

SIDE-POWER
Thruster Systems

SXP80/185T & SXP100/185T
External sternthruster
assembly

*Keep this
manual onboard !*

Installation and user manual



SLEIPNER MOTOR AS

P.O. Box 519
N-1612 Fredrikstad
Norway
Tel: +47 69 30 00 60
Fax: +47 69 30 00 70

www.side-power.com
sidepower@sleipner.no



Made in Norway

Contents

Technical specifications	2
Planning & important precautions.....	3
Stern thruster installation considerations.....	3
Bolt on installation	4
Installation measurements.....	5
Electrical installation	6
Control panel and control-leads.....	7
Visual wiring diagram	8
Technical wiring diagram	9
Electrical installation of stern thruster systems	9
Important user precautions.....	10
How to use Side-Power thrusters.....	11
Maintenance.....	12
Troubleshooting.....	13
Warranty statement	14
Checklist.....	15
Parts list.....	15
Service centres	16

DECLARATION OF CONFORMITY



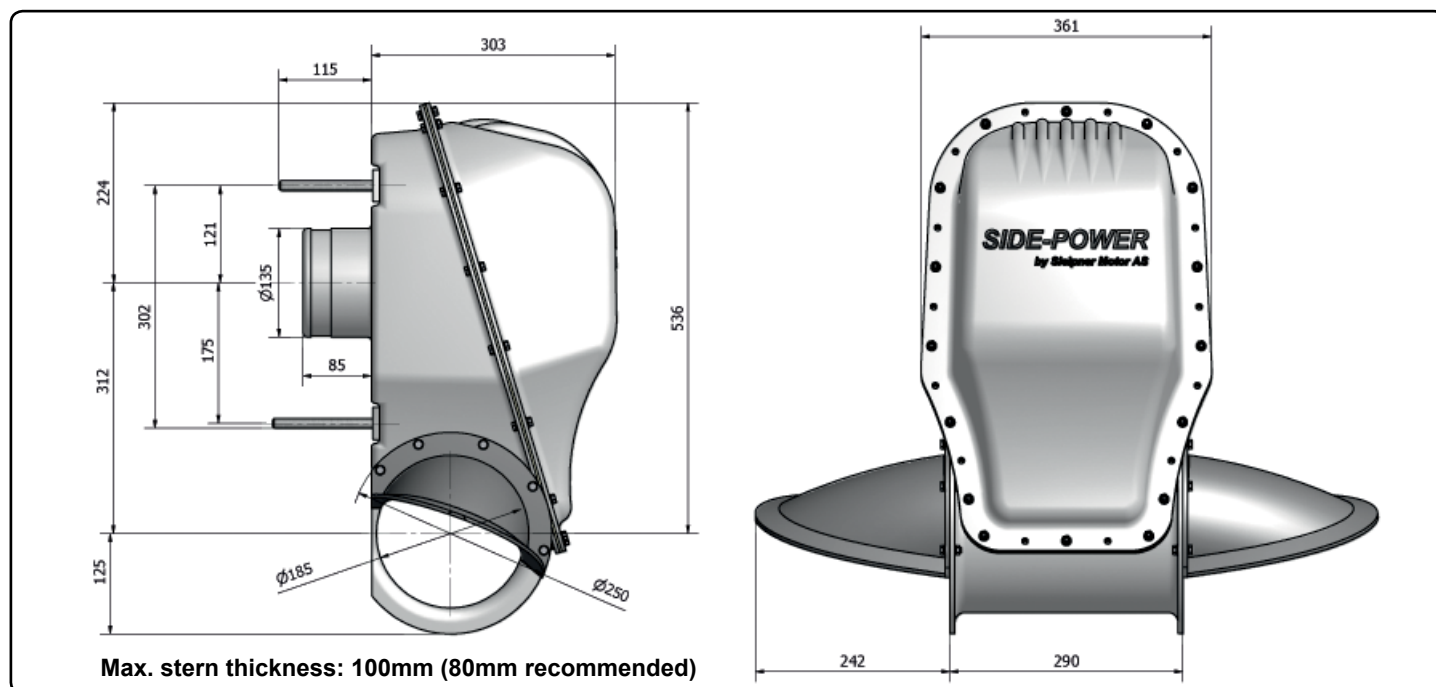
We, Sleipner Motor AS
 P.O. Box 519
 N-1612 Fredrikstad, Norway
 declare that this product with accompanying
 standard remote control systems complies with the
 essential health and safety requirements according
 to the Directive 89/336/EEC of 23 May 1989
 amended by 92/31/EEC and 93/68/EEC.

Technical specifications

- Motor:** Custom made reversible DC-motor, 12 or 24 Volt
- Motor output:** SXP80/185T: 4,4kW SXP100/185T: 6kW
- Gearhouse:** Seawater resistant bronze. Ballbearing at propellershaft; combination of ballbearing and slide bearing at driveshaft.
- Motor bracket:** Seawaterresistant aluminium.
- Ignition protection:** Conforms to ISO 8846
- Propeller:** 5 blade skew "Q"-propeller , fibreglass reinforced composite.
- Batteries:** Minimum recommended battery capacity (cold crank capacity by DIN standard)
 SXP 80/185T 12V : 550 CCA DIN/1045 CCA SAE
 SXP 80/185T 24V : 300 CCA DIN/570 CCA SAE
 SXP 100/185T 12V : 750 CCA DIN/1425 CCA SAE
 SXP 100/185T 24V : 400 CCA DIN/760 CCA SAE
- Max. use:** Up to continuous run time depending on load. Remaining run time shown on control panel.
- Safety:** Electronic time-lapse device protects against sudden change of drive direction. Electric thermal cut-off switch in electromotor protects against overheating (auto reset when electromotor cools down).

 Flexible coupling between electro-motor and driveshaft protects electromotor and gearsystem if propeller gets jammed.

 PJC panel shuts of automatically 5 minutes after last use (factory default). This interval can be adjusted in 5 min steps up to 60 minutes or turned off completly. The PPC Speed Control unit wil turn off motor power each time main solenoids is activated. This removes any possibility for solenoid lock in. Any fault in the main solenoids will give feed back to the panel and turn off power to the electric motor.



Planning and important precautions

Prior to installation, it is important that the installer reads this guide to ensure necessary acquaintance with this product.

