



**VIP 150 DUO**

12 / 24v

VERTICAL RETRACTABLE THRUSTERS

↩ **INSTALLATION**

↩ **OPERATION**

↩ **MAINTENANCE**

**Serial N° : .....**

**Start up date : .....**

**↩ IT IS VERY IMPORTANT TO READ AND THEN KEEP THIS MANUAL ON BOARD**



# CONTENTS

**Note : All the operations described in this manual are inter-connected, it is important to read and understand all chapters before installation begins.**

**1 – POSITIONING**

**2 - MOUNTING BASE INSTALLATION AND PLANS**

**3 - MECHANICAL INSTALLATION**

**4 - ELECTRICAL INSTALLATION AND DIAGRAM**

**5 - TESTS AND CHECKS**

**6 – OPERATION**

**7 - MAINTENANCE**

↙ **For any information during installation,  
do not hesitate to contact MAX POWER**

**To obtain quick and efficient results, always quote the number on the electric motor and the unit serial number stamped on the plastic mounting base plate.**

**Motor No. :**

**Serial No. :**



## GENERALITIES

The **VIP** is delivered after assembly and testing at the factory.

### OPTIONS

- extra control panels
- fuse and holder
- remote control battery cut-off switch
- maritime shipping case

### SPARE PARTS

- propellers
- joystick bellows
- power fuses
- any other part upon request



## **1 - POSITIONING (common to both versions)**

### **Correct positioning is essential for correct operation**

#### **A) VIP**

The difference between the centre of gravity of the submerged surfaces and the centre of gravity of the surfaces exposed to side wind forces results in a rotational torque whose axis is approximately at G1. One of the bow thruster's primary functions is to neutralise this torque see drawing

Therefore the distance between centre line and the thrusters must be as LONG as possible.

↪ The turbine will develop its maximum thrust when its axis is 300 mm (12") below the water-line when fully extended. In other words the turbine should be at least one full diameter below the water-line.

↪ **The mounting-flange should be parallel with the waterline.**

The following considerations must be taken into account when determining the position of the **VIP**:

- the space available given the vessel's fixtures, space and shape,
- the structural compatibility of the mounting base,
- the access needed for installation, and removal of unit,

*Note : To install a **VIP** at the stern, make sure that the turbine flow is clear of all obstacles, or select the best possible compromise.*



## **B) ASSOCIATED EQUIPMENT**

- A remote controlled or manual battery cut off switch next to the batteries
- The power fuse(s) next to the **VIP** .
- The control panel(s) should be installed as desired at helm stations in a protected and waterproof manner.

## **2 - CONSTRUCTION OF THE MOUNTING BASE**

MAX POWER supplies, a steel reinforced G.R.P. mounting base or a 5086 aluminium alloy mounting flange. These bases save considerable shipyard time while assuring solid and precise installation.

The method and materials used making the mounting base must be adapted to the particular hull material (laminated wood, GRP, sandwich, aluminium, or steel). Naval Architects, Classification Societies or specialised firms should be consulted.

The thruster's mechanical stresses are spread over the hull by the mounting base. Its installation reinforces the hull ,but it must be well calculated, it may be necessary to attach it by gussets to frames and stringers .

When sitting the base, do not forget to take into account the overall dimensions of the **VIP**. Refer to the chapter "MECHANICAL INSTALLATION".

### **The mounting flange should be parallel to the waterline (see drawing)**

In other words the **VIP** must be vertical with the turbine totally clear of the hull in the down position.

**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 while laminating in to the hull.

**ALLOY HULLS:** The mounting flange should be welded onto the base which has been fabricated into the hull.

The bolts fixing the **VIP** base plate onto the mounting base flange should be inserted from top to bottom.

The opening in the hull is closed by a plate which may be made from the cut-out hull section, or specially fabricated.

In the raised position the closing plate should bear with reasonable pressure against a neoprene or moulded SIKAFLEX gasket, fixed to a 15 to 20 mm wide rebate In the hulls opening .In order to avoid marine growth the plate must close so that no light can enter the turbines enclosure

### **3 - MECHANICAL INSTALLATION**

#### **IMPORTANT**

- A/ Watertightness of the base plate is assured by the "O" ring supplied. Do not glue with any type marine mastic/sealant. Max Power recommends that the "O" ring be greased only.**
- B/ The VIP must be installed perfectly vertical with the turbine totally clear of the hull in the down position.**

The closing plate can be attached to the **VIP** turbine plate by bolting, or welding (to the alloy clamping plate ). The turbine plate can be adjusted by rotating as desired. Do not forget to re-tighten the clamps after an adjustment. When final position is determined you may drill and bolt through the GRP turbine to mark the setting there are holes pre drilled in the alloy clamping plate for this purpose .

Production GRP boat builders may like to fabricate the closing plate / turbine clamp in one piece to save build time .

#### **CLOSING ADJUSTMENTS**

This operation can be done by one person on the exterior of the boat, if he connects an extension cord ( 2 x 2 mm<sup>2</sup> ) to the terminals of the electric up down motors (the terminals must be connected in parallel, and to a 12 V or 24 V battery. By reversing the polarity you can operate the ram up and down. A 10 or 5 amp fuse protection is recommended.

The closing plate should be permanently adjusted so that it closes squarely and firmly with the turbine at its maximum height and the rams at maximum tension without any play.

Once the closing plate adjustment has been completed, adjust the up and down position switch actuator tabs with a 2.5 mm Allen key. The tabs can slide up and down on a stainless steel rod fitted to the base plate.

### **4 - ELECTRICAL INSTALLATION**

*Note : the electrical installation should be made by a qualified marine electrician.*

#### **POWER CIRCUIT :**

**Power consumption :** will be about 600 A for the 12 V motor and about 300 A for the 24 V motor.

**Minimum Voltage:** should be 11v for the 12v and 22v for 24v at the motors terminal , thruster running , boat in water , motor running, batteries being charged.

