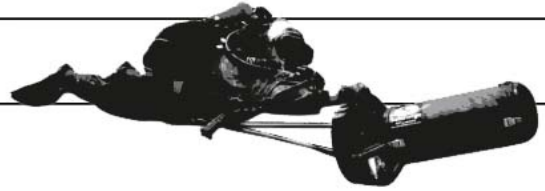




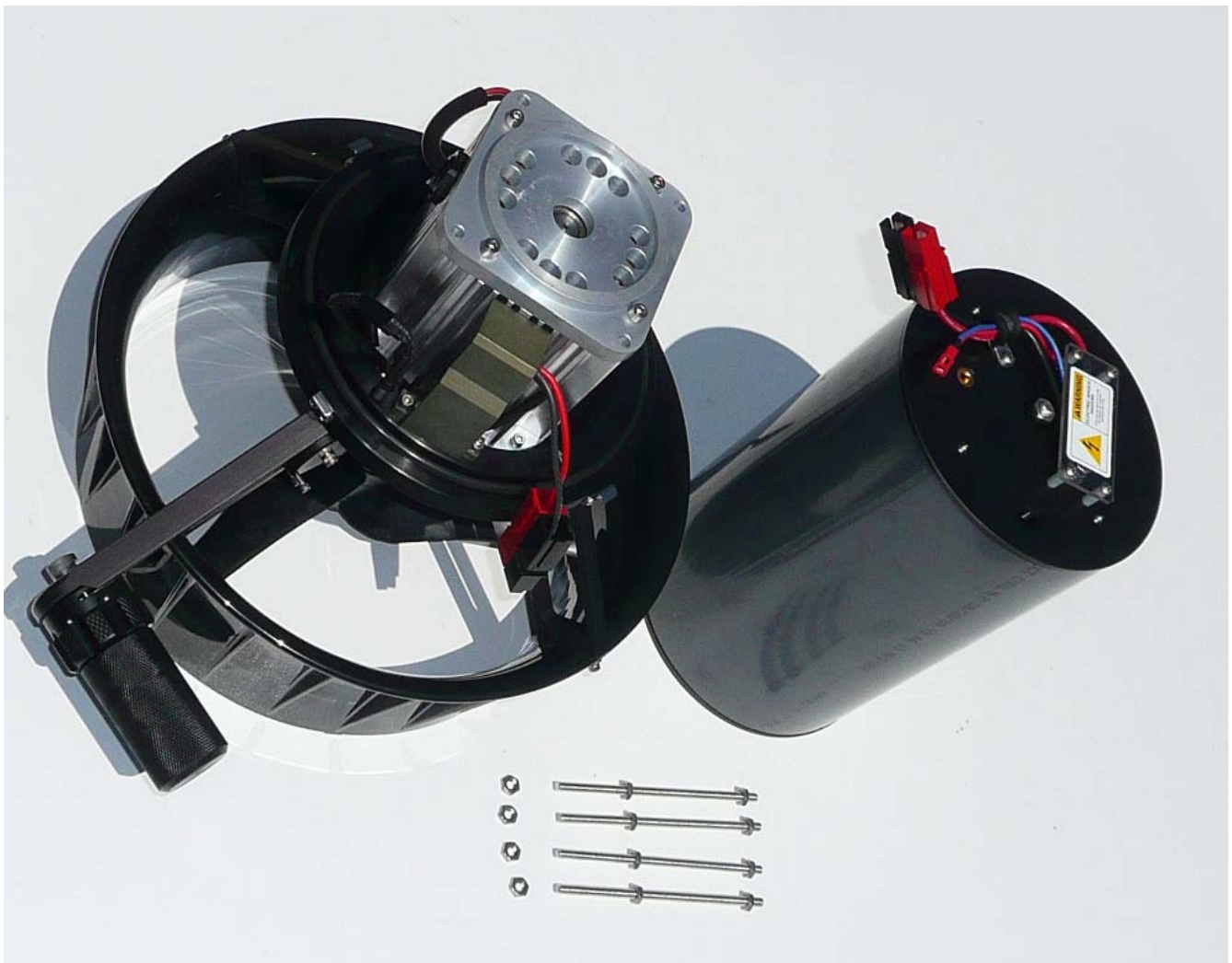
**PROVEN.
SINCE 2000**



Assembly directions for Magnus DPV

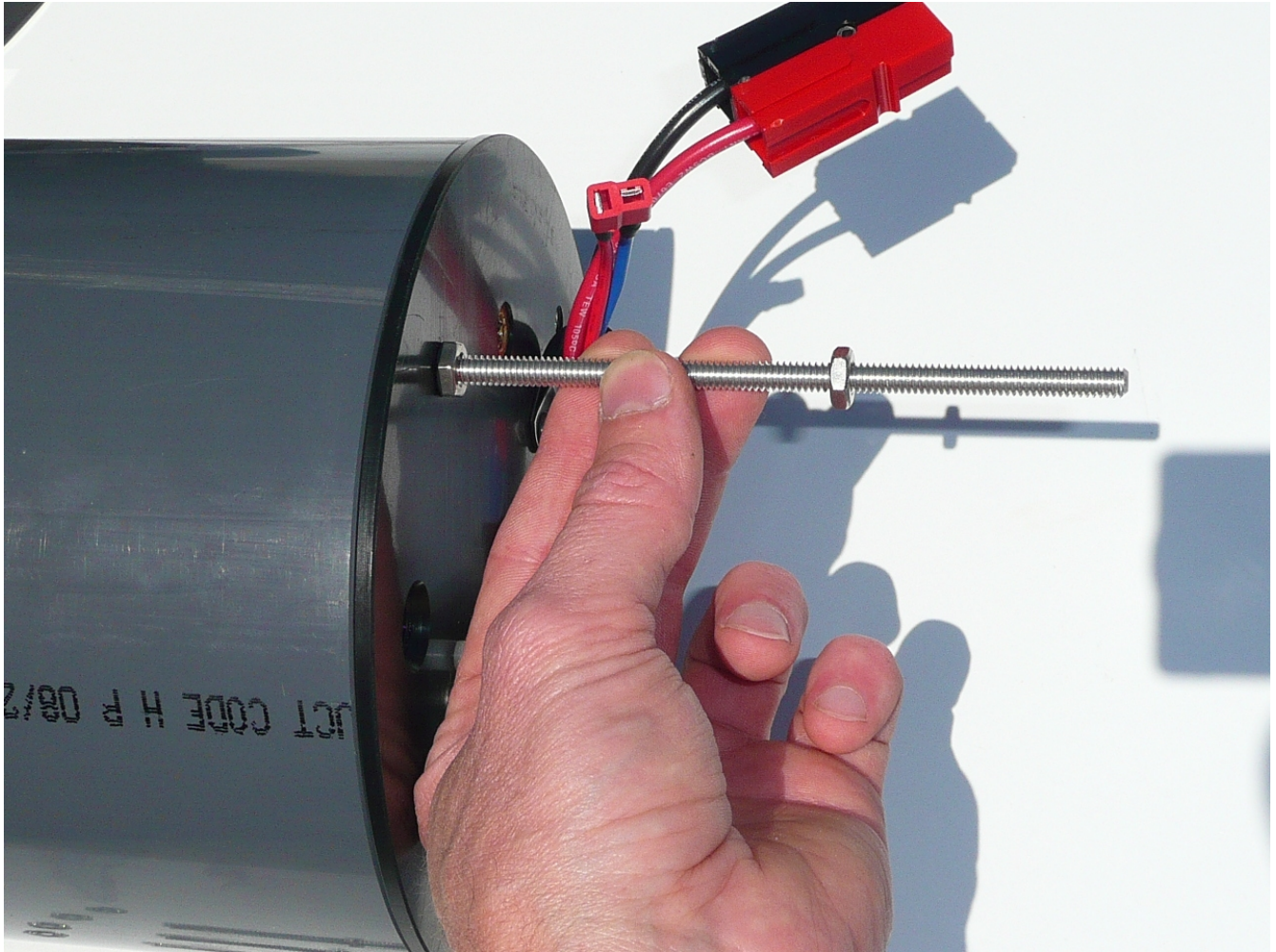
Updated Sept 2012

For this assembly, be sure you have the Motor section, the battery pack, 4 threaded rods and 12 or 16 nuts. Nuts may be pre-set position. You will also require 2x 7/16" tools to enable the tightening of 2 x 7/16" nuts at the same time.



