BOW AND STERN THRUSTER

MANUAL

CRAFTED WITH CRAFTSMAN MARINE

MANOEUVRING

IMPORTANT

- This product must be installed and maintenanced by a certified technician.
- This product is intended for pleasure crafts and not for professional applications.

- Only use Craftsman Marine control panels, cables and splitter cables.
- Do not make other connections to the wiring.
- Do not cut wires and connectors.

- This thruster set can only be used with the supplied motor + tail piece + propeller for the specified tunnel diameter. Do not change this set.
- All parts are registered as a set, do not remove parts for other use.

- Do not operate the thruster without load.
- Damages caused by moisture, water, dirt and corroded parts are not covered by the warranty.

1 Warranty

Please read this manual carefully before commissioning your Craftsman Marine thruster. Improper use of this thruster may cause accidents and all warranty conditions may become invalid. In this manual you will find instructions about the installation, use and maintenance of your thruster.

This thruster is only intended for use in pleasure crafts. In the case of deviating use the manufacturer does not accept any responsibility whatsoever for resulting damage. This type of risk is to be borne exclusively by the user. Correct and proper use also implies strictly adhering to the prescriptions of operation, maintenance and repair. Only such persons, who are acquainted with the operation, maintenance and repair of your thruster, and who are fully aware of any danger involved, should be allowed to work on your thruster. For that reason, always have your thruster serviced, maintained and repaired by an authorized Craftsman Marine dealer.

The Craftsman Marine dealer in your country is the responsible person for a complete and correct execution of the Craftsman Marine directives concerning warranty, service and maintenance. It may be possible that the dealer in your country maintains specific warranty conditions, dependent on legislation in your country. Such national warranty conditions only apply in the country to which the thruster has been delivered and the conditions will be supplied in writing together with the instruction manual.

The international Craftsman Marine warranty conditions cover all defects of the thruster, caused by faulty materials and/or inadequate craftsmanship during a period of twenty-four months (24) after commissioning. If a component is replaced within the warranty period, the remaining term of the warranty also applies to the new component. The international Craftsman Marine warranty conditions exclude all thrusters that have been subjected or connected to a severe collision, fire or flooding and foundering. thrusters that have been modified are also excluded from any warranty.

The warranty conditions do not apply to any such components that are subjected to normal wear and tear, such as oil, anodes, etc.
Damage to the thruster, caused by ice or other debris floating in the water is equally excluded from warranty. No claim for additional damages or coverage, such as consequential damage, or loss of interest on account of thruster failure, can be laid on the Craftsman Marine warranty conditions.

The warranty conditions apply under the following conditions: The thruster has always been used in a normal, responsible way and is completely maintained in accordance with the rules and regulations as prescribed by Craftsman Marine.

All service jobs have been executed at the correct periodical intervals, as described.

Any defect must be reported in writing to your Craftsman Marine dealer, within a period of one week after its discovery.

All warranty jobs must have been executed by an authorized Craftsman Marine dealer or service and repair shop and only original Craftsman Marine (spare) parts have been fitted (the replaced parts remain under custody of the dealer).

No warranty can be given if your financial obligations toward the Craftsman Marine dealer have not been completely fulfilled. Finally, no warranty is applicable if the thruster defect or failure is caused by:

- Negligence or inadequate maintenance
- No timely and/or regular service jobs
- Improper use and surcharge of the thruster
- The use of (spare) parts that are not of Craftsman Marine origin
- Modifications to the thruster
- Normal wear and tear
- Transportation, distribution or storage

1 Preface

Thank you very much for purchasing a Craftsman Marine Bow and/or Stern Thruster (hereinafter simply called: Thruster). You have made an excellent choice and our Craftsman Marine Service Team will gladly be of the best possible assistance, if and when you will need us.

The Thrusters made by Craftsman Marine are designed and developed by engineers who are fully aware of the many requirements of the marine environment; professionals who know of the ultimate quality demands, whilst making the best use of their many years of experience.

Enjoy boating with your Craftsman Marine products on board.

STRONG ADVICE
It is highly recommended to entrust an experienced installation engineer with the complete mechanical and electrical installation, so as to ensure a flawless operating equipment. Here after a survey of the basics, for your information (only!).

Safety 2

Below you will find a survey of caution pictograms pertaining to this manual. Remarks that are related to safety bear this symbol:

DANGER
ATTENTION

Carefully adhere to these instructions and inform all people who are involved in the operation or the maintenance of the Thruster about these safety precautions.

- When the Thruster is in operation: do not touch any of the moving parts.
- When the Thruster is in operation several components will become very hot. Never touch these parts and avoid the use of flammable products in the vicinity of the electric motor.
- In the case of adjustment or inspection of parts of the Thruster always stop the Thruster and disconnect the battery.
- All maintenance jobs should be executed by qualified mechanics, using properly fitting tools.

Only entrust these jobs to an authorized Craftsman Marine dealer.

Symbols related to the text below:

Pay attention to the symbols and read the instructions in the text.

Attention
(especially with a view to a safety risk for man or material)

4 Introduction

A Bow Thruster (especially in combination with a Stern Thruster) is a most effective manoeuvring aid, designed to handle the boat with utmost ease, when mooring or leaving the quay or in the cramped space of a marina box, while having to cope with bad currents or adverse winds. For trouble-free operation of the Thruster, it is necessary to read and adhere to the following:

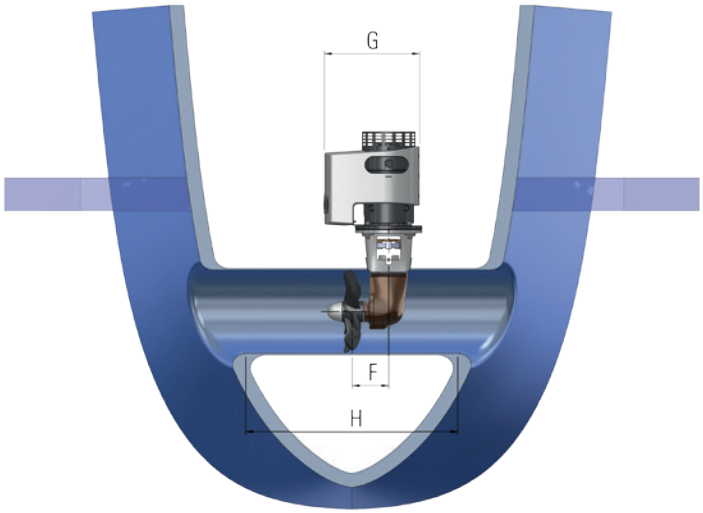
1. The technical specifications of the Thruster and the selection table
2. The selection of the power source
3. Knowing the Thruster itself
4. Correct mechanical installation
5. Correct electrical installation
6. Tips for proper use
7. Maintenance and trouble shooting

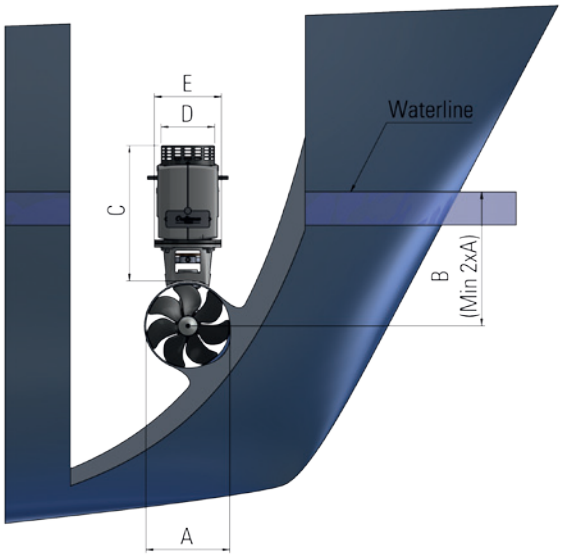
The thrust force given in the specifications is nominal and the result of standard test conditions. The actual thrust force developed is bound to vary from one boat to another, depending on various parameters, such as hull design, the power source selected, type of tunnel, protective grids at the ends of the tunnel or not, the attachment mode of the tunnel to the hull, etc. Naturally, the performance is also dependent on external conditions like the water current, the wind conditions, etc.

Tips for safe use:

The safety of the crew members on board (and of other people) is of prime importance and the following instructions must therefore be kept in mind and strictly adhered to.

1. Carefully read and follow the installation instructions.
2. The electric motor is a heat generating source and must therefore be positioned in a dry and well ventilated area.
3. The equipment must not be operated beyond the maximum time specified, to avoid overheating of the motor.
4. The main curreny supply must be switched off when the equipment is not in use for long periods e.g. over the weekend.
5. Your Thruster is an “on load” starting device and it is therefore imperative to run it only when immersed in water.
6. Look out for swimmers close to the Thruster tunnel before using it.
7. Always use Craftsman Marine spare parts and accessories, so that the compatibility of the whole system is ensured.
8. Use always a Craftsman Marine Thruster control panel.
9. Maintain the equipment in line with the specified periodical maintenance plan.
10. Never touch any moving parts.
11. Never touch the electric motor when in operation.
12. Never store flammable products in the area of the electric motor.
13. Switch off the main current and disconnect the battery wires in the case of maintenance and during long time storage.
14. In the case of installation of more than one panel, make sure to operate the Thruster from only one panel at the time.
15. Allow the Thruster to have a battery of its own and position it as closely to the Thruster as possible.



