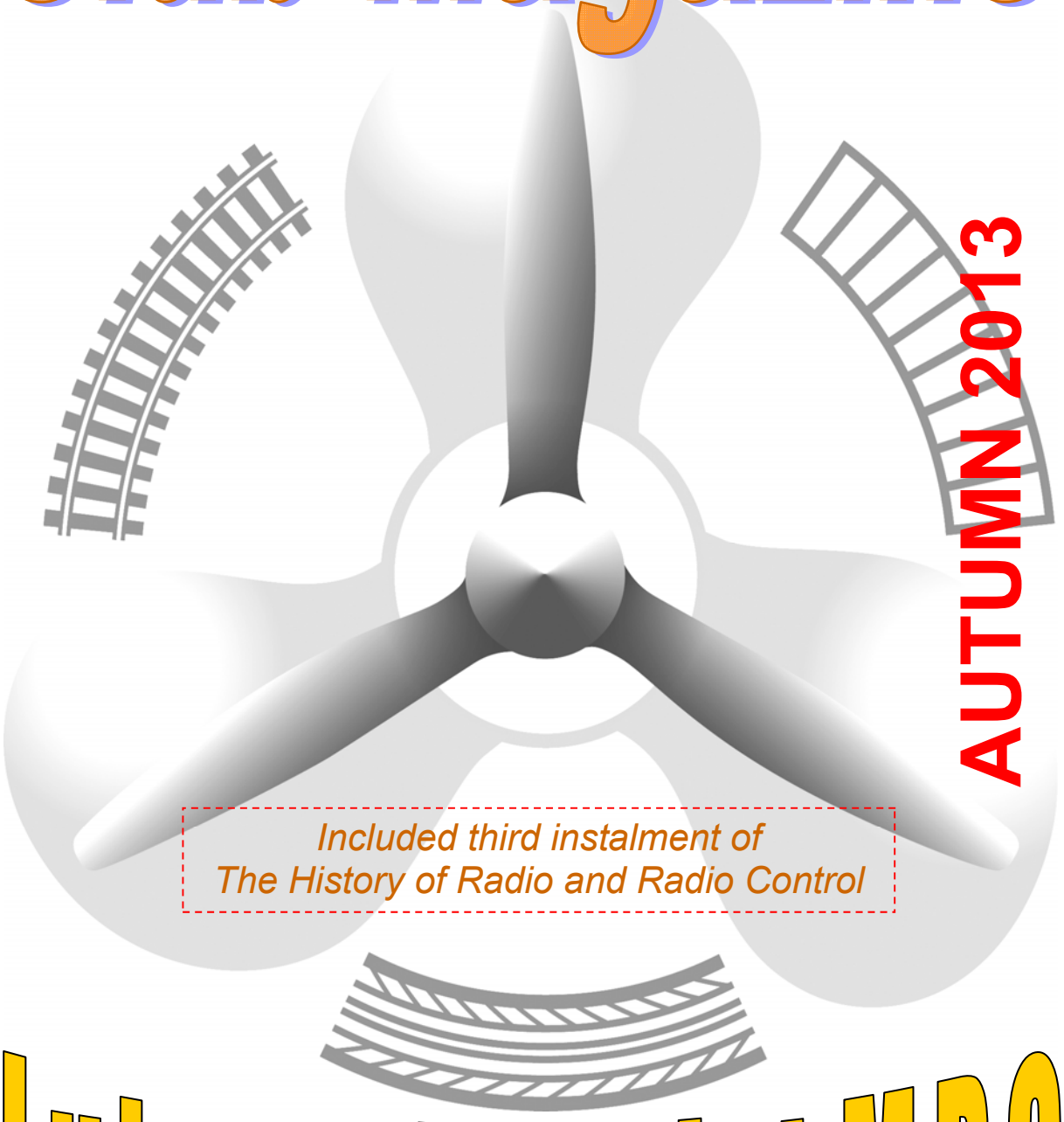
Club Magazine



AUTUMN 2013

Included third instalment of
The History of Radio and Radio Control

Luton & District MBC

.... a club NOT just for boats ....

Editorial

Hi Folks,

Since taking over *as editor at the last AGM, this will be the fourth quarterly issue. Thus making for another club year of building, sailing and attending shows and exhibitions, so I hope you have achieved what you set for yourselves.*

As far as *our many contributors are concerned, we have been fortunate in having Tony Dalton in our midst, for he has written many major articles associated with model boating, some of which have been reproduced within our magazine. You will find another in this issue on how Electric Motors Work. This is a major article; which will unravel the secrets of how conventional and brushless motors function.*
Accompanying this issue, is the third part of Tony Dalton's "The History of Radio and Radio Control".

Having said that, *it is in our own best interest; to have the widest number of members writing for the magazine. So I am sure you will join me in recording an enormous vote of thanks to each and every one of our contributors for taking the time to sit and compile their reports and articles. For it has been my pleasure to edit them into our magazine.*

Our Annual General Meeting *is upon us, Thursday 12th September. In spite of repeated requests, I have not been able to garner the details for this important yearly meeting I am therefore forced to leave this part of the page blank.*

Tell's Top Tips

No1. WATER LINES
THIS IS WHERE MANY A GOOD SHIP MODEL IS SPOILED
EVERYONE HAS HIS OWN IDEAS OF HOW IT SHOULD BE DONE
FROM THE COMPLICATED TO THE RIDICULOUS
MY METHOD IS LIKE MYSELF BOTH SIMPLE AND QUICK.

FIRST FROM THE PLAN, MAKE A MARK IN PENCIL
AT THE VERY FRONT AND BACK OF YOUR HULL
THEN RUN YOUR BATH WITH WATER AND
PUT YOUR HULL IN
WEIGH DOWN UNTIL MARKS FRONT AND BACK
ARE ON THE WATER SURFACE
AND WITH SMALL SPIRIT LEVEL ACROSS HULL,
ADJUST AS NECESSARY

LEAVE UNTIL WATER HAS SETTLED AND VERY STILL
NOW FOR THE CLEVER BIT
SPRINKLE TALC ON SURFACE OF WATER
(lily of the valley is good)
AND LEAVE OVERNIGHT.

IN THE MORNING VERY CAREFULLY REMOVE PLUG
TRYING NOT TO DISTURB WATER AND
SUPPORT HULL UNTIL WATER RUNS AWAY
AS IF BY MAGIC
A WATER LINE HAS APPEARED ALL AROUND THE HULL
AT THE CORRECT WATER LINE.
MARK LINE IN PENCIL
REMOVE TALC

JOB DONE

TERRY STAG

Boating Down my Way

At last, the water level at Setley Pond has gone down. By mid May, we could use the whole lower car park. The bonus for all club members be they scale or sail, is the greater surface area to boat on, plus deeper water at the edge so launching and retrieval is easer. Until recently the pot holes in the gravel road leading to the car parks were of suspension breaking proportions, so the council has filled them using over sixty tons of gravel.

