electric motor can run in generator mode, recharging the drive battery bank. Depending on the application of the system, the electric motor can also be connected to maximum speeds, supporting the internal combustion engine. Parallel hybrid drives can be designed **for a newly built vessel**. It is also possible to **upgrade the internal combustion engine into a hybrid one**, after completing the project and adding an electric motor, battery bank and hybrid drive components.

Parallel Hybrid

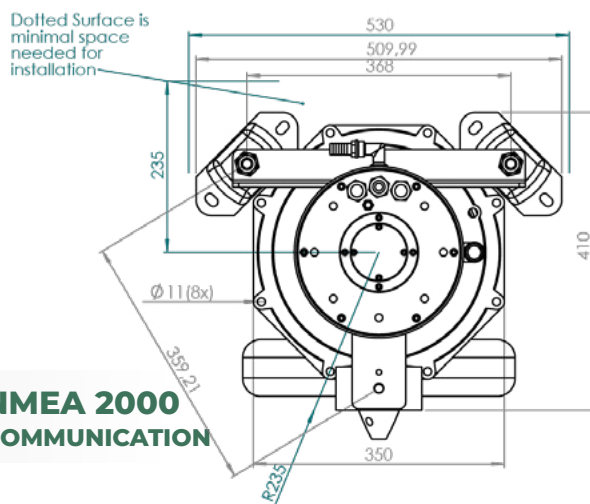


e-PROPULSION

In the world of electric drives **Bellmarine** is the standard. Bellmarine's asynchronous AC engines with permanent magnets are available in a wide range of drive type configurations:

- › Standard with straight shaft line
- › Sail Drive type
- › Outboard
- › Stern Drive type

and in modifications - modular with additional motor, motor with gearbox for increased shaft torque or Shaft-Master version - with gearbox, built-in thrust bearing and power take-off (PTO).



NMEA 2000 COMMUNICATION

- › The motors are available in water-cooled versions or, for lighter loads, air-cooled systems. They have protection class IP65.
- › All motors are designed for NMEA 2000 communication.

IP65 PROTECTION.

DriveMaster

- › Asynchronous AC electric motors with permanent magnets, high efficiency and **IP65 protection**.
- › DriveMaster series are stationary motors dedicated to drive systems with standard shaft lines. Available with water or air cooling in the power range from 2 - 50kW.

AC ELECTRIC MOTORS

PRODUCT CODE	DESCRIPTION	MOTOR SIZE	NOMINAL kW	INTERMITTENT kW	BATTERY Vdc	MOTOR rpm
B23-BV101608W	DriveMaster 3W	180-4	2.5	3	48	1500
B23-BV100854W	DriveMaster 7W	180-8	5	7	48	1500
B23-BV100808W	DriveMaster 10W	180-12	8	10	48	1500
B23-BV100810W	DriveMaster 15W	220-20	10	15	48	1500
B23-BV101610W	DriveMaster 20W EVO	220-20 (*)	15	20	48	1500
B23-BV100812W	DriveMaster 20W	220-20	15	20	96	1500
B23-BV101288W	DriveMaster 30W	220-35	25	30	144	1500
B23-BV101642W	DriveMaster 45W	300-50	35	45	144	1500
B23-BV101580W	DriveMaster 55W	300-75	45	55	144	1500

(*) Special

SternMaster

- Motors with permanent magnets in „Stern Drive” transmission - transom drive by Mercury manufacturer.
- Drives available with air or water cooling. Power range 20-100kW.

TRANSOM DRIVE



PRODUCT CODE	DESCRIPTION	MOTOR SIZE	NOMINAL kW	INTERMITTENT kW	BATTERY Vdc	MOTOR rpm
B23-BV330025W	SternMaster 25W	220-20	20	25	96	3000
B23-BV330035W	SternMaster 35W	220-20	30	35	144	3000
B23-BV330045W	SternMaster 45W	220-35	35	45	288	3000
B23-BV330065W	SternMaster 65W	300-50	50	65	288	3000
B23-BV330097W	SternMaster 97W	300-75	75	97	288	3000



SailMaster

- Motors with permanent magnets with a „Sail Drive” type of gearbox – leg by Yanmar.
- Available with air or liquid cooling. Ideal for sailing boats with the possibility of towing propeller regeneration.
- Available in power from 2 to 20kW.

SAIL DRIVE GEARBOX

PRODUCT CODE	DESCRIPTION	MOTOR SIZE	NOMINAL kW	INTERMITTENT kW	BATTERY Vdc	MOTOR rpm
B23-BV100881W	SailMaster 3W	180-4	2.5	3	48	1500
B23-BV100882W	SailMaster 7W	180-8	5	7	48	1500
B23-BV101474W	SailMaster 10W	180-12	8	10	48	1500
B23-BV101475W	SailMaster 15W	220-20	10	15	48	1500
B23-BV101955W	SailMaster 18W	180-12	12	18	96	3000
B23-BV101476W	SailMaster 25W	220-20	20	25	96	3000

Parallel hybrid Transfluid

HTM700

Split power
drive with SAE
B pto

Electric machine that can operate
as electric motor or electric
generator

Electric selector with
integrated Soft-Shift
ability

Forward-Reverse
Powershift marine
gear

SAE standard dry Clutch,
operated by solenoid
valve, to connect and
disconnect internal
combustion engine

Clutch actuation
solenoid valve

**LOWER
FUEL
CONSUMPTION**

HOW IT WORKS?

The input side is a hydraulic or pneumatic controlled clutch. When disengaged, the engine is disconnected from the rest of the driveline allowing the vehicle or vessel to be operated by the electric motor instead of the engine.

During engine operation, the clutch is engaged and the electric motor becomes a generator, recharging the batteries, if required. By operating the engine and electric motor at the same time, the "booster" operation is engaged, increasing the total available power to the driven machine.

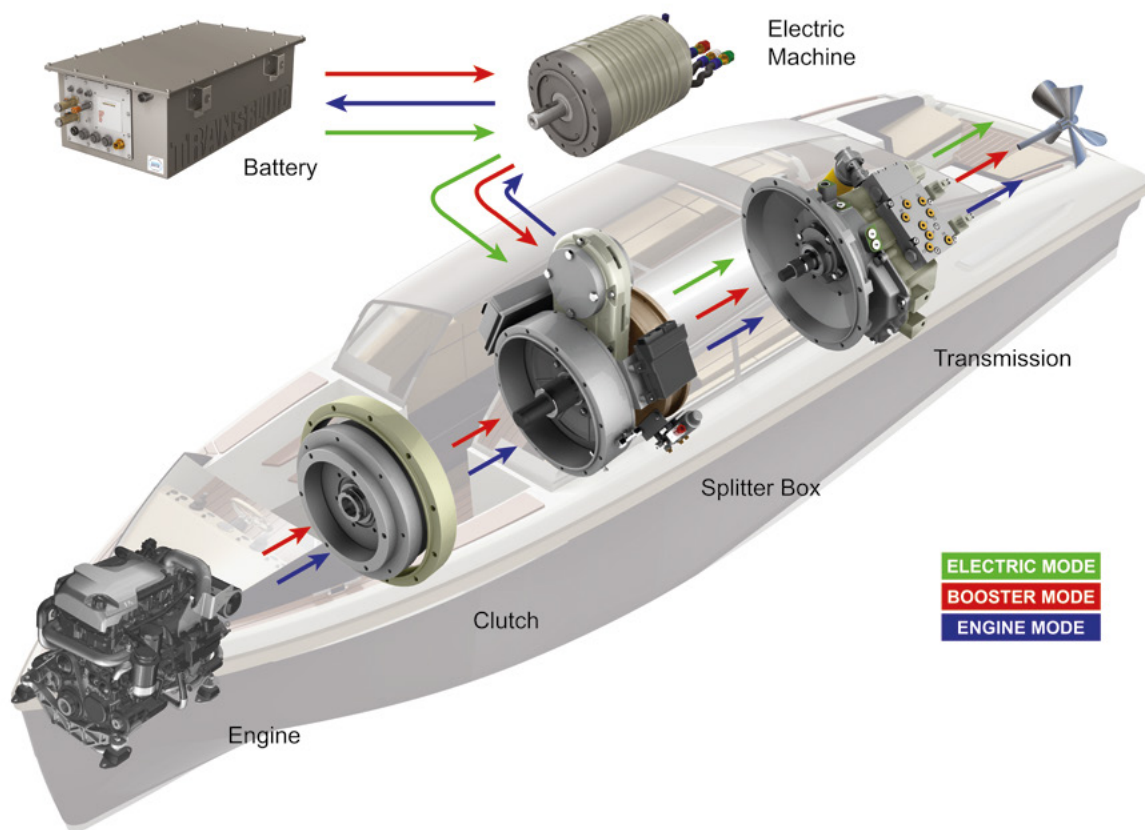
BATTERY SYSTEMS



HYBRID MODULES



WORKING SCHEME



WHY CHOOSE A HYBRID PROPULSION SYSTEM?

