

2013 / 2014



Whisperprop Hybrid Propulsion Systems



 **Fischer Panda**[®]
Power wherever you are



Whisperprop - The "Silent" Revolution

Hybrid by Fischer Panda

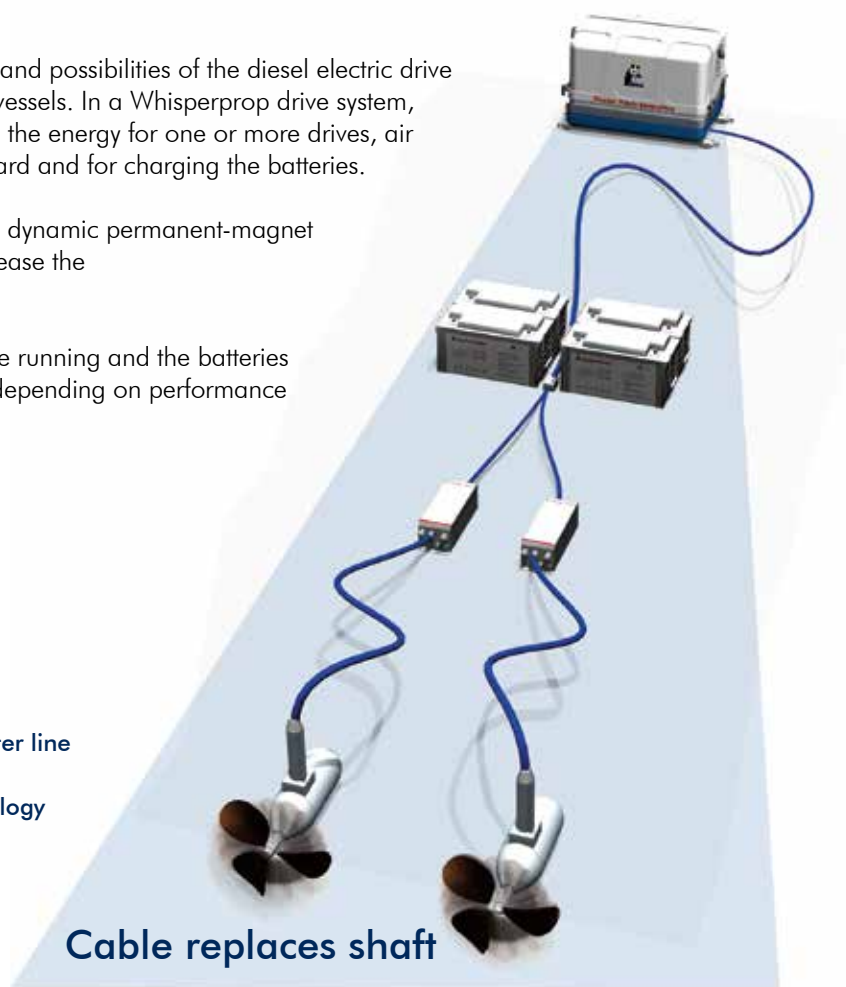
Fischer Panda has succeeded in bringing the advantages and possibilities of the diesel electric drive from large ships to smaller commercial and recreational vessels. In a Whisperprop drive system, a highly efficient Fischer Panda diesel generator produces the energy for one or more drives, air conditioning systems, additional power consumers on board and for charging the batteries.

The Whisperprop drives are constructed with modern and dynamic permanent-magnet motors. These provide higher thrust and substantially increase the manoeuvrability capabilities.

Fischer Panda's Hybrid Systems allow both the motor to be running and the batteries to be charged while sailing*. The systems are available, depending on performance required, with a voltage of 48V, 96V or 240V.

- Very quiet
- Greater thrust throughout entire speed range
- Improved manoeuvring capabilities
- One generator can power several drives
- Highly efficient onboard power system from same unit
- More design flexibility for layout
- Generator can be positioned mid-ship on the boat's center line
- Full steerage at all manoeuvring speeds
- Optimal performance using Advanced Generator Technology
- Multiple control stations possible
- Options for regeneration*

*) Regeneration options on request





Power - wherever you are

You will always have sufficient power with a Fischer Panda generator on board

- Generator systems from 3 kW to 200 kW
- Worldwide partners near you
- Very low vibration and quiet installations
- Up to 40% weight and 60% space savings possible
- Parallel operation with multiple generators
- Integration with ship's main control systems

Fischer Panda GmbH manufactures compact and quiet diesel generators for marine and vehicle applications. These are sold in over sixty countries worldwide under the trade name "Fischer Panda."

The water-cooled diesel generators from Fischer Panda are renowned worldwide for being innovative, reliable and extremely quiet. The product range includes over two hundred different generators and complete systems for performance requirements from 3 kW to 200 kW. Fischer Panda generators feature an effective water-cooling system and a lightweight compact construction. This ensures Fischer Panda generators are one of the leaders for mobile super-silent diesel generators. These highly-proven marine and vehicle generators supply power to on-board electrical systems, electric drives and complete mobile energy systems.

The company, based in Paderborn/Germany, was originally founded in 1977 under the name Icemaster GmbH and renamed to Fischer Panda GmbH in 2007.

Worldwide Distributors and Partners

Our worldwide distributors and partners are able to help you to choose the best generator for your requirements.





Service and Support

Service Kits

Fischer Panda Service Kits include only original spare parts which meet their required specifications. The Fischer Panda service kits are suited for the type of servicing normally carried out by workshops. Fischer Panda Service Plus Kits include only the original spare parts which meet their required specifications and all the relevant spare parts for the first 600 h service intervals. Service Plus kits are supplied in a handy waterproof plastic box so all the items are protected while storing until they are required.

The Fischer Panda Installation Guide can be downloaded from the company website at: <http://www.fischerpanda.de/installation>

Global Service Directory

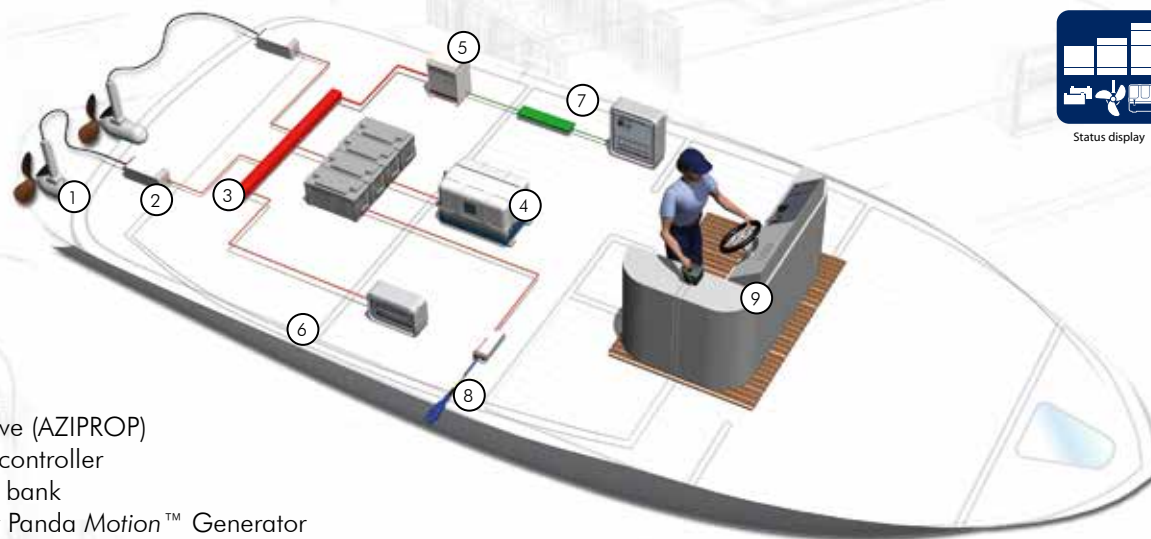
With a coordinated network of distributors, dealers and service stations, Fischer Panda has trained specialists and a worldwide dealer network ready to help, advise and recommend the best service station depending on your location, your vessel and the type of generator system installed onboard. They will also be able to organise and coordinate resources and spares (if required) so we can provide you with the best service - wherever you are.

