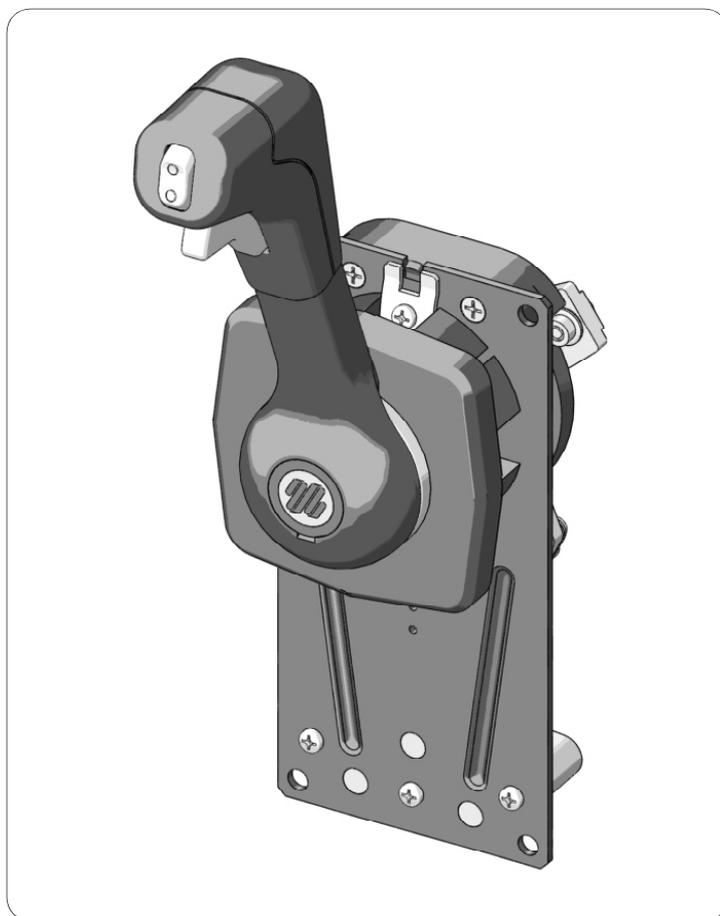


# Installation and maintenance manual

## SINGLE LEVER CONTROL



B 310

CE

# WFLUX



PARTNER

MEMBER  
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Setting Standards for Safer Boating®





Dear Customer,

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**ULTRAFLEX** SpA has been a leader in steering systems for pleasure and professional boats for many years.

All **ULTRAFLEX** SpA products are designed and manufactured to ensure the best performance. To ensure your safety and to maintain a high quality level, **ULTRAFLEX** SpA products are guaranteed only if they are used with original spare parts (see attached document "Application Spare Parts").

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The quality management system involves all the company resources and processes starting from the design, in order to:

- ensure product quality to the customer;
- maintain and improve the quality standards constantly;
- pursue a continuous process improvement to meet the market needs and to increase the customer satisfaction;
- constantly test the products to verify their conformity with the 2013/53/EU.



"Established in 1989 **UFLEX** USA is a leader in steering and control systems for the marine industry. With full manufacturing capabilities in Sarasota, Florida, **UFLEX** USA can support all sectors of the marine industry regardless of volume and/or product requirements. And, as an affiliate of the **ULTRAFLEX** Group, **UFLEX** USA has tremendous resources to draw upon for new product development in hydraulics, electronics and many other technologies.

Innovative product design and unparalleled dedication to quality customer service and products continue to be cornerstone of **UFLEX** USA's growth. Today our products can be found as originally installed equipment on many of the most widely known and respected boat brands in the world. Aftermarket parts can be sourced from trained and experienced distributor network throughout North and South America.

Our dedication to providing the highest quality products and service is only matched by our commitment to developing new products employing the latest materials and technology to enhance our customer's boating experience. From steering wheels to sophisticated electronic controls, **UFLEX** USA has everything you need to make sure that your boat looks and perform it's best for many, many years."

**UFLEX USA**

Sarasota, FL 34243 - 6442 Parkland Drive

# TABLE OF CONTENTS

USE OF THE MANUAL AND SYMBOLS USED.....	4
INTRODUCTION.....	5
WARRANTY.....	5

## SECTION 1 - PRODUCT DESCRIPTION

1.1 PRODUCT DESCRIPTION AND RECOMMENDED USE.....	6
1.2 DIMENSIONS.....	6

## SECTION 2 - TRANSPORT

2.1 GENERAL WARNINGS.....	7
2.2 PACKAGING CONTENTS.....	7

## SECTION 3 - INSTALLATION

3.1 NECESSARY TOOLS.....	8
3.2 THROTTLE REVERSING.....	8
3.3 C2-C7-C8-MACHZERO CABLE INSTALLATION.....	9
3.3.1 SHIFT CABLE CONNECTION.....	9
3.3.2 THROTTLE CABLE CONNECTION WITH PUSH MECHANISM.....	10
3.3.3 THROTTLE CABLE CONNECTION WITH PULL MECHANISM.....	11
3.4 C14 AND MACH14 CABLE INSTALLATION.....	12
3.4.1 SHIFT CABLE CONNECTION.....	12
3.4.2 THROTTLE CABLE CONNECTION WITH PUSH MECHANISM.....	12
3.4.3 THROTTLE CABLE CONNECTION WITH PULL MECHANISM.....	13
3.5 X12 NEUTRAL SAFETY SWITCH INSTALLATION.....	13
3.6 CONTROL BOX POSITIONING.....	14
3.7 ASSEMBLING B310 LEVER-MECHANISM.....	15
3.8 ADJUSTING LEVER FRICTION.....	15
3.9 TRIM ELECTRICAL CONNECTIONS.....	16

## SECTION 4 - LEVER USE

4.1 LEVER USE.....	18
4.2 NEUTRAL WARM-UP.....	18
4.3 TRIM OPERATION.....	18

## SECTION 5 - SAFETY WARNINGS

5.1 SAFETY WARNINGS DURING INSTALLATION AND USE.....	19
5.2 CLOTHES.....	19

## SECTION 6 - MAINTENANCE

6.1 ORDINARY MAINTENANCE.....	19
6.2 EXTRAORDINARY MAINTENANCE.....	20

## SECTION 7 - DISMANTLING

7.1 DISMANTLING.....	20
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## USE OF THE MANUAL AND SYMBOLS USED

THE INSTALLATION AND MAINTENANCE MANUAL is the document accompanying the product from its sale to its replacement and discharge. The manual is an important part of the product itself. It is necessary to read carefully the manual, before ANY ACTIVITY involving the product, handling and unloading included.

In this manual the following symbols are used to ensure the user safety and to guarantee the correct operation of the product:

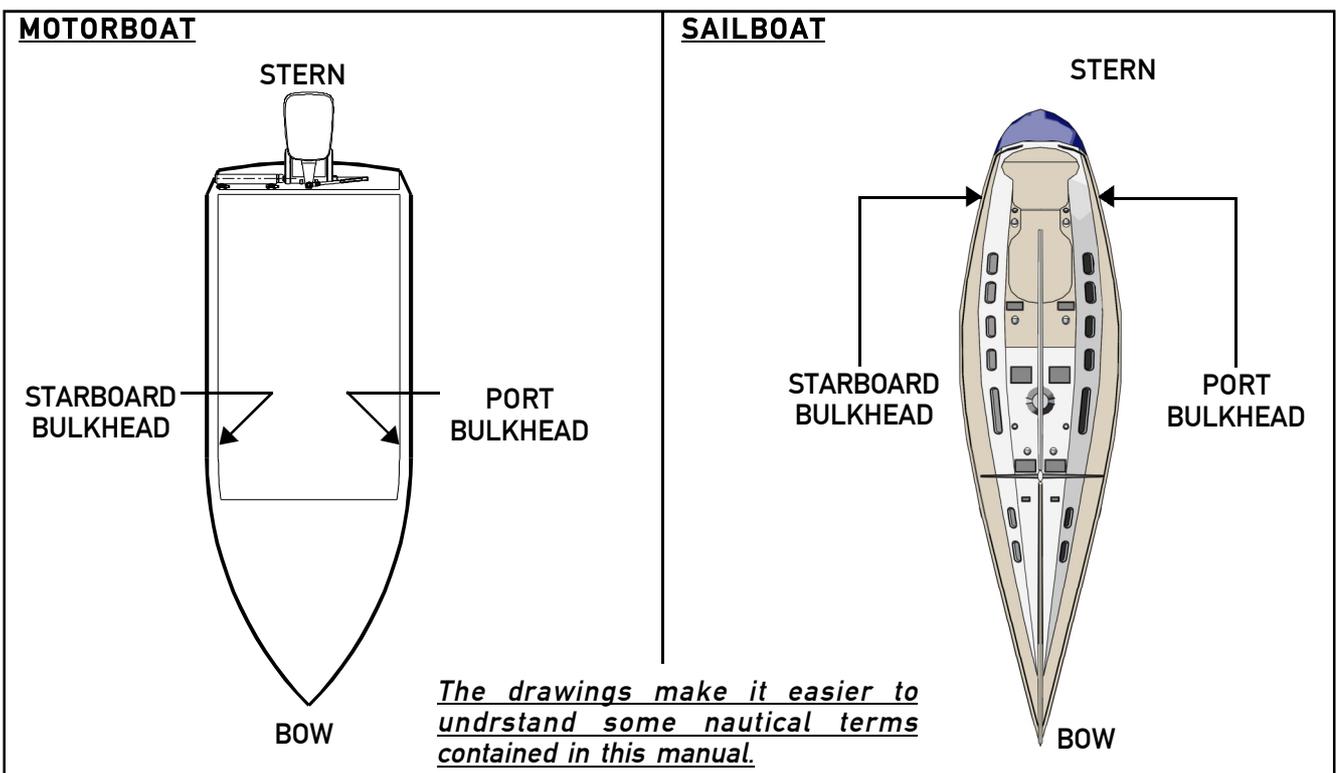
 **DANGER** → Immediate hazards which CAUSE severe personal injury or death.