Step 1:

Install the 4 threaded rods into the battery pack, the loctited nut end first. Finger tighten only.



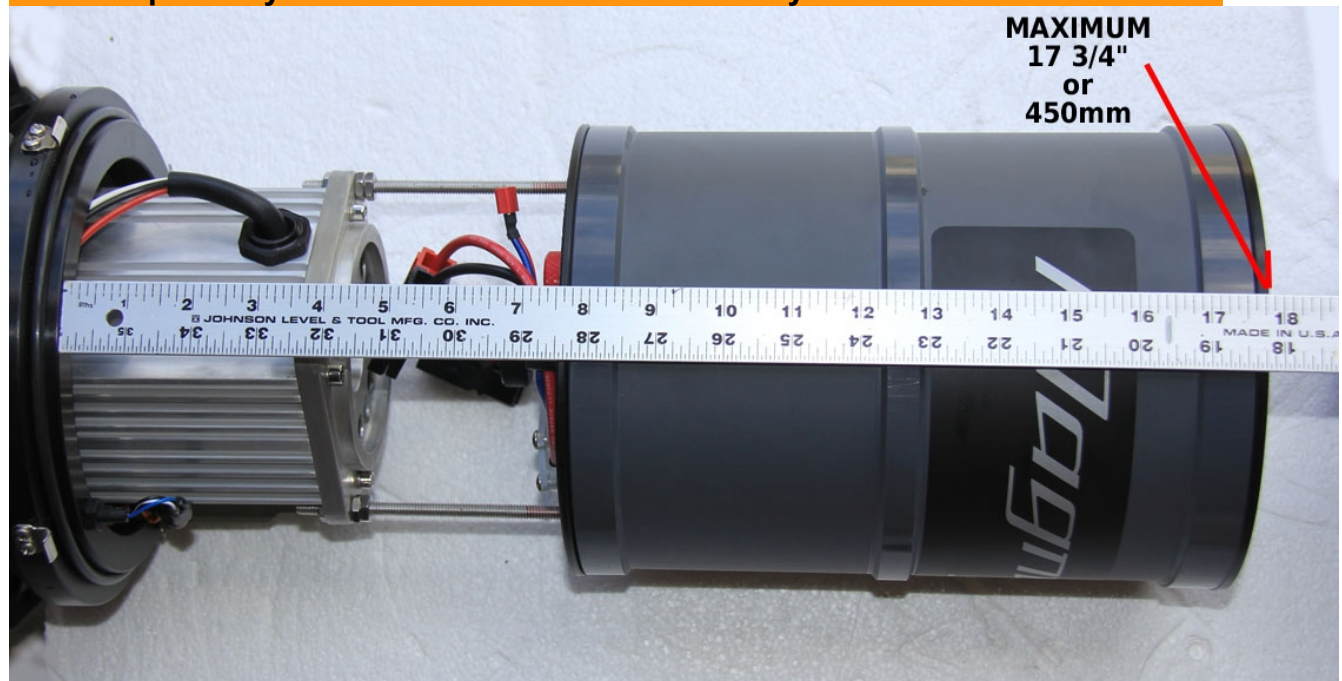
Step 2:

With the motor section sitting propellers down and flat on the ground, carefully install the battery pack onto the motor, through the 4 available holes. **Follow the alignment directions marked on the battery pack. The battery pack has a preferred orientation which will provide optimal trim.**

The mounting threaded rods may be pre-set, but it is MOST IMPORTANT that the battery pack is not installed too far towards the nose of the scooter. The maximum distance is 450mm as measured from the point indicated by this picture below and the top of the battery pack:



CAUTION: Measure at 4 positions around the battery pack to ensure the pack is installed perfectly in line with the motor. Failure may result in a flooded scooter.