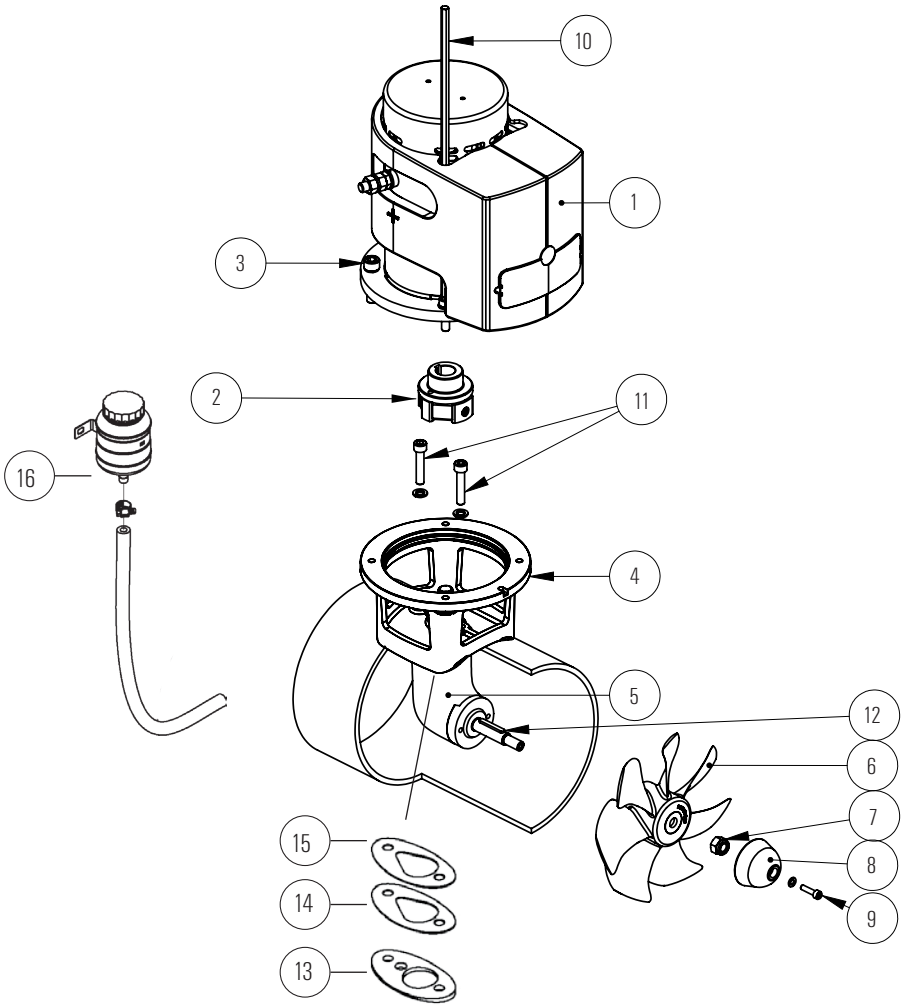


	Thruster 28kgf 12V	Thruster 40kgf 12V	Thruster 60kgf 12V	Thruster 85kgf 12V	Thruster 90kgf 24V	Thruster 100kgf 12V	Thruster 120kgf 24V	Thruster 130kgf 12V	Thruster 155kgf 24V	Thruster 180kgf 24V
A	ø110 mm	ø110 mm	ø150 mm	ø185 mm	ø185 mm	ø185 mm	ø185 mm	ø250 mm	ø250 mm	ø250 mm
B (min.)	165 mm	165 mm	225 mm	280 mm	280 mm	280 mm	280 mm	375 mm	375 mm	375 mm
C	264 mm	264 mm	335 mm	304 mm	315 mm	358 mm	358 mm	395 mm	395 mm	415 mm
D	ø113 mm	ø113 mm	ø137 mm	ø136 mm	ø136 mm	ø163 mm	ø163 mm	ø163 mm	ø163 mm	ø175 mm
E	ø175 mm	ø175 mm	ø175 mm	ø175 mm	ø175 mm	ø200 mm	ø200 mm	ø200 mm	ø200 mm	ø200 mm
F	68 mm	68 mm	68 mm	68 mm	68 mm	68 mm	68 mm	115 mm	115 mm	115 mm
G	275 mm	275 mm	232 mm	225 mm	225 mm	295 mm	295 mm	295 mm	295 mm	300 mm
H (min.)	220 mm	220 mm	300 mm	370 mm	370 mm	370 mm	370 mm	500 mm	500 mm	500 mm
	No external oil reservoir required							Supplied with external oil reservoir		

6 Thruster components

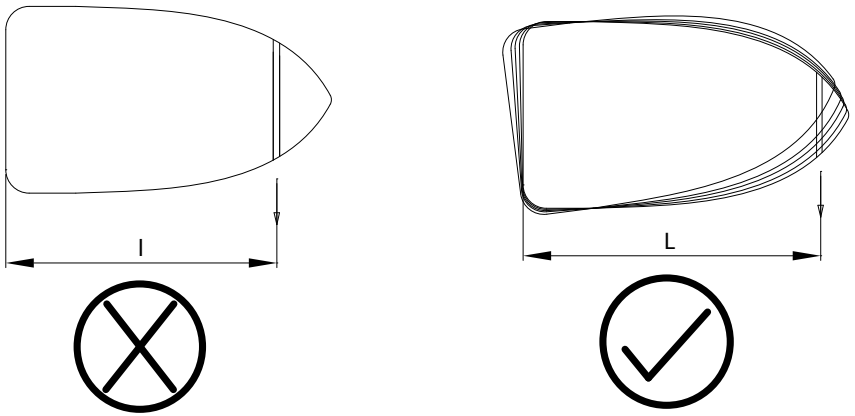
The Thruster consists of the following components:

1. The electric motor with relay and relay cover
2. The flexible coupling
3. Bolts for mounting the electric motor
4. The connecting flange
5. The tail piece with spacer
6. The propeller
7. Nut for mounting the propeller
8. The zinc or aluminium anode
9. Bolt for mounting the anode
10. Optional: Hexagonal tool (35cm length) for fastening the Thruster motor on the flange
11. Bolts for mounting the tail piece
12. Key for propeller
13. Plastic spacer
14. Gasket 1mm
15. Gasket 2mm
16. Oil reservoir, only for 130kgf, 155kgf and 180kgf

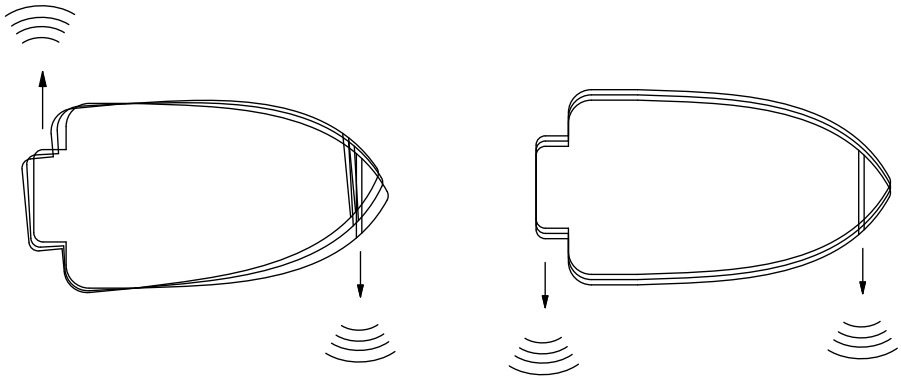


7.1 Installation of the tunnel

The Bow Thruster, when positioned at the most forward point in the bow, provides, by law of leverage, its optimum performance.

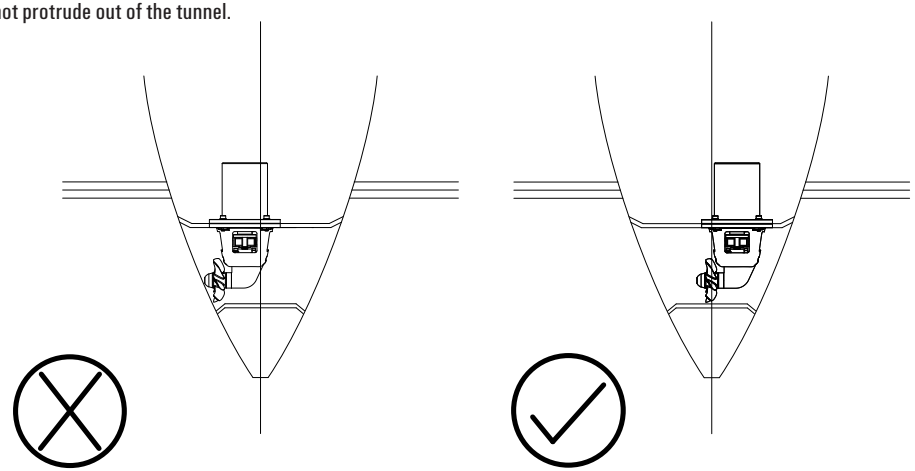


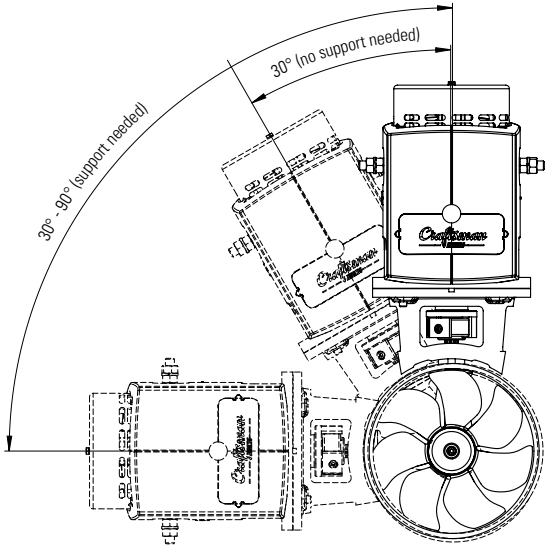
It is also possible to fit a Stern Thruster in combination with the Bow Thruster.



