



THRUST IT TO THE **MAX**

## **ELECTRO-HYDRAULIC POWER PACK**

**Series 125 HYD**

**225 HYD**

**325 HYD Model 250**

**325 HYD Model 325**

**With Electronic Thruster Controller**

INSTALLATION & MAINTENANCE

THIS MANUAL MUST BE KEPT ON-BOARD AT ALL TIMES

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## 1) GENERAL

WE RECOMMEND THAT YOU CAREFULLY READ THE FOLLOWING INFORMATION BEFORE INSTALLATION.

This equipment should be installed by a professional, authorised dealer-installer and/ or with the vendor's authorisation.

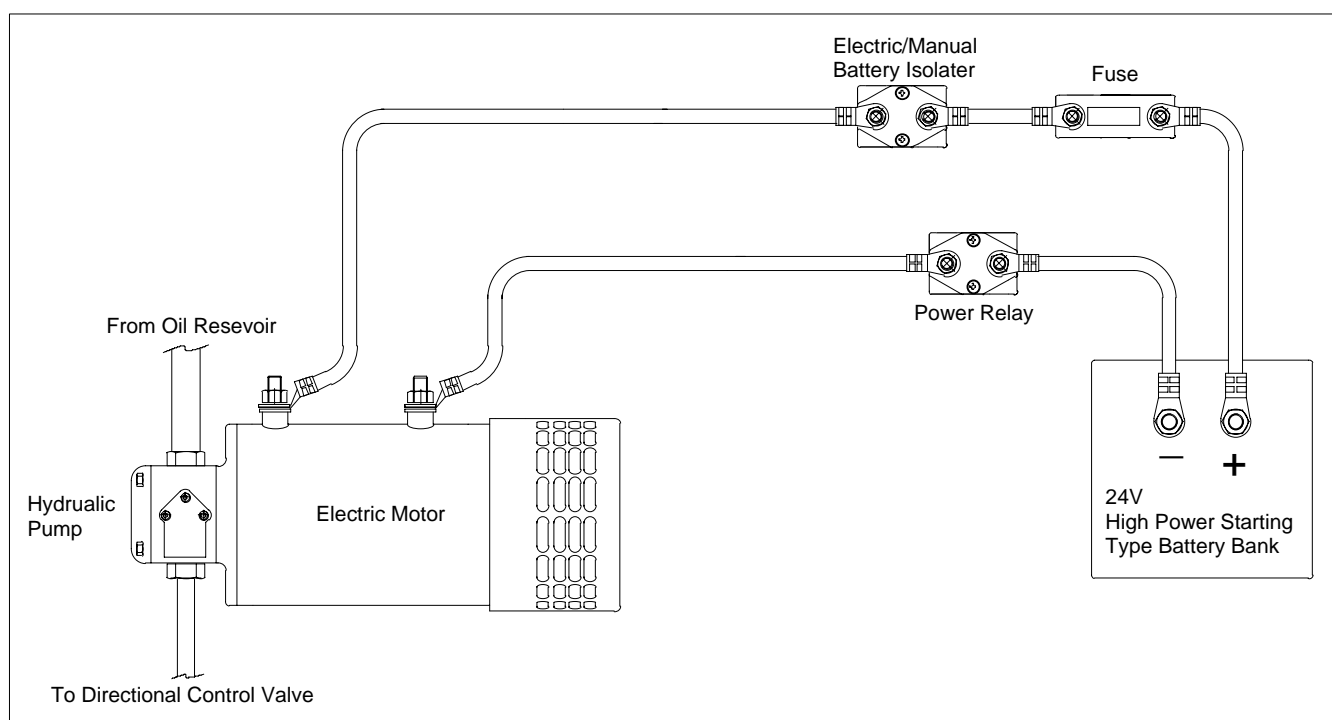
Architects, designers, builders' yards and/or other specialists should be consulted about the installation process.

**IMPORTANT:** For all boats applying for classification, please contact the relevant bodies before installation. The installation must comply with the rules and regulations, relative to the country where the boat is registered.