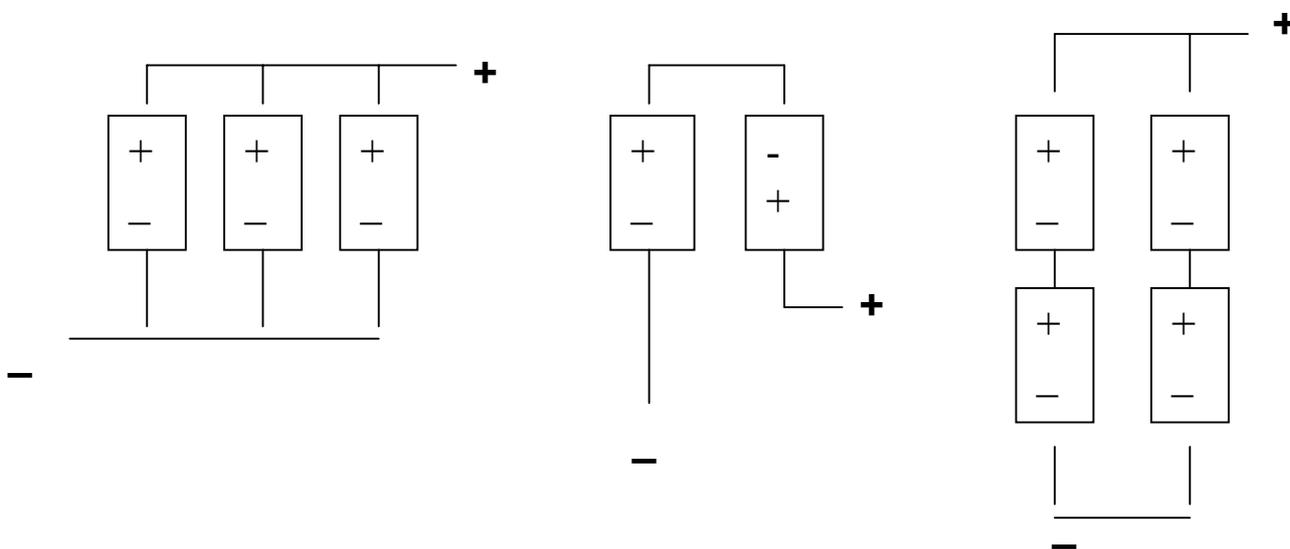
## Cable sections

Cable lengths To and from	VIP 150 DUO 12v	VIP 150 DUO 24v
5m ( 2x2.5m )	70mm <sup>2</sup>	50mm <sup>2</sup>
10m ( 2x5m )	100mm <sup>2</sup>	70mm <sup>2</sup>
15M (2x7.5m)	150mm <sup>2</sup> *	95mm <sup>2</sup>
20m (2x10m)	200mm <sup>2</sup> *	120mm <sup>2</sup>

\*For the large diameter cables, it may be easier to use two smaller cables instead. Example: 50 mm<sup>2</sup> + 50 mm<sup>2</sup> instead of 95 mm<sup>2</sup>.

**Batteries** : should be of high quality with a minimum cold starting capacity of 600 A for 12v and 300 A for 24 V. Also they must be in good condition to minimise voltage drop

For OPTIMA 850 CCA	VIP 150 DUO 12v	VIP 150 DUO 24v
<b>Number of batteries</b>	<b>2 or 3</b>	<b>2 or 4</b>
<b>Type of assembly</b>	<b>P</b>	<b>S or SP</b>



P = PARALLEL 12 v

S=SERIE 24 v

SP= SERIE PARALLEL

The cables should start directly from the battery terminals and be as short as possible. The last metre of the cable should be made up of an addition of smaller size cables(50 or 70 mm<sup>2</sup>) to allow for a greater flexibility of movement.

A battery cut-off switch and a fuse should be installed at the battery end of the cable

**Fuse(s)** : 500 A for 12 V, 315 A for 24 V,



**CHARGE LEVELS**

The table presents the level of charge remaining in the batteries relative to the voltage measured with the batteries at rest.

Batteries must always be kept fully charged discharged batteries can cause damage to relays

<b>% OF CHARGE</b>	<b>VOLTAGE</b>
<b>0%</b>	<b>11.92v</b>
<b>10%</b>	<b>12.00v</b>
<b>20%</b>	<b>12.08v</b>
<b>30%</b>	<b>12.16v</b>
<b>40%</b>	<b>12.24v</b>
<b>50%</b>	<b>12.32v</b>
<b>60%</b>	<b>12.40v</b>
<b>70%</b>	<b>12.48v</b>
<b>80%</b>	<b>12.56v</b>
<b>90%</b>	<b>12.64v</b>
<b>100%</b>	<b>12.72v</b>

**IMPORTANT**

**If the batteries or cables are inferior to that recommended, then the VIP thruster will not develop full thrust. The larger the batteries and cables size, the better the thrust.**

**Do not ground the vip**

**CONTROL CIRCUIT**

The power supply for the control circuit must be the same as that used for the power circuit but protected by an independent fuse or breaker (15 A - 12 V, or 10 A - 24 V) conveniently placed (main electrical panel for example) for easy operation. The wires, pos red and neg blue, should be 5 mm<sup>2</sup> section minimum.

An electric battery isolator may be installed on the power supply line this can be activated by the main electrical panel breaker .

**CONTROL PANELS are pre-wired with coloured wired :**

<b>No.</b>	<b>colour</b>	<b>size</b>	<b>connect to</b>
2	black	2 x 1 mm <sup>2</sup>	A & B (right & left) on motor
2	yellow	2 x 5 mm <sup>2</sup>	(up & down) on motor
		minimum	<i>Note – motors are wired in parallel</i>
2	green	2 x 1 mm <sup>2</sup>	E & F (top & bottom) on position switches

When testing the system if the rams the lighting or the thrust work backwards, simply inverse the two wires concerned.

