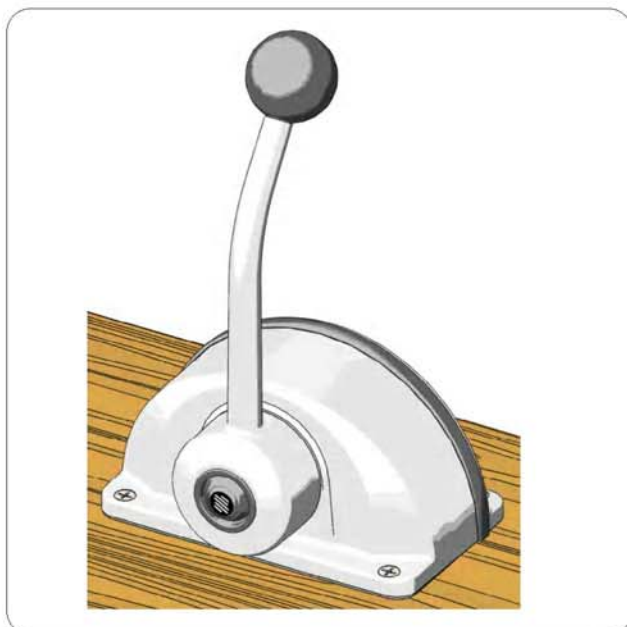


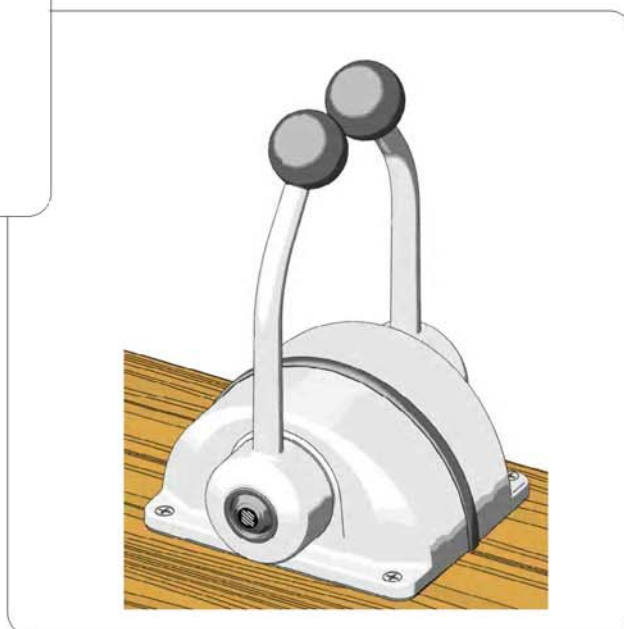
Installation and maintenance manual

SINGLE LEVER CONTROL



B 301

B 302



ENGLISH

ITALIANO

FRANÇAIS

CE

 **ULTRAFLEX**



PARTNER

MEMBER
ABYC
Setting Standards for Safer Boating®



UK
page. 2

I
pag. 17

F
page. 33



Dear Customer,

We would like to thank you for choosing an **ULTRAFLEX** product.

ULTRAFLEX has been a leader in steering systems for pleasure and professional boats for many years. **ULTRAFLEX** production is since ever synonymous of reliability and safety.

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

ULTRAFLEX and **UFLEX** Quality Management Systems are certified CISQ-IQNet by the Italian Shipping Registry (RINA), in conformity with the UNI EN ISO 9001:2000 rule. **ULTRAFLEX** certification No. 6669/02/S (former 420/96). **UFLEX** certification No. 8875/03/S.

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 94/25/CE, ISO 10592 and ABYC (American Boat and Yacht Council) requirements.



"**ULTRAFLEX** has over 70 years of experience in the marine industry and is a world leader in the production of mechanical, hydraulic and electronic steering systems, control boxes and steering wheels for any kind of pleasure, fishing or commercial boats.

The key factors which explain the increasing success of our products all over the world are the reliability of our products and the before and after sale service, the quality of the company organization and of the human resources and the continuous spending in research and development".

TABLE OF CONTENTS

MANUAL USE 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 LEVER CONTROL POSITIONING.....	8
3.3 ADJUSTMENT OF THE LEVER INCLINATION.....	8
3.4 CONTROL CABLE POSITIONING.....	9
3.5 INSTALLATION OF CABLES C14 AND MACH 14.....	9
3.5.1 SHIFT CABLE CONNECTION.....	9
3.5.2 THROTTLE CABLE CONNECTION.....	11
3.6 FRICTION ADJUSTMENT.....	12
3.7 LEVER CONTROL BOX MOUNTING.....	12
3.8 INSTALLATION OF THE NEUTRAL SAFETY SWITCH.....	13

SECTION 4 - LEVER USE

4.1 LEVER USE.....	14
--------------------	----

SECTION 5 - SAFETY WARNINGS

5.1 SAFETY RULES DURING INSTALLATION AND USE.....	14
5.2 CLOTHING.....	14

SECTION 6 - MAINTENANCE

6.1 ORDINARY MAINTENANCE.....	15
6.2 EXTRAORDINARY MAINTENANCE.....	15

SECTION 7 - DISMANTLING

7.1 DISMANTLING.....	15
----------------------	----

IMPORTANT:

The additional documents "Application Guide" and "Spare Parts List" are attached to this manual.