7 Mechanical installation

The tunnel must be positioned perpendicular to the axis of the boat, in all the directions.
The propeller must not protrude out of the tunnel.

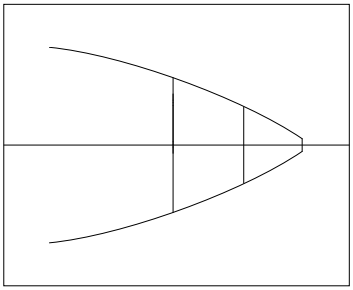




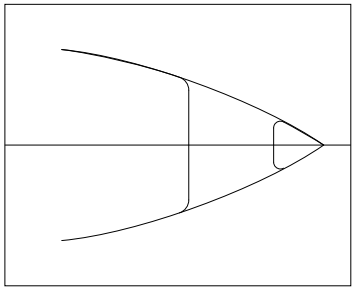
at angles greater than 30° the electric motor must be supported (also with stern thruster installation).

The tunnel can be made of steel, aluminium or fiberglass. There are three options of fitting the tunnel:

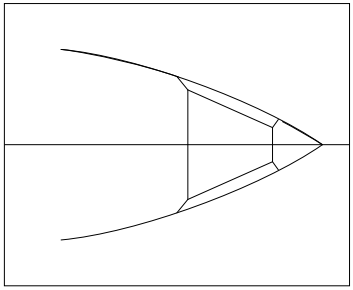
1. Blind Connection



2. Connection with a Radius (R=0.1xD) D = tunnel diameter



3. Connection with a Chamfer. The chamfer to be between 20 and 30mm



Grid bars at the ends of the tunnel reduce the thrust force and the performance of the Thruster.
However, if there is a need to fit these, on account of much debris in the water, it is necessary that the number of bars is kept to a minimum (maximum 3). The shape of the bars must be trapezoidal with no sharp edges on the bars. It is also advised to position the bars in a perpendicular direction to the wave of the bow.

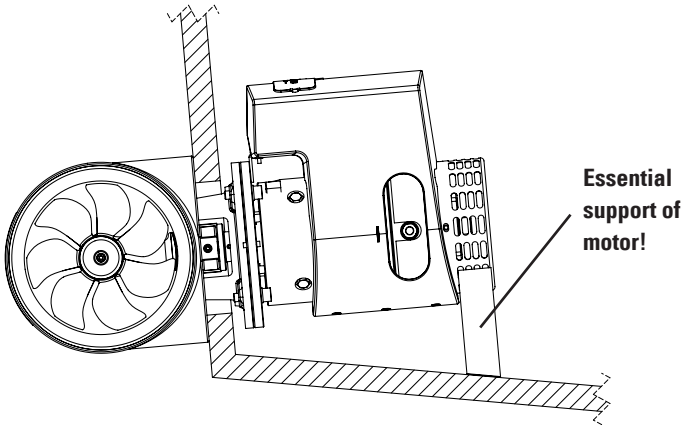
7 Mechanical installation

Installation of the stern thruster kit

Considerations for positioning the stern thruster:

- Make sure the stern tunnel does not protrude underneath the hull
- Position the stern thruster as close to the centre line of the boat as possible
- Hull thickness should be less than 35mm
- In case of a sandwich build hull, the sandwich material must be replaced by a solid core where the stern tunnel is positioned
- Check for clearance inside the boat
- Also check thickness of the hull's bottom. It should not interfere with the bolt hole pattern of the stern tunnel
- The electric motor of the stern thruster must be supported
- The inside of the boat where the stern thruster is mounted must be absolutely dry at all times
- Free water flow to the sides of the thruster tunnel is essential for proper operation. Any obstructions will make the stern thruster less efficient.
- To make our stern thruster tube as compact as possible, it is not possible to pre-assemble the tailpiece in the tunnels. Only after installation of the tunnel the tailpiece can be mounted.
- For best performance the distance between the top of the thruster and the water surface should be at least the same as the tunnel diameter.

IMPORTANT!
The stern thruster tunnel is not designed to take any external loads or shocks and must always be protected by a rigid frame or swimming platform. Don't stand on the tunnel and make sure it is protected when manoeuvring with the boat. Failing to do so can result in sinking of the boat.



First check if the tailpiece fits in the pre-drilled holes of the stern tube and correct when necessary (remove after fitting).

When the correct position is established, use the included drilling pattern to drill the holes. Before cutting the large hole, check the position of the bolt holes and correct when necessary. Make the large cutout in the same diameter as the inside of the tunnel flange (according to the drill pattern). With a sandwich built hull, remove the sandwich material 45mm deep and replace with hard wood or epoxy with micro-balloons. Protect the fresh cutout from water ingress by applying epoxy or gelcoat.

When fitting the 250mm stern thruster tube it is recommended to fit the tailpiece and oil feed pipe before the tunnel is bolted to the transom.

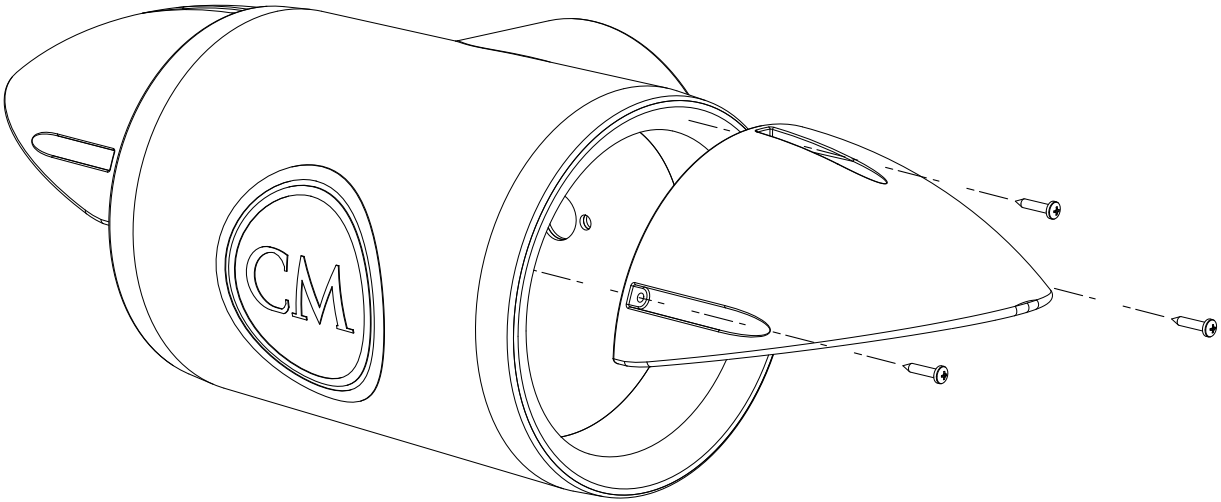
Check the bolt length of the mounting bolts to be used. The length of the thread sticking out should be 12-16mm (M8 bolts) or 15-20mm (M10 bolts). Use large washers on the inside of the boat to distribute the load. Make sure the mounting surface is flat and free of any burrs. Position the rubber O-ring and apply sealant to the mounting surface and around the bolt holes (Sikaflex 291i/292i or 3M 4400BC/5200FC). Tighten the bolts evenly until the O-ring touches the hull surface. Let the sealant dry 6-12hrs before further tightening the bolts. This makes sure there is sufficient elasticity in the sealant to do its work. Remove any excess sealant before it dries. Make a support underneath the electric motor.

When a hydraulic motor is used, make sure the hoses are supported to prevent any excessive loads on the stern tube.

Assembly of the tailpiece to the tube is described in the manual of the thruster. The flexible coupling is only fastened to the electric motor and simply slides over the tailpiece.

Make sure the stern thruster compartment is always free of any water. Plug drain holes in bulkheads and stringers. Install an automatic bilge pump. Potential water leakages like propeller shafts, rudder shafts, etc. should all be isolated from the thruster. All electrical cables connecting the thruster must be mounted high to avoid any contact with water in the bilge.

7 Mechanical installation



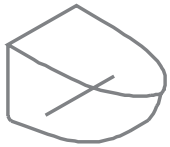
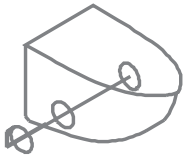
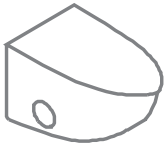
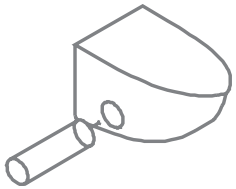
When the stern thruster cannot be mounted deep enough this deflection kit will help to get the best performance possible. Each cover is mounted with just 3 screws and adhesive sealant. We recommend using Sikaflex 292i or 3M 5200FC. It will not only seal but also bond the covers to the stern tunnel.

Place the cover on the stern tunnel and push to make sure the gap between the two parts is as small as possible. The deflector cover must be horizontal. Use a long 4.2mm drill to drill the three holes in the cover and mark the holes in the stern tunnel. Remove the cover and drill the holes in the stern tunnel with the same 4.2mm drill. Use a 5mm drill to enlarge the holes in the cover **(ONLY THE HOLES IN THE DEFLECTION COVER).**

You can pre-tap the holes by screwing in the screws without the cover in place and removing them again. Apply sealant to the mating surface and mount the cover with the screws. The gap should be as small as possible, but do not overtighten the screws as they might break. Remove any excessive sealant when it is still wet with aceton or thinner.