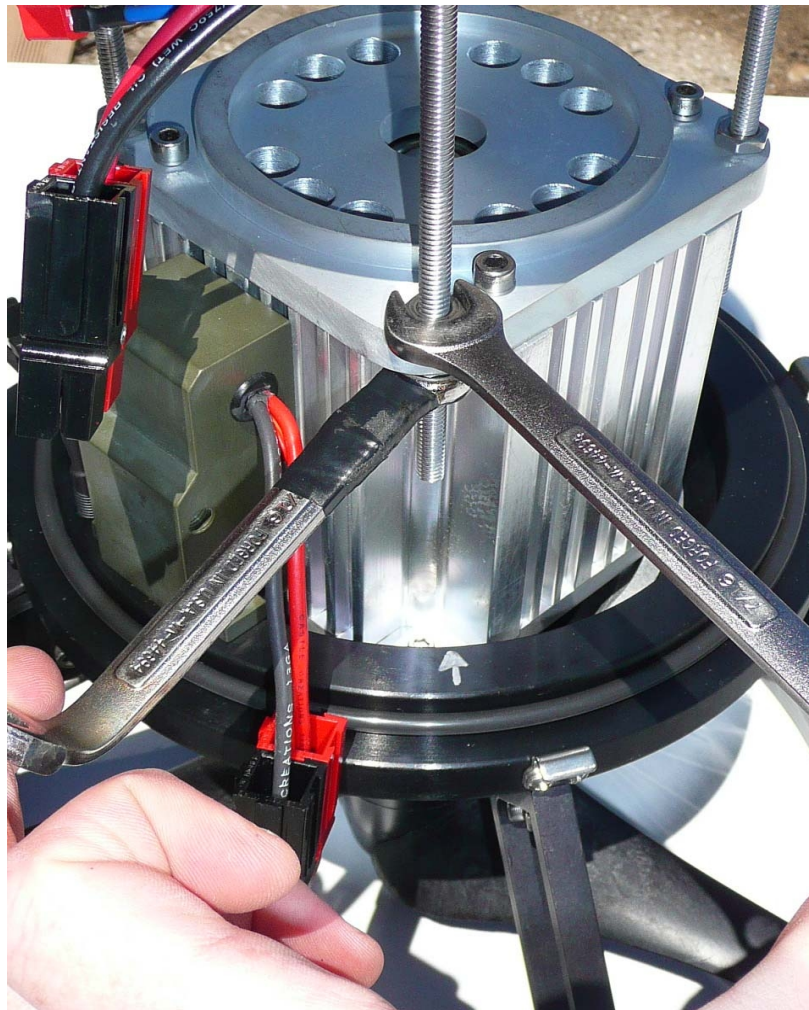
Step 3:

Install the last 4 nuts onto the 4 threaded rods. Finger tighten, until all 4 are secure. Re-measure if necessary. Then, tighten using 2 tools, either side of the motor component. A 7/16" ring type wrench is useful.

MAKE SURE YOU ARE NOT TIGHTENING THE ROD INTO THE BATTERY PACK. The threaded rod should not rotate when tightening these nuts. Doing so may damage plastic threads and compromise battery pack integrity.

Tighten snugly, but be aware the threaded rods are aluminum which is much softer than steel. Over tightening will strip the threads.

Check these nuts are secure every time before the scooter hull is installed pre-dive.



