

Swing Thruster

Product and Installation Manual

1- Introduction

Thank you for choosing Lewmar. Lewmar products are world renowned for their quality, technical innovation and proven performance. With a Lewmar product you will be provided with many years of outstanding service.

Product support

Lewmar products are supported by a worldwide network of distributors and Authorised Service Representatives. If you encounter any difficulties with this product, please contact your national distributor, or your local Lewmar dealer. Details are available at: www.lewmar.com

CE Approvals

For CE approval certificates contact Lewmar.

Important information about this manual



Throughout this manual, you will see safety and product damage warnings.

You must follow these warnings carefully to avoid possible injury or damage.

2- Safety Notice

 **WARNING!**

IMPORTANT: Read these notes before continuing.

- Read this manual thoroughly and ensure that you fully understand the operation and safety requirements of the thruster before commencing the installation and operating the product.
- Only persons who are completely familiar with the controls and those who have been fully made aware of the correct use of the thruster should be allowed to use it. If there is any doubt of how to install or operate this unit please seek advice from a suitably qualified engineer.
- Please ensure that you thoroughly understand the operation and safety requirements of the thruster.
- Your thruster should not be operated close to swimmers, as a powerful suction of water is generated when in use.
- The thruster must not be used at speeds above 6 knots, and must be retracted at that speed.
- The tunnel installation and any hull modifications should only be carried out by a specialist. This manual is based on a GRP tunnel installation.
- Do not use the thruster for ANY purpose other than mooring aid.
- We recommend that a qualified person install the thruster. Faulty installation will place the boat and crew in danger and make the warranty invalid.
- A circuit breaker/isolator should always be used with the thruster to protect the motor and cables from overheating and damage.
- Always switch off the thruster at circuit breaker/isolator when not in use.
- It is the unavoidable responsibility of the  Captain (owner, master or other responsible party) to assess the risk of any operation of the vessel.  Captain is responsible for the safety of the vessel, the crew, passengers and any third party at all times.
- Thrusters must not be operated whilst under the influence of alcohol or drugs.

3.2 Fitting

- This equipment must be installed and operated in accordance with the instructions contained in this manual. Failure to do so could result in poor product performance, personal injury and/or damage to your boat.
- Consult the boat manufacturer if you have any doubt about the strength or suitability of the mounting location.

3.3 Electrical

- Make sure you have switched off the power before you start installing this product.
- This product requires installation by a suitably qualified electrical engineer.

3- Installation instructions

Kit includes the following parts:

Description	Number
Handbook	1
Installation instructions	1
Bowthruster with motor and tube	1
Bolts for connecting the motor	4
Washers for connecting the motor	4
Stop plate for brace*	1

Description	Number
Drive shaft	1
Plastic shear pin for actuator (spare)	1
Metal shear pin for thruster (spare)*	1
Fuse holder	1
Fuse	1

*Not for model 250.

3.1 Mark out the position fore and aft

The bowthruster should be placed as far forward as possible, without the top of the box coming above the waterline, otherwise it could be difficult to fit or remove the motor. Measure out the most suitable location from inside the boat. Drill a 3 mm hole as close as possible to the centre line, within the area in which the hatch will be taken up. This hole will be used as a reference point for locating the mould on the outside of the hull. The installation kit does not include the mould, since the mould must be manufactured on site in order to fit the shape of the hull of your boat.

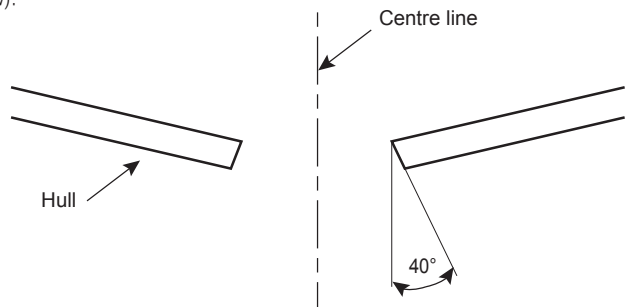
3.2 Placing the mould

Start by marking out the centre line on the outside of the hull, e.g. by sighting between a point right forward and the keel. Measure of the position of the hatch using the 3 mm hole drilled in step 2. The size of the hatch is shown in the table below.