The hybrid system enables you to sail at normal cruising speed with a **traditional Diesel engine** as well as allowing you to sail in protected areas with **zero emissions** and in ports or marinas where silence and reduced pollution are well appreciated.

During inshore navigation the silent propulsion enhances enjoyment of the landscape and, when anchored there is no need to keep the engine running to use on-board facilities, thus avoiding disturbing the calm of the surroundings.

Hybrid navigation allows you to different uses: in the Electric mode you can sail at **low speeds without emissions**, while navigating on Diesel engine mode you can **fully exploit the power of the combustion engine**. And you can decide whether or not to insert the battery recharge mode by simply pushing a button on the control panel. The Booster option adds electric motor power output and not only when on full power but also in intermediate power output where it is possible to get the best out of the rotation speed of the Diesel engine while using the electric motor only for small accelerations or changes in speed.


FIND THE DIFFERENCE.

- › Compact system
- › Fuel consumption reduction
- › Less acoustic and atmospheric pollution

TRANSFLUID®
industrial & marine

EXAMPLE OF DESIGN ASSUMPTIONS FOR AN ELECTRIC DRIVE SYSTEM:

- The selection of the propulsion power of an electric motor, in a single configuration or a combined configuration of several motors, does not result only from theoretical calculated parameters. At the **design stage** of boats, yachts and ships the theoretical dependence of the power needed to achieve specific hull speeds is determined.
- Depending on the purpose of the boat and the requirements of the owner, it is possible to determine whether the boat needs an optimal engine in terms of size and power, operating consistently around the nominal parameters, or whether a power reserve and a large propulsion set are required.



**24V, 48V, 96V,
144V AND
UPWARDS
VOLTAGES**

The electric motor models from most manufacturers, as the power and size increases, run at higher and higher voltages respectively: 24V, 48V, 96V, 144V and upwards.

For this reason, deciding on the power we also determine the voltage level at which the motor model works. This is the first factor influencing the selection of the drive battery bank the “booster” operation is engaged, increasing the total available power to the driven machine.

For example, let's take a 15kW motor running at 96V. To make it work, the motor controller needs that voltage of the battery bank. Since the standard batteries from most manufacturers are 12V (12V, 12.8V, 13.2V - depending on the type of battery), for the example system, we would need 8 such **batteries in series**: $8 \times 12V = 96$.

A BATTERY BANK OF SUCH PARAMETERS WOULD ENABLE THE ELECTRIC MOTOR TO WORK.

Another factor determining the battery bank is its capacity ([Ah], [kWh]), which determines the autonomy, i.e., time of sailing. For this purpose, the batteries forming the battery bank are **connected in parallel**. Taking a 200Ah battery pack and the 96V system example described above, a 200Ah, 96V battery bank can be modularly enlarged by adding another 8 battery packs to give a 400Ah, 96V battery bank.

Enlarging the battery bank obviously affects the weight of the entire system and its cost. The design task is to optimize the system so that, with the selected parameters of the battery bank, the boat will be able to sail for the time specified in the design assumptions, without exceeding the allowable weight of the propulsion system and the planned budget.

So this is the stage where, in addition to choosing the parameters of the motor and battery bank, you have to choose the type of batteries used. This will have a significant impact on the weight, cost and performance of the entire system.



THE MAIN TYPES OF BATTERIES USED IN ELECTRIC DRIVES:

AGM

- Absorbed glass mat.
- Batteries ideally suited for all applications where high discharge currents are required: starter batteries, electric motor drive batteries, powering pump batteries, etc.
- They are characterized by high weight, low recommended discharge level, low price.

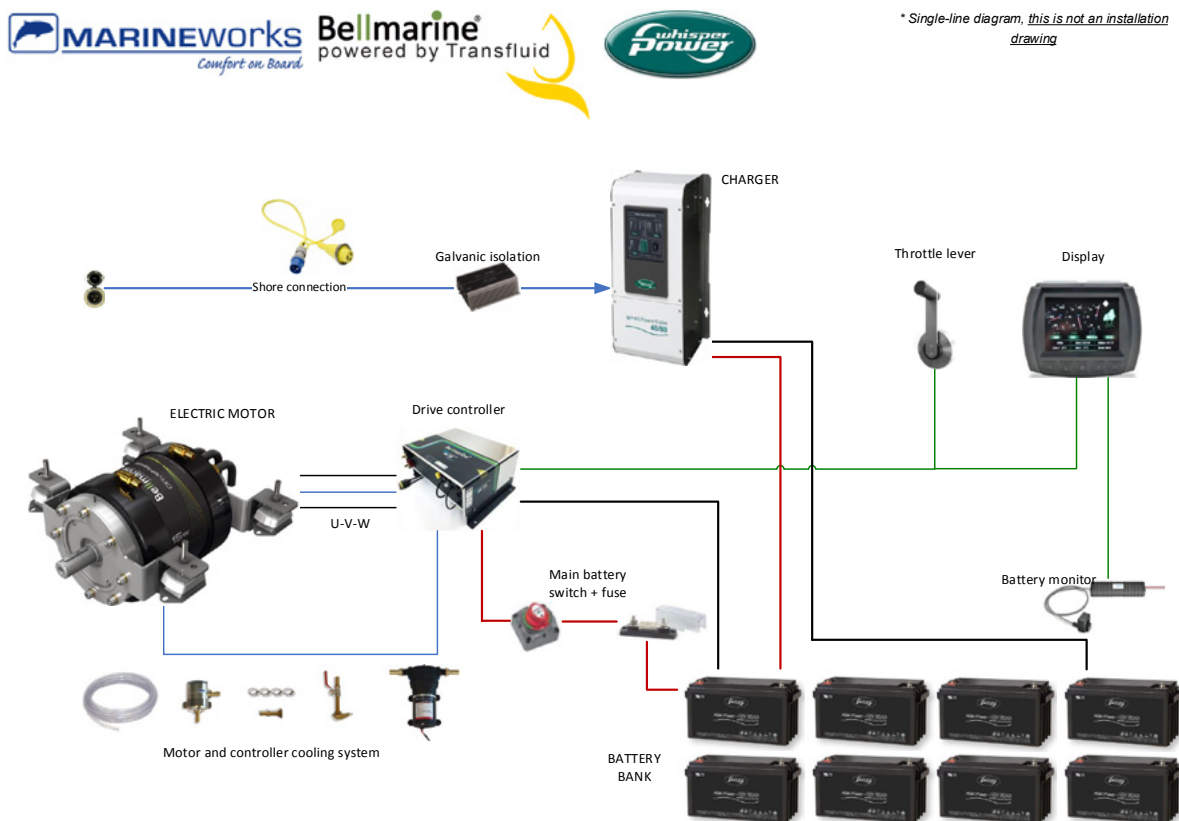
LiFeP04

- Battery type corresponding to a very wide use in various systems and applications. They are characterized by ~40% less weight compared to traditional batteries (acid, gel), deep discharged level, high energy density (~80%, where for AGM it is about 50%).
- Modern batteries of this type allow to work up to >2000 cycles (depending on the supplier and the use according to the guidelines, even above 3500 cycles), for AGM type batteries it is about 400-500 cycles. These and other numerous advantages are obviously worth the extra money, but comparing the aforementioned life span reduces the difference when spread out over years of use.