On a slightly more humorous note, one of the yachtie types cut back a gorse bush that was in his field of view, leaving the stump, a little base growth and the cuttings lying around. The upshot was, the Forestry Commission and New Forrest Authority flipped. To be fair, our insurance requires us to protect the Fauna and Flora around the pond. After some detective work, apologising and tiding up, we avoided a black mark or even suspension of our licence. The moral of this is, the countryside is so micro managed these days, to do things without prior permission is to court disaster.

As I may have mentioned before, the club is divided into two sections, cloth and motor powered. On the 11th May the yachts had their Annual R36R Open Meeting. The weather was just right, dry and windy. There was an entry of 12 and after the competitors briefing, the fun started. Heats of 8 yachts raced a series of courses to take account of the prevailing wind direction. Running a leg in gusty conditions can turn your yacht into a semi submersible at times, even becoming a complete broach. It was plain to see that No.36 Vernon Appleton was having a good day, closely followed by No.90 Martin Holton and vice versa at times. There was the usual close sailing when fetching up to the marks, with several having to do a 360 for touching buoy of competitor, thus dropping them down the order.

There were a number of drivers who had a greater understanding of their boats personality and also, really **DID** understand the sail trim for a particular leg and wind condition, their reward; was usually a heat win.

After the end of a heat, there would be a short time for adjustments and I dare say, the odd repair before the next heat was timed to start automatically, an audio tape ticking off the time to the off. This is not to say, the competitors were not enjoying themselves, as was amply demonstrated on the day. As they were frequently in and out of the water, waders were the order of the day.

By the time the weather was threatening the change, the scores had been calculated and the placing announced and trophies duly awarded..

Place	Points	Skipper	Club Sail No
1 st	22	Alan Maynard	SRCMYC 24
2 nd	28	Mike Rostance	SRCMYC 90
3 rd	32	Shaun Harris	SRCMYC 79
4 th	42	Peter Dawson	SRCMYC 35
5 th	50	Robin Clabborn	SRCMYC 33
6 th	79	Geoff Appleton	SRCMYC/Coalhouse Fort MYC 16

Should you want to take this type of racing seriously, I feel you would need to buy or mould the very best boat shape and fit top quality fittings plus, own at least three suits of sails per boat. I noticed many hulls were made of carbon fibre, don't forget deferent classes have their own rules about hull size, weight and materials to be used. You must of course register the model, have it scrutinised and be allocated a racing number. When racing, be prepared to act alone and be ruled by the countdown to the off tape loop.
The main present day classes raced are:
Marblehead max length 50inches and 800ins sq measured sail area.
The International One Metre (IOM) only three specified sail rigs allowed.
Six Metre a scaled down version of the full size 6 metre yacht. Typically about 1m long with large overhangs. Carrying 0.7M sq of sail.
R36R the hull must fit into a box 37ins long, 9ins wide, 11ins deep. Sail area unrestricted.
Model Yachting Association www.mysa.org.uk
Ken Gould

By the way, when sailing at Setley Pond, one can be caught on the horns of a dilemma or have a pig of a time steering your boat.

More from Dave Thompson's photograph Part Two

Empire Raymond – 01/05/2011

P1107 – 24/04/2011

Pegasus III – 24/04/2011

PG65 – 24/04/2011

Pip – 24/04/2011

Lake Meeting – 24/04/2011

CF63 – 01/05/2011

Loyal Chancellor – 24/04/2011

collection of members boats sailing on the lake
Part Two

Loyal Chancellor and Bee – 03/07/2011

LCT – 23/10/2011

Cabin Cruiser – 23/10/2011

LCT398 – 24/10/2011

VB59 – 24/10/2011

Life Boat – 30/10/2011

Loyal Supporter – 08/01/2012

Guided Missile destroyer – 19/08/2012

How Electric Motors Work

Much has been written about choosing the right motor, estimating performance, installing the motor in your model, and so on. This article goes back to basics and describes how both brushed and brushless motors actually work. Do you need to know this to operate your electric models? Probably not, but a good understanding of the functioning of a motor can help you diagnose problems, and some people, myself included, like to know how everything does work. So, if you're interested, please read on.

Magnets

The fundamental driving force behind all electric motors, whether brushed or brushless, AC or DC, is magnetism. We've probably all played with magnets at some time or other, and have learned about them in the science class in school. All magnets have a north pole and a south pole (it just so happens that the earth is a magnet whose poles happen to correspond very roughly to the geographical poles, hence the names for the magnet's poles – North and South). If you take two bar shaped magnets and line them up, they will be attracted to one another if one's North Pole is next to the other's South Pole. If you line them up north to north or south to south, they will repel each other. Opposites attract. Consider an assembly of three magnets, as shown in **Fig 1.** The left and right hand magnets are fixed to some surface, and the centre magnet is free to rotate about its centre.

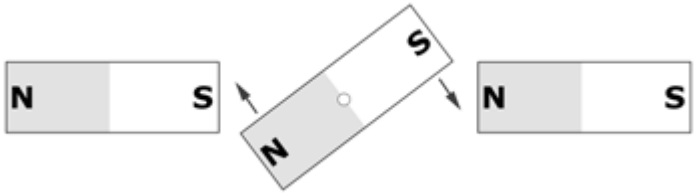


Fig 1. The central rotating magnet will turn until it is aligned with the two fixed magnets, North Pole to South Pole.

Because of the attraction of opposite poles, the centre magnet will rotate until it is

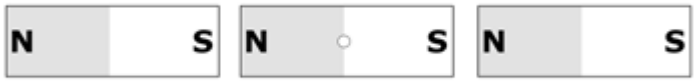


Fig 2. Once aligned, it will resist being turned further

aligned as in **Fig 2.** Because the magnet has weight, and thus momentum, it would actually overshoot slightly, and then come back, overshoot again, and so on a few times before settling down. Now, imagine we could work some magic and swap the centre magnet's north and south poles just as it overshoots the first time, as shown in **Fig 3**.

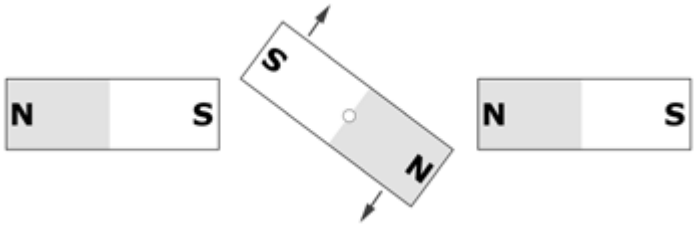


Fig 3. If we reverse the poles of the central magnet just before it comes to rest, it will keep turning.