 **WARNING** → Denotes that a hazard exists which can result in injury or death if proper precautions are not taken.

 **CAUTION** → Denotes a reminder of safety practices or directs attention to unsafe practices which could result in personal injury or damage to the craft or components or to the environment.

**NOTICE** → Important information for the correct installation and for maintenance, that does not cause any damage.

 → The symbol aside indicates all the operations which must be carried out by qualified or skilled staff, in order to avoid hazards. We recommend training the staff in charge of the product installation and checking their knowledge.



## INTRODUCTION

This installation and maintenance manual represents an important part of the product and must be available to the people in charge of its use and maintenance.

The user must know the content of this manual.

**UFLEX USA** declines all responsibility for possible mistakes in this manual due to printing errors.

Apart from the essential features of the described product, **UFLEX USA** reserves the right to make those modifications, such as descriptions, details and illustrations, that are considered to be suitable for its improvement, or for design or sales requirements, at any moment and without being obliged to update this publication.

ALL RIGHTS ARE RESERVED. Publishing rights, trademarks, part numbers and photographs of **UFLEX USA** products contained in this manual are **UFLEX USA** property.

Great care has been taken in collecting and checking the documentation contained in this manual to make it as complete and comprehensible as possible. Nothing contained in this manual can be interpreted as warranty either expressed or implied - including, not in a restricted way, the suitability warranty for any special purpose. Nothing contained in this manual can be interpreted as a modification or confirmation of the terms of any purchase contract.

### WARNING

To ensure the correct product and component operation, the product must be installed by qualified staff. In case of part damage or malfunction, please contact the qualified staff or our Technical Assistance Service.

### TECHNICAL ASSISTANCE SERVICE

#### North - South - Central America:

##### **UFLEX USA**

6442 Parkland Drive

Sarasota, FL 34243

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[www.uflexusa.com](http://www.uflexusa.com)

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## WARRANTY

1. **Two Year Limited Warranty.** **UFLEX USA, Inc.** warrants that all products manufactured by **UFLEX USA, Inc.** or **ULTRAFLEX S.p.A.** and sold by **UFLEX USA** to the retail purchaser ("Purchaser") that for two (2) years after the date of manufacture to be free from defects due to material or workmanship, subject to the exclusions below. Improper installation **AVOIDS** this warranty. Installation should only be attempted by a trained and qualified technician.

2. **Exclusions.** This limited warranty does not cover and does not extend to any of the following:

- (a) Failure caused by normal wear and tear, climatic conditions, misuse, neglect, lack of proper maintenance, accident, fire or other casualty damage, racing, overloading, negligence, modification, beaching or grounding of vessel, collision, impact, towing, acts of war or hostilities;
- (b) components not manufactured by **UFLEX USA, Inc.**, or its affiliates;
- (c) cost of removal or reinstallation of any component (including components manufactured by **UFLEX USA, Inc.**) or disassembly or reassembly of the unit containing the component;
- (d) components not manufactured by **UFLEX USA, Inc.** or **ULTRAFLEX S.p.A.**, whether or not warranted by the other manufacturer;
- (e) any product which has not been properly installed.



- 3. Limitations.** THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS SHALL BE PURCHASER'S SOLE AND EXCLUSIVE REMEDY AND **UFLEX USA, INC.**'S SOLE AND EXCLUSIVE LIABILITY UNDER THIS WARRANTY. LABOR FOR REPLACEMENT IS NOT INCLUDED. **UFLEX USA, Inc.**'s obligation under this warranty is limited to the repair or replacement (at **UFLEX USA, Inc.**'s sole election) of any covered item found to be defective, when delivered by Purchaser pursuant to written authorization and instructions from **UFLEX USA, Inc.**, shipping prepaid to **UFLEX USA, Inc.**'s plant or other designated repair facility. Repaired or replaced items are warranted as provided herein for the unexpired portion of the applicable warranty period.
- THIS WARRANTY, AND THE RIGHTS AND REMEDIES UNDER IT, IS EXCLUSIVE AND IS GIVEN IN PLACE OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, WHETHER ARISING BY LAW, CUSTOM, CONDUCT OR USAGE OF TRADE. PURCHASER'S REMEDIES SHALL BE LIMITED AS STATED HEREIN AND **UFLEX USA, INC.** SHALL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR INDIRECT DAMAGES OR LOSSES RESULTING FROM DEFECTS. THE RETAIL SELLER IS NOT A CO-WARRANTOR AND IS NOT AUTHORIZED BY **UFLEX USA, INC.** TO AMEND OR MODIFY THIS LIMITED WARRANTY IN ANY MANNER.
- 4. Transferability of Warranty.** This limited warranty may not be transferred to subsequent purchasers.
- 5. Miscellaneous.** **UFLEX USA, Inc.** is an affiliate of **ULTRAFLEX S.p.A.** **UFLEX, USA, Inc.**, reserves the right to make changes in the design and construction of its products at any time, without notice and without any obligation to incorporate such changes into products of prior manufacture. This limited warranty applies to new components sold by **UFLEX USA, Inc.**. This limited warranty contains the entire agreements between **UFLEX USA, Inc.** and Purchaser and supersedes all prior agreements, discussions, negotiations, commitments and representations, whether oral or written, between them regarding **UFLEX USA, Inc.**'s warranty. If any provision of this limited warranty, or the application of it, is determined to be invalid or unenforceable for any reason, the remainder of this limited warranty and the application of it shall not be affected.
- 6. Ultron 3000 and PowerC.** The Ultron 3000 and "PowerC - User and Installation Manual" describes activities, operations, technical specifications which must be followed during the installation and/or usage of the product, in order to keep a valid warranty. Descriptions and drawings in that manual are suitable to allow installation and use of the product to skilled persons. In case of doubt and/or for any information, please contact our Technical Service.

All communications and notices from Purchaser regarding this limited warranty should be sent to: **UFLEX USA, INC.**, 6442 Parkland Drive, Sarasota, FL 34243; (941) 351-2628.

## Return policy

Any product that is presumed defective should be reported to **UFLEX USA** within 48 hours of receipt or discovery in the field. Upon notification **UFLEX USA** will attempt to troubleshoot the problem with our customer over the phone. If we are unable to resolve the problem **UFLEX** will issue a Return Goods Authorization number and we require that the product in question be returned to **UFLEX** with all its parts in its original packaging. The product should be returned freight prepaid to:

**UFLEX USA**  
RGA Department - RGA #  
6442 Parkland Drive  
Sarasota, Florida 34243

Upon receipt **UFLEX** will examine the product to determine the cause of the defect. If the product is determined to have a defect in workmanship or material, it will be repaired at our discretion.

Our warranty does not cover labor, towing or other expenses. Further, it does not cover products that have been improperly installed, damaged in installation, misapplied, or misused.

Our products are not intended for use in racing applications.