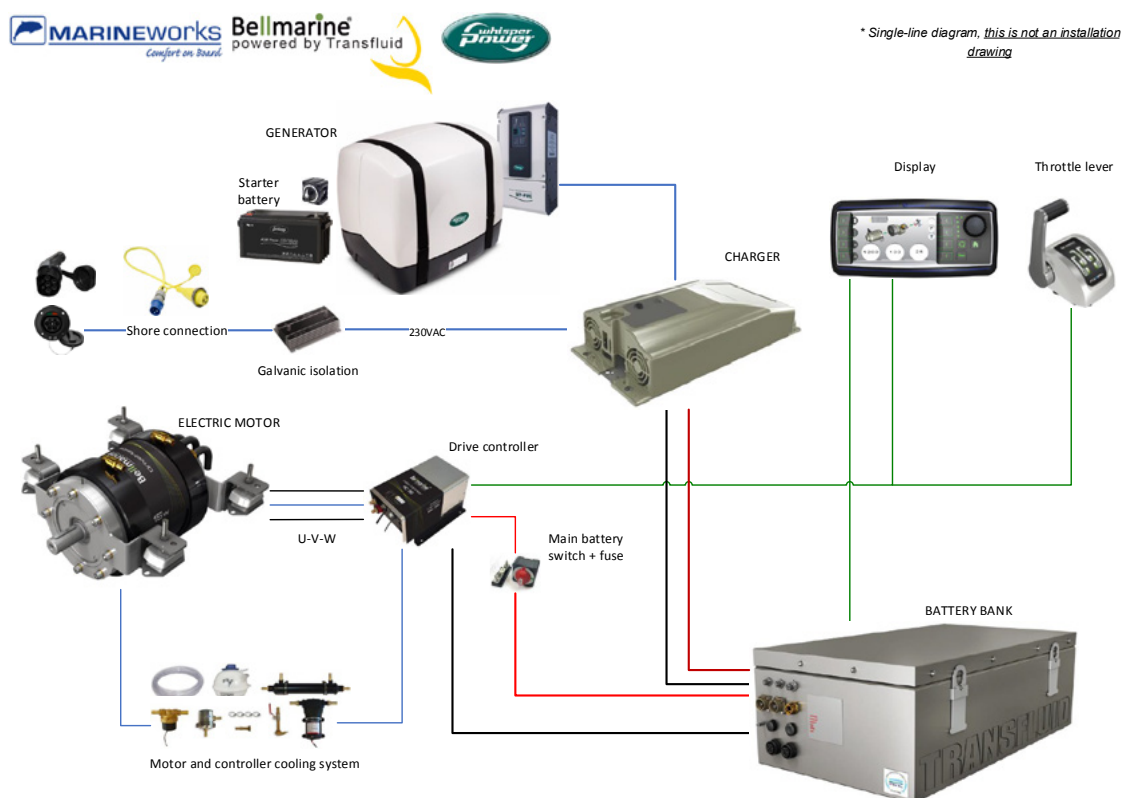
Example of series (1) and parallel (2) connection of a lithium-ion battery bank:



Example one-line diagram of electric drive system based on AGM type battery bank.

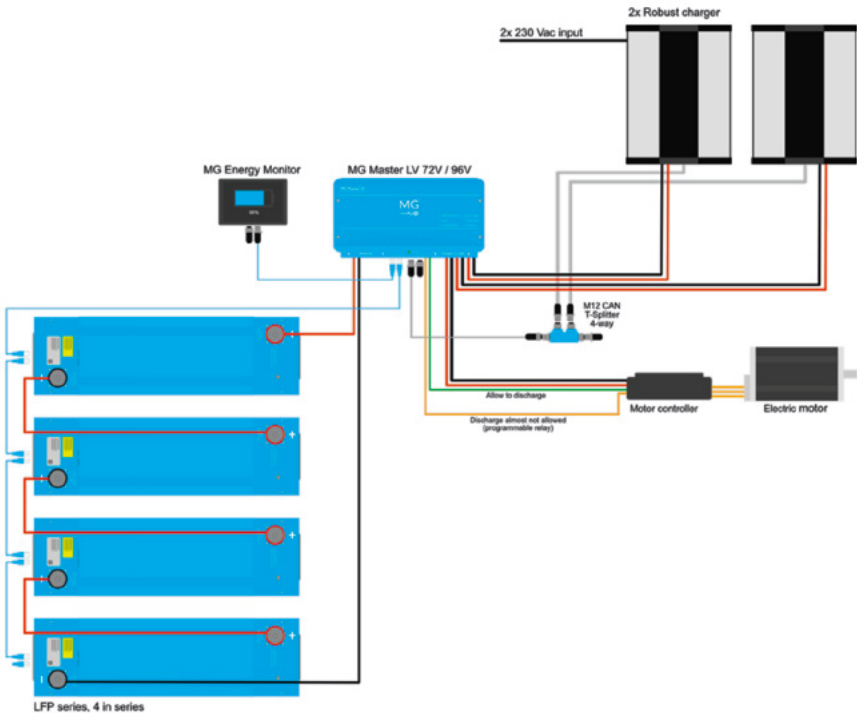


Example one-line diagram of serial hybrid drive system with LiFePO4 advanced battery bank

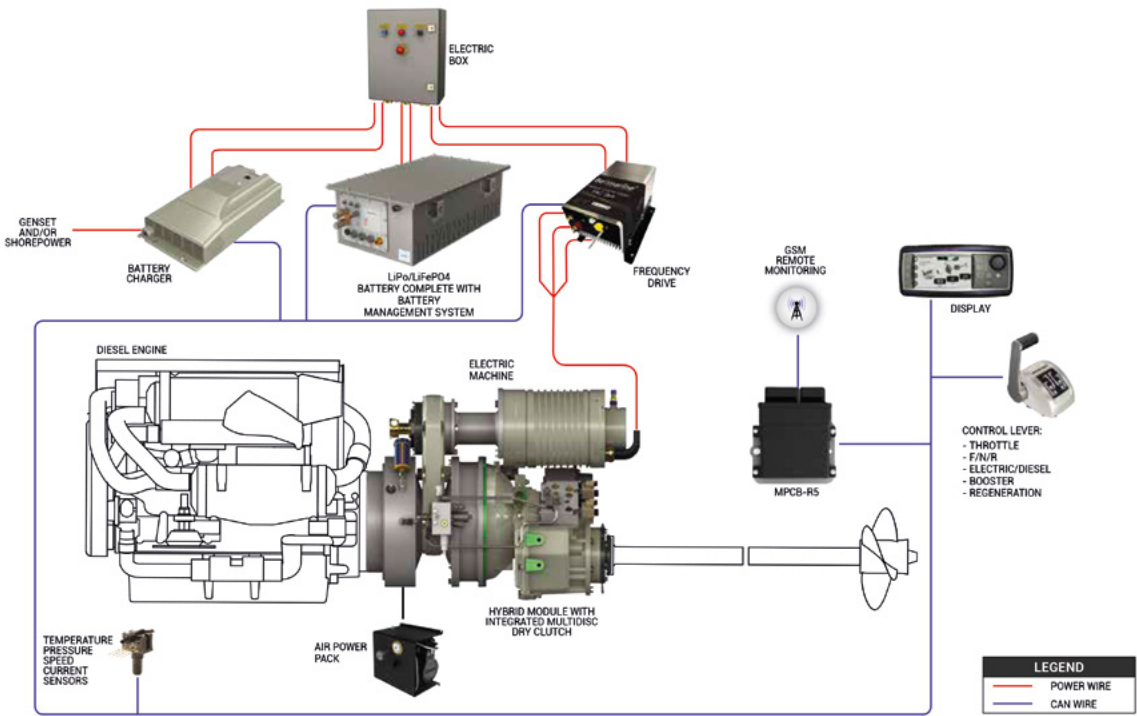


Example one-line diagram of electric drive system based on LiFePO4 battery bank.

96 Vdc system with RJ45 CAN-bus



Example one-line diagram of parallel hybrid drive.




MARINEworks
Comfort on Board
PROPULSION SELECTION FORM

CLIENT:		Contact person:	
EMAIL:		phone number:	
VESSEL NAME/PROJECT:		Place of construction:	
VESSEL TYPE:		Hull material:	
VESSEL APPLICATION:	(Commercial/ recreational)		
CLASSIFICATION SOCIETY:	(if needed)		
PROJECT ASSUMPTIONS			
Number of hulls:			
Cruising area:			
Required cruising speed:			
New drive or modernization			
Length overall:			
Displacement:			
Length on waterline:			
Draught:			
COMBUSTION DRIVE			
1.	Rated power:		
2.	Revolutions per minute - RPM:		
3.	Gearbox model/ transmission ratio:		
4.	Input vessel speed:		
ELECTRIC/ HYBRID DRIVE APPLICATION FORM			
1.	Power of existing combustion engine:		
2.	Required maximum velocity for combustion engine:		
3.	Required maximum velocity for an electric motor:		
4.	Required cruising velocity for an electric motor:		
5.	Required autonomy for electric motor:		
6.	Propeller dimensions:		
7.	Hull material:		
8.	Fresh or saltwater?		





SELDEN MASTS

are available in manual, electric and hydraulic versions.

SIMPLE.

Rolling it in is just as quick and easy.

SAFE.

You can set your sail to suit the weather conditions, from the safety of the cockpit.

EFFICIENT.

By furling the sail vertically into the mast, you don't have to furl very much to get a substantial decrease of the sail area.

WELL BALANCED.