Instead of coming back, it would now be repelled by the fixed magnets, and keep turning so it can align itself in the other direction. Eventually, it would reach the state in **Fig 4**, which looks suspiciously like **Fig 1**.

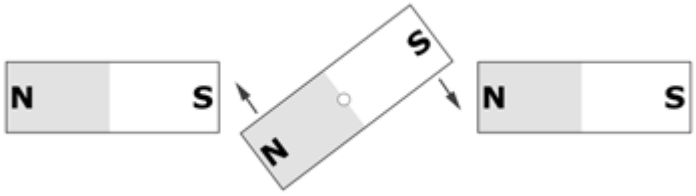


Fig 4. Eventually, it will get back into the position it started from in Figure 1.

If we perform this pole-swapping every time the centre magnet just finishes over-shooting the aligned position, it would keep turning forever.
The problem is how to perform this feat of magnetic motion.

Electromagnets

The magnets we are using are called permanent magnets. These objects have a fixed magnetic field that is always there. The poles are fixed relative to one another and relative to the physical magnet.
Another kind of magnet is the electromagnet. In its simplest form, this consists of an iron bar, wrapped in a coil of wire, as shown in **Fig 5**.

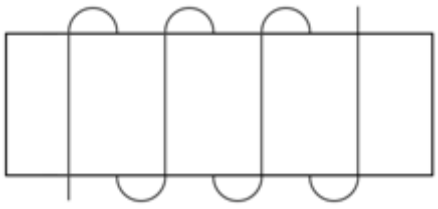


Fig 5. An electromagnet is just a piece of iron or other magnetic metal with a wire coil wrapped around it.

By itself it does nothing. However, if you pass an electric current through the wire, a magnetic field is formed in the iron bar, and it becomes a magnet, as in **Fig 6.**

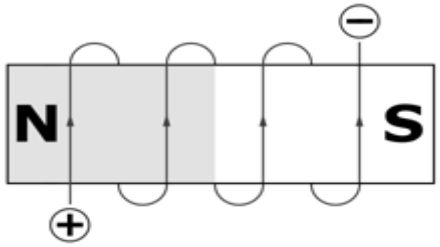


Fig 6. Applying current in one direction will produce a magnet.

If you turn off the current, it stops being a magnet.
So far, the electromagnet already seems quite useful, since we can use it to pick up iron, steel, or nickel objects, carry them somewhere, and then drop them by just turning off the power (Scrap Yard Cranes do this with entire automobiles).

The really interesting thing about an electromagnet is that its polarity (the location of the north and south poles) depends on the direction of current flow. If we pass the current through in the opposite direction, the electromagnet's poles will be reversed, as shown in **Fig 7**.

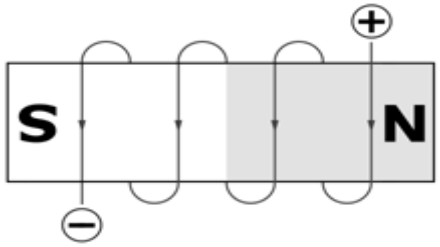


Fig 7. Applying current in the opposite direction will produce a magnet with opposite polarity.

If we replace the central magnet in our set of three magnets with an electromagnet, as in Figure 8, we have the beginnings of an electric motor.

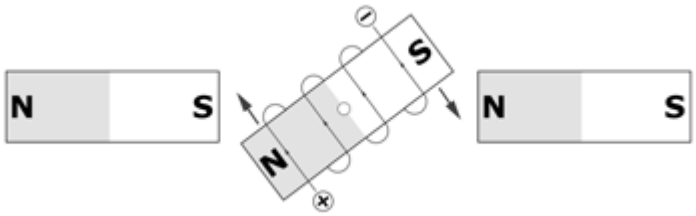


Fig 8. Replacing the central magnet in Figure 1 with an electromagnet gives us the beginnings of a motor.

We have two problems to solve: feeding the current to the rotating electromagnet without the wires getting twisted, and changing the direction of the current at the appropriate time. Both of these problems are solved using two devices: a split-ring commutator and a pair of brushes. **Fig 9** illustrates these.

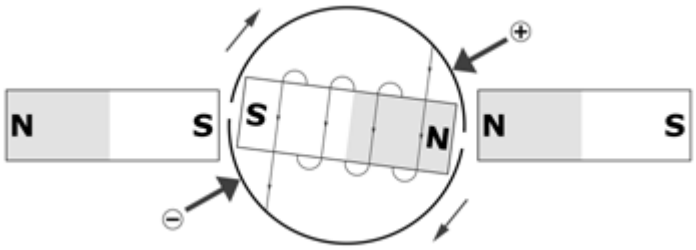


Fig 9. By adding a commutator (the semi-circular arcs) and brushes (the wide arrows), we can change the polarity of the electromagnet as it turns.

The two semicircles are the commutator, and the two arrows are the brushes. The current is applied to the brushes, indicated by the "+" and "-" signs. With the current as shown, the electromagnet will be repelled by the two permanent magnets, and it will turn clockwise. After it has turned almost half way around, it will be in the state shown in **Fig 10.**

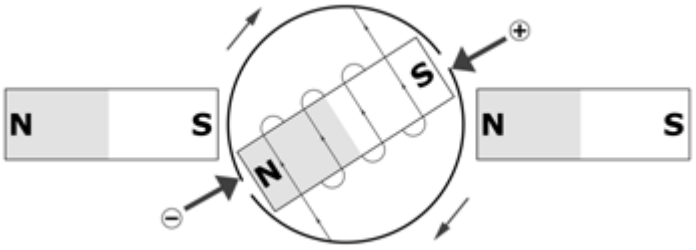


Fig 10. The magnets are almost aligned, but soon, the polarity will reverse, sending the rotating electromagnet on its way around once again.

Then, just as the magnet reaches the aligned state, the split in the commutator passes under the brushes, and then the current through the electromagnet is reversed, which takes us back to the condition in **Fig 9.** As a result, the magnet keeps turning and we have the basics of a motor.

Some Terminology

The discussion above has culminated in the design of a simple two-pole, two-slot, permanent magnet, brushed, direct-current (DC) motor.

The term two-pole refers to the fact that there are two permanent magnet poles involved in the operation of the motor, the south pole of the left hand magnet and the north pole of the right hand magnet. The motor would actually work with only one fixed magnet (for example, only the left hand magnet), but would be less powerful and efficient.