## 2) ELECTRO-HYDRAULIC POWER PACK

The 'Electro-Hydraulic Power Pack' consists of the following:

- 1 or 2 **Electro Pumps**
- 1 or 2 **Power Relays**
- 1 or 2 **Fuse Holders**
- 1 or 2 **Power Fuses**



The electro-pump(s) should be installed as close to the batteries as possible in a dry and ventilated space.

The electro-pump(s) can be mounted horizontally or vertically and should be well fixed to prevent any rotation or movement of the electro-pump(s).

The electro-pump(s) should always be situated below the oil level of the reservoir.

## Electro-Hydraulic Power Pack for Super Power Hydr. Models (3)

The installation of a manual and/or electrical battery isolator in the electro-pump motor's positive power line is essential. These battery isolators can be mono or bi-polar and should be clearly marked "BOW (or STERN) THRUSTER".

When using a manual battery isolator it must be visible, clearly marked and easily accessible. When using an electrical battery isolator the control/supply should be controlled by switching a single/ double pole isolator, installed on the main switch-board, clearly marked "Bow/Stern Thruster"

The power fuse(s) should be installed as close to the batteries as possible to the positive cable(s) of the electro-pump(s).

The power relay(s) can be installed to either the positive or the negative cable runs (lines).

The positive and the negative cables of the electro-pump can be connected either way around to the two motor terminal studs.

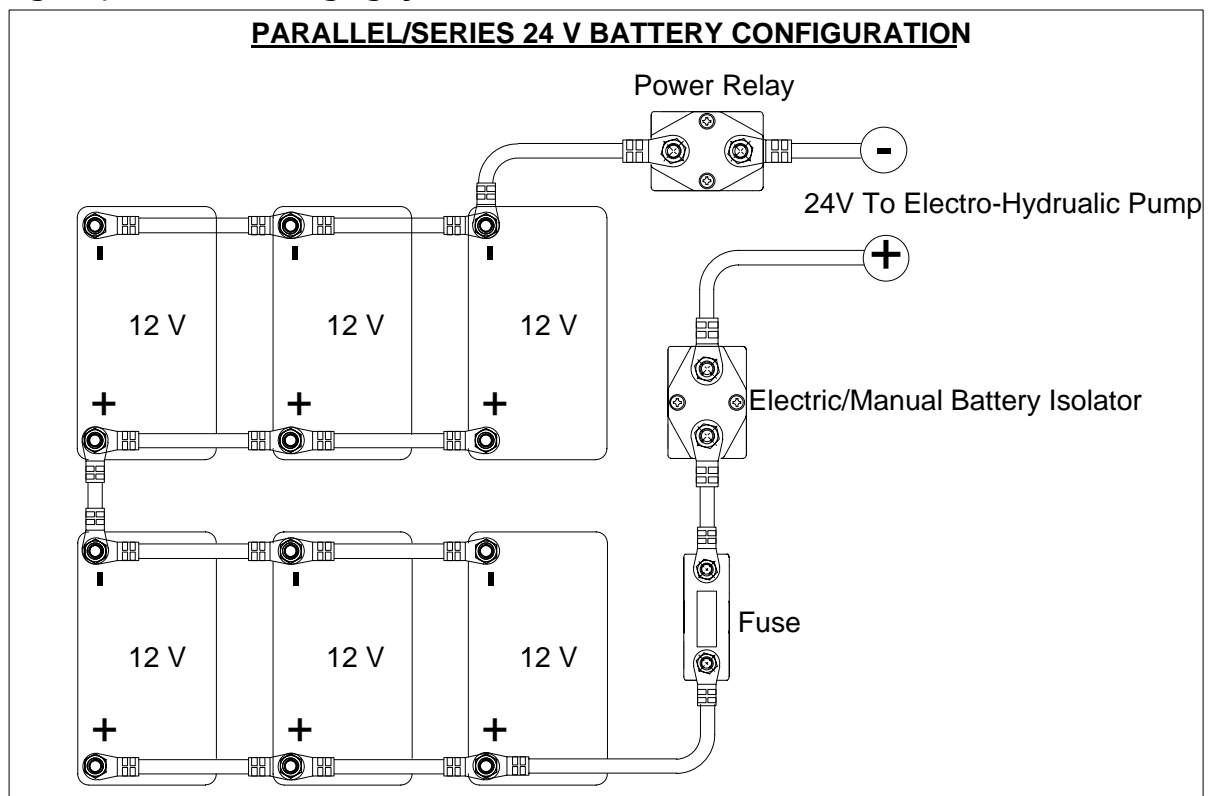
**IMPORTANT:** Care should be taken of the following: battery quality and capacity and the correct section of electric power cables, respective to the cable length, also remember to tighten all electrical connectors.