- ⌚ The thruster must NOT be installed in compartments that require ignition proof electric equipment. If necessary, make a separate compartment.
- ⌚ The electromotor will generate some carbon dust so that any storage compartment must be separated from the thruster to prevent the stored items from becoming dusty/dirty.
- ⌚ If you are installing the Sidepower in a small room /compartment, it should be ventilated to ensure cooling of the electromotor.
- ⌚ If the height in the room you are installing the Side-Power is limited, the Side-Power can be installed horizontally or at any angle in between.
 - If the electro motor is positioned more than 30° off vertical, it must be supported separately.
 - The electromotor must be handled carefully. Do not lift it by the internal connections/main terminals or put it down on the driveshaft.
 - Beware to keep installation within advised measurements. No part of the propeller or gearhouse must be outside the tunnel.
- ⌚ The electromotor, its components, contacts / plugs or other joints in the control cables must be mounted so that they will keep dry at all times.
- ⌚ We advice to paint the gearhouse and propellers with antifouling. PS! Do not paint the zinc anodes, sealings or propellershafts.
- ⌚ Do not finish the inside of the tunnel with a layer of gelcoat / topcoat or similar. It is only room for a thin layer of primer and two layers of anti-fouling between the tunnel and the props.
- ⌚ With the boat on land, only run the thruster for a fraction of a second, as without resistance it will accelerate very fast to a damaging rpm. Also, while the thruster is in air, make sure that the propellers have come to a complete stop before performing a directions change of the thruster, as it might cause damage to the thruster.
- ⌚ The PPC power control unit should be installed in a dry, ventilated place - cable connections facing down. Mount unit with battery positive cable branching out at unit terminal, not at thruster motor. Allow free space at min 200mm over and min 100mm in front and at sides. Take into consideration that a 5 m multicable shall be plugged in between thruster motor and PPC unit.
- ⌚ This manual is intended to support educated/experienced staff and is therefore not sufficient in all details for the correct installation.
- ⌚ Don't install the electromotor at close range to easily flammable objects as it will reach over 100°C before the temperature switch is activated.
- ⌚ Do not store items close to the thruster motor as it gets hot as well as any loose items near the thruster motor can cause problems with electrical wiring coming loose and short-circuiting.
- ⌚ When installed in boats approved or classified according to international or special national rules, the installer is responsible for following the demands in accordance with these regulations / classification rules. The instructions in this guide can not be guaranteed to comply with all different regulations/classification rules.
- ⌚ These instructions are only general instruction. If you are not skilled to do this work, please contact professional installers for assistance.

NB! Faulty installation of the tunnel, thruster, PPC Power Control unit or panel will render all warranty given by Sleipner Motor AS void.

Stern thruster installation considerations

To achieve maximum effect, reliability and durability from your Side-Power stern thruster, a correct installation is very important.

Please follow the instructions carefully, and make sure that all checkpoints are carefully controlled.

Additional considerations for positioning of the stern thruster

- ⌚ Make sure that the stern-tunnel does not disturb the waterflow under the hull
- ⌚ Ensure that when installed the thruster does not foul existing equipment inside the boat like steerage links etc.
- ⌚ Make sure that the water flow from the thruster are not interferred to much by sterndrives, trimtabs etc. as this will reduce the thrust considerably.
- ⌚ It is possible to mount the tunnel off the boat's centre line if necessary.
- ⌚ If the stern thickness is to much for the thruster in question you can easily remove hull material in the necessary area to fit the thruster. You only have to reduce the stern thickness down to the max. thickness measurement in the drawing.

IMPORTANT!

Do not remove the label stating serial number from the cables!

**This serial number is required to get the
correct spare and service parts!**

Fig. 1

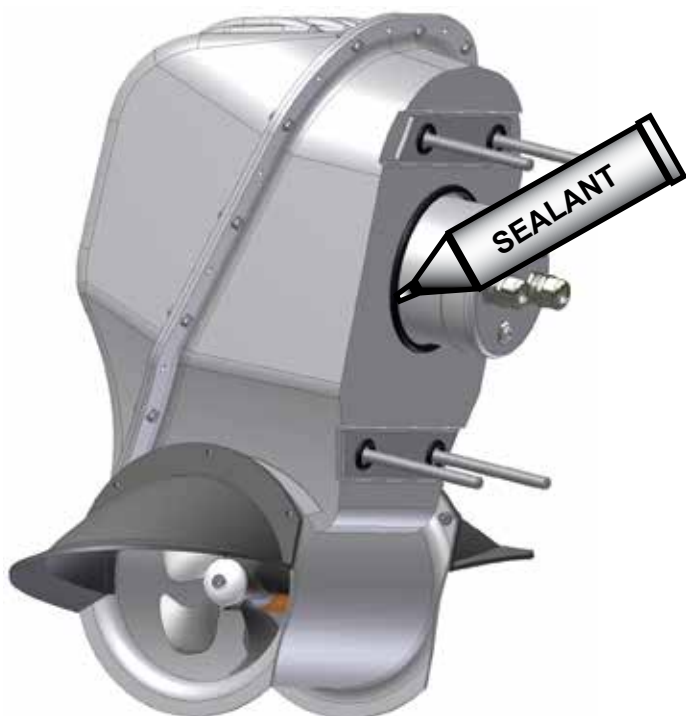
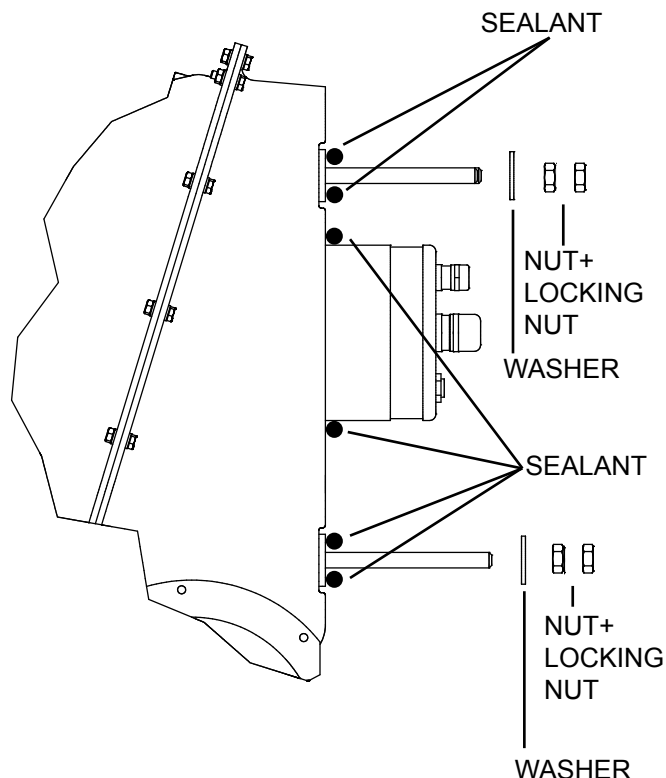