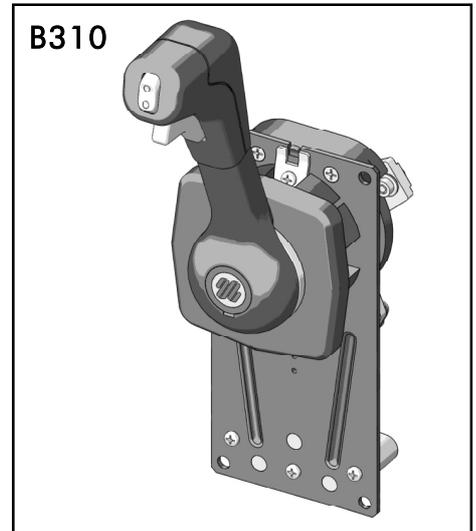
# 1 PRODUCT DESCRIPTION

## 1.1 Product description and recommended use

The single lever control must be assembled on the starboard bulkhead closer to the boat driving position. The lever is provided with adjustable friction, warming-up device with shift gear in neutral and in-neutral lock to prevent accidental operations. The B310 single control lever is also equipped with trim.

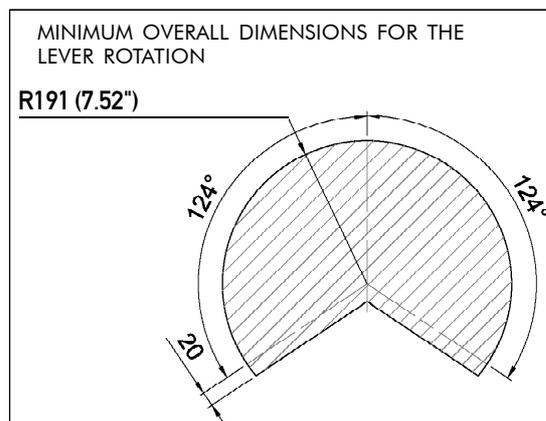
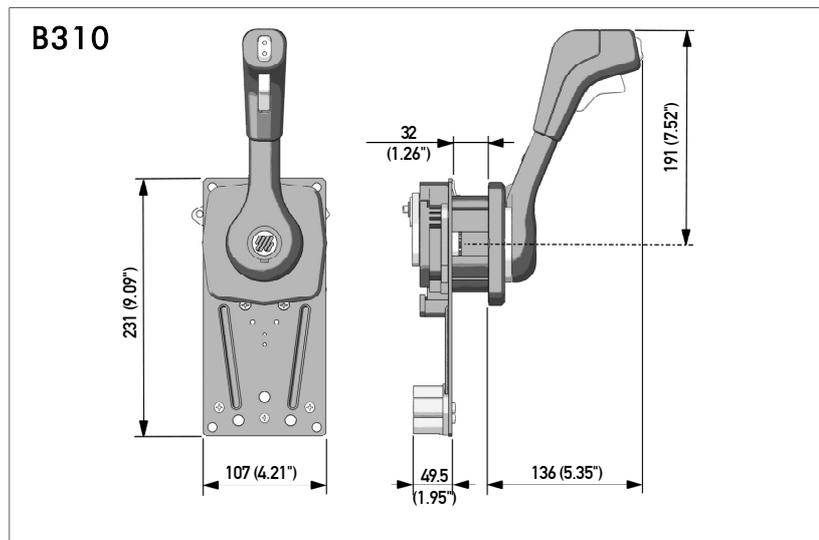
The **B310** control unit can use the following **UFLEX** cables:

- **C2 - C7 - C8 - MACHZero - C14 - MACH14** (no connection kit required)
- **C5 - MACH5 - C16** (K35 connection kit required)



## 1.2 Dimensions

The drawing below shows the dimensions of the B310 single lever control.



## 2 TRANSPORT

### 2.1 General warnings

The product weight with its packaging is 2.5kg (5.5 pounds) and so it can be handled manually.

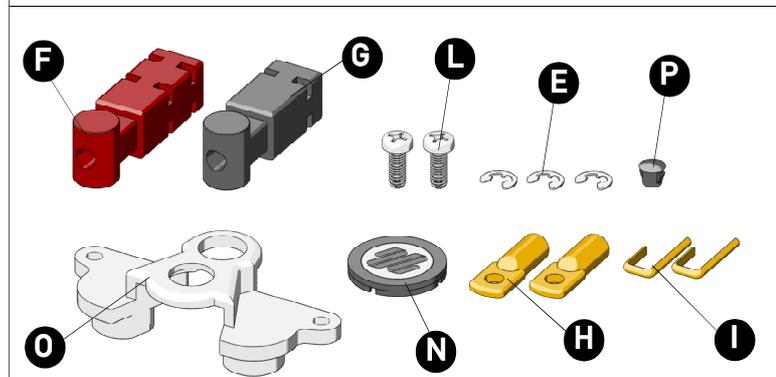
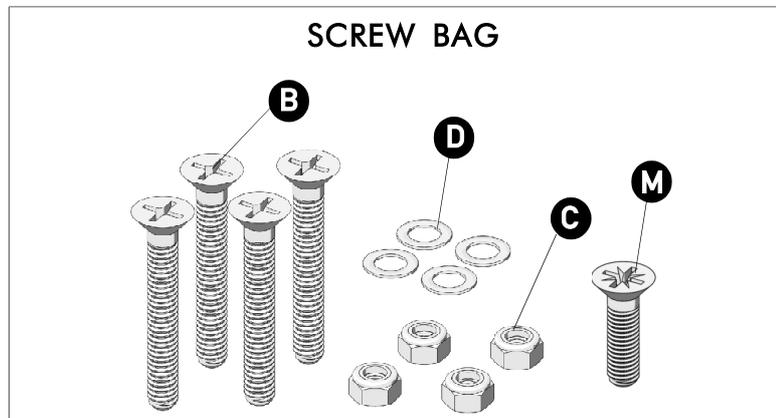
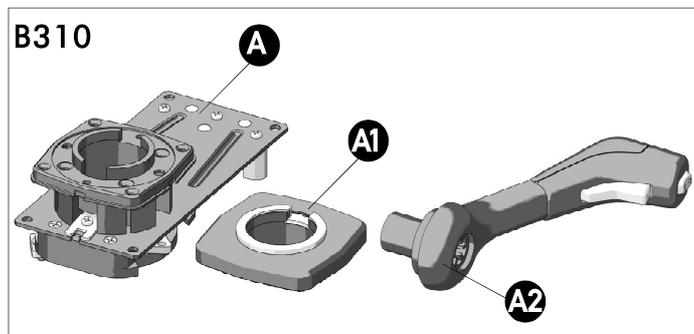
**⚠ WARNING**

The staff in charge of handling must operate with protective gloves and safety shoes.

### 2.2 Packaging contents

Before using the equipment check that the product has not been damaged during transport. Also make sure that all the standard components are in the packaging (see list). In case of damage, notify the claim to the forwarder and inform the supplier.

Contents of the control box packaging:



REF	COMPONENT
A	mechanism with hub
A1	bezel
A2	lever unit
B	4 screws M5x35
C	4 nuts M5
D	4 washers
E	3 snap rings
F	1 red connector for throttle cable
G	1 black connector for shift gear
H	2 terminals
I	2 split pins
L	2 cheese-headed screws M5x14
M	1 countersunk screw M5x14
N	1 plastic cap
O	1 casing fastener
P	1 plastic screw cover

**⚠ CAUTION**

The packaging must be disposed of according to the laws in force.



# 3 INSTALLATION

## 3.1 Necessary tools



## 3.2 Throttle reversing



<p>THE B310 CONTROL IS SUPPLIED WITH THE MECHANISM ALLOWING ENABLING THE ENGINE THROTTLE LEVER BY PUSHING IT WHEN THE BOAT SPEED INCREASES (SEE THE DRAWING)</p> <p>Engine throttle lever</p> <p>PUSH OPERATING CABLE</p>	<p>IF THE THROTTLE LEVER OF THE BOAT MOTOR MUST BE ENABLED BY PULLING IT. WHEN THE SPEED INCREASES. THE CONTROL THROTTLE SYSTEM MUST BE MODIFIED TO OBTAIN THE CONFIGURATION SHOWN IN THE DRAWING</p> <p>PULL OPERATING CABLE</p>
---	---

### NOTICE

This procedure is only necessary for throttle mechanisms that require a pull instead of push to open.

**1** Make sure the control is in the neutral position (rocker arm 1 as shown in the drawing).

**2** Remove screw (2), washer (3), tube (4), spring (5) and lever (6).



**3** Turn the lever (6) 180 degrees as shown in the drawing.  
Reinstall spring (5), tube (4), washer (3) and screw (2).

**⚠ WARNING**  
- Correct control operation depends on precise adjustment of the shift gear travel.

**⚠ WARNING**  
In no case the travel provided by the control unit (67mm (2.64") at inner hole and 78 mm (3.07") at outer hole of rocker arm) should be longer than the travel allowed by the engine mounted lever. Failure of the above will result in cable and control unit damage.