The rotating electromagnet is known as the armature. Two-slot means that the armature consists of a single coil of wire around a single bar with only two ends (the term "slot" refers to the gap between the armature ends, since the armature is not typically bar shaped, but has a wider end).

Real Motors

In a real two-pole motor, the two poles are often the two ends of the same magnet. Although the motor may appear to contain two separate magnets, the steel motor case ties them together to act as a single magnet. It's really as if our motor were

built like in **Fig 11**, with the rotating electromagnet inside a hole in the permanent magnet.

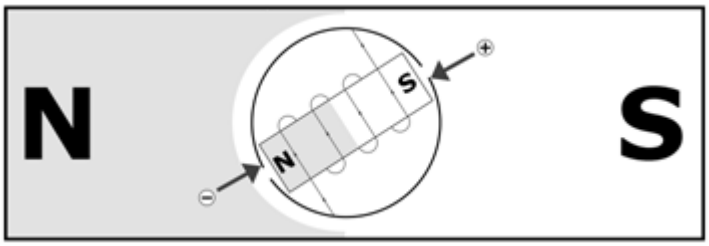


Fig 11. In many motors, the two fixed magnets are really one the two poles of what is effectively one magnet (although it may be made up of two separate magnets connected by the motor housing).

Practically real motors normally have at least a three-slot armature, and a commutator with three segments. There is however still only two brushes. Higher voltage and higher efficiency motors have even more slots (an odd number) and more segments on the commutator (the same as the number of slots), and more brushes (always an even number). **Photos 1 and 2** show the armature, commutator, and brushes from a typical low-cost three-slot motor.

Photo 1. This is a three-slot armature from an inexpensive 540-sized ferrite "can" motor

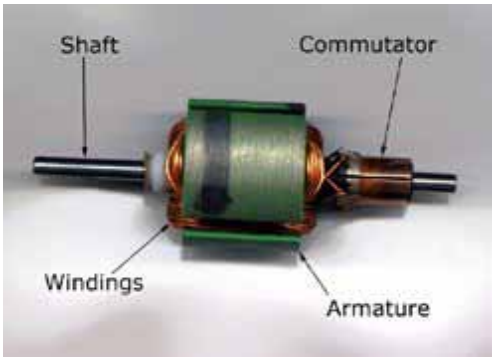


Photo 2. The brushes in a "can" motor are held in place by alloy leaf springs that also serve to carry current. The commutator has been simulated with a piece of dowel with some markings on it to better show how it mates with the brushes.

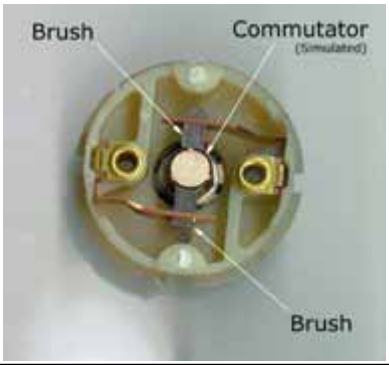


Fig 12 illustrates a three-slot motor in conceptual form. Notice that the brush is now wider, contacting the commutator segments over a wider area, and actually spanning two segments sometimes. Also notice that both ends of electromagnet number 2 are contacting the brush at the particular point in time captured by **Fig 12.** This means that no current is flowing through electromagnet 2 and only number 1 and 3 are on.

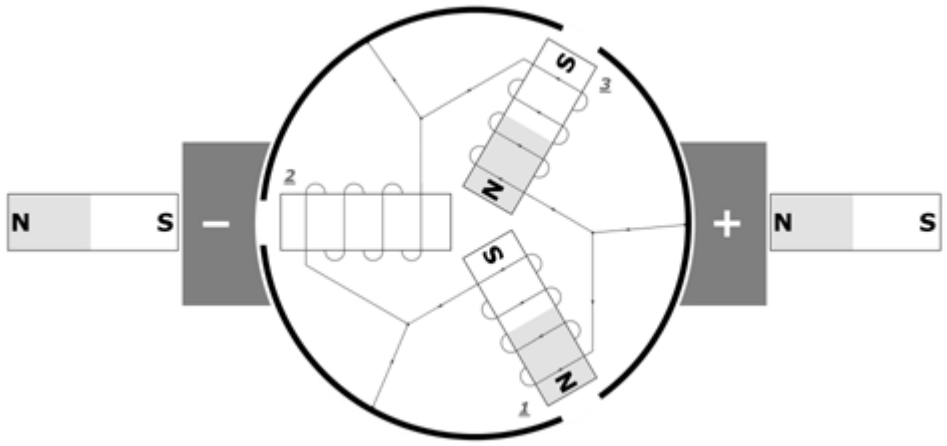


Figure 12. This is a schematic representation of a typical three-slot two-pole brushed motor. The armature has three electromagnets, and three commutator segments. The brushes sometimes contact more than one segment.

Effectively, the armature is now a pair of electromagnets; number 3 is being attracted by the north pole of the right hand permanent magnet, and number 1 is being repelled. One twelfth of a turn later, as in **Fig 13**, all three electromagnets have current flowing through them.

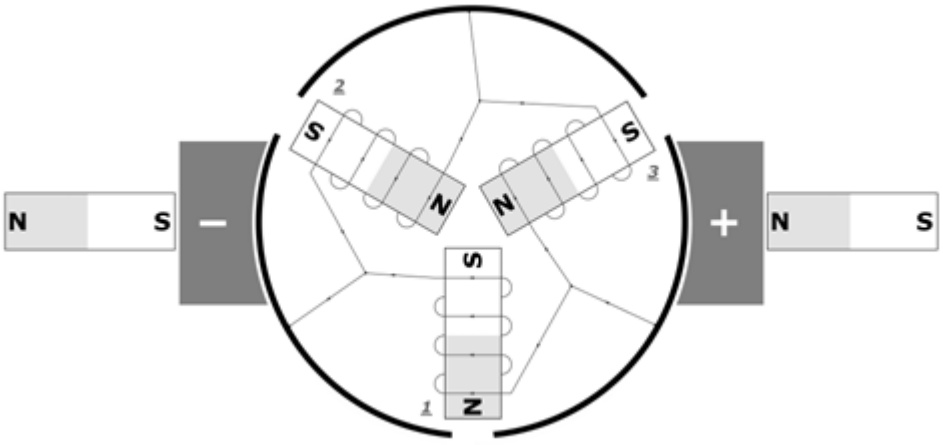


Fig 13. The same motor as in Figure 12, one twelfth of a rotation (30 degrees) later.