The Global Service Directory can be downloaded from the company website at: <http://www.fischerpanda.de/globalservice>

Fischer Panda SOS-24/7 Hotline

In case of a generator failure or urgent inquiries of any kind outside our normal business hours you can ring the Fischer Panda switchboard on +49 5254 9202-767 (SOS on a key-operated telephone). Please leave your name, number and the purpose of your call on the answerphone/voice mail. This customer service is operated around the clock by employees at Fischer Panda.





- 1 DE-Drive (AZIPROP)
- 2 Motor controller
- 3 Battery bank
- 4 Fischer Panda Motion™ Generator
- 5 Inverter
- 6 12/24 V DC Bus
- 7 230V AC Power for electrical consumers
- 8 Shore power connection for battery charging
- 9 C³Cockpit and throttle

48V Hybrid Drive System with 10 kW (on the shaft)

The 48V drive system combines all the important components and displays these clearly on a 5,4" touch display. This drive system is the first step towards cruising comfortably in the future and taking the environment into consideration. The mechanical performance of the electric motor is 10 kW on the shaft.

Hybrid Drive

- Extremely quiet drive unit
- Fischer Panda Motion™ Generator for drive and onboard power - up to 10 kW mechanical performance per drive
- Highly efficient motor - up to 90%

Always sufficient energy

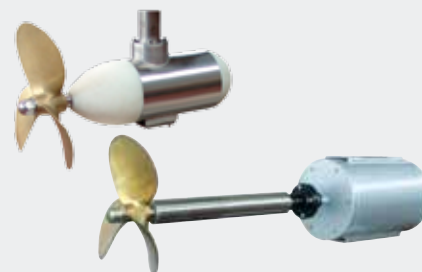
- There is always sufficient energy available for your appliances.
- Efficient battery charging is carried out even when covering shorter distances.
- AC power is supplied indirectly from the battery bank and the generator is not required to run continuously every time power is needed. This is the "silent AC power"- concept.

Advantages when using a shore power connection

- Even with a weak shore power connection, the MultiPlus can help to cover short peak AC loads by combining shore power with energy from the batteries.
- Regulation of the amount of power drawn from the shore power connection ensures safe charging and prevents land fuses from being tripped.
- Surplus energy from the shore power connection can be used to recharge the batteries.



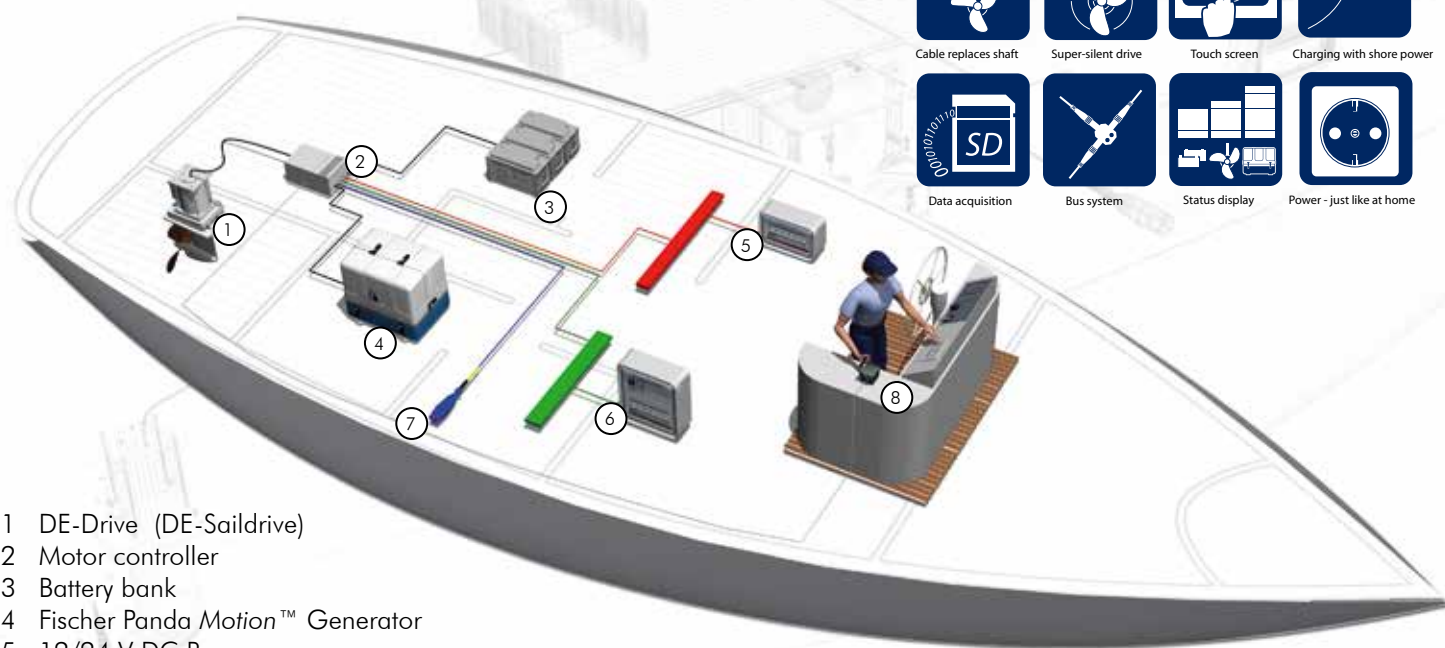
Super-silent Fischer Panda Motion™ Generator



3rd Generation Fischer Panda Drives



C³Cockpit - Touch Screen



- 1 DE-Drive (DE-Saildrive)
- 2 Motor controller
- 3 Battery bank
- 4 Fischer Panda Motion™ Generator
- 5 12/24 V DC Bus
- 6 AC Power for electrical consumers
- 7 Shore power connection
- 8 C³Cockpit and throttle

96V/240V Hybrid Drive Systems with 10-50 kW (on the shaft)

The HybridDriveSystem is designed as an environmentally conscious system while providing a high degree of comfort. All operating data is displayed on the C³Cockpit. This motor controller is an “all-in-one” solution. This can operate a single motor or even independently control two separate motors. The controller is also responsible for the supply to the 24 V DC system and functions both as battery charger and inverter for power on board.

Hybrid Drive

- Extremely quiet drive unit
- One Fischer Panda Motion™ Generator for drive and onboard power 10 - 50 kW mechanical performance per drive
- Highly efficient motors up to 96%

