

BTRH Series

REV 001A



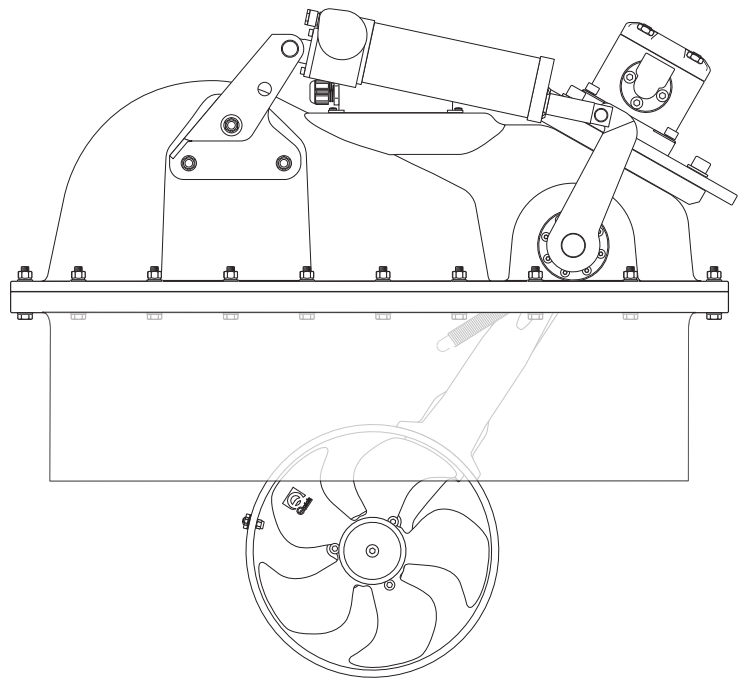
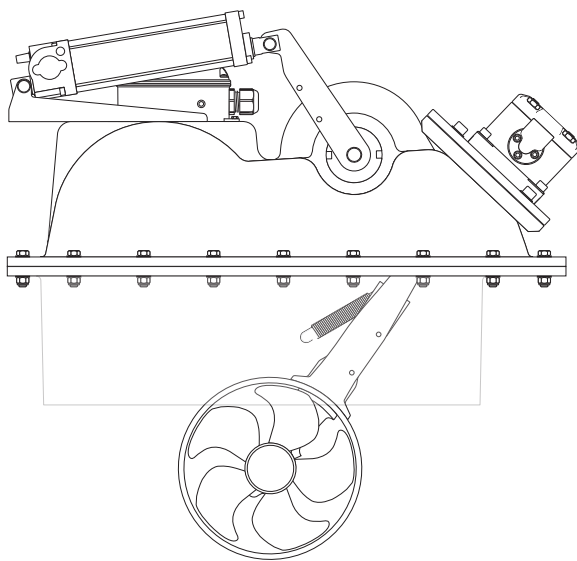
september 2025

HYDRAULIC RETRACTABLE THRUSTERS

BTRH 185 85 - 185 105

BTRH 250 150 - 250 220

BTRH 300 300



***EN - INSTALLATION AND USER'S MANUAL** **General instructions**

*Other languages available by scanning the QR code on the back of this manual or on the label on the product.

IT *Altre lingue disponibili scansionando il codice QR presente sul retro del seguente manuale o sull'etichetta alloggiata sul prodotto.

ES *Otros idiomas disponibles escaneando el código QR en la parte posterior de este manual o en la etiqueta del producto.

FR *Autres langues disponibles en scannant le code QR au dos de ce manuel ou sur l'étiquette du produit.

DE *Andere Sprachen sind durch Scannen des QR-Codes auf der Rückseite dieser Betriebsanleitung oder auf dem Aufkleber am Produkt verfügbar.

PT *Outros idiomas disponíveis, digitalizando o código QR no verso deste manual ou no rótulo do produto.

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Thank you for choosing a **Quick Spa** nautical accessory.

Quick Spa is an international leader in the production and marketing of nautical accessories. The Italian plant designs, engineers and manufactures all the products in the Quick range.

BTRH SERIES RETRACTABLE THRUSTERS

Marine accessory designed to assist with docking manoeuvres when approaching the quay. Retractable thrusters allow the tunnel to extend from the hull only during mooring operations, thereby ensuring the hydrodynamic efficiency of the hull. The BTRH series comprises a range of retractable thrusters powered by a gear-type hydraulic motor. The chassis and counter-flange are made of composite material. In particular, the chassis containing the gearbox is made of SMC, ensuring high strength. Components in contact with water are made of suitable materials, such as the gearbox, manufactured in aluminium-bronze alloy. The anode is made of aluminium and the output shaft of stainless steel. The thrusters may be made of either plastic or aluminium-bronze alloy, depending on the model.

2 - Important information

This manual provides boatyards and nautical equipment installers with instructions on how to assemble the specified BTH Quick® and operate it correctly.

READ THIS INSTRUCTION MANUAL CAREFULLY BEFORE USING THE PRODUCT.

IF IN DOUBT, CONTACT YOUR QUICK® DEALER.

Keep the manual in a safe place for future reference. If lost, it can be downloaded from the company website www.quickitaly.com

Quick® reserves the right to modify the technical characteristics of 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.

2.0 - Abbreviations and symbols

ABBREVIATIONS

BT = Bow Thruster

EX = Example

P. = Page

SYMBOLS

This manual features Warning and/or Caution symbols that are important for safety.

Please follow the instructions provided.

	Warning symbol for dangerous situations.
	Warning symbol for feet and/or hand crushing hazard (yellow triangle)
	Danger symbol for crushing hands by gears (red circle)
	Danger symbol for crushing hands by chain (red triangle)
	Caution symbol to prevent direct or indirect damage to the product.
	Caution symbol to prevent direct or indirect damage to the installer/end user.

3.0 - General precautions



Quick® Thrusters have been designed and constructed only for nautical use.

- Do not use these products for any other type of operation.
- Quick® shall not be held liable for direct or indirect damage caused by improper use of the product.
- The product is not designed to support loads generated in particular atmospheric conditions (storms).
- Operate the product from a position where it is possible to supervise the work area.
- Always deactivate the product when not being used.
- For improved safety, we recommend installing at least two controls to operate the product in case one is damaged.
- The installer shall bear full responsibility for any problems caused by defective installation of the tunnel.
- This equipment is not intended for use by people (including children) with reduced physical, sensory or mental capabilities.
- Do not install the electric motor near easily inflammable objects.

3.1 - Precautions for the installer and PPE



CARRY OUT THE INSTALLATION IN GOOD LIGHTING CONDITIONS.

It is advisable to wear suitable clothing and personal protective equipment (PPE).

All personal protective equipment must comply with the relevant national legislation and must be checked, maintained and used in accordance with the manufacturer's instructions.

PPE for the installer and the routine maintenance technician		
Identification pictogram	Description	Notes
	HELMET	Use of safety helmet to prevent damage caused by suspended loads during work and impact to structures.
	SAFETY GLOVES	Use of protective gloves to prevent cuts, perforations or punctures during work operations.
	SAFETY SHOES	Use of safety shoes to prevent damage caused by falling materials from above during stabilizer installation operations.
	SAFETY CLOTHING	Use of suitable protective clothing to prevent entanglement with moving and transported parts.

The product is not suitable for installation in potentially explosive environments and/or atmospheres. Installation and subsequent inspection or repair work must only be carried out by qualified personnel.



CARRY OUT INSTALLATION/MAINTENANCE WORK MAKING SURE THAT THE PRODUCT IS DISCONNECTED FROM THE ELECTRICAL SYSTEM.

Quick® accepts no responsibility for inadequate connection of users to the electrical/hydraulic system and its inadequate safety.

READ THIS INSTRUCTION MANUAL CAREFULLY BEFORE USING THE PRODUCT. IF IN DOUBT, CONTACT YOUR QUICK® DEALER.



QUICK® RESERVES THE RIGHT TO MODIFY THE TECHNICAL CHARACTERISTICS OF 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.

4.0 - Technical Data

MODELS	BTRH 185-85	BTRH 185-105	BTRH 250-150	BTRH250-220
No. of Propellers	Double propeller (technopolymer)			
Tunnel Ø	185 mm (7" 9/32)		250 mm (7" 9/32)	
Motor type	Reversible gear type		Reversible gear type	
Displacement	4.5 cc (0.3 in³)	6.4 cc (0.4 in³)	9.6 cc (0.6 in³)	14.1 cc (0.9 in³)
Door flanges (A and B) (¹)	G 1/2"		G 3/4"	
Drainage hole (C) (¹)	G 1/4"		G 1/4"	
Weight	27.3 kg (60.1 lb)	27.5 kg (60.6 lb)	65.3 kg (143.9 lb)	65.5 kg (144.4 lb)
ADJUSTMENT VALUES (Recommended by Quick®)				
Flow rate	17 l/min (4.5U SGpm)	28 l/min (7.4U SGpm)	25.5 lt/min (6.75 USGpm)	41.5 lt/min (11 USGpm)
Pressure	250 bar (3625 psi)	190 bar (2760 psi)	240 bar (3480 psi)	180 bar (2610 psi)
Hydraulic power input	6.4 kW	8 kW	9.2 kW	11.2 kW
Thrust	85 kgf (187.4 lbf)	105 kgf (231.5 lbf)	150 kgf (330 lbf)	220 kgf (485 lbf)

MODELS	BTRH 300-300
No. of Propellers	Double propeller (technopolymer)
Tunnel Ø	300 mm (11" 13/16)
Motor type	Reversible gear type
Displacement	22 cc (1.3 in³)
Door flanges (A and B) (¹)	G 3/4"
Drainage hole (C) (¹)	G 3/8"
Weight	79 kg (174 lb)
ADJUSTMENT VALUES (Recommended by Quick®)	
Flow rate	60 l/min (6.75 USGpm)
Pressure	225 bar (3480 psi)
Hydraulic power input	20.0 kW
Thrust	300 kgf (661.4 lbf)

(¹) See wiring diagram on page 17

4.2 - Tightening torques

TIGHTENING TORQUE	Nm
M6	6.5
M8	16
M10	31
M12	55
M14	87
M16	135

Indicative values for stainless steel screws, consider tightening by assessing the material of the surface to which it will be

4.3 - Standard supply and material included in the package

- Retractable thruster
- O-ring
- Hinge
- Hatch bracket
- Steel wire rope
- Installation and user's manual
- Warranty conditions
- Adapter

4.4 - Recommended Quick® accessories not included

- TCD thruster controls
- Extension

5.0 - General instructions and precautions

Consider the weight for lifting the BTRH, refer to section 4 “product information”, sub-section “technical data” in this manual.

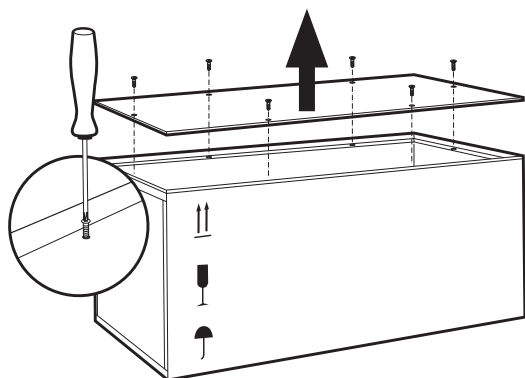


The handling and transport of the BTRH must be carried out by skilled personnel, capable of fastening loads correctly and in compliance with local regulations regarding work safety.

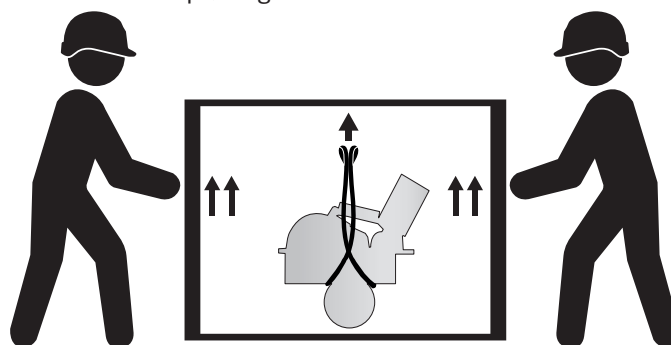
- Lift the BTR with a mechanical aid, especially when handling the motor.
- Care must be taken when removing the BTR from packaging or when lifting it, taking care NOT to cause damage to the equipment or impact with the ground.

5.1 - Removing the crate and lifting the BTRH Series

A. Remove the top panel of the crate.



B. Lift the BTRH from the crate with the mechanical aid using straps/slings to be tied to the BTRH.



The images are purely indicative and may not fully reflect the product characteristics.

6.0 - Tools required for installation

BTRH 185	• Phillips screwdriver • Wire cutters • Drill and drill bit Ø 8.5 mm • Allen wrench: 2.5 mm • Fork wrench: 8 mm and 13 mm
BTRH 250	• Phillips screwdriver • Wire cutters • Drill and drill bit Ø 8.5 mm • Allen wrench: 2.5 mm and 10 mm • Fork wrench: 8 mm, 13 mm and 17 mm
BTRH 300	• Phillips screwdriver • Wire cutters • Drill and drill bit Ø 8.5 mm • Allen wrench: 2.5 mm and 10 mm • Fork wrench: 8 mm, 13 mm and 17 mm
BTR 300	• Phillips screwdriver • Wire cutters • Drill and drill bit Ø 8.5 mm • Allen wrench: 2.5 mm and 10 mm • Fork wrench: 8 mm, 13 mm and 17 mm

6.1 - Installation requirements

We recommend you entrust preparation and positioning of the tunnel in the hull to a skilled professional.

These are generic instructions and do not give details of the preparatory operations for installing the thruster, since this is the competence of the boatyard. The installer shall bear full responsibility for any problems caused by defective installation.

Although all the components and mechanical moving parts are of high quality, the correct installation of the driving unit is an essential basis for the safe and effective use of the boat as well as the driving unit itself.

The installation of such a unit is an operation that requires experience as well as technical skills. It is recommended that the installation be carried out by competent personnel and that the manufacturer or naval architects be consulted to fully assess the scope of the work.

The Quick® retractable thruster has two separate movements.

The main movement, relative to the driving unit, is of the tilting type. The hinges on which the movement takes place are designed for assembly high resistance and are located on the plane of the flat flanging that links the pre-assembled structure to the support integral to the hull.

The secondary movement relates to the closing movement of the thru-hull from which the tunnel comes out. This tilting movement is performed around the hinge that has been designed and manufactured for an interference-free opening of the hatch (if installed as instructed).

Electric motor, gearbox, linkages and all other components are supplied by Quick® already assembled on the GRP support structure and do not require adjustments, adaptations or sealing, unless specified in this manual.

The Quick® retractable thruster is sold separately from the counter flange which can be supplied in different materials based on the different type of hulls. Quick® can provide stainless steel, aluminium alloy or GRP supports, which are essential for a fast, sturdy and precise installation.

