

Installation and maintenance manual

TWIN LEVER CONTROL



ENGLISH

B204R-ESC (-ESTC, ETC)



ULTRAFLEX





Dear Customer,

Thank you for choosing an **ULTRAFLEX** product.

ULTRAFLEX has been making steering and control systems for pleasure and working craft for many years. **ULTRAFLEX** has always been synonymous with reliability and safety.

All **ULTRAFLEX** products are designed and built to provide the best possible performance for the purpose for which they were designed.

To protect your safety and maintain top quality, **ULTRAFLEX** guarantees its products only if they are used with original parts (refer to "Application Spare Parts" annex).

ULTRAFLEX and **UFLEX**'s Quality Management Systems are CISQ-IQNet certified by RINA, the Italian Naval Registry, in accordance with standard UNI ES ISO 9001:2008. **ULTRAFLEX** Certificate no. 6669/02/S (formerly 420/96). **UFLEX** Certificate no. 8875/03/S.

The Quality System gets all company resources and processes involved, starting with design, in order to:

- provide customers with a guarantee of product quality;
- identify actions for maintaining and improving quality standards with time;
- continually improve the efficacy and efficiency of processes in order to respond to the demands of the market and improve customer satisfaction;
- ensure compliance with the requirements of directive 94/25 EC, standard ISO 10592 and ABYC (American Boat Yacht Council) standards.



"With more than 70 years of experience in boatbuilding, **ULTRAFLEX** is a world leader in the production of mechanical, hydraulic and electronic steering systems, control systems and steering wheels for motorboats for pleasure, fishing or working uses, of all sizes and with all types of engines.

The reliability of our products and our pre- and post-sales service, the quality of our company's organisation and use of human resources and our ongoing investment in research and development are key factors in explaining our products' growing success all over the world".

ULTRAFLEX S.p.A.

16015 Casella (Genova) Italia - Via Crose, 2

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USE OF THIS MANUAL AND SYMBOLS

THE INSTALLATION AND MAINTENANCE MANUAL is the document accompanying the product from sale to replacement and disposal, and should be considered an integral part of the product. Read the manual before undertaking ANY ACTIVITY involving the product, including movement and unloading from the vehicle on which it is delivered.

In order to protect the user's safety and guarantee correct functioning of the product, this manual uses the symbols described below.


DANGER


Immediate damage **CAUSING** serious injury or death.


IMPORTANT


Damage or unsafe practices which **COULD** lead to serious injury or death.


WARNING


Damage or unsafe practices which **COULD** lead to minor injury or damage to the product or to property.

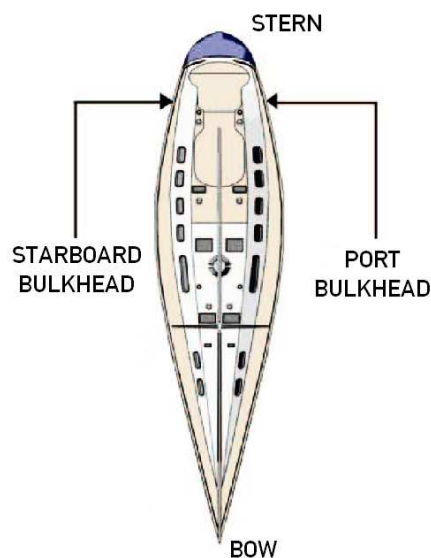
NOTE


Information considered important for adequate installation and maintenance which cannot cause damage.



Operations which should be performed by qualified or specialized personnel to avoid risks are identified by the symbol shown here. Provide the personnel who will be installing the product with appropriate training and make sure that they understand and implement the instructions provided.

SAILBOAT



NOTE

This installation and maintenance manual constitutes an integral part of the product and must be made easily accessible for personnel using the product and performing maintenance work on it.

ULTRAFLEX shall not be held liable for any inaccuracies due to printing errors contained in the manual. Without altering the basic features of the product described, **ULTRAFLEX** reserves the right to make any changes to descriptions, details and illustrations that it may consider appropriate for its improvement or for manufacturing or commercial reasons at any time, without being required to update this publication immediately.

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IMPORTANT

The product must be installed by experienced personnel to ensure correct functioning of the product and its components. In the event of breakage of components or malfunctioning, contact specialized personnel or our Technical Assistance Service.

ENGLISH

TECHNICAL ASSISTANCE SERVICE

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WARRANTY

ULTRAFLEX warrants that its products are built according to the standards of good workmanship and are free of defects in materials or workmanship.


