BTR140

REV 002A CE

ELICA DI MANOVRA RETRATTILE		
MANUALE D'INSTALLAZIONE E USO	**IT**	pag. 3
RETRACTABLE THRUSTER		
INSTALLATION AND USE MANUAL	**EN**	page 23

Quick®
Nautical Equipment

INDEX

**BEFORE USING THE RETRACTABLE THRUSTER, CAREFULLY READ THIS USER MANUAL.
IF IN DOUBT, CONTACT YOUR NEAREST QUICK® DEALER.**

☞ QUICK® RESERVES THE RIGHT TO INTRODUCE CHANGES TO THE EQUIPMENT AND THE CONTENTS OF THIS MANUAL WITHOUT PRIOR NOTICE. IN CASE OF DISCORDANCE OR ERRORS IN TRANSLATION BETWEEN THE TRANSLATED VERSION AND THE ORIGINAL TEXT IN THE ITALIAN LANGUAGE, REFERENCE WILL BE MADE TO THE ITALIAN TEXT.

1.0 - Installation requisites

It is strongly recommended to entrust a professional with the positioning and presetting of the counter flange on the hull. These instructions are generic, and do not show by any means the details of the operations of presetting the counter flange, which falls under the competence of the shipyard. In case of problems caused by a defective installation of the tunnel, the installer will be held responsible.

Despite all components and moving mechanical parts are of high quality, the correct installation of the retractable propulsion unit is fundamental for a safe and efficient use of the boat, as well as of the same propulsion unit.
Please note that the installation of such unit is an operation requiring experience as well as technical competence. It is recommended to entrust the installation to competent staff and to consult the manufacturer or naval architects to fully evaluate the entity of the work.

The Quick retractable thruster® has two individual movements.

The main movement, relating to the propulsion part, is of tilting type. The hinges on which the movement happens are conceived to confer high resistance to the set and are located on the flat flange surface that joins the pre-assembled structure to the hull solid support.

The secondary movement relates to the closing of the through-hull fitting from where the tunnel exits. This movement of the tilting type takes place around the hinge, which has been designed and manufactured in order to open the lid without interferences (if properly installed, as per instructions provided).

Electric motor, gear, levers and all other components are supplied by Quick®, already assembled on the supporting structure in GRP and do not require adjustments, adaptations or sealing, unless indicated in this manual.

The Quick retractable thruster® is sold separately from the counter flange, that can be supplied in different materials to comply with the different types of hulls. Quick® is able to supply stainless steel, aluminium alloy or GRP supports, fundamental for quick, solid and precise installation.

For the fibreglass hulls the support must be laminate in the hull respecting the current Standards relating to joints. The propulsion unit distributes mechanical stresses to the hull through the counter flange. The force of the joint will be determined by overlapped, up to standard, laminates.

For aluminium alloy hulls, like for stainless steel hulls, the support must be welded to the hull.
If correct, the installation of a boxed structure like that of the support, can give greater sturdiness to the hull. Consult the manufacturer, naval architects and/or specialised companies to evaluate additional work which beams and ribs near the retractable propulsion unit.

1.1 - Technical data

MODELS		BTQ1403012	BTQ1404012
Propeller type		Single	
Tunnel Ø		140 mm (5" 33/64)	140 mm (5" 33/64)
Motor Power		1,5 Kw	2,2 KW
Voltage		12 V	12 V
Fusible		125A CNL DIN	225A CNL DIN
Thrust		20 kgf (66.1 lb)	40 kgf (88.2 lb)
Weight		23,7 kg (52.2 lb)	24,5 kg (54 lb)
Limit thickness values of the tubes		min. 4,5 mm - max 6,5 mm (min. 11/64" - max 1/4")	
Recommended cable section (*)	**L < 5 m**	35 mm^2 (AWG 2)	50 mm^2 (AWG 1)
	5,1 < L < 10 m	50 mm^2 (AWG 1)	70 mm^2 (AWG 2/0)
	10,1 < L < 20 m	70 mm^2 (AWG 2/0)	95 mm^2 (AWG 3/0)

(*) L = positive cable + negative cable

2.0 - Standard supply and parts contained in the package

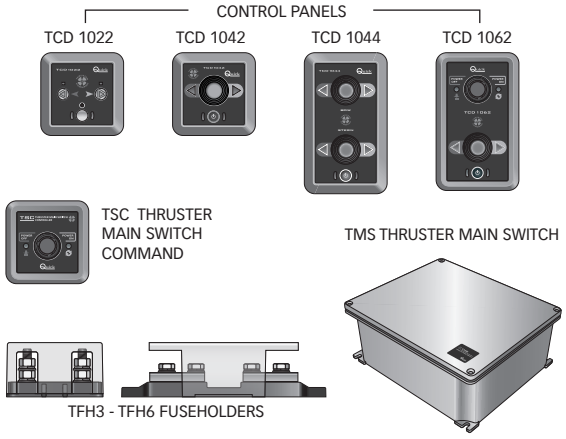
- Retractable thruster
- O-ring
- Hinge
- Lid bracket
- Steel cable
- Installation and use manual
- Conditions of warranty

2.1 - Tools needed for installation

- Phillips screwdriver
- Cutting nipper
- Drill and drill bits Ø 8,5 mm
- Hexagonal wrenches 2,5 mm
- Fork or polygonal key 8 mm and 13 mm

2.2 - Quick® accessories for activation of the retractable thruster

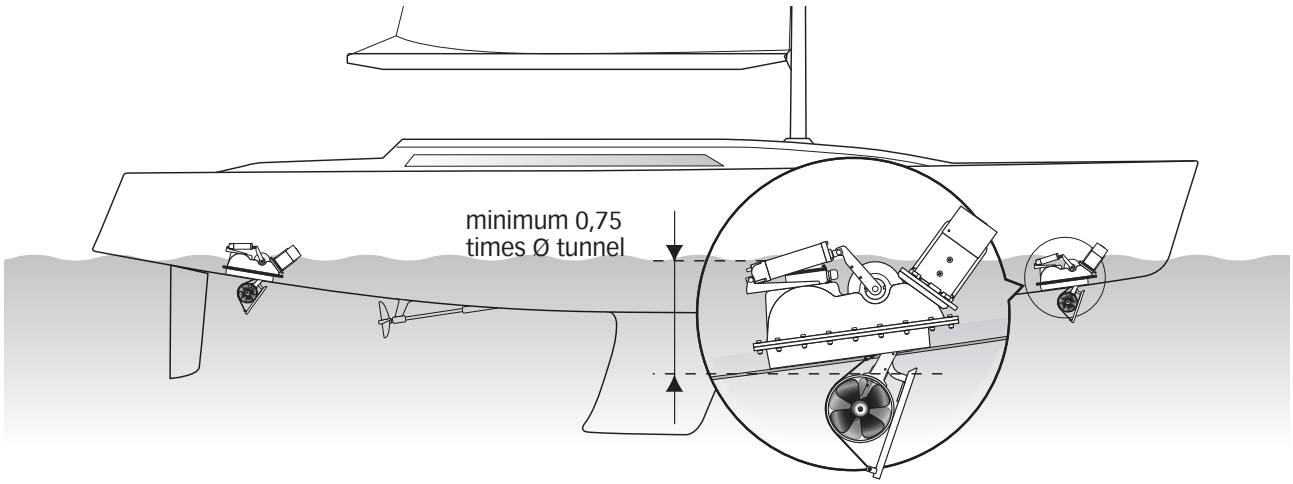
- Remote control TCD 1022
- Remote control TCD 1042
- Remote control TCD 1044
- Remote control TCD 1062 with integrated line switch control
- Thruster main switch command TSC
- Thruster main switch TMS
- TFH3 fuseholders
- TFH6 fuseholders



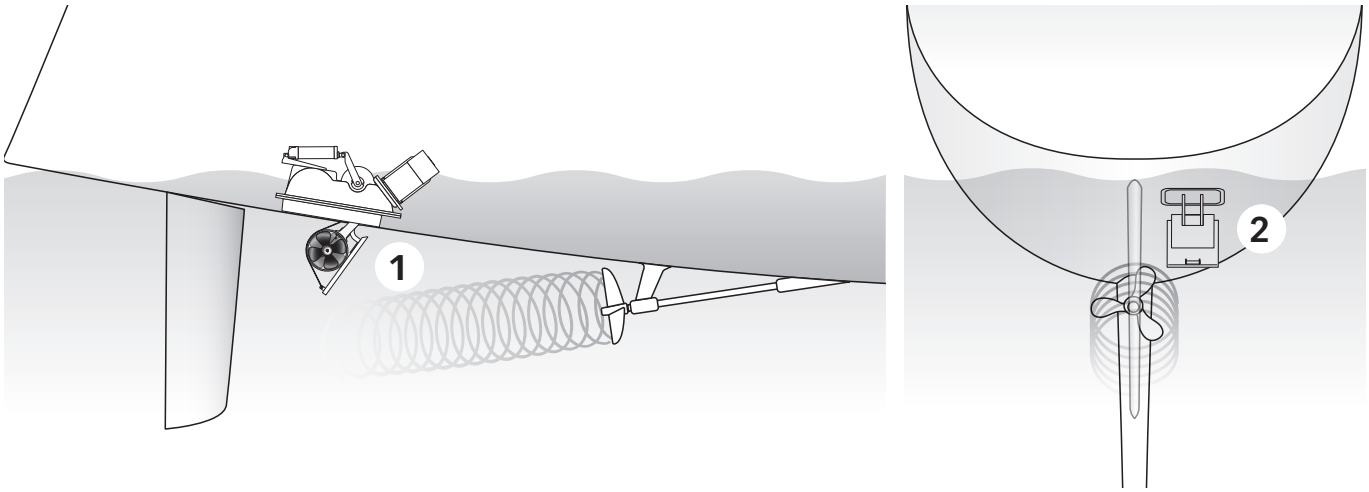
3.0 - Warnings

- The thruster Quick® have been designed and manufactured for nautical use.
- Do not use these appliances for other uses.
- Quick® shall accept no responsibility for direct or indirect damages caused by improper use of the appliance or an improper installation.
- The thruster is not designed for maintaining loads generated in particular atmospheric conditions (storms).
- It is strongly recommended to entrust a professional with the positioning and presetting of the counter flange on the hull. These instructions are generic, and do not show by any means the details of the operations of presetting the counter flange, which falls under the competence of the shipyard. In case of problems caused by a defective installation of the tunnel, the installer will be held responsible.
- Do not install the electric motor near easily inflammable objects.