- The sheaths of the cables below the control unit can be wrapped together or fastened at a minimum distance of 500 mm (19.7") from the control unit itself.

**3.3 C2 - C7 - C8 - MACHZero cable installation**



**3.3.1 Shift cable connection**

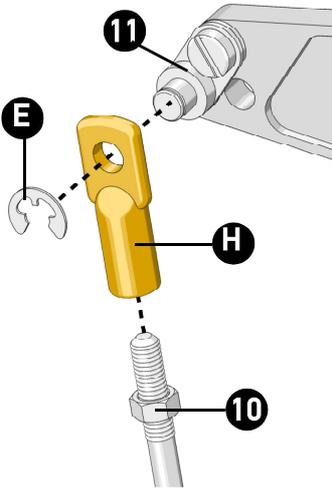
**1** Remove rubber seals (7), (8) and nut (9) (on the box side).

**2** Insert the cable into the (black) connector (G) and fasten it with the split pin (I).

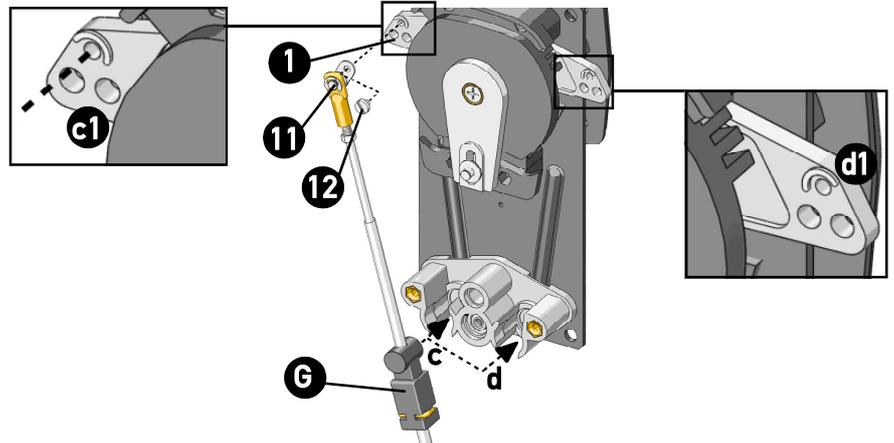
**⚠ WARNING**  
Insert and fold the long side of the split pin on the connector to lock it.



**3** Insert nut (10) on the cable end and screw the terminal (H). Tighten nut (10). Connect the terminal to the pivot pin (11) using snap ring (E).

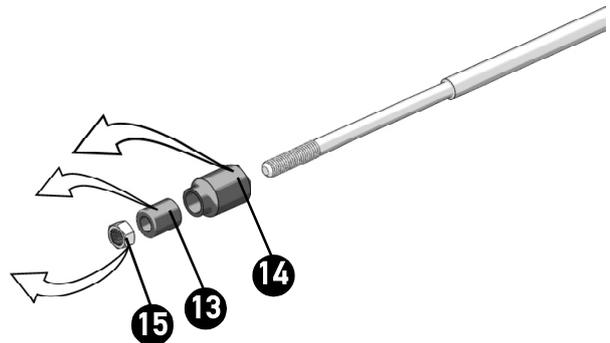


**4** Insert the pivot pin (11) into one of the two holes of the rocker arm (1) (inner hole for a 67 mm (2.64") and outer hole for a 78 mm (3.07") travel). The (black) connector (G), preassembled on the cable, must be installed in the seat (c) if the terminal of the cable is fastened to (c1) or in the seat (d) if it is fastened on the other side of the rocker arm (d1).

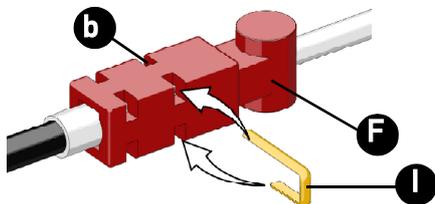


**3.3.2 Throttle cable connection with push mechanism**

**1** Remove rubber seals (13), (14) and nut (15) (on the box side).

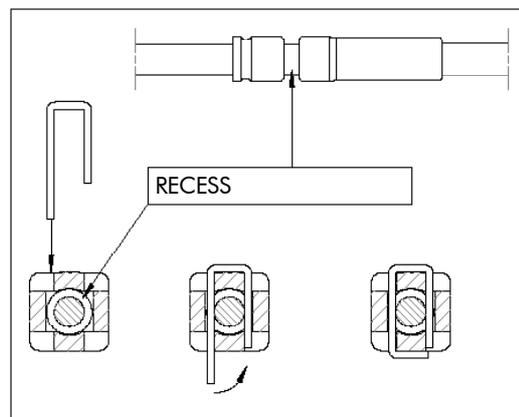


**2** Insert the cable into the (red) connector (F) and attach with the split pin (I), using seat (b).

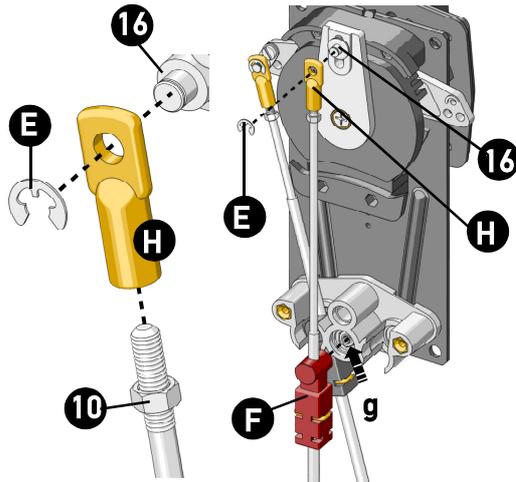


**⚠ WARNING**

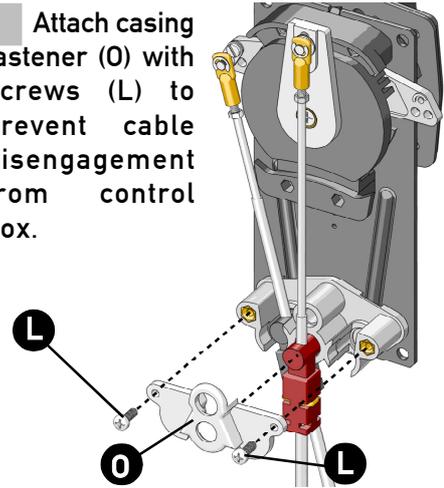
Insert and fold the long side of the split pin on the connector to lock it.



**3** Insert nut (10) on the cable end and screw the terminal (H). Tighten nut (10). Connect the terminal to the throttle lever (16) using snap ring (E). The (red) connector (F), preassembled on the cable, must be installed in seat (g).

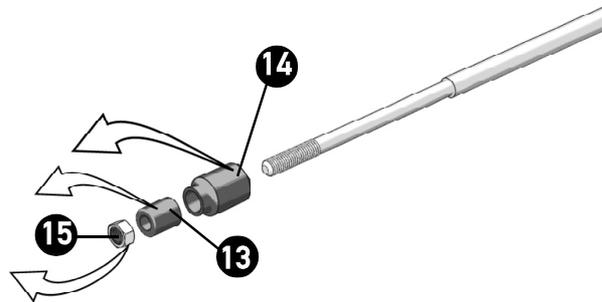


**4** Attach casing fastener (O) with screws (L) to prevent cable disengagement from control box.

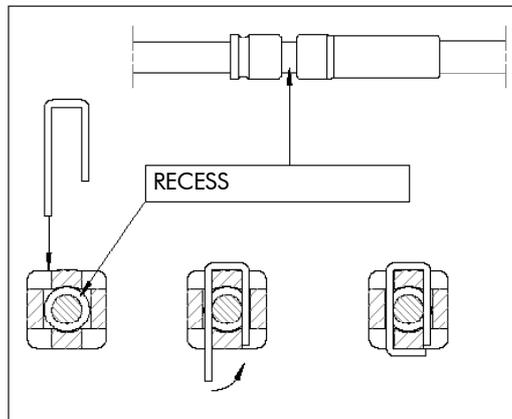
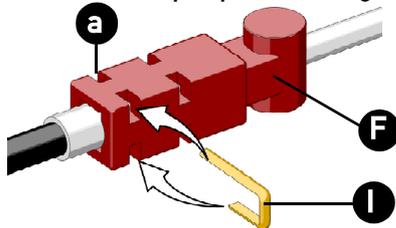


**3.3.3 Throttle cable connection with pull mechanism**

**1** Remove rubber seals (13), (14) and nut (15) (on the box side).



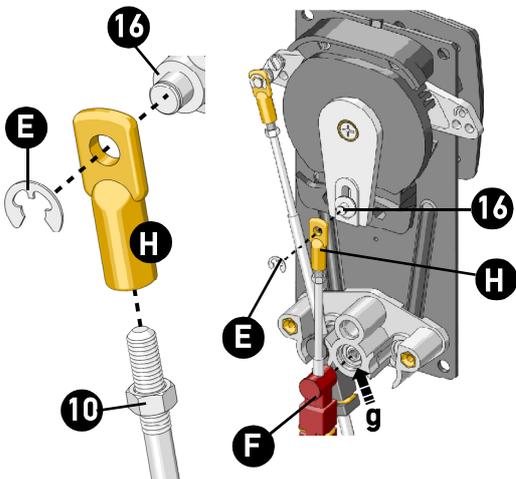
**2** Insert the cable into the (red) connector (F) and attach with the split pin (I), using seat (a).