**Example :**

The **VIP** is in the raised position, but the green light is illuminated, reverse the green wires, on the position contactors and the red light will illuminate.



## **5 - CHECKS and TESTS**

### **BEFORE LAUNCHING :**

#### **PROTECTIVE COATINGS**

It is recommended that the submerged parts be primed and antifouled as per the paint manufacturers instructions.

#### **IMPORTANT**

**Do not use copper based paints ,do not paint the vertical column, or the propellers**

#### **MECHANICAL CHECKS**

raising and lowering  
firm closing of hull closing plate  
indicator lights, red - up, green - down  
tightness of all bolts, especially the base bolts  
Correct adjustment of the position indicators

### **AFTER LAUNCHING**

**Check the water tightness of the installation**

**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

**Turn on power to both circuits (power and control)**

If when the joystick is pushed to the left the boat moves to the right, inverse the two black control wires .



## 6 - OPERATION

### IMPORTANT

**Never leave the VIP in the down position when not in use. Any calcium, or shellfish deposits that may accumulate after a long period in the down position will deteriorate the column water seal.**

Never push the up and down buttons at the same time.

The **VIP** must be in the up position during normal navigation. The **VIP** should only be used for manoeuvres with less than 5 knots forward speed. Examples - berthing manoeuvres, assisting a tack in light air.

The usage period of the **VIP** electric motor is calculated in accordance with the S2 standard and can be run continuously for 3 minutes which must be followed by a rest period of 10 minutes. The above calculations depend on an ambient temperature of 20 degrees with proper ventilation of the motor.

The **VIP** thruster should always be used with the batteries fully charged and the engine alternator running . **Discharged batteries will cause damage to the motor relay.**

### OPERATING PROCEDURE

Turn on the circuits (power and control) the red pushbutton will light.

If fitted with an electric battery isolator the power will automatically be switched on with the control .

Push the green push button for about 12 seconds, it will light up, meaning the **VIP** is in the down position and is ready to use.

Push the joystick left for left movement of the boat and vice versa.

### IMPORTANT

**It is not recommended to change thrust direction too rapidly, wait at least one second before pushing the joystick in the other direction.**

Push the red push button for about 15 seconds, it will light up, meaning the **VIP** is in the up position and it is safe to increase forward speed.

Always Turn the main circuit breaker off when the thruster is not in use.  
And isolate the batteries ( When not fitted with an electric battery isolator ) .



### **IMPORTANT**

It is not recommended to change thrust direction too rapidly, wait at least one second before pushing the joystick in the other direction.

## **7 MAINTENANCE**

The control panels should be protected from the sun and weather when not in use.

### **CHECK PERIODICALLY :**

That your batteries are in good condition and that they are fully charged.

That the moving power cables are free to move, and are in good condition

### **AT EACH ANNUAL HAUL-OUT :**

Clean the turbine, cover and casing.

