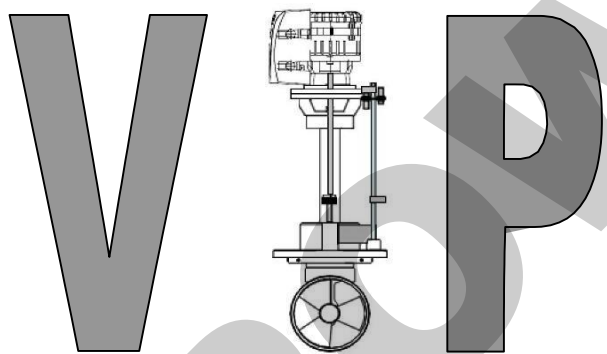




**VERTICAL RETRACTABLE THRUSTER**



VIP 250 ECO PRO 48V

**INSTALLATION    OPERATION    MAINTENANCE**

Serial Number:.....

Date of Installation:.....

**THIS MANUAL MUST BE KEPT ON BOARD AT ALL TIMES**

BEFORE STARTING THE INSTALLATION, IT IS RECOMMENDED TO CAREFULLY READ THE FOLLOWING GUIDE.

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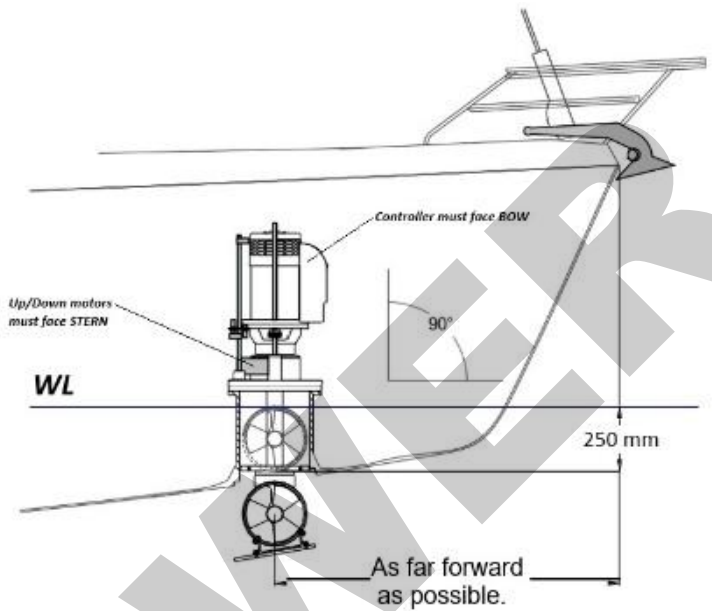
Your thruster is a high quality technical product and should be treated as such. The employment of a qualified marine technician, with experience in bow thruster installation, is strongly advised. Where possible, the boat manufacturer's architects, design departments and/or shipyards should be consulted, prior to the installation of the unit. For any boat requiring official classification, bodies of approval should also be consulted at the earliest opportunity. In any case, all other bodies, governmental or otherwise, should be contacted to ensure conformity with legal regulations relating to the boat in question.

Your thruster should be delivered with the following parts:

THRUSTER assembly complete with THRUSTER motor, controller, controller cover, motor SUPPORT, motor COUPLING, UP / down motors, drive leg and propellers	Can Joystick panel
15m can bus cable	QR CODE

## 1. POSITIONING

- Consider the following, when determining the position of the thruster unit in order to ensure the most efficient operation:
- Find the point the farthest forward (or aft), while keeping in mind the space available, given the vessel's fixtures, space and shape and while respecting the minimum immersion depth of one full turbine diameter (250 mm). **The thruster must be positioned onboard with the Controller facing the BOW and the Up/Down motors facing the STERN.**
- Always check and make sure that there is enough room to allow for the complete removal of the VIP unit and enough room for the connection of the electric power cables. These cables must be able to flex freely without kinking when the VIP goes up and down.
- To install a VIP in the stern, make sure that the turbine flow is clear of all obstacles, or select the best possible compromise. The thruster must be positioned in the stern as shown in the above picture as well.



### 3. MECHANICAL INSTALLATION

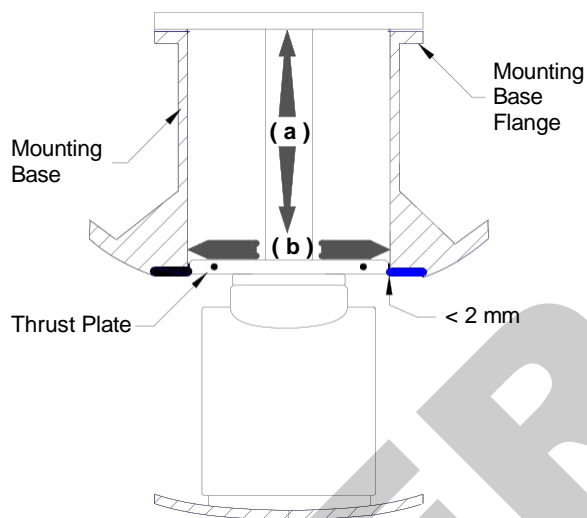
#### 3.1 MOUNTING BASE INSTALLATION

(Please refer to “Build Drawing” at back of this document):

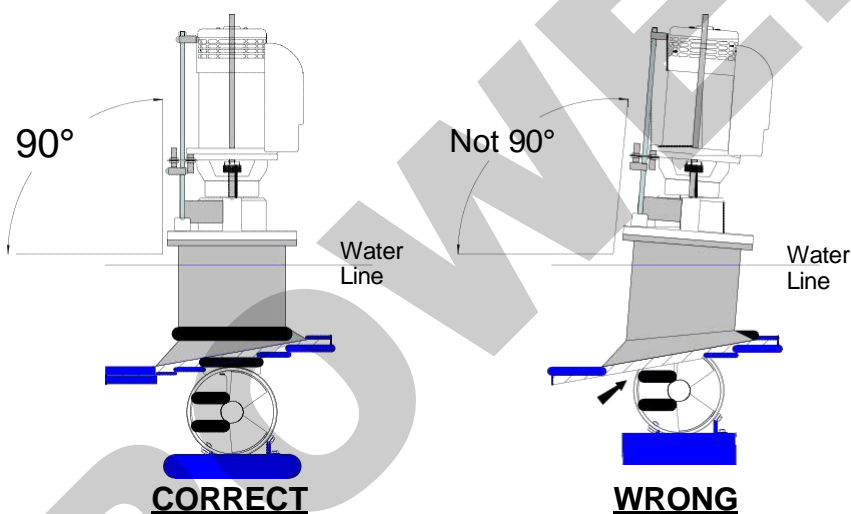
- MAXPOWER can supply, either a reinforced G.R.P. mounting vase or a 5086 aluminum alloy-mounting flange. These bases save considerable shipyard time while assuring solid and precise installation.
  - a) For GRP hulls the mounting base should be laminated into the hull. The base supplied is only to help give the initial form; its strength will come from additional lamination (inside and out) added when laminating the hull.
  - b) For alloy hulls the mounting flange should be welded onto the base, which has been fabricated into the hull.
- The method and materials used for making the mounting base must be adapted to the particular hull material (laminated wood, GRP, sandwich, aluminum, or steel). Naval Architects, Classification Societies or specialized firms should be consulted.
- The thruster(s) mechanical stresses are spread over the hull by the mounting base. Its installation reinforces the hull, if well calculated, but it might be necessary to attach it by gussets to frames and stringers.
- When setting the mounting base, do not forget to take into account the overall dimensions of the VIP.

- The VIP pushes its thrust plate sideways against the inside of the mounting base when running. This means that one must totally lower the unit and check the following:

- (a) That the VIP's thrust plate is free to move up and down.
- (b) And also that there is no more than 2mm horizontal movement between the thrust plate and the mounting base, especially when fully down.