Fig. 2



Bolt on installation of the sternthruster assembly

1. Make sure that there are enough space both inside and outside the transom of the boat.

NOTE:

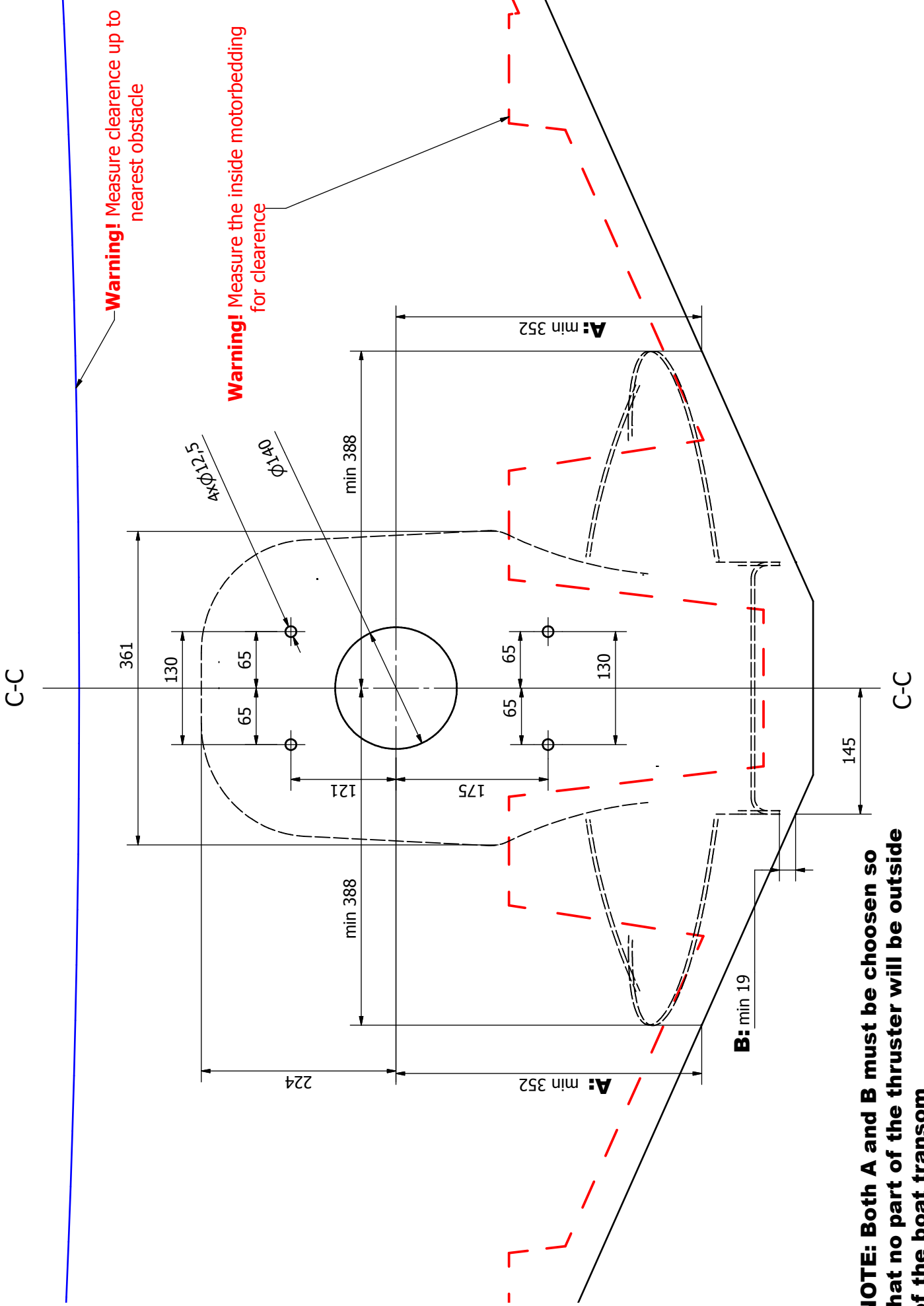
Make sure no part of the thruster is lower than the transom or protrudes outside the transom on either side - the lowest part of the thruster must be minimum 19mm over the bottom of the transom. Please take note of both A and B minimum measurements on the dimension drawing, page 5. A is most significant if the hull bottom angle is more than 24 degrees, B is most significant if the hull bottom angle is less than 24 degrees.

Refer to drawing on page 5 and attached drilling template.

2. Once the place for the installation has been decided, use the drilling template and drill the holes.
3. It is important that the thruster assembly sits flush on the transom. If this is not so, then the area on the transom will have to be flattened to ensure a snug fit.
PS ! Take care with grinders as it is very easy to remove too much in fibreglass
4. When fitting the thruster assembly, ensure that there is ample sealant (Sikaflex or similar) around the center tube with cable connectors and around the bolts to make a water tight fitting (Fig. 1/2).
Bolts diameter: \varnothing 12mm stainless steel