Now, electromagnet number 1 is being both repelled by the right hand permanent magnet, and attracted by the left hand one. Number 2 is being repelled by the left magnet, and number 3 is still being attracted by the right magnet.

Another twelfth of a turn later, in **Fig 14**, electromagnet 1 is being attracted to the left hand magnet, and number 2 is still being repelled. Electromagnet 3 is turned off. This progression of electromagnets switching on and off continues as the motor turns, eventually returning to the state of **Fig 12.**

The Brushless Motor

There are a number of drawbacks to the brush and commutator mechanism used in

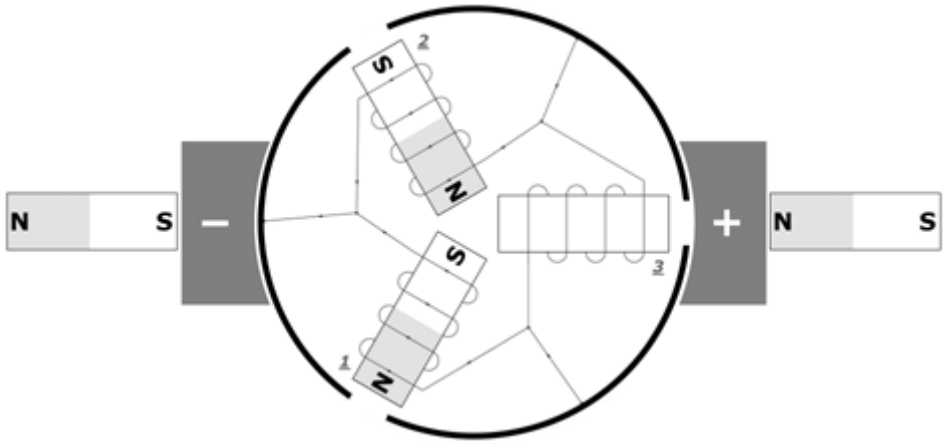


Fig 14. The motor from Figure 12, one sixth of a rotation (60 degrees) later.

a brushed motor: the brushes cause friction, there is some electrical resistance in the brush-to-commutator interface, and the mechanical switching of the armature current results in sparking, which can cause radio interference. Brushless motors do away with the brushes and commutator to get around these problems. The result is greater efficiency (more output power for a given amount of input power), and less electrical interference.

The basic principles by which a brushless motor operates are exactly the same as those of a brushed motor. **Fig's 15 and 16** show two stages in the operation of a simple brushless motor.

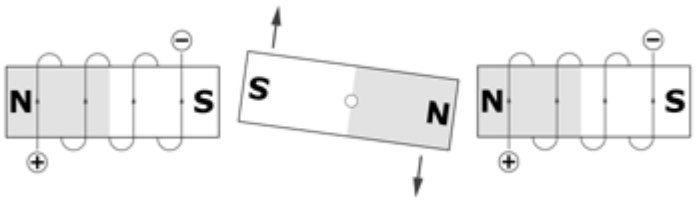


Fig 15. This is the brushless motor equivalent of Figure 9. The electromagnets are fixed, and the permanent magnet rotates.

Notice that **Fig 15** is almost identical to **Fig 9** of the brushed motor type, except that there are no brushes and no commutator, and the types of the magnets have been exchanged. The permanent magnets have become electromagnets, and vice versa. The rotating permanent magnet is being repelled by the two electromagnets.

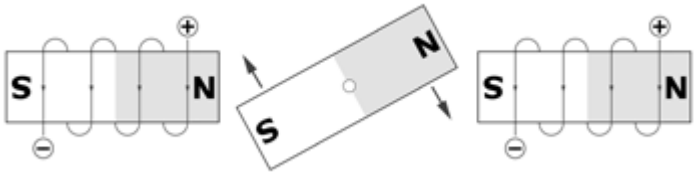


Fig 16. The motor from Figure 15, almost a full turn later. Notice that the electromagnets have changed their polarity.

In **Fig 16**, almost a full turn later, the polarity of the left and right hand magnets has changed. The rotating magnet is now being pulled into alignment.
The problem to be solved here is how to cause the electromagnets to reverse their polarity at the right time. One could devise some sort of mechanical scheme controlled by the rotating permanent magnet, but this would nullify the main benefits of brushless motors.
Instead, the electromagnets are controlled by external electronic circuitry. This circuitry monitors the current position of the rotating magnet, and energizes the external magnets appropriately to keep the motor turning. This circuitry is part of the brushless electronic speed control (ESC).
There are two ways for a brushless ESC to monitor the position of the rotating magnet. One is by way of magnetic sensors (based on the Hall-effect sensors). These sensors report back to the ESC through a separate set of wires. The other method is known as "sensorless". Roughly, in this method the ESC monitors the three motor power wires for fluctuations caused by the spinning magnets.

Brushless Terminology

Since the electromagnet assembly in a brushless motor remains stationary, it is called a stator instead of an armature. The rotating magnet assembly is called the rotor.

Real Brushless Motors

Just as a real brushed motor rarely has only two poles and a two-slot armature, a real brushless motor rarely has only a two-pole rotor and a two-slot stator. Most commercially available brushless motors have at least four poles, and a nine or more slot stator. However, for purposes of comparison, **Fig 17** illustrates a hypothetical two-pole three-slot brushless motor, corresponding to our two-pole three-slot brushed motor.

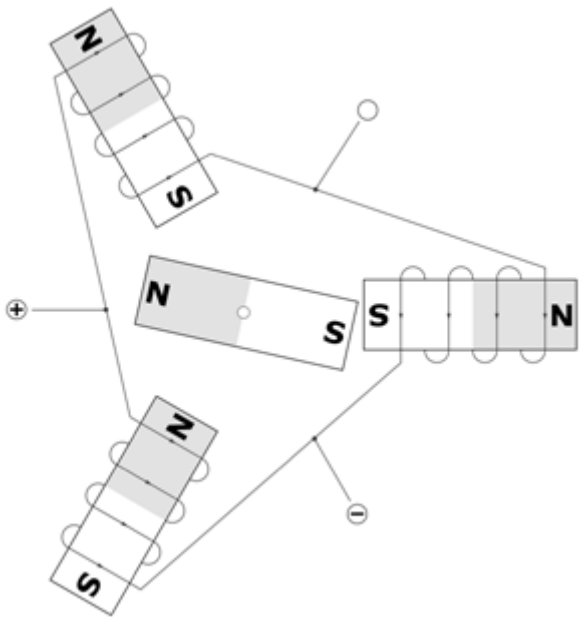
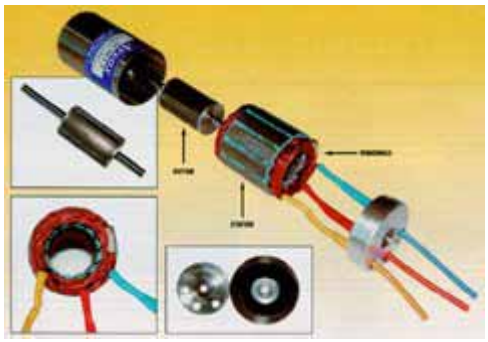


Fig 17. This is a schematic representation of a hypothetical three-slot two-pole brushless motor. The rotor has one permanent magnet (two poles), and the stator has three electromagnets (three slots) and three connection points.