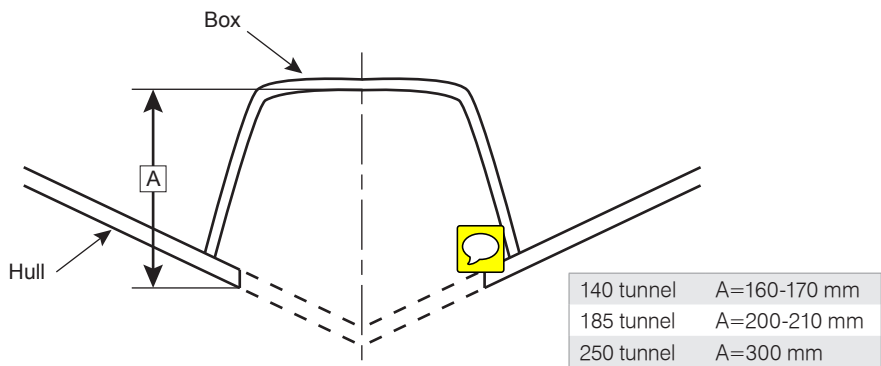
140 tunnel	B=220 mm	L=274 mm
185 tunnel	B=255 mm	L=346 mm
250 tunnel	B=375 mm	L=480 mm



Cut the marked up hole in the hull with a jigsaw. We recommend you cut with an angle of 40 degrees to the hull (see picture below).



3.3 Fitting the box



Locate the box with the inside of the after edge a maximum of the width of the flange (10 mm) aft of the hole. Measure out dimension A and calculate the difference between the measured dimension A and the value for A given in the table. Transfer this measurement to the fore-and-aft side of the box using a marking gauge. Cut the box to this line. The thwartships sides (fore and aft) are fitted to the shape of the inside of the hull. Put the box in place and check that dimension A has been accurately marked.

3.4a Installing the box (standard)

Sand the outside of the box for a height of about 10 cm all-round to ensure good adhesion to the plastic.

Locate the internal rear edge of the box a maximum of the width of the flange (10 mm) aft of the opening. Adjust the lateral position of the box until the thruster tunnel goes down through the hole and the clearance on each side of the tunnel is the same, so that it is centred athwartships. Then attach the box using a little rapid-curing filler.

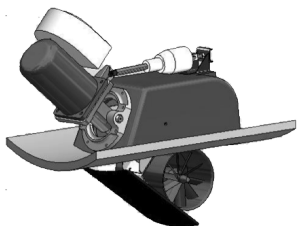
Check carefully that the sides of the box are not concave. If they have become concave, the sides of the box must be pushed out with a strut while the box is being glassed-in.

Then check that the tunnel can move freely, and that, when it is deployed, the thruster wash will miss the hull.

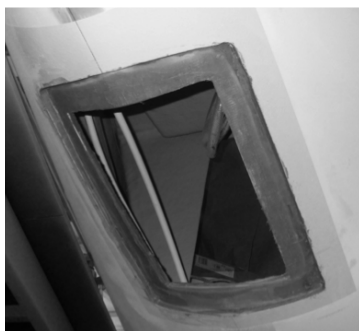
NB! Do not apply the final laminations until the hatch has been fitted. Check carefully that the hatch clears the hull

3.4b Installing the box (flange base)

A flange base version is available for high volume customers performing installations in the same location repetitively. This requires an appropriate recess moulding in the hull and a custom box producing by Lewmar to fit it. Please contact Lewmar for further information on this facility.



The flange base thruster is supplied as a complete unit. The bottom flange is custom made to match the contour of the hull. The hatch is also pre-fitted to the tunnel.



Ensure moulded recess in hull is clean and ready for bonding. Exact details on preparatory steps should be taken from the instructions from the bonding agent to be used.



Perform the recommended preparatory work to the flange of the thruster box itself. Apply the chosen bonding agent as instructed and position the box into the recess, holding in place using strapping or suitable support for the duration of the stated curing time.



Once the bonding agent has cured, finish and fair the installation as required to achieve a seamless blend between flange and hull.

Proceed to step 3.9

3.5 Install the hatch

Trim the sawn-out section of hull until it is a good fit against the angled surface formed as above. Adjust the hatch with filler, so it fits perfectly in opening. When the hatch is in place in the opening, the outside of the hatch at the forward edge must be at least 1 mm higher than the outside of the hull. The after edge and sides of the hatch must be flush with the outside of the hull. Locate the hatch provisionally using rapid-curing filler. Check that the hatch is centred in the opening when the thruster is retracted. The hatch must be adjusted to the tunnel, so that the hatch is no thicker than 5-7 mm where the ends of the tunnel lie against the hatch.



3.6 Glass in the finished box, and the tunnel to the hatch

Consult the boat designer on the number of layers and the method used. The lamination must not be less than 6 layers and must be tapered, starting with 1x300gm mat and then 5x600gm.