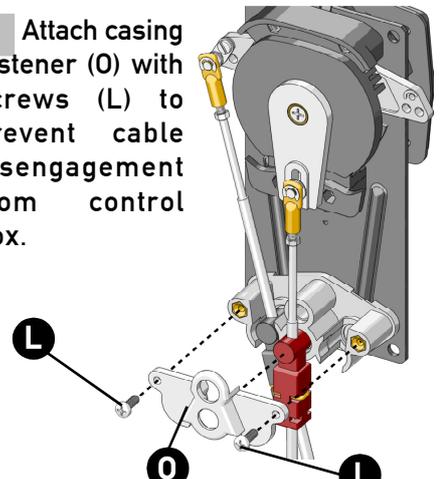
**⚠ WARNING**

Insert and fold the long side of the split pin on the connector to lock it.

**3** Insert nut (10) on the cable end and screw the terminal (H). Tighten nut (10). Connect the terminal to the throttle lever (16) using snap ring (E). The (red) connector (F), preassembled on the cable, must be installed in seat (g).



**4** Attach casing fastener (O) with screws (L) to prevent cable disengagement from control box.

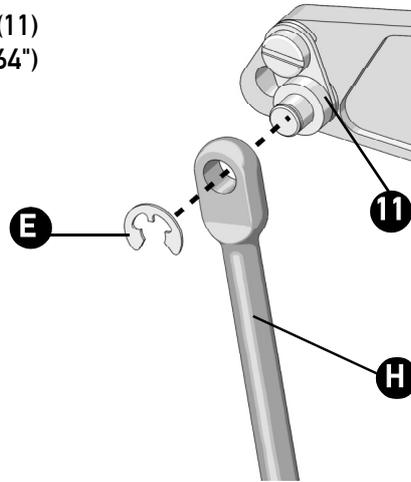




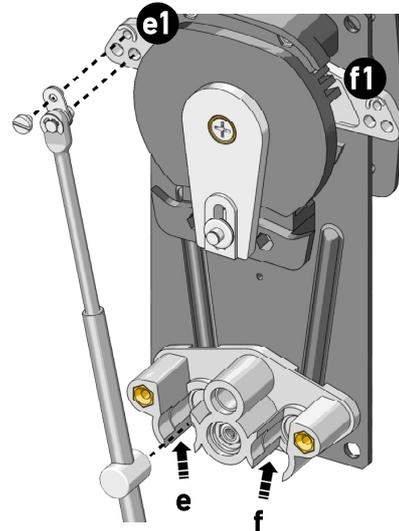
### 3.4 C14 and MACH14 cable installation

#### 3.4.1 Shift cable connection

1 Connect the terminal of the cable (H) to pivot pin (11) located on the inner hole of the rocker arm (67 mm (2.64") travel), then attach with snap ring (E).



2 Insert the cross cylinder of cable sheath end into seat (e) if the terminal of the cable is fastened in (e1) or into seat (f) if it is fastened on the other side of the rocker arm (f1).

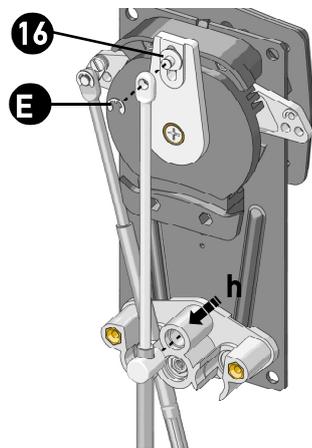


**NOTICE**

(Black) connector (G) and split pin (I) are not used.

#### 3.4.2 Throttle cable connection with push mechanism

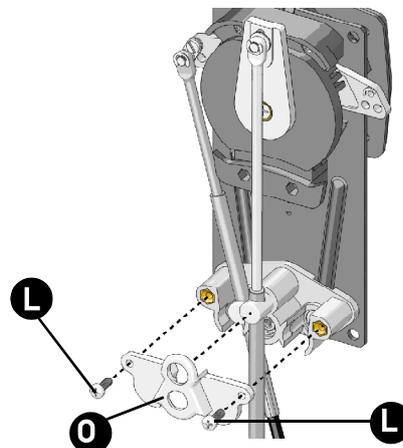
1 Connect the terminal of the cable to the throttle lever (16), then attach with spring ring (E). Insert the cross cylinder of cable sheath end into seat (h).



**NOTICE**

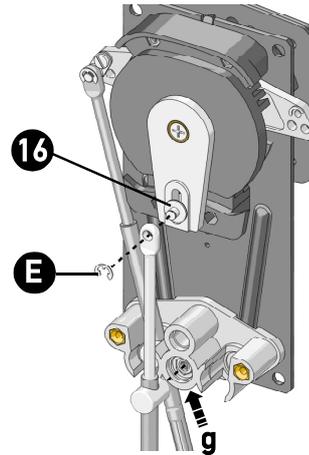
(Red) connector (F) and split pin (I) are not used.

2 Attach casing fastener (O) with screws (L) to prevent cable disengagement from control box.



### 3.4.3 Throttle cable connection with pull mechanism

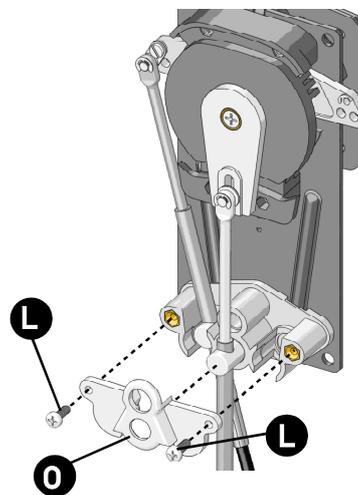
1 Connect the terminal of the cable to the throttle lever (16), then attach with snap ring (E). Insert the cross cylinder of cable sheath end into seat (g).



**NOTICE**

(Red) connector (F) and split pin (I) are not used.

2 Attach casing fastener (O) with screws (L) to prevent cable disengagement from control box.



### 3.5 X12 neutral safety switch installation

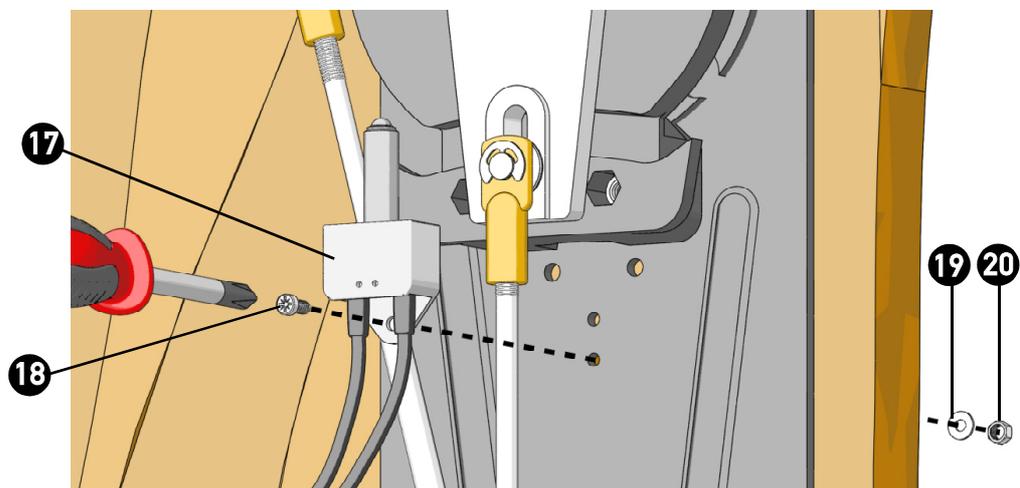
This optional device allows starting the engine only with the shift gear in "neutral" position, by avoiding undesired movements of the boat.