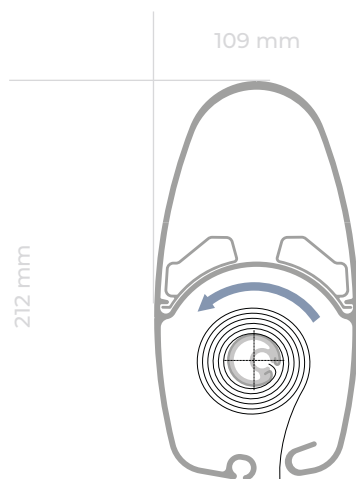
There are no fixed reef points, so the number of combinations between furling genoa and main are unlimited.





Furling masts for yachts.

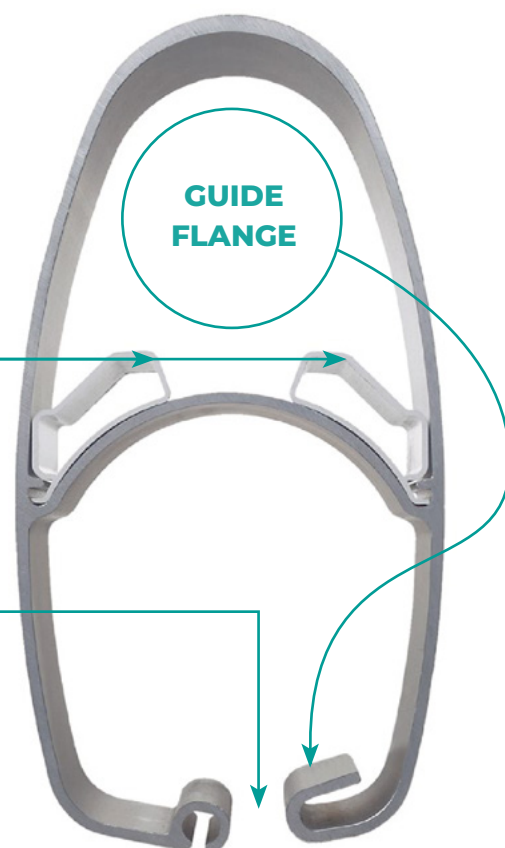
The Seldén furling principle. The wide sail slot allows for vertical battens and a positive roach of the main sail. The actual sail slot is placed asymmetrically to reduce furling resistance and to lead the sail straight on to the internal luff extrusion.



Cable conduits

The sail slot is wide and asymmetrically located to reduce friction between the mast and the sail

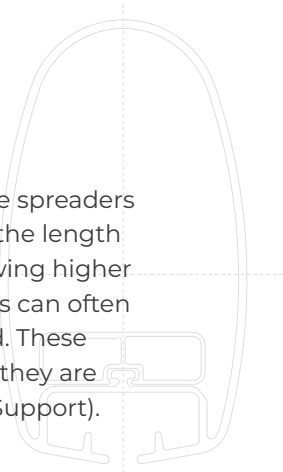
Cross-section of a Seldén furling mast.



Conventional masts for yachts.

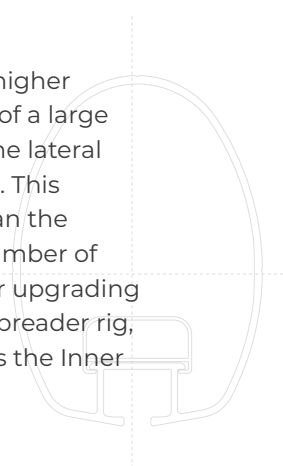
Longitudinal mast section

These sections are used for rig configurations with in-line spreaders or moderate spreader angles. The relationship between the length / width is 1,9 in order to create longitudinal stiffness allowing higher forestay load tensioning the backstay. Running backstays can often be avoided and the risk of mast pumping is also reduced. These rigs normally come with multiple pairs of spreaders and they are designed for the popular MDS sliders (Multi Directional Support).



Lateral mast section

For rigs with large spreader angles, lateral stiffness is of higher importance than longitudinal stiffness. This is the result of a large spreader angle creating longitudinal stability, whereas the lateral stability is achieved by the geometry of the mast section. This makes for a mast section which is wider and rounder than the corresponding longitudinal section and therefore the number of spreaders can be reduced. These sections are popular for upgrading a boat from the 1970-90's with a traditional style single spreader rig, but still with all the benefits of modern functions such as the Inner Wheel Sliders (IWS).

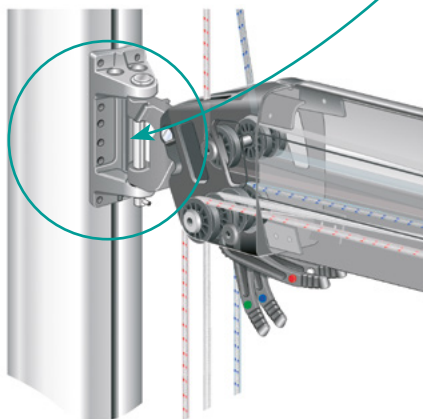


Booms with a strong profile.

Seldén booms have a wealth of sophisticated features and can be equipped with a variety of reefing systems to suit different boats and the needs of different sailors. The booms can be fitted for traditional slab reefing or Single Line Reef, or be used for furling masts. The boom extrusions are relatively deep in relation to their width, allowing a lighter extrusion with high resistance to vertical bending.

This makes them perfect for use with modern, stiff sailcloth and efficient Rodkicker rigid vang.

D-SHAPED HEAD OF CLEVIS PIN. SEE SPARE PARTS LIST FOR DETAILS.






Inboard end.

The inboard end fitting contains sheaves for reef lines and outhaul. Spring loaded rope stoppers can be fitted to the inboard end as option. Every stopper is colourcoded to match the relevant line. The clevis pin connecting the inboard end to the boom toggle has a D-shaped head in order to prevent rotation.

A perfect end.

The boom end is gently rounded. It is fastened with screws and is open at the back to facilitate maintenance and line replacement. It comes with a cast preventer bracket, a topping lift eye and numbered line compartments.

	Boom section	Dim.,mm height/widht	I_y cm ⁴	I_x cm ⁴	Wall thick-ness mm	Weight kg/m	W_y^{min} cm ³	W_x^{min} cm ³	Sail groove mm
	B087	86/60	60.2	27.7	2.0	1.55	13.4	9.3	5.5 ± 0.6
	B104	104/60	97.5	33.6	2.0	1.71	18.5	11.2	5.5 ± 0.6
	B120	120/62	155	42.5	1.8	2.12	24.8	13.7	5.5 ± 0.75
	B135	135/71	265	70	2.0-2.8	2.66	39	19.5	5.8 ± 0.75
	B153	153/86	438	132	2.5-2.9	3.60	55.2	30.8	10 ± 0.75
	B172	171/98	720	219	2.3-3.2	4.66	81.5	44.7	10 ± 0.75
	B199	199/122	1257	407	3.1	5.90	124.6	67.00	10 ± 0.75
	B250	250/140	2706	692	3.2	7.95	200.1	101.3	6.25 ± 0.75
	B290	290/155	5209	1524	4.1	11.50	339	196	10.25 ± 0.75
	B380	380/186	12030	3283	4.5-9.0	17.80	586	353	No groove



Seldén Sail Hardware

Outer Wheel Slider - OWS

Heavy to hoist the mainsail? Seldén Outer Wheel Sliders fit earlier models of Seldén sections and a large amount of other makes. The four wheels distribute the load from the battens evenly and simplify setting, reefing and dousing of your sail.

Seldén batten receptacles

Five models of batten receptacles covering boats up to 45'. The two bigger models, FA-22 and FA-30, are adjustable from both front and rear to allow easy adjustment of the batten.

Tracks & Travellers

Seldén's tracks and travellers are designed with the same passion for sailing and attention to detail that has become a hall mark for Seldén. The ability to easily adjust the position of a traveller contributes to efficient and pleasant sailing both for the racing sailor as well as for the sailor out there just for pure pleasure. You simply manage active sailing for a longer period of time, which naturally influence the boat speed in a positive way. Ergonomics and low friction are key words for these products.

ERGONOMIC AND LOW FRICTION

seamless interaction between the sailor and system.

The systems are available in four sizes 15, 22, 30 and 42. System size selection is determined by boat size.



SYSTEM 15
Dinghy

22'

SYSTEM 30
30'

45'

SYSTEM 22
20'

33'

SYSTEM 42
40'

65'



Furlex 50S

jib furling system for boats 18-26 ft

The Furlex 50S is the perfect choice for every sailor who wants a compact, low weight furling and reefing system. It shares many features with the larger members of the world-famous Furlex family. The patented load distributor in the halyard swivel and the full length distance tubes for smooth rotation are the same as on all the other Furlex models. Furlex 50S is supplied as a complete kit including forestay wire, halyard lead, stanchion block, pre-feeder and furling line.