To prepare the box, sand the area to be laminated and then clean with solvent.

On the sides and the rear of the box, lamination should cover at least 100mm up the box.

On the front of the box, lamination should go up to a point just below the hinge.

3.7 Install the drive shaft and motor assembly

Check that the shear pin on the motor goes into the channel in the shaft. Turn the motor slowly forward and back to find the correct position. Insert the bolts and washers on the motor.

3.8 Brace

A stainless square washer is included, and this is to be glassed in as a stop for the brace. It may be necessary to glass a projection onto the hull in the centre of the brace to ensure that the motor is at the correct angle in the retracted position.

To adjust the length of the brace: Retract the thruster. Check that the hatch is lying against the lip, and does not stand proud of the hull. Then tighten the screw until its head touches the washer on the lip. Lock the nut.

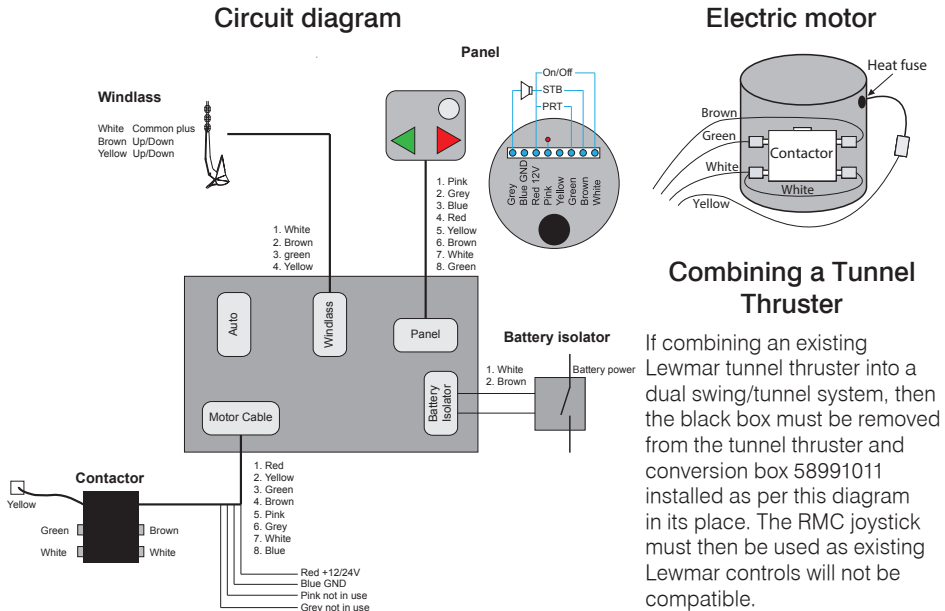
NB! On the model 250, the lip must be moulded by the installer/boatbuilder.



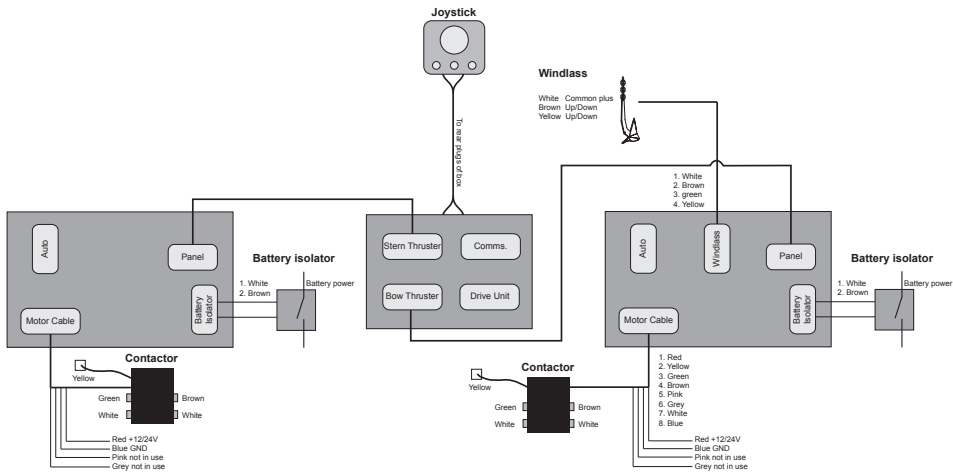
3.9 Position and install the panel

The panel must be installed in a dry location. The rear of the panel is not watertight, and must be protected against water entry.