To assemble it, follow the instructions below:

1 Secure the X12 neutral safety switch (17) with screw (18), washer (19) and nut (20).

**NOTICE**

Keep the screw head on the switch surface.





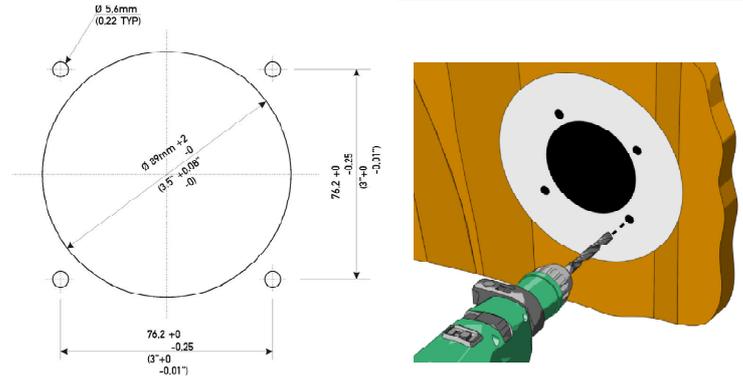
### 3.6 Control box positioning

- 1 To make sure the box can be installed in the desired position see the overall dimensions indicated in section 1.2. The mechanism with the cables connected must be installed inside the boat bulkhead.

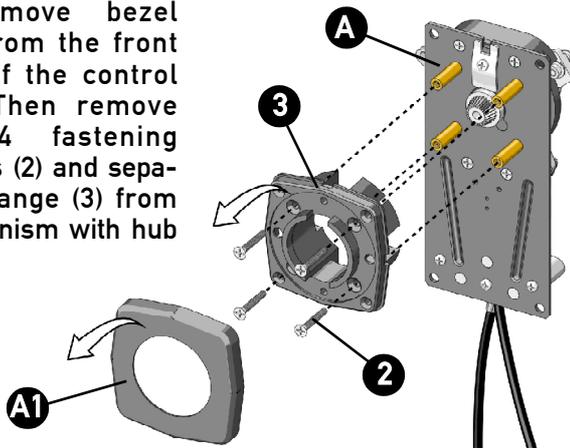
**⚠ WARNING**

Avoid bending the cables too tight (Minimum radius: 200 mm (8")). We recommend using **UFLEX** cables.

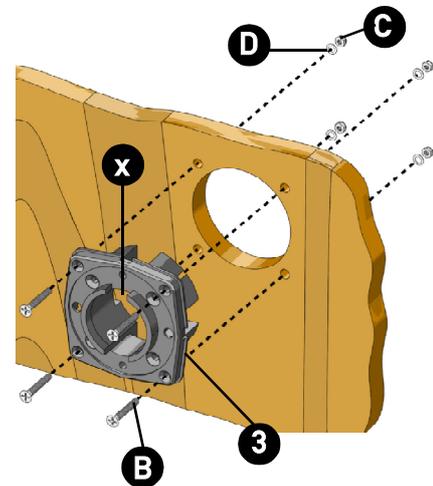
- 2 After choosing the right position, drill to insert the control box using the suitable template.



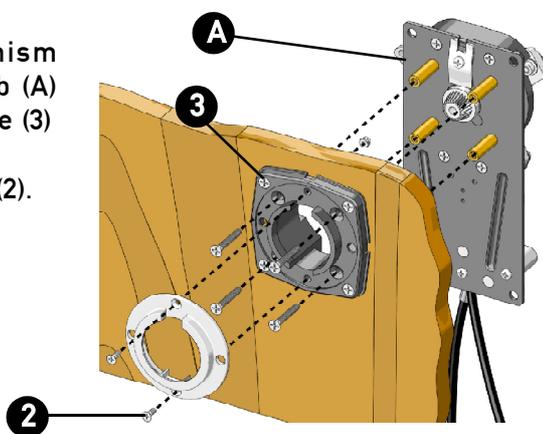
- 3 Remove bezel (A1) from the front part of the control box. Then remove the 4 fastening screws (2) and separate flange (3) from mechanism with hub (A).



- 4 Fix flange (3) using screws (B), washers (D), nuts (C). The flange should be positioned in such a way that the slit (x) is aligned with the sliding element in the control lever that provides the locking in neutral.



- 5 Fix mechanism with hub (A) to flange (3) using screws (2).



**⚠ WARNING**

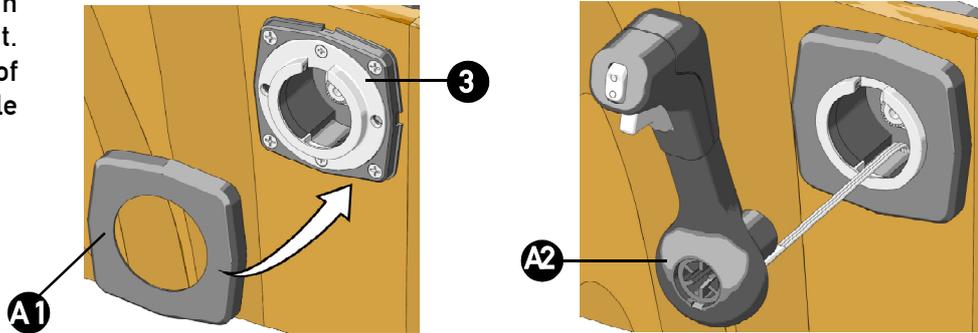
The flange must be assembled so that the slit (x) is on the upper side.



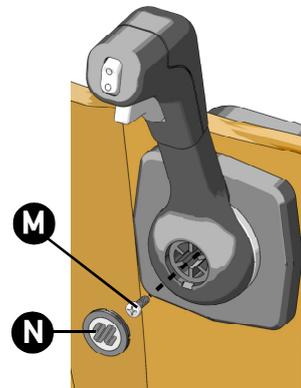


### 3.7 Assembling B310 lever-mechanism

**1** Insert bezel (A1) on flange (3) by pressing it. Insert the electric cable of lever (A2) through the hole of the cover.

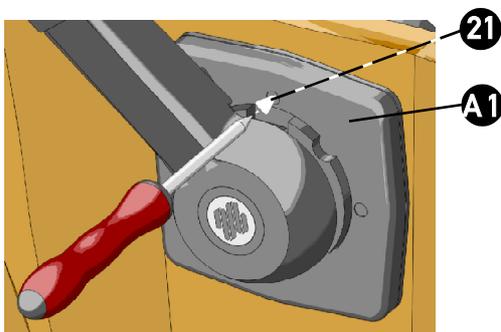


**2** Attach the lever unit using screw (M) and press on cap (N).

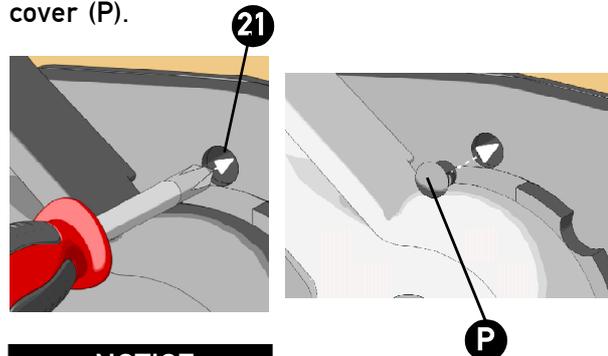


### 3.8 Adjusting lever friction

**1** Gain access to adjusting screw (21) by drilling a hole in the circular impression of bezel (A1) near the mechanism friction. Use a 6 (0.23") to 6.5mm (0.25") diameter punch or a screwdriver.



**2** Adjust throttle lever friction turning on screw (21) with a Phillips head screwdriver (clockwise to increase and counterclockwise to decrease the friction). When adjustment is ended, close the drilled hole by inserting the provided screw cover (P).



**NOTICE**

This adjustment can be carried only after disassembling the flange if the mechanism is assembled in vertical position.



### 3.9 Trim electrical connections

Carry out the electrical connections of the cables coming from the lever by following the diagrams below according to the motor used.

