

Hover Time

The Model Hovercraft Association Newsletter



Volume 2 Issue 1
February 2008



Hovercraft and DragonFly

(A Chinese copy of the AP1-88?)

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The Model Hovercraft Association

The Model Hovercraft Association (MHA) was formed in 2004.

The principle objectives of the Association include:

1. The encouragement of interest in and the building and operation of model hovercraft.
2. Research, education and discussion on the design, operating and trading aspects of model hovercraft and the understanding of the technical principles involved
3. To offer help to other groups, clubs and organisations in running events where model hovercraft will be involved in operation or display.
4. The regular distribution of a Newsletter and the publication of proceedings.
5. The establishment of a database and library for books, photographic materials and papers on the history and development of model hovercraft.

ACTIVITIES

The Association's programme includes lectures and video/DVDs on events involving model hovercraft, details of new techniques, components and materials. Visits to model exhibitions, manufacturers and operators of hovercraft.

The venues for such meetings are currently based in the south of England, but outreach to other areas is incorporated in the programme.

MEMBERSHIP INFORMATION

Applications for membership are handled by the Membership Secretary and some bona fide interest in model hovercraft is expected.

There are three classes of membership and the subscription year is from 1 August to 31 July.

Members

Being 18 years of age or over with an annual subscription of £25.00.

Junior Members

Being under 18 years of age with an annual subscription of £10.00

Family Membership

Single household with an annual subscription of £30.00.

Note that there is no addition to the subscription rate for overseas members.

MANAGEMENT COMMITTEE

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Vacant

Competitions Secretary & Events Co-ordinator

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ASSOCIATION WEBSITE

www.modelhover.org.

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Late breaking news

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announcement from the
Committee on page 5**

Cover Picture

Hovercraft and DragonFly
by emmcnamee
via Flickr
taken July 14 2002

Many thanks to Mark Porter for the
link to this Public picture

1/1 Scale Hovercraft News

Published: 20 January, 2008

Burnham-On-Sea hovercraft rescues two children stranded in mud

Burnham's Light Of Elizabeth hovercraft flew to the rescue of two children in difficulty on the mudflats at Weston-super-Mare on Sunday (January 20th).

The hovercraft, run by Burnham-based charity BARB, had been taking part in a training exercise on the beach at Uphill when the alarm was raised by Coastguards who spotted the girls in distress.

Hovercraft Operations Manager Pete Emery flew to the pair - both aged 13 - and brought them back to the safety of the shore.

The two children, Faith Bowerman and Shannon Brook, from Quedgeley in Gloucester, had been walking with their family when they had sunk into the mud. They were unhurt, but shaken by the experience.

Faith's mother, Angela Bowerman, said: "We are so grateful that the hovercraft was nearby at the time and we were impressed with how quickly the crew carried out the rescue."

"I had no idea that the mudflats here can be so dangerous - the warning sign nearby had fallen off its post."

The Light Of Elizabeth is one of two rescue hovercrafts operated by BARB, a registered charity, which is funded entirely by contributions from the public.

Our photos show the Light Of Elizabeth hovercraft in action at Weston on Sunday



These were the scenes on Weston beach, with Brean Down in the background, on Sunday when a Coastguard training exercise turned into a real rescue



The Light Of Elizabeth is BARB's smaller, second hovercraft which operates alongside its flagship craft, The Spirit Of Lelaina.



This was the view from the Light Of Elizabeth as it flew across the mudflats at Weston, with Uphill in the distance, during Sunday's rescue

Courtesy of the BARB website

Hovercraft builder steps up production By Gareth Lewis

HAMPSHIRE hovercraft manufacturer Reaction International is set to see a four-fold increase in production after coming up with a radical new production technique.

The small Baker's Wharf, Southampton, firm is looking to ramp up production to 240 hovercraft a year and is launching a push into the lucrative US market.

A move to ditch labour intensive glass fibre bodywork on its popular Hovpod craft in favour of a type of plastic has hacked production times back from six days to four hours.

As a result, bosses of the eight - strong manufacturer are looking for bigger premises and to hire more staff to scale up their operation.