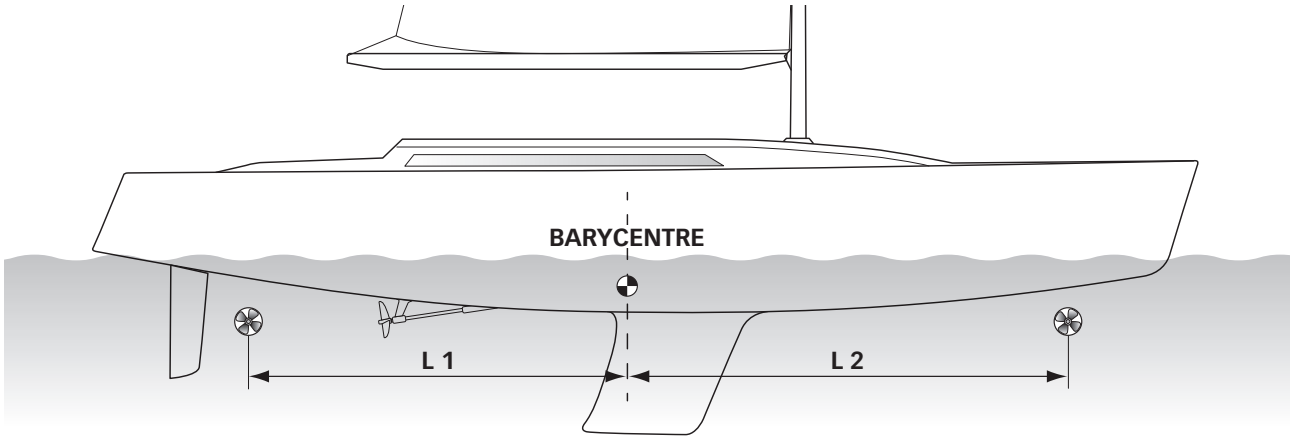
4.0 - Thruster positioning



• To avoid cavitation in the propeller, the tunnel must be positioned as low as possible.



• In order to prevent any damage, position the retractable thruster in such a way that the closing lid is not affected by the propulsion cone of the boat propeller (example 1 and 2), in both directions.

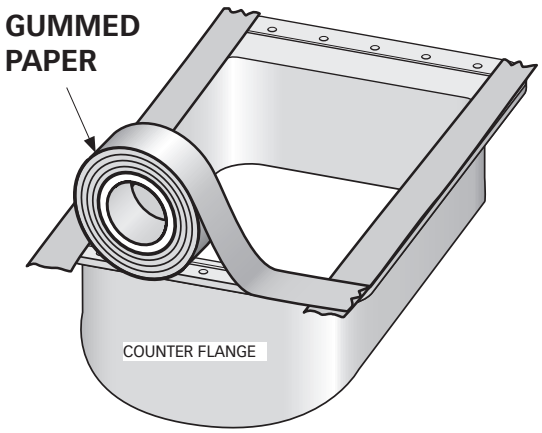


• The longer L1 and L2 lengths will be, the greater will be the thrust generated around the center of gravity.

4.1 - Counter flange's installation

Directly access inside the hull, where the thruster will be installed. The thruster position must enable easy maintenance operations.

- Protect the gasket with gummed paper tape up to the installation of the propeller to prevent it from getting dirty.



- Pay attention to the installation direction, place the arrow marked on the counter flange towards the bow.

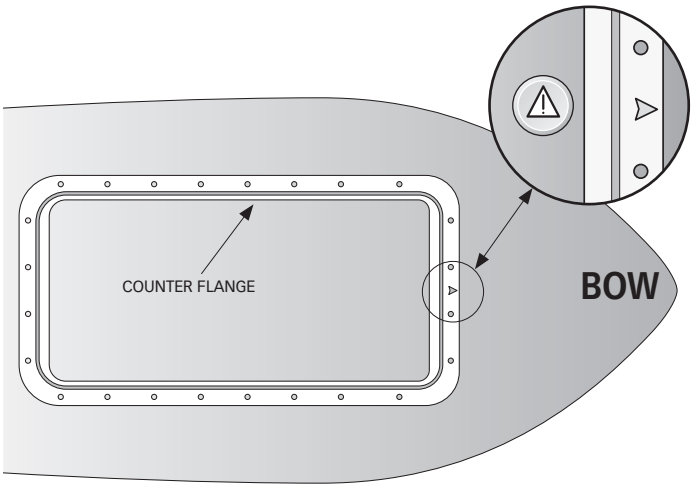
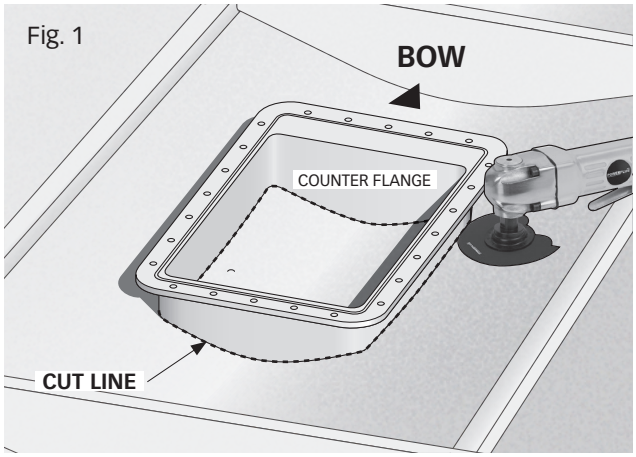


Fig. 1

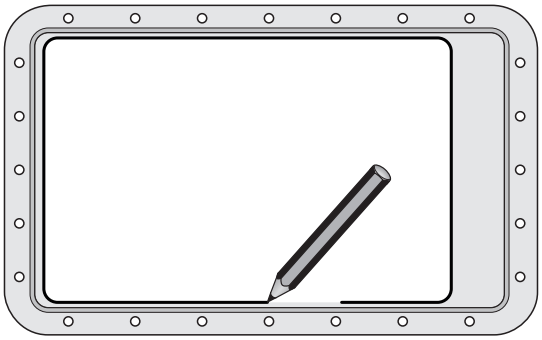


- Model the central parts of the 2 counter flange short sides so that they can adapt to the hull shape (Fig.1)

- Lay the properly-cut counter flange and check that the four sides fit the hull, or adjust them until they do fit in the position where the counter flange is meant to be fixed.

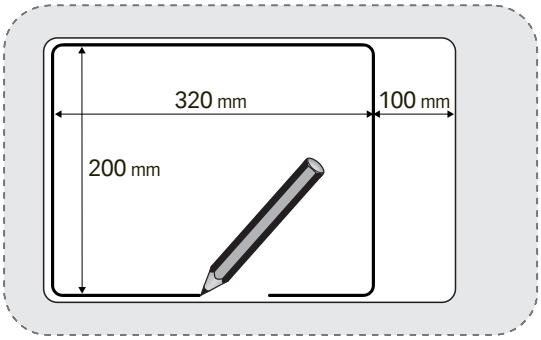
WARNING: keep into account the minimum dimensions for the final positioning of the hinge (see fig. 12 to page 32).

Fig. 2



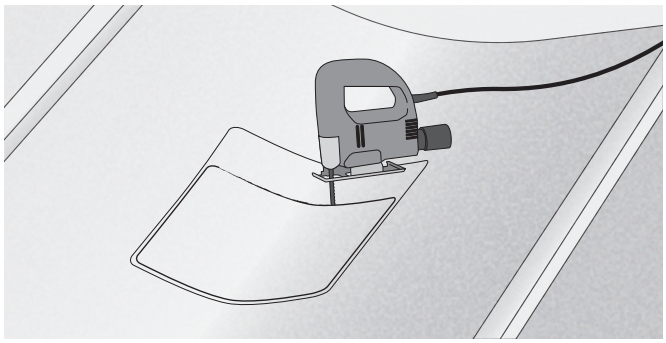
- On the hull, Mark with a felt-tip pen the internal perimeter of the counter flange (fig. 2).

Fig. 3



- Remove the counter flange and mark the cutting area: 350 x 280 mm (13" 25/32 x 11" 1/32) (fig. 3).

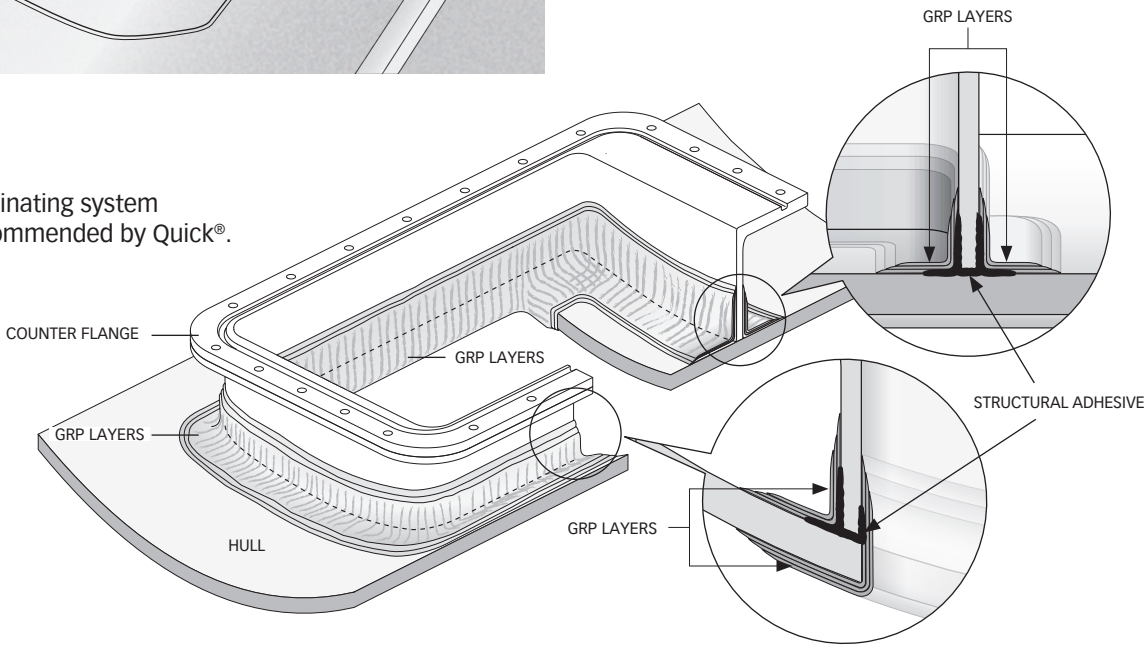
Fig. 4



- Cut the hull along the cutting area previously marked (fig. 4).