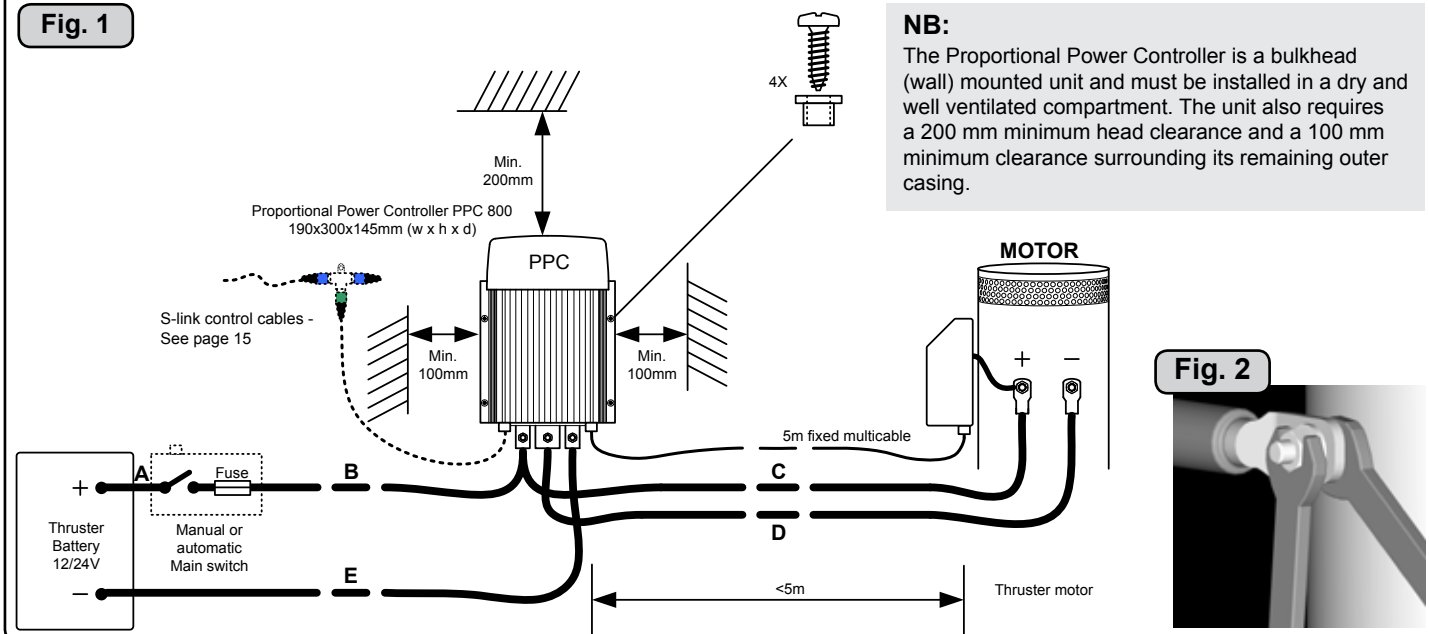
If a bow thruster is also installed, we strongly advise to use separate battery banks for the two thrusters to avoid extreme voltage drop if both thrusters are to be used at the same time. Refer to the thruster manuals for advised battery capacity and cable sizes for each thruster. Also ensure that you do not have direct connections of both + and - if you have built together controls for both thrusters to avoid current leakage between separate battery banks. If you are installing the standard Sidepower dual joystick panel this is already secured.

Installation measurements



NOTE: Both A and B must be chosen so that no part of the thruster will be outside of the boat transom

Fig. 1



Battery & cable recommendations:

Model	Voltage	Nominal current draw	Min. battery CCA	mm ² AWG	>7m total + & -		7-14m total + & -		15-21m total + & -		22-28m total + & -		28-35m total + & -		36-45m total + & -	
					Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.
SX80/185T	12 V	530 A	DIN: 550 SAE: 1045	mm ² AWG	60 2/0	70 2/0	95 3/0	2x 70 2x 2/0	2x 70 2x 2/0	2x 95 2x 2/0	2x 95 2x 3/0	270*	2x 120 2x 4/0	340*	NA	NA
	24 V	260 A	DIN: 300 SAE: 570	mm ² AWG	25 1	35 1	35 1	50 1/0	60 2/0	70 2/0	70 2/0	95 3/0	95 3/0	120 4/0	120 4/0	2x 95 2x 3/0
SX100/185T	12 V	740 A	DIN: 750 SAE: 1425	mm ² AWG	95 3/0	95 3/0	2x 70 2x 2/0	2x 95 2x 3/0	2x 95 2x 3/0	280*	250*	375*	NA	NA	NA	NA
	24 V	340 A	DIN: 400 SAE: 760	mm ² AWG	35 1	50 1/0	50 1/0	70 2/0	60 2/0	95 3/0	95 3/0	120 4/0	120 4/0	2x 95 2x 3/0	2x 95 2x 3/0	2x 120 2x 4/0

Minimum and recommended cable dimensions can be identical due to safety margins and cable heat considerations for short cable lengths.