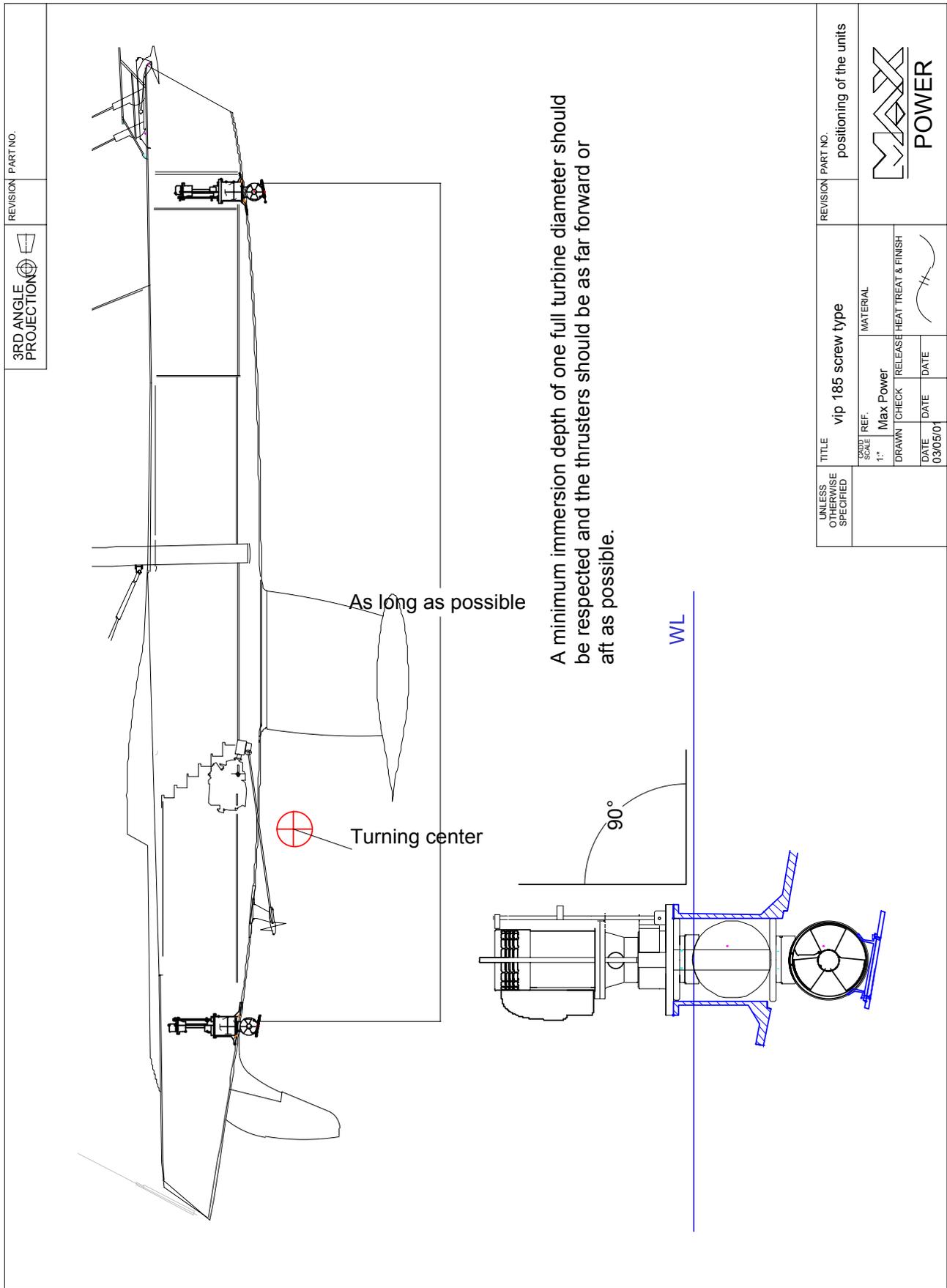
### **EVERY 2 YEARS**

change column seal N°52 on parts list .

### **DURING WINTERING :**

Remember to operate monthly the up-down system .

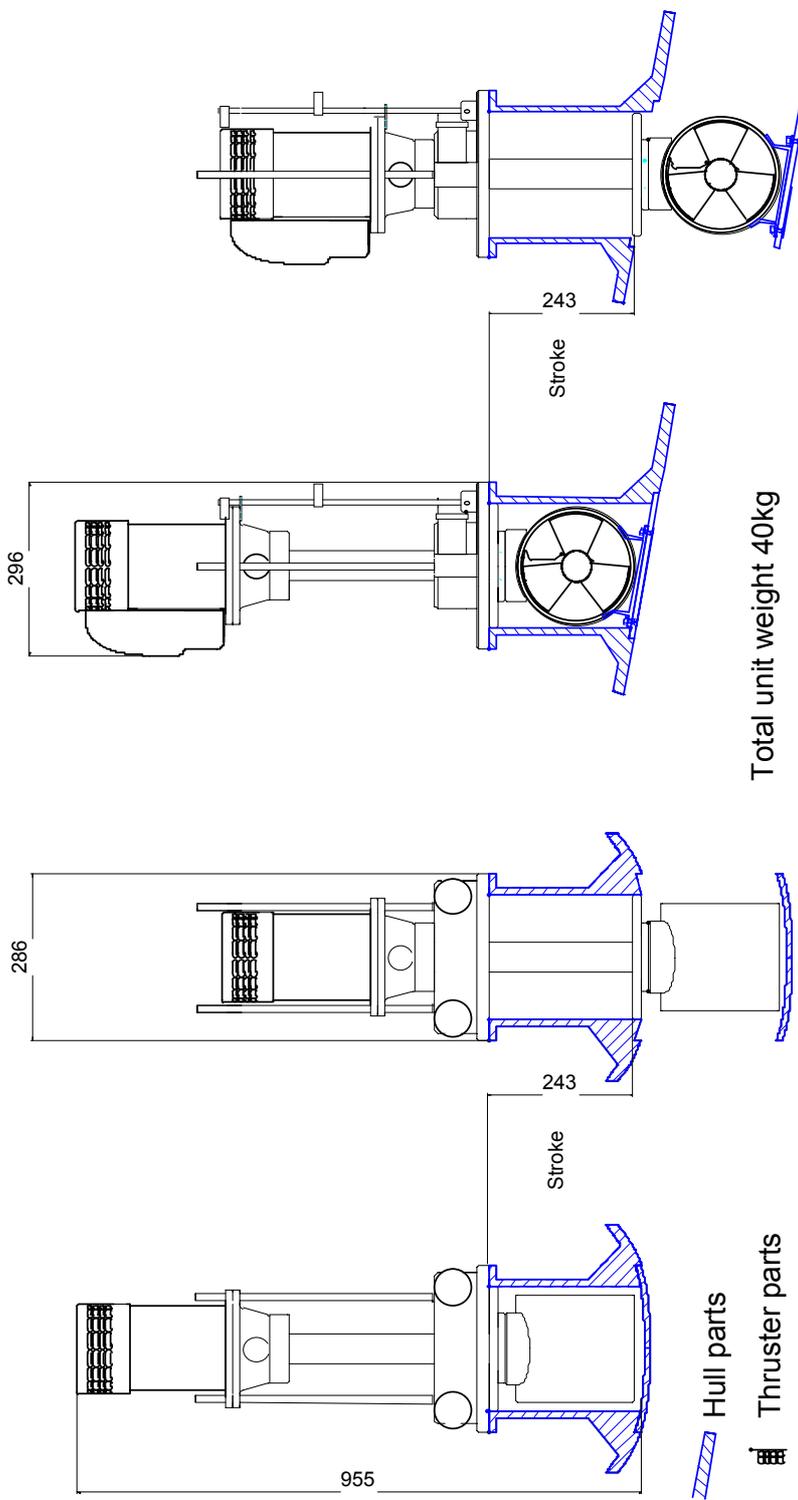
**A copy of this manual must remain  
on board for consultation.**



REVISION PART NO.