MANUAL USE 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



Hazards or unsafe practices which COULD CAUSE severe personal injury or death.

⚠ CAUTION



Hazards or unsafe practices which COULD CAUSE minor injury or product or property damage.

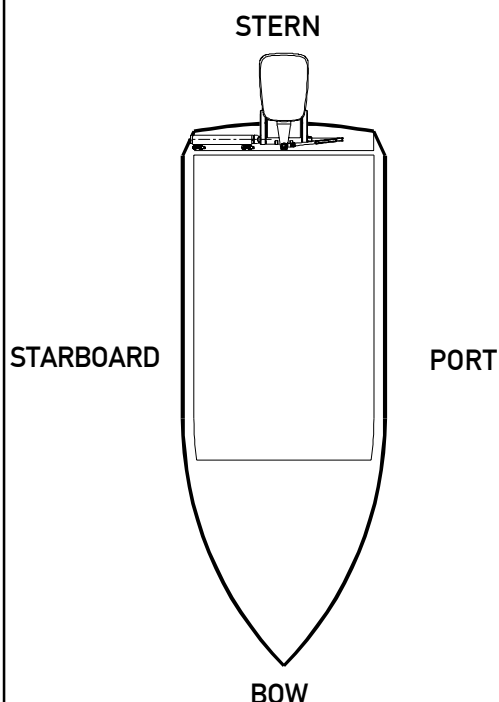
NOTICE



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.



The picture aside explains the meaning of some nautical words contained in this manual.



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.

ULTRAFLEX declines all responsibility for possible mistakes in this manual due to printing errors.

Apart from the essential features of the described product, **ULTRAFLEX** 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 **ULTRAFLEX** products contained in this manual are **ULTRAFLEX** 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

UFLEX S.r.l.

Via Milite Ignoto,8A
16012 Busalla (GE)-Italy
Tel: +39.010.962.0239 (Italy)
Tel: +39.010.962.0244 (abroad)
Fax: +39.010.962.0333
Email: ut@ultraflexgroup.it
www.ultraflexgroup.it

North - South - Central America: UFLEX USA

6442 Parkland Drive
Sarasota, FL 34243
Tel: +1.941.351.2628
Fax: +1.941.360.9171
Email: uflex@uflexusa.com
www.uflexusa.com

WARRANTY

ULTRAFLEX guarantees that its products are well designed and free from manufacturing and material defects, for a period of two years from the date of manufacturing.

For the products which are installed and used on working or commercial boats the warranty is limited to one year from the date of manufacturing.


If during this period the product proves to be defective due to improper materials and/or manufacture, the manufacturer will repair or replace the defective parts free of charge.



Direct or indirect damage is not covered by this warranty. In particular the company is not responsible and this warranty will not cover the damage resulting from incorrect installation or use of the product (except for replacement or repair of defective parts according to the conditions and terms above).

This warranty does not cover the products installed on race boats or boats used in competitions.

The descriptions and illustrations contained in this manual should be used as general reference only.

For any further information please contact our Technical Assistance Service.

ULTRAFLEX steering system components are marked  according to the Directive 94/25/CE and to the ABYC (U.S.A.) requirements.

We remind you that only  marked steering systems must be used on the boats marked  (Art. 3 and Art. 5 of the Directive 94/25/CE). We inform you that the **ULTRAFLEX** warranty is null if some **ULTRAFLEX** components are installed on a steering system together with products of other brands.



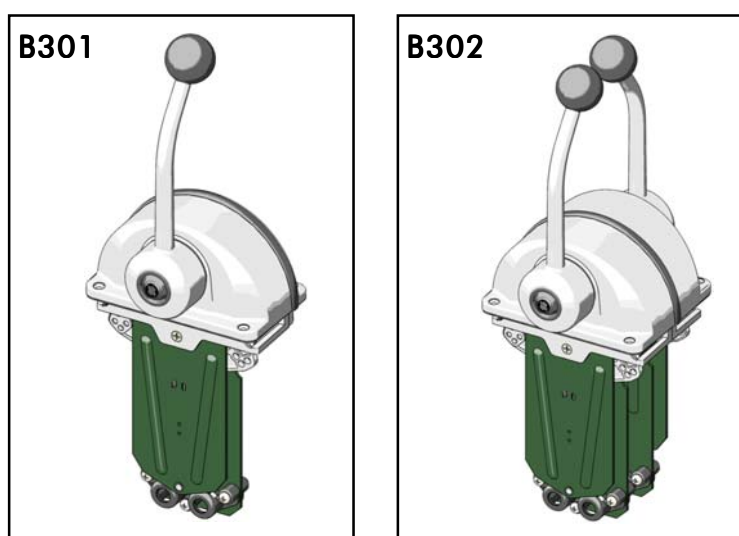
1 PRODUCT DESCRIPTION

1.1 Product description and recommended use

The B301 single lever and the B302 dual lever controls are designed as a single lever dual function per engine. They are specifically designed to operate with outboard, stern drive (I/O) and inboard marine propulsion engines. The controls can operate with all Ultraflex cables except the C4; included with both the controls is the K59 kit, necessary to install Ultraflex C2, C8, C0, and Mach 0 cables.