Retailing for between £8,500 and £15,500, the 45-mph Hovpod, pictured, is popular with superyacht owners who use them as tenders to access hard-to-reach islands and in the rental market. More

than 85 per cent are exported overseas.

Now the company is looking to the US for growth and has just shipped out 22 models to a chain of 107 shops in America and has plans to deliver a further 40. The consignment will act as display models, with bosses hoping to generate at least 100 sales across the Atlantic in the coming year.

Hovpod's Mike Glanville said: "The process before was glass fibre and it was labour intensive and we were limited to producing four or five a month. But now we have a new process to make the hulls and it's gone from six-and-a-half days to make a hull to just four hours. I think it's at least a four or five-fold increase in production. The next thing now is a bigger factory and more staff.

"Last year the maximum we could make was five a month but now that bottleneck has gone we could make 200 a year. There's far more orders than we have capacity to make them."

Southampton has a close association with the development of the hovercraft, with the inventor of the first one, Sir Christopher Cockerell, using Southampton water to test the concept in the 1950s.

The city is also home to Griffon Hovercraft, which has the largest range of hovercraft in the world, specialising in military applications as well as passenger craft and emergency services vehicles.

Souther Daily Echo Internet Edition-28-Jan 2008

Festival hope for hovercraft firm

By Laura Kitching

from Daily Echo/Dorset Echo on line news 29-01-2008



ROARING IN: The Tiger 12s class hovercraft the Cheshire-based Hovercraft Rental company is hoping can take part in the Spirit of the Sea Festival in Weymouth

A HOVERCRAFT company hopes to wow crowds at Weymouth's new Spirit of the Sea Festival with trips across land and sea.

Company director and lead pilot Geraint Roberts said the 10-seater craft could offer 10-15 minute trips across beach and sea for £10-£12, and likened the experience to a cheaper helicopter ride.

He said the 30ft hovercraft started life in the government experimental military ranges at Shoeburyness bird sanctuary - retrieving objects fired out into the marshes and also acting as a safety vessel.

Then it went to Scotland to be used for oil exploration but when that was unsuccessful Mr Roberts and his partner Dagmar Lensing took it on.

He said: "It's been completely rebuilt from engines to seats, with all the latest safety specifications."

Now the Tiger 12s class hovercraft travels all over Europe with a specially-built truck, crane and 35-foot trailer attending maritime festivals, air displays and provides a passenger service on the North Wales coast.

Mr Roberts said: "It's the only mobile one in Europe - there are a couple of hovercraft around but they're registered to ferries or privately owned.

"We're hoping to take part in the Spirit of the Sea Festival and give people the experience of the hovercraft - everyone who tries it says it's marvellous."

Mr Roberts said the hovercraft body travels about a metre-and-a-half above the ground while its skirt hangs down making it look closer to the floor than it actually is.

Despite weighing two-and-a-half tonnes, Mr Roberts said if the craft ran over someone lying on the beach they would not know unless its skirt knocked their glasses off - other than the noise of course.

Cheshire-based Hovercraft Rental has emailed the events' council bosses to ask if it can take part in the nine-day maritime extravaganza in July and is waiting to hear back.

A spokesman for Weymouth and Portland Borough Council said they had received the email but still needed to look into what was feasible for the event and whether the hovercraft could play a part.

The Spirit of the Sea Festival will be launched on February 27 and the council said it would have a better idea then of

what could work and how.

Arctic explorers begin training alongside Burnham hovercraft crews



Two Arctic explorers who hope to be the first to travel to the North Pole in a hovercraft have this week begun training alongside the crew of Burnham-On-Sea's rescue hovercrafts.

Simon Marshall, from Wembdon near Bridgwater, and London-based friend Alex Henney will be attempting a 500-mile expedition to the pole in a custom-made hovercraft similar to Burnham's life-saving Spirit Of Lelaina craft.



With this in mind, the duo have begun training alongside BARB crewmembers in preparation for their Arctic expedition in May 2009.

In return, they will donate the proceeds of the sponsorship of their trip to BARB to help it meet its £30,000 annual running costs.

During the first training session, Simon and Alex were shown around BARB's two hovercrafts and took part in a training flight along the coastline.

BARB Chairman Mark Newman said: "We were delighted to be approached by Simon and Alex and hope we can do all we can to help them with their expedition."