The purpose of the threaded rods, is to allow for adjustment of the battery pack in order to adjust the trim of the scooter. Using these measurements, the scooter will be almost perfectly balanced in fresh water.

If you need to adjust the trim of the scooter so than the nose is higher, move the battery pack closer to the motor in small (5mm/1/4') increments, until the scooter is to your desired trim.

Do not place any loose trim weights or other loose object in the tail end of the scooter. Doing so may cause an electrical failure, or mechanical motor failure if any object makes it's way into the motor (which is not sealed).

TRIMMING FOR SALT WATER:

The scooter is set up for fresh water from the factory. (you will have to make minor adjustments to trim the scooter perfectly).

For salt water diving, you will need to add 1 to 1.75 pounds depending on the scooter and your preference. We recommend a slightly positive scooter on the surface. Horizontal or preferably with 5% nose up angle.

There are 2 ways to distribute the salt water trim weight.

First is adding approx $\frac{1}{2}$ of the trim weight to the pocket inside the nose cone (under the steel plate) and $\frac{1}{2}$ attached to the threaded rods near the motor. This method allows you to keep the battery pack position fixed between fresh and salt. *This method is recommended if you switch between fresh and salt water diving.*

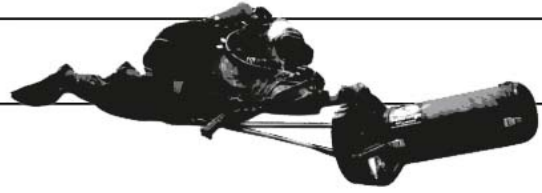
Be vigilant that added trim weights at the motor end are secure. Loose weights could damage the motor or motor controller.

The second method is to place all the trim weight in the nose, and adjust the battery pack to be closer to the motor approx 1 inch. *This method is recommended if you will only use in salt water.* If the scooter is nose down but neutral buoyancy, adjust battery pack towards the motor. If it is too nose up angle, adjust battery pack towards the nose. Maximum 450mm!

Always double measurements at 4 points around the scooter battery pack. Failure to have equal adjustments at each threaded rod may result in the failure of the seals.



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INSTRUCTION MANUAL MAGNUS DPV

UPDATE 12/12

WARNING:
**MAGNUS SCOOTER LITHIUM BATTERY PACK NOT APPROVED FOR AIRLINE
TRANSPORT IN A PASSENGER AIRCRAFT.**

ADVISORY: prepare a dedicated charging area that is cleared of any flammable materials or other equipment; do not charge the scooter in or attached to a dwelling with sleeping occupants, and ensure you have a functioning smoke alarm where the scooter is stored.

Charging scooter:

Charging of the scooter must always be done under supervision. **Do not leave the battery pack charging unattended. Always charge the scooter away from any flammable materials.** Do not charge batteries after any mechanical damage.

To charge the scooter, simply remove the hull of the scooter, disconnect the motor from the battery pack, and plug in the charger to the battery pack. (There is a separate connector for charging). **DO NOT leave the charger connected to the battery pack once the charge process is complete.** The charge process will require 4 to 12 hours depending state of charge and the amp rating of the charger.

We recommend you purchase a Watt's Up meter or utilize a volt meter to determine the state of charge of the battery pack. 40 volts= low charge. 45 volts= half charge. 49 to 50 volts = full charge. Volt readings can be taken from the battery connectors.

Charge time: up to 12 hours.

Diving scooter:

We highly recommend a DPV instruction before DPV use. Unintended powered ascents can lead to decompression sickness. The Magnus is a ultra high performance DPV and should not be taken on any demanding dive until you have full acquainted yourself with it's operation in a controlled environment.

To dive the scooter, with the hull removed, attach the battery pack to the motor electronic speed control (large red/black connectors). A series of beeps will follow the connection. Once connected, check that the scooter will start by rotating the trigger. (be sure there are no

obstructions in the propellers). If the scooter does not start, try disconnecting and then re-connecting the battery pack.

