INSTALLATION – OPERATION - MAINTENANCE

Rheinstrom
Bow- & sternthruster

Type 1505/2005/2505/2510/3505/3510/4005/4010/4505/4510
12/24 & 400 V DC

version 3 - 2019

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1 Introduction

To ensure that installation of the bow thruster runs just as smoothly as its operation, please read the following information carefully.

With your new bow thruster, you have acquired a highly effective and extremely easy-to-handle maneuvering aid. No bow thruster leaves our works without first undergoing a thorough test. We warrant each unit for a period of one year after delivery date provided it is handled properly and installed professionally. The use of suitable, high quality materials for all components guarantees you fault-free operation for many years.

1.1 Technical data

Type	1505	2005	2505	2510	3505	3510	
Ship's length until approx.*	10	15	19	24	28	32	m
Thrust approx.	180	360	630	900	1100	1300	N
Power consumption	2.0	4.5	6.1	8.2	10.0	12.1	kW
Voltage	12/24	12/24	24	24	24	2x24	V
Current	280/140	600/250	350	475	550	400	A
Battery capacity**	120	160	180	200	260	310	Ah

Type	4005	4010	4505	4510	
Ship's length until approx.*	40	45	50	55-65	m
Thrust approx.	1700	2100	2400	3800	N
Power consumption	15.5	18.8	22	34.6	kW
Voltage	2x24/400	2x24/400	2x24/400	2x24/400	V
Current	485/60	588/71	688/83	1081/130	A
Battery capacity**	*on request*	*on request*	*on request*	*on request*	Ah

*Based on displacement hull, where displacement (ton) < ship's length (m) at 4 Beaufort.

**It is advised to use start batteries

1.2 General dimensions

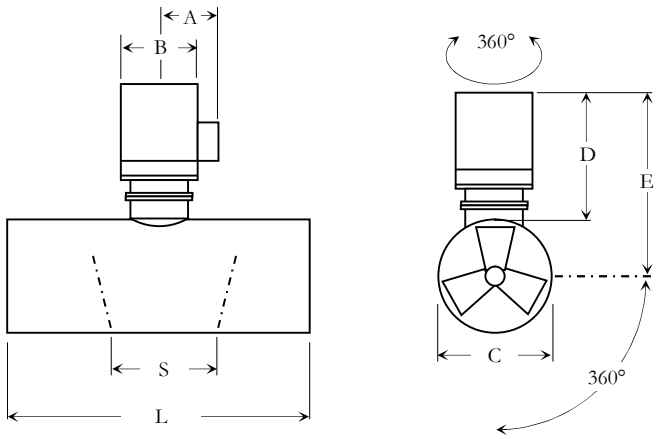

Fig. 1

	Type					
	1505	**2005**	**2505**	**2510**	**3505**	**3510**
A	160	160	165	205	190	260
B	140	140	165	200	220	280
C	ø159	ø216	ø267	ø267	ø368	ø368
D	345	347	355	370	400	400
E	425	455	489	505	584	584
L	750	1000	1500	1500	1500	1500
S	250	350	380	380	450	450

	Type			
	4005	**4010**	**4505**	**4510**
A	*on request*	*on request*	*on request*	*on request*
B	"	"	"	"
C	"	"	"	"
D	"	"	"	"
E	"	"	"	"
L	"	"	"	"
S	"	"	"	"

2 Installation instructions

Installation procedures, points of attention and useful tips

Basic general knowledge has not been entered. Consequently, it is assumed that the shipyard staff is well informed of the care and installation of bow thruster installations. Drawings and illustrations subject to change. Construction and design subject to alteration.

Before any steps are taken, carefully read the corresponding items in this instruction manual. As with all installation work the following points are to be taken in to account:

Note:
When carrying out any work on board, please observe the regulations for the prevention of accidents.

- Observe the utmost cleanliness and order.
- Check the parts for damages, before assembling.
- Before mounting a part clean it thoroughly.
- Always use exact fitting, clean and well-maintained tools.
- Cover immediately holes and connections with tape, plugs, clean clothes or the like.
- After installation, check that all screws and nuts are tightened and locked, if necessary.