This warranty is valid for two years starting on the date of manufacture, with the exception of cases in which products are installed and used on working vessels or on vessels for commercial use, in which case the guarantee is limited to 1 year from the date of manufacture.

This warranty is limited to free replacement or repair of the item, which must be returned carriage paid, provided we find it to be effectively defective in materials and/or workmanship.

The warranty does not cover any direct or indirect damages. The warranty specifically does not cover, and we shall not be held liable for (except for replacement or repair of defective items under the terms and conditions set forth above), malfunctioning of our products if their failure or poor functioning is attributable to incorrect installation or to negligent or improper use.

This warranty does not cover products installed on racing boats or used in a competitive context. The descriptions and illustrations in this manual are indicative only.

Please contact our Assistance Service for more detailed information.

The components of **ULTRAFLEX** steering and control systems are marked  as required by directive 94/25/EC and conform to ABYC standards (U.S.A.).

Note that on EC marked vessels it is obligatory to install steering and control systems with EC marked components. (See Art. 3 and Art. 5 of directive 94/25/EC.) Note that the **ULTRAFLEX** warranty shall be automatically forfeited if any **ULTRAFLEX** components are installed in a steering and control system along with products of other brands.



1 PRODUCT DESCRIPTION

1.1 Product description and recommendations for use

The twin lever control is assembled on the dashboard close to the vessel's helm. The throttle lever have an adjustable clutch and the shift lever an adjustable detent force.

The B204R twin lever control may use the following **ULTRAFLEX** cables:

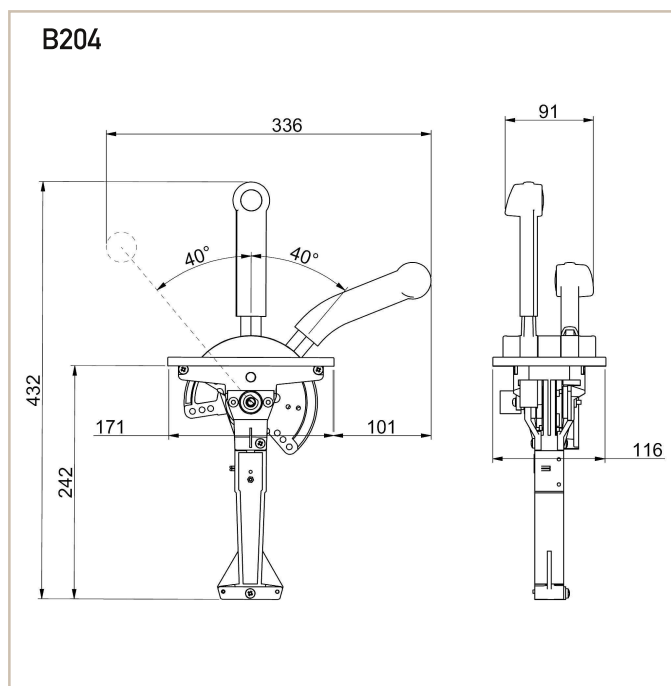
- C2 – C8 – MACHZero (no adaptation kit required)



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1.2 Dimensions

The figure below shows the dimensions of the B204 twin-lever control.



NOTE

Make sure that the lever can turn freely and its travel is not blocked by obstacles on the dashboard.