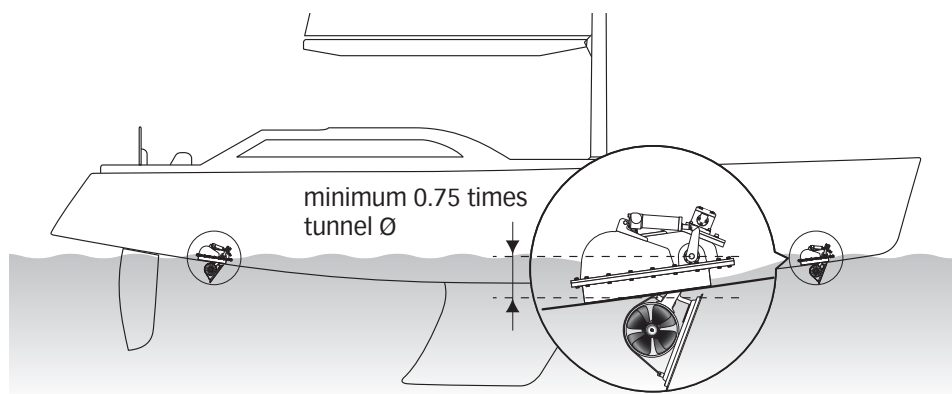
For fibreglass hulls, the support must be laminated in the hull in compliance with current regulations on joints.

The driving unit distributes mechanical stresses to the hull through the counter flange. The strength of the joint will be determined by overlapping laminations, made in a "workmanlike" way.

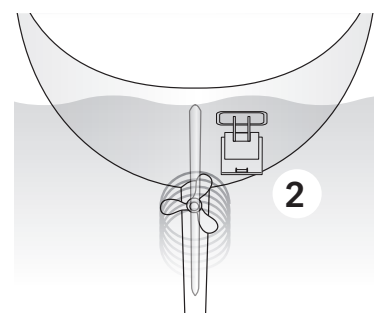
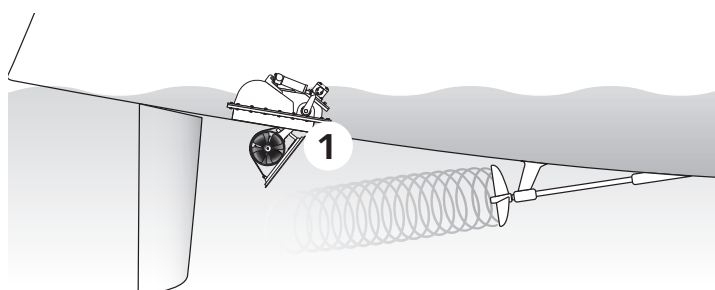
For aluminium alloy hulls or stainless steel hulls, the support needs to be welded to the hull.

If well done, the installation of a box structure such as that of the support can give greater strength to the hull. Refer to the manufacturer, naval architects and/or specialised companies to evaluate additional works such as beams and supporting structures near the position of the retractable driving unit.

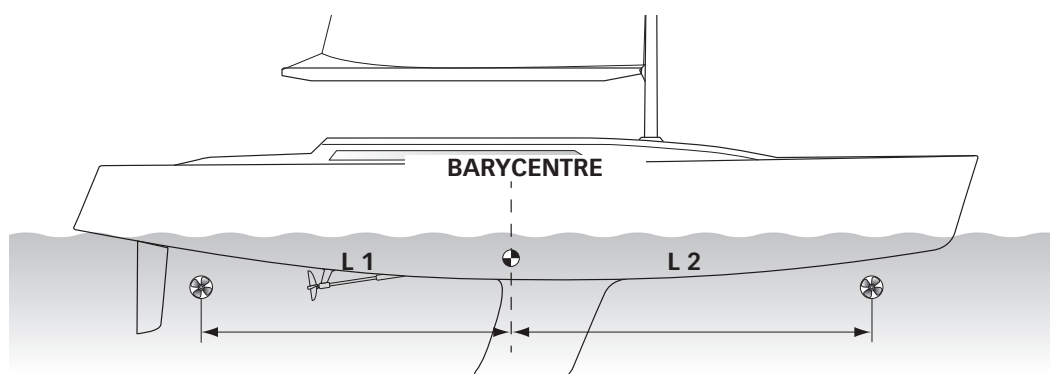
6.2 - Thrusters position



- To avoid cavitation in the thruster, the tunnel must be positioned as low as possible.

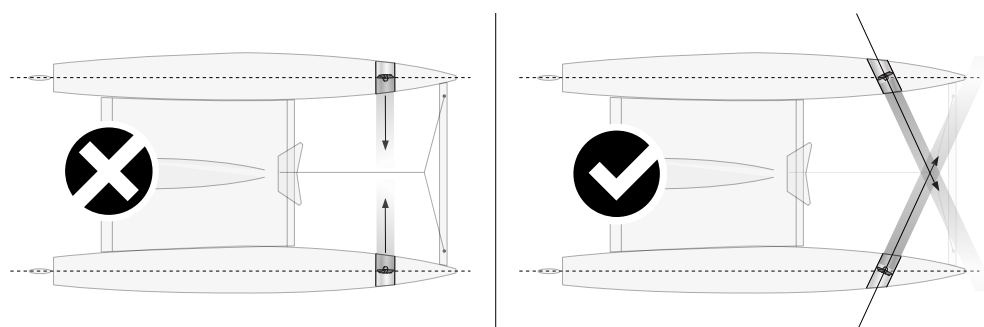


- To avoid damage, position the retractable thruster so that the hatch is not affected by the thruster driving cone of the boat (examples 1 and 2), in both directions of travel.



- The longer the lengths L1 and L2, the greater the thrust generated around the barycentre.

6.3 - Propeller installation on catamarans



- When installing propellers on a catamaran, the tunnel axes must not be aligned or directly opposed. The installation angle may vary depending on the catamaran size and model.
- The angle should be kept to a minimum to ensure greater Thruster efficiency.

6.4 - Counter flange installation

- Protect the seal seat with gummed paper tape to prevent it from getting dirty, until the retractable thruster is installed (Fig. 1A).

FIG. 1A

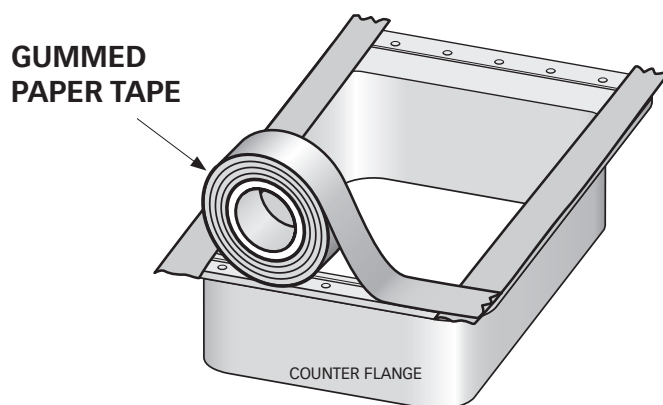
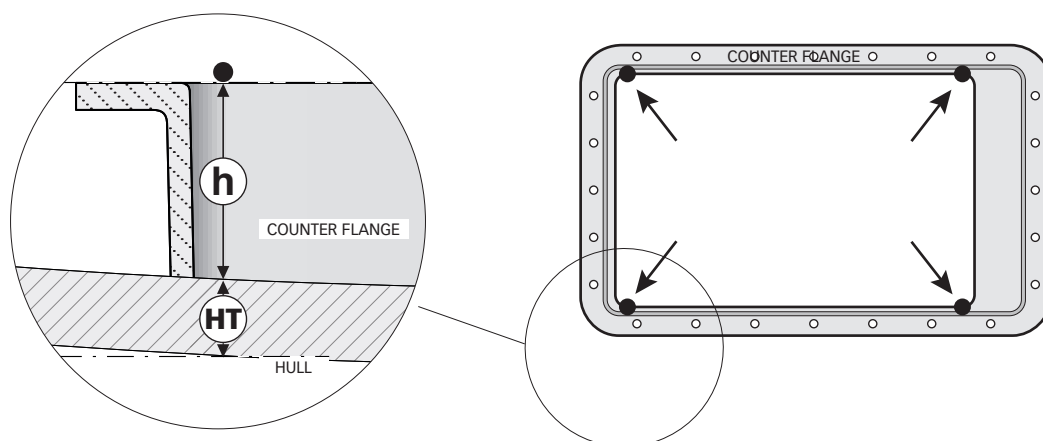
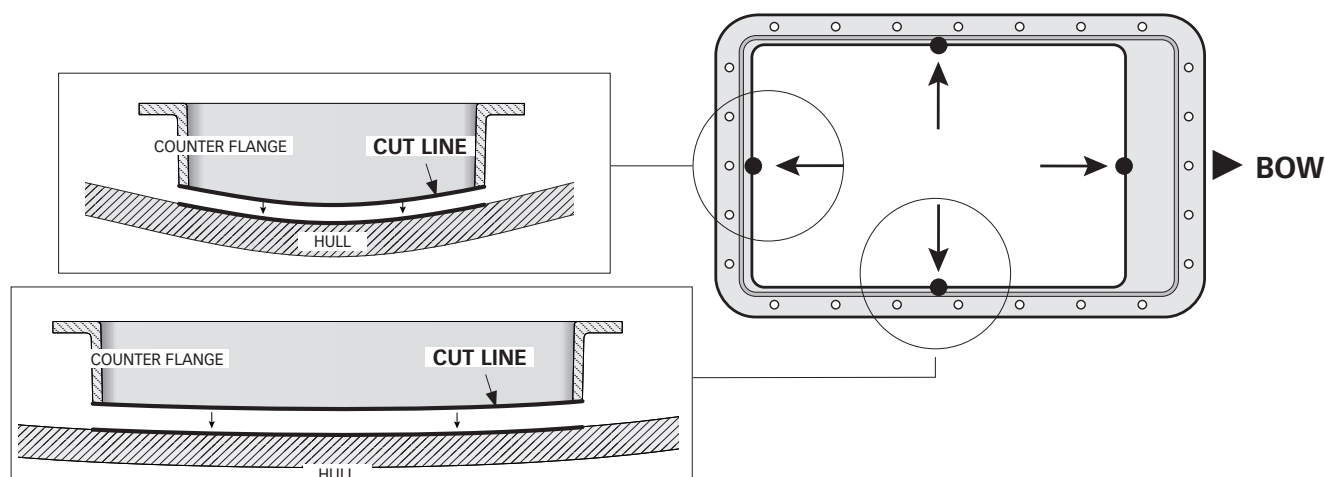


FIG. 1B



- Mark the counter flange with a marker in the four **INDICATED** positions of the long sides (Fig.1b), refer to the table:

	h	HT
Ø140	37-57mm	30mm
Ø185	60-65mm	35mm
Ø250	65-80mm	40mm
Ø300	110-120mm	40mm



- Shape the central parts of the 4 **indicated** sides of the counter flange by adapting them to the curve of the hull (fig. 1C).

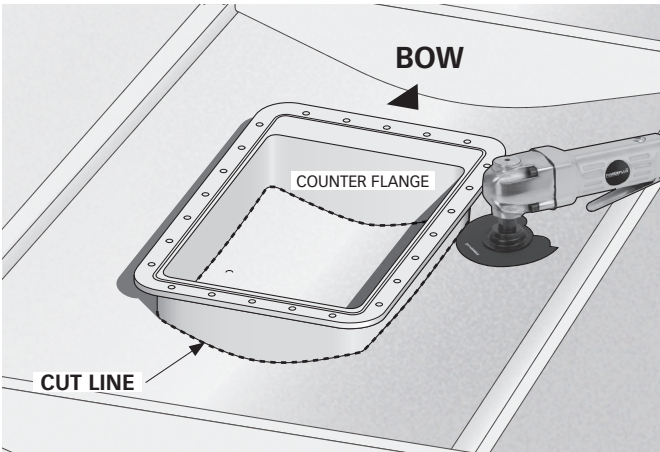


Fig.2

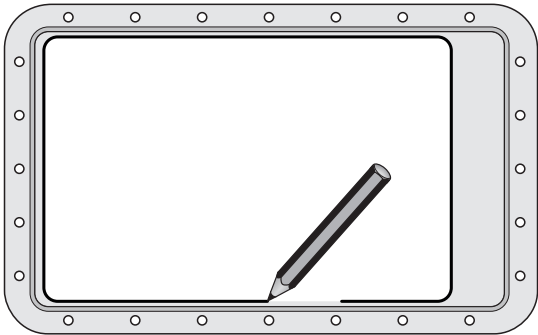


Fig.3

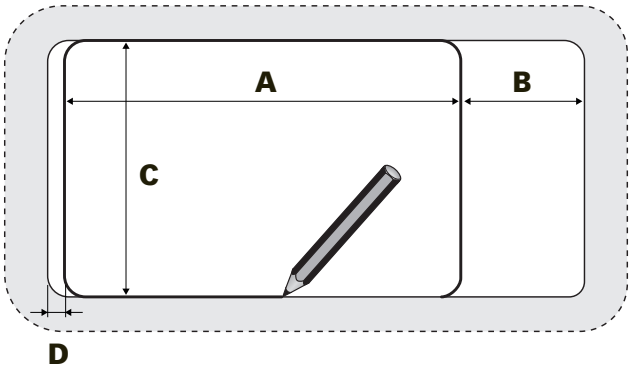
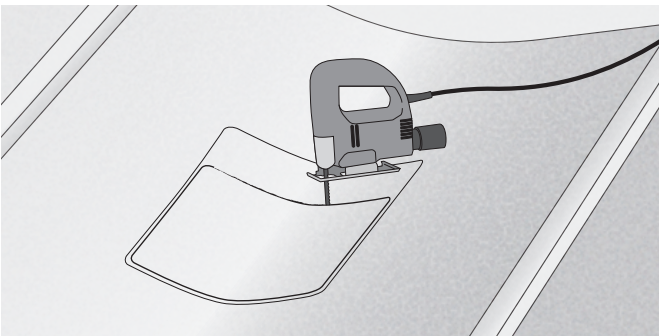


Fig.4



- Place the appropriately cut counter flange and check that the four sides adhere to the hull, if this is not the case, adapt it until it rests and adheres to the hull in the position where it is meant to be fixed.



WARNING: take into account the minimum dimensions for the final placement of the hinge (see fig.13, page 12).

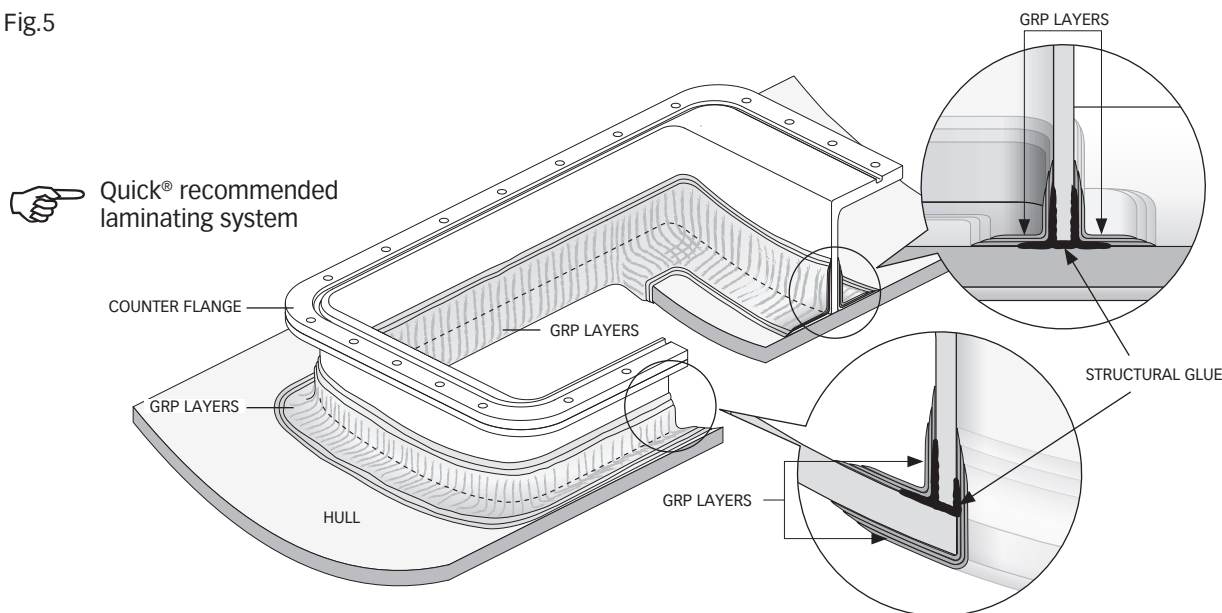
- Mark the inner perimeter of the counter flange on the hull with a marker (fig. 2).