When applying antifouling, please check with the antifouling supplier/ manufacturer what steps are needed. The topcoat of the tunnel is not treated with any primer.

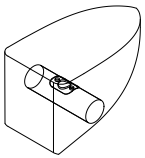
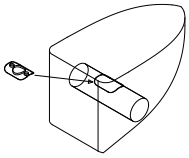
MAKE SURE THE COMPLETE STERN THRUSTER TUNNEL, INCLUDING THE DEFLECTION COVERS, IS PROTECTED BY A FRAME OR BATHING PLATFORM FROM ANY OUTSIDE FORCES.

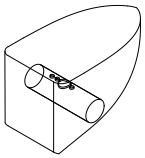
1	Mark the centre line of the tunnel. This must be perpendicular to the axis of the boat. Drill a small hole in the center at both sides of the bow.	
2	Use a simple tool to pass through the drilled centers and mark the cutout at both sides of the bow.	
3	Cutout the hull using the mark as a knife guide by appropriate method.	
4	The Tunnel may now be inserted. Based on the material of the tunnel the tunnel may be fixed with resin or welded. The sides are to be finished with 2 pack epoxy paint.	

7 Mechanical installation

7.2 Installation of the tail piece

A.

Mark the installation position of the unit with the intermediate flange so that the propeller will be in the middle of the tunnel	
Use the flange to mark the correct position of the holes Drill holes through the tunnel and deburr the edges	

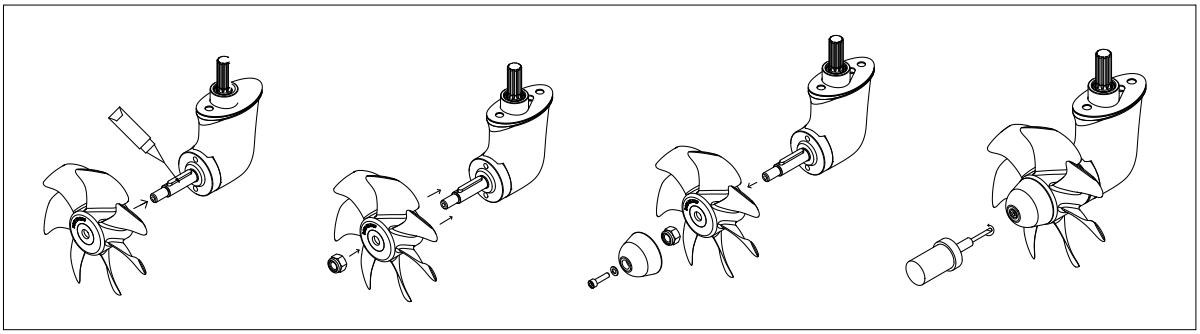
Drill holes through the tunnel and deburr the edges	

B. Every Thruster is supplied with 2 gaskets of 1mm and 2mm thickness. Check which gasket thickness must be used to center the propeller in the tunnel. It is also possible to use both gaskets to have a distance altogether of 3mm.

Apply (Sikaflex - 292) sealant on both sides of the gasket and stick the gasket in position on the tail piece. Then position the tail piece in the correct position in the hole, drilled earlier in the tunnel.

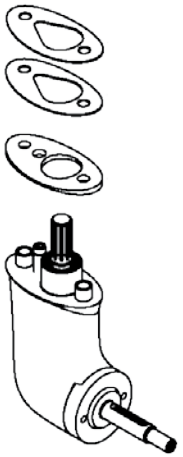
Position the intermediate flange on top of the tunnel. The application of grease (Molykote br2plus) on all threaded joints is advisable, then firmly tighten the bolts.

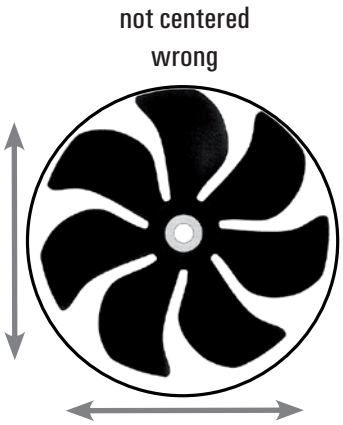
Next apply grease on the propeller shaft and fit the propeller. Make sure that there is a gap between the propeller blades and the tunnel wall of at least 1.5mm at all sides. Fix the propeller using the Nylock nut and then fit the zinc anode at the end of the propeller shaft and tighten it.

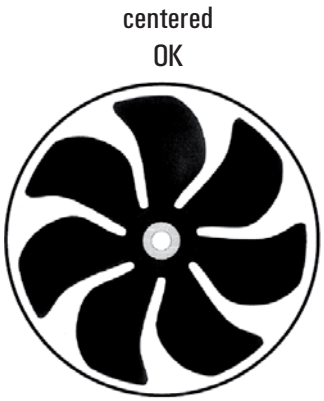


Center the propeller

Put the spacer on the tail piece
Use the 1mm and/or 2mm gasket to center the propeller in the tunnel







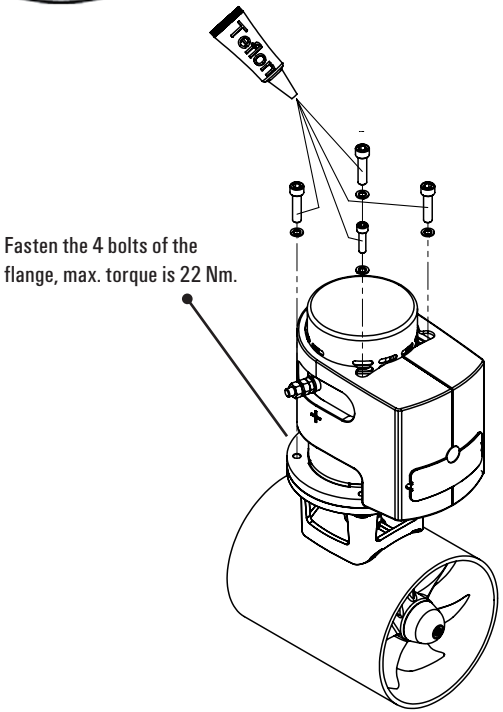
7.3 Installation of the electric motor

Apply a little grease to the shaft of the electric motor. With the key in position fit over the shaft, the flexible coupling and tighten the lock screw.

Insert the electric motor onto the intermediate flange.

Turn the propeller by hand and make sure it rotates freely.

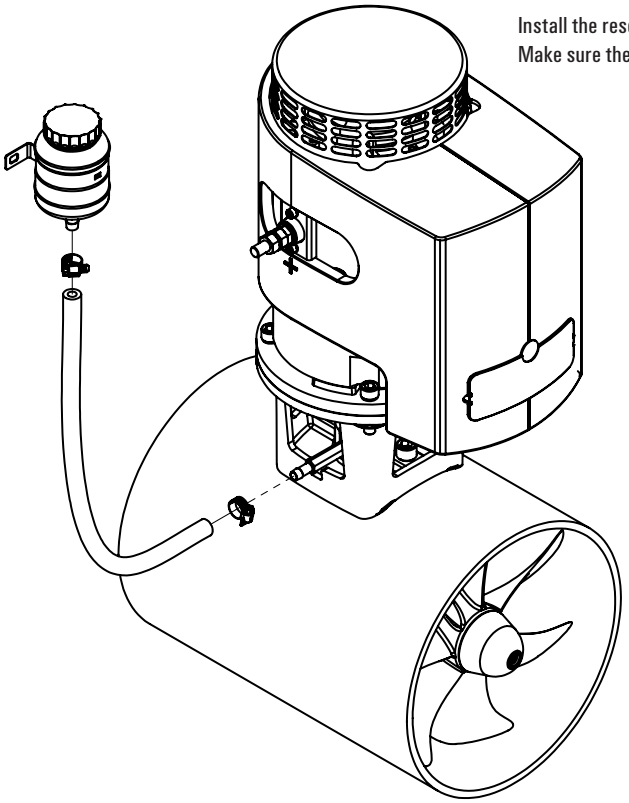
Then grease the screws lightly and fasten the motor onto the flange.



7 Mechanical installation

7.4 Only for Thruster 130kgf, 155kg and 180kgf

Install the supplied oil reservoir and fill it with oil, type EP90.



Install the reservoir ± 50 cm above waterline!
Make sure the oil-line has a constant downward slope.

Caution

Switch off all other circuits before operating the assembly. Maintain a safe distance between the tools and the opposite polarities (positive/negative), where the tool can act as a conductor to create a short- circuit.

Never short-circuit the batteries, which will cause severe burns/ flame/explosion. Do not connect the bare wires (without terminals) to the motor; always use terminals on the wires to ensure proper connectivity.

Fuse and Main Switch
A separate fuse or circuit breaker must be installed between motor and power source, so that the thruster will be protected against overload.

A "slow blow" fuse must be used to withstand the starting-up current of the motor. (see table 2)

Always install a battery main switch in the power supply to the thruster

Use the proper tools for tightening the cable terminals.

Crimp the proper terminals to the wires, to suit the motor terminal ends.

8.1 Power Supply

Battery
The battery (or the bank of batteries) should be selected to suit the appropriate size of the Thruster as indicated in the table 2.

Batteries are to be placed as close as possible to the Thruster, in a dry and cool place.

The Thruster should have its own battery (bank), independent from the starting and the domestic batteries. When connecting two or more batteries in series or parallel, ensure that the batteries are of the same type, age and with the same capacity.