VIP 150 12/24v Principal dimentions

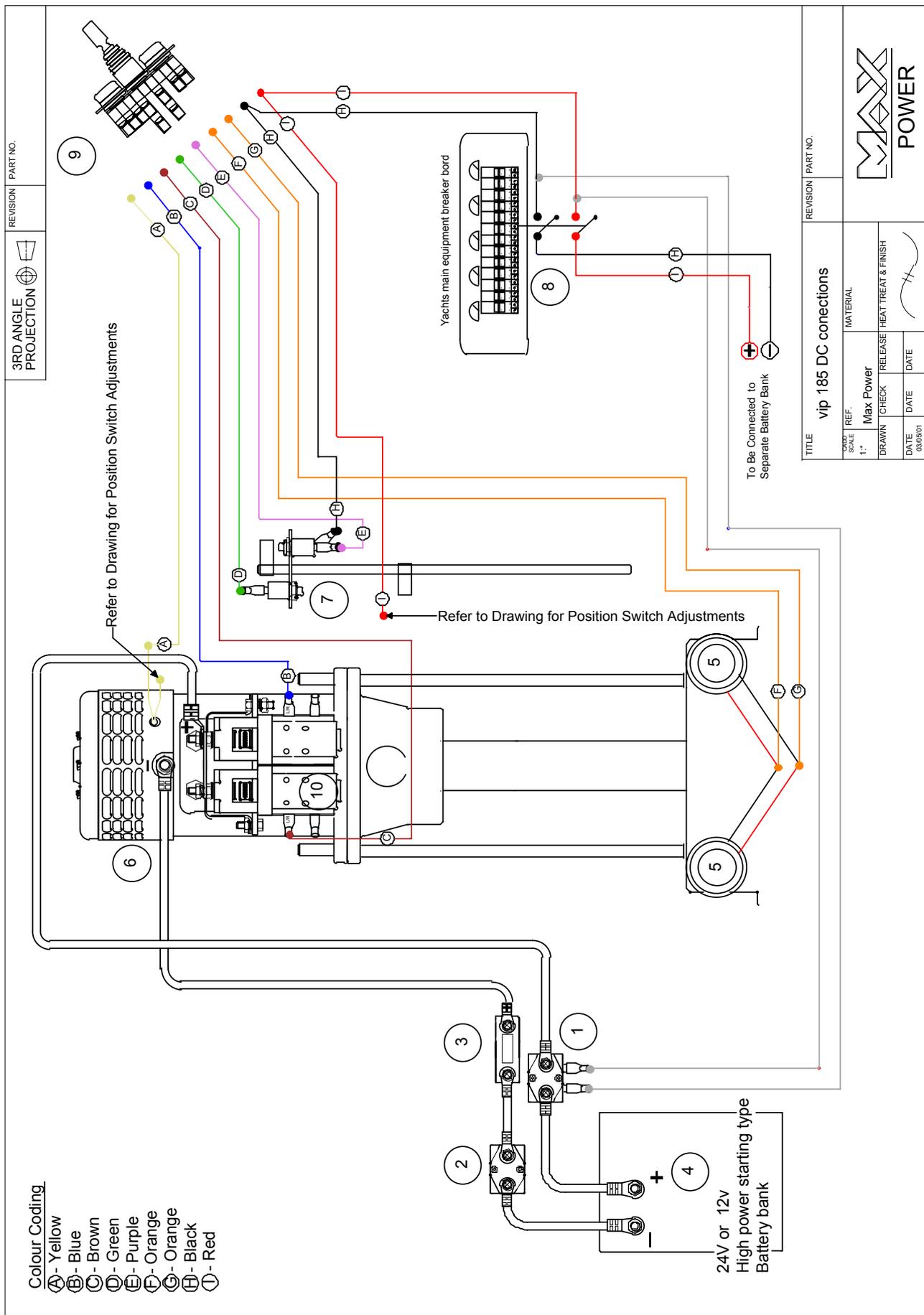


Hull parts  
 Thruster parts

Total unit weight 40kg

UNLESS OTHERWISE SPECIFIED	TITLE	vip 185 screw type		REVISION	PART NO.	Principal dimentions
	SCALE	REF.	MATERIAL			
1"	Max Power	CHECK	RELEASE HEAT TREAT & FINISH			
DATE	CHECK	DATE	DATE			
03/05/01						



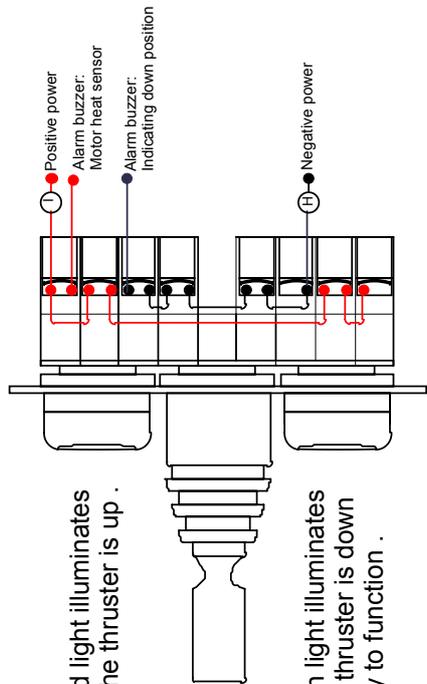
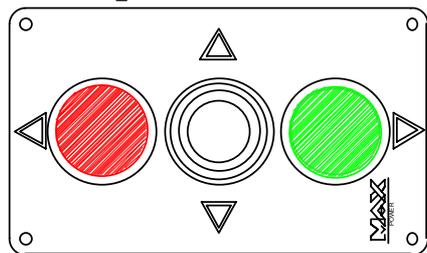
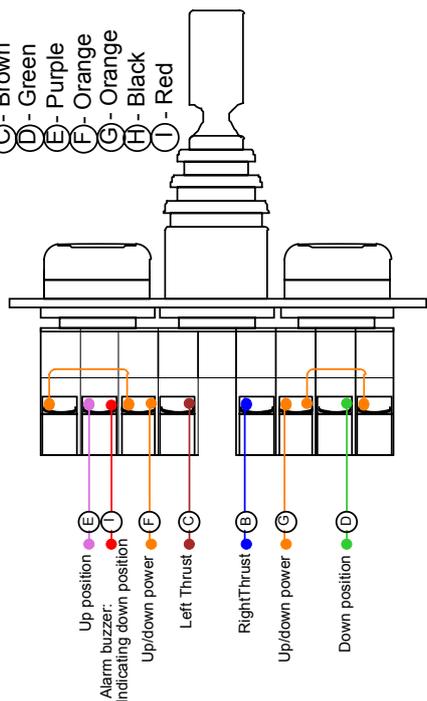


24V or 12V  
High power starting type  
Battery bank

3RD ANGLE PROJECTION

REVISION PART NO.