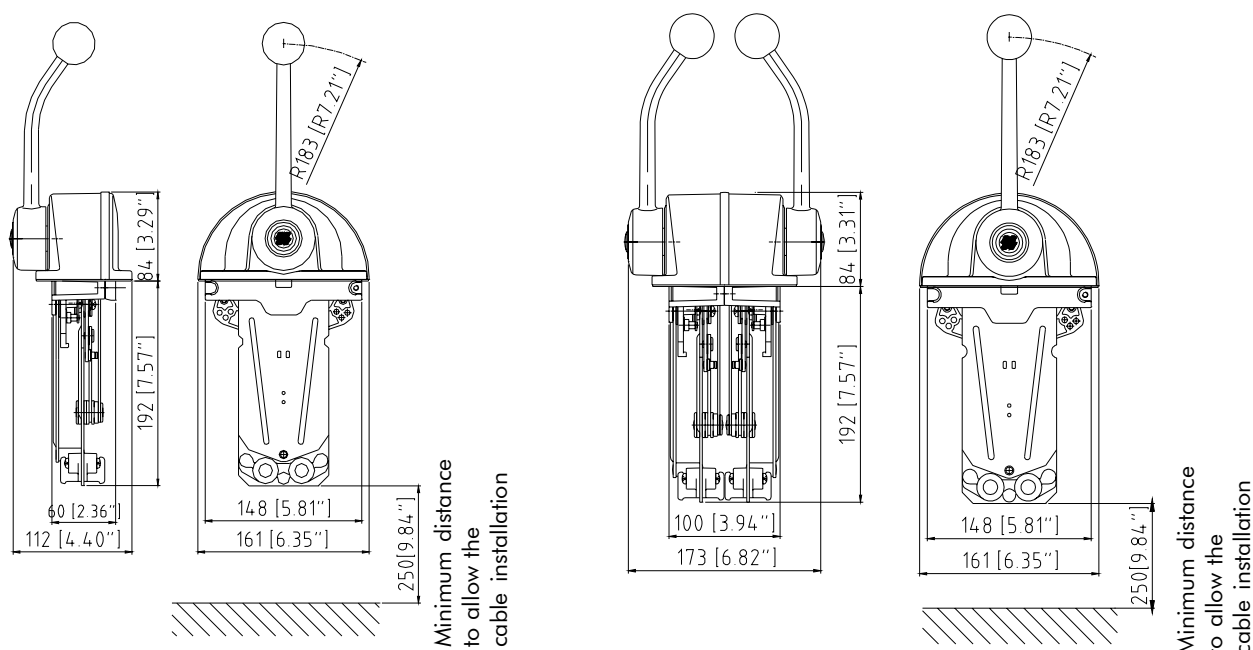
For all the other cables the following kits are available on demand:

- K 60 for cables Ultraflex C5 - C16 - MACH 5;
- K 61 for cables Ultraflex C22;
- K 62 for cables Ultraflex C36 - MACH 36.
- The cables C14 and MACH14 require no installation kit.



1.2 Dimensions

The pictures below show the lever control B301 and B302 dimensions.



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.

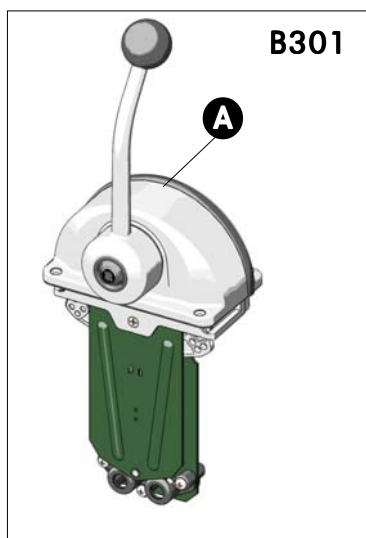
⚠ WARNING

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

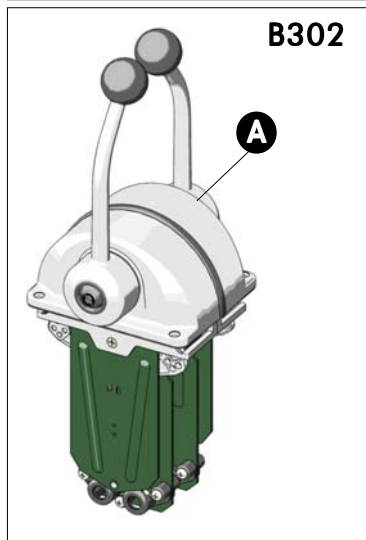
2.2 Packaging contents

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 lever control packaging:

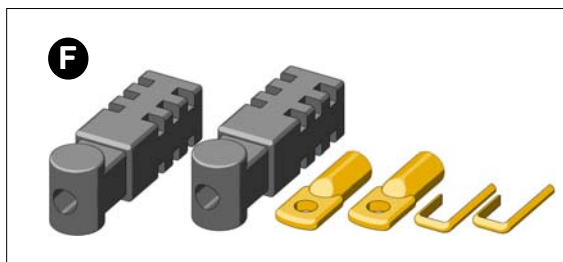
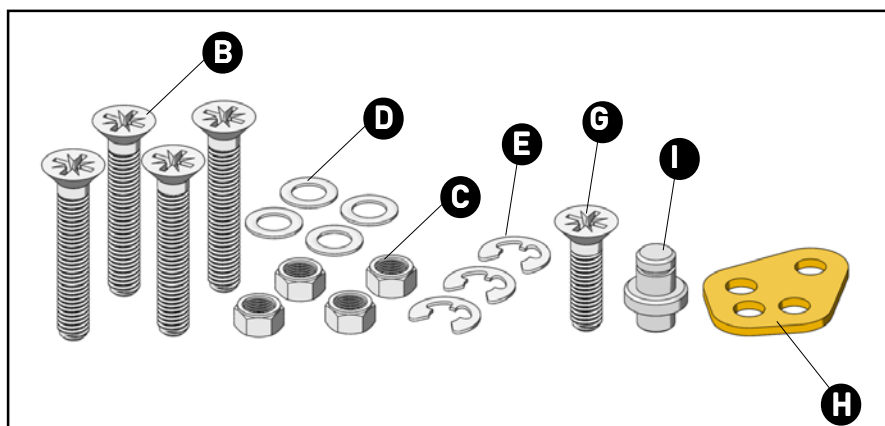


B301



B302

REF	B301	B302
A	1 lever control	1 lever control
B	4 screws M5x35	4 screws M5x35
C	4 nuts M5	4 nuts M5
D	4 washers	4 washers
E	3 snap rings	6 snap rings
F	1 kit K59 for cable installation	2 kits K59 for cable installation
G	1 screw M5x14	2 screws M5x14
H	1 plate	2 plates
I	1 pin	2 pins



⚠ WARNING

The packaging must be disposed of according to the existing laws.



3 INSTALLATION

3.1 Necessary tools



Phillips
screwdriver



Pliers



Open end
wrench
8mm [0.31"]



Socket wrench
17mm [0.66"]



3.2 Lever control positioning

1 Position the lever control so as to allow the complete and free turning of the lever from the full forward to the full reverse position and vice versa.

2 Refer to the overall dimensions indicated in paragraph 1.2 to make sure the lever can be installed in the desired position.

⚠ WARNING

When the cable is installed avoid too narrow bends.

3 After choosing the proper position, drill till inserting the lever control by using the suitable drilling template.

For the single and dual control installation refer to the drilling templates enclosed.

NOTICE

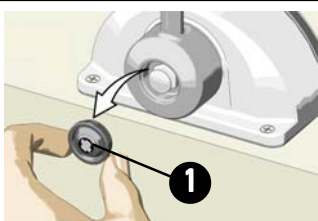
Connect the cables to the lever before fastening the lever control to the dashboard.



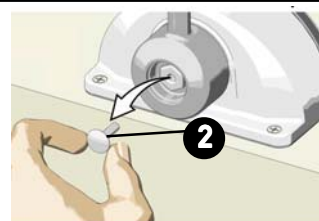
3.3 Adjustment of the lever inclination

The lever inclination can be adjusted both forward and backward according to the control position. Follow the instructions below:

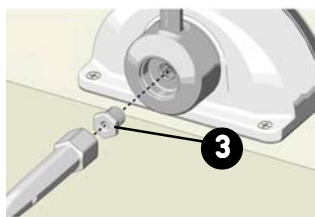
1 Remove the rubber cover from the lever hub (1).



2 Extract the plastic pin (2).



3 Take out the hexagonal head screw (3) with a 17 socket wrench.



4 Extract the lever and turn it to the desired position, then reinsert it by putting into gear with the shaft of the control box.



- 5 Apply threadlocking **low strength** (Loctite 222) on the screw (3) and lock it completely. Insert the pin on the screw (2). Insert the rubber cover (1).

⚠ WARNING

Make sure the lever inclination does not prevent it from carrying out the complete angular range (about 180°) that is necessary.

3.4 Control cable positioning



- 1 Select a direct path with a minimum number of bends and without any obstacles.

⚠ WARNING

Avoid too narrow bends (the minimum bend radius is 203 mm (8")).

NOTICE

Outboard engine installations require an additional length of about 120 cm (47") of the cables to allow engine swing.

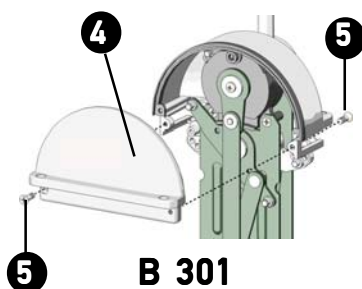
The cables can be sustained by means of suitable cable hangers (supplied separately) or routed through segments of conduits (supplied separately too) for long straight runs.

⚠ WARNING

To avoid the control hardening, do not fix the cables near the control outlet (the minimum fixing distance is 500 mm) and in any case do not use fixing systems that can deform the casing.

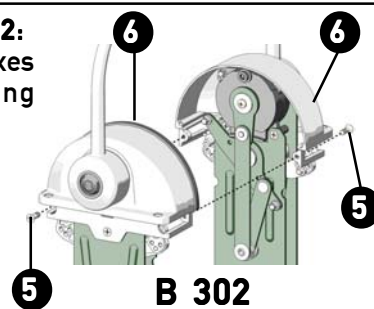
2 CONTROL B301:

Remove the rear cover (4) of the control by unscrewing the screws (5) so as to reach easily the elements where the cables are to be fixed.



CONTROL B302:

Split the two boxes (6), by removing the screws (5).