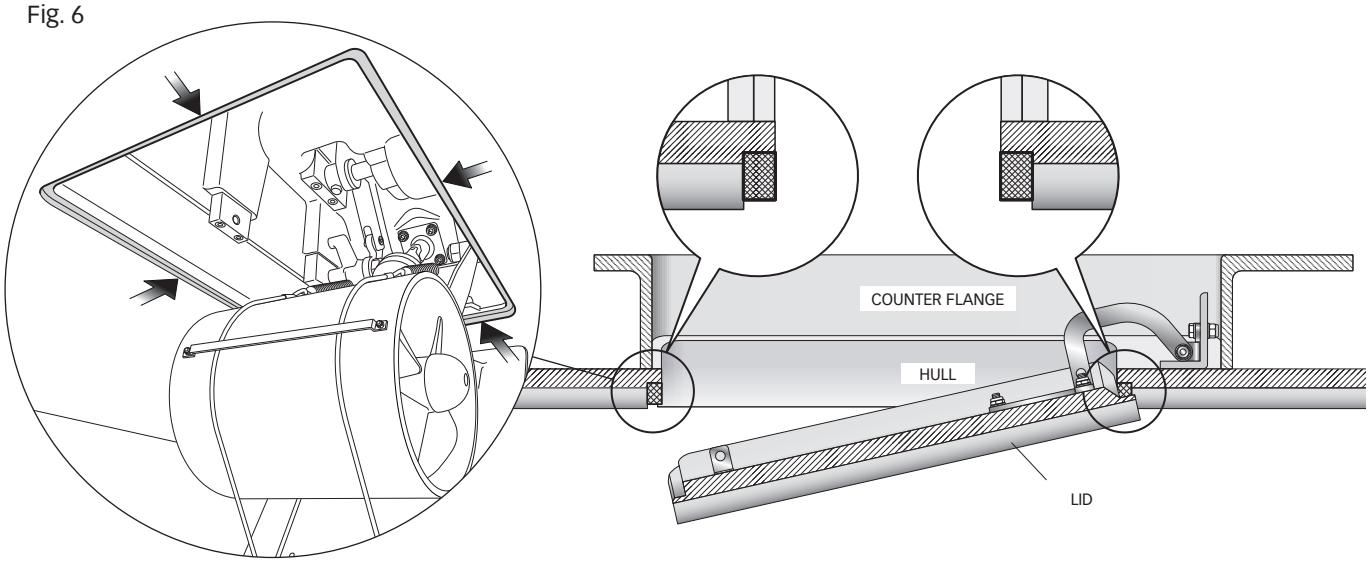
Fig. 5

Laminating system recommended by Quick®.



- Align the counter flange to the hull's opening and check that the two heights (**X**) are correct. Resinate the counter flange, or solder it in case of aluminium or steel, according to the techniques the most suitable to the hull's material (fig. 5).

Fig. 6



- Make a solid coaming for the closing lid on the whole perimeter of the hull's opening (fig. 6).

4.2 - Closing lid's preparation and installation

WARNING: pay particular attention to avoid interferences between the lid and the hull opening. Too precise contacts will cause damages to the entire moving system (fig.7).

Fig. 7

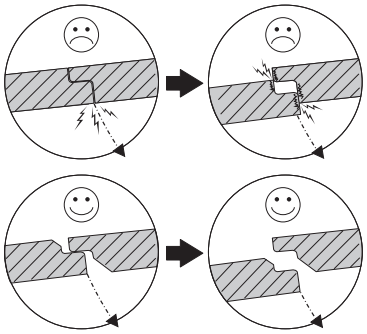


Fig. 8

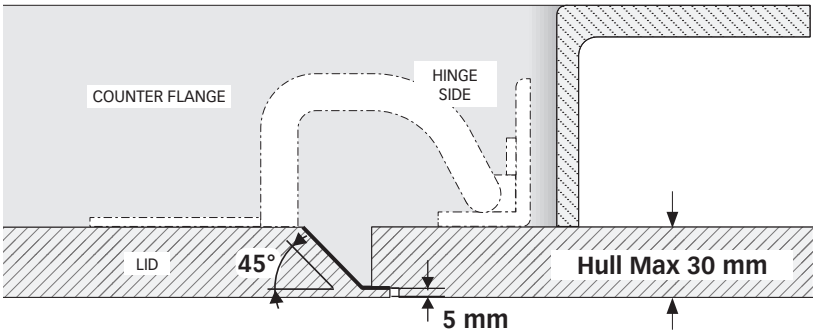
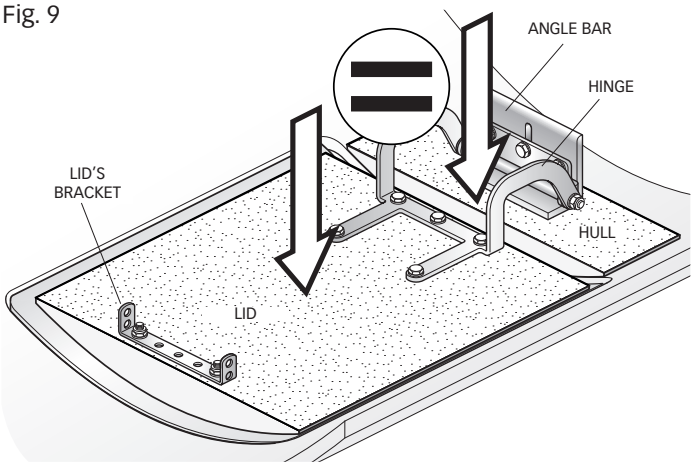


Fig. 9



- Make the closing lid by keeping on all sides a space varying from 3 to 5 mm, paying special attention to the hinge's side, ensuring that the internal walls are inclined by 45° so that they don't hinder the hull's opening (fig. 7 and 8).
- To obtain the correct opening of the hinge, the surfaces of hull and lid must be on the same level (fig. 9).
- The maximum hull thickness must be 30 mm (Fig. 8).
- Position the angle bar correctly on the hull (fig. 10A and 10B - part. A).
  Fasten the angle bar with structural adhesive (fig. 10B - part. B1 - B2).
  Decide whether to fasten the lid bracket to the hull with 3 M8 screws or with resin (fig. 10B - part. C1 - C2).

Fig. 10A

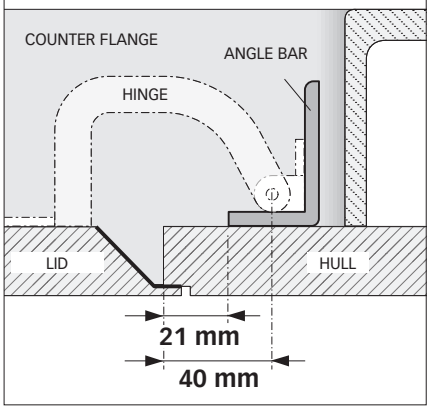


Fig. 10B

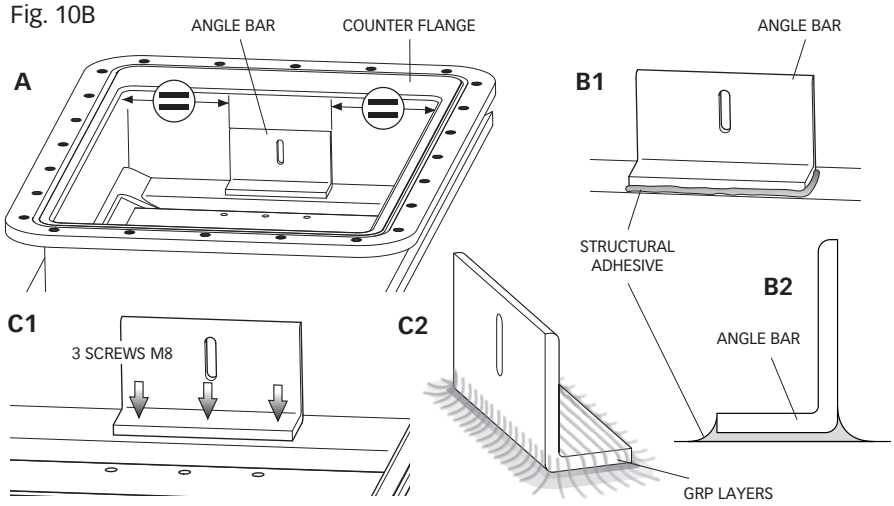
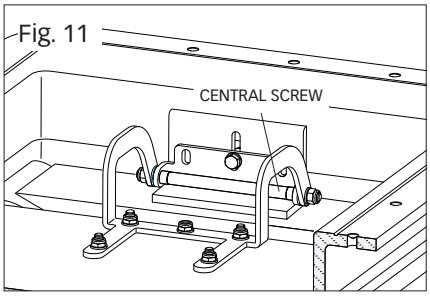
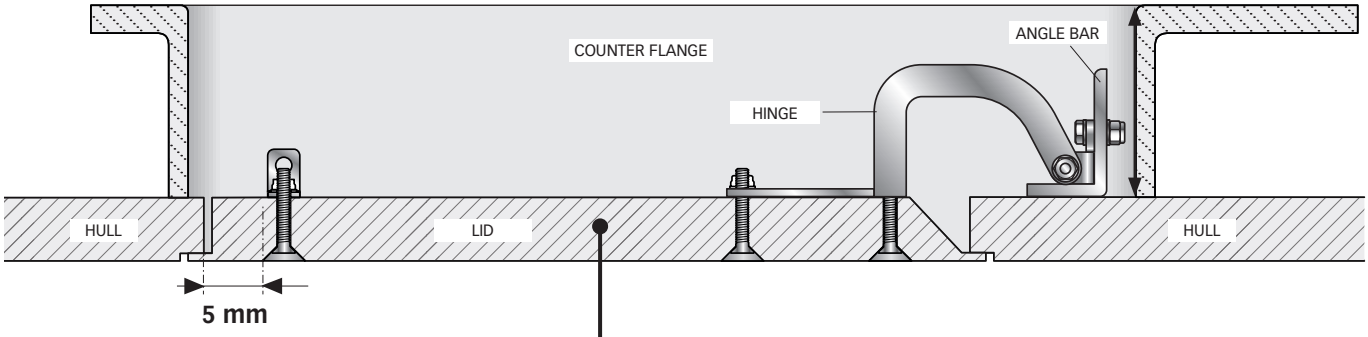


Fig. 11



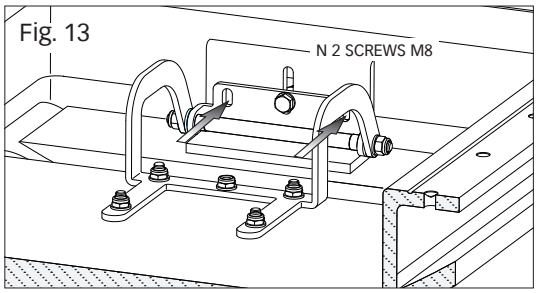
- Temporarily fasten the hinge bracket in its housing.
- Screw the hinge onto the angle bar with the central screw only (fig. 11).
- Position the hinge and hinge bracket correctly in the correct positions.
  Mark all the fastening points (fig. 12), remove the hinge and hinge bracket and drill using the Ø 8,5 mm bit.
  Fasten the hinge and hinge bracket in the positions marked with stainless steel hardware suitable for the application.
  Adjust the central screw of the hinge (fig. 11) and position it correctly so that the hatch opens without any hindrance.

Fig. 12



WARNING: in order to allow a stable fixing of hinge and bracket, the lid must present neither empty areas nor non-structural fillings inside (fig. 12).