Notice there are three connection points to receive power from the brushless ESC (a motor with more than three stators has them wired in three groups, so there are still only three power leads).

Photo 3. The components of a brushless motor.	

In the state represented by **Fig 17**, power is being applied to the two leads labelled "+" and "-", which energizes the electromagnets as shown. The upper left electromagnet is attracting the rotor's North Pole, the lower left one is repelling it, and the right hand electromagnet is repelling the rotor's South Pole. As the rotor turns, the ESC will change which leads have power applied to them. Sometimes only two leads will, as in **Fig 17**, and at other times all three leads will (just like in **Fig 13** for a brushed motor).

Real World Issues

The theory of motor operation described here is correct, but somewhat simplified. If you examine the diagrams closely, you'll notice situations where the polarity might reverse too soon, apparently causing the motor to stop. Because of a number of factors, such as the time it takes for the magnetic field to collapse, and the momentum of the armature, a real motor won't necessarily stop in this situation.

The relationship between the position of the armature (or rotor) and magnets (or stator), and the time that the electromagnets change their polarity, is known as "timing". In a brushed motor, it is adjusted by repositioning the brushes relative to the permanent magnets. In a Hall-effect sensored brushless motor, it is the sensors that are repositioned. In a sensorless motor, the ESC adjusts the timing automatically based on the feedback it is getting from the motor.

The optimal timing depends on motor speed and current, and for maximum efficiency, should be adjusted for the particular operating condition of the motor.

KV Ratings

The letters KV represent the number of revolutions it will turn for each volt applied with no load. For example if you have a brushless motor with a KV rating of 4600 and run it at 12V. Multiply the KV of 4600 by 12 volts and this gives you an RPM of 55,200. This is the max RPM that the motor can reach under no load conditions.

Almost all brushless motors will have the KV ratings marked on them. Some on the motor case, others on the motor leads, but some you will only see on the motors specification sheet.

So what does this really mean?

- A motor with a higher KV has less turns of thicker wire, it will run on a lower voltage but take a high amps and swing a smaller propeller at a high RPM possibly giving a high top speed but not as much acceleration/torque.

A motor with a lower KV has more turns of thinner wire, it will run on a higher voltage at less amps, produce a higher torque and swing a larger propeller.

Now you are in a position to decide which is best for your requirements. If you have room to really reach top speeds, a higher KV motor will get you there, but maybe you are in a restricted area and what you want is acceleration, then look for a lower KV number, still not sure which way to go? Try something in the middle.

Motor Heat

If motor heat is an problem then a lower KV rating with a higher voltage battery may be the answer. The thing to remember when referring to KV of your Brushless Motor is that it and the ESC will each have a maximum input voltage the lower of which you must use to calculate your top RPM. If you go over the recommended voltage then you have a high chance that something will over heat.

Motor Turns

Motor Turns is the same for brushed motors and brushless motors. The word 'Turns' stands for the amount of wire wound around each of the motor's rotor poles.

- The higher the number of wirings/turns means less top speed, but higher acceleration/torque.
- The lower the number of turns equals higher top end speed and lower torque/ acceleration.

A motor with a turn rating of 5.5 will have less acceleration/torque but higher top speed than a motor with a 12 turn rating.

Current Rating - Amps

It is a great idea to find an ESC that has a current rating that is higher than your motor by at least 20%. It will be a good safety cushion to make sure that you do not burn up your brushless motor.

The maximum current rating is the maximum amount of current that a motor is able to handle safely. This current is measured in Amps. The continuous current rating of a motor is the Amps that a motor can handle safely over a long period of time.

The estimated current rating of a motor is usually stated on motors specification sheet. However other factors will affect the actual current that a Brushless motor will draw. Things like the KV rating, battery voltage, how large the RC model is, and gear ratio or prop size. The harder a motor needs to work to reach its top speed, the higher the amount of current is drawn.

Watts

Watts are the power rating or the horsepower equivalent of your brushless RC Motor. The math's here is Amps x Volts = Watts. You will see a watt rating in the brushless motor specs. Your brushless motor should have a watt rating on its spec sheet, something like "180W". This is the amount of "horse power" that it should produce safely. Running anything over this rating could damage your motor, especially over a long period of time.

Motor Efficiency

The efficiency of a motor determines its quality. Higher efficiency means better design and high quality components. The higher the efficiency of the motor the more power it can produce before it overheats. A 70% efficient motor produces 70% power and 30% heat. A 85% efficient motor produces 85% power and 15% heat. If

your battery is sending the ESC 180 watts, your motor will produce 153 watts (85%), the rest is 27 Watts of heat that could melt solder, that is a lot of wasted power. A cooler running motor will give you much less trouble. To reduce heat you can change your gearing or propeller size, use a more efficient motor, reduce the voltage and thus the amps, or try a motor heat sink and motor fan. Keeping the heat down on your motor allows it to run longer, and give you the power it needs.

I trust you have all fully understood this article and are now experts on Brushed and Brushless motors.
Tony Dalton

Sold on ebay

~~~~~~~~~~~~~~~~~~~~~~

I recently sold my Africa star on ebay, mainly due to its size and keeping it in my hobby/workshop room, which is upstairs. It needed careful negotiation through doors, round corners and then down the stairs, through the hall and kitchen, then the garden to my car, which is kept at the back of our house. This always caused comments such as, mind the wallpaper, don't chip the paint, be careful of those plates hanging on the wall etc, that also had to be achieved without kicking the cats food bowls all over the floor.

I digress, now back to **ebay**. The advert was for 7 days, with pick up only, due to size. When it sold, I got a message from the buyer saying, could he pick the boat up on Saturday, me, I had no problem, just let me know a rough time. Buyer, I will give you a ring about midday, when I am about half an hour from your house, me, OK no problem will await your call. Purchaser phoned as agreed at about 11.30 and said, he would be with me in a short while as his Sat/nav had pinpointed my location, all in a very heavy Scottish accent.

He arrived about 12 noon with his son in a beat up S reg. Vauxhall Corsa, but what was more surprising is, that they had travelled down from 15 miles north of the Fourth Bridge in Scotland, which had taken them some 6 hours. They paid me, had a cup of tea, and promptly put the boat between the front seats and left for the 6 hour return journey. Could this be the longest recorded **ebay** pick up ??
John Weedon
~~~~~~~~~~~~~~~~~~~~~~