- 3 To install each cable model a kit of fittings is supplied allowing the cable connection to the lever control/controls. Included with both the single levers B301 and B302 is the K59 kit.

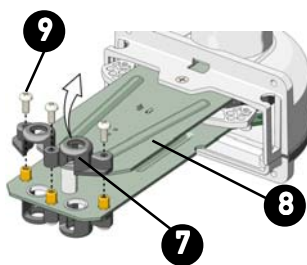
To install the cables on the control/controls follow the suitable instructions supplied with each kit. To install the cables C14 and MACH14 follow the instructions given below.

3.5 Installation of cables C14 and Mach14

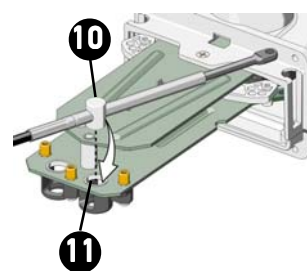


3.5.1 Shift cable connection

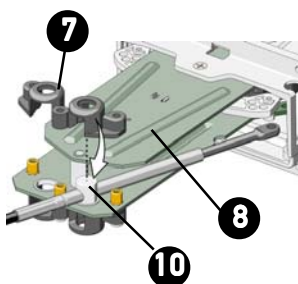
- 1 Place the control box on a level (the Ultraflex symbol on the lever will be turned upside down). Remove the cable clamp (7) from the plate (8) loosening the screws (9).



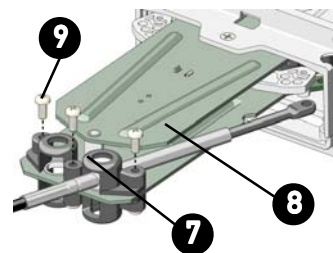
- 2 Mount the cable making sure the cylinder of the cable (10) is placed inside the plate hole (11).



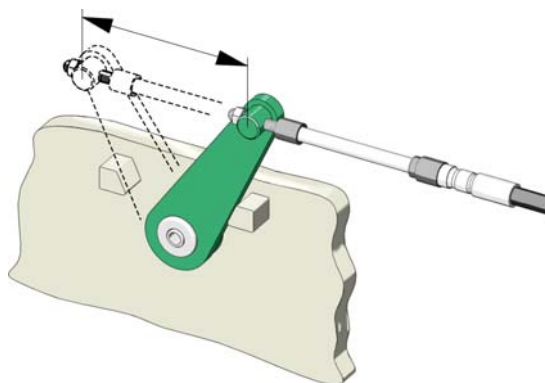
3 Remount the cable clamp (7) on the plate (8) aligning the cylinder of the connector (10) with the hole of the cable clamp.



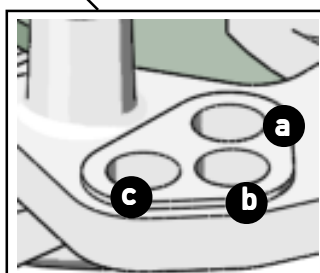
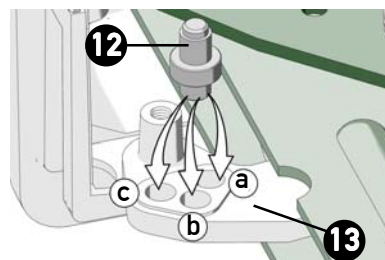
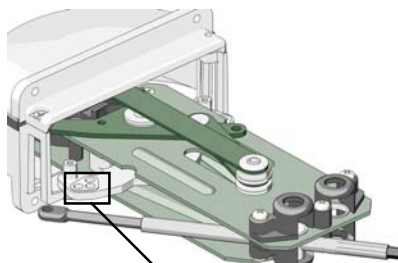
4 Fix the cable clamp (7) to the plate (8) with the screws (9).



5 Measure on the engine the shift lever stroke from the forward gear to the reverse gear. See the possible strokes on the control device and select the nearest one; for instance, if the stroke on the engine from one end of stroke to the other is 67 mm, the cable must be connected to the more internal hole (68 mm stroke). If a stroke of 70 mm is detected, check if the 68 mm stroke is sufficient otherwise connect the cable to the central hole (76 mm stroke); some millimeters (5-6) of surplus stroke on the control device are counterbalanced by the cable play.



6 Turn upside down the control box (internal mechanism turned upside). Put the pin (12) on one of the three holes (a), (b), or (c) of the lever (13).



NOTICE

The hole is chosen according to the stroke of the cable (see the table below).

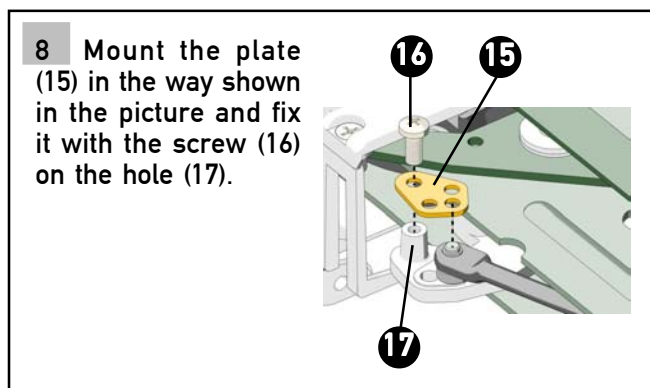
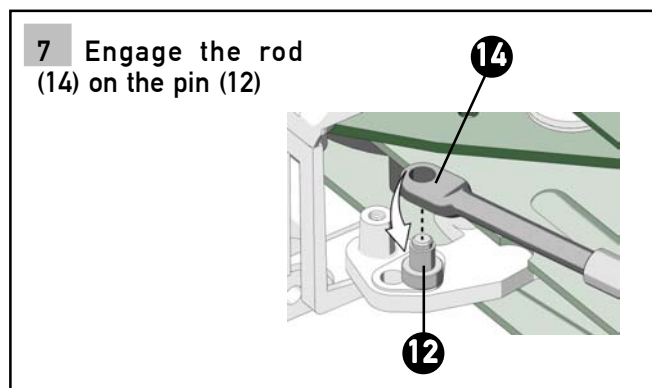
HOLE	a	b	c
STROKE [mm]	68	76	82