- Remove the counter flange and mark the cutting area: (fig.3)

	Ø140	Ø185	Ø250	Ø300
A	320mm	350mm	480mm	604mm
B	100mm	95mm	150mm	110mm
C	200mm	280mm	310mm	440mm
D	0mm	0mm	20mm	0mm

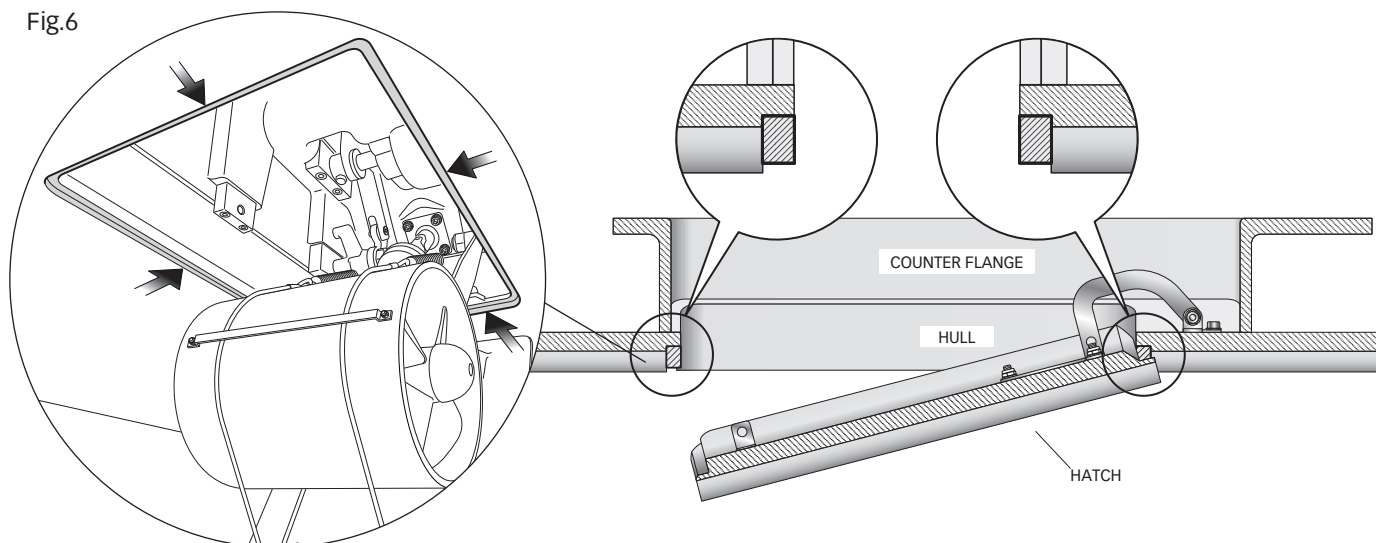
- Make the hull opening by cutting along the line of the marked cutting area (fig. 4).

Fig.5



- Align the counter flange with the opening of the hull and **check that the 4 heights indicated in fig.B page 9** are correct. Apply resin to the counter flange or weld it, in the case of aluminium or steel, according to the techniques identified as the most suitable for the type of hull construction (fig. 5).

Fig.6



- On the entire perimeter of the hull opening, make a sturdy stop for closing the hatch (fig. 6).

6.5 - Construction and installation of the closing hatch



WARNING: take special care to avoid interference between the cover and the hull opening. Too precise contacts will cause damage to the entire movement system (fig.7).

Fig.7

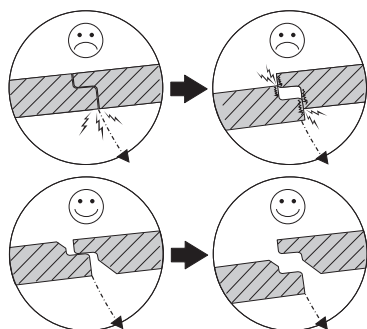


Fig.8

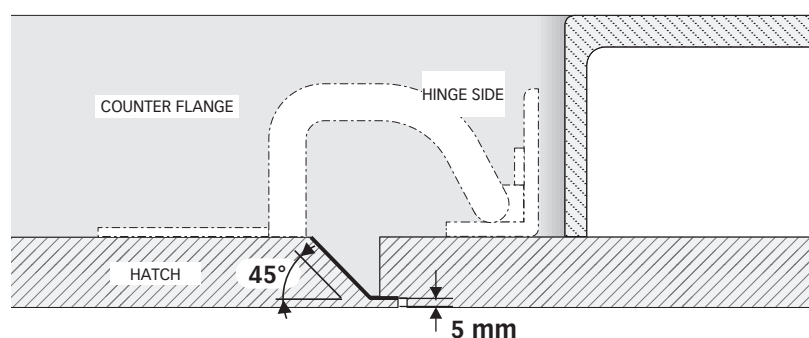


Fig. 9

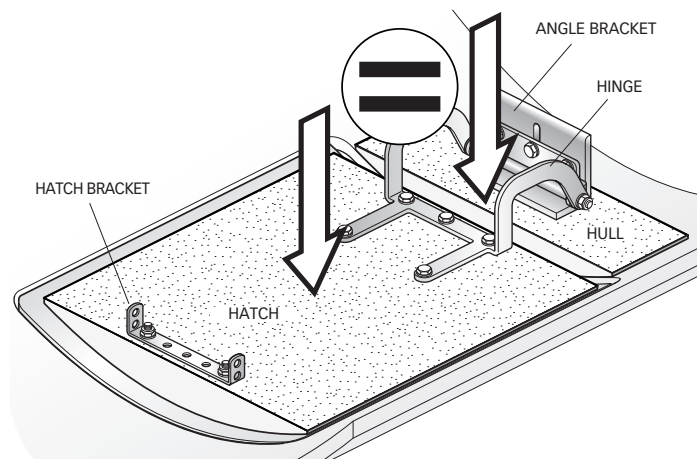
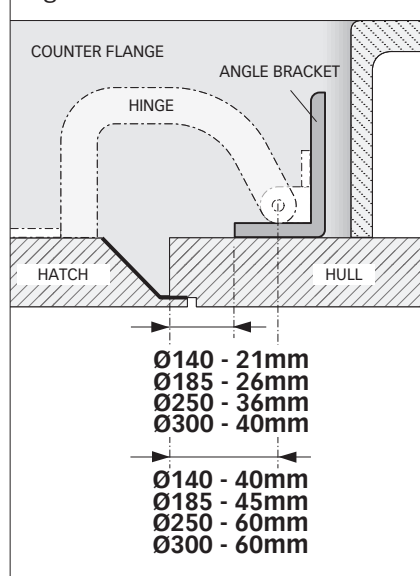


Fig. 10A



- Make the closing hatch maintaining a clearance on all sides from 3 to 5 mm, paying particular attention to the hinge side, making the internal walls inclined at 45° so that they do not interfere with the hull opening (fig.7 and 8).
- To achieve the correct opening of the hinge, the hull and hatch surfaces must be on the same level (fig. 9).
- The thickness of the hull must be max. 35mm (Ø185) 50mm (Ø250) (fig. 8).
- Correctly adjust the angle bracket on the hull (fig. 10A and 10B - ref. A).
- Fix the angle bracket with structural glue (fig. 10B - ref. B1 - B2).
- Choose whether to fix the angle bracket to the hull with 3 M8 screws or by applying resin (fig. 10B - ref. C1 - C2).

Fig. 10B

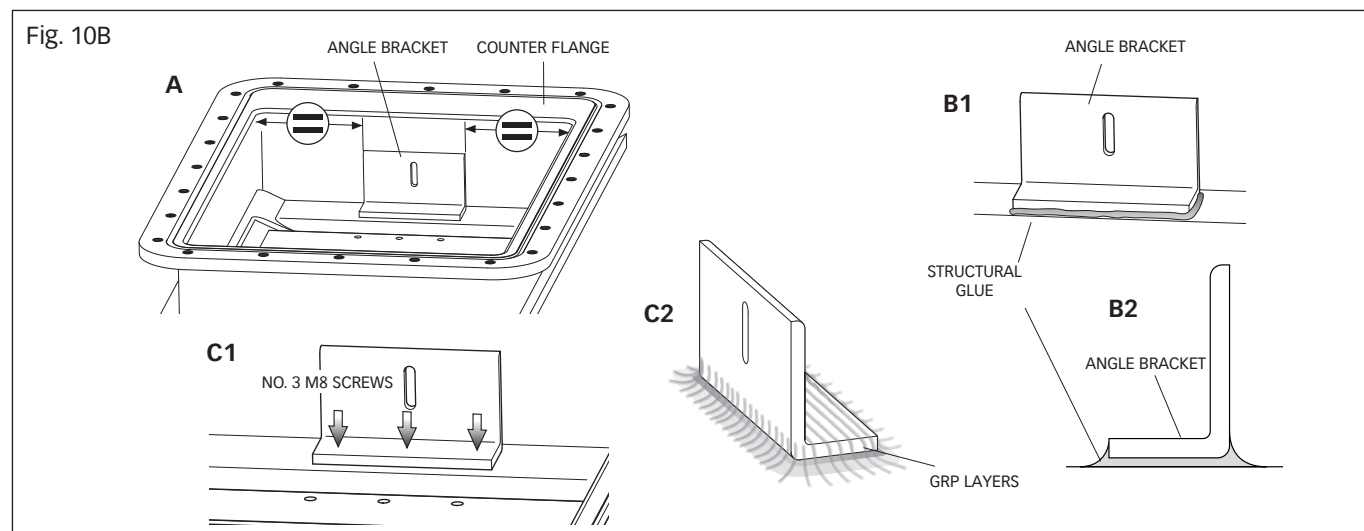
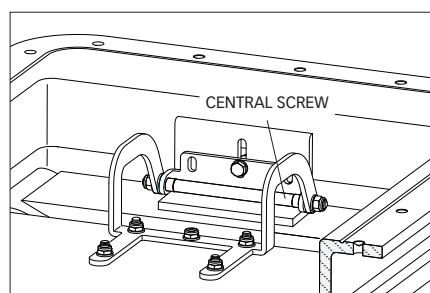


Fig.11



- Temporarily fix the hatch in its seat.
- Screw the hinge onto the angle bracket with the central screw only (fig. 11).
- Place the hinge and hatch bracket in the correct positions.
- Mark all the fixing points (fig. 12), remove the hinge and the hatch bracket and drill with a Ø 8.5mm drill bit.
- Fix the hinge and the hatch bracket in the positions made using stainless steel screws suitable for the application.
- Adjust the central hinge screw (fig. 11) and position it correctly so that the hatch opens unhindered.

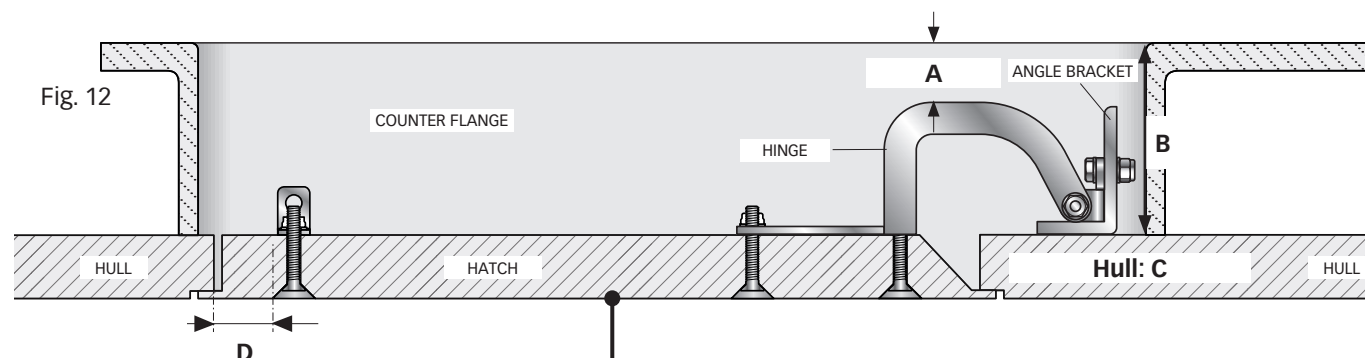
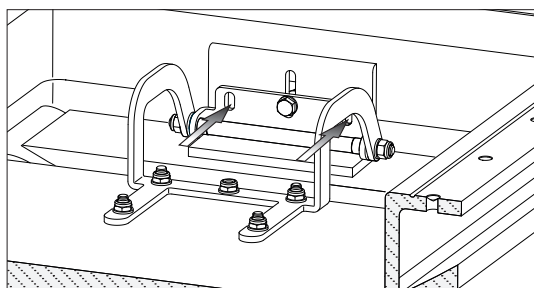


Fig. 13



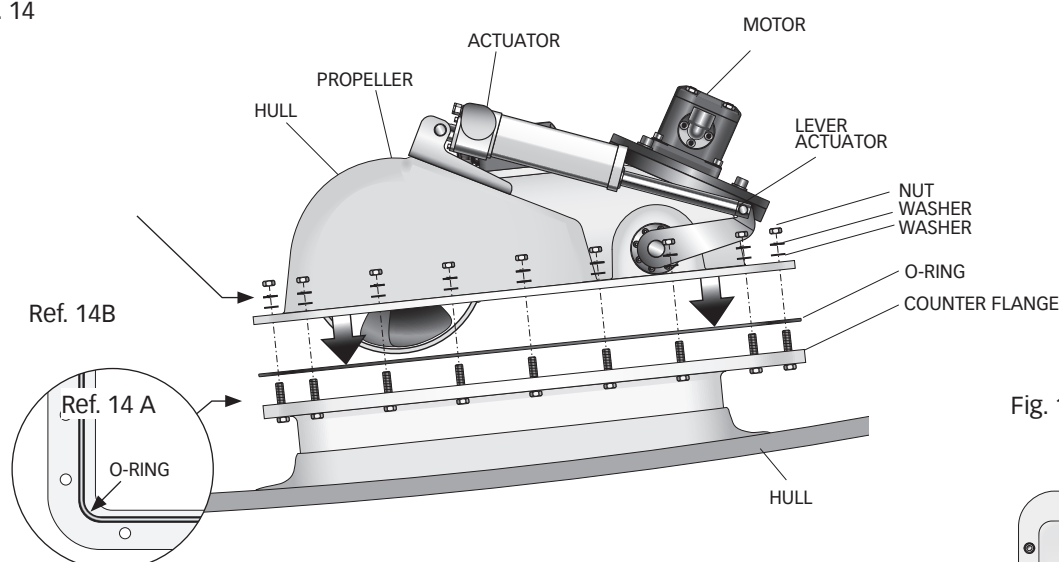
WARNING: for a sturdy fixing of the hinge and bracket, the hatch must not have hollow areas, or non-structural infilling (fig. 12).