- The mounting base flange should be parallel to the waterline.
- In other words the thruster unit must be installed vertical with its turbine totally clear of the hull in the down position.

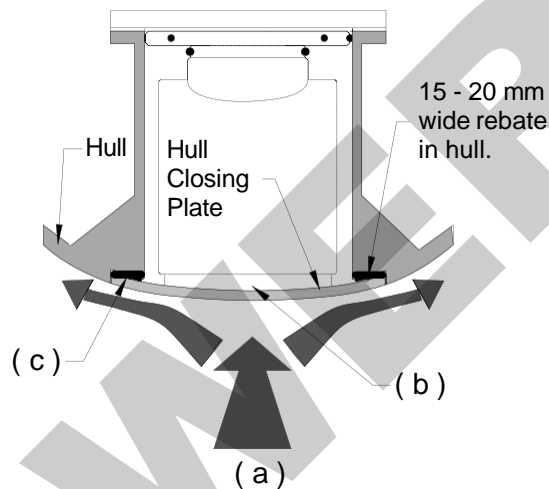


- Before fixing the thruster unit onto the mounting base flange it is important to ensure that the top surface of the mounting base flange is perfectly flat in order to accept the « O » ring seal of the VIP base flange in order to ensure perfect water tightness.
- The bolts fixing the VIP onto the mounting flange must be inserted from top to bottom. Provide sufficient access underneath the flange to allow for tightening the nuts. If the access is not possible, provide a special mounting flange with metric studs or tapped holes.

### 3.2 CONSTRUCTION OF HULL OPENING & CLOSING PLATE:

- The opening made for the thruster in the hull is closed by a plate, which can be made from the cutout hull section, or specially fabricated.

- a) The closing plate should fit into a 15 – 20 mm wide rebate in the hull when in the raised position. This is to transfer all the seas slamming forces to the hull and not to the electric rams!
- b) The closing plate must be securely fixed to the supplied adjustable aluminum-mounting fitting.
- c) A gasket must be installed in the hulls rebate. This gasket can be made either from neoprene or molded in «SIKAFLEX» (or similar product). Precautions should be taken to ensure that the gasket does not stick to the closing plate. The plate must rest evenly on this gasket when the thruster is closed.



- To prevent marine growth inside the turbine enclosure, it is essential that once the unit is raised, no light be allowed to enter. On an excellent installation the enclosure may even be watertight. If this is achieved anode life will be greatly increased (No circulating water, no oxygen and no corrosion!).
- The use of antifouling or other paints on the thruster unit is not necessary if the closing plate closes properly onto its seal.

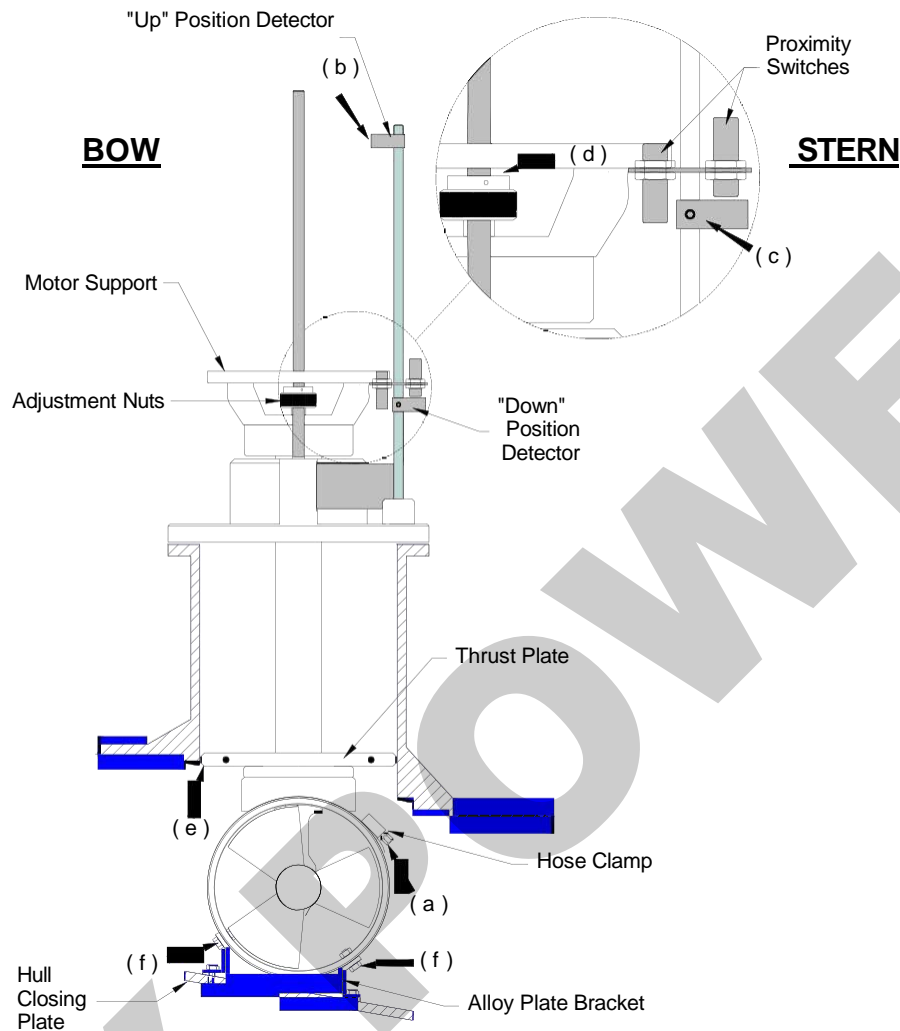
⚠ However, if painted, never use copper based paints and do not paint the vertical column of the unit.

### 3.3 FINAL FITTING OF THE THRUSTER UNIT TO THE MOUNTING BASE:

- Final installation of the thruster unit onto the mounting base must be made after thoroughly cleaning and then liberally coating both joint surfaces (thruster base flange and mounting base flange) with good quality marine grease. This is so that the «O» ring seal is compressed flat, evenly, smoothly and squarely when the bolts are tightened.
- Under no circumstances should the thruster be glued or bedded down with a marine type mastic/glue such as Sikaflex or other similar product(s).
- The flange bolts should be tightened sequentially and in successive passes until the two surfaces touch.

### 3.4 FINAL ADJUSTMENT OF THE CLOSING PLATE:

- Once the thruster is permanently bolted onto the mounting base, reinstall the closing plate to do the final adjustments.



- Lower and raise the turbine to determine correct position of the hull closing plate so that it fits evenly and squarely in the rebate in the hull, then tighten the hose clamps (delivered with unit). The closing plate must rest evenly on its gasket, with pressure so that no upwards movement of the plate is possible even in heavy sea conditions when the hull is subjected to slamming forces.
- Once the hull closing plate adjustment has been completed, adjust the "up" position detector and tighten its grub screw with a 2.5 mm Allen key. This should be done with the unit fully retracted. It is very important to first configure the "Up" position detector before activating the thruster onboard.**
- Note that the down position detector is pre-adjusted (before leaving the factory) and should not be touched.**
- If re-adjustment is necessary, care should be taken to re-adjust the detector so that adjustment nuts do not touch the motor support when fully down and that the detector grub screw (2.5mm Allen key screw) is tightened down after re-adjustment.
- The thrust plate should not protrude from the mounting base, since it absorbs the horizontal stresses when thrusting or maneuvering. If protruding, adjust the down position detector as described above.

- f) When finished with the final adjustments, fix the alloy plate bracket by bolting through the GRP turbine in addition to the cable clamps.