Cables
Battery cables must be selected to handle the maximum current of the motor (see table 2). The battery cable size is to be selected with care, so as to a avoid a voltage drop of more than 10% (see table 2).

Make sure you use the proper tools for crimping the cable lugs on the cables, like an 6 side crimping tool or an hydraulic crimping tool. Poor connections can lead to high voltage drops and heat buildup resulting in poor performance of the thruster and can even cause fire.

8.2 Specifications and recommended cable, fuse and battery

	28kgf 12V	40kgf 12V	60kgf 12V	85kgf 12V	90kgf 24V	100kgf 12V	120kgf 24V	130kgf 12V	155kgf 24V	180kgf 24V
Product code	BA.110.02812	BA.110.04012	BA.150.06012	BA.185.08512	BA.185.09024	BA.185.10012	BA.185.12024	BA.250.13012	BA.250.15524	BA.250.18024
Force @ 10.5V / 21V Peak force (1.5 sec) *	28 kgf 45 kgf (peak)	40 kgf 65 kgf (peak)	60 kgf 95 kgf (peak)	85 kgf 125 kgf (peak)	90 kgf 110 kgf (peak)	100 kgf 150 kgf (peak)	120 kgf 180 kgf (peak)	130 kgf 190 kgf (peak)	155 kgf 230 kgf (peak)	180 kgf 270 kgf (peak)
Tunnel diameter	110 mm	110 mm	150 mm	185 mm	185 mm	185 mm	185 mm	250 mm	250 mm	250 mm
Electric motor	1.6 kW (2.2 hp)	2.6 kW (3.5hp)	3.7 kW (5.0 hp)	4 kW (5.4 hp)	4 kW (5.4 hp)	6 kW (8.1 hp)	6 kW (8.1 hp)	6.5 kW (8.8 hp)	6.5 kW (8.8 hp)	11.3 kW (15.4 hp)
Temperature switch	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Operating time	2 min/hour	2 min/hour	2 min/hour	2 min/hour	2 min/hour	2 min/hour	2 min/hour	2 min/hour	2 min/hour	2 min/hour
Current consumption	190 A	380 A	460 A	450 A	280 A	730 A	380 A	830 A	450 A	550 A
Min. battery capacity *	110 Ah	140 Ah	160 Ah	160 Ah	2x108 Ah	2x200 Ah	2x120 Ah	2x230 Ah	2x120 Ah	2x200 Ah
Fuse slow-blow (ANL)	125 A	250 Ah	300 A	300 A	200 A	500 A	250 A	500 A	300 A	355 A
Battery cable *	0-8m/25mm2 8-12m/35mm2	0-9m/50mm2 9-13m/70mm2	0-10m/70mm2 10-14 m/95mm2	0-10m/70mm2 10-14 m/95mm2	0-17m/50mm2 17-25m/70mm2	0-8m/95mm2 8-11m/120mm2	0-18m/50mm2 18-25m/70mm2	0-8m/120mm2 8-11m/150mm2	0-21m/70mm 22-29m/95mm2	0-22m/95mm2 22-28m/120mm2
Battery connection	M8	M8	M10	M10	M10	M10	M10	M10	M10	M10
Weight (motor incl. tail piece)	10.6 kg	11.3 kg	17.7 kg	18.2 kg	15.6 kg	26.8 kg	25.7 kg	30.5 kg	30.0 kg	37.2 kg
Motor body IP rating	IP54	IP54	IP11	IP21	IP21	IP21	IP21	IP21	IP21	IP21

table 2

The recommended battery capacity and cable ratings are based on the average thrust force. Short and thicker cables in combination with higher battery capacity will result in higher thrust and overheating the electric motor faster. It is then very important that the maximum operating time is reduced, this to prevent damage on the electro motor. Depending on the boat installation and the distance between the thruster and battery, other ratings can be chosen.

After a certain time of running the electric motor, new brushes will be seated, this means the contact surface of the brushes will be matching with the commutator what will improve the performance.

Maximum allowed voltage loss for 12 V is 1.2 V and for 24 V is 2.4 V

Battery cable, the total length of plus and minus *
Starting peak force for the first 1.5 sec. *

8.4 Connecting thruster to the battery

1. Connect the positive wire to the motor where the "+" symbol is indicated. This is a M8 or M10 bolt at the motor body

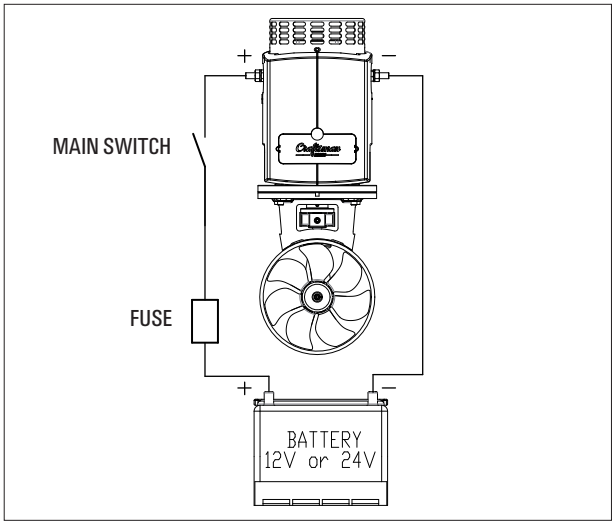
2. Connect the negative wire to the motor where the "_" symbol is indicated. This is a M8 or M10 bolt at the motor body

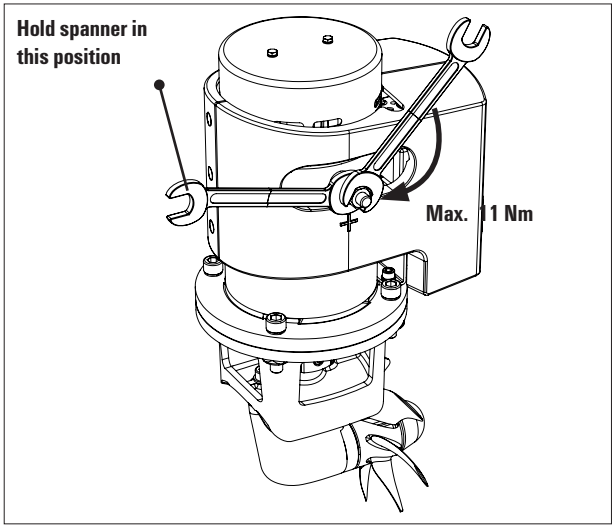
The terminals must be tightened properly, to avoid any loose connections (max. torque of 11 Nm).

While connecting the terminals to the motor, use two spanners, one to hold the inner nut and the other one to tighten the outer nut.

Always use a Fuse and Main switch in the power line

Figure 1





9 Thruster panels

9.1 Specifications of Thruster panel

1. Time lapse device

Integrated time lapse device when changing directions (port to starboard and vice versa).

Setting options:
1. Time lapse device as from 1 second (factory setting)
2. No time lapse delay when changing over directions.

2. Temperature safety

All electric thruster motors are provided with a temperature switch. The control panel switches the Thruster automatically off in the case of a too high temperature. This situation is indicated by means of a LED indicator and a buzzer.

3. Switching off the panel

Dependent on the settings, the panel can switch off automatically, when it has not been activated during a certain period of time.

Setting options:
1. Panel does not switch off automatically (factory setting)
2. Panel switches off after 30 minutes
3. Panel switches off after 60 minutes
4. Panel switches off after 120 minutes

4. Protection against continuous use

If the thruster is operated more than 2 minutes continuously, the thruster can be switched off automatically, dependent on the settings.

Setting options:
1. The thruster switches off after 2 minutes of use. The LED indicator and the buzzer are activated.
2. The thrusters does NOT switch off after 2 minutes of use. The LED indicator and the buzzer are activated.

5. Detection by the relay

If an interruption occurs in the wiring of the control current circuit of the relay, the LED on the panel will blink intermittently with a red or green colour.

6. Protection against erroneous switching (children proof setting)

7. Supply voltage is 12VDC or 24VDC

8. The front section of the panel is watertight in accordance with IP65

9. Dimensions

ALFA10T: 81 x 85mm
ALFA20T: 81 x 85mm
ALFA30T: 81 x 136mm

9.2 Control panel connection

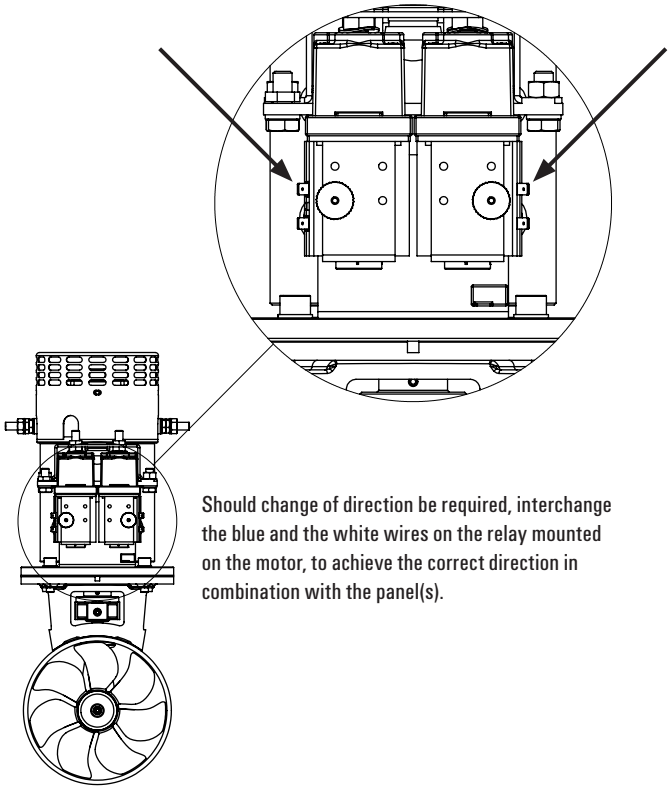
Use the panel connection cables to connect the motor with the control panel(s). Panel connection cables are available in lengths of 7m, 10m, 15m or 20m.