	Ø185	Ø250	Ø300
A	Min 5 mm	Min 5 mm	Min 5 mm
B	60-65 mm	65-80 mm	110-120 mm
C	35 mm	40 mm	40 mm
D	15 mm	20mm	20mm

- Drill the angle bracket and also secure the other two M8 screws (fig. 13) firmly.

4.3 - Retractable thruster installation

Fig. 14



- Remove the previously applied adhesive protectors from the counter flange.
- Verify that the O-ring seat is well cleaned and has not been damaged during installation.
- Position the O-ring correctly on the counter flange (ref. 14A), assemble the retractable thruster (fig. 14), spread marine grease on the bolt threads (ref. 14B) and fix securely with the supplied screws.

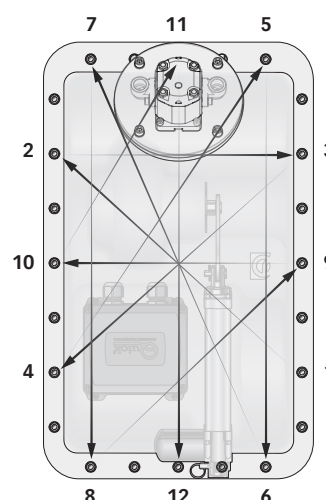


The counter flange screws should be tightened to 15Nm, tightening little by little in a cross pattern as in the example in figure 15.



WARNING: after about a week from installation, check the correct tightening of the screws to compensate for any settling of the O-ring.

Fig. 15



6.7 - Check and mechanical adjustment of the system

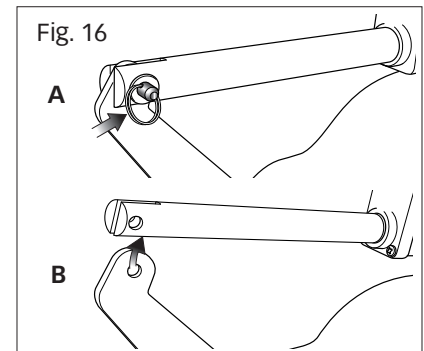
Follow the sequence below to check hatch opening:

Fig. 16

- the retractable thruster should not be powered.
- Remove the ring and the pin (ref. A).
- Release the actuator from the lever (ref. B), make sure the system can be opened and closed smoothly without mechanical hindrance.

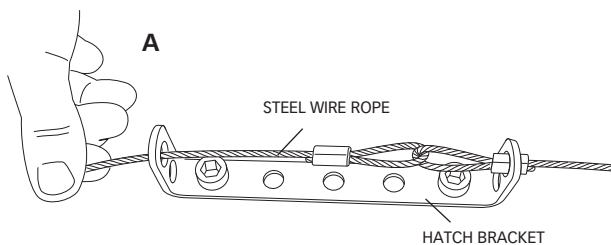


Warning: when manually releasing the actuator the thruster with its weight comes out completely, hence make sure that no one is within its operating range.

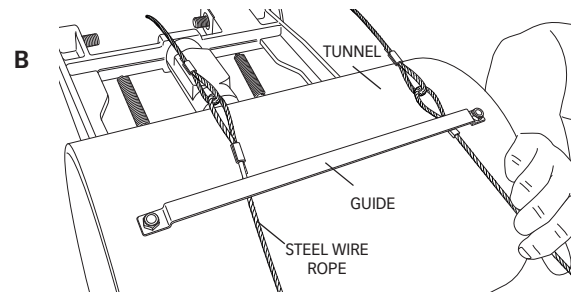


6.8 - Installing the cable in the hatch

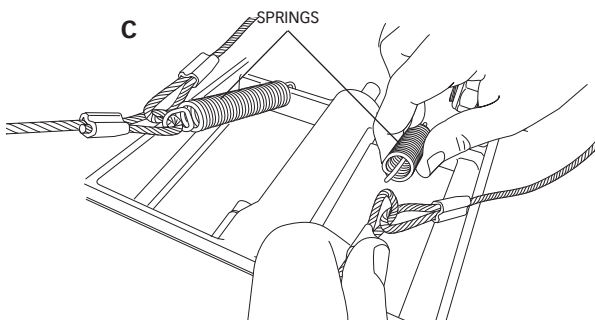
Fig. 17



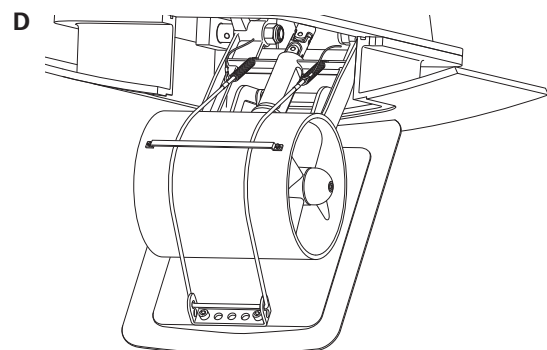
- Insert one end of the cable into the hatch bracket (ref. A).



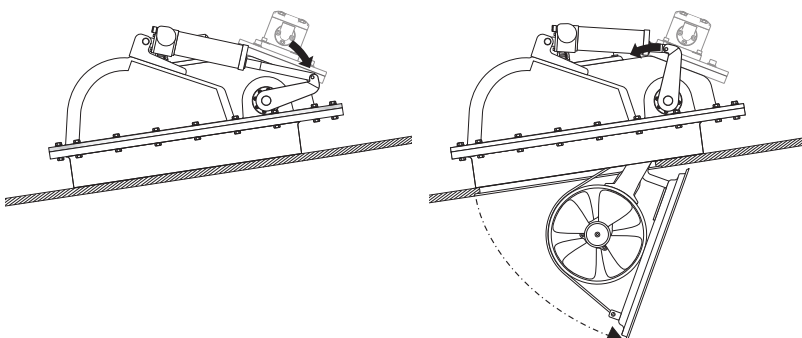
- Run the cable under the guide attached to the tunnel (ref. B).



- Hook the ends of the cable to the two springs (already positioned on the tilting body) (ref. C).



- Final installation of the cable in the hatch (ref. D).



Make sure the system can be closed and opened again smoothly without mechanical hindrance.

6.9 - Adjustment procedure



WARNING: the following procedure must be performed by qualified personnel.



WARNING: presence of moving mechanical parts. Take special care when operating on a powered retractable thruster.

- Make sure that all electrical connections have been made correctly.
- Remove the cover from the RTC R1 board housing (fig.18).
- Switch to "manual mode" to adjust the limit switches.
- Press and hold down both the UP and DOWN buttons on the board (fig. 19) to power the RTC R1 electronic board until the POWER LED (green) flashes rapidly (fig. 19 ref. A). Then release both buttons.
- Now it is possible to control the actuator electrically with the UP and DOWN buttons.
- Press the DOWN button until reaching a stroke that allows the actuator to be hooked to the lever (point 4.4 - fig. 16 ref. A).
- Pressing the DOWN button opens the thruster until the limit switch is activated and the STATUS LED turns green (fig. 19 ref. B).
- The limit switch can be adjusted (point 4.8) if not in the right position (fig. 20A).

Fig. 18

RTC R1



Fig. 19

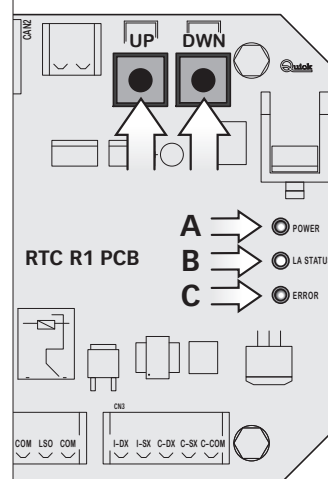


Fig. 20A

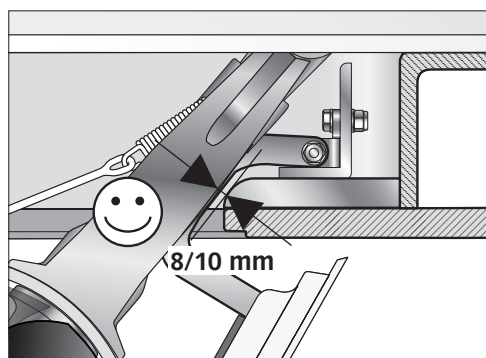
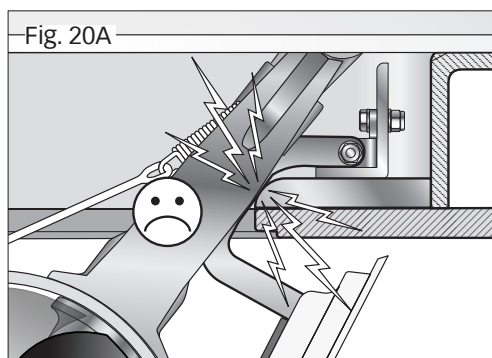
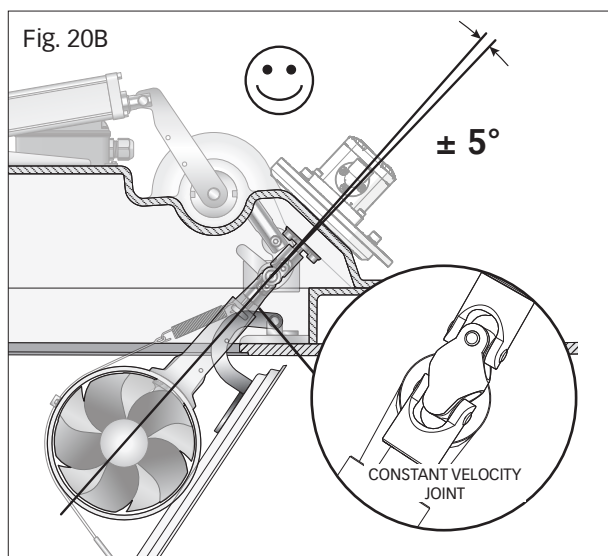


Fig. 20B



WARNING: check that the CV joint is in a straight position, at an angle between -5° and +5° (Fig.20b)

- By pressing the UP button it is now possible to verify hatch closing and once the limit switch is reached, the STATUS LED turns red. If the stroke is not enough to reach the limit switch, adjust the latter during closing (point 4.8).



The retractable thruster is factory-set, so it should not be necessary to adjust it during closing.

6.10 - Actuator adjustment

Opening the side door of the actuator. Fig. 21A.
Actuator internal view. Fig.21B

Fig.21A

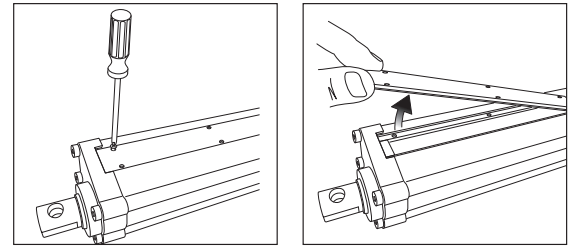
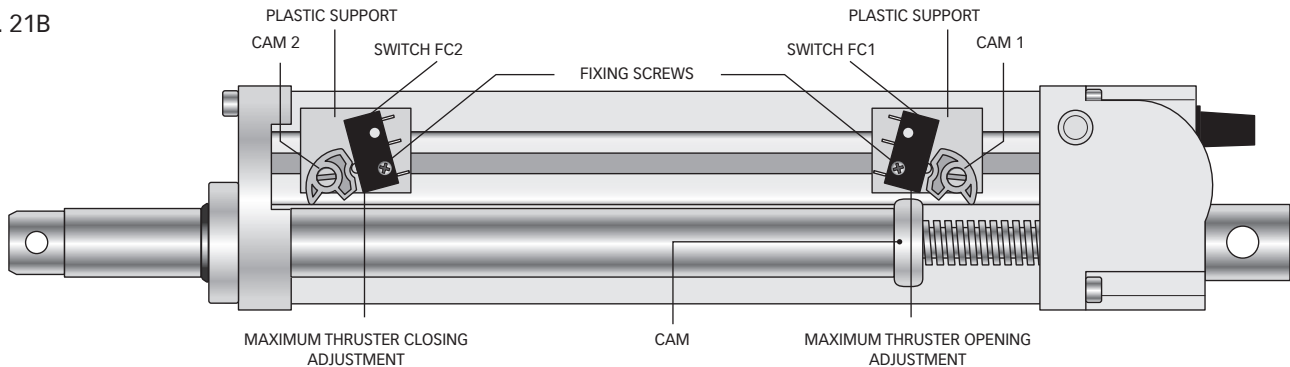


Fig. 21B



- To adjust the FC1 and FC2 limit switches, slightly loosen the fixing screw and move them to the right or left as needed. Then tighten the fixing screw back (fig. 21B).



WARNING: during each adjustment of the FC1 and FC2 limit switches, check that the cam that operates them is always positioned between them and never over the required stroke.

- Disconnect the retractable thruster from the power supply for at least five seconds (fig. 22).
- Power the retractable thruster again (fig. 22).
- Enable a TCD control connected to the retractable thruster to open the hatch and make it operational (fig. 23).
- Disable the previously enabled TCD control to close the retractable thruster (fig. 23).
- Make sure that the thermal cut-out has not tripped (the ERROR LED must be off - see point 4.7 fig. 19/Ref. C).

Fig. 22



Fig. 23



6.11 - Installing spring end-of-stroke cables

- Open the hatch completely via the control (fig. 23).

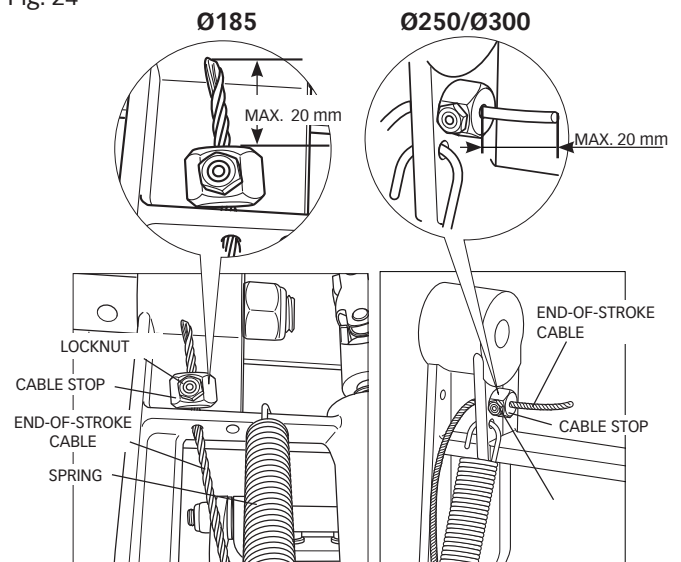


WARNING: Once the hatch has been opened, turn off the power (fig. 22) to lock it in this position.