Easy to order and easy to install.

FURLEX

Uniform cross-section of extrusion from head to tack for better performance of a reefed sail

Single groove extrusion for 5 mm luff tape

Firm, reliable fit

Stainless steel reinforcement in moulding

High quality, glass fibre/ polyamide composite

Stainless steel insert for low friction line management

Sta-lok® wire terminal for easy installation

Ball bearings and ball bearing rings in marine grade stainless steel

Stainless steel reinforcement in moulding

Dyneema® lashing

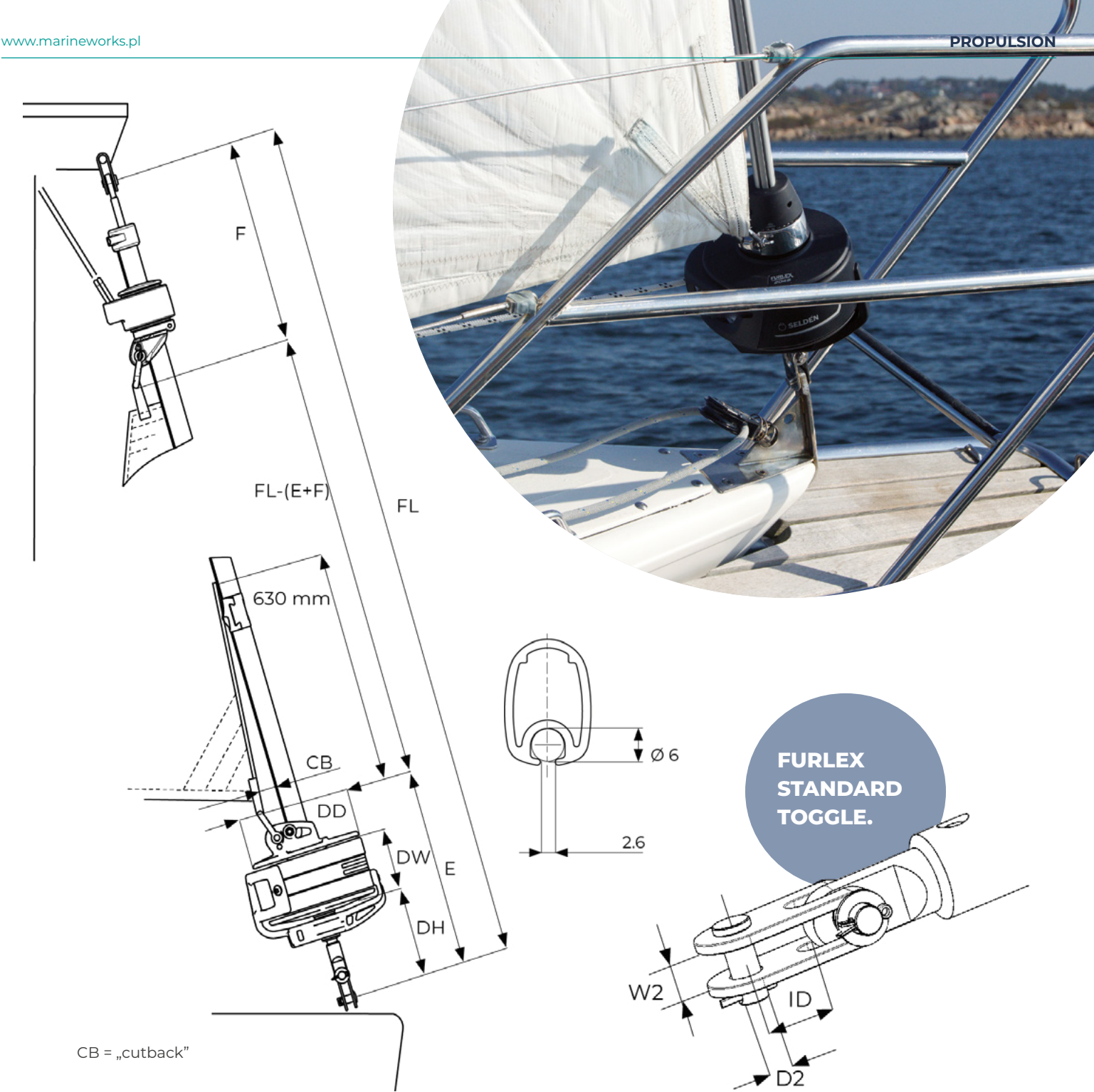
Patented load distributor for easy furling and long service life

Stainless steel sail feeder for smooth hoisting of sail

Composite sail feeder connector

Fork/fork toggle for proper forestay articulation

Halyard swivel in composite with stainless steel reinforcement. Low weight (230 g). Low friction due to the load distributor.



CB = „cutback”

FURLEX 50S DETAILED INFORMATION

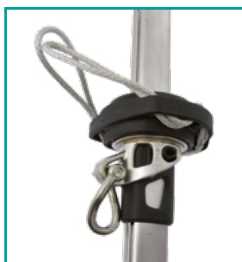
Forestay dia.mm	Max righting moment (kNm) at 30° heel		Approx. displacement, tonnes		DH mm	DW mm	DD mm	CB mm	E mm	F mm	ID mm	W2 mm	D2 Clevis pin mm Ø	Halyard sheave box Art. No.
	Masthead rig	Fractional rig(kNm)	Masthead rig	Fractional rig										
4	6.5	8	1.4	1.7	100	60	120	25	215	360	17	8.5	8	S79-505-004-10
5	8.5	11	1.8	2.5	100	60	120	25	215	360	19	11	10	S79-505-004-10

Forestay dia.mm	Max. forestay length, m	Weight kg	Furlex system Art. No.
4	7.7	7.4	S79-022-015-51
4	10.1	8.1	S79-022-015-52
5	7.7	7.9	S79-022-015-53
5	10.1	8.6	S79-022-015-54
5	12.5	9.7	S79-022-015-55

Furlex 104 S

For carefree sailing

The fourth generation of Furlex is an uncompromising evolution of the world's best selling jib furling and reefing system. Proven design blended with innovation is our way to maintain the iconic heritage of Furlex.



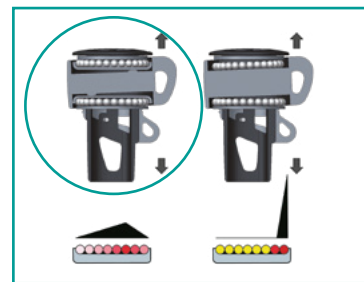
The halyard swivel for Furlex 104S and 404S features stain-less ball bearings. The load is centered by the attachment of the Dyneema® lashing.



The sail feeder is marine grade stainless steel. It is well rounded and kind to the sail.

The twin-groove luff extrusion and the split drum allow the racing sailor to convert the Furlex for racing. The cruising sailor can use the extrusion for 'wing on wing' downwind sailing with two genoas poled out to either side.

NEW Two sets of stainless ball bearings and one additional set of roller bearings for low friction and low lateral deflection.



The Seldén load distributor prevents... ..point loading!



Ball bearings and ball bearing races made from marine grade stainless steel. Seldén's patented load distributor for Furlex 204S and 304S makes for low furling resistance and durability. This concept was launched in 1983 and it still performs flawlessly today.

Tack swivel with a 'free-turn' and a uniform cross section of the luff extrusion make for a perfectly furled sail and effective performance even when reefed. It also reduces the effort needed to furl that first turn.

NEW The tack ring has a smaller diameter compared to previous models and the shackle is also smaller. This combination reduces the initial furling resistance.

NEW Greater utilisation of modern composite material means 8% overall weight reduction which improves the sailing performance.