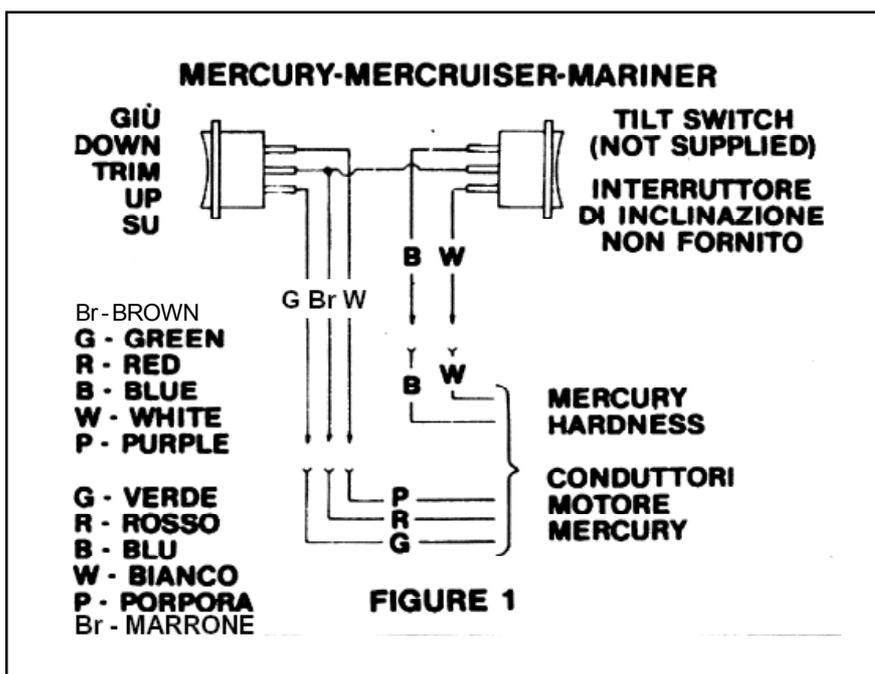
**NOTICE**

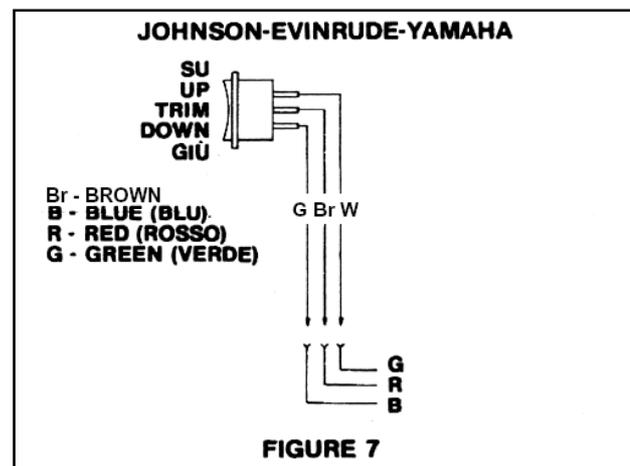
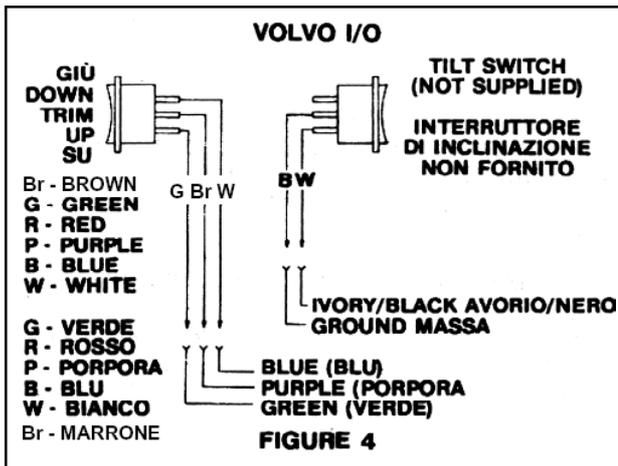
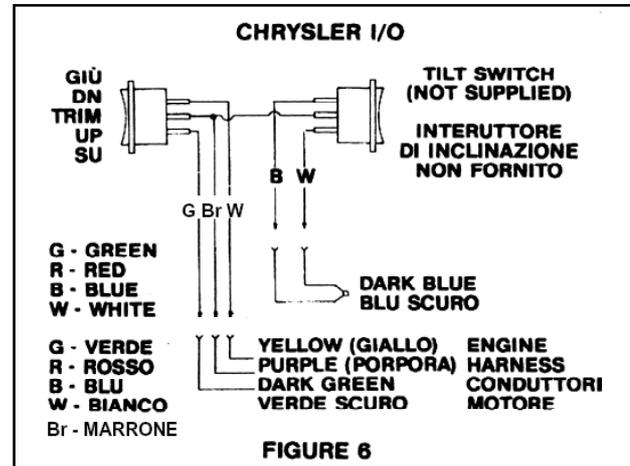
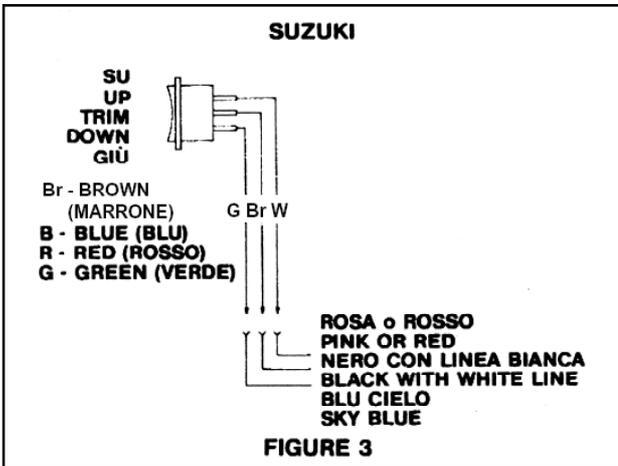
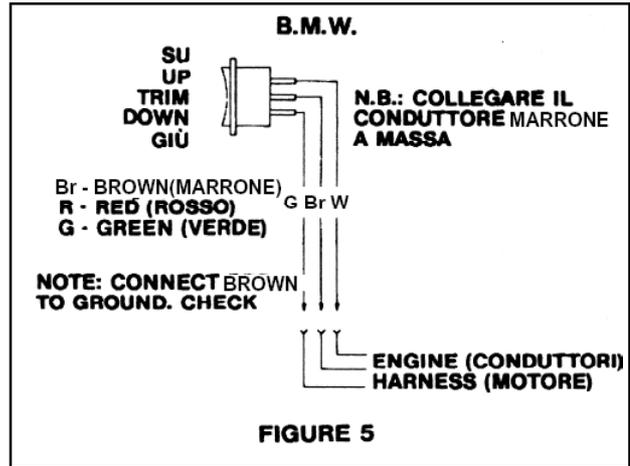
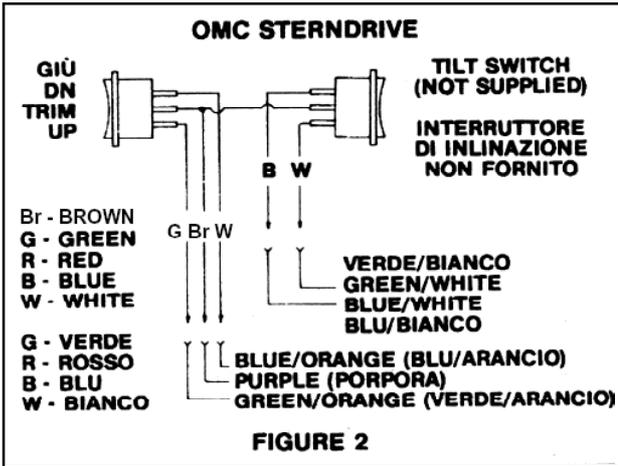
These controls work only on the motors shown below. Controls marked with (\*) need an additional TILT switch. Refer to the circuit diagram of the motor used.

MOTORS	CONTROLS
Mercury O/B	Only Trim (*)
Mercruiser I/O	Only Trim (*)
Mariner O/B	Only Trim (*)
Johnson/Evinrude O/B	Trim & Tilt
Yamaha O/B	Trim & Tilt
Suzuki O/B	Trim & Tilt
BMW I/O	Trim & Tilt
Volvo I/O	Only Trim (*)
OMC	Only Trim (*)
Chrysler I/O	Only Trim (*)

**⚠ WARNING**

The circuit diagram for MERCURY, MERCUISER and MARINER needs Mercury solenoid kit and harness unit.





**SWITCH TECHNICAL DATA:**

Resistive load: 6 Ohm 12V

Inductive load: 2A 12V

**NOTICE**

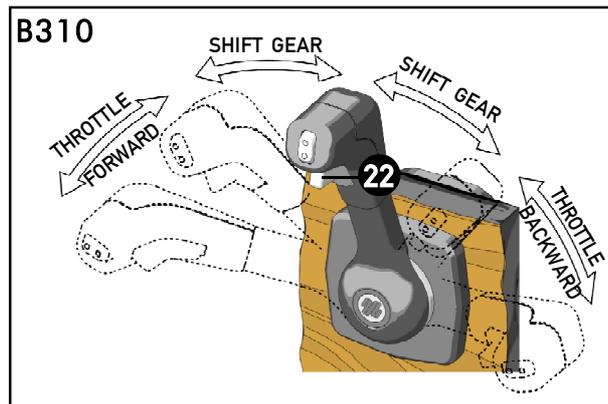
In case of high inductive load, it is advisable to use a supporting relay to protect the switch.