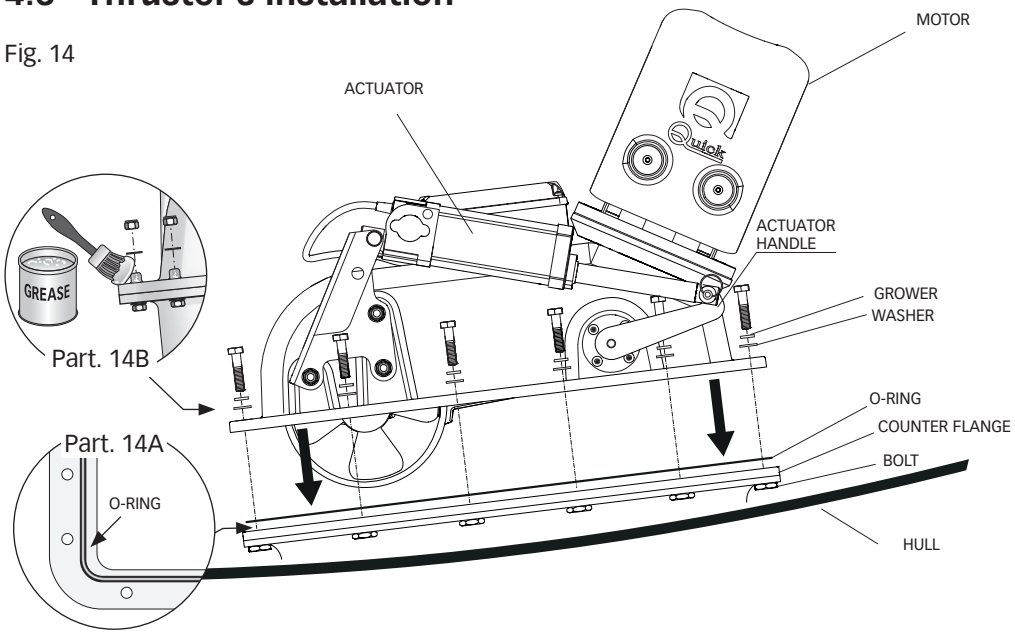
Fig. 13



- Drill the angle bar and fasten securely with the other two M8 screws (fig. 13).

4.3 - Thruster's installation

Fig. 14

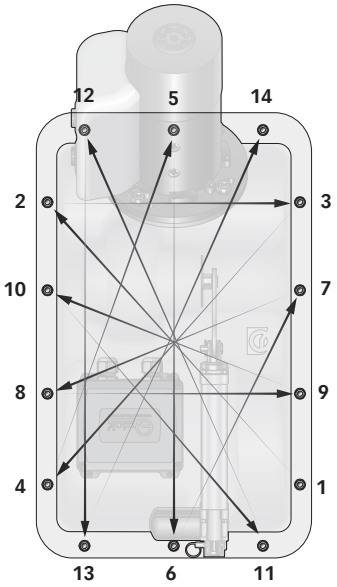


- Remove the adhesive backings, previously applied, from the counter flange.
- Make sure the area where the gasket will be positioned is clean and has not suffered any damage during installation.
- Position the o-ring on the counter flange (part. 14A), assemble the thruster (fig.14), spread marine grease on the thread of the bolts (fig.14B) and fasten securely with supplied screws.

The bolts and screws of the counter flange must be tightened to 25Nm, tightening little by little in a crossed sequence, following a scheme such as in the example in figure 14C.

WARNING: about one week after installation, you should check that all screws are properly tightened in order to compensate for any potential o-ring settling.

Fig. 14C



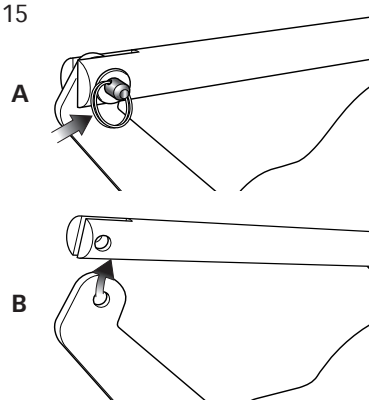
4.4 - Mechanical system check and adjustmen

Follow the sequence described below to verify the opening of the hatch:

Fig. 15
- The BTR propeller should be disconnected from power.
- Take the ring off and remove the pin (part. A).
- unhook the actuator from the lever (part B), ensuring that the system is free to open and close without any mechanical hindrance.

WARNING: when the actuator is manually unhooked, the thruster completely comes out due to its weight, therefore ensure that nobody stands in its range of action.

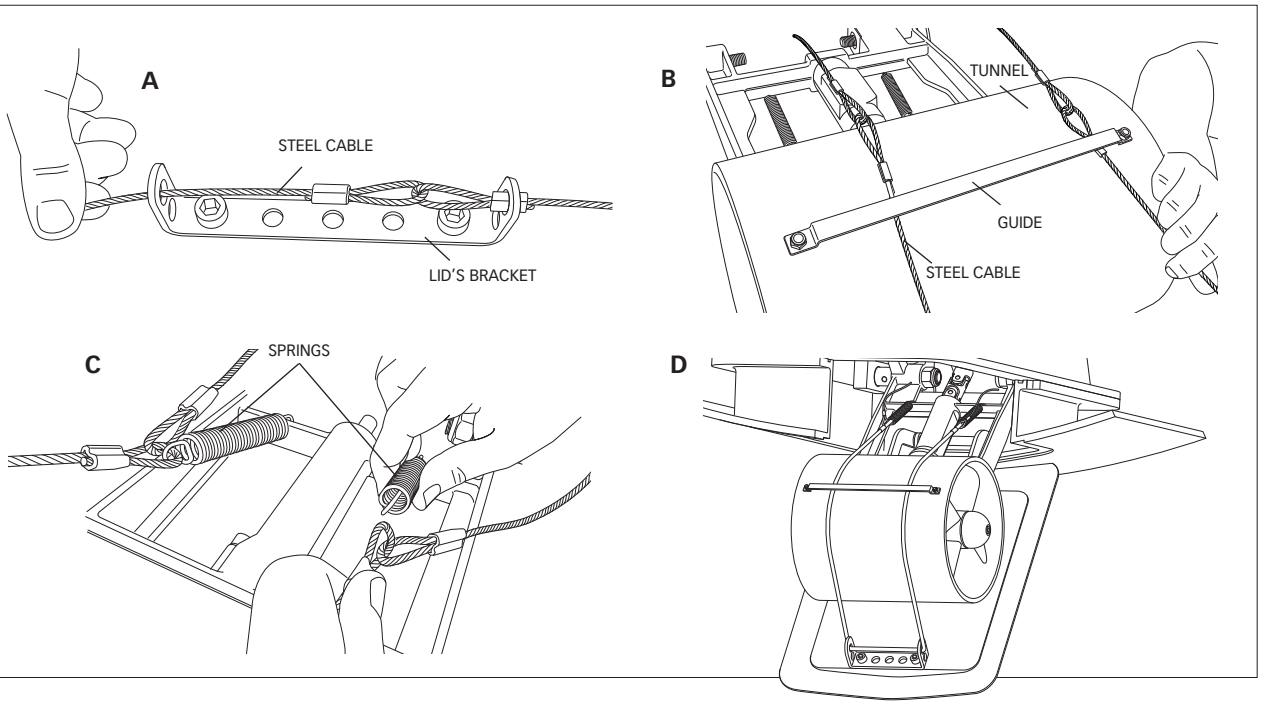
fig. 15



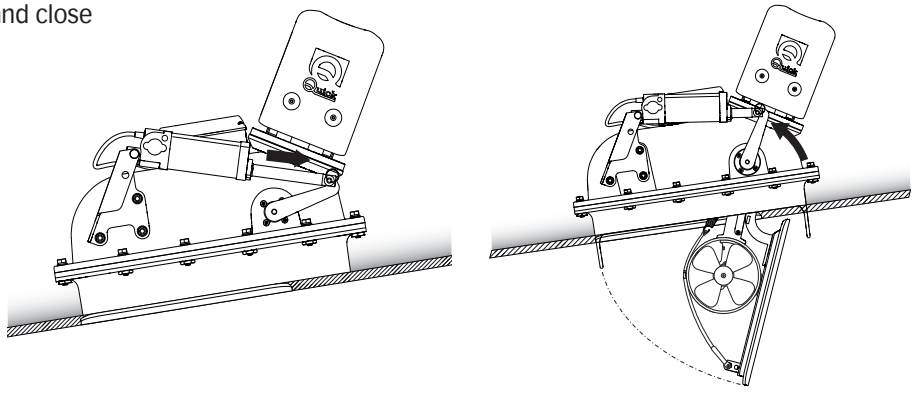
4.5 - Installation of the cable in the lid

Fig.16
- Thread one end of the cable through the lid's bracket (part. A).
- Pass the cable beneath the fixed guide of the tunnel (part. B).
- Hook the end of the cable to the two springs (that are already mounted onto the moving body) (part. C).
- Final installation of the cable in the lid (part. D).

fig. 16



- Ensure that the system is free to open and close without any mechanical hindrance.



4.6 - Adjustment procedure

WARNING: the following procedure must be carried out by qualified personnel.

WARNING: presence of moving mechanical parts. Pay extreme attention when operating on the BTR propeller if connected to power.

- Ensure that all electrical connections have been properly carried out.
- Remove the cover from the board box (fig.17).

fig. 17 RTC R1

Limit switch adjustments must be made in "manual mode".