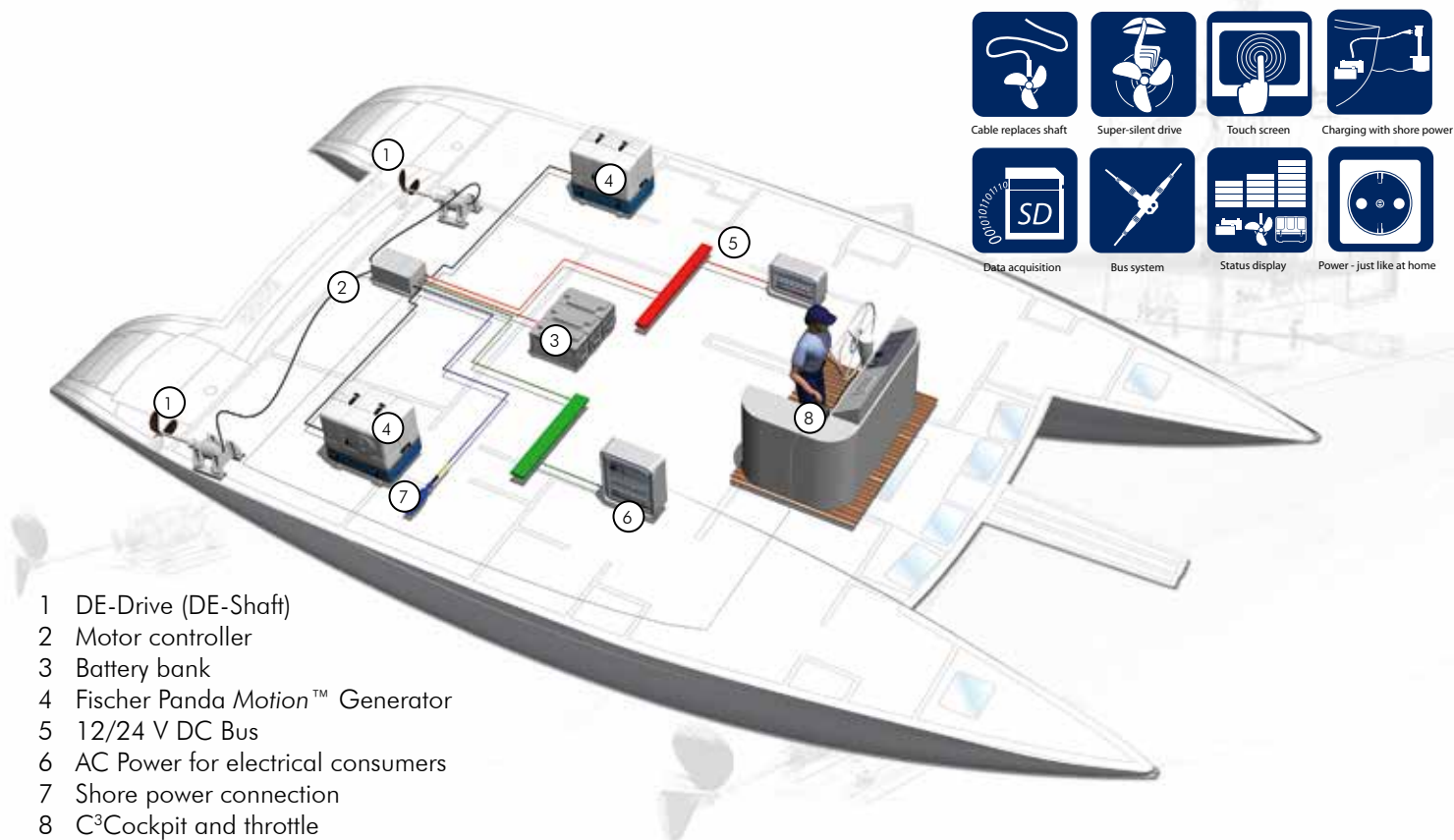
Always sufficient energy

- Integrated battery charger inside Motor Control Unit - an additional inverter is not required
- Use of domestic appliances such as heaters, ovens, hair dryers, vacuum cleaners, coffee machines and boilers for longer periods or even simultaneously. There is always sufficient power so you do not need to return to shore or start the ship's main engine. This allows you to enjoy longer trips.

Complete System

- Single display (C³Cockpit) for generator & drive. Displays service intervals, generator, motor and cooling system information etc.
- Energy from multiple sources (generator, battery bank or shore power)
- Easily starts powerful consumers which require high starting power such as air conditioning units and dive compressors.





Hybrid Drive Systems for Catamarans & Trimarans

The HybridDriveSystem is designed as an environmentally conscious system while providing a high degree of comfort. All operating data is displayed on the C³Cockpit. The motor controller is an "all-in-one" solution with battery charging and functioning as an inverter for power on board.

The advantages of two generators on board multi-hull vessels allow optimal weight distribution and fuel savings when cruising at lower speeds. The installation of a single generator in the centre is also possible.

Hybrid Drive

- Extremely quiet drive unit
- One generator for drive and onboard power 10 - 50kW mechanical performance per drive
- Highly efficient motors up to 96%

Always sufficient energy

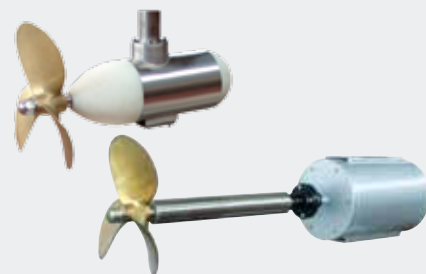
- Integrated battery charger inside motor controller - an additional inverter is not required
- Use of domestic appliances such as heaters, ovens, hair dryers, vacuum cleaners, coffee machines and boilers for longer periods or even simultaneously.
- There is always sufficient power so you do not need to return to shore just to recharge the batteries. This allows you to enjoy longer trips.

Advantages of two smaller generators

- Less consumption at lower speeds - a smaller generator efficiently covers lower energy requirements
- Optimal weight distribution with multi-hulls
- Very flexible - when not enough room for a single larger generator is available



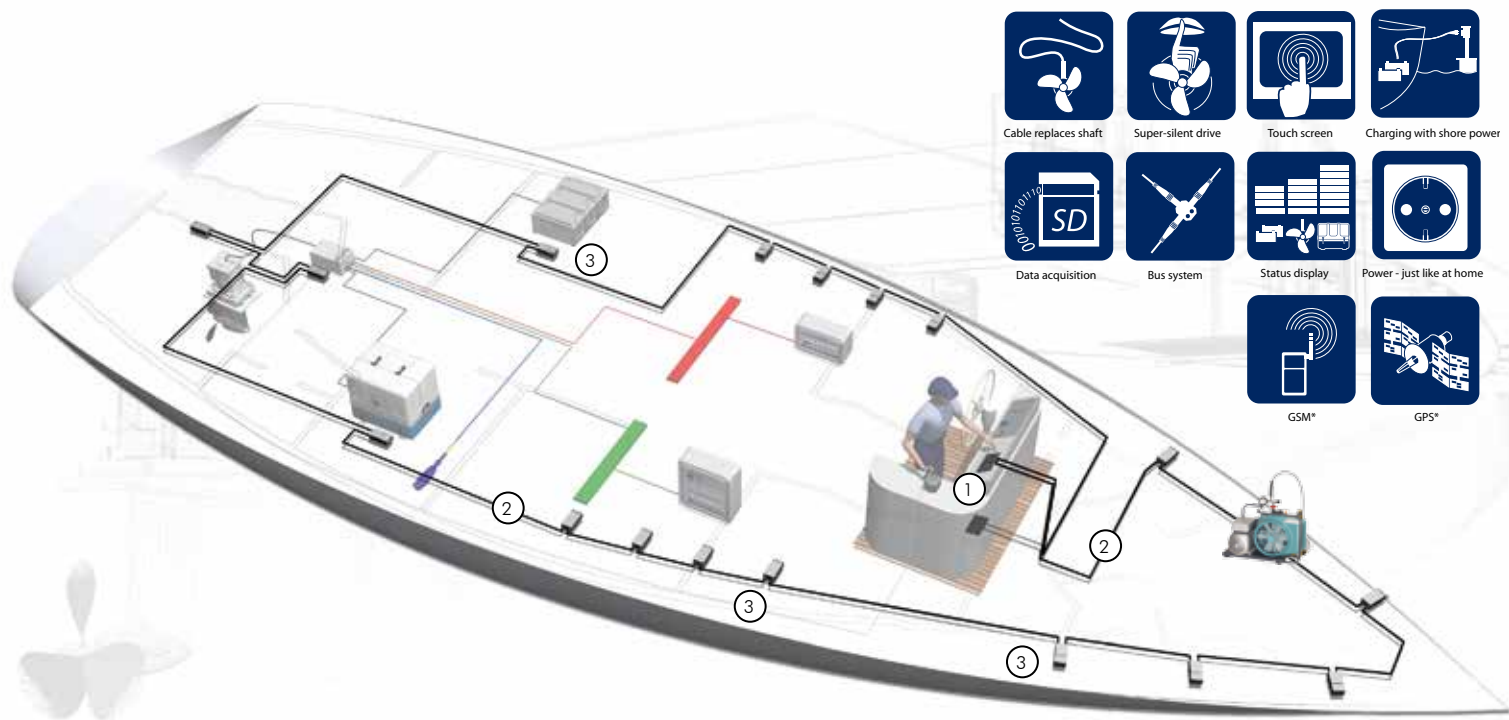
Complete Hybrid-Energy System



3rd Generation Fischer Panda Drives



C³Cockpit - Touch Screen
Command Control & Communication



- 1 C³Cockpit
- 2 Bus System
- 3 Sensors

C³Cockpit with Bus System

The new innovative Fischer Panda HybridDriveSystem combines a 3rd generation diesel-electric drive system with a fully integrated onboard power system. Central to this is the new Fischer Panda C3Cockpit. This provides the skipper with everything needed to control and manage power requirements on board.