Complete kit

Furlex	Forestay dia mm. Ø	Max. forestay length, mm	Complete kit including...		
			Standard Sta-lok-terminal Art. No.	Sta-lok terminal & rigging screw Art. No.	Stud terminal for swaging Art. No.
104S	4	8100	S79-030-020-51	S79-030-020-61	S79-030-020-91
		10500	S79-030-020-52	S79-030-020-62	S79-030-020-92
		12900	S79-030-020-55	S79-030-020-65	S79-030-020-95
	5	8100	S79-030-020-53	S79-030-020-63	S79-030-020-93
		10500	S79-030-020-54	S79-030-020-64	S79-030-020-94
		12900	S79-030-020-56	S79-030-020-66	S79-030-020-96
204S	6	10500	S79-030-020-56	S79-030-020-66	S79-030-020-96
		12900	S79-030-020-57	S79-030-020-67	S79-030-020-97
		15350	S79-035-025-51	S79-035-025-61	S79-035-025-91
	7	12950	S79-035-025-52	S79-035-025-62	S79-035-025-92
		15350	S79-035-025-53	S79-035-025-63	S79-035-025-93
		17750	S79-035-025-54	S79-035-025-64	S79-035-025-94
	8	15350	S79-035-025-55	S79-035-025-65	S79-035-025-95
		17750	S79-035-025-56	S79-035-025-66	S79-035-025-96
		20280	S79-035-025-57	S79-035-025-67	S79-035-025-97
304S	8	15450	S79-042-031-51	S79-042-031-61	S79-042-031-91
		17850	S79-042-031-52	S79-042-031-62	S79-042-031-92
		20280	S79-042-031-53	S79-042-031-63	S79-042-031-93
	10	15480	S79-042-031-54	S79-042-031-64	S79-042-031-94
		17880	S79-042-031-55	S79-042-031-65	S79-042-031-95
		20280	S79-042-031-55	S79-042-031-65	S79-042-031-95
404S	12	17700	S79-052-038-51	S79-052-038-61	S79-052-038-91
		20100	S79-052-038-52	S79-052-038-62	S79-052-038-92
		22500	S79-052-038-53	S79-052-038-63	S79-052-038-93
	14	20100	S79-052-038-54	S79-052-038-64	S79-052-038-94
		22500	S79-052-038-54	S79-052-038-64	S79-052-038-94
		22500	S79-052-038-55	S79-052-038-65	S79-052-038-95



COMPLETE KIT.

Basic kit

Furlex	Forestay dia mm. Ø	Max. forestay length, mm	Complete kit including...		
			Sta-lok terminal (Standard) Art. nr.	Sta-lok terminal & rigging screw Art. No.	Stud terminal for swaging Art. No.
104S	4	8100	S79-030-020-510	S79-030-020-610	S79-030-020-910
		10500	S79-030-020-520	S79-030-020-620	S79-030-020-920
		12900	S79-030-020-550	S79-030-020-650	S79-030-020-950
	5	8100	S79-030-020-530	S79-030-020-630	S79-030-020-930
		10500	S79-030-020-540	S79-030-020-640	S79-030-020-940
		12900	S79-030-020-550	S79-030-020-650	S79-030-020-950
204S	6	10500	S79-030-020-560	S79-030-020-660	S79-030-020-960
		12900	S79-030-020-570	S79-030-020-670	S79-030-020-970
		15350	S79-035-025-510	S79-035-025-610	S79-035-025-910
	7	12950	S79-035-025-520	S79-035-025-620	S79-035-025-920
		15350	S79-035-025-530	S79-035-025-630	S79-035-025-930
		17750	S79-035-025-540	S79-035-025-640	S79-035-025-940
	8	15350	S79-035-025-550	S79-035-025-650	S79-035-025-950
		17750	S79-035-025-560	S79-035-025-660	S79-035-025-960
		20280	S79-035-025-570	S79-035-025-670	S79-035-025-970
304S	8	15450	S79-042-031-510	S79-042-031-610	S79-042-031-910
		17850	S79-042-031-520	S79-042-031-620	S79-042-031-920
		20280	S79-042-031-530	S79-042-031-630	S79-042-031-930
	10	15480	S79-042-031-540	S79-042-031-640	S79-042-031-940
		17880	S79-042-031-540	S79-042-031-640	S79-042-031-940
		20280	S79-042-031-550	S79-042-031-650	S79-042-031-950
404S	12	17700	S79-052-038-510	S79-052-038-610	S79-052-038-910
		20100	S79-052-038-520	S79-052-038-620	S79-052-038-920
		22500	S79-052-038-530	S79-052-038-630	S79-052-038-930
	14	20100	S79-052-038-540	S79-052-038-640	S79-052-038-940
		22500	S79-052-038-540	S79-052-038-640	S79-052-038-940
		22500	S79-052-038-550	S79-052-038-650	S79-052-038-950



In the basic kit of Furlex, stanchion blocks, pre feeder, halyard lead and Torx bits have been excluded.

A stainless steel cover is available as an option. Art. No. 549-228-10 (204S), 549-328-10 (304S) and 549-428-10 (404S).

Gennaker and Code 0 Furling

Seldén GX drum and halyard swivel and an AT-cable is included in the kit. The drum and the halyard swivel are permanently fitted to the sail with the Seldén line lock. Connect the drum to the bow and the spinnaker halyard to the halyard swivel. Lead the furling line to the cockpit by using Seldén Double Fairleads on the stanchions, tighten the furling line and secure it in the Twin-Cam block. Thereafter hoist the furled sail.

Seldén GX	Kit including GX drum, halyard swivel and AT-Cable Art. No. 1+2+3	Max lenght of the system	Drum size, Ø mm	Dimension of included AT-cable, Ømm	Max suggested sail area m2Max suggested sail area m2	Max working load, kN
GX7.5	S79-545-018-24	10000	105	9	50	7.5
	S79-545-018-21	13000				
	S79-545-018-22	16000				
	S79-545-018-23	19000				
GX10	S79-545-118-21	13000	120	11	80	10
	S79-545-118-22	16000				
	S79-545-118-23	19000				
	S79-545-118-24	22000				
GX15	S79-545-218-21	16000	150	13	115	15
	S79-545-218-22	19000				
	S79-545-218-23	22000				
	S79-545-218-24	25000				
	S79-545-218-25	28000				
GX25	S79-545-418-21	19000	190	15	200	25
	S79-545-418-22	22000				
	S79-545-418-23	25000				
	S79-545-418-24	28000				



Selden CX, for Code 0

The AT-cable is integrated in the luff of the sail and thimbles connect the luff to the drum and to the halyard swivel. Special Cable clamps are required to fit the thimbles to the Seldén AT-cable. A dedicated halyard for Code 0 is required and 2:1 purchase is recommended to obtain the required luff tension and to reduce the load on the halyard sheave and on the line stoppers. The drum and the furling line can be permanently mounted to the bow and along the stanchions.

Seldén CX	Kit including drum and halyard swivel Art. No. 1+2	Drum size, Ø mm	Safe working load, kN	Max suggested sail area, m ²	Max RM at 30° heel, kNm	Approx. Displacement, tonnes
CX 10	S79-545-010-10	105	10	50	25	5
CX15	S79-545-100-10	120	15	80	45	7.7
CX25	S79-545-200-10	150	25	115	90	14
CX45	S79-545-433-10	190	45	200	200	28



Seldén CX, for top-down furling of an asymmetric spinnaker/gennaker

A Seldén CX drum is combined with a Free Tack Adapter and a GX halyard swivel, both of them with Seldén line lock. The furled sail with the Adapter is connected to the drum and the sail is hoisted with the spinnaker halyard. The drum and the furling line can be permanently mounted to the bow and along the stanchions.

Seldén CX	CX drum Art. No. 2	Kit including Free Tack Adapter & GX halyard swivel Art. No. 1+3	AT-cable Dimension, Ø mm	This combination equals...	Max suggested sail area, m ²
CX10	S79-545-010-11	S79-545-028-10	9	GX7.5	50
CX15	S79-545-100-11	S79-545-128-10	11	GX10	80
CX25	S79-545-200-11	S79-545-228-10	13	GX15	115
CX45	S79-545-433-11	S79-545-428-10	15	GX25	200



Seldén CX, for Code 0 & top-down furling of an asymmetric spinnaker/gennaker

A Seldén CX drum is combined with a Free Tack Adapter and a GX halyard swivel, both of them with Seldén line lock. The furled sail with the Adapter is connected to the drum and the sail is hoisted with the spinnaker halyard. The drum and the furling line can be permanently mounted to the bow and along the stanchions.

Seldén CX	CX drum and halyard swivel Art. No. 1+2	Adapter Art. No. 3	AT-cable Dimension, Ø mm	This combination equals...	Max suggested sail area of the gennaker, m ²
CX10	S79-545-010-10	S79-545-028-11	9	GX7.5	50
CX15	S79-545-100-10	S79-545-128-11	11	GX10	80
CX25	S79-545-200-10	S79-545-228-11	13	GX15	115
CX45	S79-545-433-10	S79-545-428-11	15	GX25	200



Furlex Electric

Furlex Electric is available as a complete kit or as an upgrade kit for an existing Furlex 200S, 300S, 204S and 304S series. The push-button function of a Furlex Electric makes pulling on the furling line a thing of the past.

Furlex

Electric is designed around a highly efficient 42V electric motor. A DC/DC converter (PSU, Power Supply Unit) is included and converts the boat's 12V or 24V to 42V which allows for thin cables to the motor unit, easy installation and a compact unit design.