- Holding down both buttons on the board (fig. 18), connect power to the RTC R1 electronic control board until the (green) POWER LED begins flashing rapidly (fig. 18 / part. A). Then release both buttons.
- It is now possible to electrically control the actuator by means of the UP and DOWN buttons.
- Press the DOWN button till the actuator can be hooked again to the lever (section 4.4 - fig. 15 part A).
- By pressing the DOWN button, the thruster opens till the activation of the limit switch and the STATUS LED becomes green (fig.18 part B).
  If the limit switch isn't in the correct position (fig. 19A), it can be adjusted (see section 4.7).

fig. 18

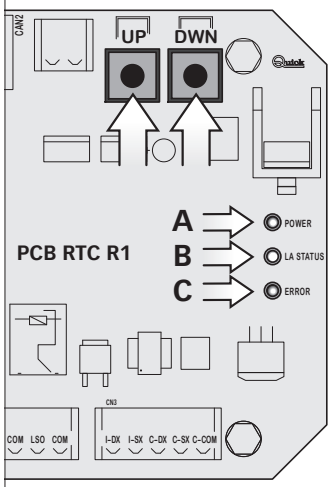
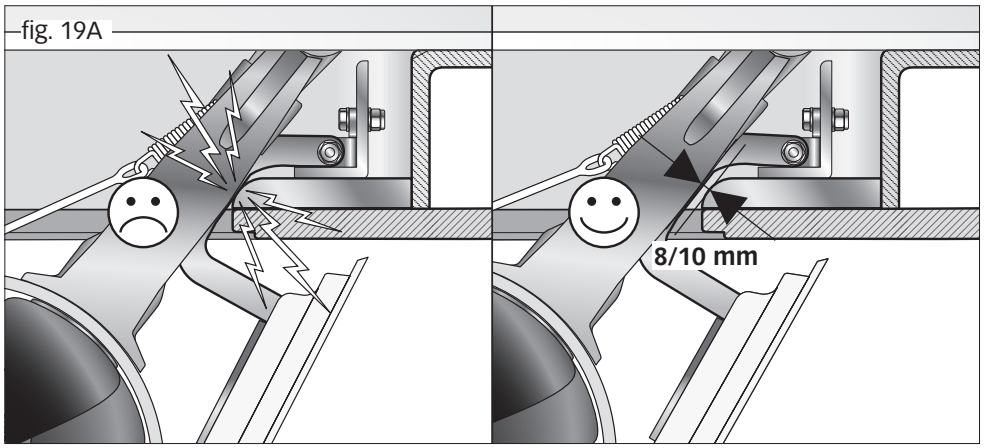


fig. 19A

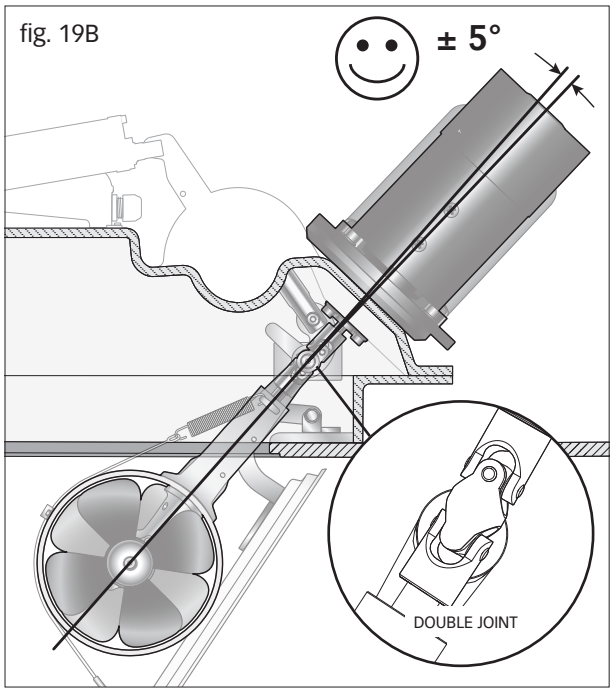


WARNING: make sure that the constant-velocity joint is straight, at an angle between -5° and +5° (Fig. 19B).

- By pressing the UP button, it is now possible to check the closing of the lid; once the limit switch is reached the STATUS LED becomes red: if this closing is not enough, adjust the limit switch (see section 4.7).

The thruster is already adjusted at the factory, so it shouldn't need any closing adjustment.

fig. 19B



4.7 - Actuator's adjustment

Opening of the actuator's side lid

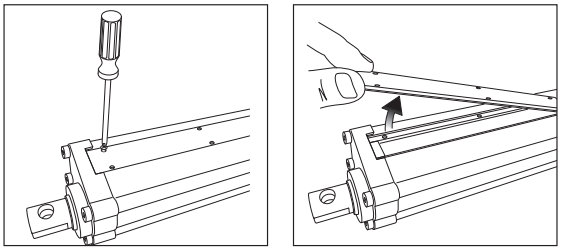
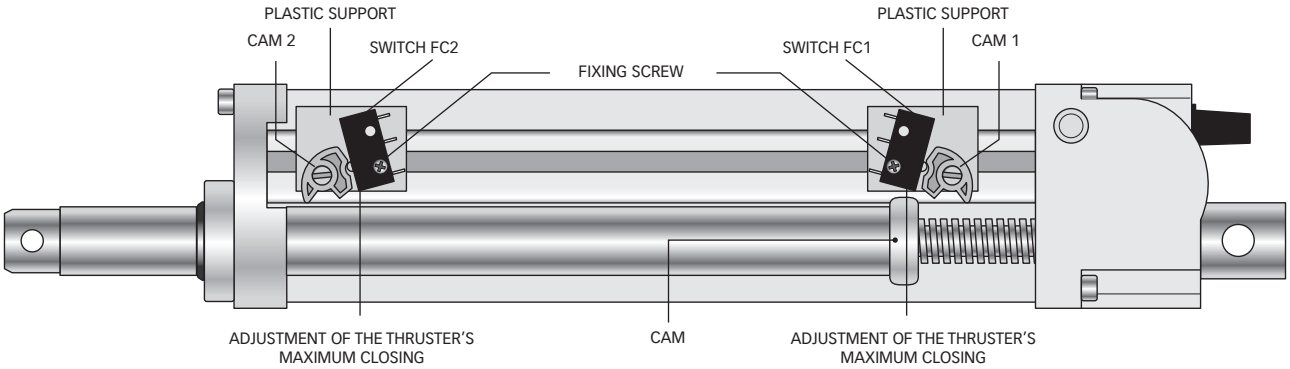


fig. 20

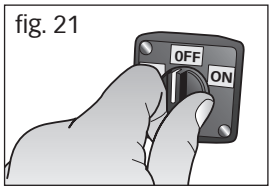
Actuator's interior



- To adjust the FC1 and FC2 limit switches, partially unscrew the fixing screw and move them on the right or on the left according to the need, then screw the fixing screw back on (fig. 20).

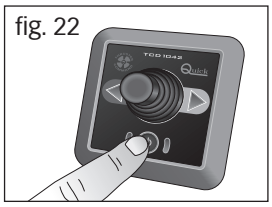
WARNING: while adjusting the limit switch FC1 and FC2, verify that the cam which operates them is always positioned between them and never in overstroke.

fig. 21



- Disconnect the BTR propeller from power for at least five seconds (fig. 21).
- Connect power to the BTR propeller (fig. 21).
- Enable a TCD control connected to the BTR propeller to open the propeller and activate it (fig. 22).
- Disable the TCD control before hand enabled in order to close the propeller (fig. 22).
- Ensure that the high-absorption protection did not intervene (the "ERROR" LED must be switched off - see section 4.6 fig. 18 / Part. C).

fig. 22



4.8 - Installation of the springs' limit switch wires

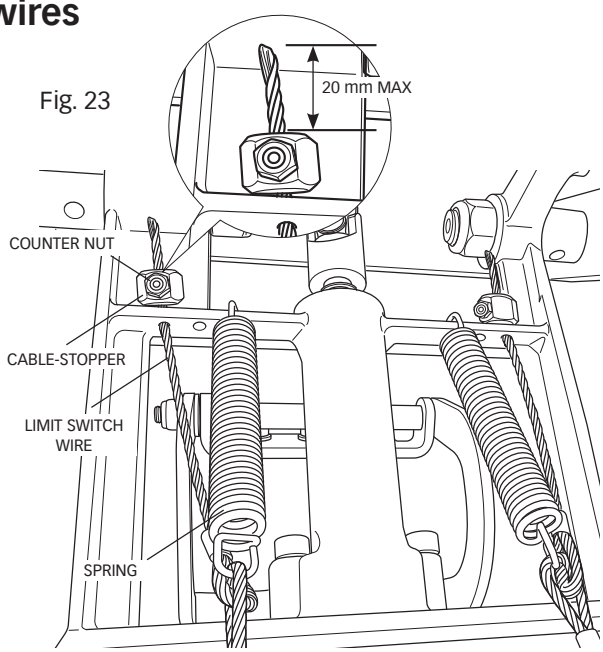
- Open the thruster completely by switching it on by the remote (fig. 22).

WARNING: once the thruster is open, disconnect power supply (fig. 21) in order to lock it into this position.

Fig. 23

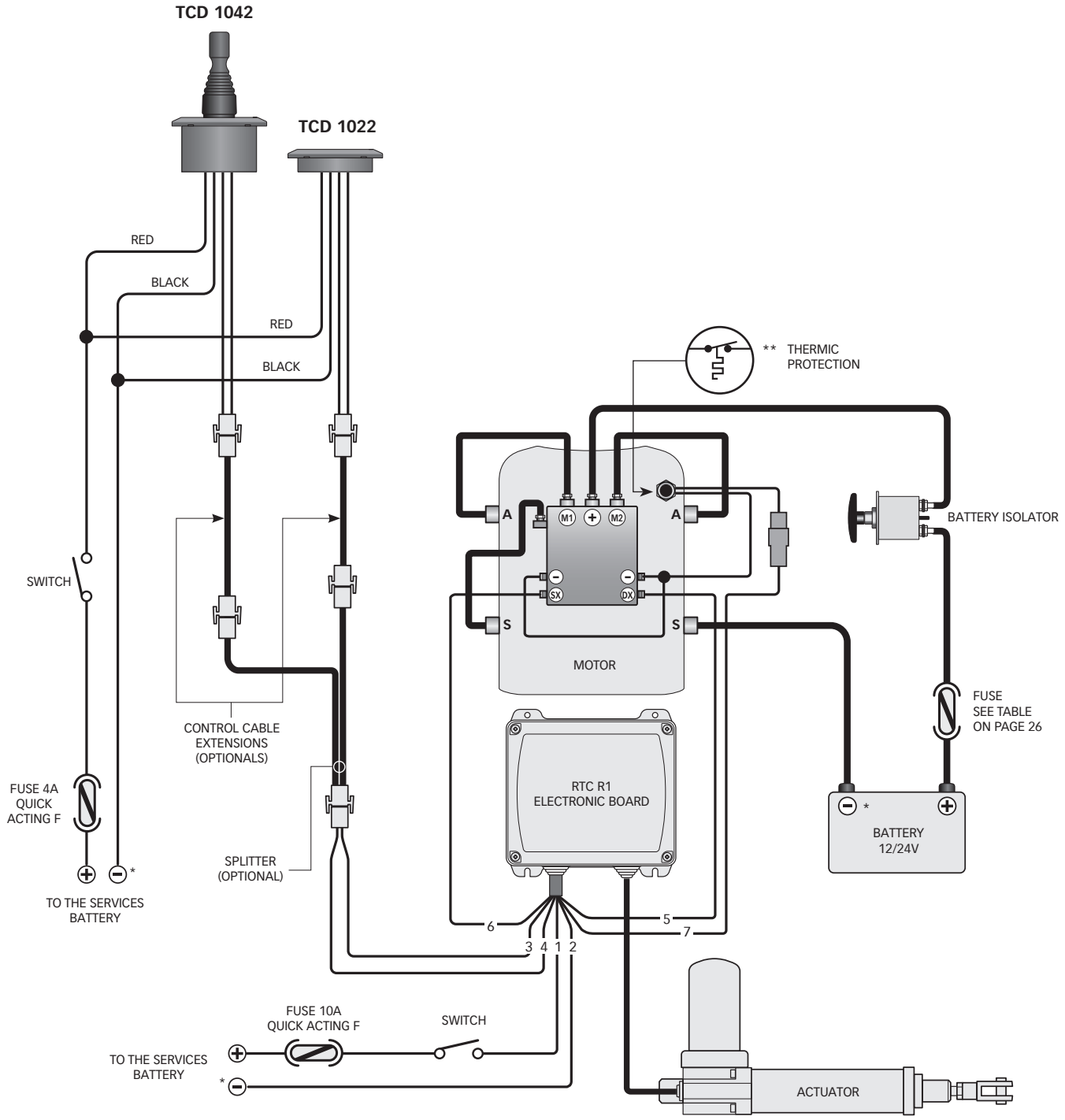
- Insert the two limit switch wires in the proper slots.
- Position the two cable-stoppers, apply tension to the two wires, checking that both springs are equally pulled, tighten the cable-stoppers by means of a 2,5 mm hexagon wrench key.
- Lock the cable-stopper by tightening the counter nut by means of a 8 mm open end wrench, cut with a cutting nipper the excess cable leaving about 20 mm besides the cable-stopper.
- Power up the thruster (fig. 21) which will automatically close.
- In order to ensure that the thruster is properly working, open the thruster several times using the control (fig. 22).