Command, Control and Communication are the key elements behind the new C3Cockpit. All components are connected via a bus system so that they communicate by sending and receiving signals for further processing with each other. The status, parameters and values of all connected components such as drive system, controllers, generator, onboard power devices and batteries are displayed giving the skipper full control. The skipper has full command – he can change parameters and switch devices.

Hybrid Drive

- More comfort on board
- 10-50 kW drive performance on the shaft available (with fully charged batteries)
- Quiet, efficient and environmentally conscious operation

Complete System

- C³Cockpit to control and monitor all components
- Easy to operate touch screen
- Status monitoring for safer operation

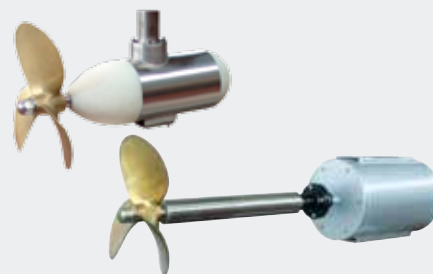
Always sufficient energy

- Intelligent distribution of energy from multiple sources: Generator, battery bank and shore power

*) GPS/GSM Options on request



Complete Hybrid-Energy System



3rd Generation Fischer Panda Drives



C³Cockpit - Touch Screen
Command Control & Communication



eMove Drive System

The rotatable drive system solution

The complete motor mounting with rudder control (eMove) is available for installing with 10kW 48V drive systems. The eMove Autopilot (optional) is suited for motor and sailing yachts. It can also be combined with symmetrical-hydraulic systems. Positioning data received by the GPS module is compared with the rudder position. A desired course can be automatically maintained by the touch of a button on the C³Cockpit.

All information is gathered centrally and seamlessly integrated so additional displays and switches are no longer required. The actuating arm is driven by a spindle that can deliver a force of up to 600N. This is more than adequate for operating in strong wind conditions.

eMotor Mounting

- Can be combined with a second eMove motor and control stand
- Integrated heat exchanger for motor cooling
- Adjustable from 0 to 10° to compensate for hull's form (angle from stern)

Safety

- Synchronous operation - for increased system safety
- System can be operated manually using mechanical switches in an emergency
- Redundant bus-communication setup provides high operational safeguards

Components - Options:

- Propeller Nozzle: to prevent propeller 'walk' effect and greater thrust
- Protection for the propeller and for an improved rudder efficiency
- Cruise control: automatic course holding and speed



eMove Motor Mounting with Rudder Control



C³Cockpit - Touch Screen Command Control & Communication



Joystick und Joystick Module



Configure your 48V / 10kW Drive System in 6 Steps

1



Drive System Package

Select a single or dual drive setup with either shaft (DE-Shaft) or AZIPROP motors.

Page 12-13

2



E-Move

Individual mounting with electronic steering for podded AZIPROP motors. Versions available for glass fibre, aluminium and wooden hulls.

Page 14-15

3



System Cooling

Standard cooling systems for Whisper-prop drive systems. Single circuit, keel cooling and dual circuit cooling.

Page 16-17

4



Generator

Specially designed Fischer Panda Motion Generators for extended cruising and charging when shore power is not available.

Page 18-19

5



Battery Monitoring

Enhanced battery monitoring via bus system. Monitoring individual batteries / cells within single or multiple banks.

Page 20

6



Second Control Stand

Additional components for installing a second throttle on another control stand such as on the flybridge.

Page 21



1 Electric Drives

Drive Systems	
1 x 10kW	2 x 10kW
	
Qty.	Qty.

Complete package incl. all control elements (excluding propeller)

Aziprop-Motor Base Kit*:	16.05.01.001S	16.05.01.003S
10kW* Aziprop-Motor @1200 rpm	1	2
Motor control unit, water-cooled	1	2
MC48-12 Connection board	1	2
U/I-module for board signals	1	1
5,4" touch panel monochrome	1	1
DC-box for signal control	1	1
Throttle (single) chrome	1	-
Throttle (double) chrome	-	1
Throttle module incl. bus connector	1	1

Fischer Panda Kort-Nozzle	21.20.01.026H	21.20.01.026H
1 Kort nozzle incl. propeller 14x13	1	2

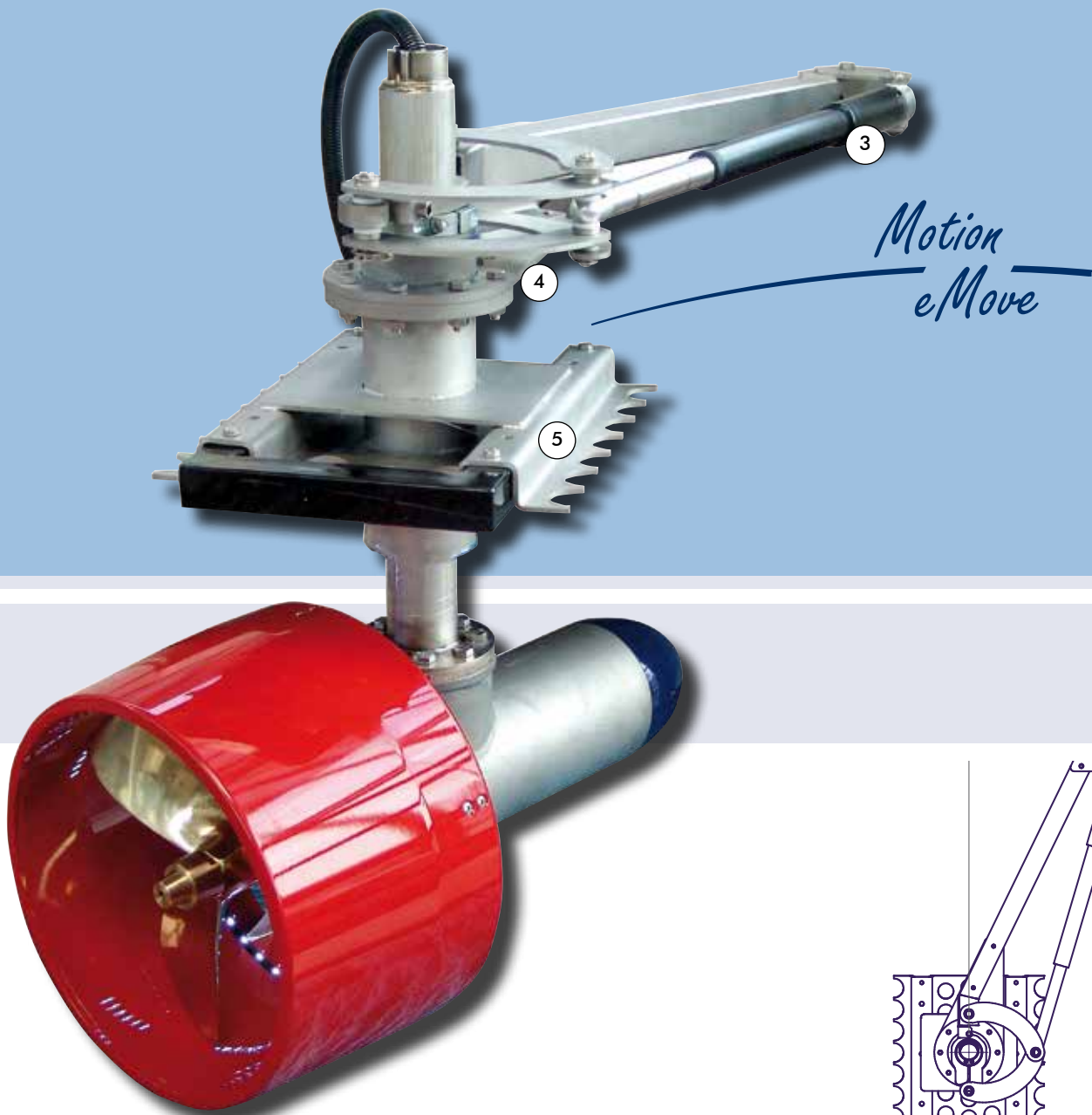


Drive Systems	
1 x 10kW	2 x 10kW
	
Qty.	Qty.