Use the thruster panel splitter cables when connecting two or more panels in parallel.

By using Craftsman Marine control panels, any number of panels can be connected in parallel.

Please verify the correct direction of the thruster once the installation is completed.

Change portside - starboard direction



Should change of direction be required, interchange the blue and the white wires on the relay mounted on the motor, to achieve the correct direction in combination with the panel(s).

9.2 Control panel connection

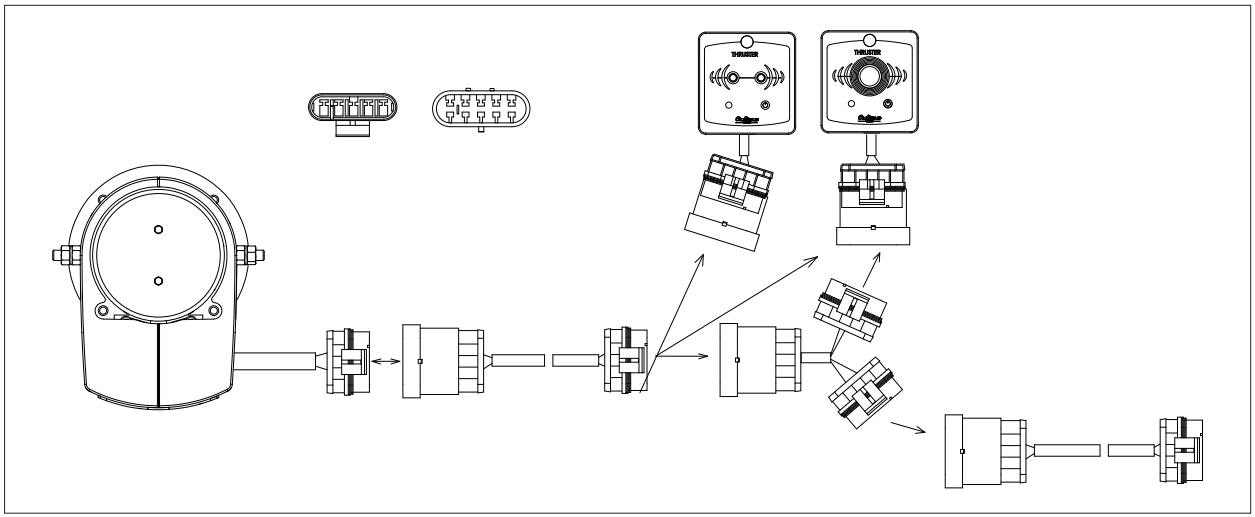


Figure 3

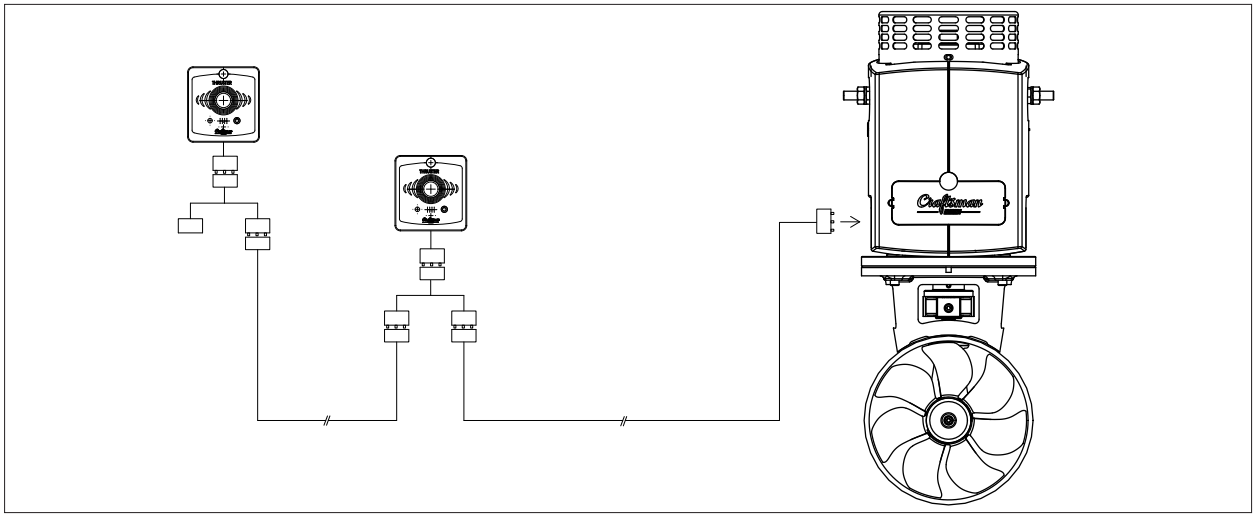


Figure 4 Connection of the Thruster panel for bow OR stern.

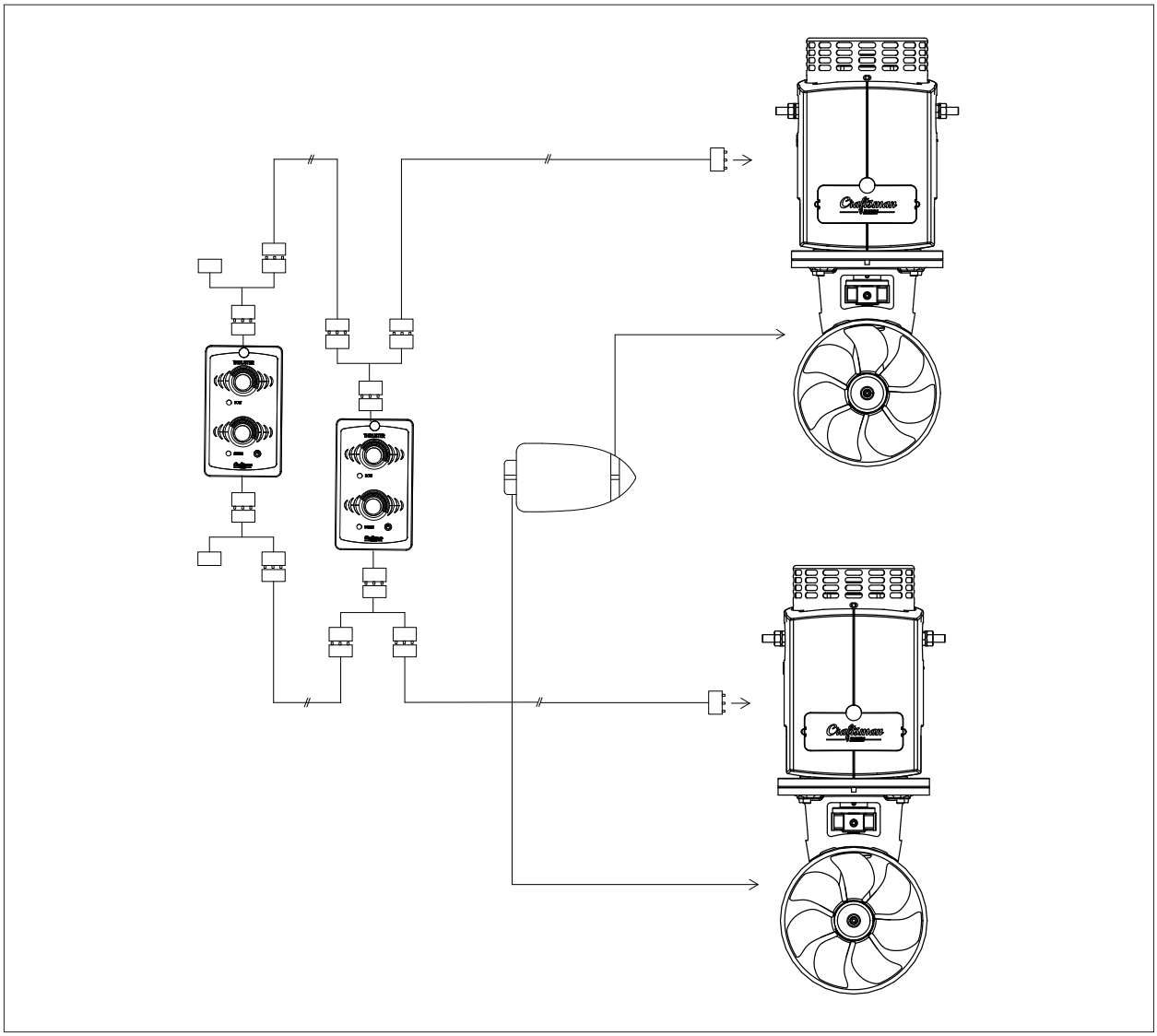


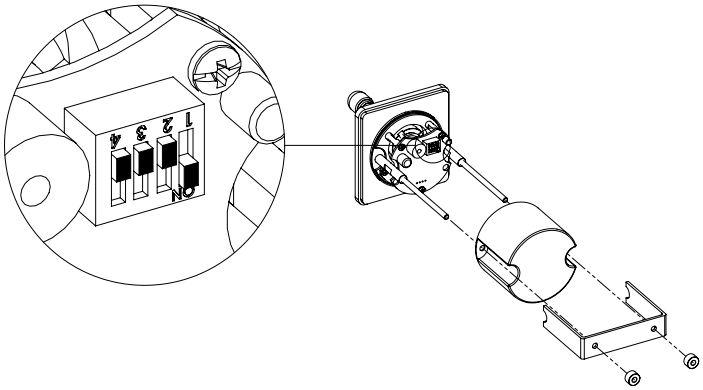
Figure 5 Connection of the Thruster panel for bow AND stern.