Fig. 23



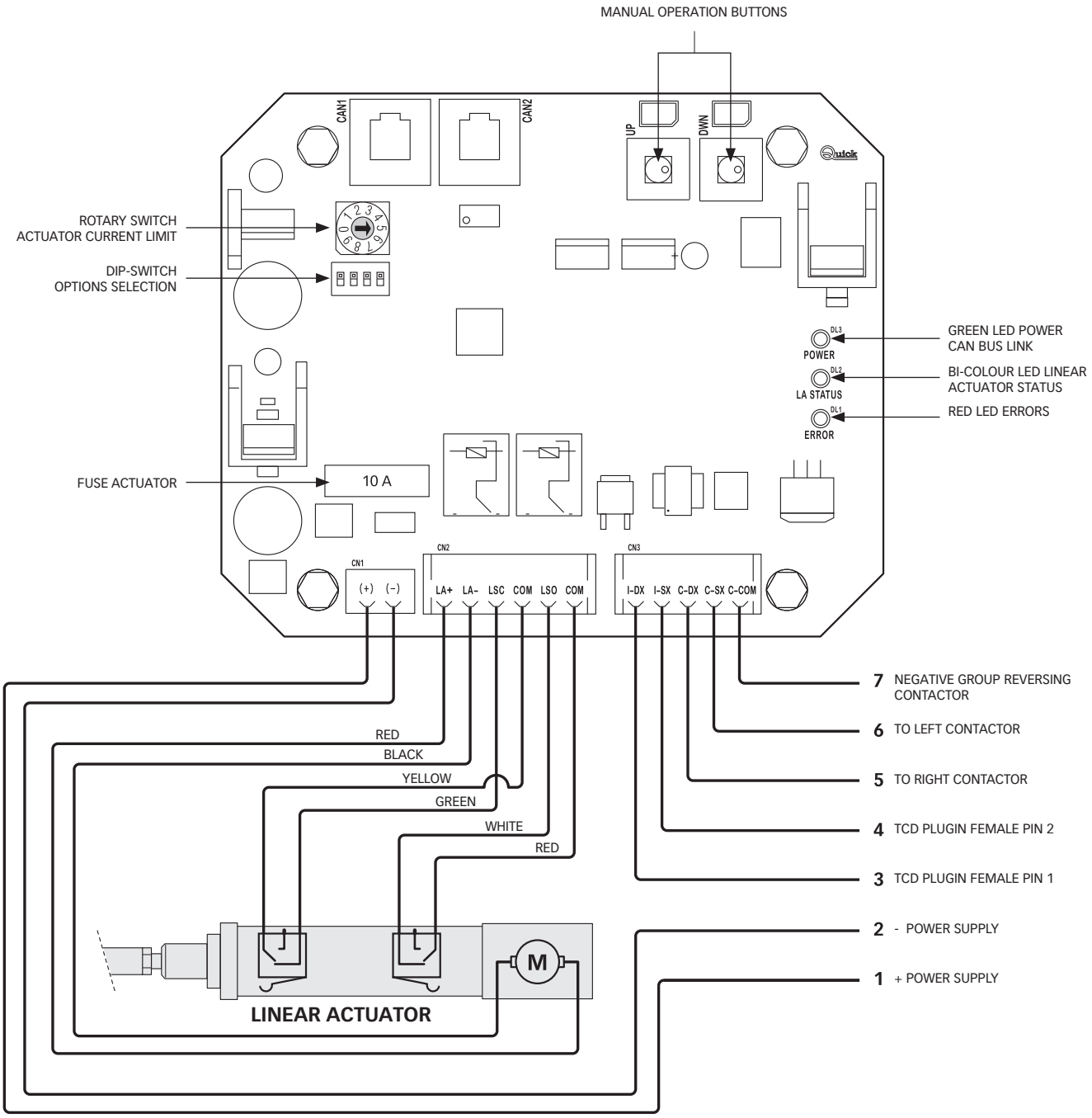
5.0 - BTR140 basic system

Connection example

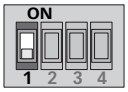
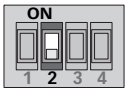
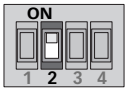
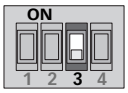
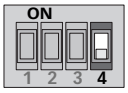
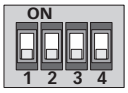


* COMMON NEGATIVE FOR THE BATTERY GROUPS.
** WARNING: IN CASE OF OVERTEMPERATURE, THE THERMAL PROTECTION ON THE MOTOR WILL OPEN AND INTERRUPT THE NEGATIVE CONTACT ON THE SOLENOID UNIT. WAIT AS LONG AS THE SYSTEM NEEDS TO REACTIVATE.

5.1 - RTC R1 BOARD



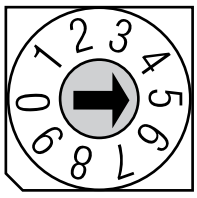
6.0 - Option selection Dip-Switch

SELECTION	FUNCTION	DIP-SWITCH
1	Reserved (always keep off)	
2	Informs the CAN control station that the thruster is in the bow (OFF)	
	Informs the CAN control station that the thruster is in the stern (ON)	
3	Reserved (always keep off)	
4	Reserved (always keep off)	
FACTORY SETTING: 1 = OFF , 2 = OFF , 3 = OFF , 4 = OFF		

6.1 - Actuator current rotary switch

The ten selectable steps (from 0 to 9) allow you to set a percentage (see table) regarding the maximum current/load allowed for the actuator in use.

ROTARY SWITCH POSITION	MAXIMUM CURRENT/ LOAD %
0	28%
1	36%
2	44%
3	52%
4	60%
5	68%
6	76%
7	84%
8	92%
9	100%



Should a setting different to the factory one be requested, carry out the following operations:

1) Turn the arrow of the rotary switch to the desired position with the board not powered.
2) When the board is powered, the percentage corresponding to the selected position will automatically be set.

If the maximum current/load is too low compared to the real operating requirements, may intervene protections against high absorption of the actuator in closing and opening the retractable, with flashing 1 and 7 errors.

7.0 - Notification signs

Legend of error notifications concerning the RTC R1 board (see the board on page 38)

LED POWER (GREEN)

LED STATUS	DESCRIPTION
OFF	Board not powered
SLOW FLASHING	Powered board but disabled control
FAST FLASHING	Powered board and actuator's manual movement mode on
ON WITH SHORT SWITCHING OFF	Powered board but disabled control and active link with the CAN control station
ON	Powered board and enabled control (TCD or CAN station).

LED LA STATUS (BI-COLOUR)

LED COLOUR	LED STATUS	DESCRIPTION
-	**OFF**	With powered board, actuator's manual movement mode on and limit switch anomaly present
RED	**ON**	Retractable thruster closed (LSC limit switch enabled)
GREEN	**ON**	Retractable thruster open (LSO limit switch enabled)
ORANGE	**ON**	Retractable thruster neither open nor closed (LSC and LSO limit switches disabled)
ORANGE	**FLASHING**	Retractable thruster neither open nor closed (LSC and LSO limit switches disabled) and linear actuator moving.

LED ERROR (RED)

NUMBER OF FLASHING	DESCRIPTION
NOTHING	**No anomaly present.**
1	**High absorption of the actuator during ascent (retractable thruster closing)** Signalling occurs after the system has attempted three ascents in the presence of mechanical friction exceeding the set threshold. The problem can be caused by a foreign body that entered the mechanism, by the vessel navigating at sustained speed, or by mechanical problems of the retractable and relative hatch.
2	**Open fuse.** A current absorption exceeding 10A has occurred. The problem can arise from a short circuit or an overload on the actuator power line. Verify the wiring of the power lines from the board to the actuator or the absorption of the actuator itself.
3	**Anomalous limit switch's condition.** The problem is signalled when the board detects an anomaly on the limit switches (both activated). Verify the wiring of the power lines from the board to the limit switches and their functionality.
4	**Actuator command line interruption.** The problem is signalled when the board detects an interruption in the command power lines of the actuator. Verify the wiring of the power lines from the board to the actuator.
5	**Timeout of actuator's movement intervention.** The problem is signalled when the movement command given to the actuator is not executed within 15 seconds.
6	**Mistaken dip-switch setting.** The problem is signalled when the dip-switch positions have not been set correctly.
7	**High absorption of the actuator during descent (retractable thruster opening).** Signalling occurs after the system has attempted three descents in the presence of mechanical friction exceeding the set threshold. The problem can be caused by a foreign body that entered the mechanism, by the vessel navigating at sustained speed, or by mechanical problems of the retractable thruster and relative hatch.
8	**High absorption on motor reversing contactor unit control's output.** The problem is signalled when the board detects a short circuit or an overload on the electric control line of the propeller. Verify the wiring on the power lines from the board to the propeller and the absorption of the motor reversing contactor unit installed on the propeller.
9	**Activation of the thermal protection on the motor** The problem is notified in case the thermal protection on the motor is tripped. Wait for the thruster to cool off.
	Interrupted connection on the motor reversing contactor unit control's output. The problem is signalled when the board detects an interruption on the electric control line of the propeller. Verify the wiring of the power lines from the board to the motor reversing contactor unit installed on the propeller.

At the end of the cyclical flashing sequence, the "ERROR" LED remains off for a short period.

8.0 - Warnings

• This bow thruster is not designed for continuous use.
It is equipped with protections which limit its operation at a maximum time span, as reported on the controls' manual. It is strongly forbidden to bypass or modify such protections in order to increase the operating time span, lest voiding the warranty and thus lifting any responsibility from Quick® SPA.

• Before starting the retractable thruster ensure there are no bathers and floating objects near-by.