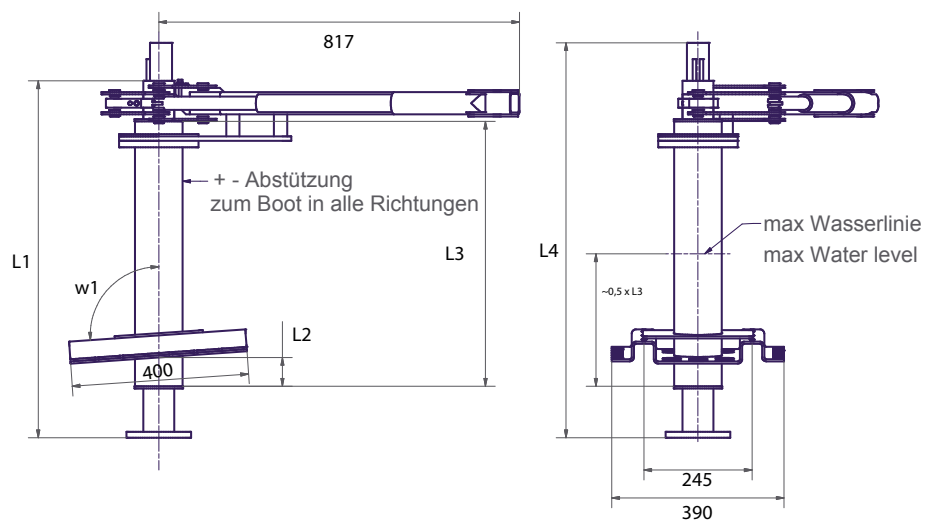
Item Description		
Complete package incl. all control elements (excluding propeller)		
Shaft-Motor Base Kit*:	16.05.02.001S	16.05.02.003S
10 kW* Shaft-Motor @1200 rpm	1	2
Motor control unit, water-cooled	1	2
MC48-12 Connection board	1	2
U/I-module for board signals	1	1
5,4" touch panel monochrome	1	1
DC-box for signal control	1	1
Throttle (single) chrome	1	-
Throttle (double) chrome	-	1
Throttle module incl. bus connector	1	1

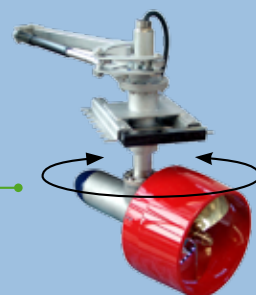
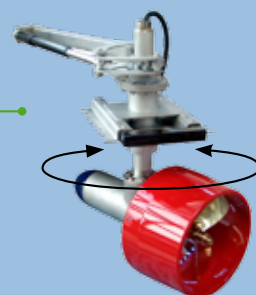
* Mechanical performance on the shaft

2 Rotatable E-Move and Mounting



The lengths L1 - L4 and the angle W1 are set individually according to the hull. The height of the waterline is also required.





*Two drives are automatically synchronised. One joystick / steering wheel can be used to control up to two drives (E-Moves) in synchronous.

Drive Systems

48V Aziprop-Motor

1 x
10kW



2 x
10kW



Qty.

Qty.

Item Description

E-Move complete:

21.03.20.031S

21.03.20.032S

1 Joystick

1

1*

2 E-Move module with housing

1

2

3 Con 50 actuator

1

2

4 Mounting post with cooling

1

2

5 Installation mounting:*

1

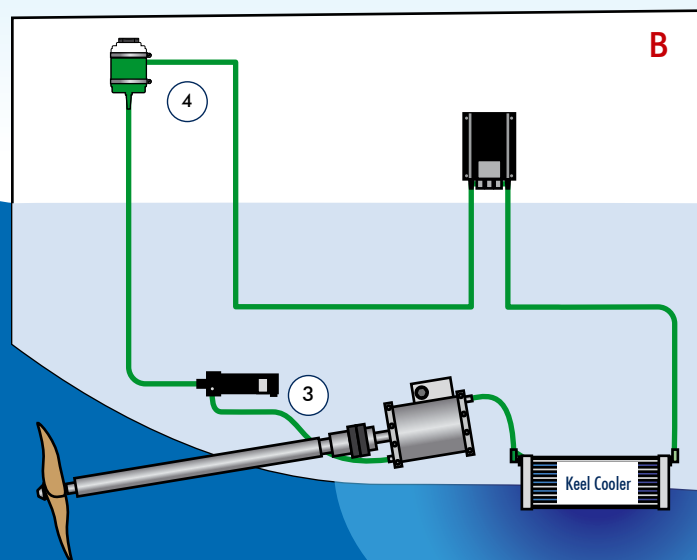
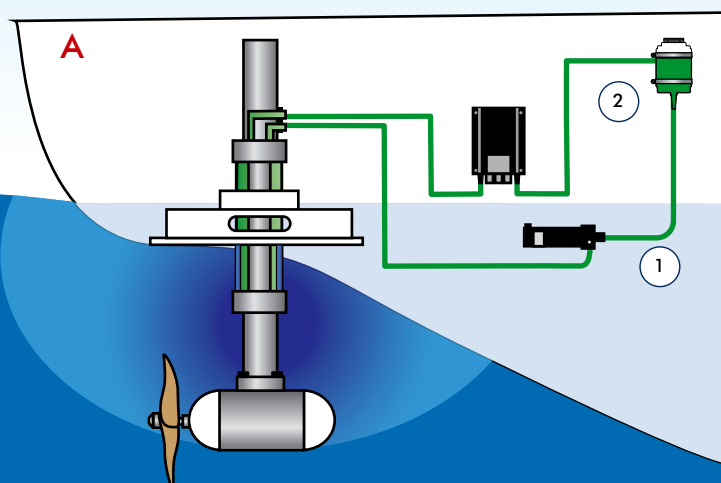
2

5a for GFK hull*

5b for aluminium hull*

5c for wood hull*

*) Individual configurations according to installation



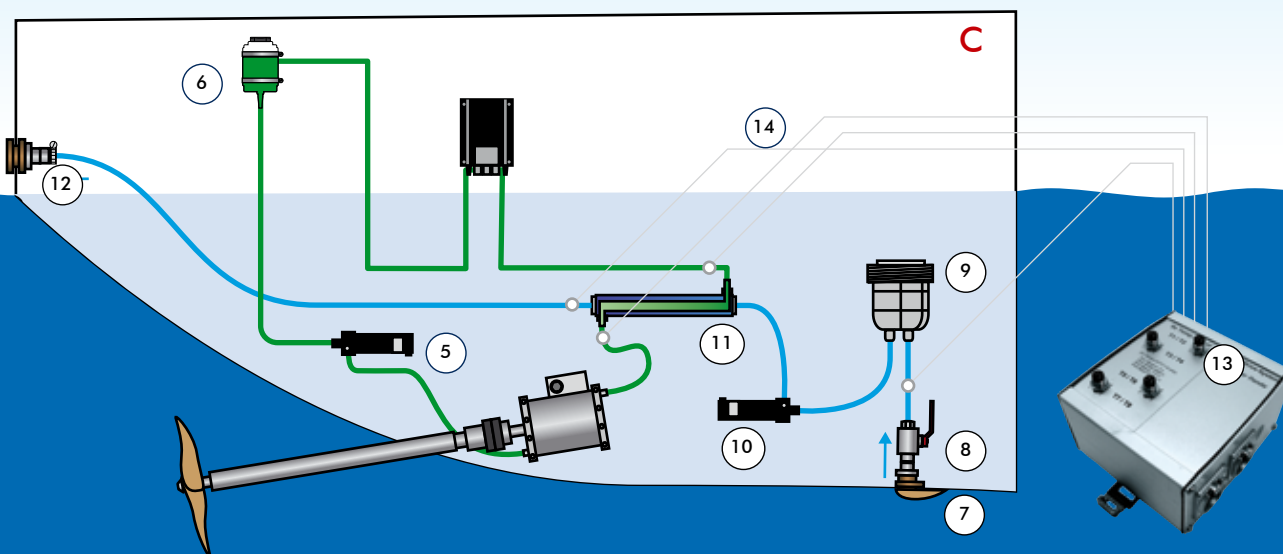
Keel Cooling System

3 Cooling System

Drive Systems					
		48V Aziprop-Motor		48V Shaft-Motor	
		1 x 10kW	2 x 10kW	1 x 10kW	2 x 10kW
					