9.3 Settings of Thruster panel

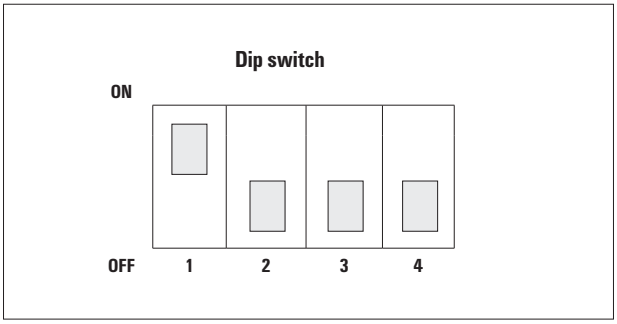
In order to be able to modify the settings, the backside of the panel must be removed. By changing the positons 1 – 4 of the dip switch from OFF to ON, the settings are altered.

When dip switch settings are changed, the panel must be switched OFF and ON.

Dip switch	Description
1	Setting for time lapse device when switching over portside <-> starboard
2	Setting for 2 minutes' continuous use of the joy stick/push buttons
3	Setting for automatic switching off of the panel
4	

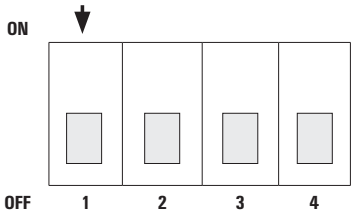


Factory setting:

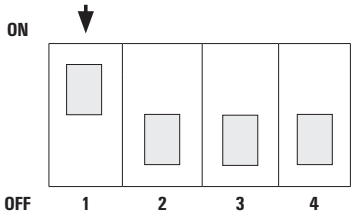


DIP SWITCH

Dip switch 1

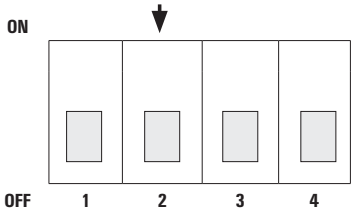


No time lapse.



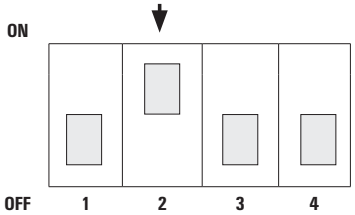
The time lapse amounts to 1 second.

Dip switch 2



If the joystick (or push buttons) are operated for more than 2 minutes continuously, the bow thruster will be switched off.

The LED indicator and the buzzer are activated.



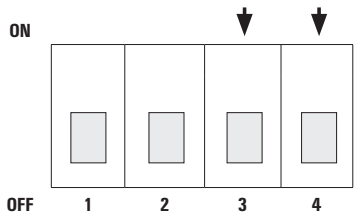
If the joystick (or push buttons) are operated for more than 2 minutes continuously, the bow thruster will NOT be switched off.

The LED indicator and the buzzer are activated.

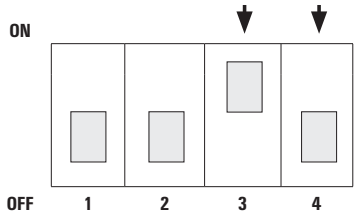
9.3 Settings of Thruster panel

DIP SWITCHES 3 and 4:

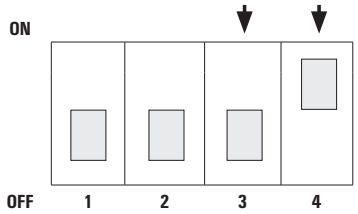
Dip switches 3 and 4



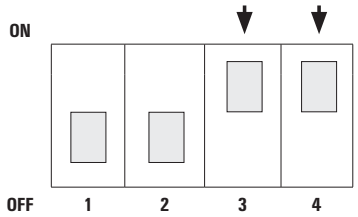
The panel will not be switched off automatically.



If the panel is not engaged during more than 30 minutes, it will switch off automatically.



If the panel is not engaged during more than 60 minutes, it will switch off automatically.



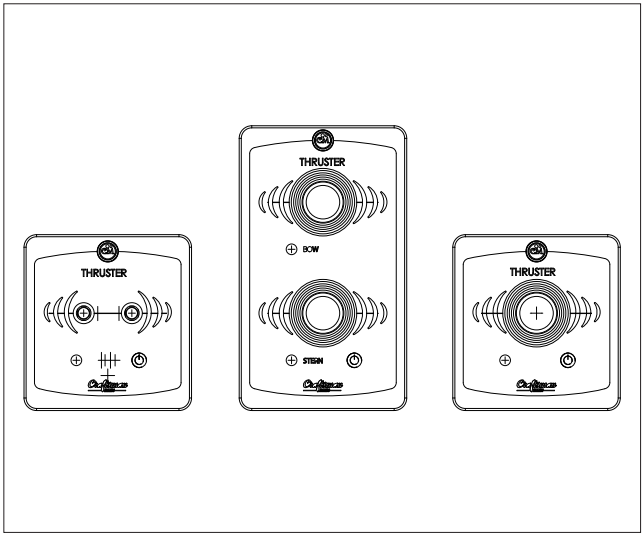
If the panel is not engaged during more than 120 minutes, it will switch off automatically.

Switching the panel ON and OFF:

Switching the panel ON:
Push the ON/OFF key.
The LED will blink intermittently with a green colour and the buzzer will sound. In order to activate the panel, the ON/OFF button must be pushed again within a time lapse of 6 seconds. The green LED will be ON continuously and the buzzer will stop. If the ON/OFF switch is not pushed (again) within 6 seconds' time, the panel will not be switched ON.

Switching OFF the panel by hand:
Push the ON/OFF switch so as to disengage the panel.

Automatic switch OFF of the panel:
If the settings of the dip switches 3 and 4 have been modified, as described under the heading "Settings", the panel will switch OFF automatically after 30 min, 60 min or 120 min respectively.



9.4 Operating the Thruster

Operation of the directional switch:

If the directional switch (push button or joystick) is operated, the Thruster will be engaged.

In the case of more than one steering position:

1. Never operate the Thruster from more than one position simultaneously.
2. Whenever the Thruster is engaged, the LED on the other steering positions will blink intermittently with a green colour.

If the directional switch is operated during more than 2 minutes continuously, the Thruster will, dependent on the setting in use:

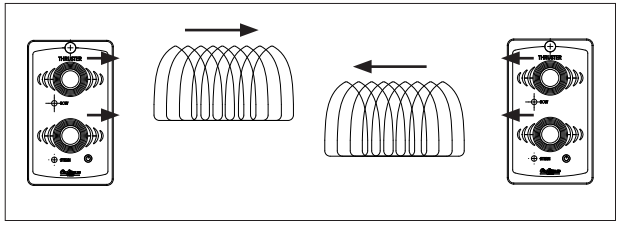
1. be switched off; the LED indicator and the buzzer are activated.
   If the joystick/push button is released, the bow thruster can be operated again thereafter.
2. not be switched off; the LED indicator and the buzzer are activated.

ATTENTION:

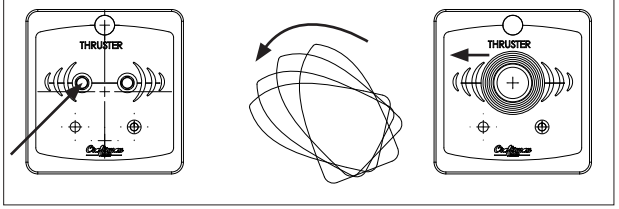
1. If the electric motor of the Thruster is engaged during more than 2 minutes, it can be seriously damaged.
2. The maximum engagement time amounts to 2 minutes per hour.

Bow + Stern Operation

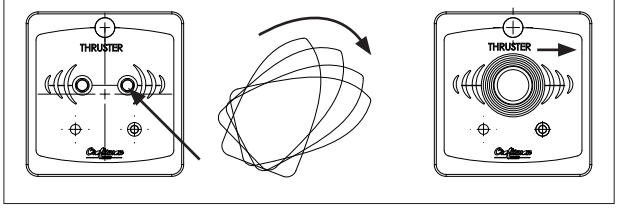
Move both joysticks into the same direction to achieve the following:



Turning the boat to portside



Turning the boat to starboard



Each Thruster motor is provided with a temperature safety switch. If the temperature of the motor becomes excessively high, the electric motor will be disengaged automatically.

Only for emergency use:

In an emergency situations, the Thruster can still be activated (after every time lapse of 3 seconds) in a pulsating fashion. This will require first the release of the directional switch.

If the Thruster is activated directly thereafter, it will operate again during 3 seconds maximum, after which the temperature safety switch will disengage the Thruster again. By releasing and engaging the directional switch again, the thruster will be operative for another 3 seconds.
And so on and so forth.

If the thruster is operated in this condition there is a high risk that the motor can damage. The risk is to be borne exclusively by the user.
Damaged / overheated motor is excluded from warranty.

Caution
Switch OFF all electrical circuits before starting maintenance work.
Disconnect the battery.