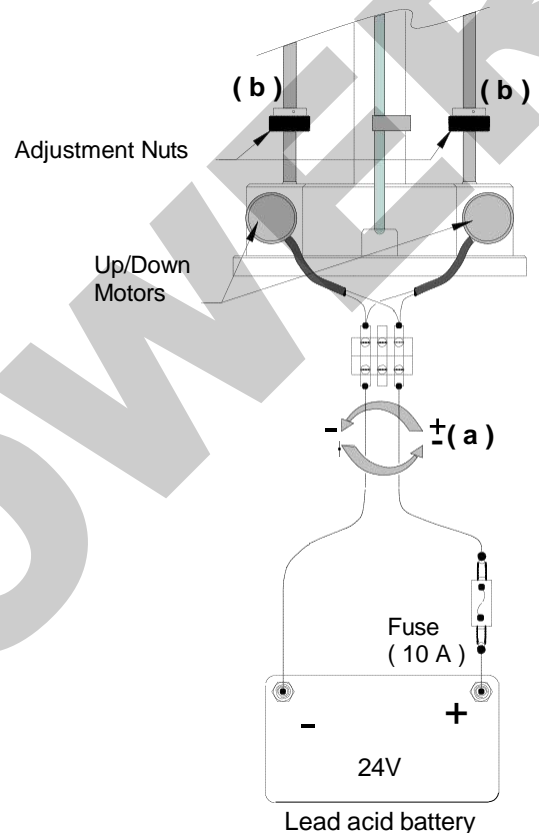
**⚠ IMPORTANT:** Please keep in mind that the power supply to up/down motors is not automatically interrupted if the proximity switches do not detect the position detectors. Care must therefore be taken to remove ones finger from up or down button as soon as the unit blocks in fully up or fully down position when closing plate adjustments are done and if position detectors are not adjusted yet.

• **Installation Advise:** In order to make sure that VIP is raising and lowering smoothly and when closing plate adjustments are made, one can do the following:

- a) Connect 24V directly to the two up/down motors and simply reverse the polarity to change direction (raise/lower) to a lead acid battery for testing.

**⚠** It is important to install a 10A fuse in the positive cable and to keep in mind that wires need to be disconnected as soon as the up or down position is reached or as soon as the unit blocks, to avoid damaging the up/down motors.

- b) If the unit blocks before reaching the up/down position or if the unit vibrates excessively when going up/down one needs to adjust the two adjustment nuts to ensure the unit is completely vertical to its base.



#### 4. ELECTRICAL INSTALLATION

##### 4.1 GENERAL:

- It is important that a qualified marine electrician does the electrical installation, since an incorrect electrical installation will result in the rapid deterioration and/or failure of the unit.
- All electrical components (thruster motor, relay, electronic control box, etc) should be installed in dry and ventilated areas.
- Under no circumstances should any inflammable products be stored next to the electrical components of the thruster.
- When choosing cable sizes and the battery bank size and type, special care should be given to voltage drops, since excessive voltage drops will cause premature failure of motors and relay contacts.
- Great care should be taken to correctly tighten all electrical connections.
- The independent electrical connections between relay box and thruster should be done before activating the unit. If the relay box is connected after the unit's activation, the joystick will notify an error. In this case, the unit should be reset.

#### 4.2 POWER CABLE SELECTION:

- According to the ISO 10133 standards: "The length and cross sectional area of conductors in each circuit shall be such that the calculated voltage drop shall not exceed 5% of the nominal battery voltage at any appliance if the circuit is switched on at full load".
- The cable lengths as given in the table below are the total length of the positive cable, measured from the thruster battery bank to the thruster, plus the total length of the negative cable measured from the thruster back to the battery bank.

Cable lengths	VIP 250 ECO PRO
$L \leq 7 \text{ m (3,5 x 2)}$	50 mm <sup>2</sup> - 1 AWG
$7 < L \leq 14 \text{ m (7 x 2)}$	70 mm <sup>2</sup> - 2/0 AWG
$15 < L \leq 21 \text{ m (10,5 x 2)}$	95 mm <sup>2</sup> - 3/0 AWG
$22 < L \leq 28 \text{ m (14 x 2)}$	120 mm <sup>2</sup> - 4/0 AWG

- When choosing or calculating the cable size needed for your thruster installation, do not forget to take into account the thermal rating of the conductor insulation which are directly related to the ampacity (current carrying capacity) of the cable. Always try to use cables with the highest thermal insulation rating available or at least 85° - 90°C.
- For large diameter cables it may be easier to use two smaller cables instead (in order to allow for a greater flexibility of movement). For example: 2 x 50 mm<sup>2</sup> instead of 95 mm<sup>2</sup>. Cables at thruster unit should be free to move, without kinking when VIP goes up and down.

#### 4.3 POWER FUSE:

- Sizing of fuses for over current protection are a function of the cable sizes in the circuit, not the amperage drawn by the appliance (thruster motor) in the circuit. It is thus not the electrical thruster motor that is protected by the fuse, but the power cables supplying the thruster motor.
- The Max Power fuse has been application selected for its time and current characteristics, consequently a much lower rated fuse than traditionally rated may be fitted. Max Power recommends the following fuses and fuse holders as supplied by Max Power:

Thruster model	Minimum Operating Voltage (V)	Maximum Operating Voltage (V)	Average Amperage (A)	Max Power ceramic fuse (A)
VIP ECO PRO	42	57.6	225	125

#### 4.4 BATTERY REQUIREMENTS:

When choosing the type of batteries needed for YOUR THRUSTER's battery bank, keep in mind that it is the CCA (Cold Cranking Amps) capacity that is the most important and not the Ah (AMP-HOUR) capacity. This is BECAUSE THRUSTERS draw high CURRENTS. Thrusters are high amperage consumers with instantaneous demands,


therefore they need high CCA outputs provided typically by lead acid “starting” type batteries. In case of lithium-ion batteries, the voltage supplied to the thruster must respect the range 42 - 57.6 V for 48V models (consult a marine electrician for more information regarding the battery discharge needed and the BMS). If the dedicated batteries are charged by the alternator, the reference of the charge must be taken after the diode-splitting block. The total battery capacity must be sufficient for the size of the bow thruster and the operation cycle needed:

Thruster model	Recommended Battery CCA
VIP 250 ECO PRO	DIN 395, SAE / CCA 700

- If the dedicated batteries are charged by the alternator, the reference of the charge must be taken after the diode-splitting block (if in doubt, consult a marine electrician).
- If the batteries or cables are inferior to those recommended, the VIP will not reach its potential thrust. The greater the batteries and cables size, the better the thrust.
- Do not ground the VIP.
- The overvoltage/under voltage set up now is in the range 70-19.2V. In case that the limits are overpassed, the controller will indicate an error.

#### 4.5 BATTERY ISOLATOR:

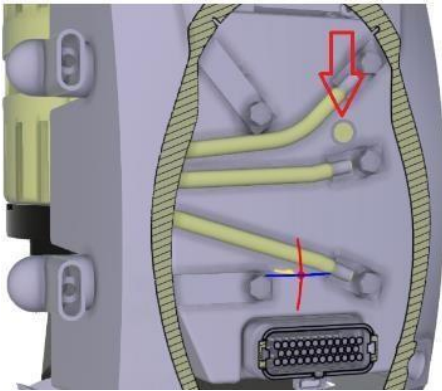
- A manual battery isolator, of the correct size, should be installed in the positive supply cable, as close as possible to the thruster battery bank and should be easily accessible and clearly marked.
- Important: When the motor/controller of the thruster is supplied with power for the first time the small relay on the controller will arm automatically and it will remain armed, in order to run the tests. As soon as you finish the tests turn off the thruster from the CAN-Joystick.