There is a warning beep which sounds every 60 seconds, this alerts you to the fact that the controller is powered up. It is also a good reminder to disconnect the controller whilst the scooter is in storage, or else the controller will completely drain the battery pack if left connected for a long period (depending on the state of charge, as little as 1 week).

NEVER LEAVE THE BATTERY PACK CONNECTED TO THE MOTOR SECTION for extended periods. Doing so slowly discharges the battery and can permanently damage the battery pack. There is a warning beep which emanates from the controller every 60 seconds whenever the controller is connected to the battery.

Once the battery pack is charged, and plugged into the motor, install the hull and nose cone. Be sure the nose cone is not obstructed by any objects on top of the battery pack, such as trim weights. Obstructions can cause the scooter to flood as it can prevent the nose cone from sealing correctly.

Entering the water:

Be sure that all main hull clips are secured. (It's a good idea to re-check this on the last deco stop, as the scooter will only leak at the surface if a latch is unsecured. At depth, the pressure keeps the scooter sealed.)

For the 1st dive, before placing the scooter in the water, set the variable pitch adjustment knob (in the center of the propellers, at the very rear of the scooter) to a low setting. #5 is a good start. Also, lock off the thumb screw which is on the left hand side of the trigger/handle. This will prevent unintended scooter starts whilst lifting the scooter.

Do not place the scooter half in and half out of the water. Place the scooter completely in the water, and observe the scooter for at least 60 seconds, looking for any leaks. If the scooter is floating, but starts sinking after a time, and/or any bubbles emerge from the O-ring areas, the scooter is leaking.

Starting off:

The Magnus has 2 methods of speed control, electronic and mechanical which together allow almost any speed to be achieved between the minimum and maximum speed.

The mechanical speed control is achieved by adjusting the pitch/angle of the propellers, using the pitch adjustment knob at the end of the propeller/hub assembly. There are small white position indicators on the end of the propeller assembly. The mechanical control can only be adjusted while the scooter is "off". It can be adjusted during the dive at any time the scooter is turned off. We recommend setting the pitch to between #6 and #9 (Maximum speed will be achieved by setting pitch to #9).

The electronic speed control is actuated via the trigger on the handle of the scooter. There are 3 electronically controlled speeds. When you first turn on the trigger, the scooter starts off on

speed 1. On your 1st dive, get used to this speed for a few minutes, and adjust the tow rope, and tighten the sliding knots, before attempting the use of speed 2 or 3.

Once speed 1 is engaged, turning the trigger off and back on quickly (<0.5 seconds) shifts the scooter up 1 speed to speed 2, and another quick twist off/on will kick the scooter into high gear/speed 3.

To slow down, turn off the scooter for 1 second and the scooter will then start off in gear1.

From a standstill you can click the trigger quickly 2 or 3 times and the scooter will skip speed 1 or 2 and go directly to you chosen speed.

During the dive: We recommend to use speed # 3 sparingly, as it cuts down your run time by at least 50% compared to speed #2. For the majority of your dive time, USE ELECTRONIC SPEED #2 TO OPTIMISE THE SPEED-RUNTIME TRADE-OFF.

Matching speeds with your dive partner: We recommend matching speeds on Electronic speed#2, which is your cruise speed for technical diving. Have the faster diver start off at a medium pitch setting (eg, #6 or 7) and the slower diver can then set his scooter to run on pitch #8 or 9.

General notes:

Be careful when disconnecting the motor from the electronics, as the wires can be broken. (requiring new electronics)

When installing the hull, be careful that all wires kept inside the hull.

Opening the battery canister voids all warranty on the battery pack. The battery pack is high voltage (50 volts) so use caution at all times.

Plugging in the electronics with the wrong polarity will destroy the electronic speed controller (and possibly the battery BMS).

Minimum recommended propeller pitch setting #5 (lower setting produce cavitation/prop stall at high rpm's) If you want to go slower, use the electronic speeds.