⚠ WARNING

Adjust the control cable stroke of the shift so as not to force the end of strokes of the engine lever. The non-compliance with this recommendation causes the control system malfunction such as:

- High resistance to the lever operation
- Early wear of the mechanism that can cause its locking.

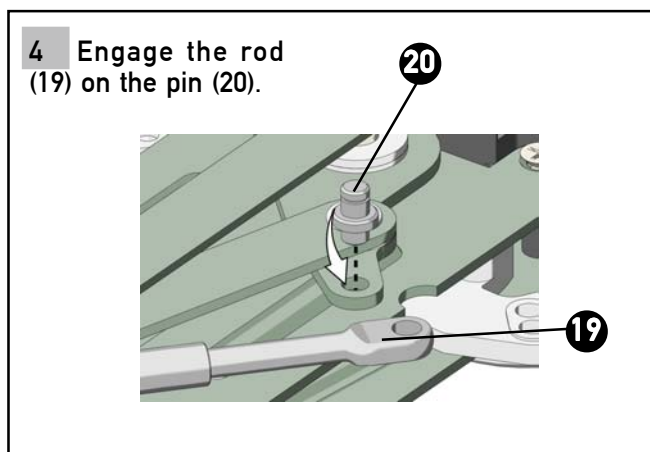
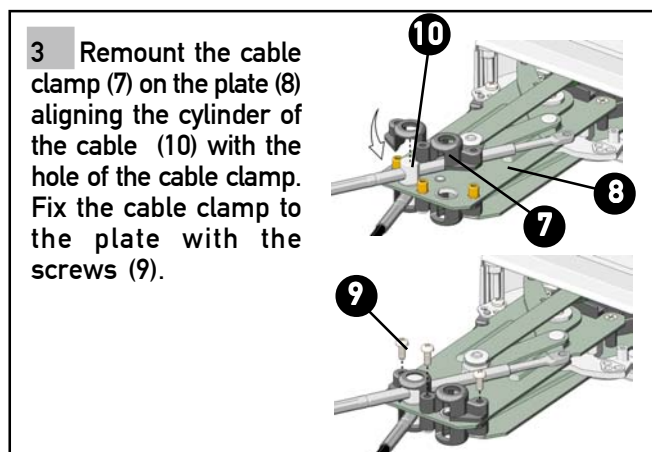
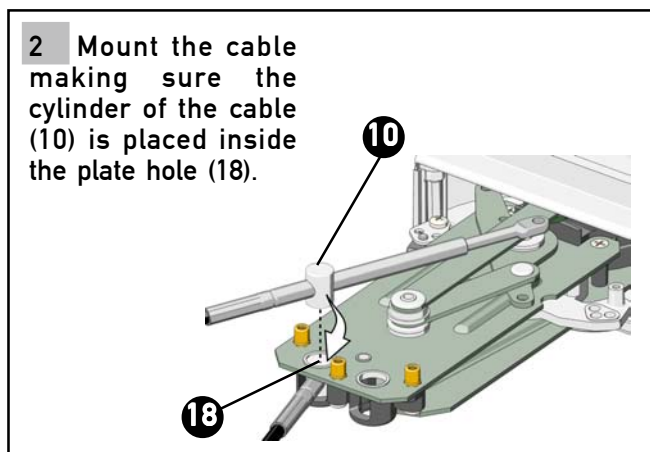
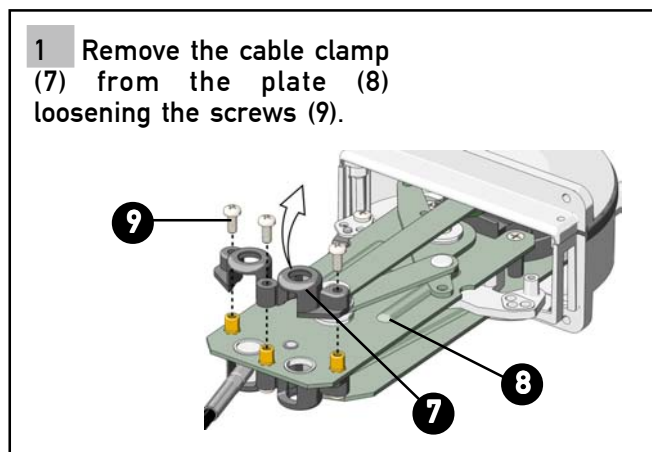


⚠ WARNING

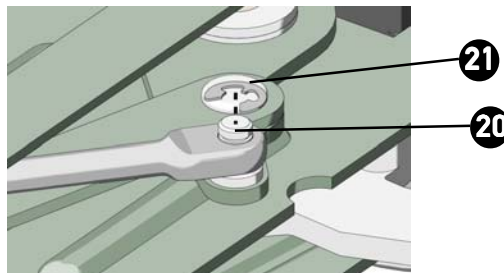
Check the right adjustment of the shift stroke and make sure the following condition is complied with:

During the shift enabling the lever movement must always be smooth and it must have a constant resistance coming up against no resistance when the lever is turned as a throttle. Otherwise check the stroke correspondence between the control and the shift on the engine.