**WARNING:** An incorrect installation will give poor thruster performance and can cause damage or accelerated wear to the equipment, especially the relays and the electric motor brushes etc.

The performance of the system is measured with a tension of approximately 22 V at the connectors of the motor.

### 3) BATTERIES

Please refer to specific manufacturers technical characteristics for battery capacity, CCA (Cold Cranking Amps) and the charging system.



**For Example:** Exide Maxxima 900, 12 Volt: Capacity = 56 AH; CCA 800

The battery bank(s) should be connected in **PARALLEL/SERIES 24 Volt** with a minimum CCA depending on the power requirement.

Six 12 Volt Batteries in parallel / series 830 CCA x 3 = 2490 in 24 volts

In order to increase the running time and/or the performance, increase the CCA of the battery bank.

#### BATTERY CAPACITY IN CCA:

Thruster Model	Motor Size	Average Consumption (Amps)	Available CCA
Series 125 HYD	KDF.08, 22V	550 A	830 to 1600 CCA
Series 225 HYD	KDF.13, 22V	750 A	2500 to 3000 CCA
Series 325 Model 250 HYD	KEF.14, 22V	800 A	2700 to 3200 CCA
Series 325 Model 325 HYD	KDF.08, 22V	550 A	830 to 1600 CCA
	+KDF.08, 22V	550 A	830 to 1600 CCA

#### 4) POWER CABLES

The total length of the cable (L) is measured from the battery to and from the electric motor (+ & -).  
The authorised amperage by length (L) is: **0 to 5 m = 7Amp/mm<sup>2</sup>**

**5 to 10 m = 5 Amp/mm<sup>2</sup>**

**10 to 15 m = 4Amp/mm<sup>2</sup>**

EXAMPLE: Calculation of the cable section (mm<sup>2</sup>) for a KDF 13 motor with a total length (L) of 9 metres: (750 A / 5 Amp) mm<sup>2</sup> = 150mm<sup>2</sup>.

For reasons of supply or ease of installation it is possible to use 3 x 50 mm<sup>2</sup> = 150 mm<sup>2</sup>

To facilitate connection, one can use a smaller section cable over a distance of a few centimetres.

#### 5) CONTROL WIRING (see Thruster and Hydraulic Control Pack Installation Manuals)

#### 6) ELECTRIC MOTOR TEMPERATURE SENSOR (Two wires coming out of motor cover)

The electric motor of the electric-hydraulic pump is fitted with a normally open (N/O) thermal switch as standard. This should be connected to the electronic thruster controller as indicated in the Hydraulic Control Pack Installation Manual.

#### 7) RUNNING TIME

Maximum running time: S2-2 min. rating (depending on ambient temperature).

In order to increase the running time, it is possible to add an electrically forced air-cooling unit to the electric motor. If a forced air unit is installed, it is necessary to remove the motor's ventilation fan.

#### 8) HYDRAULIC INSTALLATION (see Thruster Manual)

After connection of all the hoses etc, fill the oil reservoir and proceed with initial tests.