	Item Description	Qty.	Qty.	Qty.	Qty.
A	Installation kit "Mounting Post Cooling" (uses drive mounting as heat exchanger) comprising:	21.03.20.021S	21.03.20.022S		
1	Circulation pump 24 V	1	1		
2	Cooling water expansion tank	1	1		
	Cooling water hose Ø 16 mm	8 m	16 m		

B	Installation kit (uses hull-mounted keel cooler) comprising:			21.03.20.023S	21.03.20.024S
3	Circulation pump 24 V			1	2
4	Cooling water expansion tank			1	2
	Cooling water hose Ø 16 mm			10 m	20 m
	Screw cap with inlet pipe			1	2

*) The cooling, fuel and exhaust installation kits include hose clamps and couplings to connect major components according to the generators and drive system being installed. Other hose lengths available on request.



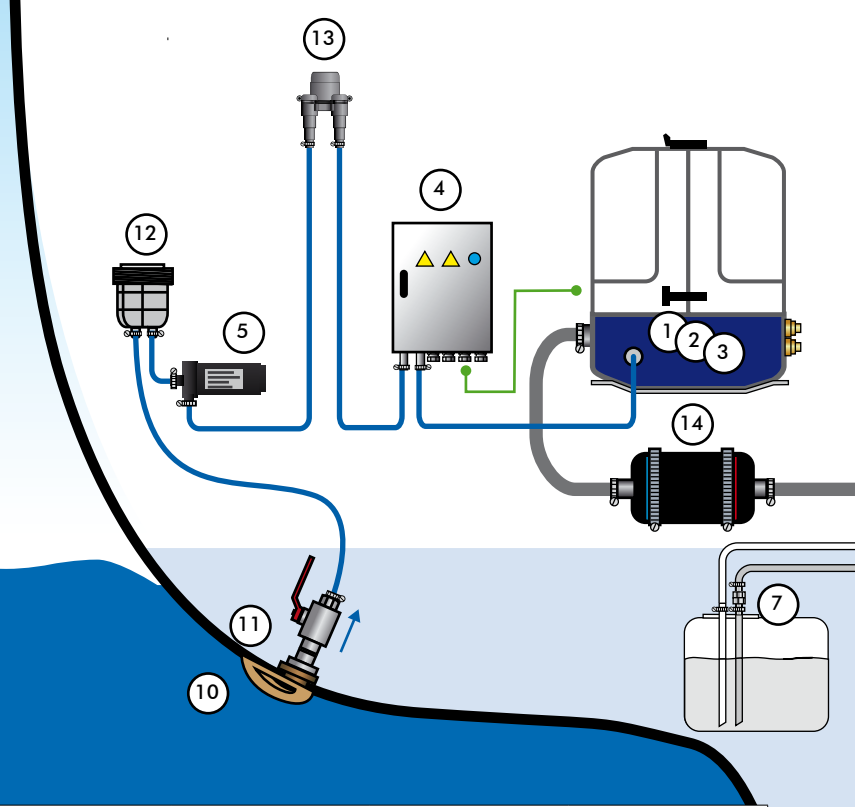
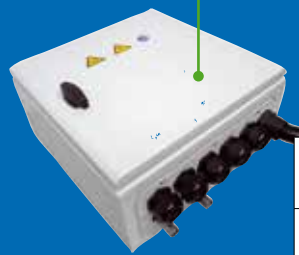
2-Circuit Cooling

Drive Systems

48V Aziprop-Motor		48V Shaft-Motor	
1 x 10kW	2 x 10kW	1 x 10kW	2 x 10kW
			
Qty.	Qty.	Qty.	Qty.
on request	on request	21.03.20.025S	21.03.20.026S
1	1	1	2
1	1	1	2
6 m	8 m	8 m	16 m
1	1	1	2
1	1	1	2
1	1	1	2
1	1	1	2
1	1	1	2
6 m	8 m	6 m	12 m
6	6	6	12

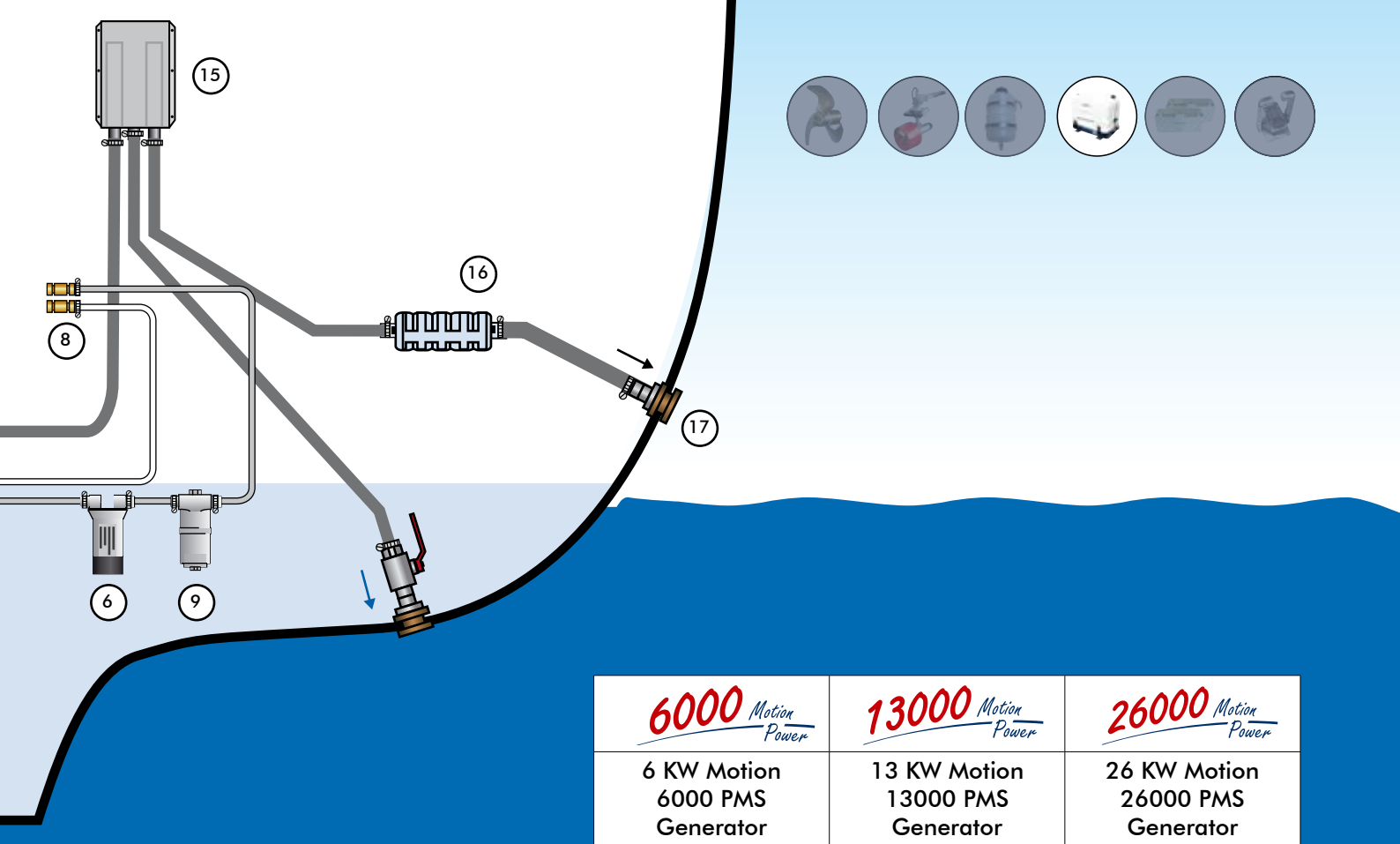
	Item Description
C	Installation Kit „Dual-Circuit Cooling“ comprising:
5	Circulation pump 24V
6	Cooling water expansion tank
	Cooling water hose Ø 16 mm
	Screw cap with inlet pipe
7	Thru-hull fitting with strainer 3/4"
8	Ball cock 3/4"
9	Seawater filter
10	Seawater pump 48V
11	Heat exchanger
12	Thru-hull fitting without strainer 3/4"
	Seawater hose Ø 20 mm
	Hose coupling 3/4" to 20 mm