A Model Railway

I have always been interested in railways since I were a little lad collecting engine numbers at the side of the track, (a little anorak), so when girls came into fashion and I succumbed, all through of railways went out of the window, but as nature took its course and the patter of little feet came along and one of them was a boy, thoughts began of a model railway. I had to wait until he was old enough to take an interest. I built a small layout over his bed using an 8x4 board pivoted from the wall, this kept us amused until we moved premises and it was never rebuilt. Boys grow old as we all know, leave home and leave an empty bedroom and

idea's come to fill the empty space, but after a diplomatic discussion with another interested party I was allowed a fair space.

Thus, I put pencil to paper and sketched out a layout, having measured out the space that had been agreed. Design completed it now needed building and as I have trouble nailing two bits of wood together, I asked my brother Derek to help as he is a genius with wood. Once the staging had been erected, came the expensive part of buying the track and points. Then came the enjoyment of laying the track to

the boards taking particular care with the curves in order to stop the carriages coming off at speed, and to fit all the necessary electrics.

The other enjoyable part was building the houses, railway buildings, and stations, which were mostly built of Metcalfe ready cut card kits. So to the first runs and finding out all the snags, but the final result was very pleasing. Unfortunately, time and

other interests meant the layout had to come down and given to my son who also has a boy. In time, the layout may be rebuilt. For it has given me and my son pleasant days running trains.

Brian Thompson

ONE FOR THE SENIOR CITIZEN

During a visit to my doctor, I asked him, How do you determine whether or not an older person should be put in an old age home? Well, he said, we fill up a bathtub, then we offer a teaspoon, a teacup and a bucket to the person to empty the bathtub. Oh, I understand, I said. A normal person would use the bucket because it is bigger than the spoon or the teacup. "No" he said. A normal person would pull the plug.

Do you want a bed near the window?

ARE YOU GOING TO PASS THIS ON … OR DO YOU WANT THE BED NEXT TO MINE?

A short neurological test

1-Find the C below.. Please do not use any cursor help.

OOOOOOOOOOOOOOOOOOOOOOOOOOOOO
OOOOOOOOOOOOOOOOOOOOOOOOOOOOO
OOOOOOOOOOOOOOOOOOOOOOOOOOOOO
OOOOOOOOOOOOOOOOOOOOOOOOOOOOO
OOOOOOOOOOOOOOOOOOOOOOOOOOOOO
OOOOOOOOOOOOOOOOOOOOOOOOOOOOO
OOOOOOOOOOOOOOOOOOOCOOOOOOOOO
OOOOOOOOOOOOOOOOOOOOOOOOOOOOO
OOOOOOOOOOOOOOOOOOOOOOOOOOOOO
OOOOOOOOOOOOOOOOOOOOOOOOOOOOO
OOOOOOOOOOOOOOOOOOOOOOOOOOOOO

2- If you already found the C, now find the 6 below.

99999999999999999999999999999999999999999999
99999999999999999999999999999999999999999999
99999999999999999999999999999999999999999999
69999999999999999999999999999999999999999999
99999999999999999999999999999999999999999999
99999999999999999999999999999999999999999999

3 - Now find the N below. It's a little more difficult.

MMMMMMMMMMMMMMMMMMMMMMMMMMNMM
MMMMMMMMMMMMMMMMMMMMMMMMMMMMM
MMMMMMMMMMMMMMMMMMMMMMMMMMMMM
MMMMMMMMMMMMMMMMMMMMMMMMMMMMM
MMMMMMMMMMMMMMMMMMMMMMMMMMMMM

This is NOT a joke. If you were able to pass these 3 tests, you can cancel your annual visit to your neurologist. Your brain is great and you're far from having a close relationship with Alzheimer.

I am indebted to John Weedon for these, bye the way, his bed is by the door.
Editor.

Lost and Eventually Found

A Special report form Setley Pond, home of the Solent Radio Control MBC

20th June 2013 divers from Calshot Sub Aqua Club today recovered David McNair-Taylor's sunken warship from the pond. Hit by a sudden squall, the newly completed model had capsized on her maiden voyage on the 2nd of June. Attempts to trawl the pond having failed, permission was obtained for the dive. Despite the zero visibility under water, a finger tip search in circles around a marker buoy detected the model which was recovered intact.

Lost and Eventually Found Part 2

That particular story and recovery, reminds me of a time long ago, when I lost a Matchbox Corvette to rough weather at a lake just north of Aylesbury. On the day, it was windy with short seas. The boat was going well and riding the crests and dipping into the troughs and I thought just how well designed these Corvette class of boats were, especially as we have seen film of them on convoy duty; during the WWII. My late father-in-law would have disputed this, as he served on them and was apt to say, should I mention them, “bloody tin baths”. I digress, back to the story, what I did not know was, my one was taking on water at the bottom of each trough. A short while later, the result was, on the last rise to the crest, it stalled, slowly went astern and sank by the stern. By the time the safety boat was pumped up there was no sign of her. A little later, the rear superstructure was found floating by the waters edge. Whilst taking home an empty boat box, I remembered I knew a chap from the Aylesbury Sub aqua Club, so I asked if they could help, three of them came out the next day and quartered the lake, but with no contact, they had done all they could and called it a day.

I was not prepared to give up just yet. So went back the next day with a friend and went over the ground using a three foot long canister with the bottom cut out and a piece of glass fixed in its place, this was then fixed to the side of a small dingy. With a long rope fixed to a point on opposite sides of the small lake, we went back and forwards until all was surveyed. The result was, one silver cigarette case, one vehicle registration plate and a length of very large chain but no warship. My guess was, the boat finished up in a reed filled trough and could not be seen.

Morale of this story is: fill your model with floatation devices as a 12v motor will run just as well under water until the battery/controller gives up. Second, pump up the safety boat BEFORE commencing boating, correct on so many levels.

Foot Note. I latter found out, the chain was an attempt to level off the rough bottom of the lake, although not very successfully. The chain attempt was an after thought, due to the excavations from both the small and large holes having been heaped up to make a dry ski slope. The slope then decided to start moving, so the holes had to be filled with water as quickly as possible to relieve the hill base pressure.

PS. I still have two Corvettes in my fleet.