Fig. 24

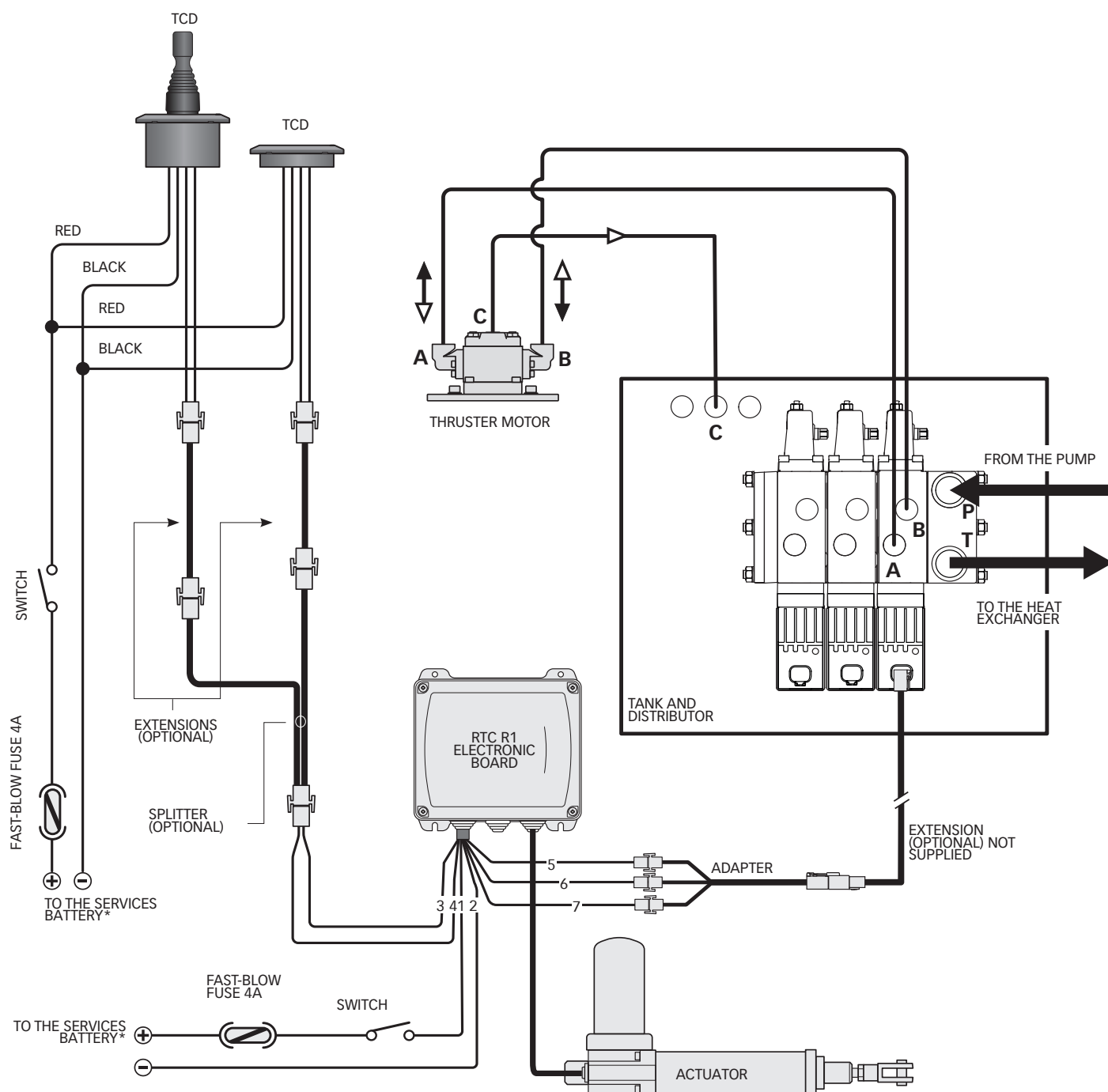
- Insert the two end-of-stroke cables into the appropriate seats.
- Place the two cable stops, tension the two cables, making sure that both springs are tensioned at the same length, and tighten the cable stops with a 2.5 mm Allen wrench.
- Secure the cable stop by tightening the locknut with an 8 mm fork wrench, cut the excess cable with wire cutters leaving approx. 20 mm beyond the cable stop.
- Power the retractable thruster (fig. 22) which will automatically close.
- To ensure correct operation, open the hatch a few times via the control (fig. 23).

Fig. 24



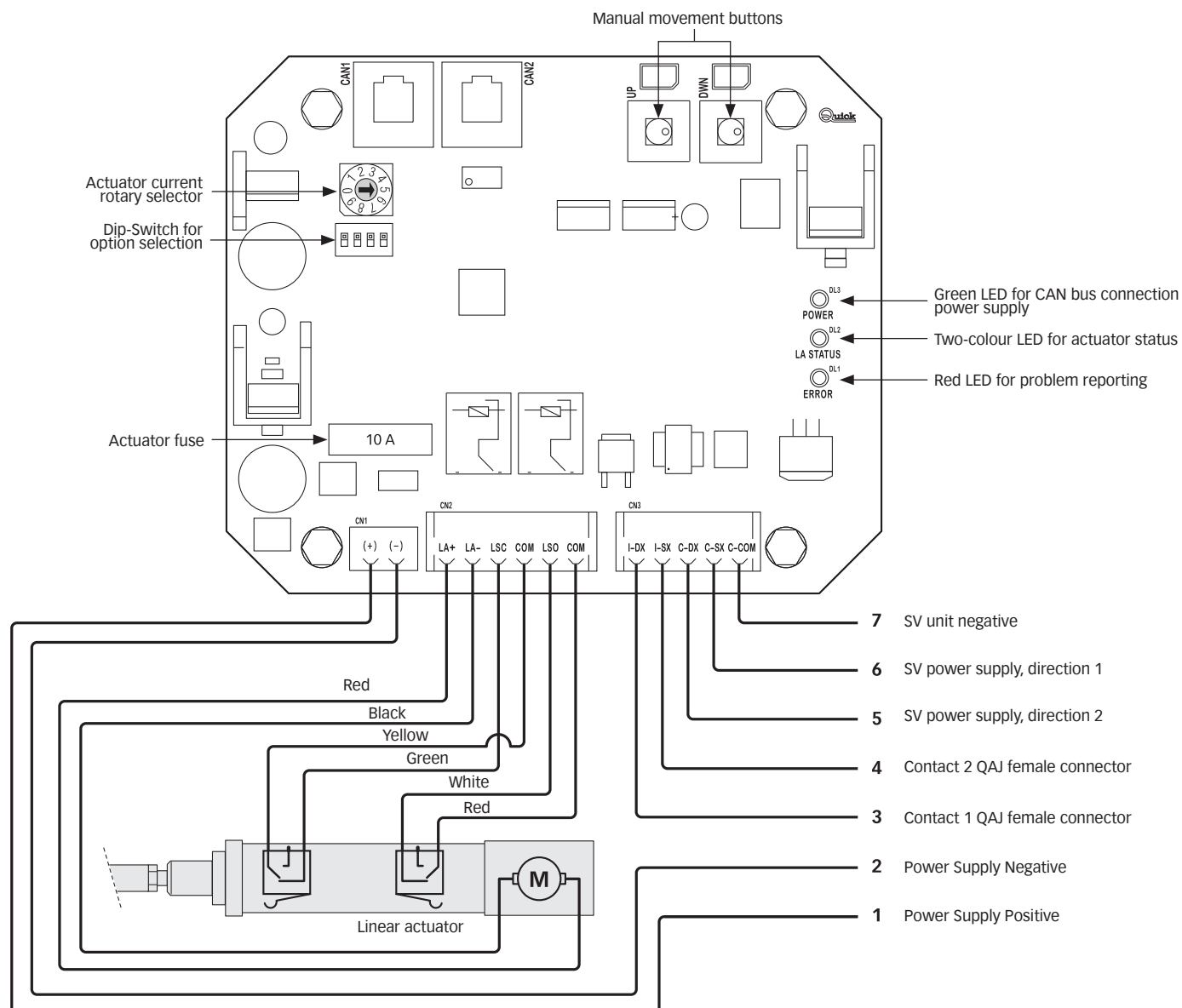
7.0 - BTRH general basic system

Example of connection

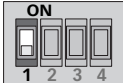
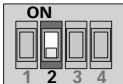
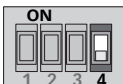


* COMMON NEGATIVE FOR BATTERY GROUPS.
THE MAXIMUM OUTPUT CURRENT IS 4A.

7.1 - RTC R1 board



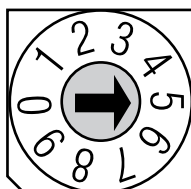
8.0 - Dip-Switch for option selection

SELECTION	FUNCTION	DIP-SWITCH
1	Reserved (always keep off)	
2	It indicates to the CAN control station that the thruster is in the bow (OFF)	
	It indicates to 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 selector

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

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



If a setting other than the factory setting is required, proceed as follows:

- 1) With the board not powered, place the arrow of the rotary selector in the desired position.
- 2) After powering the board again, the percentage corresponding to the selected position will be automatically set.

If the maximum current/load limit is too low compared to the real needs of use, the thermal cut-outs of the actuator may be tripped during retractable thruster closing and opening with error 1 and 7 flashing.

9.0 - Light signals

Below is the meaning of the light signals provided by the RTC R1 board (see electronic board on page 18).

POWER LED (GREEN)

LED STATUS	DESCRIPTION
OFF	Board not powered
FLASHING SHORTLY	Board powered but control not enabled
FLASHING FAST	Board powered and active manual actuator movement mode
ON WITH SHORT SHUTDOWN	Board powered but control not enabled and link active with CAN control station
ON	Board powered and control enabled (TCD or CAN station).

LA STATUS LED (TWO-COLOUR)

LED COLOUR	LED STATUS	DESCRIPTION
-	OFF	With board powered, active manual actuator movement mode and limit switch fault present
RED	ON	Retractable unit closed (active LSC limit switch)
GREEN	ON	Retractable unit open (active LSO limit switch)
ORANGE	ON	Retractable unit neither open nor closed (LSC and LSO limit switches not active)
ORANGE	FLASHING	Retractable unit neither open nor closed (LSC and LSO limit switches not active) and linear actuator in motion.

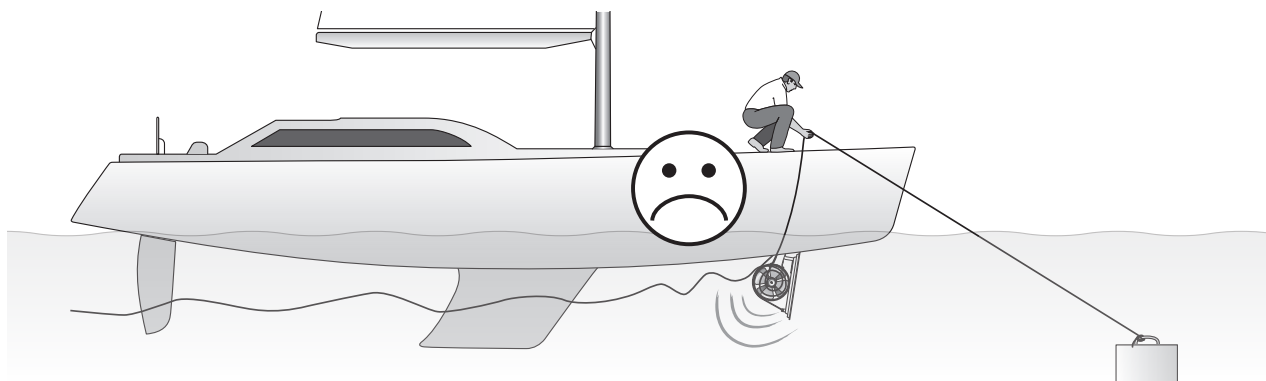
ERROR LED (RED)

NUMBER OF FLASHES	DESCRIPTION
NONE	No fault detected.
1	High rising actuator absorption (retractable unit closing). The signal is triggered after the system has made three attempts to rise in the presence of mechanical friction above the set threshold. The problem can be caused by a foreign body entering the mechanism, the boat sailing at high speed, or mechanical problems with the retractable thruster and its hatch.
2	Fuse open. A current absorption greater than 10A has occurred. The problem may occur if there is a short circuit or overload on the actuator power line. Check the wiring of the power lines from the board to the actuator or the absorption of the actuator itself.
3	Abnormal limit switch condition. The problem is reported if the board detects a fault on the limit switches (both activated). Check the power line wiring from the board to the limit switches and their operation.
4	Actuator control line interruption. The problem is reported if the board detects an interruption in the actuator control power line. Check the wiring of the power lines from the board to the actuator.
5	Actuator movement timeout tripped. The problem is reported if the movement imparted to the actuator is not carried out within a period of 15 seconds.
6	Incorrect dip-switch configuration. The problem is reported if the dip-switch positions are not set correctly.
7	High lowering actuator absorption (retractable unit opening). The signal is triggered after the system has made three attempts to lower in the presence of a mechanical friction above the set threshold. The problem can be caused by a foreign body entering the mechanism, the boat sailing at high speed, or mechanical problems with the retractable thruster and its hatch.
8	High absorption of motor reversing contactor control output. The problem is reported if the board detects a short circuit or overload on the motor control power line. Check the wiring of the power lines from the board to the motor and the absorption of the reversing contactor/motor unit installed on the retractable thruster.
9	Motor thermal cut-out tripped. The problem is reported if the thermal cut-out of the motor has tripped. Wait for it to cool down.
	Interruption of motor reversing contactor control output connection. The problem is reported if the board detects an interruption in the motor control power line. Check the wiring of the power lines from the board to the reversing contactor/motor unit installed on the retractable thruster.

10.0 - Precautions for safety and use of the BTH Series



- This 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, as these actions will void the warranty, thus lifting any responsibility from Quick® SPA.
- Make sure no swimmers or floating objects are in the vicinity before switching on the retractable thruster.
- In order not to damage the system, it is recommended to avoid navigating with the retractable thruster open and to open and close the thruster within a maximum speed of 4 knots and to proceed in reverse at a maximum speed of 2 knots, always taking into account the currents.
- In order not to damage the system, it is also recommended not to enable the thruster at speeds exceeding four knots.
- 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 thrusters, thus leading them to break (fig. 24).



10.1 - Retractable thruster use

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

Start-up

When powered on, the RTC R1 board checks the position of the retractable thruster (raised, lowered, or in intermediate position). In the event that it is raised, the system does not perform actions.

In the event that it is lowered or in an intermediate position, it will control the rise of the retractable thruster.

Enabling control from TCD (Retractable thruster lowering)

When the RTC R1 board is enabled by a TCD control, the retractable thruster lowering procedure begins.

The right/left commands coming from the TCD will be inhibited until the procedure is completed.

During the lowering phase, the RTC R1 board measures the current drawn by the linear actuator.

If due to mechanical friction there is a high absorption of the linear actuator, the lowering will be reversed for a short time and then resumed. The RTC R1 board will report the problem after 3 attempts.

Disabling control from TCD (Retractable thruster rising)

When the RTC R1 board is disabled by a TCD control, the retractable thruster rising procedure begins.

On the way up, the right/left commands coming from the TCD will be inhibited.

During the rising phase, the RTC R1 board measures the current drawn by the linear actuator.

If due to mechanical friction there is a high absorption of the linear actuator, the rising will be reversed for a short time and then resumed. The RTC R1 board will report the problem after 3 attempts.