#### 9) TESTS (see Thruster Manual)

**IMPORTANT: THE THRUSTER MUST NOT BE OPERATED WITH THE BOAT OUT OF THE WATER.**

## Electro-Hydraulic Power Pack for Super Power Hydr. Models (3)

All tests must be carried out with the batteries charged to 100% and the charging system functioning.

Switch on the power circuit and the control circuit supply.

Proceed with short operations in order to purge the circuit.

**WARNING:** NEVER RUN THE SYTEM WITHOUT ANY OIL IN THE OIL RESEVOIR.

Read the hydraulic pressure on the distributor pressure gauge and ensure that pressure corresponds with the thruster specifications.

## 10) ELECTRICAL CHECKS (depending on the model)

With the thruster working, control the voltage at the following points:

Battery Terminals.

Battery Isolator.

Fuse.

Electric Motor Terminals.

The above measurements are to test eventual voltage losses. The minimum voltage at the electric motor must be approximately 22 Volt for a 24Volt system.

If the voltage at the motor is lower, check the following points:

Faulty batteries.

Batteries with insufficient capacity.

Battery charge insufficient.

Power cables section incorrect.

Cable connections etc incorrectly tightened.

## 7) MAINTENANCE

**Annually:** Check oil level and the hydraulic filters.

Check all batteries, cables connections, and the system of the battery charge etc.

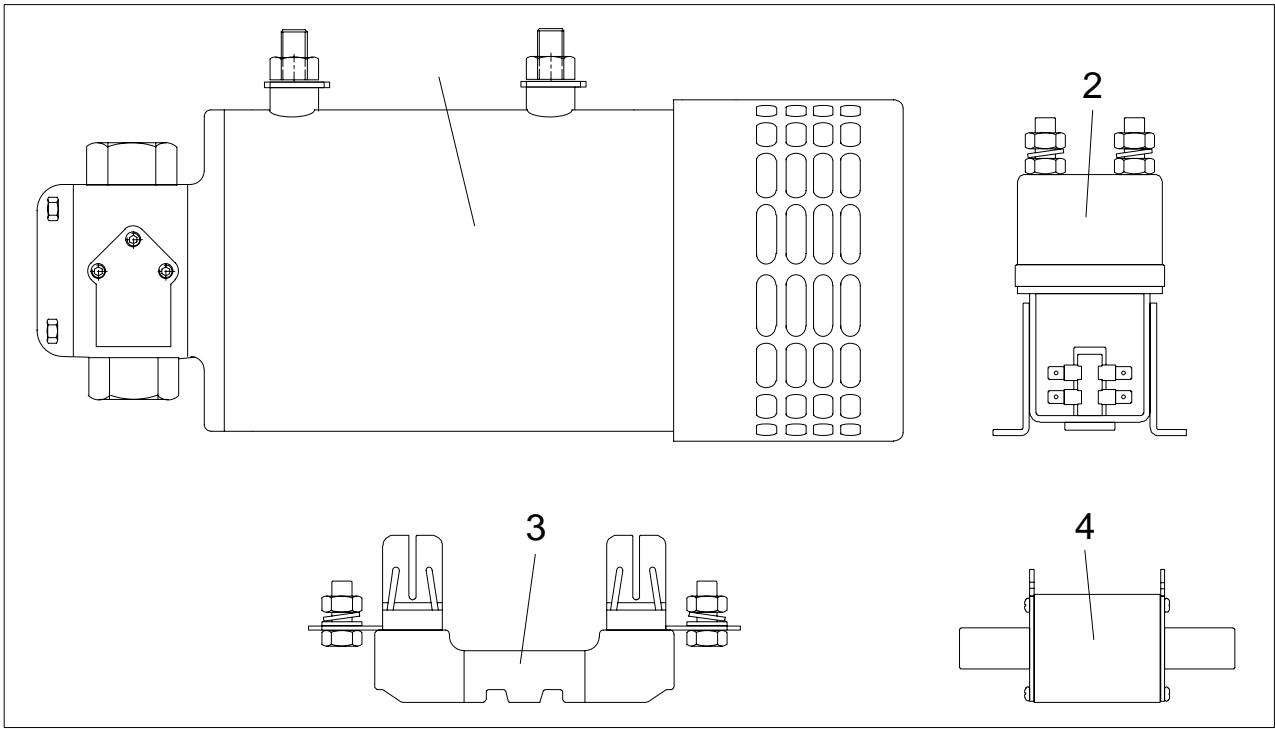
Blow out brush dust.