3.10 Connect the electrics



Circuit diagram for dual thrusters

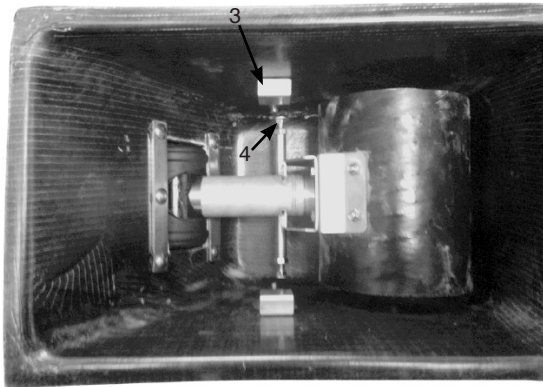


3.11 Adjustments

If, after the installation has been completed, the tunnel is not sufficiently clear of the hull in the deployed position, you can adjust the vertical position of the tunnel using an adjustment screw. Slacken the nut (1) on the forward edge of the fitting slightly and tighten the nyloc nut (2) on the after edge of the fitting until the water flow through the tunnel is not disturbed by the hull. Then lock the adjustment by tightening the nut (1) again.



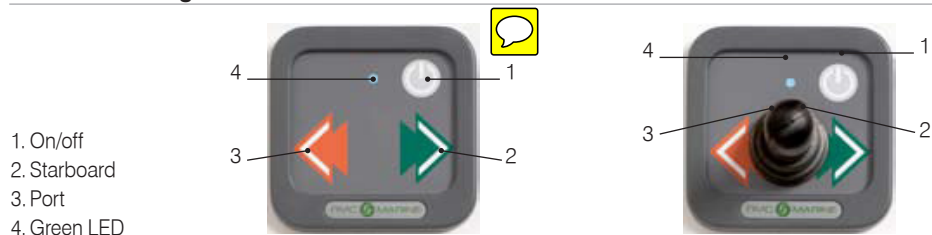
Next, adjust bracket (3) so that the side support bolt (4) is centred on its surface when the thruster is in the fully deployed position. To do this, loosen the nut holding on the bracket (3), move position and re-tighten nut.



Finally, adjust bolt 4 so that there is a gap between the end of the bolt and the side support bracket of 0.5-1mm. The bolts on either should not press on to the brackets when the thruster is not running.

4- Operation

4.1 Manoeuvring



Deploy the thruster by holding down the on/off button (1) for about two seconds. The green LED (4) will start flashing. The thruster is ready for use when the LED shines continuously. Hold down the on/off button to retract the thruster when you are finished.

⚠ WARNING! The protective cover should be in place when the panel is not in use.

⚠ WARNING! The main switch must be in the off position if the thruster is to be serviced from outside.

4.2 Error Message

Overheating

The bowthruster is fitted with an overheating switch, which shuts off the current if the bowthruster is run for too long and the electric motor overheats. If this happens, the green LED will flash rapidly. When the motor has cooled, the system will reset to normal function automatically. Even if the motor has overheated, the thruster can still be retracted using the on/off button.

4.3 Alarm settings

An alarm will sound when the thruster is deployed. This alarm can be set at interval of 5, 15 or 60 seconds as follows:

1. Check that the panel is switched off, i.e. the LED is not lit.
2. Press the SB button or move the joystick to starboard. You will hear a single buzz which indicates that the interval is now 5 s.
3. Press the SB button or move the joystick to starboard. You will hear two buzzes which indicates that the interval is now 15 s.
4. Press the SB button or move the joystick to starboard. You will hear three buzzes which indicates that the interval is now 60 s.

The alarm interval can be changed at any time. Repeat steps 2 to 4 above.

4.4 Auto-retract function settings

The thruster can be set to auto-retract automatically after 2 or 5 minutes after the last button press. This auto-retract function can be set as follows:

1. Check that the panel is switched off, i.e. the LED is not lit.
2. Press the PT button or move the joystick to port. You will hear a single buzz which indicates that the auto-retract is OFF.
3. Press the PT button or move the joystick to port. You will hear two buzzes which indicates that the auto-retract is now set after 2 minutes.
4. Press the PT button or move the joystick to port. You will hear three buzzes which indicates that the auto-retract is now set after 5 minutes.

The auto-retract function can be changed at any time. Repeat steps 2 to 4 above.

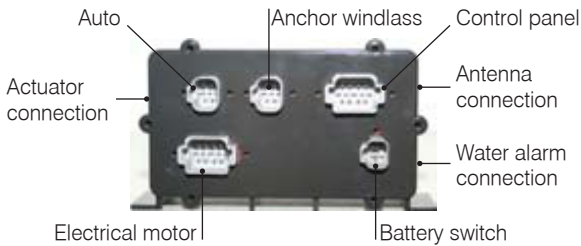
5- Accessories and spare parts

Remote control

The remote control is a useful accessory which makes mooring easier, especially if you are short-handed.