 *An automatic battery isolator is already available on the controller of the thruster under the plastic cover:*



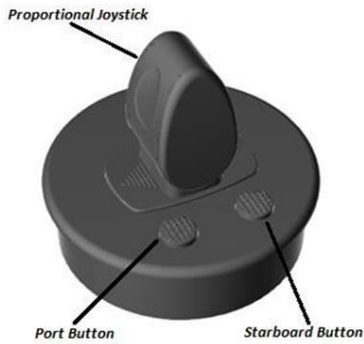
#### 4.6 CONTROL CIRCUIT:

- A double pole isolator/breaker clearly marked “Thruster” should be installed on the yacht's main equipment breaker board in order to isolate the control circuit and/or power circuit, when thruster is not in use.
- The Up/Down motors must be supplied by 24V voltage for the tests.
- The installer must protect the positive supply cable of the VI electronic control box by means of a fuse as indicated in the drawing below. The size of the supply wires (red & black) depends on the length of the cable run and the voltage drop in these cables should not exceed 5% of the nominal battery voltage.



Please refer to the drawings “8.3 Wiring Diagram”, in the back of this manual for more detail on the complete wiring installation.

## 4.7 CONTROL PANEL AND THRUSTER FUNCTIONS:



### 4.7.1 Switching System ON/OFF and Lowering/Raising functions:

- a) **Turn ON:** To switch "ON" the thruster push down the two buttons simultaneously for two seconds and then release them, after that the two buttons will flush 3 times and the thruster will deploy automatically. Until the DOWN position is reached the LED lights of the two buttons will flush with 6 second interval:



1. *Note: If the two buttons are pressed, while the thruster is deploying, then the thruster will retract automatically.*
2. *Note: The joystick must not be deflected until the thruster has deployed.*

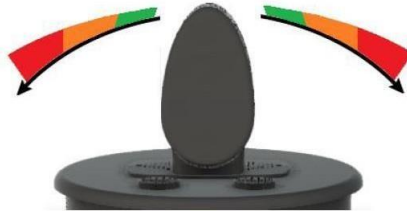
- b) **Turn OFF:** With the bow thruster already deployed, press the two buttons simultaneously for two seconds to switch it "OFF", after that the two buttons will flush 3 times and the thruster will retract automatically, until the UP position is reached both LED lights will flush with 1 second interval. As soon as the UP position is reached, the LED lights of the two buttons will flash 4 times and the thruster will deactivate automatically:



3. *Note: If the thruster must retract due to an emergency then the port button can be pressed 4 times, the LED on the buttons will flash two times and the unit will retract automatically (it will not cause any problem if the button is pressed more than 4x times).*

#### 4.7.2 THRUSTING "Left" or "Right" & Hold function:

- a) Use joystick to thrust fully proportionally to either Port or Starboard side, depending on the direction in which the joystick is deflected the LED light of the corresponding button will remain ON:



4. Note: It is only possible to thrust to Port or Starboard side when the thruster is detected to be fully deployed.

The thruster controller provides a time delay between left and right thrust in order to avoid rapid direction changes, BUT no delay when THRUSTING to same side.

- b) **Hold function:** With the thruster(s) already activated and deployed, the hold function is activated by deflecting the joystick of the corresponding thruster to the desired angle/power and direction and simultaneously pressing the button opposite to the side the joystick is pushed for 3 seconds. The joystick will indicate that the hold function is activated by flashing the button in a 1:4 ratio in the selected direction:



The device stores the deflection angle of the joystick at the moment of the function activation and continuously outputs the memorized value regardless of the joystick position. Deactivating the hold function is done by pressing any of the buttons or pushing the joystick in any direction.

#### 4.7.3 Overheat Alarm & Shut-Down:

- a) If for any reason the thruster/controller starts to overheat then at first the controller will limit the power to 80% and will continue to operate normally.
- b) If the temperature continues to rise until the critical threshold is reached, then the controller will terminate the operation of the thruster and the two buttons of the CAN joystick will start flashing red, the mobile app will also indicate the overheat of the thruster. The unit will not be able to switch "ON" again until the motor has cooled down.

#### 4.7.4 General:


1. In case of an error the connected app will provide the corresponding alert to the user, errors are also indicated from the corresponding blinking of both buttons on the CAN joystick, from the LED light on the controller (you need to remove the plastic cover to access it).
2. When electronic control box is powered and the UP position is not detected, the thruster will retract automatically. The thruster will retract automatically in case there is a power failure onboard with the thruster deployed.
3. If the thruster detects an over/under voltage, then the controller will indicate an error. To clear the error, it is necessary to press only the Port button of the joystick for 7 seconds.
4. If the two buttons are pressed, while the thrusters are deploying, then the thrusters will retract automatically. The joystick must not be deflected until the thrusters have fully deployed.
5. If the thruster must retract due to an emergency then the port button can be pressed 4 times, the LED on the buttons will flash two times and the unit will retract automatically (it will not cause any problem if the button is pressed more than 4x times).
6. It is only possible to thrust to Port or Starboard side when the thruster is detected to be fully deployed. The LED light of the button that corresponds to the direction of thrust will remain On for as long as the joystick is deflected in this direction.
7. If the thruster is deployed and left unused for a period of 15 minutes then it will retract automatically. While the thruster(s) is/are deployed the LED of the two buttons will blink every 5 seconds. If the deploy or retract operation is blocked for any reason continuously for 25 seconds, then the thruster will remain in the same position and the joystick will indicate ERROR by fast blinking the LED lights until the system is returned to its operational state. Severe mechanical failure. Maintenance required.
8. While the system is in error state (fast blinking and buzzing) it cannot be operated. If an attempt for activation is made there will be no response by the thruster system. The error state has a 2 minutes time out. An individual reset of each joystick will be needed after fixing the issue in order to return the system to its operational state. Pressing the left button for 7 seconds resets the controller. In case the supply drops to 19.2V the thruster will also need reset.
9. The controller of the thruster can be restarted by keeping pressed the left joystick button for more than 7 seconds. **Each joystick is restarted individually.**
10. The thruster controller provides a time delay of 4 seconds between left and right joystick for safety reasons.

#### 5. TESTS and CHECKS

##### 5.1 BEFORE LAUNCHING:

- a) Raise and lower thruster.
- b) Check that the hull closing plate shuts firmly.
- c) Confirm that all bolts have been sufficiently tightened, especially the base bolts.
- d) Correct the adjustment of the position detectors, if needed.

- If the up/down motors function the wrong way round, reverse the two wires connected to the up/down motors. Check wiring below plastic cover (contact Max Power).

 Never test the thruster to the left or right with the boat out of the water. This is due to the risk of injuries and the risk of damage to the thruster motor and relay due to high RPM. If thruster operates inverted check that the thruster has been oriented as advised in page 3 (thrust invert is also available through the Android app "CANthrust" available in Google store).

##### 5.2 AFTER LAUNCHING:

- a) Check the water tightness of the thruster installation.
- b) Turn on power to both circuits (power and control).
- c) Thrust tests must be carried out under NORMAL conditions:
  - with the batteries fully charged and in good condition.
  - with the engine running and the alternator charging the batteries.