Colour Coding  
 A- Yellow  
 B- Blue  
 C- Brown  
 D- Green  
 E- Purple  
 F- Orange  
 G- Orange  
 H- Black  
 I- Red

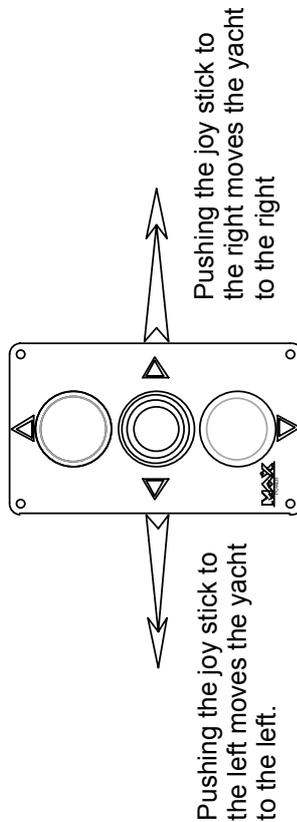
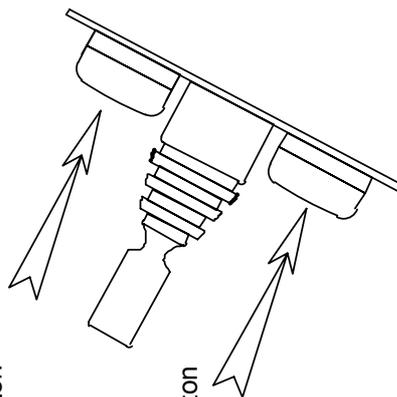


The red light illuminates when the thruster is up .

The green light illuminates when the thruster is down and ready to function .

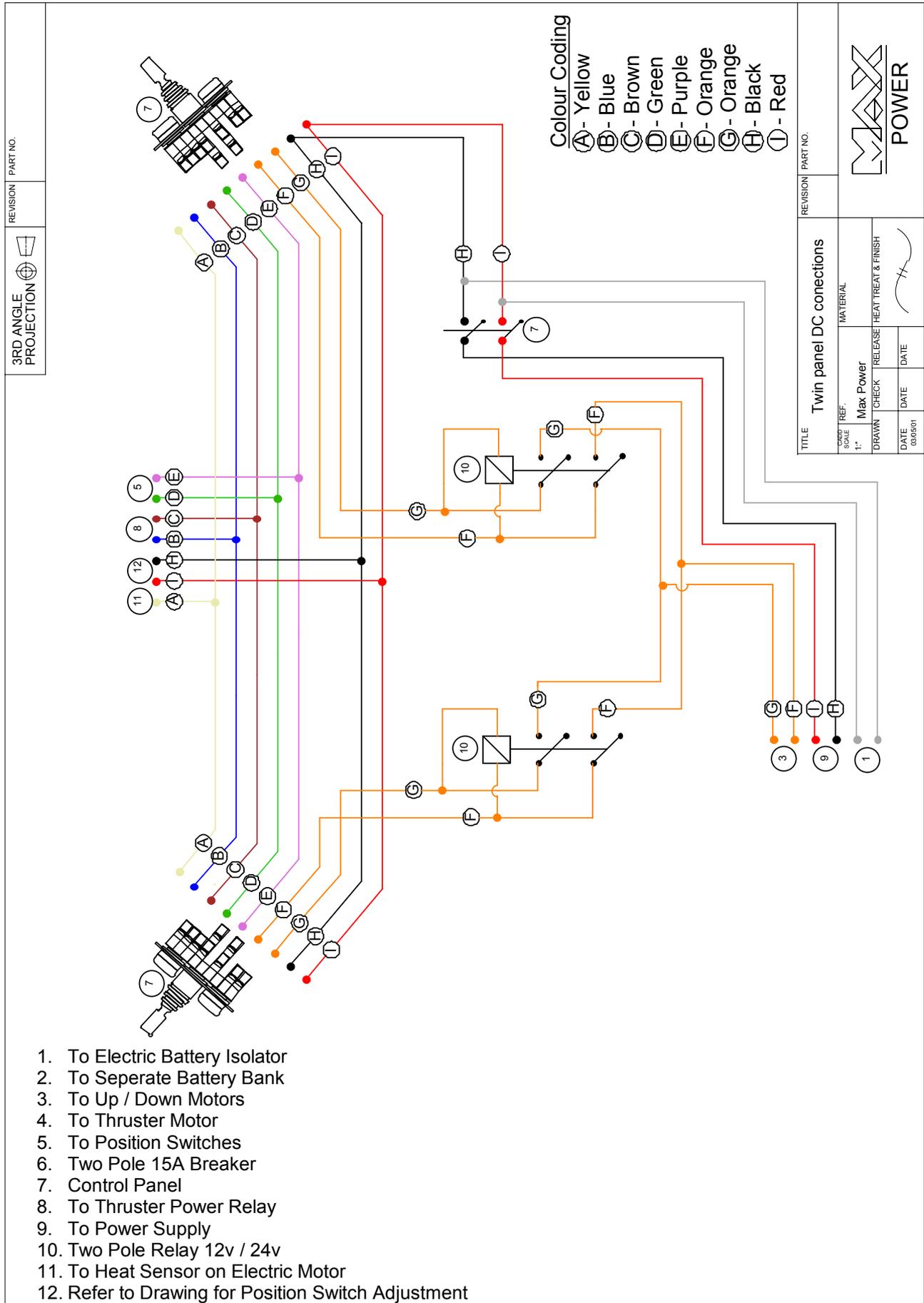
Pushing the red button raises the thruster.