3.5.2 Throttle cable connection



- 5 Fix the cable inserting the elastic ring (21) in the groove of the pin (20).

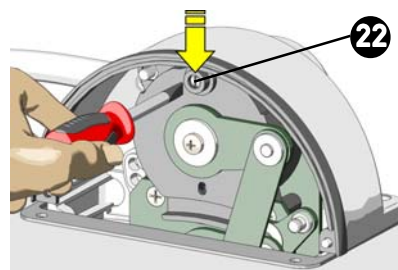


3.6 Friction adjustment

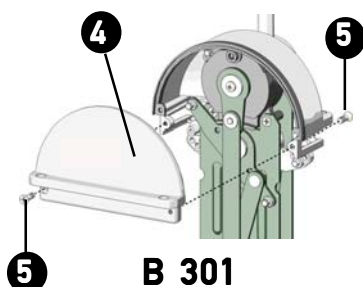
Both the control boxes B301 and B302 allow the adjustment of the clutch. Follow the instructions below:

- 1 Rotate the lever in the middle throttle position:

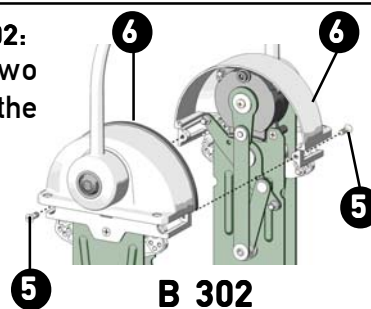
- 2 By means of the screwdriver screw the dowel 22 to obtain the hardening of the clutch, or unscrew it to obtain a smooth movement. To check the friction of the lever, move it clockwise and counterclockwise. WE RECOMMEND PREVENTING THE CLUTCH FROM ACTING WHEN A GEAR IS ENGAGED.



- 3 **CONTROL B301:**
Place the rear cover (4) fixing it with the screws (5).



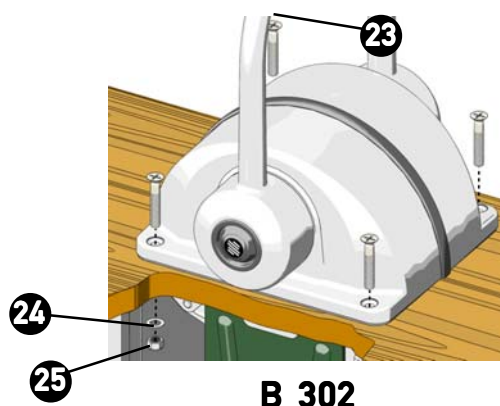
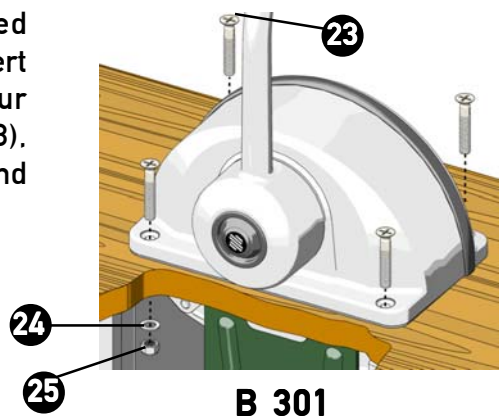
- CONTROL B302:**
Join the two boxes (6) with the screws (5).



3.7 Lever control box mounting



- 1 Put the control box in the selected position, then insert and screw the four screws M5x35 (23), the washers (24) and the nuts (25).



- 2 Place the sticker supplied on the chromium plated covering.



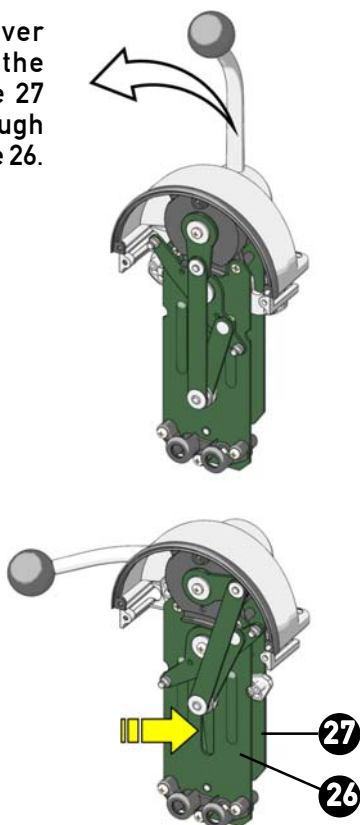
3.8 Installation of the neutral safety switch