	Installation Kit "Temperature Monitoring":	on request	on request	21.03.20.027S	21.03.20.028S
13	Temperature sensor for FP Bus	4	4	4	8
14	Temp. module incl. bus connector	1	1	1	1



4 Motion Power Generators

		Drive Systems			
		48V Aziprop-Motor		48V Shaft-Motor	
		1 x 10kW	2 x 10kW	1 x 10kW	2 x 10kW
					
Item Description	Qty.	Qty.	Qty.	Qty.	Qty.
6 kW Motion Generator Set:	03.04.01.008P			03.04.01.008P	
1 Generator AGT-DE 6000 PMS with Kubota Z482 engine	1			1	
4 B6-box incl. generator control	1			1	
5 Seawater pump 24V	1			1	
6 Fuel Pump	1			1	
13 kW Motion Generator Set:	03.04.01.006P			03.04.01.006P	
2 Generator AGT-DE 13000 PMS with Kubota D1305 engine	1			1	
4 B6-box incl. generator control	1			1	
5 Seawater pump 24V	1			1	
6 Fuel pump	1			1	
26 kW Motion Generator Set:		21.02.09.032P			21.02.09.032P
3 Generator AGT-DE 26000 PMS with Kubota V2403T engine		1			1
4 B6-box incl. generator control		1			1
5 Seawater pump 24V		1			1
6 Fuel pump		1			1



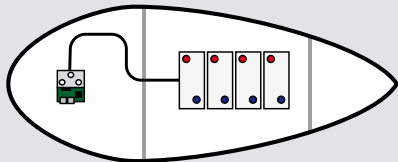
	<i>6000</i> Motion Power	<i>13000</i> Motion Power	<i>26000</i> Motion Power
	6 KW Motion 6000 PMS Generator	13 KW Motion 13000 PMS Generator	26 KW Motion 26000 PMS Generator
	1 x 6kW 	1 x 10kW 	1 x 26kW 
Item Description	Qty.	Qty.	Qty.
Installation Kit ¹⁾	21.03.04.080S	21.03.04.080S	
Fuel System:			
7 Non-return valve	1	1	1
Fuel hose	10m.	10m.	10m.
8 Quick-release fuel connectors	optional	optional	optional
9 Fuel filter with water separator	optional	optional	optional
Cooling System:			
10 Thru-hull fitting with strainer	1	1	1
11 Ball cock	1	1	1
12 Seawater filter	1	1	1
13 Venting valvet	1	1	1
Seawater hose	7 m	7 m	7 m
Exhaust System			
14 Waterlock	1	1	1
15 Exhaust separator	1	1	1
16 Secondary silencer / muffler	optional*	optional*	optional*
17 Thru-hull fitting without strainer	2	2	2
Exhaust hose	4m	4m	4m

*Some components are available as optional extras and are not included as standard. The cooling, fuel and exhaust installation kits include hose clamps and couplings to connect major components according to the generators and drive system being installed. Please consult the Generator and Installation Guide for alternative and optional components. Other hose lengths available on request.

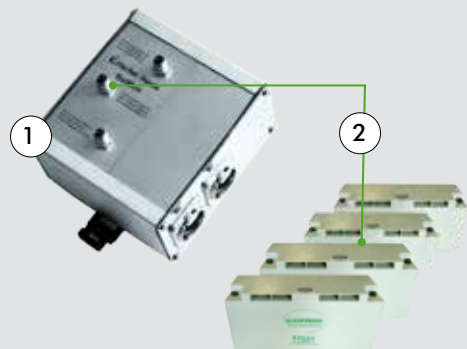
5 Battery Monitoring



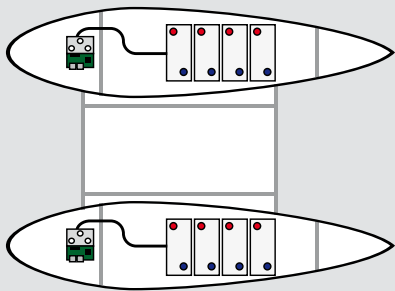
1 x Battery Bank		
	Item Description	Qty.
1	Battery monitoring module	1
2	3m Cable incl. measuring adapter for battery monitoring	3x3m



4x12V = 48V

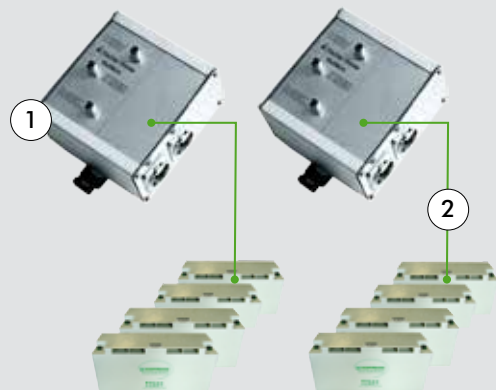


2 x Battery Bank (installed together)		
	Item Description	Qty.
1	Battery monitoring module	2
2	3m Cable incl. measuring adapter for battery monitoring	4x3m

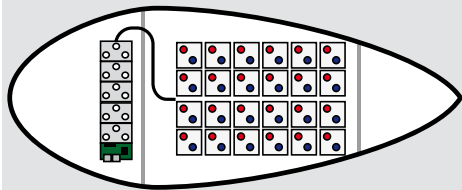


4x 12V = 48V

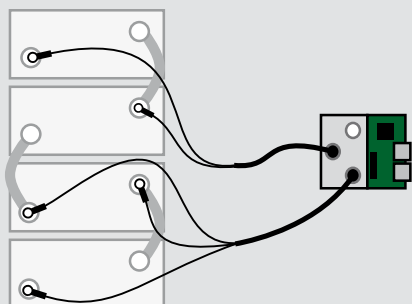
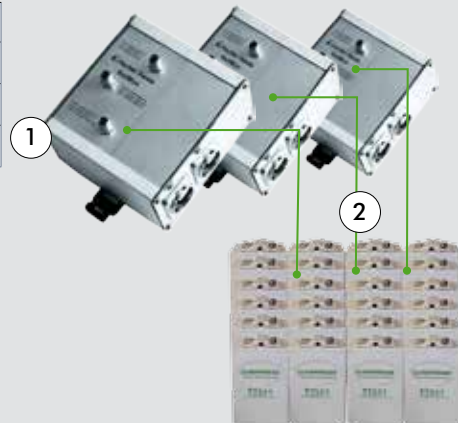
4x 12V = 48V



2V Battery Bank (Individual Cell Monitoring)		
	Item Description	Qty.
1	Battery monitoring module	3
2	3m Cable incl. measuring adapter for battery monitoring	18x3m