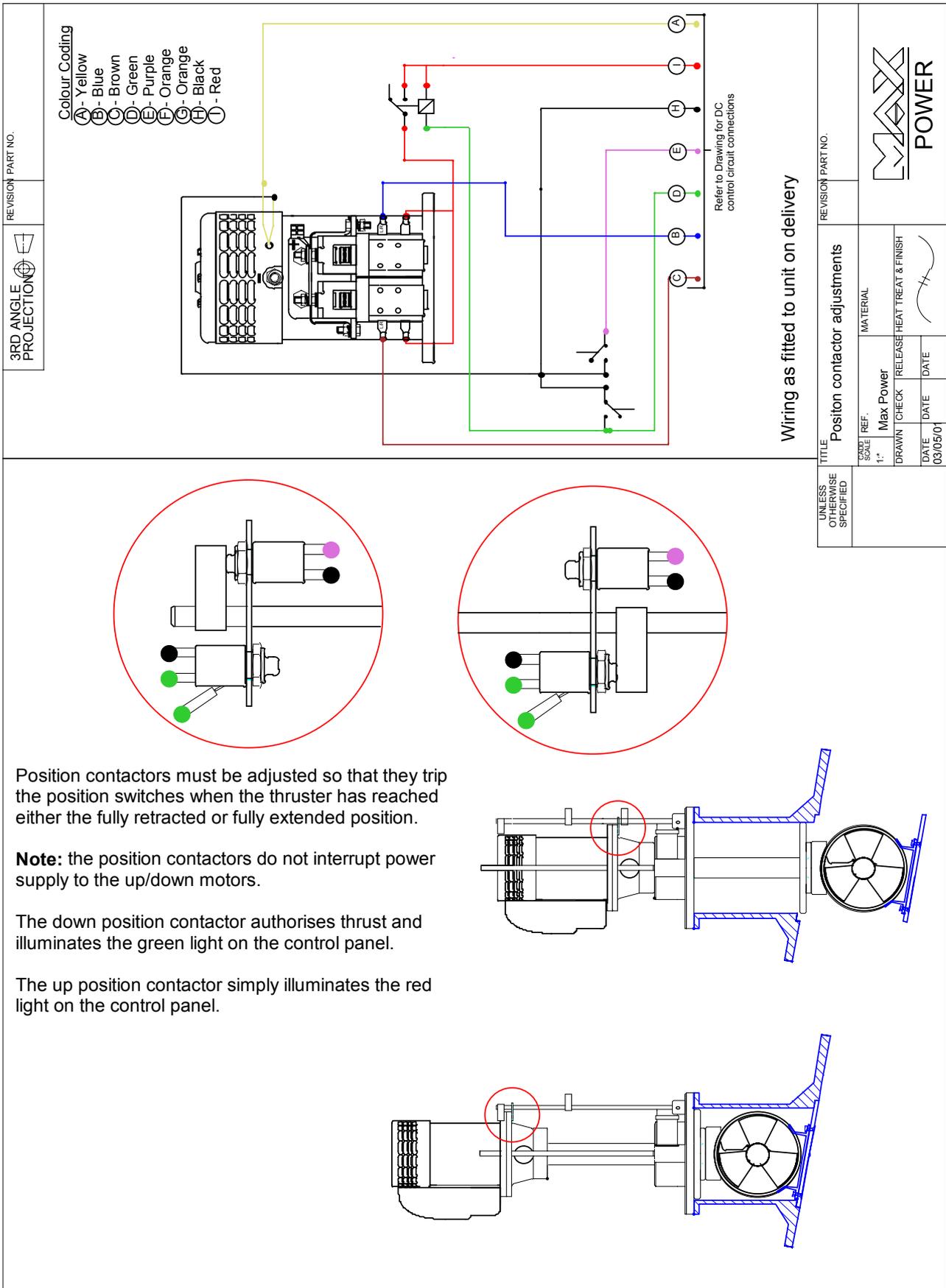
Pushing the green button lowers the thruster.



UNLESS OTHERWISE SPECIFIED		TITLE		REVISION PART NO.	
Control panel VIP / R200		Control panel VIP / R200		REVISION PART NO.	
SCALE	REF.	MATERIAL		MATERIAL	
1"	Max Power	RELEASE		HEAT TREAT & FINISH	
DRAWN	CHECK	DATE	DATE		
03/05/01					