"Not only will they help to raise funds for BARB, but our crews will also benefit from

the experience of working with them."

Both Simon and Alex have a great deal of experience in trekking in the Arctic. Mr Marshall over ten years' experience, having been the base camp manager during the 1996 Ultimate Challenge expedition, which gave novices the opportunity to experience polar travel. And Mr Henney was a member of Team Polar Horizon, which took part in the 2007 Polar Race, a 350-mile race to the Magnetic North Pole.

Courtesy of the BARB web site
<http://www.burnham-on-sea.com/barb/index.html>
Published: January 28, 2008

Home for the Hover

By Greg Lambert

WORK on a new 'Home for the Hover' could begin as early as this summer after Lancaster City Council granted a 50-year lease for Morecambe's new rescue hovercraft station.

The council has agreed for the RNLI to lease land on the foreshore near to the Stone Jetty slipway for a peppercorn rent of £1 per year, if demanded.

This then means that the RNLI can press ahead with final discussions with Urban Splash to ensure the new station fits in with their plans for promenade regeneration, centred around the Midland Hotel.

Once these have been finalised, building work will begin.

Andrew Ashton, divisional inspector for the RNLI, said: "We are very pleased because this secures the future of the hovercraft on that site for 50 years.

"We are working hard with the council and Urban Splash to produce a design for the station that will fit in with the surrounding area.

"The funds are in place and this is an exciting development for the town."

Andrew thanked The Visitor and our readers for our help raising the £250,000 required to build the new station through our 'Home for the Hover' appeal.

The Morecambe RNLI hovercraft remains stationed in its temporary home near the Yacht Club.

reported on thevisitor.co.uk website
Last Updated: 31 January 2008 10:09 AM

Important !!

News from the Committee

Due to private family commitments some committee members have found it difficult to fulfil their duties, consequently the following changes were proposed and unanimously voted for by the Committee.

The Chairman, Secretary, Membership Secretary and Technical Officer all stood down on the 1st February 2008 and the replacements were then co-opted from the membership.

The co-opted replacements are as follows:-

- (1) Chairman - Stan Robinson
- (2) Secretary - Mark Porter
- (3) Membership Secretary - Tony Middleton
- (4) Technical Officer- Ralph Arrow

As these positions are co-opted they are effective until the 2008 AGM when all will be subject to re- election.

All other positions remain as:
Account Officer - Brian Wise
Safety Officer - Jim Ritchie
Archivist - Jason Collins-Webb
Newsletter Editor- Tony Middleton
Events & Competition Officer - Larry Hodgson

The Public Relations Officer remains vacant. If there is a volunteer the Committee would like to hear from you.

With this line up the committee should be in a better position to move the MHA forward.

Technical Meeting

We are having our first Technical meeting of 2008 at the Hovercraft Museum. We will start at about 10:00. We should be able to arrange teas and coffees but at the moment there is no buffet. If that changes we will let you know.

The main reason for the meeting is to work out how to arrange our static and operational displays for this year's Hovershow. Bring your latest models along, and we can see how you are getting on and discuss hints and tips to help you get them finished! Also, we can see how much space we are going to need to operate our models, so bring some batteries!

Last month on the MHA forum

Don't forget to visit the MHA Members only Forum on the MHA website at modelhover.org

To wet your appetite here are some of the topics discussed during the last month.

Current Project:-	WhizzyWig Build
Safety issues:-	Lithium Polymer cells (Li-Po) Futaba 6EX FASST Radio System Warning.
Model making tips and help:-	Well Deck ramp
Plans and design:-	SRN1 Model

The Gallery

Has pictures of the MHA at Alexander Palace, Mark's latest SRN5, Tony's RNLI hovercraft and Ralph's WIG project. Also Mark's new centrifugal fan, Tim's Welldeck, Jag's new model,

Why not take a visit and see for yourself then join in.

And finally:-

The technical paper this month is [Choosing the right Electronic Speed controller by Ralph Arrow](#) .
How about some of you new to the hobby writing about your experience in getting started?