# 4 LEVER USE

## 4.1 Lever use

The lever travel includes two movements: in the first phase the shift gear is enabled; in the second one the throttle is enabled. If the lever is in forward position, the boat moves forward; if the lever is in backward position, the boat goes in reverse. To unlock the B310 control lever from the neutral position, press the lever unit trigger (22) on the lower part of the handle and simultaneously move the lever forward or backward.



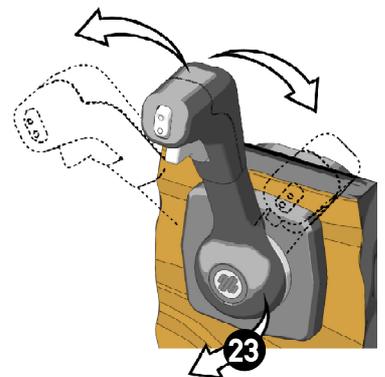
**⚠ DANGER**

If the control has no safety switch, before starting the engine make sure that it is in neutral position.



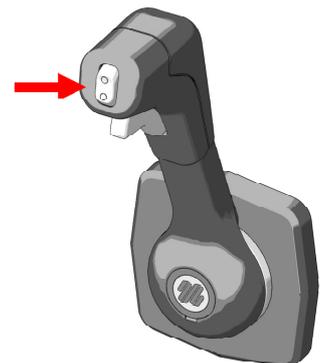
## 4.2 Neutral warm-up

- 1 Pull lever hub in the direction shown by the arrow (23) and rotate clockwise or counterclockwise until desired warm-up. With lever in neutral, return spring will bring hub to initial position.



## 4.3 Trim operation

The trim allows changing the boat attitude. By pressing the "UP" push button, the boat bow lifts; by pressing the "DOWN" push button, it lowers.



## 5 SAFETY WARNINGS

This section shows the safety rules which must be followed for the correct equipment operation. We recommend reading carefully this section and also the other manuals supplied with the other components of the single lever control.

### 5.1 Safety rules during installation and use

RESPECT STRICTLY the following safety rules.

**UFLEX** declines all responsibility in case the user does not follow these rules and it is not responsible for negligence during the use of the system.

#### DANGER

- **DO NOT PUT HANDS BETWEEN THE MOVING PARTS.**
- Do not disable the safety devices.
- Do not modify or add devices to the system, without **UFLEX** written authorisation or technical intervention which will prove the modification.
- Do not use the equipment for a purpose different from the one it has been designed for, which is specified in the installation and maintenance manual.
- Do not let non-specialized staff perform the installation.

#### WARNING

- During the system installation, clean carefully to prevent foreign matters from entering the system. Even a little object may cause lasting damage that is not detected immediately.
- Avoid too narrow bend radius of cables <200 mm (8").
- Avoid the cable contact with edges or sharp corners.
- Avoid the cable contact with heat sources.

### 5.2 Clothes

#### WARNING

During installation, inspection or maintenance, IT IS STRICTLY FORBIDDEN to wear necklaces, bracelets or clothes which could get caught in the moving parts.

## 6 MAINTENANCE

### 6.1 Ordinary maintenance



#### WARNING

Poor installation and maintenance may result in loss of steering and cause property damage and/or personal injury. Maintenance requirements change according to climate, frequency and the use. Inspections are necessary at least every two years and must be carried out by specialized marine mechanics.

Carry out the following maintenance operations:

- Periodically wash the components with soft water by removing any salt deposit.
- Every month check and if necessary tighten all the nuts fastening the system.

#### DANGER

**If the check nuts are removed or disassembled, this could cause the single lever control malfunction as well as damage to people or things.**

- Periodically check the absence of corrosion on the metal parts of the cable terminals and of abrasions on the sheath.
- Replace the damaged parts that can compromise the single lever control integrity.



## 6.2 Extraordinary maintenance

### Technical assistance

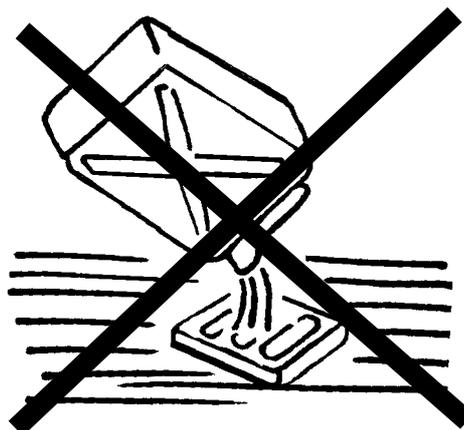
*For any information or for assistance with unusual applications please contact our technical support personnel (See paragraph "Introduction").*

# 7 DISMANTLING

## 7.1 Dismantling

When for any reason, the system is put out of service, it is necessary to follow some rules in order to respect the environment.

Sheaths, pipelines, plastic or non-metallic components must be disassembled and disposed of separately.







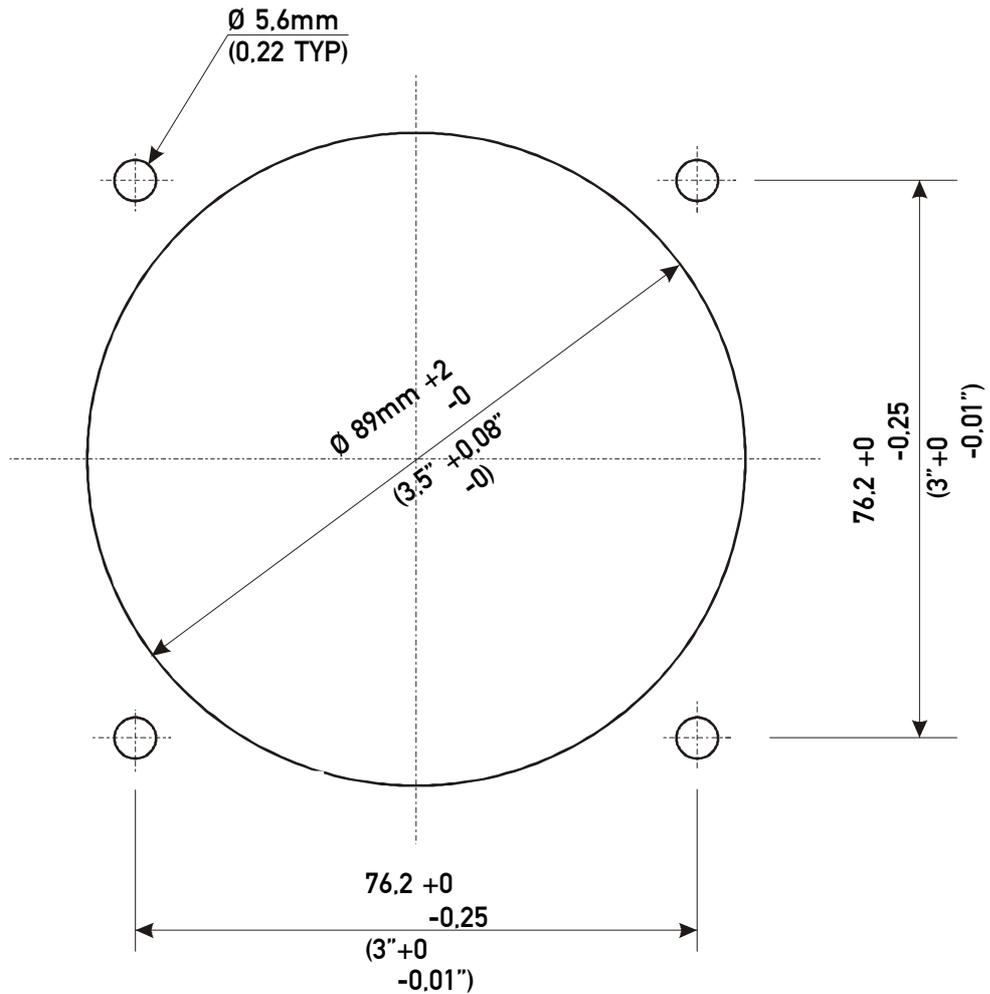


**UFLEX USA**

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# Drilling template for B310 single lever control



# WFLER



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