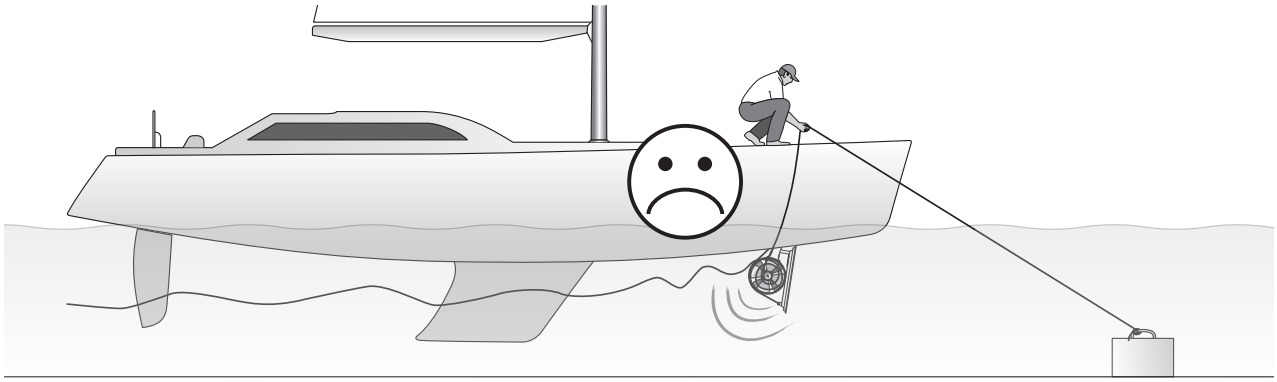
• To prevent any damage to the system, it is recommended not to sail with the open retractable thruster; to perform the thruster's opening and closing at a maximum speed of 4 knots, according to the currents, and at a maximum speed of 2 knots, still according to the currents, if reversing.

• To avoid damaging the system, it is recommended not enable the retractable thruster at speeds over four nodes.

• There must not be flammable materials in the peak or in the area where the Bow Thruster motor is.

• During mooring, it is recommended not to leave in the water any free line, which may be sucked in by the propellers, thus leading them to break (fig. 24).

Fig. 24



9.0 - Use of the retractable thruster

To correctly use the retractable thruster, refer to the TCD control manual

Start-up
When switching on, the RTC R1 board verify the position of the retractable thruster (raised, lowered or in an intermediate position). If it is raised, the system does not execute any actions. If it is lowered or in the intermediate position, it will command the ascent of the retractable thruster.

Enabling control from TCD (Retractable thruster descent)
When the RTC R1 board is enabled by a TCD control, the retractable thruster begins its descent.
The left/right commands from the TCD are inhibited until this operation is complete. During the descent phase, the RTC R1 board measures the current absorbed by the linear actuator. If mechanical friction causes elevated absorption in the linear actuator, the descent will be reversed briefly and then restart. After 3 attempts, the RTC R1 board will signal the problem.

Disabling control from TCD (Retractable thruster ascent)
When the RTC R1 board is disabled by a TCD control, the retractable thruster begins its ascent.
The right/left commands from the TCD are inhibited during the ascent. During the ascent phase, the RTC R1 boards measures the current absorbed by the linear actuator. If mechanical friction causes an elevated absorption in the linear actuator, the ascent will be reversed briefly and then restart. After 3 attempts, the RTC R1 board will signal the problem.

Automatic ascent in case of time out TCD
With the propeller lowered, after 6 minutes from last TCD right or left control, the retractable thruster performs the ascent procedure.

Errors detection from TCD
In case TCD sends an error signal in network (prolonged control, line interruption, short circuit in right or left output), the retractable thruster performs the ascent procedure.

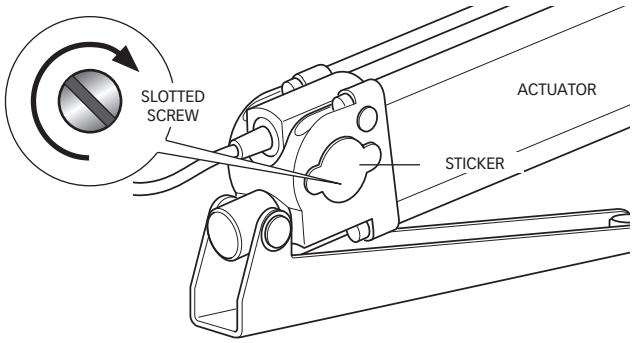
Thruster's closing problems

BTR140 **EN**

In emergency, the propeller can be locked in the closed position

WARNING: disconnect the BTR propeller from power.

On the actuator, under the sticker, there is a slotted screw; turn it clockwise with a screwdriver to close the system.



Maintenance

BTR140

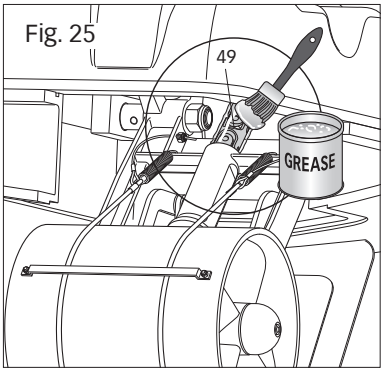
Quick® Thrusters are made in materials that are resistant to the sea environment: In any case, it is indispensable to periodically remove salt deposits that form on the outer surfaces to avoid corrosions and consequent system inefficiency.

ACCORDING TO THE USE WE RECOMMEND CHECKING PERIODICALLY THE OIL SEALS AND IF NECESSARY REPLACING THEM.

WARNING: make sure that the power supply to the electric motor is not switched on when maintenance operations are carried out.

Dismantle once a year, following the points below:

- Clean propellers, tunnel and gearleg.
- Replace the anodes (carry out this operation more often if needed) and, if possible, grease the double joint with marine grease (fig. 25).
- Replace the propellers if damaged or worn out.
- Check the tightness of all screws.
- Ensure that there is no water seepage inside.
- Check that all electrical connections are well tightened and oxide-less.
- Check that the batteries are in good conditions.