Power is transmitted to a self-locking worm gear to rotate the luff extrusion at a max torque of 60Nm (204E) and 90Nm (304E). These high torque levels mean that you can always rely on being able to furl your foresail – even when the wind and sea are doing their worst.



Two speed function

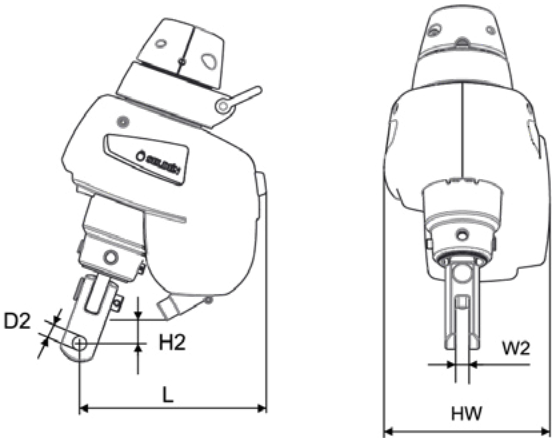
Press one button and you will run the sail, in or out, at low speed. To double the speed, press the other button simultaneously.

On-deck or through-deck. The choice is yours

Furlex Electric is available for either on-deck or through-deck installations. The main advantage of a through-deck installation is better sailing performance as a result of a longer luff length. More space on the foredeck is an added bonus!

Furlex Electric specifications

Type	Forestay diameter mm	L mm	HW mm	W2 mm	D2 diam. mm	H2 mm
204 E	6	180	175	12	10.5	-16
	7	180	175	14	12.5	-16
	8	183	175	14	14.5	-7
304 E	8	192	175	14	14.5	23
	10	191	175	16	16.5	21.5



Upgrade your manual Furlex

Push-button performance is an easy upgrade for anyone who already has a manual Furlex 200S, 300S or 400S series (production year 1997-2015) or the current models 204S, 304S or 404S on their yacht. The furling line, drum and line guard assembly are simply replaced with a Furlex Electric motor unit. No sail conversion is required as the luff length of your existing sail is unaffected.



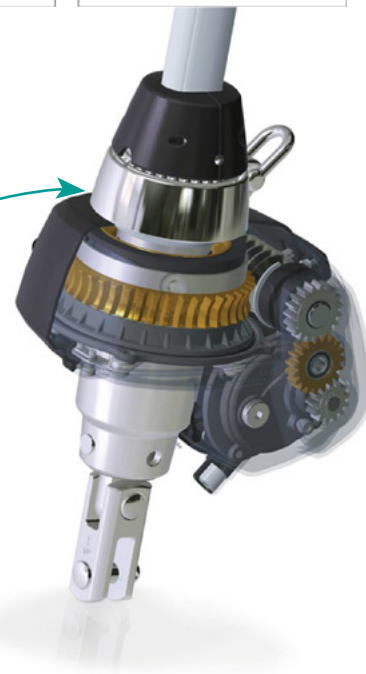
CONVERTING FURLEX 200S/400S TO FURLEX ELECTRIC



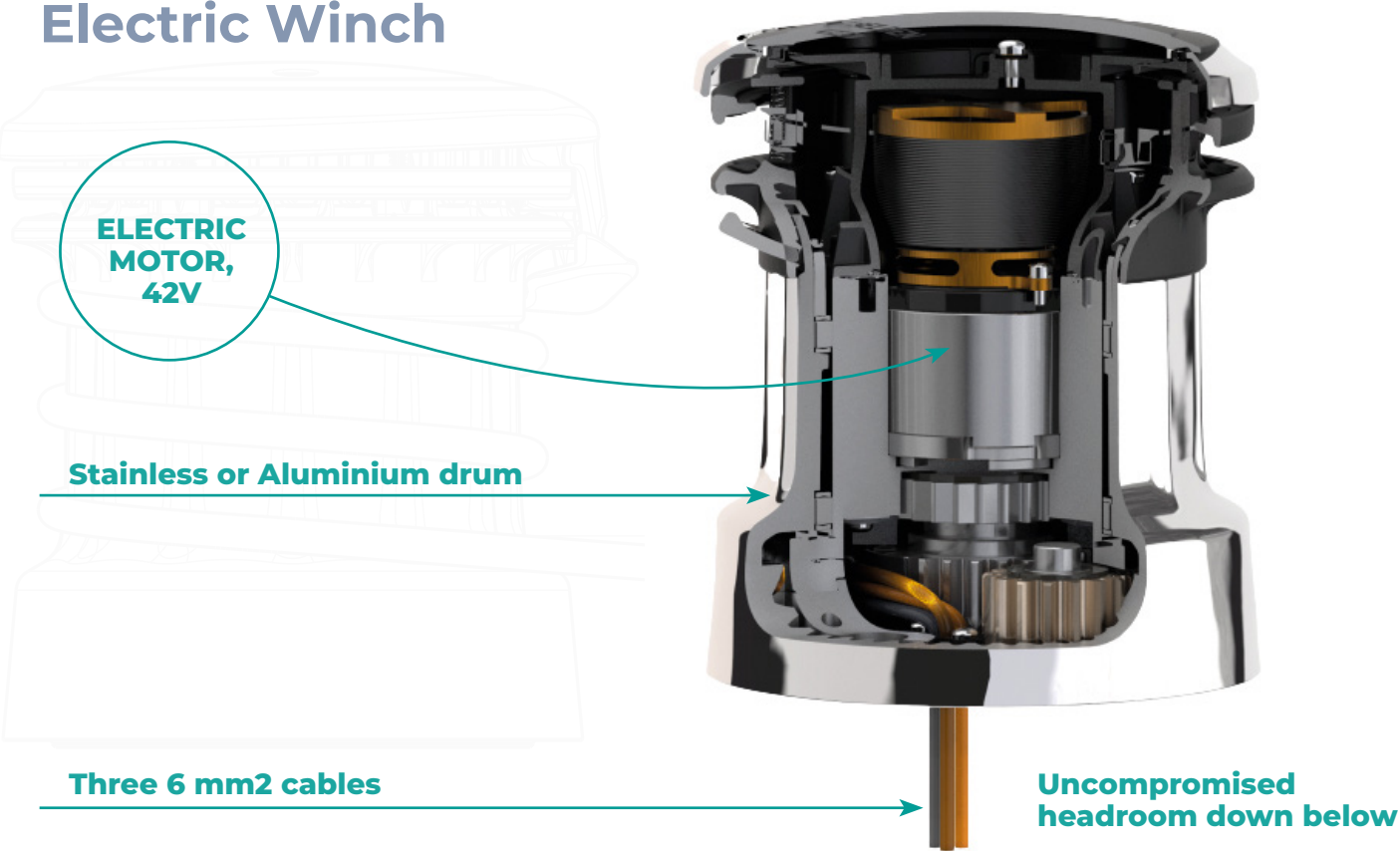
CONVERTING FURLEX 204S/404S TO FURLEX ELECTRIC



**TECHNICAL
SIDE**



Electric Winch



E40i

The easily placed electric winch

The coach roof is the normal place for a winch that operates halyards, reef lines, outhaul and control lines.

The E40i winch is built up around an electric motor which is totally integrated in the drum. Only three thin cables are protruding to lead through the coach roof or the deck, no large cutouts and no external motor or gearbox.

This makes for uncompromised headroom down below.

No sweat

Hoisting your main will no longer be a struggle. Self-tailing function and 3-speed operation makes E40i ideal for any line where you need the combination of speed and fine-tuning.



ART. NO.	E40i
S79-471-540-10	Stainless drum
S79-471-540-20	Aluminium drum



2-speed self-tailing winches.

The S-series simplifies the maneuver of tacking and makes the handling of a highly loaded sheet much safer and quicker. Nothing less than great grip and reliability in a light weight package.

The grip on the winch drum is exceptionally efficient and combined with a unique self-tailer it enables the trimmer to pull the slack out of the sheet with the line sitting in the self-tailer and with the winch handle mounted. A great advantage for the racing sailor who can pre-load the sheet into the self-tailer of the windward winch prior to tacking and then sheet home and set the trim of the jib instantly on the new tack. Simply pull in the slack and turn the handle a turn or two to get full tension.

The cruising sailor will appreciate simpler and safer maneuvers by not having to hold a tensioned sheet in the hand whilst trying to load it into the self-tailer and searching around for the winch handle.



THE DRUM



THE GROOVE



The groove of the self-tailer does not have the traditional wedge shape but is a round cavity encircling the line. A spring loaded disc provides just enough pressure to keep the line in place. The feeder arm is highly polished stainless steel.

The drum is hard anodised aluminium with concave surfaces that provide the extraordinary grip.