Automatic rising in case of TCD time-out

With the thruster down, the retractable thruster performs the rising procedure after 6 minutes from the last right or left command of the TCD.

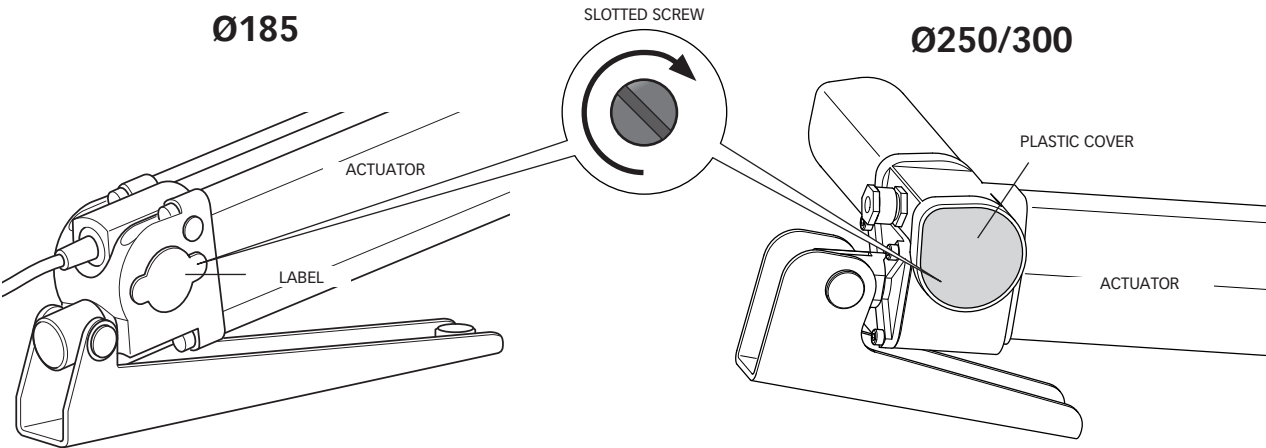
Error detection from the TCD

If the TCD sends an error signal into the network (extended command, line interruption, short circuit on the right or left output), the retractable thruster performs the rising procedure.

10.2 - Manual closing of the thruster in case of emergency

There is a slotted screw on the actuator, under the label (Ø185) or under the cover (Ø250/Ø300); turn it clockwise to close the system.

 **WARNING:** Cut off the power to the retractable thruster.



10.3 System characteristics

NOTE: the hydraulic thruster is a system component. The system must have certain characteristics.

- The initial contamination level of the fluid used to fill the system should not exceed class 18/15 (ref. ISO 4406). This level should be maintained by adequate filtration, which is ensured by the system filter, according to the table.

Pressure	<140 bar	140÷210 bar	>210 bar
Class NAS 1638	10	9	8
Class ISO 4406	19/16	18/15	17/14
Ratio $\beta_x = 75$	25-40 μm	12-15 μm	6-12 μm

- The system must have a filter to keep the oil free of impurities.
- It is advisable to install an exchanger or to use a well-dimensioned oil tank so that the maximum oil temperature remains within the range recommended for the hydraulic fluid used.
- We recommend the use of specific mineral oil-based fluids for hydraulic circuits, with good anti-wear and anti-foam characteristics, with fast deaeration, antioxidant, anti-corrosion, with lubricating properties and able to meet the requirements of DIN 51525 and VDMA 24317, with kinematic viscosity between 10cSt and 100cSt.
- Service temperatures must be between -10°C and +80°C.
- The entire hydraulic system is the responsibility of the installer who, according to the specifications described and the service requirements, must protect the motor from potential damage resulting from the system.
- The motor must not be used with pressures higher than those indicated.
- Higher values may irreparably compromise the integrity of the motor.
- Carefully follow Quick's instructions to obtain maximum efficiency from your product; with different settings, do not exceed the maximum pressure values indicated in the table.
- Under no circumstances should the maximum pressure in the drainage branch exceed 6 bar.
- The installation of a pressure relief valve (set to a value 10% - 15% higher than the maximum service pressure in the control valve) is recommended to protect the system from damage due to mechanical blockage of the system.
- It is recommended to install an electronic or hydraulic system that delays motor motion reversal in order to protect the gearbox from breaking down.

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 with consequent system inefficiency.



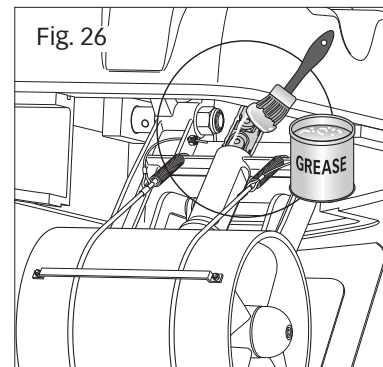
WARNING: make sure that the power supply to the electric motor is not switched on when maintenance operations are carried out.



DEPENDING ON USE, PERIODICALLY CHECK THE TIGHTNESS OF THE OIL SEALS AND REPLACE THEM IF NECESSARY.

Dismantle once a year, following the points below:

- Clean propellers, tunnel and gearleg.
- Replace the propellers if damaged or worn out.
- Replace the anodes (replace more frequently if necessary) and, if possible, lubricate the CV joint with marine grease (fig. 26).
- 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.
- Eliminate any graphite residues produced by the normal wear of the motor brushes.



WARNING: do not paint the anodes, the seals and the gearleg shafts where the thrusters are lodged.

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NO.	NAME	19	KEY	38	OIL SEAL	56	SCREW	75	KEY
1	MOTOR SCREW	20	ACTUATOR LEVER	39	INTERNAL SNAP RING	57	ANODE	76	GEARLEG
2	GROWER	21	ACTUATOR PLATE	40	BEARING	58	SCREW	77	PIN
3	MOTOR FLANGE	22	CABLE GLAND	41	SHAFT	59	CABLE STOP	78	THRUSTER 185 R
4	MOTOR	23	SCREW	42	KEY	60	SCREW	79	THRUSTER 185 L
5	FLANGE SCREW	24	RRC RX CONTAINER	43	WASHER	61	NUT	80	NUT
6	WASHER	25	PIN	44A	BEARING	62	TILTING BODY	81	ANODE
7	MOTOR FLANGE	26	SPRING RING	44B	BEARING	63	PIN	82	SCREW
8	FLANGE SCREWS	27	ACTUATOR	45	SHAFT SUPPORT	64	NUT	83	TUNNEL
9	SCREW	28	SCREW	46	OIL SEAL	65	LEVER	84	ROPE GUIDE
10	SCREW	29	PIVOT	47	EXTERNAL SNAP RING	66	LEVER	85	WASHER
11	FLANGE	30	PIN	48	PLATE	67	EXTERNAL SNAP RING	86	SCREW
12	CHASSIS	31	ANGLE BRACKET	49	CONSTANT VELOCITY JOINT	68	SCREW	87	SELF-LOCKING NUT
13	SCREW	32	HINGE BRACKET	50	EXTERNAL SNAP RING	69	SPRING	88	WASHER
14	WASHER	33	HINGE SHAFT	51	OIL SEAL	70	SHAFT	89	SELF-LOCKING NUT
15	NUT	34	SCREW	52	NUT	71	SCREW	90	CABLE
16	O-RING SEAL	35	WASHER	53	SHAFT	72	GROWER		
17	O-RING	36	HINGE ARM	54	SHAFT	73	O-RING		
18	OIL SEAL	37	HATCH BRACKET	55	PIVOT	74	GASKET		

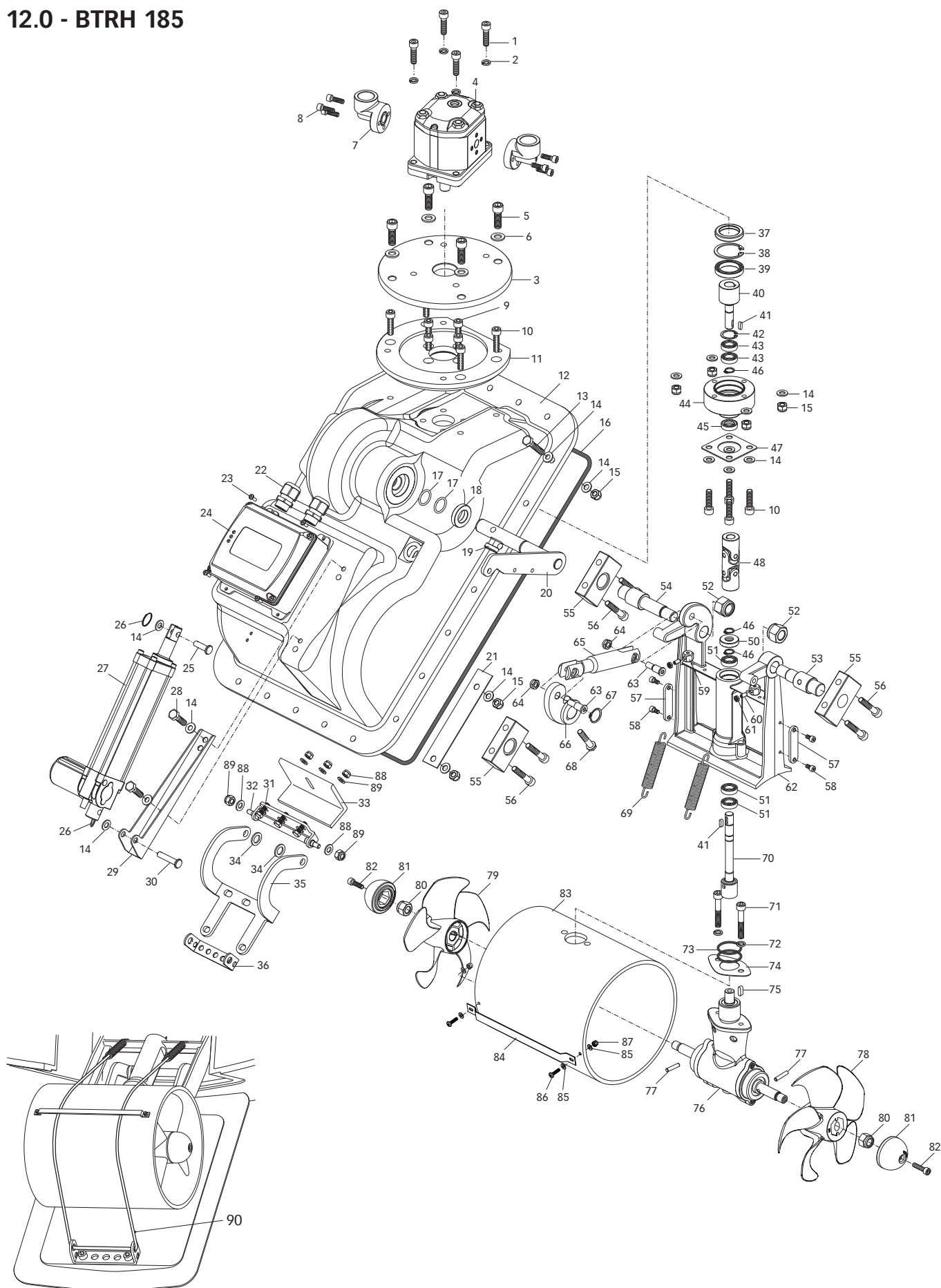
BTRH 250 Pag.29

N	NAME	19	SPRING RING	38	OIL SEAL	56	OIL SEAL	75	ROPE GUIDE
1	MOTOR SCREW	20	RRC RX CONTAINER	39	CONSTANT VELOCITY JOINT	57	CABLE STOP	76	HINGE SHAFT
2	GROWER	21	CABLE GLAND	40	TILTING BODY	58	SCREW	77	HINGE BRACKET
3	MOTOR FLANGE	22	SCREW	41	SPRING	59	NUT	78	WASHER
4	MOTOR	23	WASHER	42	ANODE	60	SHAFT	79	HINGE ARM
5	SCREW	24	ACTUATOR BRACKET	43	SCREW	61	TUNNEL	80	HATCH BRACKET
6	GROWER	25	PIN	44	SCREW	62	GASKET	81	SCREW
7	MOTOR FLANGE SCREW	26	SELF-LOCKING NUT	45	GROWER	63	REDUCTION GEAR	82	ANGLE BRACKET
8	SCREW	27	ACTUATOR	46	OIL SEAL	64	KEY	83	WASHER
9	FLANGE	28	SCREW	47	KEY INSERT	65	THRUSTER 250 R	84	SELF-LOCKING NUT
10	CHASSIS	29	ACTUATOR PLATE	48	GROWER	66	THRUSTER 250 L	85	KEY
11	O-RING	30	O-RING	49	SCREW	67	ANODE	86	CABLE
12	OIL SEAL	31	OIL SEAL	50	WASHER	68	WASHER		
13	RING	32	INTERNAL SNAP RING	51	NUT	69	SCREW		
14	SCREW	33	SHAFT	52	O-RING	70	SCREW		
15	PIN	34	KEY	53	BEARING	71	WASHER		
16	ACTUATOR LEVER	35	BEARING	54	INTERNAL SNAP RING	72	SELF-LOCKING NUT		
17	PIN	36	EXTERNAL SNAP RING	55	EXTERNAL SNAP RING	73	NUT		
18	WASHER	37	SHAFT SUPPORT			74	SCREW		