**Every 2 Years:** Drain and replace hydraulic oil and filter.

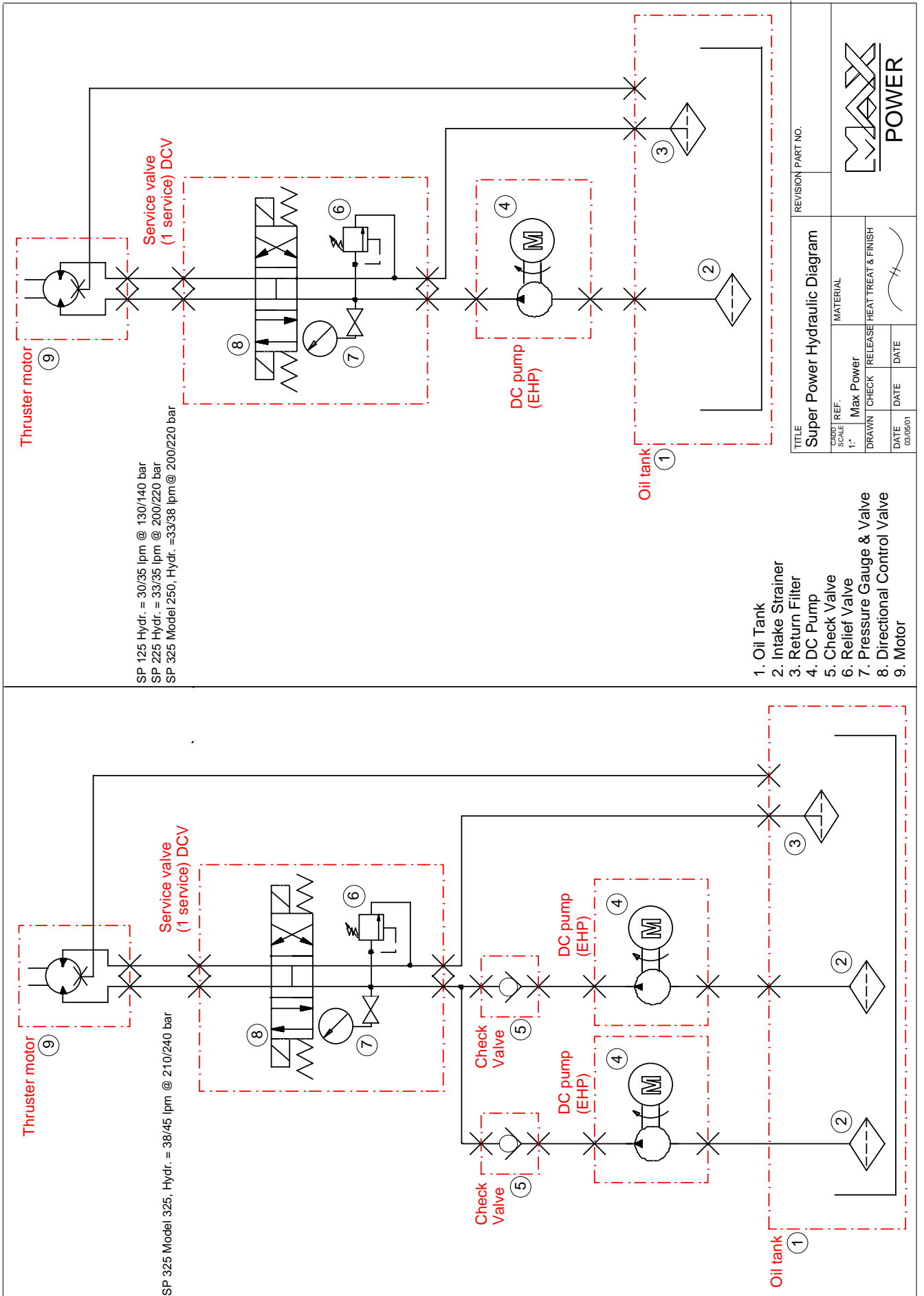
## 8) PARTS LIST & DIAGRAM

N°	DESCRIPTION	SP 125 HYD	SP 225 HYD	SP 325 HYD, Model 250	SP 325 HYD, Model 325
1, 2, 3, 4	Complete Electro-Hydraulic Power Pack	1 x	1 x	1 x	1 x
1	Electro Pumps	1 x	1 x	1 x	2 x
2	Power Relay	1 x	1 x	1 x	2 x
3	Fuse Holder	1 x	1 x	1 x	2 x
4	Power Fuse	1 x	1 x	1 x	2 x

Electro-Hydraulic Power Pack for Super Power Hydr. Models (3)