* Minimum or recommended cable cross section in mm²

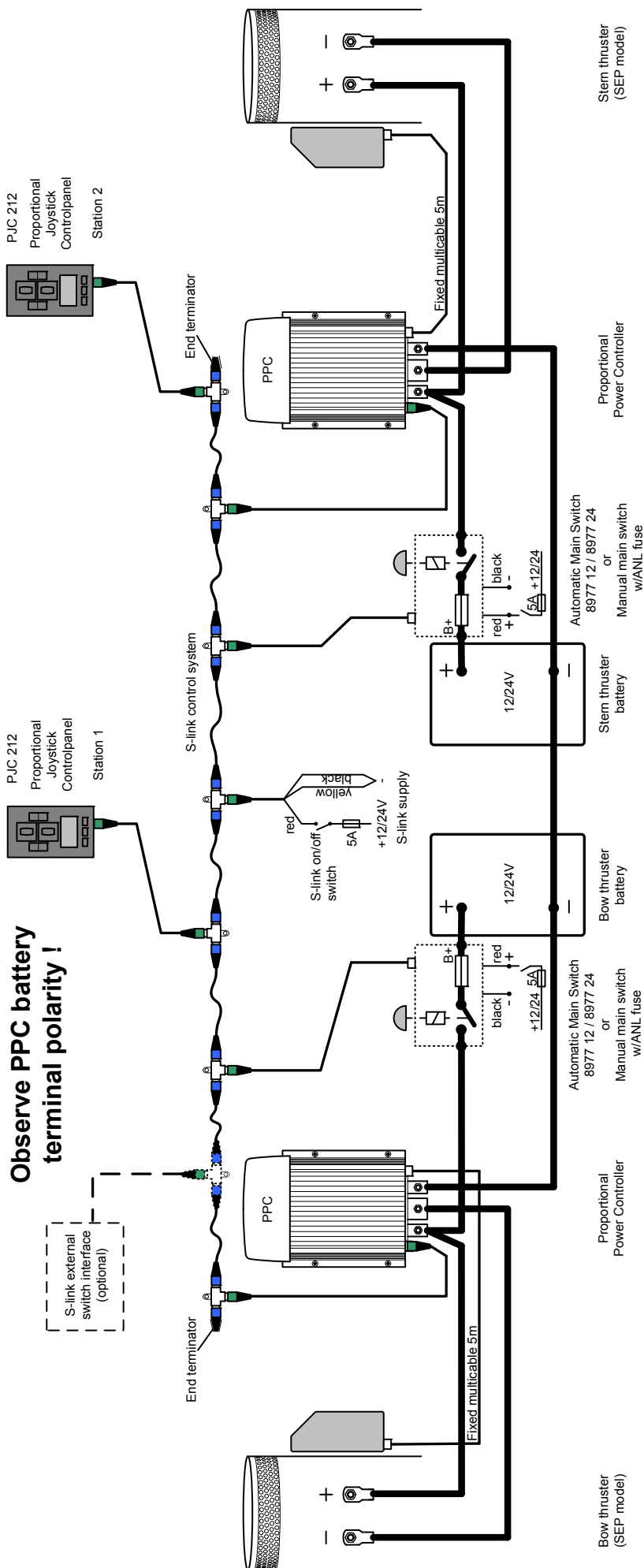
Electrical installation

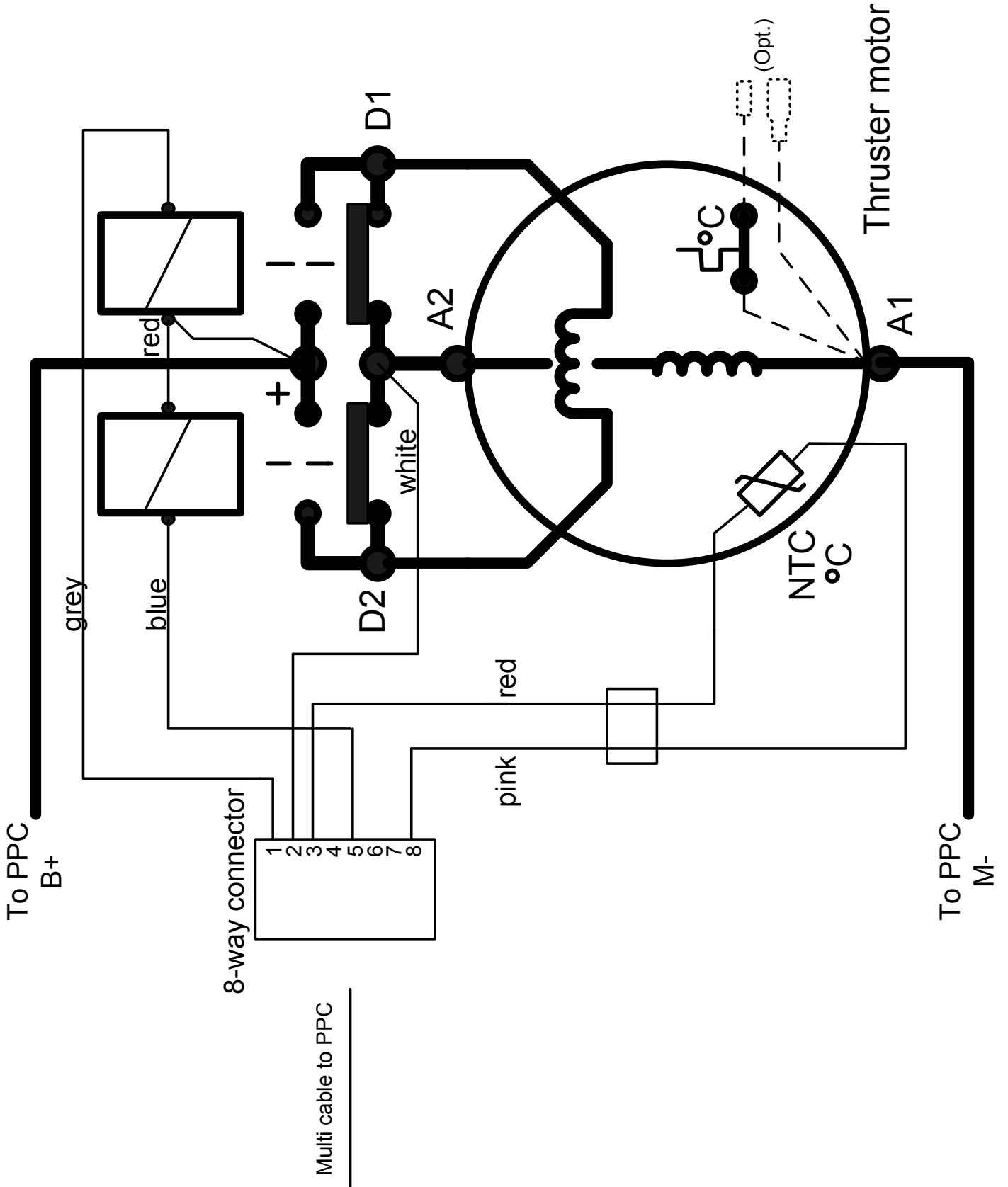
- Explanation of electrical table
 - All cable lengths are the total of A+B+C+D+E in Fig. 1.
 - Battery size is stated as minimum cold crank capacity, not Ah.
 - Use slow fuse rated to hold stated Amp-Draw for min. 5 minutes.
- It is important that you use a good cable size and batteries with a high cranking capacity to feed the thruster, because it is the actual voltage at the motor while running the thruster that decides the output rpm of the motor and thereby the actual thrust. Please see the list below for advised min. sizes of cables and batteries. You can of course use larger cables for even better results.
- A main switch that can take the load without noticeable voltage drop must be installed in the main positive lead so the power for the thruster can be turned off independent of the rest when not on board or in emergencies. This should be placed in an easy accessible place and the boats instructions should inform that this should be turned off like the boat's other main switches.
- We also advice to install a fuse in the positive lead for protection against short circuiting of the main cables. This fuse should be of a adequate quality which normally means that it is physically large as these have less voltage drop than the simple / small ones. It should be of the slow type and sized to take the amperage draw for at least 5 minutes.
- It is highly recommended to install a Side-Power Automatic Main Switch 897712 (12V) eller 897724 (24V). The AMS will be activated when the panel is turned on, contains an automatic short circuit fuse and a manual emergency stop. The AMS will also provide feedback to the panel regarding evt. faults.
- The cable ends must be fitted with terminals and these must be well isolated against contact with anything but the proper connection point.
- Terminals must be properly tightened. Secure/hold inner nut when tightening (Fig. 2). Tighten $\varnothing 10\text{mm}$ / 3/8" bolt with 15 Nm/11lb/ft.

Wiring diagram

Control panel installation:

- You can install as many panels as you wish by using optional Side-Power S-link T-connectors. If two or more panels are operated at the same time in opposite directions, the thruster will stop. When two or more panels is operated in the same direction, the thruster output will be determined by the panel giving the largest signal.
- When using original Side-Power equipment it is all "plug & go".
- If the drive direction of the thruster is the opposite of what expected, the blue and grey wire must be changed on the thruster solenoid.
- The mechanical installation of the panel is described in the manual following the panel.
- The thruster control should be placed in a position where it is easy to use, and it is very common to use the thruster at the same time as your gear/throttle lever so it is normally a user friendly solution to be able to access these with one hand for each control.