Tony Middleton
Editor of Hover Time
contact via news@modelhover.org



Website: www.modelhovercraft.co.uk



- Length: 850mm, width:450mm
- Excellent capabilities on land and water
- Ideal for racing
- Highly stable on land and water
- Single Motor for propulsion and hover
- Simple design for assembly
- Bag skirt - Pre-stitched

E-Gem - £177.99 kit - including delivery to UK mainland

Basic model supplied with Deck, Hull, Duct, Spacer motor mount, Bracket - Motor mount, R/c mount, Screen, Rudders and pre- stitched Bag skirt.

Requires:

Option 1 - Standard Power unit: Speed 600 motor, MFA 2.3:1 gear box and Speed controller

Option 2 - High performance Power unit: Brushless Motor and Speed controller

Additionally: 2 channel Radio control system, Battery pack, 9" electric propeller, servo control fittings

Note: Price includes V.A.T., collection can be arranged

Choosing the right Electronic Speed controller

by Ralph Arrow

Before I start this article I must emphasise that I am in no way electronically competent and firmly believe that all electronic components consist of an outside case within which large amounts of smoke are stored. Well it appears to me that way as when ever I am playing with electronics I always let the smoke out!!



'Ralph Letting the smoke out again!'

Choosing the right Electronic Speed controller (SPEED CONTROLLER) for your radio control electric model can be made quite simple. Speed controllers are available with many different features, limits, and price ranges. Sorting through the list of speed controllers can be done by identifying what you need, and eliminating the rest. The general procedure is to narrow the list down to speed controllers that will get the job done, and then make your final selection based on price and preference. First, select speed controllers based on their most fundamental features.

Brushed or Brushless?

R/C speed controllers are separated by the type of motor they work with, either brushed or brushless. If your motor has two wires, it is brushed, and you need a brushed speed control. If it has three wires, it is brushless motor, and you require a brushless speed control. An exception to these rules are speed controllers that can work with both types of motor, however this feature is not commonly available and is very, very

rare.

Current Rating

A speed controller will have a power limit. To handle more power, the speed controller needs to be larger, heavier, and is more expensive. It's important to know the constant and peak current your motor is going to pull at full throttle. This determines the current rating you should look for in a speed controller.

Always choose a speed controller with a constant current rating that is higher than what you need. If, for example, the motor is going to pull 12A continuous, a 25A-rated speed controller is a much better choice than a 10A-rated one. The 10A speed controller will probably overheat and cook, even if you only fly at half throttle.

Check that the peak current capability of the controller can cope with a short term peak demand particularly on a brushed motor. For instance when initially starting the 12A continuous brushed motor from rest it could draw 60 or 100 amps for a split second. This is the amperage needed to get the motor turning and once rotating the amperage quickly falls to a continuous rate.

Brushless motors are much more efficient and therefore the continuous and peak ratings on a brushless speed controller are much closer, for instance 45/60A (45A continuous and 60A peak or surge)

Speed controllers are relatively light and maintain great resale value, so this is one item in your power system where skimping isn't worth while.

As a general rule of thumb the speed controller should be rated for about twice the normal operating power, i.e. a motor/propeller combination pulling 12 amps continuous should be fitted with a 25A speed controller.

Also remember the more power you need the more heat the speed controller will generate so installation location may become an issue.

Choosing the correct type and identifying the minimum current rating are the two big steps.

The next choices depend on your preferences. Here are some of the features and limits that can affect your selection.

Voltage Rating

All Speed controllers have voltage limits. Some even have more than one!

What is your battery voltage?

Choose a speed controller that is designed to work with an equal or higher voltage. Some Speed controllers are designed for low voltages (below 13V), some for medium voltages (below 25V), and some for high voltages (above 25V).

You shouldn't connect a high voltage battery to a low voltage speed controller, but it is also wasteful to use a high voltage speed controller with a low voltage battery.

The second voltage rating that some Speed controllers have is based on their Battery Eliminator Circuit (BEC).

For a speed controller to provide power to your receiver and servos, it has to drop battery voltage down to 5V. This becomes difficult once battery voltage is above 13V, so usually a separate receiver battery or voltage regulator is required. Consider what is going to be powering your receiver and servos.