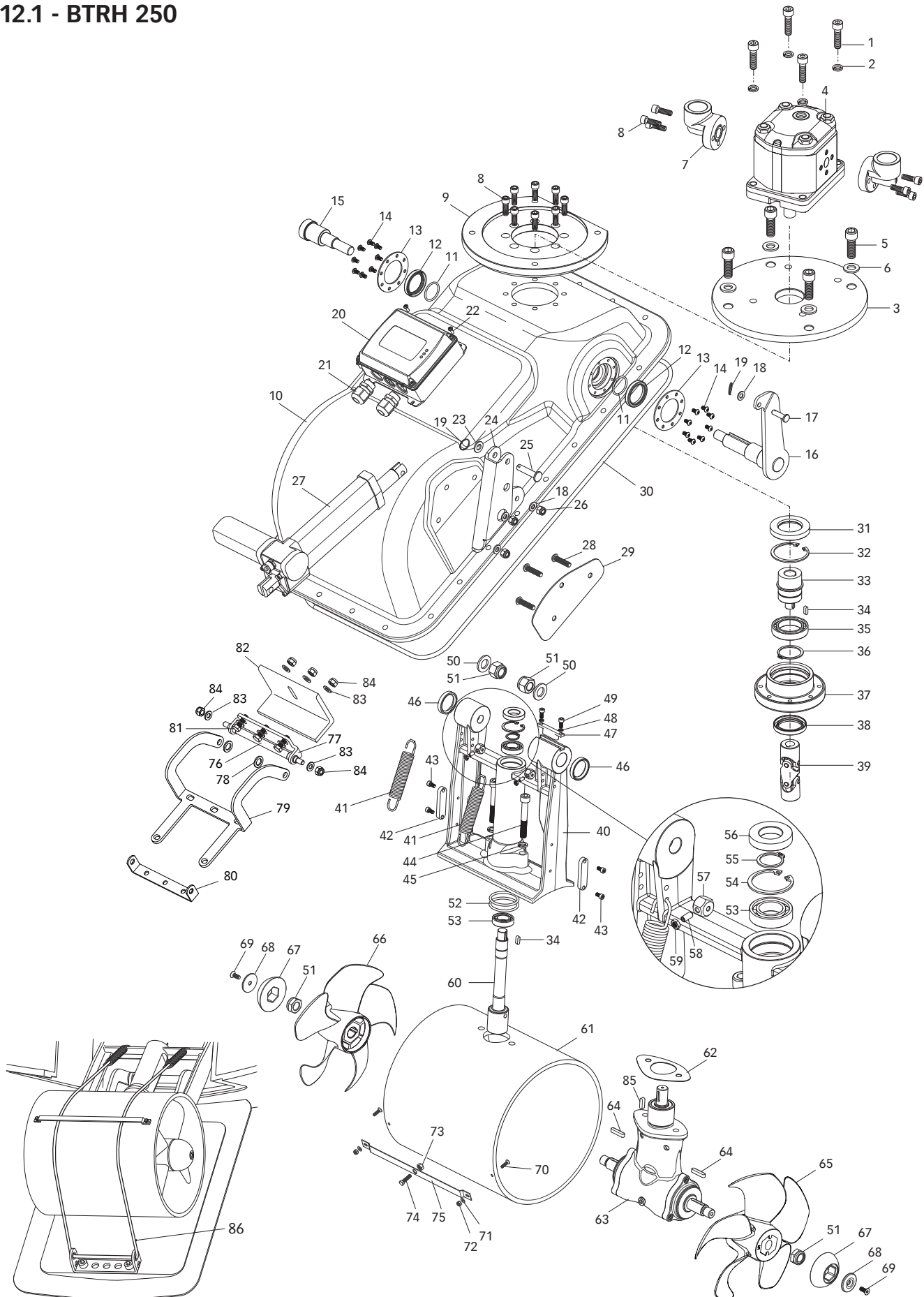
BTRH 300 Pag.30

N	NAME	19	RRC RX CONTAINER	38	TILTING BODY	58	SHAFT	77	NUT
1	SCREW	20	CABLE GLAND	39	SPRING	59	TUNNEL	78	HINGE SHAFT
2	GROWER	21	SCREW	40	ANODE	60	GASKET	79	HINGE BRACKET
3	MOTOR FLANGE	22	WASHER	41	SCREW	61	REDUCTION GEAR	80	WASHER
4	MOTOR	23	ACTUATOR BRACKET	42	STUD	62	KEY	81	HINGE ARM
5	MOTOR FLANGE	24	PIN	43	GROWER	63	THRUSTER 300 L	82	HATCH BRACKET
6	SCREW	25	SCREW	44	OIL SEAL	64	THRUSTER 300 R	83	SCREW
7	SCREW	26	ACTUATOR	45	KEY INSERT	65	ANODE	84	ANGLE BRACKET
8	FLANGE	27	ACTUATOR PLATE	46	GROWER	66	SCREW	85	WASHER
9	CHASSIS	28	NUT	47	SCREW	67	QSRGTW ADAPTER	86	SELF-LOCKING NUT
10	O-RING	29	OIL SEAL	48	WASHER	68	SCREW	87	ADAPTER
11	OIL SEAL	30	INTERNAL SNAP RING	49	NUT	69	WASHER	88	CABLE
12	RING	31	SHAFT	50	O-RING	70	SCREW	89	SHAFT
13	SCREW	32	KEY	51	BEARING	71	NUT	90	KEY
14	PIN	33	BEARING	53	EXTERNAL SNAP RING	72	SCREW	91	SELF-LOCKING NUT
15	ACTUATOR LEVER	34	EXTERNAL SNAP RING	54	OIL SEAL	73	ROPE GUIDE		
16	PIN	35	SHAFT SUPPORT	55	CABLE STOP	74	SELF-LOCKING NUT		
17	WASHER	36	OIL SEAL	56	SCREW	75	GASKET		
18	SPRING RING	37	CONSTANT VELOCITY JOINT	57	NUT	76	WASHER		