2 INSTALLATION

2.1 Tools required

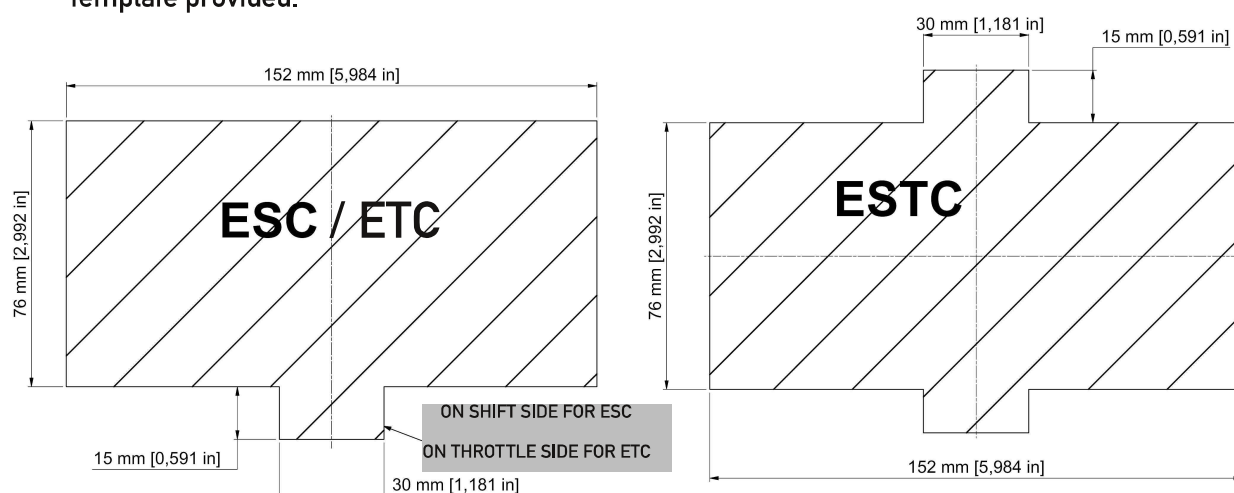


Phillips screwdriver (ø4)
and flat-tip screwdriver (ø6)



2.2 Installation of the control on the dashboard

- 1 Refer to the footprint dimensions given in point 1.2 to check that the box can effectively be installed in the desired position. Assemble the mechanism after connecting cables and wirings.
- 2 After determining the appropriate location, cut the hole required to assemble the control using the template provided.



- 3 Install all mechanical cables (if any) (see par. 2.4), and connect all sensors wires (see par.2.3 for pin out)
- 4 Take away the plastic cover and fix the control to the dashboard with 4 tapered head screws, Holes are Ø5.
- 5 Connect again the cover on the control, pushing on the sides until each snap in tooth clamps the control metal flange.

IMPORTANT

Red color identifies the throttle lever, black the shift lever.

WARNING

Dispose of packaging in accordance with the law.





2.3 Sensors Pin Out

In the standard version the shift sensor (B204R ESC or ESTC only) will have an output of 2.5V in Neutral position and 0.5V and 4.5 V in REV and FWD. For customised outputs refer to the customized data sheet.

In the standard version the throttle sensor (B204R ETC or ESTC only) will have an output of 0.9V- 4.4V. For customised outputs refer to the customized data sheet.



IMPORTANT

Both sensors need a stabilised 5 V DC power supply to work properly.

2.3.1 Shift sensor Pin Out

Shift sensor comes with 3 AWG20 wires (green, red and yellow). Refer to the following pin out for a proper connection.

Green = +5VDC input

Red = output V signal

Yellow = GND



WARNING

Don't short circuit the wires. This will definitely damage the sensor.

2.3.2 Throttle sensor Pin Out

Throttle sensor comes with 6 AWG20 wires (green, red and yellow for V1 signal and white, blue and black for V2). The V2 signal (redundancy signal) ,in the standard version, gives out a voltage value that is exactly the half of V1 signal. $V2 = V1 \times 0.5$. Refer to the following pin out for a proper connection.

Green = +5VDC input for V1

Red = output V1 signal

Yellow = GND for V1

White = +5VDC input for V2

Blue = output V2 signal

Black = GND for V2



WARNING

Don't short circuit the wires. This will definitely damage the sensor.



IMPORTANT

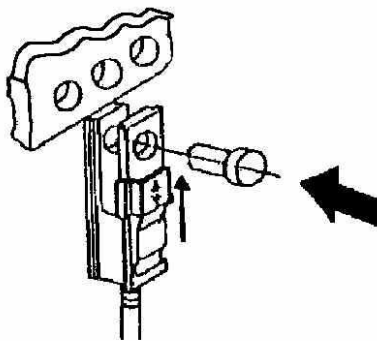
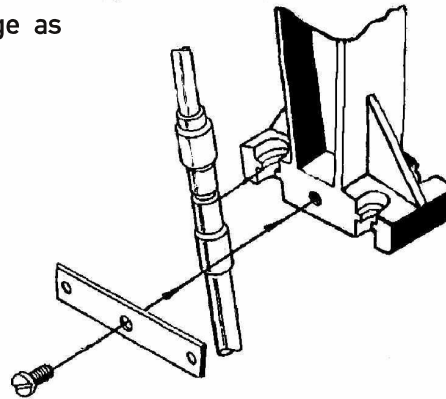
If you don't need the V2 signal and don't connect it, protect the wires with insulation tape and heatshrink tube.



2.4 Connection of the cables (throttle cable for ESC, shift cable for ETC)

Untighten the M5 screw and disconnect the fixing flange as shown in picture.

Connect the cable conduit on the proper side of the control body whether you need push or pull mode.
Mount the flange again and tighten the screw.