## 6. OPERATION LIMITATIONS

- Never leave the VIP in the down position when not in USE. Any CALCIUM, or shellfish deposits that ACCUMULATE after a long period in the down position will deteriorate the column's water seal. More importantly there is risk of the retract mechanism getting entangled, which will lead to eventual damage.
- The VIP **MUST** be retracted during normal navigation. The VIP should only be deployed when the vessel is moving with speeds less than 5 knots. Examples - berthing maneuvers, assisting a tack in light air.
- Before the thruster is operated the user must be aware of its surroundings (objects, other vessels, etc.). In case the thruster malfunctions during a maneuver, the user must have a backup plan to avoid damage to persons or any other objects. When maneuvering keep in mind that the vessel's momentum continues after the joystick is released, therefore remember to release the joystick prior to reaching your desired position. The thruster must not be used, when close to objects, persons or animals in the water, as it will draw objects into the tunnel and the rotating propellers. Always turn the main power switch off before performing any **service to the thruster**.
- **The thruster will be able to operate continuously at full power for 7 minutes given that the battery bank is of sufficient capacity.** If for any reason the thruster starts to overheat then at first the controller will limit the power to 80% and will continue to operate normally. If the temperature continues to rise until the critical threshold is reached, then the controller will terminate the operation of the thruster and the two buttons of the CAN joystick will start flashing red. The thruster will then not be able to be switched on again until the motor has cooled down.

## 7. BASIC MAINTENANCE:

### 7.1 CONTROL PANEL:

- a) When the thruster remains offline for a significant amount of time we recommend to protect the CAN-Joystick from the natural elements (if exposed). Install the CAN- Joystick(s) in easily accessible positions, without obstructing the steering controls. We recommend that the area below the dashboard should be kept dry to avoid the risk of oxidization of the cable connector contacts.
- b) It is possible to connect up to three 10 meter CAN cables via a 3-way “T” connector. The moment the second CAN-Joystick is activated; it will cause the automatic deactivation of the first one therefore take into consideration that you cannot use more than one CAN-Joystick panel at the same time (the app will need a few seconds to synchronize as well).

### 7.2 THRUSTER MOTOR :

- a) The motor of the thruster does not have brushes, which means that there are no brushes that need to be replaced or cleaned.
- b) The electric motor/controller **MUST** be kept dry and well ventilated

### 7.3 BATTERIES:

- 4.7.4.1 Check REGULARLY the condition of the batteries used for the thruster and its charging system.
- 4.7.4.2 Weak batteries (low voltage) are the most frequent cause of rapid deterioration of the thruster’s electric peripherals components.

### 7.4 BRONZE DRIVE LEG

- a) Check the oil (SAE 75W90, quantity 140mL) in the leg every year, and change if necessary (oil drain plug is under the anode - copper joint should be changed).
- b) The anode should be frequently checked and changed when necessary (At least every year).
- c) When the boat is ashore, check for evidence of fishing line, etc... in the propellers.
- d) For prevention of calcium build up on the drive shafts, which would damage the oil seals, before fitting the propeller(s) cover drive shaft and oil seals, with silicon grease. This should be done on an annual basis after cleaning of outside of leg.
- e) Do not use aggressive solvents as they might damage drive leg seals.
- f) Always keep the propellers and tunnel clean.
- g) Do not paint the anode.
- h) Please contact your closest Max Power distributor for local service points.

## 7.5 GENERAL:

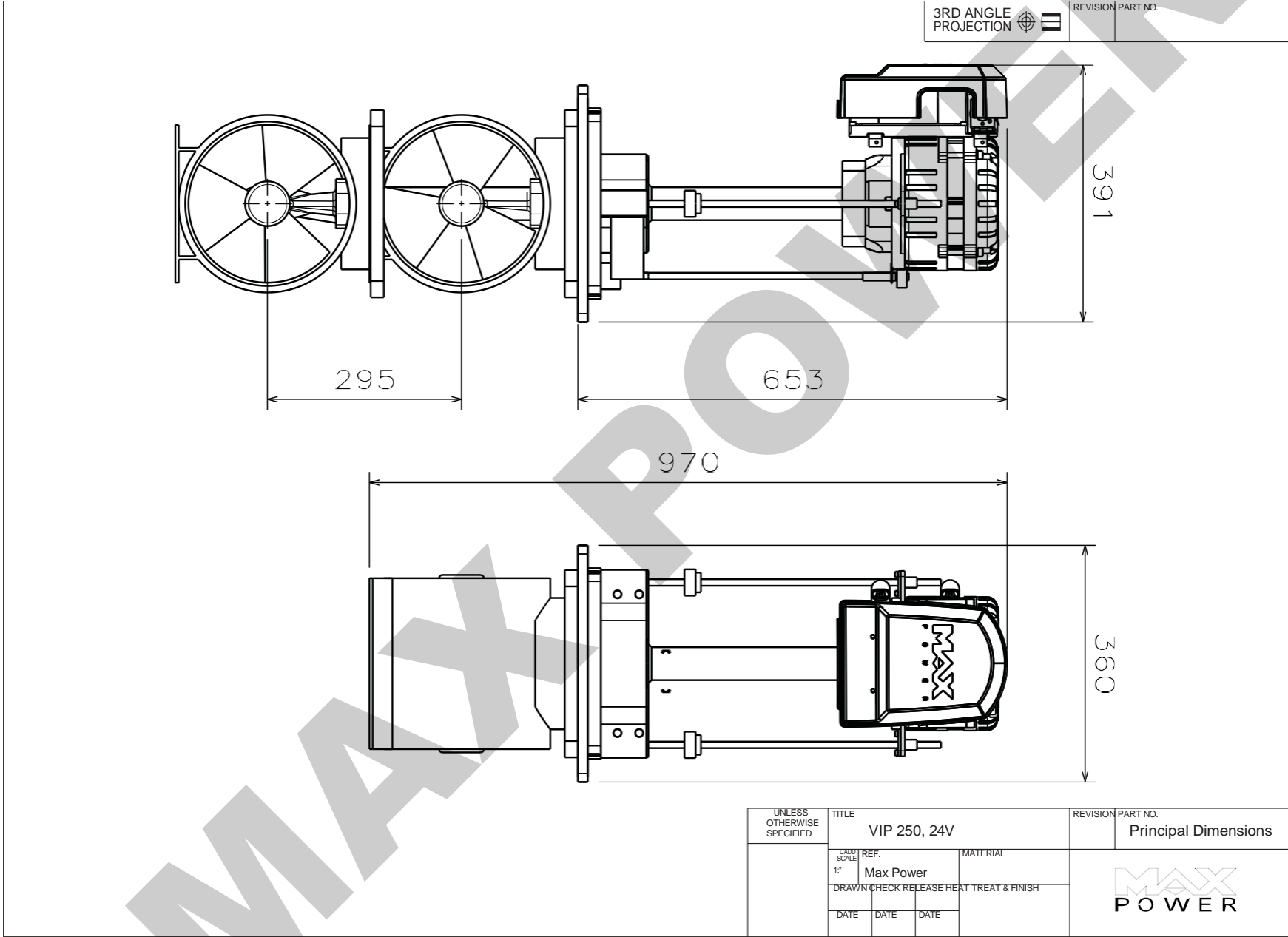
- a) Regularly check that the power cable connections are tightened correctly and that they are free to move when VIP is going up/down, and that they are in good condition.
- b) If the vessel is to remain out of the water for some time, for example dry storage for winter, the underwater mechanism must be thoroughly rinsed with fresh water, then the thruster column must be liberally greased.
- c) Inspect and repair the hull closing plate gasket for deterioration or missing pieces. Check and tighten, if necessary, the hull fixing plate bracket screws.
- d) Every two years change column seal, part number 52 on parts list.

For more detailed maintenance procedures, please contact your closest Max Power distributor (See “Distributor Contact List”) for further assistance.