Art. No.	Description	Base diameter, (mm)	Weight (kg)	Line size (mm)	Poer ratio		Fasteners (Allen)*	10" Winch handle, Art. No.*
					High speed	Low speed		
S79-472-630-10	S30	150	3.2	8-12	10:1	30:1	5xM6	S79-533-927-20
S79-472-640-10	S40	150	3.2			40:1	5xM6	
S79-472-648-10	S48	188	5.1	10-14		48:1	5xM8	
S79-472-654-10	S54	188	5.1			54:1	5xM8	

Deck hardware Selden

Plain bearing blocks are typically used for heavy and static loads in:

- › Halyard tuning
- › Mainsheet systems
- › Boom vang

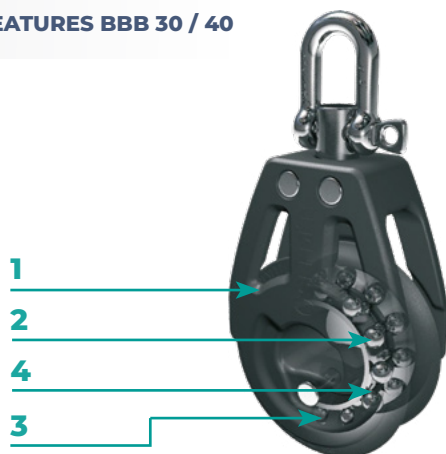
Available in 16, 20, 40, 50, 60, 70, 80 and 100 mm sheave diameters.

1. Bronze bushing (PBB 80)
2. Teflon bushing
3. Glass fibre reinforced sheave with Teflon bushing.

FEATURES PBB 70 /80



FEATURES BBB 30 / 40



Ball bearing blocks are used where the loads are more moderate and dynamic. The stainless steel ball bearings provide for good sheave rotation with the lowest possible friction. Available in 20, 30, 40 and 60 mm sheave diameters.

1. Cheeks with composite 50/50 glass fibre/polyamide
2. Stainless steel races
3. Acetal ball bearing cages
4. Stainless steel balls

Roller bearing blocks designed for high load dynamic applications such as backstay cascades, sheets, spinnaker systems and halyards. Low friction and low weight are the main characteristics for these blocks. Cheeks are of black anodised machined aluminium with Torlon® roller bearings. Delrin® bearings are used for axial loads. PA washer insulates stainless from aluminium to prevent corrosion. Available in 60 and 80 mm sheave diameters. The swivel pin is hollow and chamfered to reduce weight.

FEATURES RBB60



1. Designed for high load, dynamic applications.
2. Machined, black anodised aluminium cheeks and Torlon® roller bearings.
3. PA washer insulates stainless from aluminium to prevent corrosion.

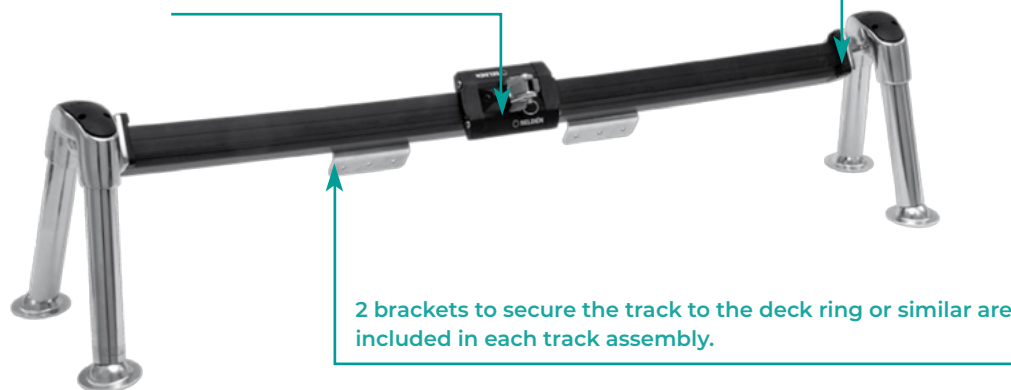
Self tacking JIB SYSTEM

22 30



End stops with rubber shock absorbers.

The cars run on Torlon® ball bearings.



2 brackets to secure the track to the deck ring or similar are included in each track assembly.

A self-tacking jib makes life on board a lot easier, in particular for shorthanded crews. The jib sheet is led to a car which moves to leeward during the tack with no need to touch the sheet. Tacking is as simple as steering the boat through the wind.

This retro-fit installation is designed for boats ranging from 30' to 45 feet'. A ball-joint allows for perfect alignment of the track and easy installation to the deck or coach side. The curvatures of the tracks are optimized to give a smooth travelling of the car all the way along the track without adjusting the sheet load. And to give a good alignment of the sheet load to the car and track.

30 mm High Beam tracks with a standard radius and standard length can be ordered from stock. Customized tracks, single bent or double bent can be ordered by submitting necessary measurements in enquiry form 595-952-E, available at www.seldenmast.com.

Track, car, consoles, deck fittings and blocks for the sheet arrangement makes a complete a system.

Ball-joint for adjustment of the track angle and console angle.

CUSTOM TRACKS

Seldén provide customized curved tracks in sizes 22, 30 and 42 mm on request. An enquiry form, 595-952-E, is available at www.seldenmast.com.



Stainless steel AISI 316 side consoles. Can be shortened if needed.





Bowsprits

An extendable gennaker bowsprit from Seldén makes gennaker sailing easier, more efficient and much more fun. You just slide the bowsprit out to its active position whenever you want. Then, when you douse your gennaker, you slide the bowsprit back and secure it to the aft pad eye. The inboard end of the bowsprit is fitted with a spring-loaded plunger for simple attachment to the pad eye. Choose between carbon fibre and aluminium models.

- › Unique end fittings
- › Gives the gennaker more clear air
- › Facilitates rapid gybing
- › Always on standby, ready for use
- › Easy to stow away
- › Sold as a kit
- › Can be fitted to most yachts



Bowsprit kits

	Description	Dimension (mm)	Art. No.
Aluminium	G072	Ø72/72 L=< 2080 mm	S79-072-072-70
	G075	Ø75/75 L=< 2230 mm	S79-075-075-70
	G087	Ø87/87 L=< 2270 mm	S79-087-087-70
	G099	Ø99/99 L=< 3160 mm	S79-099-099-70
Carbon	GC076	Ø76/76 L=< 3000 mm	S79-076-076-70
	GC088	Ø88/88 L=< 3000 mm	S79-088-088-70
	GC089	Ø89/89 L=< 3000 mm	S79-089-089-70
	GC100	Ø100/100 L=< 3000 mm	S79-100-100-70
	GC101	Ø101/101 L=< 3000 mm	S79-101-101-70

THE KIT INCLUDES:

- Aluminium or carbon bowsprit section
- Inboard end fitting with plunger
- Outboard end fitting
- 2 stainless steel pad eyes
- Instructions



MDS
45



The MDS full-batten concept.

LET'S THE BATTENS RUN FREELY.

Full support in all directions. As the name implies, Seldén's MDS (Multi-Directional Support) cars are supported in all directions, making sail handling simpler. A full batten always creates a side load on the cars, particularly when you release the halyard for taking a reef. Each car has side-load absorbing wheels that run against the guiding flanges in the luff groove. The interaction between the mast section and the MDS car deals with longitudinal loads, as well as side loads. This is the essence of the MDS concept. Since the cars need no external track, there is also less weight aloft.

The MDS system is a suitable complement to the Seldén Single Line Reef boom. With such a combination on board, you have a simple and easily manoeuvred system for handling the mainsail in all weathers.



MULTI-DIRECTIONAL SUPPORT



mds 45

Headboard assembly,
Art. No. S79-511-702-04



Full-batten car,
Art. No. S79- 511-702-03



Intermediate sail car,
Art. No. S79-511-702-02
Incl. bushing for
webbing,
Art. No. S79-511-719



MDS 68/68ALU

Headboard assembly,
Art. No. S79-511-701-04
Art. No. S79-511-717-06
(ALU)



Full-batten car,
Art. No. S79-511-701-03
Art. No. S79-511-717-03
(ALU)



Intermediate sail car,
Art. No. S79-511-701-02
Art. No. S79-511-717-02
(ALU)
Incl. bushing for webbing,
Art. No. S79-511-719



MDS 80/80 HD

Headboard assembly,
Art. No. S79-511-730-06
Art. No. S79-511-731-06
(HD)



Full-batten car,
Art. No. S79-511-730-03/511-
730-09
Art. No. S79-511-731-03/511-
731-09 (HD)



Intermediate sail car,
Art. No. S79-511-730-02
Art. No. S79-511-731-02
(HD)

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MARINEworks

Comfort on Board