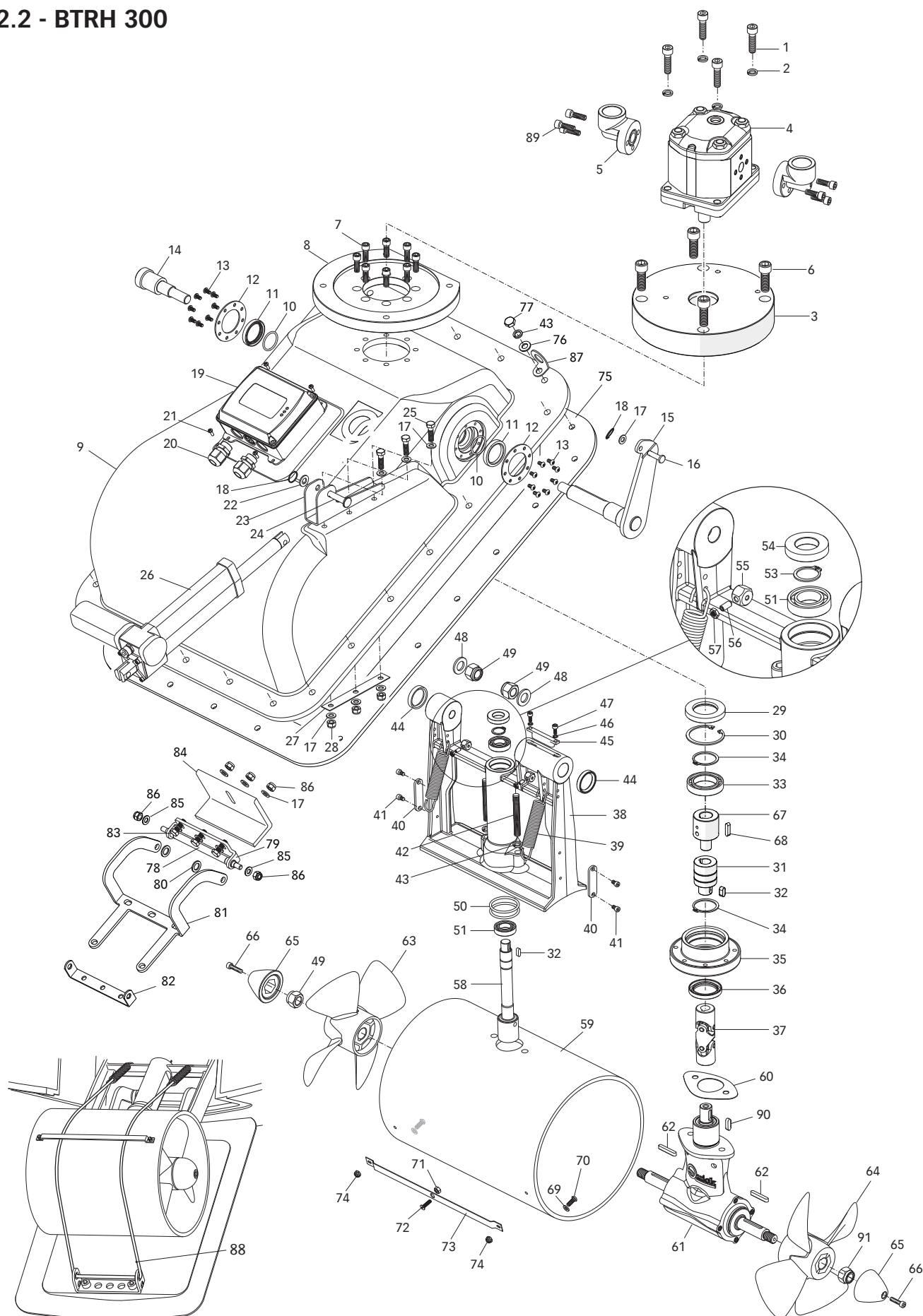
12.0 - BTRH 185



12.1 - BTRH 250

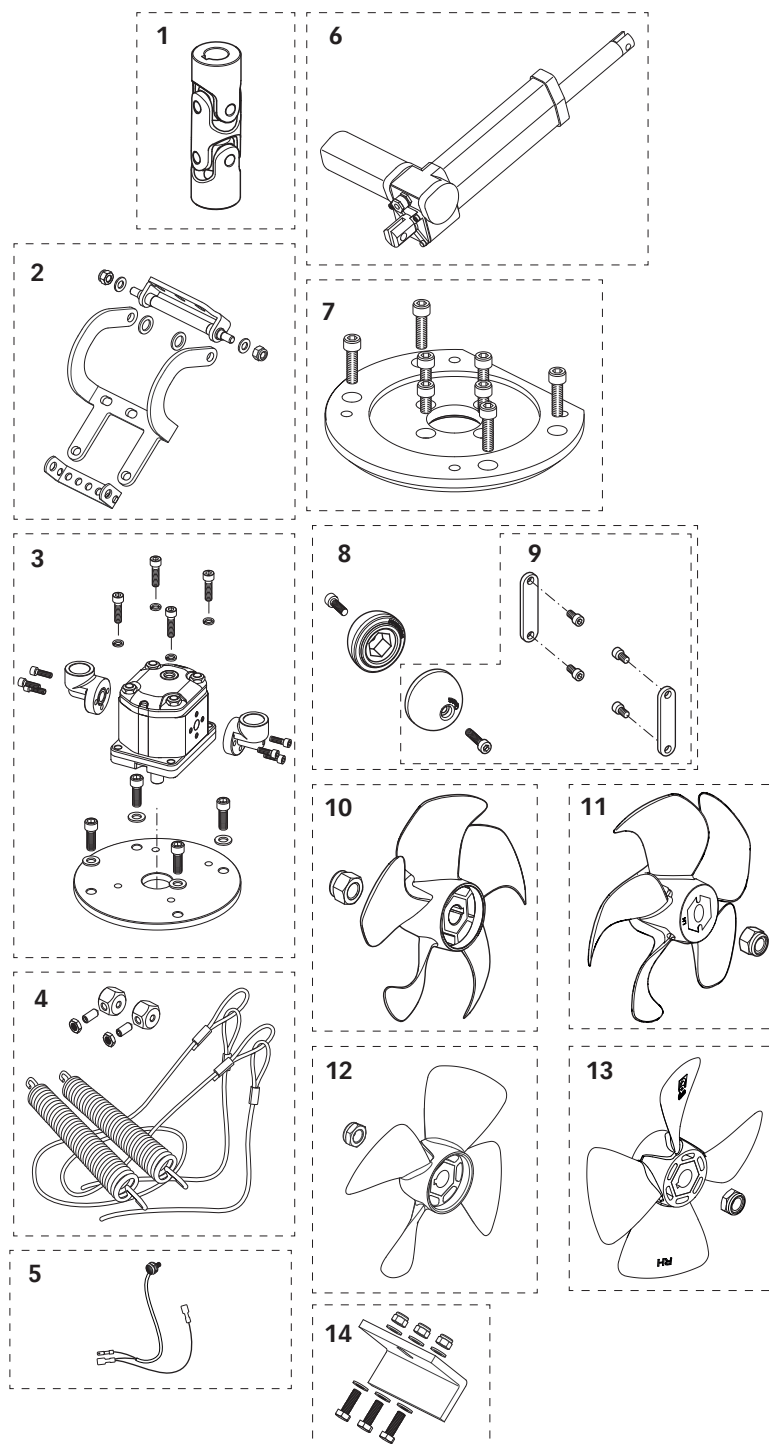


12.2 - BTRH 300

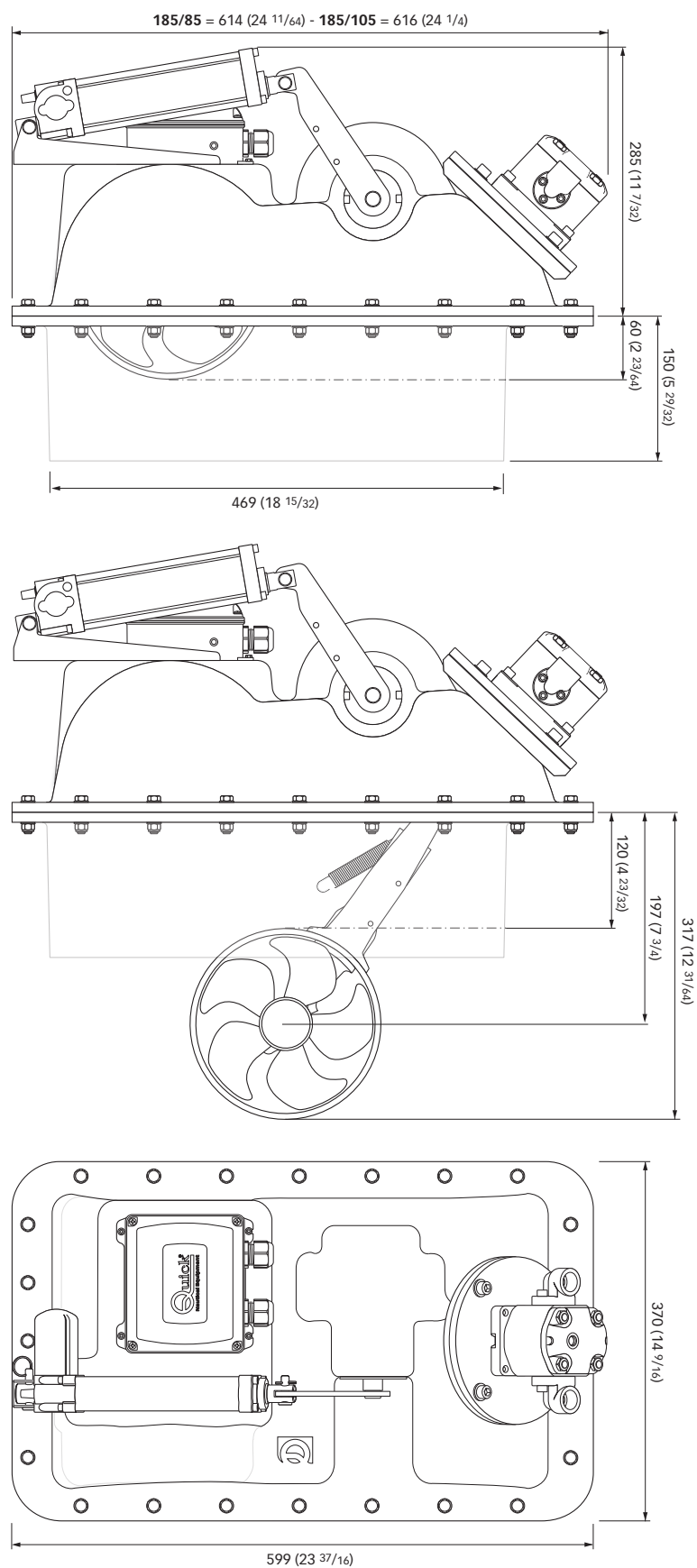


12 - List of components

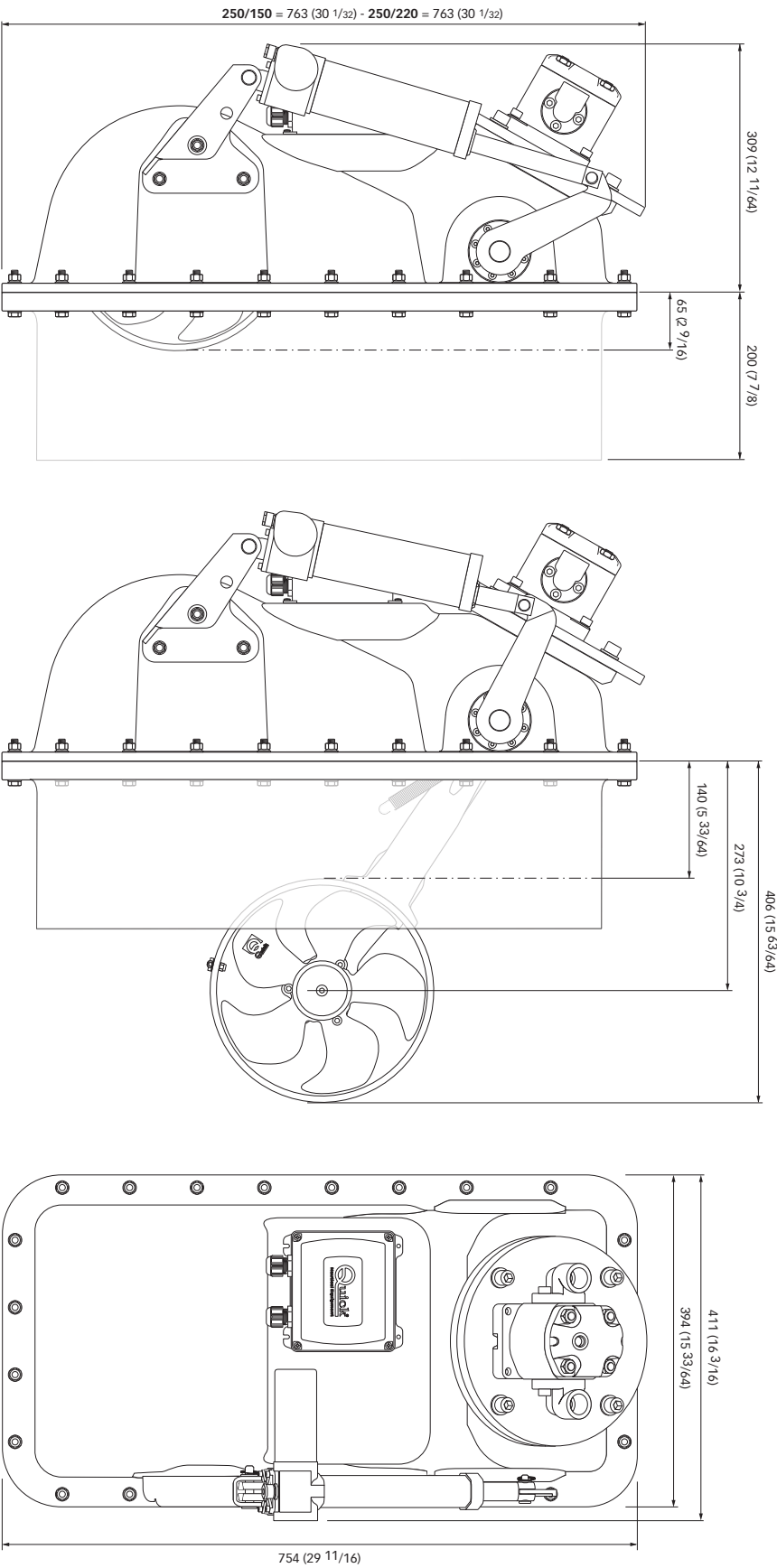
No.	DESCRIPTION	CODE
1 A	OSP CONSTANT VELOCITY JOINT Ø140	FVSGG140BTR0A00
1B	OSP CONSTANT VELOCITY JOINT Ø185	FVSGG185BTR0A00
1C	OSP CONSTANT VELOCITY JOINT Ø250	FVSGG250BTR0A00
1D	OSP CONSTANT VELOCITY JOINT Ø300	FVSGG300BTR0A00
2 A	OSP HINGE + SUPP. BRACKET KIT BTR140	FVSGCN140000A00
2B	OSP HINGE + SUPP. BRACKET KIT BTR185	FVSGCN185000A00
2C	OSP HINGE + SUPP. BRACKET KIT BTR250	FVSGCN250000A00
2D	OSP HINGE + SUPP. BRACKET KIT BTR300	FVSGCN300000A00
3 A	OSP GEAR MOTOR 4.5CC GR2 B5/90	FVEMFEL045B5090
3B	OSP GEAR MOTOR 6.4CC GR2 B5/90	FVEMFEL064B5090
3C	OSP GEAR MOTOR 9.6CC GR2 B5/100	FVEMFEL096B5100
3D	OSP GEAR MOTOR 14.1CC GR2 B5/100	FVEMFEL141B5100
3E	OSP GEAR MOTOR 22CC GR3 B5/100	FVEMFEL220B5100
4 A	OSP COMP. STAINLESS STEEL WIRE ROPE KIT BTR140	FVSFBTR14000A00
4B	OSP COMP. STAINLESS STEEL WIRE ROPE KIT BTR185	FVSFBTR18500A00
4C	OSP COMP. STAINLESS STEEL WIRE ROPE KIT BTR250	FVSFBTR25000A00
4D	OSP COMP. STAINLESS STEEL WIRE ROPE KIT BTR300	FVSFBTR30000A00
5	OSP THERMAL CUT-OUT KIT	FVKPS120BTR0A00
6 A	OSP ACTUATOR 12V Ø140	FVEAL1401200000
6B	OSP ACTUATOR 12V Ø185	FVEAL1851200000
6C	OSP ACTUATOR 24V Ø185	FVEAL1852400000
6D	OSP ACTUATOR 24V Ø250	FVEAL2502400000
6E	OSP ACTUATOR 24V Ø300	FVEAL3002400000
6F	OSP ACTUATOR 48V Ø300	FVEAL3004800000
7 A	OSP FLANGE KIT BTR140	FVEFGMBTR140000
7B	OSP FLANGE KIT BTR185	FVEFGMBTR185000
7C	OSP FLANGE KIT BTR250D00	FVEFGMBTR250000
7D	OSP FLANGE KIT BTR300	FVEFGMBTR300000
8 A	OSP ANODES FOR PROPELLER KIT BTR185	FVSGANBTR18AA00
8B	OSP ANODES FOR PROPELLER KIT BTR250E00	FVSGANBTR25EA00
8C	OSP ANODES FOR PROPELLER KIT BTR300	FVSGANBTR30AA00
9	OSP ANODES FOR PROPELLER KIT BTR140	FVSGANBTR14AA00
10 A	OSP PROPELLER D185 LH QUICK 5 BLADES BLACK	FVSGEL185L05A00
10B	OSP BTR THRUSTER D250 LH QUICK 5 BLADES E00	FVSGEL250LE5A00
11 A	OSP THRUSTER D185 RH QUICK 5 BLADES	FVSGEL185R05A00
11B	OSP THRUSTER D250 RH QUICK 5 BLADES E00	FVSGEL250RE5A00
11C	OSP THRUSTER KIT BTR 140 RH 5 BLADES	FVSGEL140R00A00
12	OSP THRUSTER KIT LH BTR 300	FVSGEL300L00A00
13	OSP THRUSTER KIT RH BTR 300	FVSGEL300R00A00
14 A	OSP HINGE VERT. FIX. ANGLE BRACKET BTR140	FVSLPVNG1400A00
14B	OSP HINGE VERT. FIX. ANGLE BRACKET BTR185	FVSLPVNG1850A00
14C	OSP HINGE VERT. FIX. ANGLE BRACKET BTR250	FVSLPVNG2500A00
18D	OSP HINGE VERT. FIX. ANGLE BRACKET BTR300	FVSLPVNG3000A00



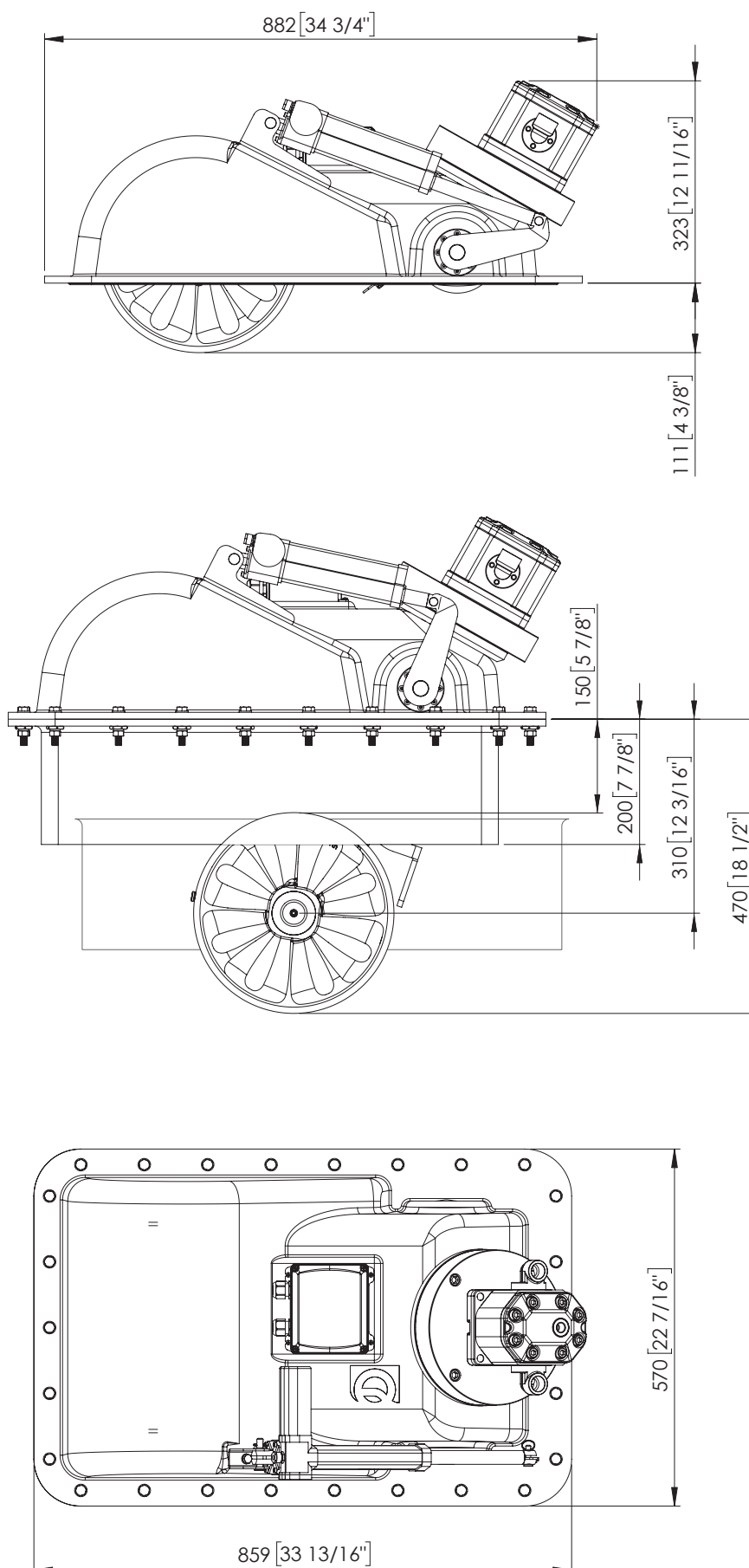
13.0 - BTRH 185



13.1 - BTRH 250



13.3 - BTRH 300



Your contribution to protecting the environment



The crossed out bin symbol indicates that the product must be delivered for proper disposal.

The user is responsible for erasing any personal data from the electronic equipment to be disposed.

Proper separate collection helps to avoid possible negative effects on the environment and health and promotes the recycling of the materials of the equipment.

Disposal of packaging

The purpose of the packaging is to protect the goods from transport damage. The packaging materials used are recyclable, as they are selected in an environmentally friendly and easy-to-dispose manner.

The packaging may be retained for possible shipment to the authorized technical service department in the event of damage or equipment failure.

The individual components of the packaging may be collected separately in accordance with separate collection criteria.

Returning packages to the material collection circuit saves raw materials on one hand and reduces the volume of waste on the other.

Product disposal

Electrical and electronic equipment often contains useful materials. They also contain substances, compounds and components that were necessary for the operation and safety of the equipment. Improper disposal could be harmful to health and the environment.

The product consists of metal and plastic materials which, when separated, can often contain useful materials. Improper disposal could be harmful to health and the environment.

The user is therefore advised to separate the materials prior to disposal in order to ensure correct delivery of the materials including for possible reuse. In any case, follow the applicable delivery regulations of the country in which the product is used.

For EU countries

Disposal of waste electrical and electronic equipment (WEEE), in compliance with Directive 2012/19/EU and implementation of its transposition into national law.

For non-EU countries

Dispose of the equipment in accordance with the applicable waste electrical and electronic equipment regulations.

BTRH Series

REV 001A

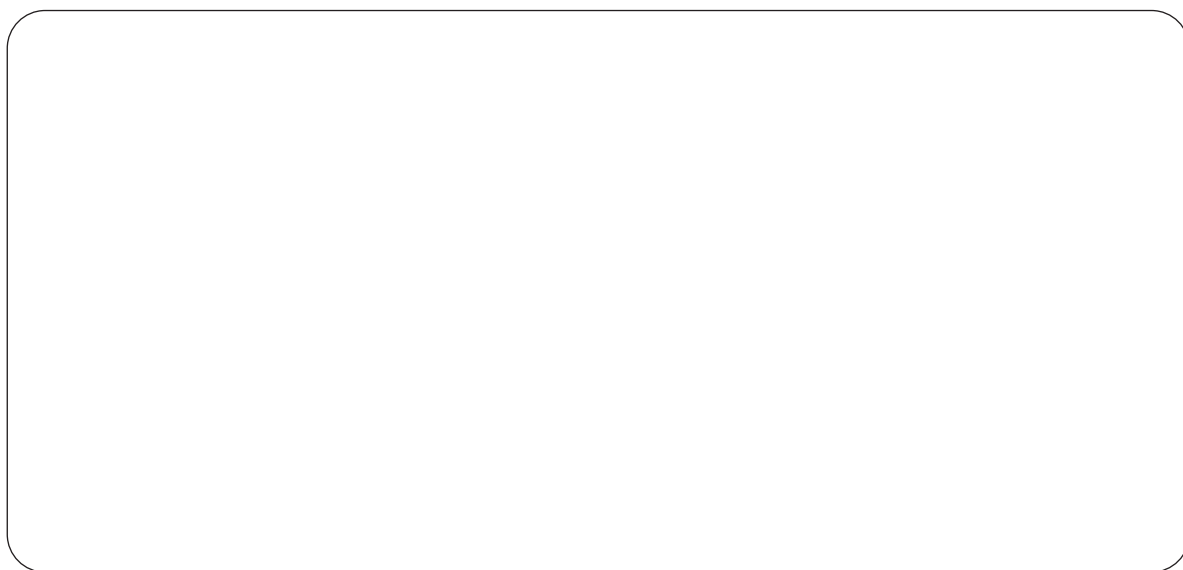


HYDRAULIC RETRACTABLE THRUSTERS

BTRH 185 85 - 185 105

BTRH 250 150 - 250 220

BTRH 300 300



Product serial number



QUICK® S.p.A. - Via Piangipane, 120/A - 48124 Piangipane (RAVENNA) - ITALY
Tel. +39.0544.415061 - Fax +39.0544.415047 - www.quickitaly.com - quick@quickitaly.com