Installation requires the addition of an extra circuit board within the bow thruster electronics box.

Instructions are included in the package.



Joystick

A joystick is available for the system. It connects to the rear of the panel.

Foot switch

A foot switch with light can be connected simply to a socket on the rear of the panel.

Water detector

The water detector is installed immediately forward of the box, and sets off an alarm if there is a leak. The alarm sounds a steady signal. The bowthruster can be used normally.

List of parts

PART NO	DESCRIPTION
58990001	Touch panel
58990002	Joystick panel
58990003	Joystick (small)
68001027	Foot switch
58991003	Control cable 10m to main switch
58992003	Water detector
58992001	Remote control for Swingthruster and anchor windlass
589150	Anode, 140
589350	Anode, 185
589550	Anode, 250
559018	Drive shear pin for model 140
559017	Drive shear pin for model 185
589151	140 propeller
589351	185 propeller
589552	250 propeller, starboard
589551	250 propeller, port

Installing an extra panel

The control panels can be installed in parallel, in which case they will both indicate alike. When the system is activated from one panel, the system starts with both panels active.

6 Maintenance

Annual maintenance

1. Clean thruster and tunnel as necessary.
2. Replace anode if necessary.
3. Check that all nuts and bolts are tight.
4. Check that the battery cables are still firmly connected.
5. Run the bowthruster up and down and check that everything is moving freely.
6. Check that the connectors are not corroded.
7. Inspect the rubber bellows in the bowthruster articulation. Replace if necessary.
The manufacturer recommends replacement every 5 years.

Other maintenance

Replacement of the drive shear pin on models 140 and 185 only. The shear pin is located below the electric motor. Remove the electric motor, replace the shear pin and fit a new cable tie to lock the shear pin. Refit the electric motor.

Replacement of the actuator shear pin. Deploy the bowthruster and switch off the electrical power before the bowthruster is fully extended. This reduces the load on the shear pin. Remove the shear pin and fit the new one. Reconnect the power and run the bowthruster up and down.

Replacement of rubber bellows (RMC Branded Thrusters Only)

The rubber bellows must be replaced every 5 years.

1. Remove the drive motor by unscrewing the 4 screws.
2. Unscrew the central nut.
3. Unscrew the hexagonal screw on the upper side of the motor yoke.
4. Deploy the thruster with the actuator.
5. Slacken the two hose-clips and lower the hatch, pipe and the supporting arm as one unit.
6. Unscrew the eight M6 nuts on the inside of the ring fastener. A support will then be needed on the outside.
7. Lift off the ring fastener.
8. Take out the old bellows and fit the new one.
9. Place the ring fastener over the rubber bellow, so that the bellows sits correctly in the ring profile. Attach nuts and washers. If the screws were removed, new sealant (butyl) must be applied under the washers on the outside.
10. Apply a little grease to the threads on the supporting arm, thread on the hose-clips and locate them so that they can be tightened.
11. Pass the supporting arm through the bellows and the motor yoke, and fit the central nut.
12. Tighten the hose-clips round the supporting arm.
13. Retract the thruster and tighten the hexagonal screw on the motor supporting arm. Use Loctite.
14. Refit the drive motor.
15. Test run the up/down function.



7- Technical data

System voltage: 12/24 V

Control system fuse: 5 A

Meets the relevant standards on electromagnetic compatibility under EN 55 012, EN 60 945, EN 61 000-4-2 and ISO 7637-1/2.

8- Fault finding

If the panel functions are not operating correctly

- Check that the extension cable is fitted correctly.
- Check the fuse for the electronics.
- Check that the power for the electronics is connected correctly.
- Check that any circuit-breakers are turned on.

The boat is moving in the wrong direction

- Swap over the green and brown cables on the electric motor.

The panel lights up, but the thruster does not work

- Check that the battery is charged.
- Check that the motor cables are connected correctly.

The thruster does not provide sufficient power or operates in one direction only

- The battery is not sufficiently powerful.
- Battery cables are too thin. The voltage drop in the cable is excessive. Voltage drop over the complete wiring run must not exceed 10%.
- The thruster is jammed in the tunnel.

The fuse blows repeatedly

- Wrong fuse inserted.
- The thruster is jammed in the tunnel.

The motor rotates but the thruster does not

- The shear pin is broken and needs to be replaced. The shear pin is located below the electric motor.

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