Checklist

- Propellers is fastened correctly to the shaft.
- Propellers turns freely in tunnel.
- The zinc-anodes holding screw is tightened well with thread glue.
- Anti-fouling have been applied to the gear leg and propellers but NOT on the anodes or the gearleg lid where the propellers is fastened.
- The brush springs are fitted correctly on the brushes in the electro motor (check through the grid around the top end of the motor).
- Correct drive direction as per control panel.
- All electrical connections are clean, dry and tight, and the correct cable, fuse and main switch sizes have been used.
- With a ohm meter check that there is no electrical connection between electro motor body and positive terminal on the motor and between the electro motor body and the negative (A1) terminal on the motor.
- The bolts holding the gear leg and motor bracket together are tightened correctly.
- The bolts holding the electro motor to its bracket are tightened correctly.
- The 4 main cables connected to 3 terminals on PPC is placed correctly and properly fixed to avoid mechanical stress on the terminals

Very important for IP protection:

- The main power cables have securely been connected as described.
- The control lead ends out of the explosive area and has been properly fitted and secured against damage.

The thruster has been installed as per the instructions in this manual and all points in checklist above have been controlled.

Signed: Date:

Extra pre-delivery tests by installer / yard who does not use other quality control systems !

Thruster type: Voltage:

Serial number:

Date of delivery:

Correct drive direction as per control panel:

Voltage at thruster when running:

Battery cable size used:

The compartment where the thruster is fitted is isolated from general bilge water and has no obvious or suspected risks for flooding.

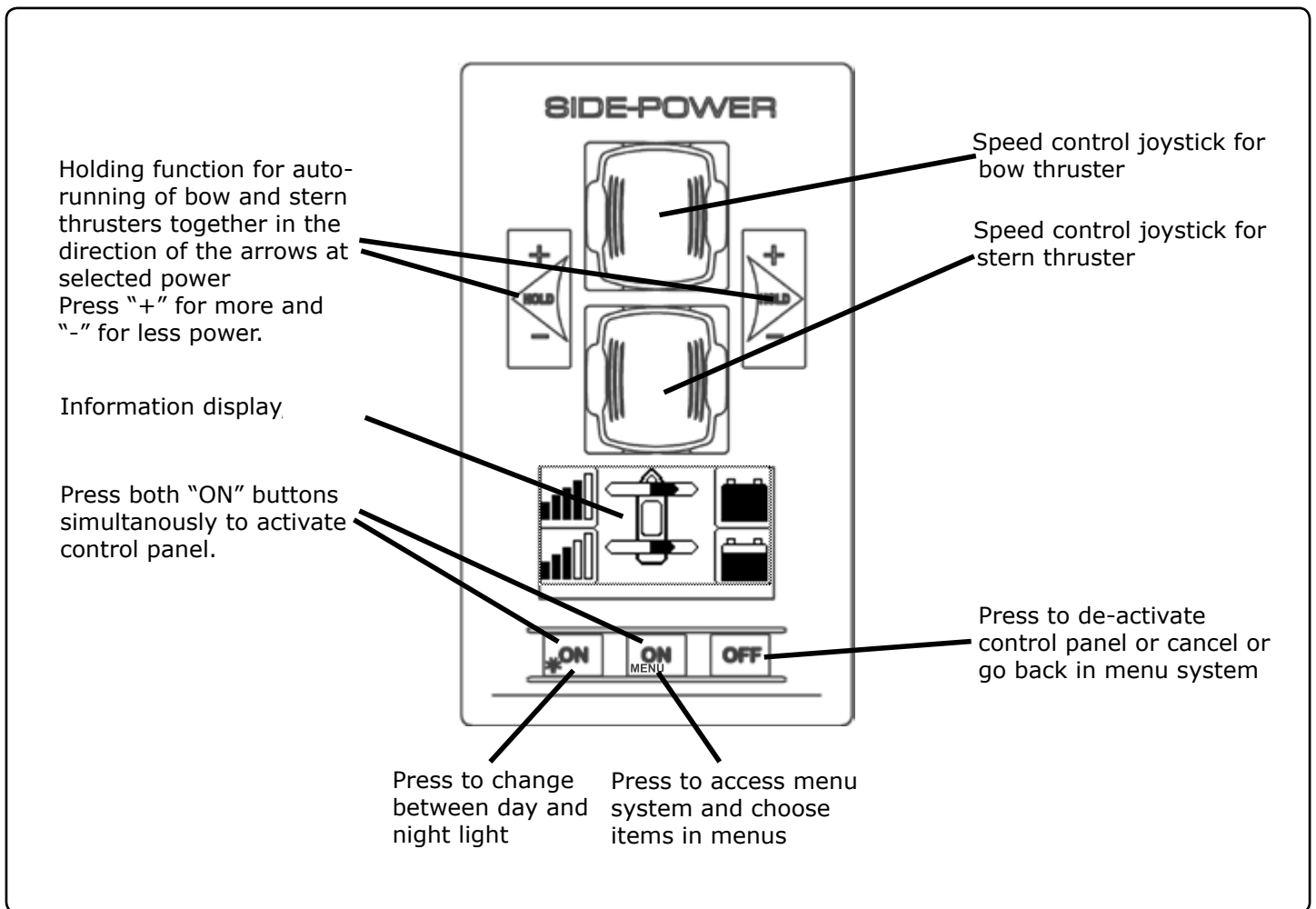
Other comments by installer:

Important user precautions

- Ensure that you know the location of the main battery switch that disconnects the thruster from all power sources (batteries) so that the thruster can be turned off in case of a malfunction.
- Always turn the main power switch off before touching any part of the thruster, as an incidental start while touching moving parts can cause serious injuries.
- Always turn the control device off when the thruster is not in use.
- The maximum continuous usage time of the electrical thruster is approximately 3 minutes. The electromotor has a built in thermal cut-off switch that will shut off the electromotor if it is overheating and re-engage it when it has cooled down some. This should be considered when planning your maneuvering.
- This also means that the thruster will limit its total running time per time period so that you can not count on the thruster to hold you in a current and side wind for extensive time periods. Depending on the surrounding temperatures etc. the thruster will be able to run approximately 10 % of the time.
- Never use a thruster close to somebody in the water, as the thruster will draw objects close by into the tunnel and contact with the rotating propellers will cause serious injuries.
- With the boat on land, only run the thruster for a fraction of a second, as without resistance it will accelerate very fast to a damaging rpm. Also, while the thruster is in air, make sure that the propellers have come to a complete stop before performing a directions change of the thruster, as it might cause damage to the thruster.
- If the thruster stops giving thrust while the electromotor is running, chances are that there is a problem in the drive-system. You must then immediately stop trying to run it, and turn it off, as running the electromotor for more than a few seconds without resistance from the propeller, can cause serious damage to the electromotor.
- When leaving the boat always turn off the main power switch for the thruster.
- We advice to always keep the main engine(s) running while using a thruster. This will keep the batteries in a good charge condition. This will also give better performance to the thruster, as a higher voltage at the thruster results in a higher torque (power) in the electromotor.
- Please note that the performance of a thruster strongly depends on the voltage available at the electromotor. This voltage will decrease by time because aging batteries have a reduction of capacity. By installing new batteries the effect of the thruster should be back at the original level.
- Make sure that only one control is used at the same time, if two panels are operated in opposite directions at the same time the thruster will not run at all. If they are operated in the same direction the thruster will run in this direction.
- If the thruster is not performing or functioning as usual, the cause for this must be found and corrected as soon as possible so to avoid causing any other or further damage to the equipment. You must also turn off the main battery switch immediately in case the problem is of electric origin.
- Never store anything (e.g. equipment, sails, ropes etc.) in the same compartment as the thruster. When the thruster runs for a longer period it will get hot and will cause damage.
- It is the owner/captain/other responsible party full responsibility to assess the risk of any unexpected incidents on the vessel. If the thruster stops giving thrust for some reason while maneuvering you must have considered a plan on how to avoid damage to persons or other objects.

Warning:

- 🔊 **Tampering with the Ignition Protected stern thruster assembly or any attempt to disassemble anything on this thruster assembly inside the boat can cause an explosion with very serious consequences.**
- 🔊 **If there is a problem with your Ignition Protected stern thruster, please contact your dealer.**
- 🔊 **Danger: NEVER Disassemble any part of the Ignition Protected stern thruster assembly**



How to use Side-Power thrusters

How to use a bow thruster

1. Turn main power switch for the bow thruster on. (Always turn off the main power switch when not onboard.)
A Side-Power Automatic Main Switch will turn on/off when the panel is turned on/off
2. Please take some time to exercise thruster usage in open water to avoid damages to your boat.
3. Turn the control panel on by pushing both "ON" buttons on the original Side-Power panel simultaneously.
4. Move the joystick in the direction you wish the bow to move. Other controls like foot switches or toggle-switches on the throttle can be used. These connected to the S-link control system by a S-link interface (Refer to schematics in interface manual for installation)
5. Depending on the sideways speed of the bow, you must disengage the control device shortly before the bow is in the desired direction, as the boat will continue to move after stopping the bow thruster.

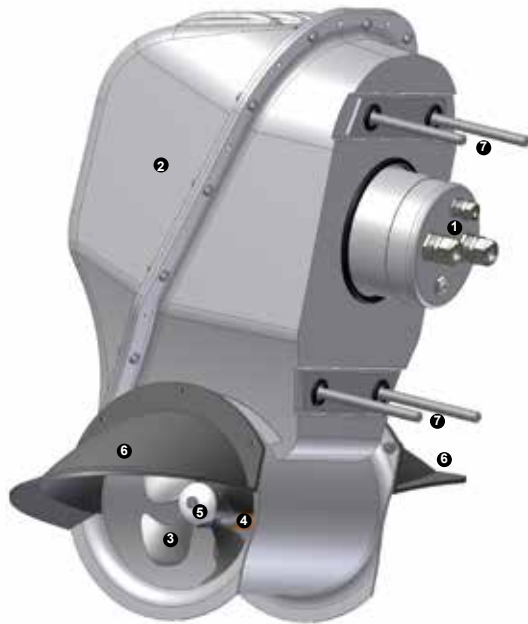
How to use a single stern thruster

Some boats might however have installed a single stern thruster because of space limitation in the bow. In this case the stern thruster is used in the same way as a single bow thruster or moving the boat's stern.

How to use a bow and stern thruster combined

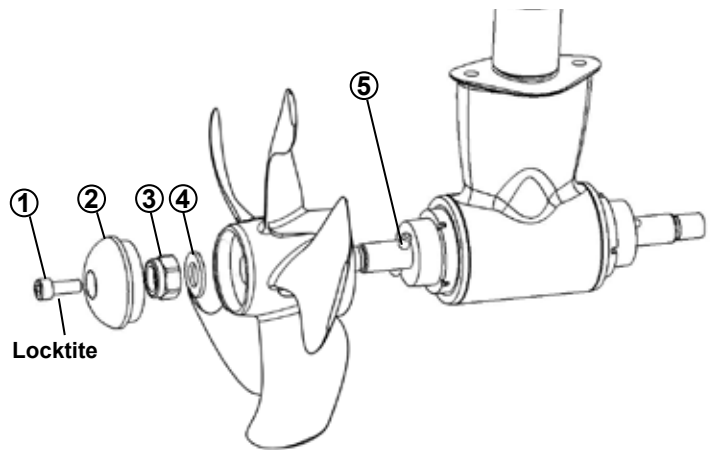
The combination of a bow and stern thruster offers total manoeuvrability to the boat and the opportunity to move the bow and the stern separately from each other. This enables you to move the boat sideways in both directions and to turn the boat around its own axis staying at the same place. Refer to the PJC control panel manual for detailed instructions.

- Again, if in doubt, try in open water first!



- ❶ Power & control cables
- ❷ Ignition protected and waterproof casing
- ❸ 5-blade skew Q-PROP propeller for ultimate performance.
- ❹ Prefilled & sealed gear leg.
- ❺ Changeable anode protects gear-house from corrosion in seawater.
- ❻ Additional cowls
- ❼ Bolts securing the assembly to transom

- ❶ Fastening screw for anode
- ❷ Anode
- ❸ Propeller lock nut
- ❹ Washer
- ❺ Drivepin for propeller



Maintenance

- » Keep the propeller and gear leg clean from growth by painting with antifouling before every season.
PS ! The anode, sealing and propeller shafts must absolutely not be painted. Be careful that you don't fill paint in the "tracks" in the gear leg that the propeller hub moves in.
- » Change the anode before every season, or when about half the anode is gone. Always use a sealant on the screw holding the anode to ensure that it does not fall off. Please observe that in some water conditions it can be necessary to install an extra anode to ensure that it lasts for the whole period between regular service lifts of the boat. Consult your dealer for information on how to do this.
- » As a part of the seasonal service of your boat, and before every season, always check that:
 - The propeller is securely fastened
 - The area where the thruster is installed is clean and dry. If there are signs of water you must try to find the source and eliminate it.
 - All electrical connections are clean and fastened firmly.
 - Make sure that your batteries are in a good condition so that the thruster gets a good voltage. Old or bad batteries will give a reduced performance from the thruster.