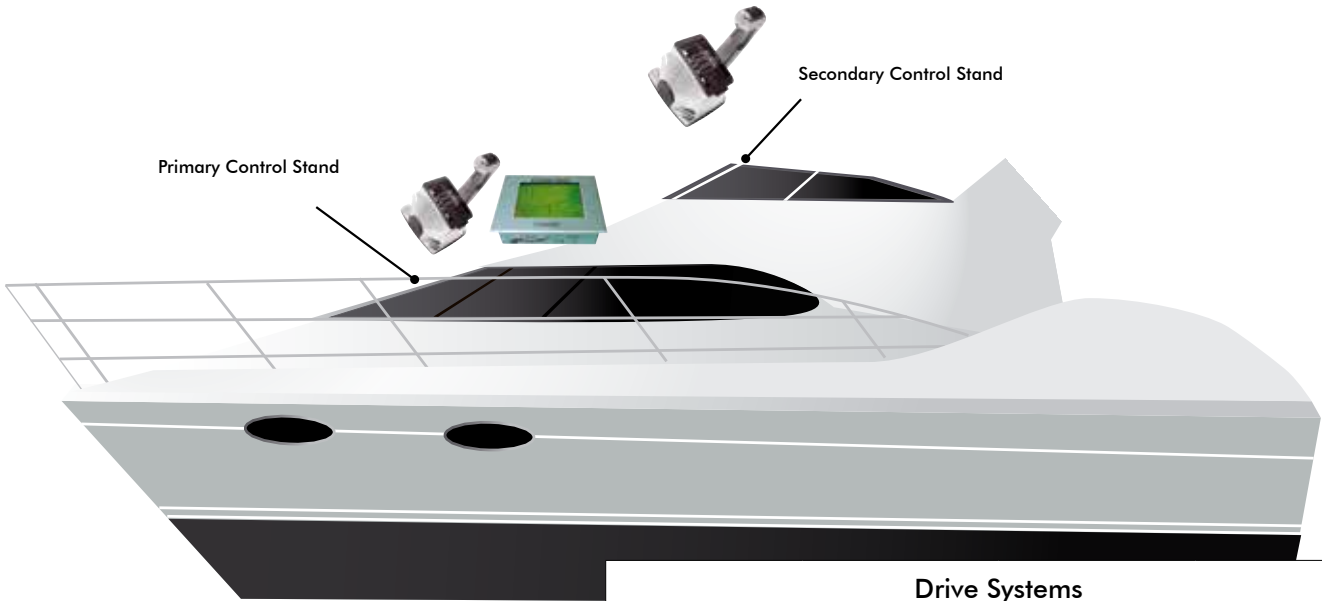
24x 2V Cells = 48V



8 batteries can be connected to each module. Up to 5 modules can be installed in the system, allowing up to 40 batteries to be monitored.

6

Second Control Stand



Drive Systems			
48V Aziprop-Motor		48V Shaft-Motor	
1 x 10kW	2 x 10kW	1 x 10kW	2 x 10kW
			
Qty.	Qty.	Qty.	Qty.

Item Description



Single throttle kit comprises:	21.03.20.029S		21.03.20.029S	
Throttle single chrome	1	-	1	-
Throttle module incl. bus connection	1	-	1	-



Dual / twin throttle kit comprises:		21.03.20.030S		21.03.20.030S
Throttle dual / twin chrome	-	1	-	1
Throttle module incl. bus connection	-	1	-	1



Checklist when making a request

Important information to consider while planning your hybrid drive system

Vessel Information:

Boat type
Hull form
Hull material
Length
Weight
Is the boat new or being fitted with a replacement system?

Drive System:

Number of drives
Drive performance
Type of drives
Planned displacement per ton

Battery System:

Number of batteries
Are batteries already installed?
Size of battery bank (Ah. capacity)?
How long (and how fast) should you be able to cruise using the batteries?
How long should the battery bank supply electrical consumers?

Supply System:

Voltage
Generator type
Number of generators
Cooling system
Display size
Onboard power, if yes: performance in kW
Is a shore power connection required?

Typical large consumers:

Air conditioning [kW]
Anchor winch [kW]
Diving compressor [kW]
Other consumers [kW]

Also:

Specific norms, which have to be met
Country where installation will take place
Planned date for installation

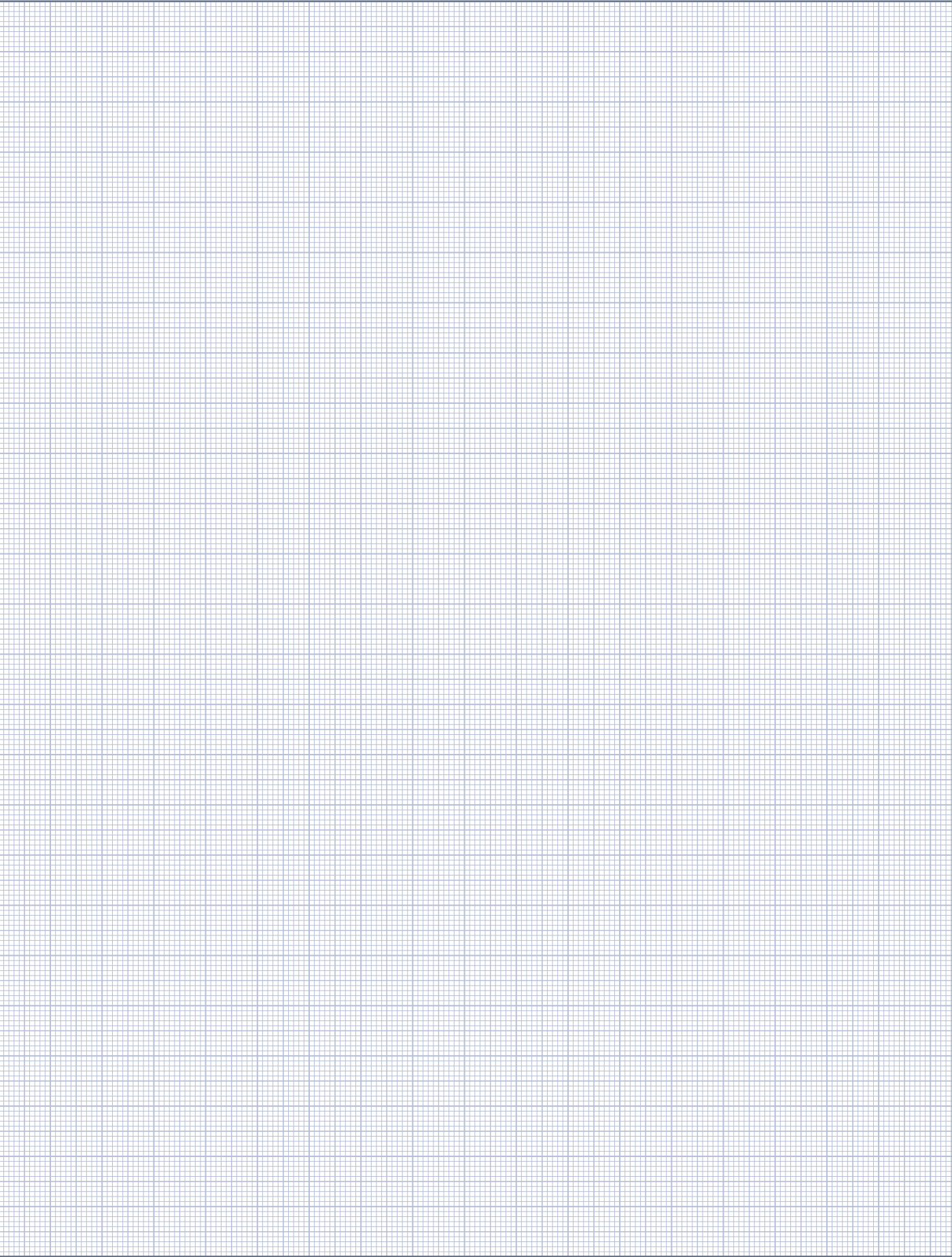


DE-Shaft

The classical drive solution

DE-Aziprop

Underwater drive





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Disclaimer:

The information contained here is to the best of our knowledge accurate at the date of publication. Please note that the data in this publication reflects the technical state at time of print. Dimensions apply for the sound insulation capsule only and do not include latches, fittings etc. Additional room will need to be calculated for installation to include hoses, cables and capsule mountings. Additional components or alternators may also affect capsule dimensions. Due to our policy of continual product development, we reserve the right to alter technical specifications without notice. All performance data relates to air and water temperatures of 20°C. Performance reduction (approx. 1% per 100 m height and approx 2% per 5°C air temperature and approx. 1% per 1°C water temperature above 20°C)

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