Low Voltage Cut-off (LVC)

To protect your lithium polymer battery pack from being discharged too much, most Speed controllers can shut down when they sense battery voltage has become too low. This is almost always a useful feature, as it can save your li-poly battery from being permanently damaged.

Price

Speed controllers with the same current and voltage rating can vary in price. Investigate this large market, and put prices on the features that you want.

Programmability

Some Speed controllers simply work out of the bag, like a servo. Others can be fine-tuned and set up with exotic throttle profiles, battery cut off voltage, motor timing etc. The most advanced can be configured via a computer program and cable. Generally it is only brushless speed controllers that can be programmed.

Battery Eliminator Circuit (BEC)

This is a small circuit within the speed controller that provides power to the receiver and servo's. So with one of these BEC's you do not need to fit a separate receiver battery. This will save you weight. Some modellers have experienced radio interference when using the BEC and therefore prefer to run a separate battery for the receiver and servos.

This is a matter of choice, but for me I run all my models with BEC's. An important point to note here is that should you ever experience radio interference, i.e. the servo's are constantly twitching, then when trouble shooting the problem you should as one test consider trying a separate receiver battery to prove that the BEC is not faulty.

On a small low power speed controller, i.e. capable of controlling a small number of cells the BEC power can be very small, in fact small enough only to power the receiver and two servo's. So it is worth checking the BEC output before buying. This power is usually specified by the manufacturer as 'number of cells'. Most speed controllers 20A and above can power 4 servo's but it is worth checking the specification.

If using a large number of cells, usually more than 8 or 9, then you may have to disable the BEC circuit as the controller cannot reduce the high voltage down to the 5V required for the servo's and receiver due to the high heat loss required to reduce the voltage.

If this is the case then you have two options, either a separate battery or a separate BEC device.

Do's and Don'ts

Installation

As stated earlier, the speed control produces heat. This heat can build up and damage the speed control. The location of the installation of your speed control can affect the heat build up. If you install it in a confined space, a small fan may be needed to circulate air over the heat sink. Pay attention to the heat build up inside the hull on hot days.

Again, a fan may be needed, or just a few ventilation holes may work. Also remember that water will damage the electronic components and release that smoke!!

Controller Set Up

Motors with different numbers of coils need different timing set-ups in the controller in order to work properly. Your speed controller will probably not be set up for your motor and you must check the set up before you use it in anger. Each speed controller has it's own way of setting up - usually telling you what is going on by making the motor beep.

FAILURE TO GET THE SET UP CORRECT WILL USUALLY END UP WITH THE CONTROLLER BLOWING UP.



Fortunately the speed controller remembers the set up - but you will need to change it if you use a different motor **SO KEEP THE INSTRUCTIONS.**

The usual basic speed controller's have simple 'beeps' to tell you what they are doing. Typically set the throttle stick to minimum, plug in the speed controller and it will beep once, move the throttle to full power and the speed controller will beep again. Set the throttle to minimum again and the speed controller is ready to go. You normally only have to do this once and not every time you plug in the speed controller. **READ THE INSTRUCTIONS** as each speed controller set up varies.

Wires

Brushless motors rotate very fast - so the controllers need to make a lot of calculations every second and they have to switch the juice on and off very fast. Now all those wires have a property called inductance.

Inductance resists the flow of current - and the effect is worse the higher the frequency - **SO LONG WIRES ARE BAD.**

Schulze recommend a maximum current path of 8 inches. The current path includes - the controller power leads, the battery power leads and joint between cells. So on a 12 cell pack with a joining wire of 2 inches plus 10 0.75 inch bars, plus the battery leads at 2 inch so use end to end soldered cells and keep joins by battery bars to a minimum. Keep all wires as short as possible.

Must have longer wires!

Authors note: The following section was taken from an e-magazine sent to me by Tony Middleton:

On the speed controller-to-motor end of the controller, the concern seems to be primarily the addition of more resistance and inductance to the windings of the motor, which will make starting a sensorless motor more difficult. This is also an argument against having connectors between the motor and the controller.

For either sensor-equipped brushless motors or conventional brushed motors, this does not seem to be an issue. Of course additional wire

length and connectors do add to resistance losses and therefore result in less of the battery's power getting to the motor, but unless the connectors are really bad (such as the Tamiya type) or the wire is really long or undersized, this is a small concern.