Warning:

- ⚠ **Tampering with the Ignition Protected stern thruster assembly or any attempt to disassemble anything on this thruster assembly inside the boat can cause an explosion with very serious consequences. Tampering will also void the thruster assembly waterproofing.**
- ⚠ **If there is a problem with your Ignition Protected stern thruster, please contact your dealer.**
- ⚠ **Danger: NEVER Disassemble any part of the Ignition Protected stern thruster assembly**

Before seeking assistance at the help desk of your Side-Power dealer / distributor please perform these tests and make notes of all measurements to ensure that they have as much information as possible to work on.

NB! All check points and solutions must be carried out after consulting the relevant information elsewhere in this manual to understand how the system is intended to work.

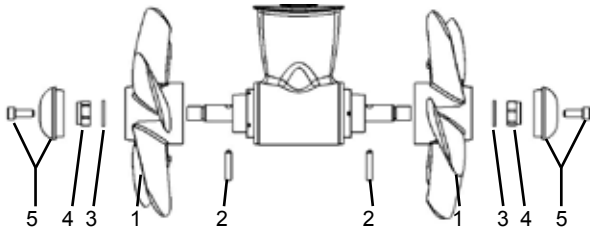
If you are unable to understand what to check, you must consult a professional.

<i>Check</i>	<i>Solution</i>
» The electromotor runs, but there is no thrust.	
If the flexible coupling between the motor and driveshaft is not fitted correct inside the boat.	Check the flexible coupling/shear pin and the motor installation to ensure correct connection of the flexible coupling before re-fitting the electromotor.
Are the propellers in the tunnel fastened correctly on the prop-shaft (key/drive pin present)	Re-fasten or replace the propeller and/or key/drive pin.
With the motor removed, turn the driveshaft from inside the boat to feel if the gears are engaging and turning the prop-shaft.	In case of a failure inside the gearhouse, we advice to get a replacement gear-house instead of attempting to repair the internal gear and bearing system.
» The thruster does not start at all or works only in one direction.	
Refer to the PCJ Control Panel manual for detaild explanations of fault codes shown in panel display.	
» The thruster has an unexpected low performance.	
Check voltage at thruster when running.	If less than 10,5 V / 21V the thruster will not perform at specified effect.
Check that all the brush-springs sits correctly on the brushes in the electromotor.	If one or more brushes are loose/has no tension from the brush-spring, the performance will be low.
Check that the propeller, gearhouse and tunnel is free from growth/barnacles etc.	If there is growth in the tunnel, this will disturb/block the waterflow and especially barnacles on the propeller will greatly reduce performance.

Warranty statement

1. The equipment manufactured by Sleipner Motor AS (The "Warrantor") is warranted to be free from defects in workmanship and materials under normal use and service.
2. This Warranty is in effect for of two years (Leisure Use) or one year (Commercial use) from the date of purchase by the user. Proof of purchase must be included, to establish that it is inside the warranty period.
3. This Warranty is transferable and covers the product for the specified time period.
4. In case any part of the equipment proves to be defective, other than those parts excluded in paragraph 5 below, the owner should do the following:
 - (a) Prepare a detailed written statement of the nature and circumstances of the defect, to the best of the Owner's knowledge, including the date of purchase, the place of purchase, the name and address of the installer, and the Purchaser's name, address and telephone number;
 - (b) The Owner should return the defective part or unit along with the statement referenced in the preceding paragraph to the warrantor, Sleipner Motor AS or an authorized Service Centre, postage/shipping prepaid and at the expense of the Purchaser;
 - (c) If upon the Warrantor's or Authorized Service Centre's examination, the defect is determined to result from defective material or workmanship, the equipment will be repaired or replaced at the Warrantor's option without charge, and returned to the Purchaser at the Warrantor's expense;
 - (d) no refund of the purchase price will be granted to the Purchaser, unless the Warrantor is unable to remedy the defect after having a reasonable number of opportunities to do so. Prior to refund of the purchase price, Purchaser must submit a statement in writing from a professional boating equipment supplier that the installation instructions of the Installation and Operation Manual have been complied with and that the defect remains;
 - (e) warranty service shall be performed only by the Warrantor, or an authorized Service Centre, and any attempt to remedy the defect by anyone else shall render this warranty void.
5. There shall be no warranty for defects or damages caused by faulty installation or hook-up, abuse or misuse of the equipment including exposure to excessive heat, salt or fresh water spray, or water immersion except for equipment specifically designed as waterproof.
6. No other express warranty is hereby given and there are no warranties which extend beyond those described in section 4 above. This Warranty is expressly in lieu of any other expressed or implied warranties, including any implied warranty of merchantability, fitness for the ordinary purposes for which such goods are used, or fitness for a particular purpose, and any other obligations on the part of the Warrantor or its employees and representatives.
7. There shall be no responsibility or liability whatsoever on the part of the Warrantor or its employees and representatives for injury to any person or persons, or damage to property, loss of income or profit, or any other consequential or resulting damage or cost which may be claimed to have been incurred through the use or sale of the equipment, including any possible failure or malfunction of the equipment, or part thereof.
8. The Warrantor assumes no liability for incidental or consequential damages of any kind including damages arising from collision with other vessels or objects.
9. This warranty gives you specific legal rights, and you may also have other rights which vary from country to country.

SPARE PARTS

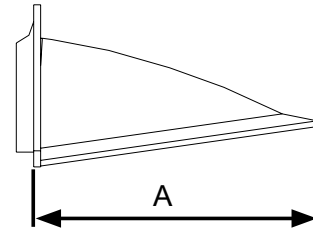


Ref:

Part #

5	Anode	7 1190
4	Locknut	4 1260
3	Propeller washer	7 1181
2	Propeller drivepin	6 1241
1	Propeller	7 1261

OPTIONAL PARTS



Part# Description

90080 PVC Cowls, long model - A=242mm, kit of two

Worldwide sales and service



www.side-power.com



SLEIPNER MOTOR • AS P.O. Box 519 • N-1612 Fredrikstad • Norway
Tel: +47 69 30 00 60 • Fax: +47 69 30 00 70 • www.side-power.com • sidepower@sleipner.no