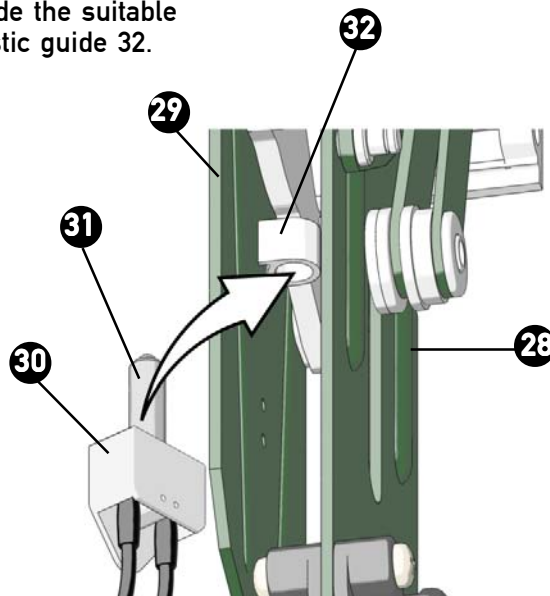
This optional device allows starting the engine only with the shift in neutral, avoiding all dangerous movements of the boat.

To assemble it do as follows:

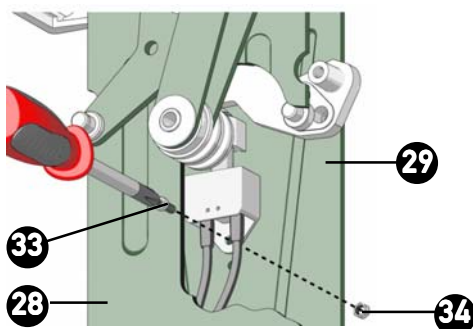
- 1 Put the lever forward until the holes on the plate 27 can be seen through the slot on the plate 26.



- 2 Position the device 30 on the plate 29 inserting the cylinder 31 inside the suitable plastic guide 32.

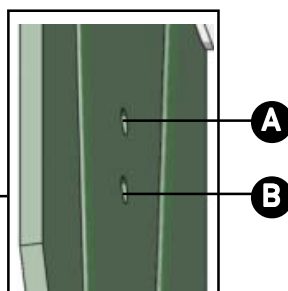
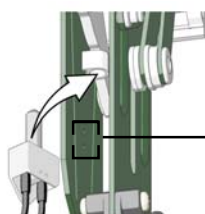


- 3 Through the slot located on the plate (28), insert the screw (33) in the switch hole through the hole of the plate (29). Insert the nut (34) from the outer side of the plate (29) and tighten the screw (33).



NOTICE

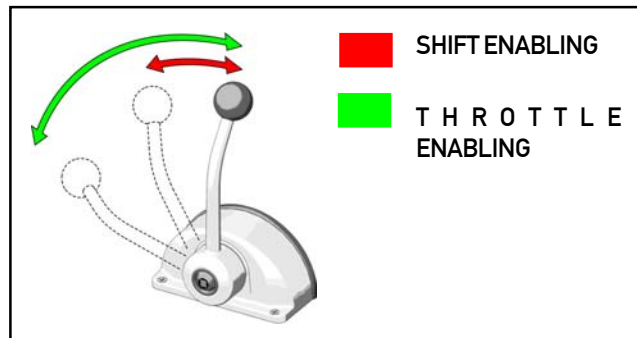
If you are installing the switch X12, the screw and the nut must be inserted inside the hole (A). For the switch X43, the reference hole is (B).



4.1 Lever use

The lever stroke is made up of two movements enabling the shift in the first step and the throttle in the second one.

The boat moves forward when the lever is put forward and it moves backward when the lever is put backward. To enable the throttle without engaging a gear press the button located on the lower part of the lever and at the same time put the lever forward.



⚠ DANGER

Before starting the engine, if the control is not provided with safety switch, make sure it is in neutral.

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 steering system components.

5.1 Safety warnings during installation and use

RESPECT STRICTLY the following safety rules:

ULTRAFLEX 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 **ULTRAFLEX** 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

- When the system is installed, clean thoroughly to prevent foreign bodies from entering it. Even the smallest object could damage the system permanently.
- Avoid 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 Clothing

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

⚠ DANGER

Release or separation of one of the fasteners can cause failure of control system resulting in property damage, injury or death.

- Periodically check the absence of corrosion on the metal parts of the cable ends and of abrasions on the sheath.
- Replace the damage parts that could compromise the steering system integrity.

6.2 Extraordinary maintenance



Technical Support

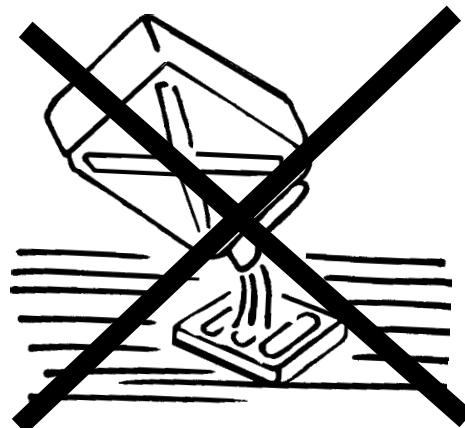
For any information or for assistance with unusual applications please contact our technical support personnel (See paragraph "Introduction").

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.



ENGLISH

[illegible]