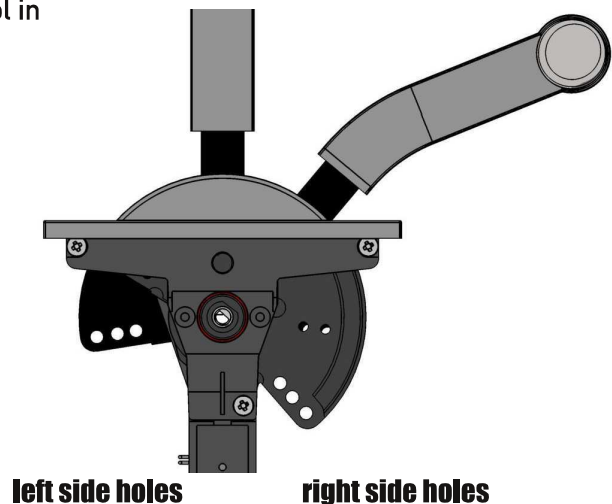
Fix the cable end fitting in one of the three holes on the bottom of the lever. If you need a longer stroke use the outer hole, if you need a shorter hole use the inner hole. The three holes will allow respectively 54mm / 67 mm / 79 mm

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2.4.1 Push and pull mode

Using the picture on the right as reference put the control in the same position and :

- if you need to pull the cable while rotating the throttle lever from zero to wide open throttle, connect it on the right side holes
- if you need to push the cable while rotating the throttle lever from zero to wide open throttle, connect it on the left side holes
- if you need to pull the cable while rotating the shift from neutral to Forward connect it on the right side holes
- if you need to pull the cable while rotating the shift from neutral to Reverse connect it on the left side holes



⚠ IMPORTANT

Make sure the cables are not bent too tightly (minimum radius: 200 mm – 8").
We recommend the use of **ULTRAFLEX** cables.



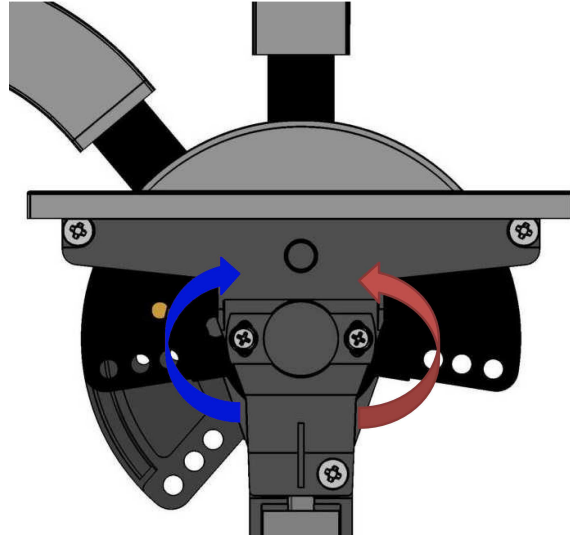
2.5 Sensors fine tuning

Sensors are preset at midstroke within the requested range. If an extra fine tuning is needed please refer to paragraph 2.5.1 and 2.5.2

2.5.1 Shift sensor tunig (for ESC and ESTC version only)

Slightly untighten both screws on the sides of the sensor and rotate it :

- COUNTER CLOCKWISE to incremet the output signal
- CLOCKWISE to decrement the output signal



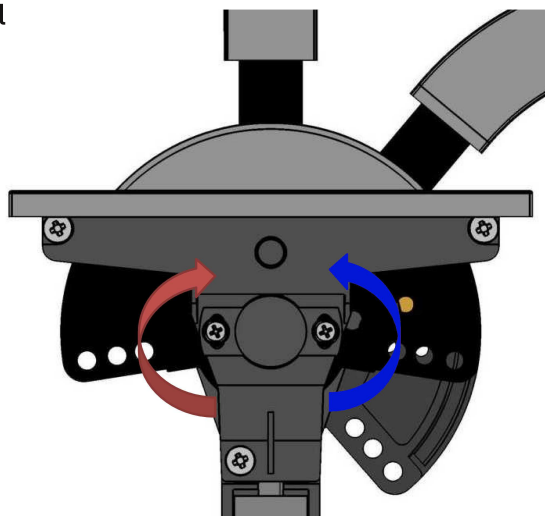
IMPORTANT

Once you reach the desired value hold the sensor tight while tightening the screws to prevent any further rotation .