2.1 Installation instructions

When installing the bow thruster, observe the following instructions. Proceed as far as possible in this sequence:

Note:
To maintain the safety of your boat, installation of the bow thruster must be executed by qualified staff.

- Ensure that the boat rests safely on a keel block.
- Then determine where the bow thruster shall be installed.
  The cross-pipe should be positioned as far forward in the bow as possible, and at least one pipe diameter below the water line. However, the minimum length B must be kept at all costs (see fig. 1).
  When installing the cross-pipe it can be turned on its longitudinal axis as necessary. Thus the position of the motor can be optimally adapted to suit the conditions on board. However, it must be ensured that the motor is suitably supported should it be installed in an extremely sloping or horizontal position.
- Using a pair of hawse compasses, draw the opening for the cross-pipe on both sides of the hull.
  Using suitable tools, cut out the opening drawn in the boat's hull.
- Loosen the bolts that fix the electric motor to the dome and remove the motor.
- Remove coupling half with the rubber star and extension shaft from the hooked gear. Loosen the bolts in the dome and take the hooked gear with mounted propeller from the cross-pipe. Remove the dome.

Note:
It must be guaranteed that no parts of the propeller or the gears project from the pipe on either side.

- Feed the cross-pipe into the hull and move it into position. Install the cross-pipe so that the right-angle gear with the flange-mounted propeller is positioned as far as possible in the middle of the boat. It must be guaranteed that no parts of the propeller or the gears project from the pipe on either side.

- Fix the pipe in the position; with a tack for metal hulls or by means of wooden wedge for non-metal hulls.
- Establish a professional connection between the cross-pipe and the inner wall of the boat. In the case of metal hulls: weld the pipe and hull together with a clean, water-tight fillet weld. For GRP or wooden hulls use GRP and polyester resin. To ensure that the flow characteristics of the boat are not affected in any way, the flowing water should be lead past the opening of the pipe with as little turbulence as possible. To achieve this, firstly cut off the cross-pipe in accordance with drawing in fig. 2. The front part of the pipe must project slightly over the hull of the boat. At the other end, the pipe must be cut flush to the hull. To ensure that the bow thruster operates as efficiently as possible, the inner edge of the pipe must be rounded at the outlet as much as the thickness of the material allows.

  Now connect the cross-pipe with the hull of the boat on the outside in a manner suited to the material the boat is made of. At the front, where the pipe is still sticking out of the hull, use a fillet join, at the back keep the connection as flat as possible.

  Establish a streamlined connection between the part of the pipe still sticking out and the hull of the boat. Fig. 3 shows an ideal connection. For metal hulls a piece of sheet-metal, cut accordingly, should be welded on. All seams and roundings must be as smooth as possible.
- Having completed installation of the bow thruster, it must now be given the same surface protection as the hull. Only the propeller and the right-angle gear require no surface protection.
- Put a layer of the supplied kit on the flange of the hooked gear and on the dome. Place the dome in its position on the cross-pipe.

Note:
To ensure that the flow characteristics of the boat are not affected in any way, the flowing water should be lead past the opening of the pipe