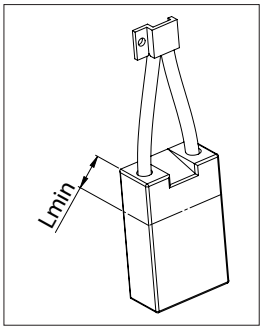
There are no user serviceable parts inside your Thruster and therefore, in the case of a problem, please refer to the Dealer.

Monthly

1. Clean the thruster area.
2. Vacuum or blow out the motor grid on top, to remove carbon dust.
   Avoid breathing in the carbon dust.

Yearly or when the thruster disfunctions

1. Clean the thruster area.
2. Vacuum or blow out the motor grid on top, to remove carbon dust.
   Avoid breathing in the carbon dust.
3. Clean the propeller and inspect for damages. Damaged propeller must be replaced.
4. Replace the anode if needed.
5. Inspect all cable connections; make sure that they are clean and tight.
6. Check for any damage of all wires used for the Thruster and replace if necessary.
7. Check the batteries for voltage level, as the proper functioning of the Thruster motor is directly dependent on its battery.
8. Check and tighten the motor mounting bolts.
9. Inspect the motor's carbon brushes. Slide the brushes back and forth in their holders. They should be loose and slide freely. Clean the carbon brush for dust.
10. Check the carbon brushes for wear and tear, by measuring the length
    Replace them if the length is less than 12mm.
    When replacing brushes, always replace the complete set of brushes.
11. For thrusters with an oil reservoir, check the oil level.



11 Trouble shooting

Motor does not operate

- Is the battery main switch in "ON" position. *
- Is the main fuse burnt out. *
- Is the circuit breaker of the control panel tripped. * (Figure 1)
- Check for damaged or disconnected cables. *
- Check if anything is blocking the propellor, piece of wood, rope etc.

Motor operates slowly/low thrust

- Check the battery condition.
- Clean all electrical terminals corrosion may cause bad connections.
- Inspect the carbon brushes of the motor (to be done by technician only)..
- Check if anything is blocking the propellor, piece of wood, rope etc..

Motor turns too fast but there is no thrust

- Check if the propeller is damaged or lost.

5A circuit breaker for the control panel.
Reset (push) if the circuit breaker is tripped.

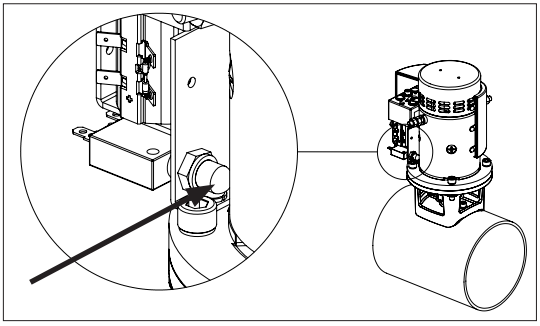


Figure 1

LED error blinking codes:

Relay control wires detection

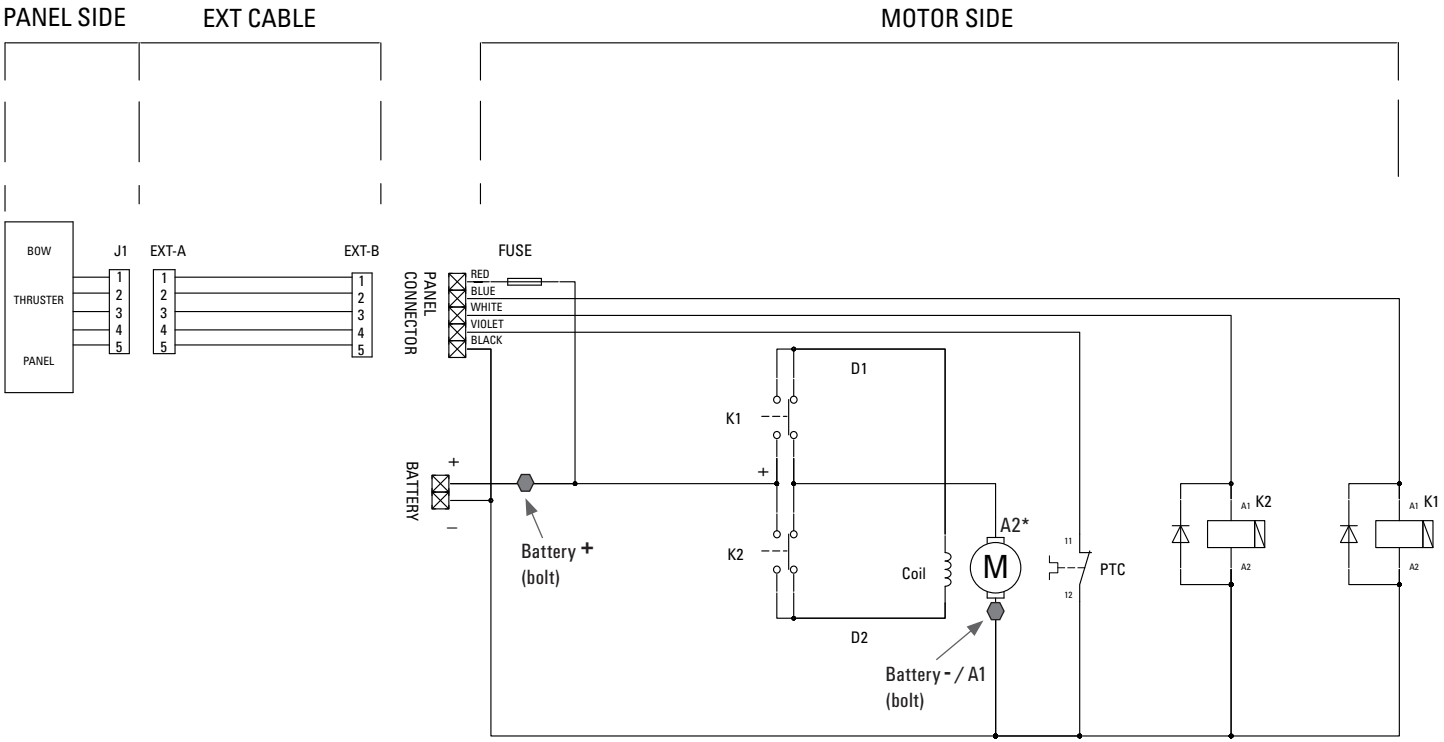
- **LED flashes green, no beep sound**
  When operating the thruster, the motor does not run, LED will continue to flash green.
  -> One control wire to the relay is loose, check the green and white wire and/or minus wires.

- **LED is continuous red, no beep sound**
  When operating the thruster: LED flashes red with a beep_beep_beep sound.
  -> Both control wires to the relay are loose, check the green and white wire and/or minus wires.

Temperature protection

- **Dip switch 2 is OFF: LED flashes red, no beep sound**
  When operating the thruster, the motor will only run for maximum 3 seconds,
  the LED flashes red with beep_beep sound and the motor is switched OFF.
  -> Temperature protection switch is activated / or defect/ or the purple wire is loose.
- **Dip switch 2 is ON: LED flashes red, no sound**
  The temperature of the motor is already too high, when operating the thruster, the motor will NOT switch OFF but the LED will flash red with a beep sound to warn for high temperature.
- **Dip switch 2 is ON:**
  When operating the thruster, after 2 minutes continuously running, the motor will NOT switch OFF,the LED flashes red with beep sound to warn that the motor is operated more than 2 minutes with a high riks of overheating the motor

At high temperature the temperature switch "opens", in this condition the thruster motor can only run for 3 seconds intermittent. When the temperature cools down, the temperature switch will close. The temperature switch is "Normally Closed" and making connection to the minus (ground), In this condition the thruster motor works normally.
If the temperature switch is defect, it can be tested by connecting the purple wire directly to battery minus.



Pin configuration of 5 pole connector:

Pin 1 : RED = Positive voltage for control panel
Pin 2 : BLUE = Output 1 to solenoid of relay
Pin 3 : WHITE = Output 2 to solenoid of relay
Pin 4 : VIOLET = To Temperature Switch (inside the motor)
Pin 5 : BLACK = Battery minus

PTC : Temperature switch Normally Closed contact
Battery + : Refers to B+ bolt on the side of the motor (isolated from the motor body)
Battery - : Refers to B- bolt on the side of the motor (isolated from the motor body).

* A2 : A2 does NOT refer to the bolt on the motor
This is a cable output from the motor to the relay

Notes

CE

DECLARATION OF CONFORMITY

Manufacturer's Name:	Craftsman Marine
Manufacturer's Address:	Pascalstraat 88 3316GR Dordrecht Netherlands
Equipment description	Electric thruster
Equipment Model Designation	BA.110.02812 – thruster 28kgf 12V BA.110.04012 – thruster 40kgf 12V BA.150.06012 – thruster 60kgf 12V BA.185.08512 – thruster 85kgf 12V BA.185.09024 – thruster 90kgf 24V BA.185.10012 – thruster 100kgf 12V BA.185.12024 – thruster 120kgf 24V BA.250.13012 – thruster 130kgf 12V BA.250.15524 – thruster 155kgf 24V BA.250.18024 – thruster 180kgf 24V

Craftsman Marine hereby declares that the electric thrusters are in compliance with the harmonised standards EN 55016-2-3 (2007), EN 14010:2003+A1:2009, EN 60034-1:2010+AC:2010, application of EMC directive 2004/108/EC, EN 55016-2-3 (2007), 2006/42/EC , when installed in a recreational craft, on accordance with the manufacturer's supplied instructions.

Dordrecht, 21-04-2025

A. Soekhoe
Authorized representative

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www.craftsmanmarine.com

ZD.010.072EN-270126

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