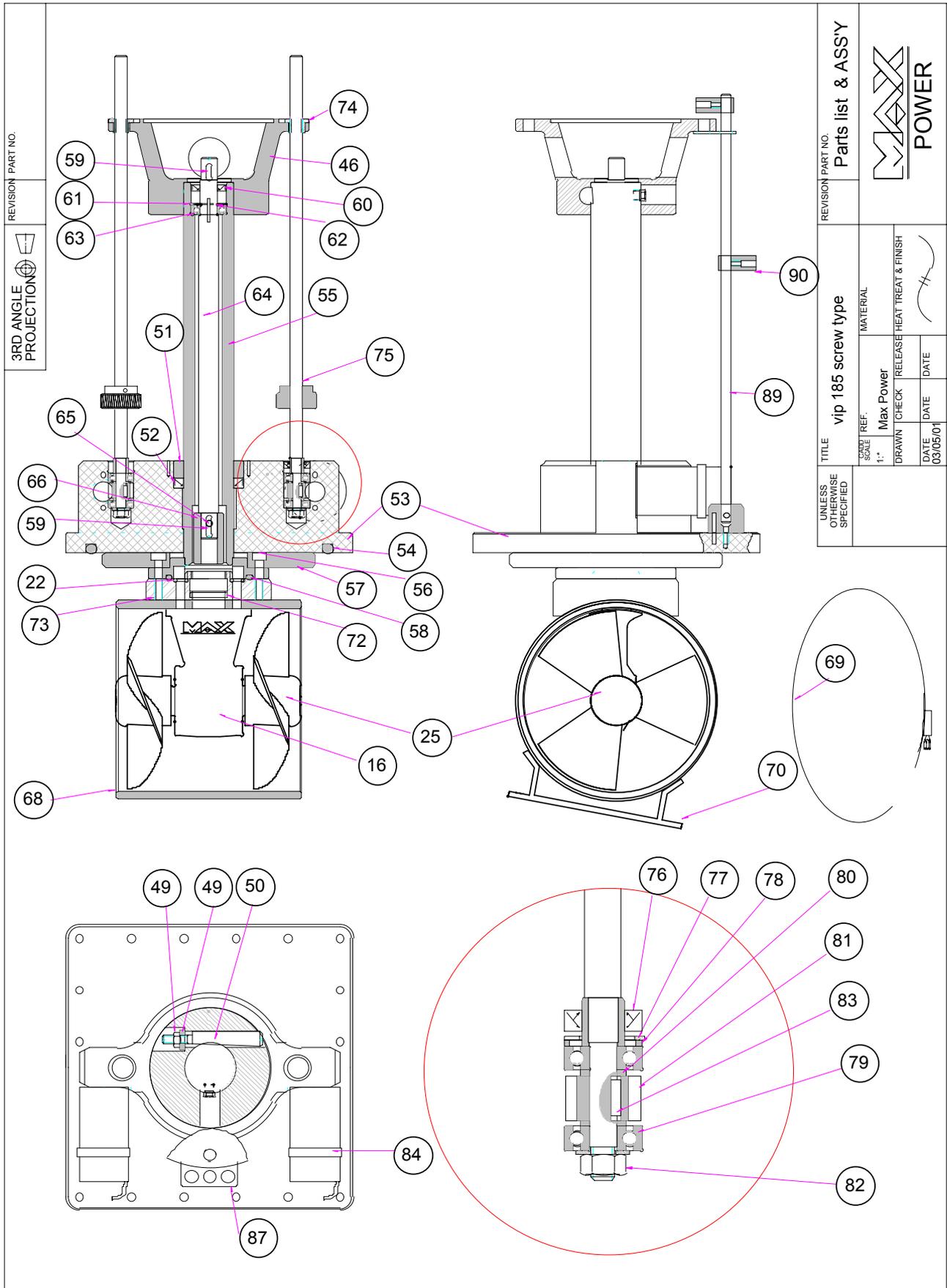








N°	Description	Q	Reference
1	RELAY COVER	1	MP082021
2	N/O HEAT SENSOR	1	
3	SAFETY RELAY 24	1	MPOP3451
3	SAFETY RELAY 12	1	OPTI3450
4	POWER RELAY 12 (Complete)	1	MP083053
4	POWER RELAY 24 (Complete)	1	MP083054
5	ELECT MOTOR 12	1	MP083010
5	ELECT MOTOR 24	1	MP083011
7	TRANSMISSION. KEY	1	MP115010
8	COUPLING TOP	1	MPOP5140
9	GRUB SCREW	4	
10	RUBBER COUPLING	1	MPOP5150
11	Trans Key Drive Shaft	1	
12	COUPLING BOTTOM	1	MPOP5130
46	MOTOR SUPPORT	1	VP085340
45	10 MM NUT	5	VP084120
88	POSITION SWITCH	2	OPTI3460
91	WIRING LOOM	1	VP088050



N°	Description	Q	Reference
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16	Composite leg	1	MP088100
22	Leg bolts	2	MPOP 5340
25	Propeller	2	MPOP 5230
26	Propeller grub screw	2	OPTI 4040
27	Propeller pin	2	MPOP 5220
48	Nyloc nut 8mm	1	VPO8 4190
49	Machine washer	1	VPO8 5390
50	Coter pin	1	VPO8 5380
51	Water gland retaining ring	1	VPO8 5400
52	Water gland	1	VPO8 5490
53	Sliding shaft plate	1	VPO8 5330
54	Shaft plate o ring	1	VPO8 5460
55	Sliding shaft	1	VPO8 5310
56	Sliding shaft bolt	2	VPO8 4100
57	Torque transmission plate	1	VPO8 5320
48	Nyloc nut 8mm	1	VPO8 4190
49	Machine washer	1	VPO8 5390
50	Coter pin	1	VPO8 5380
51	Water gland retaining ring	1	VPO8 5400
52	Water gland	1	VPO8 5490
53	Sliding shaft plate	1	VPO8 5330
54	Shaft plate o ring	1	VPO8 5460
55	Sliding shaft	1	VPO8 5310
56	Sliding shaft bolt	2	VPO8 4100
57	Torque transmission plate	1	VPO8 5320
58	Sliding shaft o ring	1	VPO8 5450
59	Shaft key	1	VPO8 5420
60	Drive shaft oil seal	1	VPO8 5480
61	Circlip	1	VPO8 5500
62	Circlip	1	VPO8 5510
63	Shaft bearing	1	VPO8 5470
64	Drive shaft	1	VPO8 5300
65	Grub screw	2	VPO8 4140
68	Propeller housing	1	VP08 2020
69	Tunnel clamp	2	VPO8 5530
70	Closing trap support plate	1	VPO8 5580
71	BS seal	2	VPO8 5430
72	O ring	1	VPO8 5440
73	Adapter	1	VPO8 5350
74	DRIVE NUT	2	VP085004
75	DRIVE SCREW	2	VP084042
76	SEAL	2	VP085008
77	CIRCLIP	2	VP085003
78	END FLOAT SPACER	2	VP085005
79	SCREW BEARING	4	VP085001
80	WASHER	4	VP085007
81	WHEEL	2	VP085000
82	NUT 8 MM	2	
83	DRIVE SCREW KEY	2	VP085010
84	ELECTRIC MOTOR 12V	2	RT203121
85	ELECTRIC MOTOR 24V	2	RT203122
86	MOTOR S SCREW 4 MM	4	VP084160
87	POSITION SWITCH HOLDER	1	VP085620
89	POSITION DETECTOR ROD	1	VP085581
90	POSITION DETECTOR	2	VP083200