On the battery-to-speed controller side of the controller, the situation can be more severe. On this side of the controller, there is no diode or synchronous rectification to help smooth out the start-stop-start-stop of the electricity flow as the controller switches the motor on and off.

Due to the small, but real, inductance of the wires that lead from the battery to the ESC, this current tends to try to keep flowing even during the "off" times. This induces a voltage spike in the wire. The more wire, the greater the inductance and resulting voltage spike.

Many speed controller's, for both brushed and brushless motors, have a capacitor across the input side to help smooth out these spikes, but if the leads get too long, the voltage rating of that capacitor (or capacitors in some cases) can be exceeded. When that happens (and it can happen, I've seen it), the capacitor either smokes or even explodes!

Afterward, the controller may still work, but now these voltage spikes are getting into the rest of the controller and sooner or later more smoke will leak out.

Therefore, while some makers have told me, "don't lengthen either end", and some have said, "it doesn't matter", most are of the opinion that if you must lengthen wires, it is better to do it between the motor and the controller, rather than between the battery and the controller. I think "Astro Bob" Boucher put it succinctly in an e-mail response to this question some time ago.

Bob wrote (in April of 2001), "The lead length to any brushless or brushed motor from the speed control is not important except for resistance losses. The inductance in the winding is higher than any leads. This is not true about the wire length between battery and control. These must be SHORT. The motor sees a PWM [pulse width modulated] voltage but a smooth current waveform. The battery sees an interrupted current

waveform with one microsecond or smaller rise times

[this would be true for anything other than a frame rate controller, and we don't use those any more, do we? - BEC].

This means big voltage spikes. The caps used on most controls are OK for 1 foot of wire. Add 3 feet and you have instant smoke. This is true of almost all speed controls on the market, brushless and brushed. At 30 Amps, a 3-foot loop will generate 20-volt spikes. Add this to the battery voltage and you are asking for trouble."There are also considerations of having more wire to radiate interference, especially at higher power levels. This argues for keeping the wiring as short as possible all the way around.

However, it seems to me that the induced voltage spikes on the battery side are the biggest worry. That said, I routinely insert my Wattmeter between the battery and ESC when testing, adding about a foot of wire length. I've put more than 50 flights on my Big T with an MGM ComPro brushless controller with about a 9-inch extension on the battery side, and I haven't blown it up yet.

Regardless of what I might actually be flying, if you must lengthen wiring, and you have a choice, I recommend you do it on the motor end.

Safety Loop

This is a small loop of wire that completes the power circuit and is mounted on the outside of the model. Usually this consists of two female connectors glued into the model and a small length of wire with male bullets on each end.

The males are pushed into the females completing the power circuit. Removing this loop will disconnect the battery from the electronics in the model. This is very common on model planes and racing boats.

Fitting more than two speed controllers or a receiver battery?

If fitting more than two speed controllers with BEC's in a model and no receiver battery then you **MUST** disconnect the positive lead on *ONE* of the speed controller receiver plugs.

Otherwise both speed controllers will try to power the receiver and potentially let the smoke out!!

If fitting a receiver battery then all the speed controllers must have the power lead disconnected.

To disconnect the lead is quite easy. Either remove the manufacturers BEC link which will disable the BEC part of the electronics. If this link is not fitted then look at the plug on the speed controller with three wires that plugs into the receiver, on one side of this plug you will find little plastic tabs that stop the little metal pins from being pushed out when connecting to the receiver.

Using a small pointed tool, a pin will do, lift the plastic tab on the middle wire, and pull the wire

out. Tape this wire back on itself. Now you only have two wires, signal and negative, going into the plug. That's it, ready to go.

Conclusion

If you are not electronically minded like me, do what I do, ***KISIS - Keep It Simple I'm Stupid.*** Electronic parts like speed controllers are very easy to install and use ***IF YOU READ THE INSTRUCTIONS!***

I have written this article by searching the internet for snippets of information and compiled all these snippets into one document. So my grateful thanks to all those 'smoke experts' out there who have publicly shared their knowledge and enabled me to put this article together.

Ralph



The result of getting it wrong!!