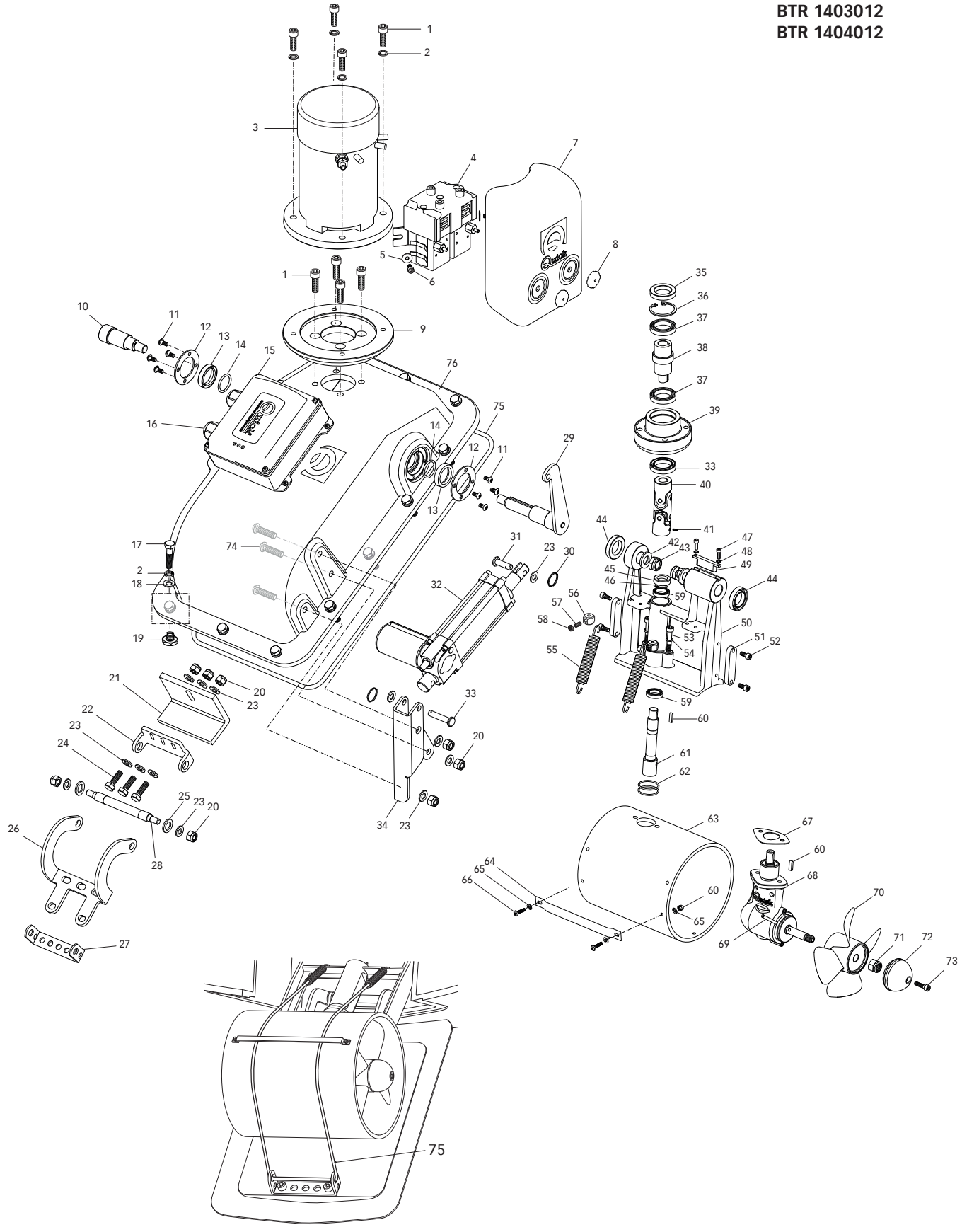


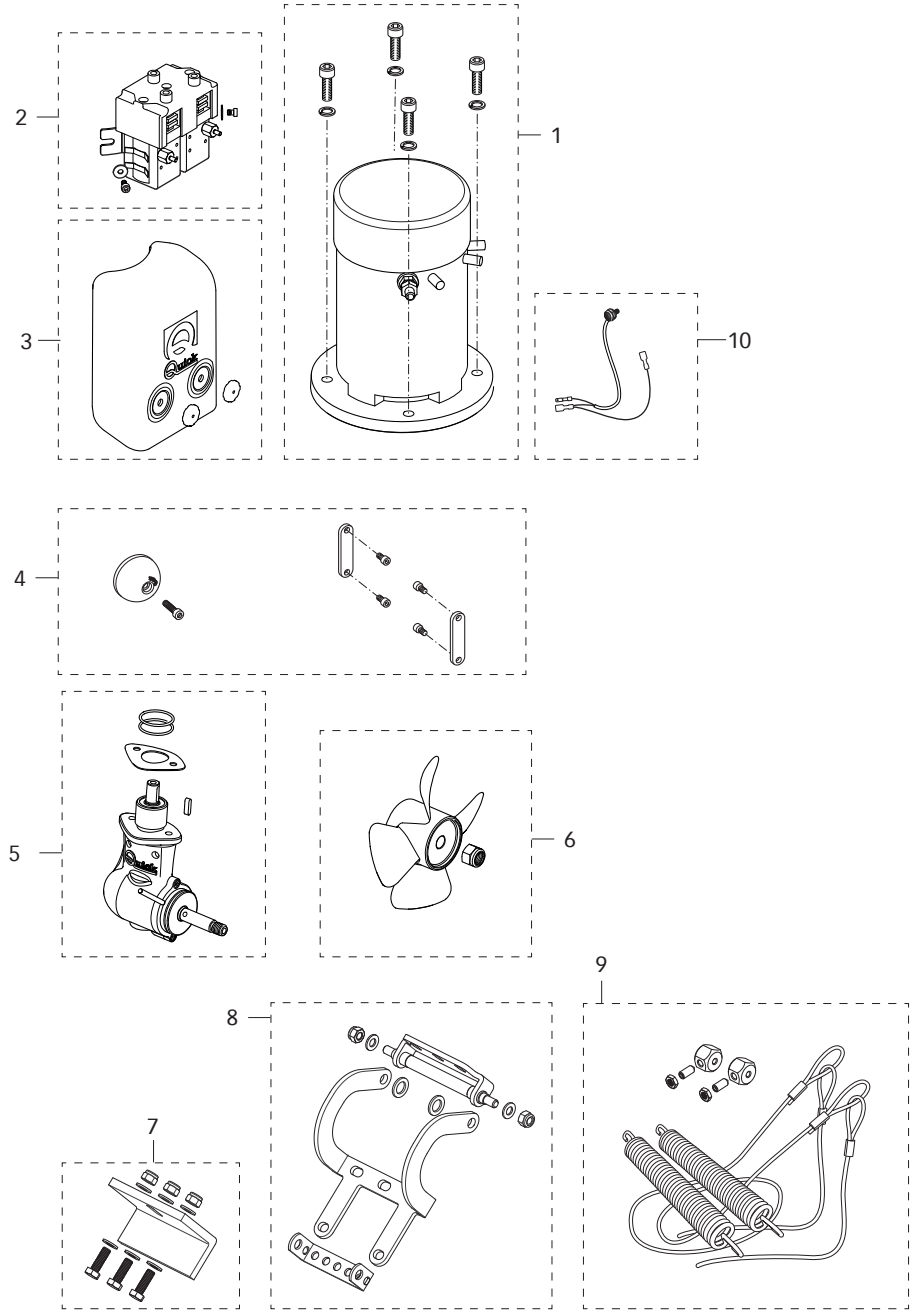
WARNING: do not paint the anodes, the sealings and the gearlegs' shafts where the propellers are lodged.

Drawing number page 40

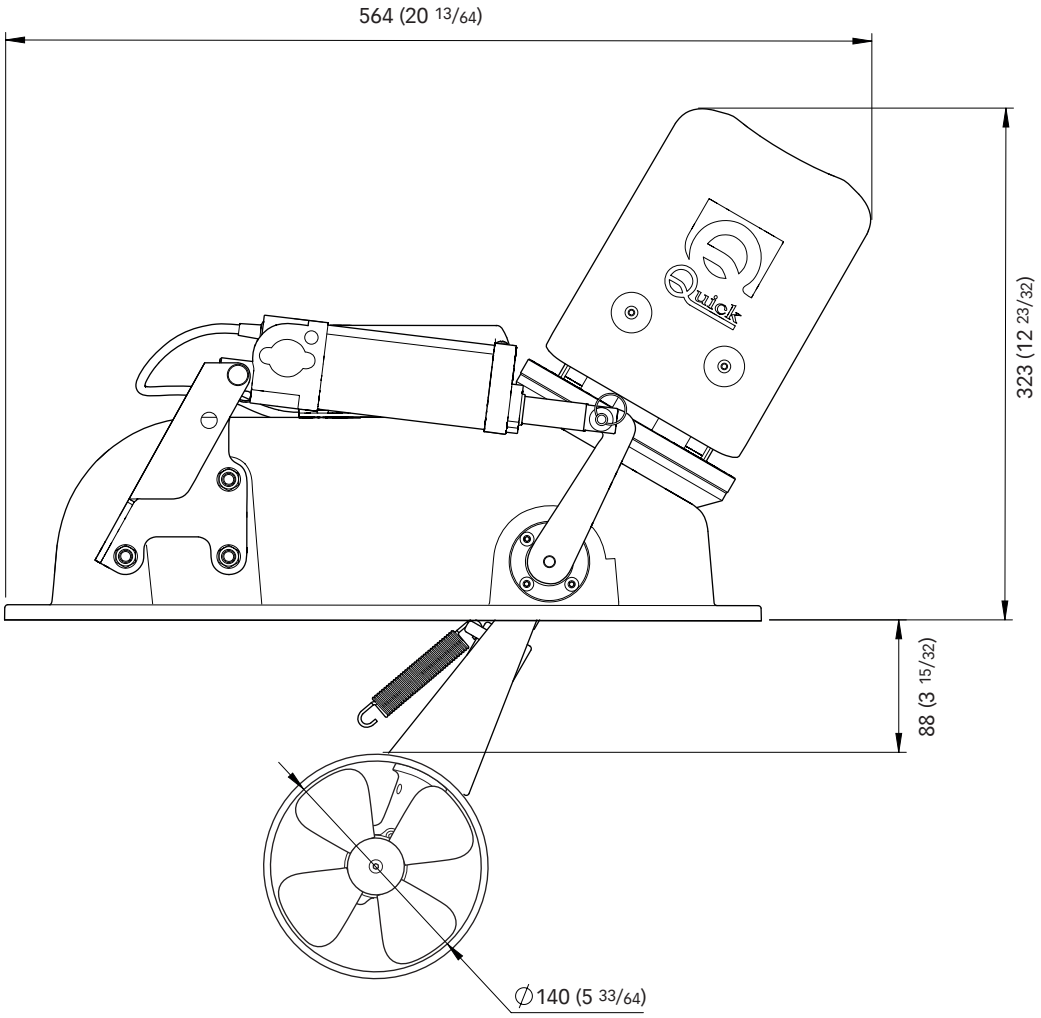
N°	DENOMINAZIONE
1	SCREW
2	GROWER
3	MOTOR
4	REVERSING CONTACTOR UNIT
5	WASHER
6	SCREW
7	CARTER REVERSING CONTACTOR
8	ASTENERS CARTER REVERSING
9	FLANGE
10	PIN
11	SCREW
12	FIXING RING
13	OIL SEAL
14	GASKET
15	RX RRC BOX
16	FAIRLEADS
17	SCREW
18	GASKET
19	THREAD INSERT
20	NUT
21	ANGLE BAR
22	HINGE'S BRACKET
23	WASHER
24	SCREW
25	WASHER
26	HING'S BRACKET
27	WASHER
28	HINGE'S SHAFT
29	ACTUATOR'S LEVER
30	HINGE'S SHAFT
31	PIN
32	ACTUATOR
33	PIN
34	FULCRUM
35	OIL SEAL
36	INTERNAL CIRCLIP
37	BEARING
38	SHAFT
39	SUPPORT
40	DOUBLE JOINT
41	SCREW
42	WASHER
43	NUT
44	OIL SEAL
45	OIL SEAL
46	CIRCLIP EXTERNAL
47	SCREW
48	GROWER
49	KEY INSERT
50	TILTIN BODY
51	ANODE
52	SCREW
53	SCREW
54	GROWER
55	SPRING
56	CABLE - STOPPER
57	SCREW
58	NUT
59	BEARING
60	KEY
61	SHAFT
62	GASKET
63	TUNNEL
64	CABLE GUIDE
65	WASHER
66	SCREW
67	GASKET
68	GEARLEG
69	SCREW
70	SCREW
71	NUT
72	ANODE
73	SCREW
74	SCREW
75	CABLE

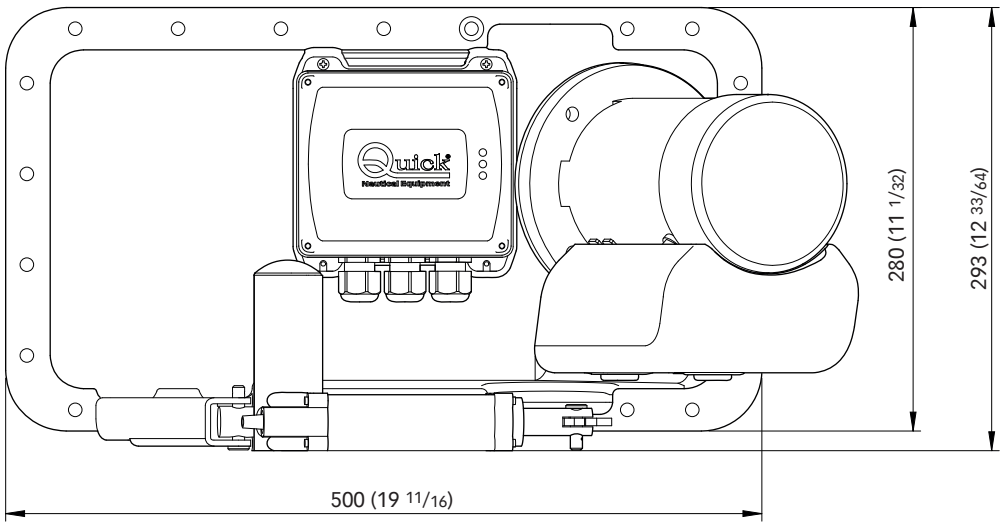
BTR 1403012
BTR 1404012





N°	DESCRIZIONE	CODICE
1A	OSP ROTOR 1500W 12V BTR 140+T	FVERFEL1512B14T
1B	OSP ROTOR 2200W 12V BTR 140+T	FVERFEL2212B14T
2A	OSP KIT REVERSING CONTACTOR UNIT 150A 12V	FVSGRCT15012A00
3A	OSP KIT CARTER 'A' FOR PROPELLER	FVSGCARTABTQA00
4	OSP KIT ANODS FOR PROPELLER BTR140	FVSGANBTR140A00
5	OSP KIT GEARLEG BTR140	FVSGGBBT140DA00
6	OSP KIT PROPELLER D140	FVSGEL140L00A00
7	OSP ANGLE BAR FISS VERT CERN BTR140	FVSLPVNG1400A00
8	OSP KIT HINGE+LID'S BRACKET BTR140	FVSGCN140000A00
9	OSP KIT STEEL CABLE BTR140 COMPLET	FVSFBTR14000A00
10	OSP KIT THERMIC PROTECTION	FVKPS120BTR0A00


564 (20 13/64)
323 (12 23/32)
88 (3 15/32)
∅140 (5 33/64)


280 (11 1/32)
293 (12 33/64)
500 (19 11/16)

BTR140

RETRACTABLE THRUSTER

REV 002A CE

MANUALE D'INSTALLAZIONE ED USO
INSTALLATION AND USE MANUAL

Codice di serie del prodotto / Product code and serial number

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