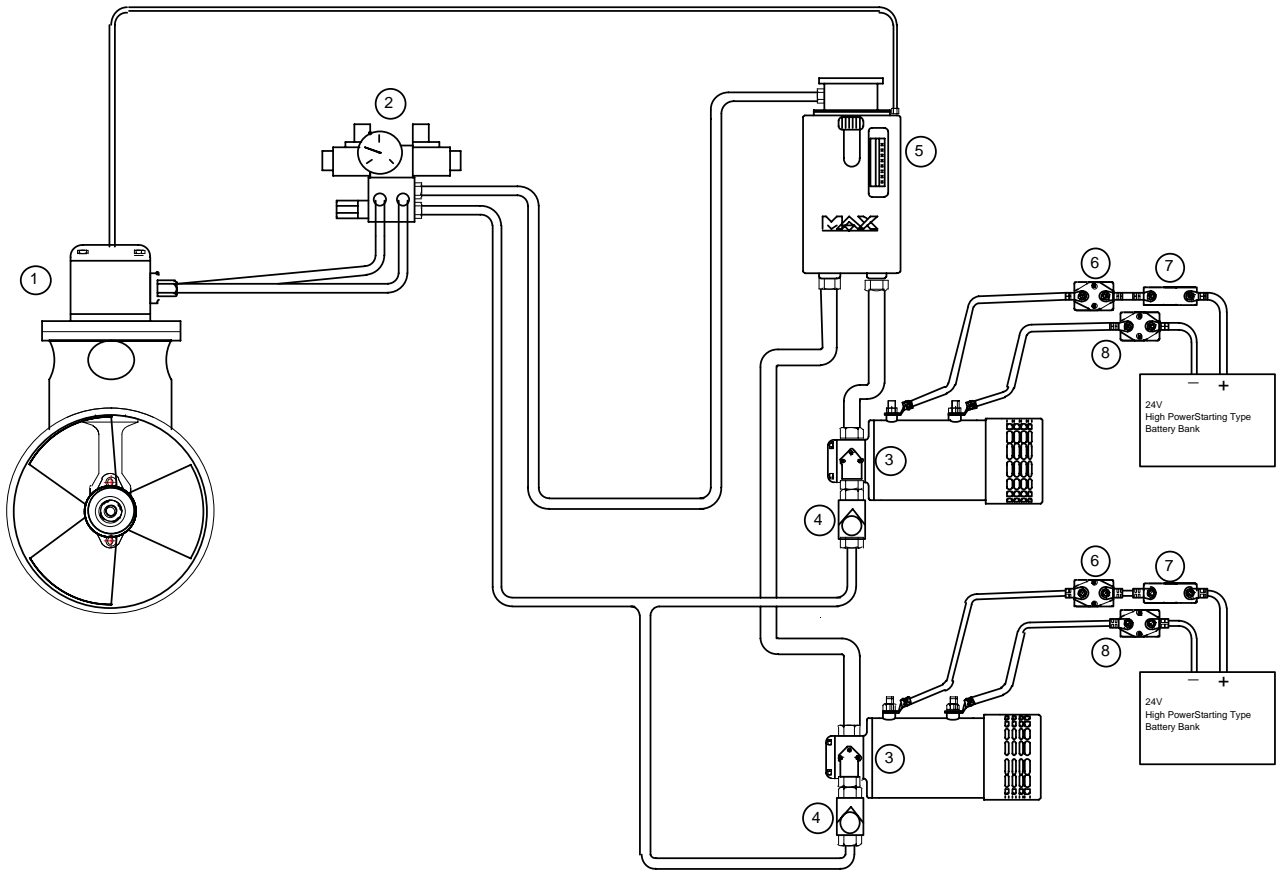


**THE MAX-POWER TEAM WISHES YOU A SUCCESSFUL INSTALLATION.**

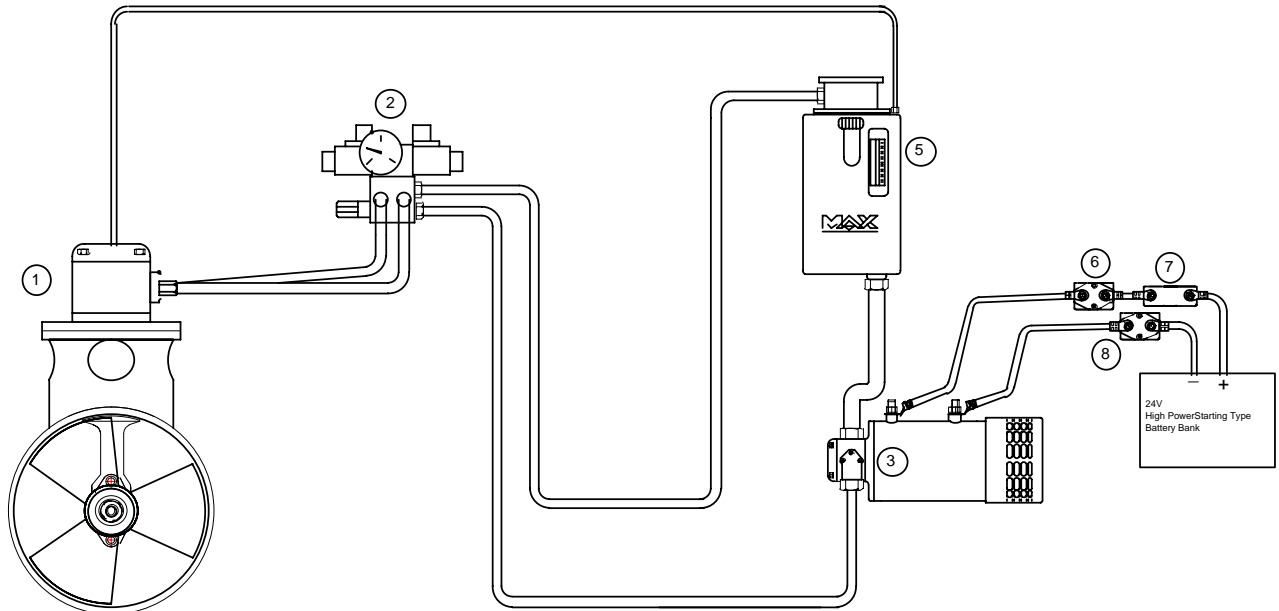


## ELECTRIC AND HYDRAULIC POWER CONNECTIONS

### Super Power 325 Model 325



### Super Power 125, 225 & 325 Model 250



- 1. Hydraulic Motor & Thruster
- 2. Service Valve (DCV)
- 3. Electro-Hydraulic Pump (EHP)
- 4. Check Valve

- 5. Hydraulic Oil Reservoir with Filtration System
- 6. Electric/Manual Battery Isolater
- 7. Power Fuse
- 8. Power Relay