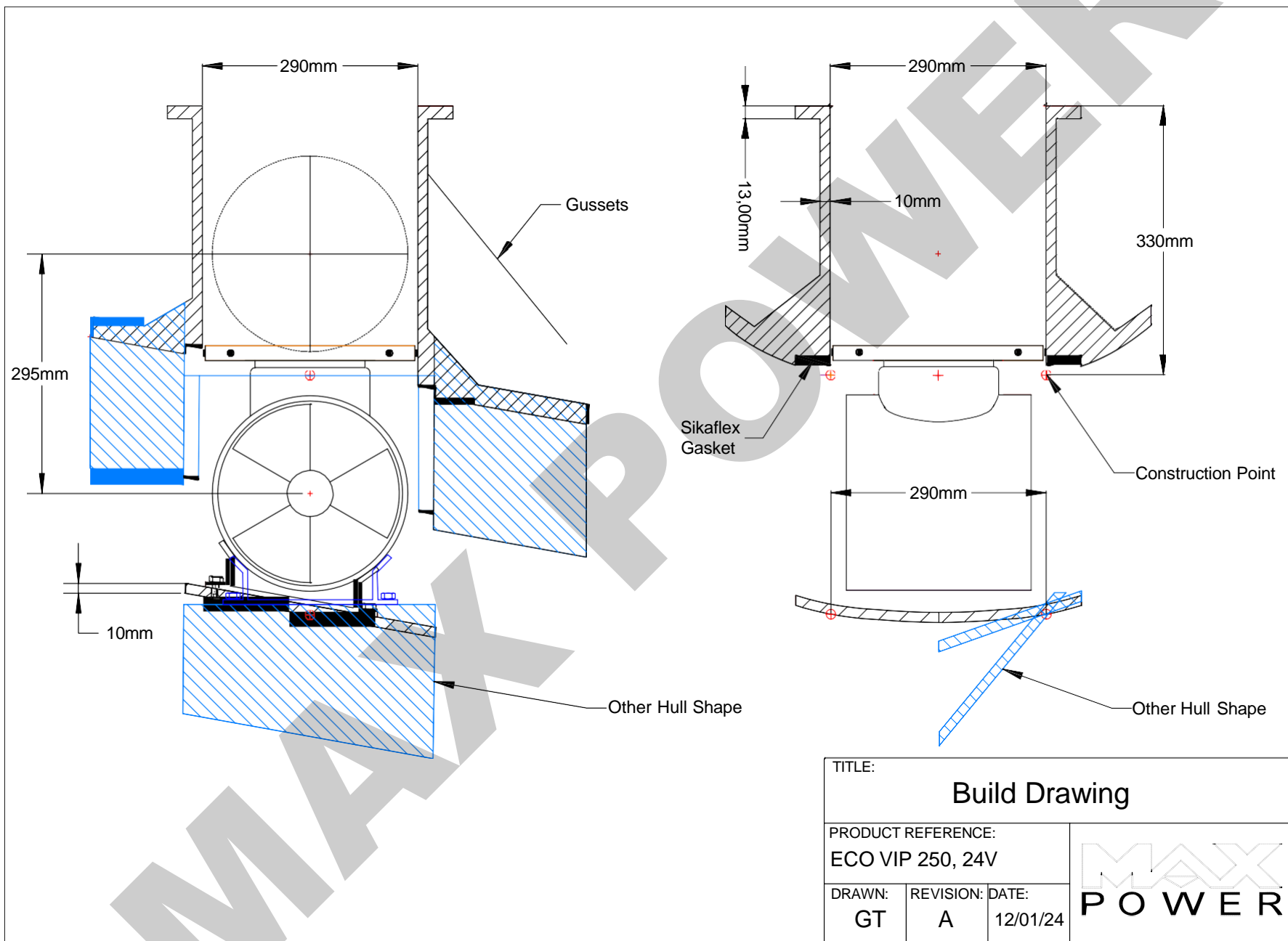
A copy of this manual must remain on board for consultation.