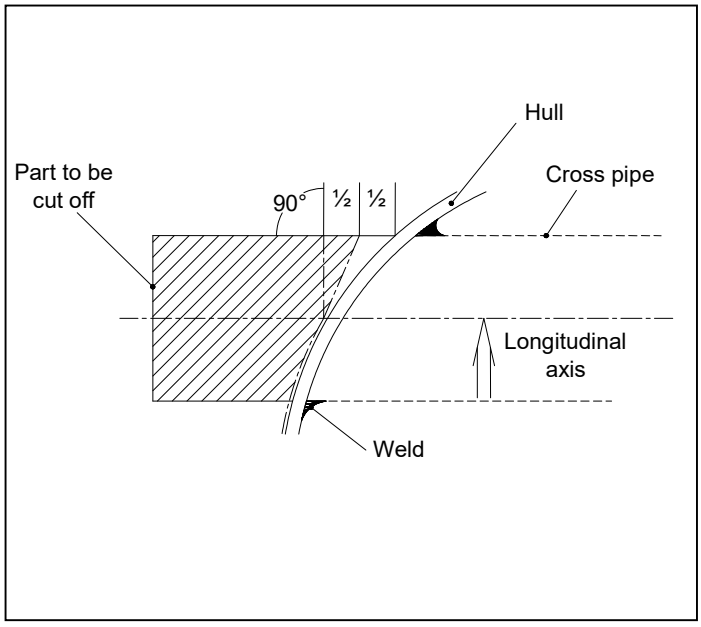

Fig. 2

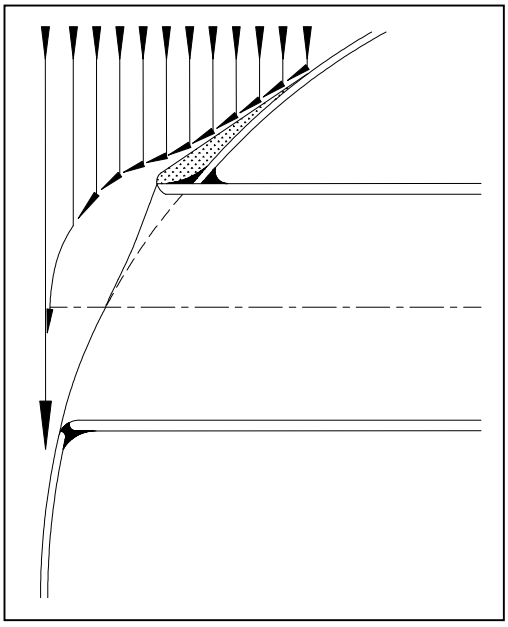
Fig. 3

Note:
Repeat the crosswise tightening of the bolts 3 times, with a 5 minute period in between.

- Put the hooked gear into position in the cross-pipe. Make sure that the bolt holes of the hooked gear, the cross-pipe and the dome are aligned. Place the centering bush through the dome into the hooked gear (not for type 1505 & 2005). Mount the bolts and tighten them cross-wise. Repeat this crosswise tightening of the bolts 3 times, with a 5 minute period in between. This allows the kit to settle. Failing to do so may result that the hooked gear will come loose.
- Place the coupling half with the extension shaft over the shaft end of the hooked gear. Dismount the adapter flange from the electric motor and mount it on the dome (the bolts are fitted in the dome).

Note:
After mounting the electric motor the clearance between both halves should be 0.5-1 mm.

- Measure the clearance of both coupling halves. After mounting the electric motor the clearance between both halves should be 0.5-1 mm. If necessary, the position of the coupling half of the electric motor can be adjusted by loosening the lock screw. Always make sure that the coupling halves are correctly locked. Place the rubber star in to the coupling half on the shaft of the hooked gear.
- Now install the electric motor of the bow thruster. Turn the motor so that the terminal clamps are easily accessible.

2.2 Electrical connection

Note:
The electrical connection of your bow thruster to the boat's electrical system must be executed by a qualified electrician.

- Connect the '+'-pole of the battery to the connection on the electric motor that is marked '+'.
- Connect the '-'-pole of the battery to the connection on the electric motor that is marked '-'.
- Use the standard PTD 'plug & play' extension cables, to connect the remote control to the bow thruster.

3 Operation & maintenance

Operation and maintenance procedures and where to obtain spare parts.

3.1 Operation

Your bow thruster is extremely easy to operate.

- Turn the tumbler switch of the master switch to ON. The bow thruster is now ready for operation. You can now operate the rudder either from the master control or from the second control point (optional accessory).
- Move the control lever in the direction you wish the boat to move.
- Lever to starboard - bow moves to starboard.
- Lever to port side - bow moves to port.

3.2 Maintenance

Normally speaking your bow thruster is maintenance free. It is only necessary to check the propeller for damages when the boat happens to be out of the water. Also check if the propeller can be turned smoothly by hand.
The hooked gear is filled with a '0'-grease for lubricating the gears. Under normal operating condition, it is not necessary to renew this grease.

Should a repair be necessary, please contact our specialists for the parts needed.

3.3 Spare parts

On request, we can supply you with all necessary spare parts for your bow thruster. The item numbers and description of the parts you require can be found in the relevant drawing or parts list attached.

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