2.5.2 Throttle sensor tunig (for ETC or ESTC only)

Slightly untighten both screws on the sides of the sensor and rotate it:

- CLOCWISE to incremet the output signal
- COUNTERCLOCKWISE to decrement the output signal



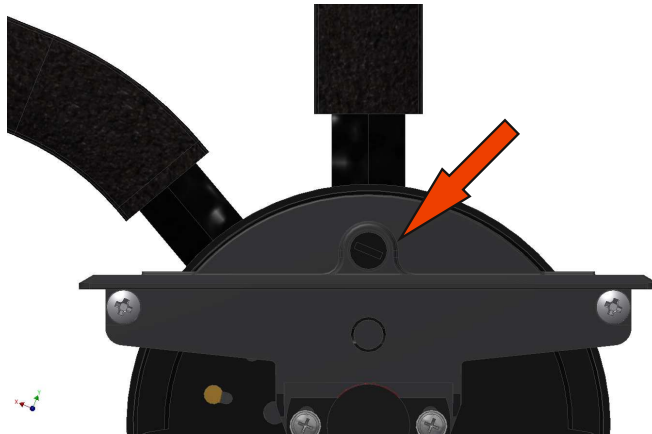
IMPORTANT

Once you reach the desired value hold the sensor tight while tightening the screws to prevent any further rotation .

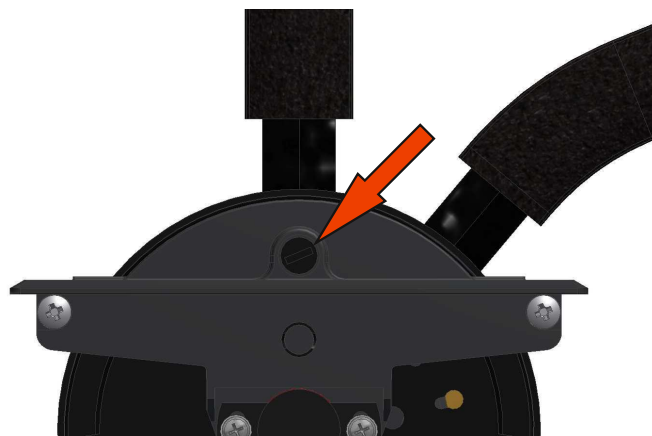


2.6 Detent and clutch adjusting

- 1 To change the detent load on the shift lever, screw or unscrew the threaded pin shown in picture until you find the desired force



- 2 To change the clutch load on the throttle lever, screw or unscrew the threaded pin shown in picture until you find the desired force



3 SAFETY WARNINGS

This section illustrates the safety regulations to be applied for proper use of the apparatus. Read this section very carefully and also read the manuals supplied with other components of the single lever control.

3.1 Safety during installation and use



OBLIGATORILY FOLLOW the precautions and safety criteria indicated below.

ULTRAFLEX shall not be held liable for the user's failure to observe these precautions and criteria and shall not be held liable for any negligence in use of the system.



DANGER

- NEVER PUT YOUR HANDS BETWEEN MOVING PARTS
- Do not deactivate safety devices or render them inoperative.
- Do not modify the system or add devices to it without written authorization or the intervention of an **ULTRAFLEX** technician describing the change made in the description of the work performed.
- Do not use the apparatus for any purpose other than its intended purpose as specified in the installation and maintenance manual.
- Do not allow untrained personnel to perform installation.



IMPORTANT

- During installation of the system, take particular care to keep everything clean to ensure that no foreign bodies can get into the system. Even a tiny object can cause permanent damage which may not be immediately obvious.
- Avoid cable curve radiuses of < 200mm (8").
- Do not let cables come into contact with sharp corners or edges.
- Do not let cables come into contact with heat sources.

3.2 Clothing



IMPORTANT

DO NOT wear necklaces, bracelets or any loose garments that could get caught in moving parts during installation, inspection or maintenance work.



4 MAINTENANCE

4.1 Ordinary maintenance



IMPORTANT

Failure to apply maintenance controls may result in loss of control when driving, which can result in damage to property and/or injury.

Maintenance requirements will vary depending on climate and frequency and type of use. Inspections must be conducted at least every two years by an experienced nautical mechanic.

Perform the following maintenance operations:

- Periodically wash components with fresh water and remove any salt deposits.
- Once a month, check all nuts holding the system in place and tighten if necessary.



DANGER

Loosening or separation of nuts holding the system in place can cause not only malfunctioning of the control but damage or injury.

- Periodically check that there is no corrosion on metal parts of the cable terminals or abrasion on the sheath.
- Replace damaged parts that may compromise the integrity of the control.

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4.2 Special maintenance



Technical assistance

For any information or assistance with particular applications, you are invited to contact our technical assistance service .



5 DISMANTLING

5.1 Dismantling



If you intend not to use the single lever control system any more, dispose of it in an environmentally sound way.

Sheaths, hoses and components made of plastic or other non-metallic materials must be dismantled and disposed of separately.