8. DRAWINGS & DIAGRAMS:

8.1 PRINCIPAL DIMENSIONS:

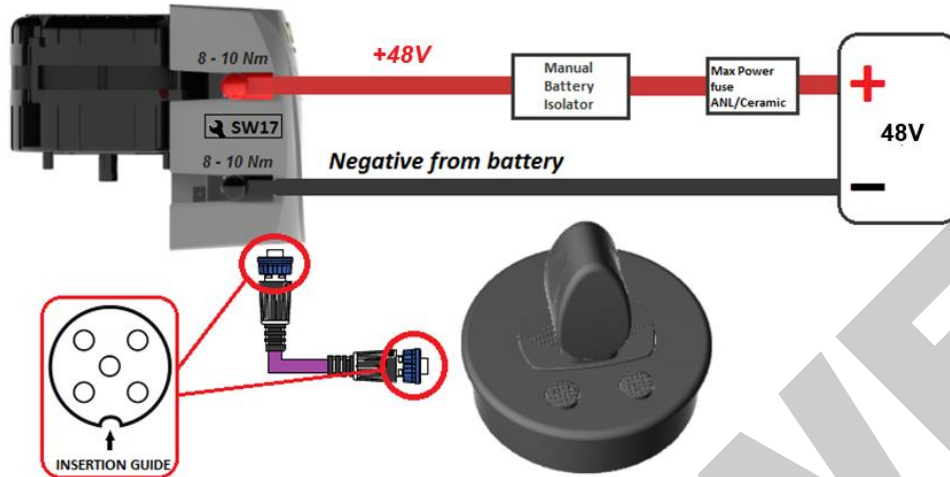


## 8.2 BUILD DRAWING:

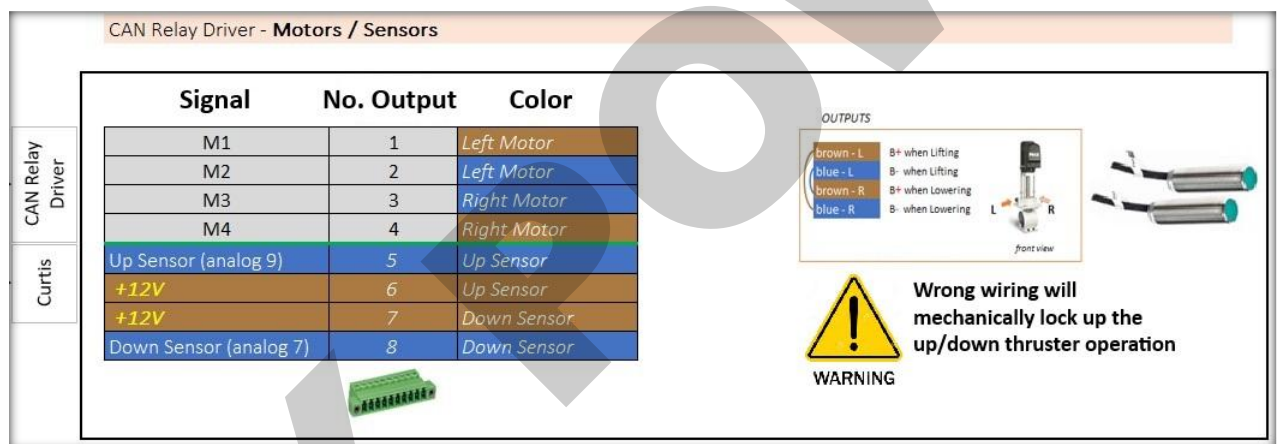


### 8.3 WIRING DIAGRAM:

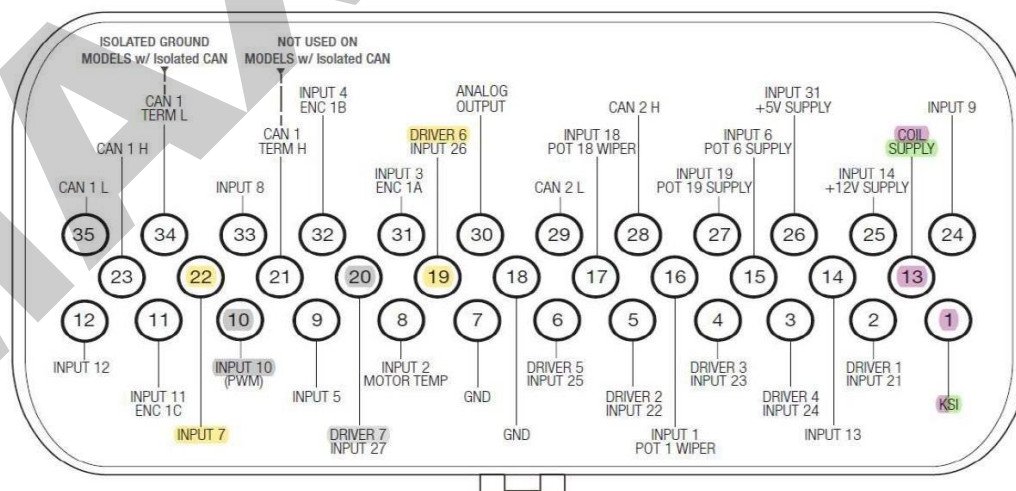
**VIP 250 ECO (24V):** For the protection of the cables a fuse must be installed near the positive terminal of the battery (see pages 6 and 7). To connect the CAN bus cables the insertion guides must match first in order to tighten the safety:



**UP/DOWN MOTORS:**  
**PROXIMITY SENSORS:**



### CURTIS CONTROLLER PINOUT:

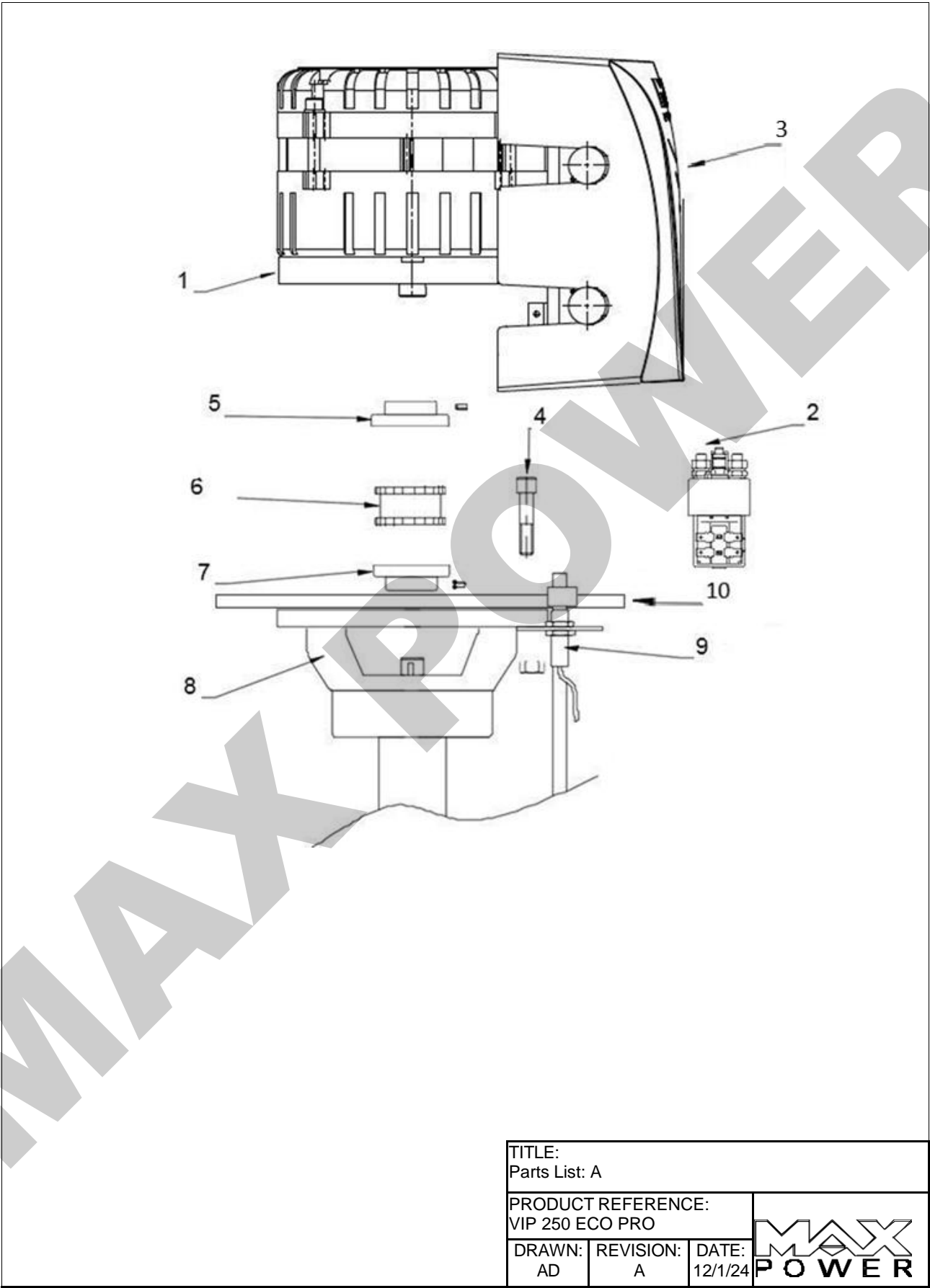


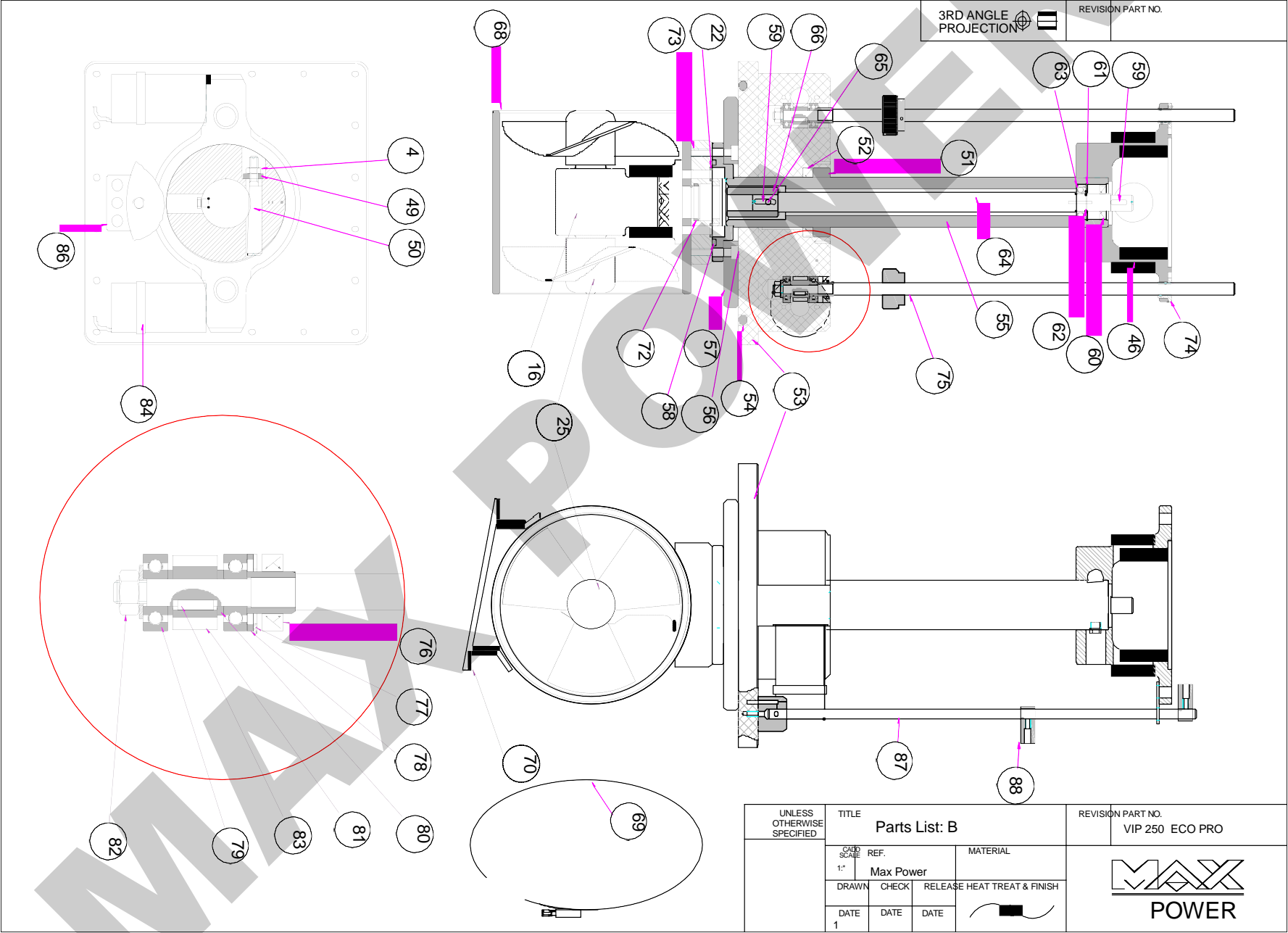
## 9. PARTS LISTS & DIAGRAMS :

### 9.1 PARTS LIST & DIAGRAM: A

N°	DESCRIPTION:	Qty.	Code
1	Brushless motor, controller and joystick	1	600137
2	Automatic isolator (included in #1)	1	N/A
3	Motor cover (included in #1)	1	06157
4	Motor Mounting studs	4	N/A
5	Coupling Motor Side	1	630487
6	Rubber Coupling	2	633744
7	Coupling Drive Leg Side	1	633745
8	Mounting Flange	1	313714
9	Proximity Switch	2	312787
10	Anodized Aluminum Mounting flange	1	06205

9.2 PARTS DIAGRAM: B





9.3 PARTS LIST: B

#	Description	Qty	Old Code
16	Bronze Leg	1	633674
22	Leg Bolts	2	634213
25	Propeller	2	35042
27	Propeller Pin	2	312059
48	Nylon Nut 8mm	1	312039
49	Machine Washer	1	-
50	Coter Pin	1	-
51	Water Gland Retaining Ring	1	310136
52	Water Gland	1	310263
53	Sliding Shaft Plate	1	06238
54	Shaft Plate O - Ring	1	310251
55	Sliding Shaft	1	-
56	Sliding Shaft Bolt	2	-
57	Torque Transmission Plate	1	-
58	Sliding Shaft O - Ring	1	-
59	Shaft Key	1	312018
60	Drive Shaft Oil Seal	1	310232
61	Circlip	1	312012
62	Circlip	1	312008
63	Shaft Bearing	1	310338
64	Drive Shaft	1	-
65	Grub Screw	2	-
68	Propeller Housing	1	-
69	Tunnel Clamp	2	310141+310147
70	Closing Trap Support Plate	1	-
71	BS Seal	2	-
72	O - Ring	1	-
73	Adapter	1	636538
74	Drive Nut	2	312047
75	Drive Screw	2	635666
76	Seal	2	310230
77	Circlip	2	312011
78	End Float Spacer	2	310133
79	Screw Bearing	4	310346
80	Washer	4	310356
81	Wheel	2	310359
82	Nut 8mm	2	-
83	Drive Screw Key	2	-
84	Electric Motor 24V	2	312864
85	Motor Screw 4 mm	4	635600
86	Position Switch Holder	1	-
87	Position Detector Rod	1	311358
88	Position Detector	2	310162

## 9. WARRANTY DEFINITION



THRUST IT  
THE MAX

### Max Power

5, Via Philips Str, 20900, Monza (MI), Italy

Tel: +39 (0) 39 2001973 - 936, Fax: +39 (0) 39 2004299

### Introduction

The purpose of this document is to set out the terms of warranty cover offered in relation to products purchased by the End User from Max Power or its approved network of resellers.

### 1. Definitions

- **Authorized Repair Number:** The number given by Max Power on reporting a fault with your thruster
- **Dealer:** An authorized Max Power sales center
- **End User:** The boat supplied with supplied equipment and the owner thereof
- **Installer:** The authorized center responsible for the installation of your thruster
- **Manufacturer:** supplier of the equipment under warranty
- **Pleasure Craft:** Vessels used for owner's personal use that have no commercial use (i.e. Charter boats or work boats)
- **Resellers:** Max Power approved distributors and dealers
- **Serial Number:** Number in upper right hand corner of Warranty document
- **Supplier:** The manufacturer (Max Power)
- **Warranty:** The terms and conditions that are covered by the manufacturer

### 2. Period of Coverage

The equipment manufactured by the Supplier is guaranteed to be free from defective workmanship, components and materials under normal usage conditions for a period of three (3) years from the date of purchase by the End User. This warranty is transferable to subsequent owners of this equipment during the period of coverage.

### 3. Warranty Registration

Register your purchase now at [www.max-power.com](http://www.max-power.com). (NB. proof of purchase must be kept throughout the warranty period)

### 4. Warranty Terms

If the material is used for anything other than for pleasure craft, the guarantee is limited to a six-month period.

**Year 1:** All factory testing, diagnosis, repairs and replacements are performed at no charge to the End User; All parts and up to two hours of labour are covered for repairs and replacements conducted in the field.

**Year 2 & 3:** All factory testing, diagnosis, repairs and replacements are performed at no charge to the End User.

This excludes any damage or faults occurring from normal wear and tear on the following items: engine, oil seals, relay contacts (If warranty is registered within the 3 month period following installation).

### 5. Warranty Exclusions

- Damage due to modifications or installation contrary to published specifications
- Cost of hauling the boat
- Damage due to repairs performed by an unauthorized service center
- Damage due to lack of normal maintenance services
- Damage due to water
- Parts replaced due to normal wear and tear
- Repairs performed without knowledge of manufacturer (please contact dealer to receive Repair Authorization Number)
- Tampering of equipment by the End User
- Cost of travel to and from the job site
- Cost of economic loss, including injury to any person, damage to property, loss of income or profit, communication, lodging, inconvenience
- Consequential damage due to failure, including those arising from collision with other vessels or objects

### 6. Procedural Guidelines

PLEASE VIEW THE TROUBLE SHOOTING LIST ON THE MANUAL OF YOUR PRODUCT TO ASCERTAIN OR SOLVE ORIGIN OF PROBLEM PRIOR TO CONTACTING THE DEALER/INSTALLER

1. Contact your dealer/installer to report the problem.  
If you do not know who this is, contact the nearest Max Power distributor  
If you are in foreign waters, please contact the nearest Max Power distributor
2. Ensure you have your serial number and model number to hand (top right hand corner of warranty)
3. Dealer/Installer will come to site to decipher the cause of the fault
4. If the cause of fault is due to a manufacturing problem the dealer will contact Max Power to receive Repair Authorization Number.
5. If the problem is due to an installation error please contact your installer.

IF POSSIBLE: PLEASE TAKE PHOTOGRAPHS OF THE THRUSTER TO SHOW PROBLEM

### 7. Service Centers

Please go online [www.max-power.com](http://www.max-power.com) to find the authorized service station of your area.

The warranty as outlined above is only applicable to Max Power manufactured thrusters and optional equipment as used in marine pleasure industry. The supplier holds the exclusive right to test the product and determine whether it is defective