Foot Foot note. My late father-in-law saw service in destroyers and cruisers during WWII. He vividly described the many runs made between Gibraltar and Malta; when the island was all but cut off from normal convoys. His ship at the time was the fast minelayer HMS Manxman. With the 100 odd mines removed, they could deliver vital aircraft spares, ammunition and fuel to Malta. The 980 mile one way trip was done at top speed 36+ knots for most of the way, as this gave them the best chance of outrunning the E-Boats waiting near the Sicilian narrows. He described each trip as being in a semi- permanent earth quake zone and wet, as Manxman was a very wet ship at speed. He also made eight trips to Murmansk and back, all without incident. That well known debacle in 1944; off Lime Bay on the South Coast, as the allies were practicing for the D-Day Landing when a number of E-Boats got in amongst the convoys, the crew of Manxman took to half a dozen small landing craft with the ramps down to recover hundreds of drowned solders. Such is a maltose's life.

He lost his medals in the course of time, so for his 70th birthday, I asked Spinks of London if they could replace them. I gave his service record and the correct medals arrived by post including the Russian issued Russian Convoy Medal that has only just been recognised by the British Government.

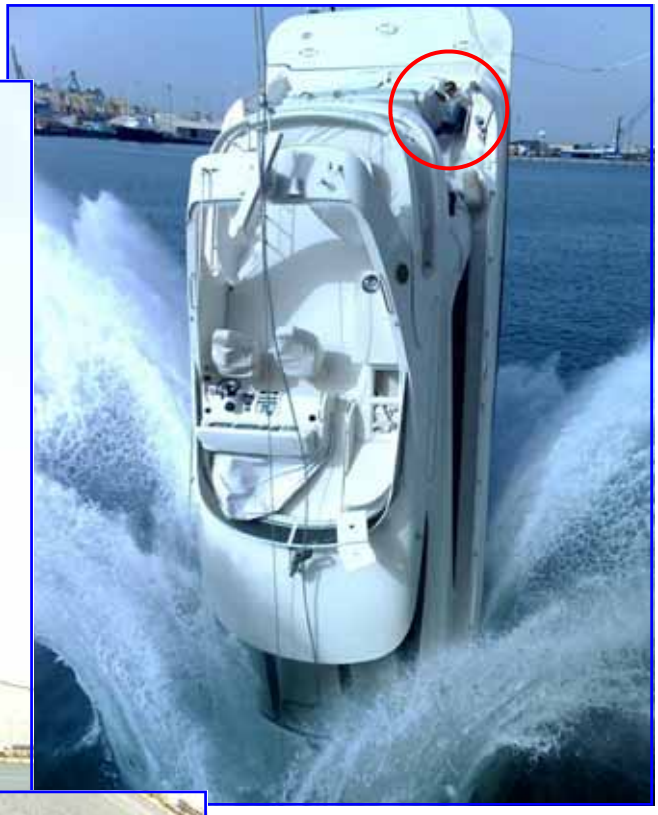
Ken Gould.

Yacht Delivery

85 foot custom-built motor yacht complete with 4 state rooms, a state-of-the-art galley, GPS System and radar for navigation, twin supercharged diesel engines

$7,474,793.00

Champagne, chocolate covered strawberries with cream and music on the dockside for the excited 'soon to be owner' and a small group of his friends. $1500.00. Two corporate representatives, crane, and rigging $2,500.00 a hour minimum and a faulty turnbuckle...$25.00



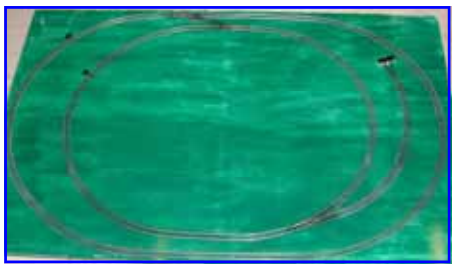
With the owner in the stern/ back of the yacht watching his 7 million dollar dreamboat nose dive into the harbour, accompanied by two Corporate Representatives from the company that built it just prior to 'inking' the final paperwork and handing over a 7 million dollar bankers check

John Weedon

The Railway Project

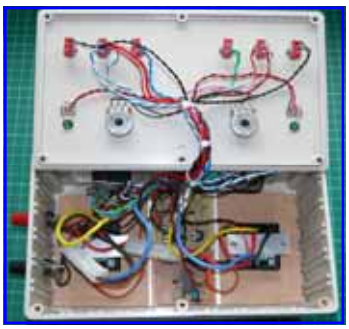
I am always thinking about items to display that would attract attention to our stand at the exhibitions that the club attends. Whilst manning the club stand at Alexandra Palace this year and looking at some of the small railway layouts being exhibited I thought it would be nice to have a small railway layout on our stand.

After a short discussion with Graham, our Club Secretary, I went ahead with planning the project layout. Mike Skuce informed me that the club shop had some OO gauge track for sale which I duly acquired. He also loaned me some books on track layouts which gave me some ideas as to what to do. I laid out all the track parts on my garage floor and began to play (as you do) and a suitable layout began to form in my mind (Picture 1)



One of the first considerations was transportation, namely it had to fit in the back of my car. I therefore measured the inside rear of the car (back seats down) and the maximum available space appeared to be about 6 x 4 feet (152 x 100cm). The material selected for the base was 6mm thick MDF this would be supported on the underside (around the edge and across the centre) using 1.5 x 0.75" soft wood this would produce a solid base that would not be too heavy to lift in and out of the car. Searching around for the best price for the materials, I found HOMEBASE required £20 for a 6 x 4 ft sheet of 6mm MDF while B&Q only required £11 for a 20 x 6ft sheet of the same material, thus I purchased all the materials from B&Q and in the process got the big sheet of MDF cut to my required size for free with some material left over for other projects.

With the materials purchased I gave the MDF base sheet a couple of coats of white sealer and then proceeded to place the track on the board for another go at deciding on the layout (Picture 2). As can be seen some of the required track parts are missing, these where duly purchased (on E-Bay) including a set of buffers, three points motors (which would allow remote switching of the points) and a LMS 0-6-0 locomotive, the latter only costing £12. While I was awaiting delivery of the additional parts I gave the board a single coat of dark green paint, which was my choice of a fairly neutral colour for the base. With the additional track parts now delivered the layout was put together and placed on the freshly painted base; after it was dry of course (Picture 3).



With the final layout decided it was noted that the base board could be cut down and made a little smaller, this was duly undertaken and the

frame work added to the underside, being glued and pinned into position. A hole was cut in one corner of the base for a multi-way connector to which all the control wiring would pass. The base and frame where then given two coats of the green paint and allowed to dry thoroughly. The track layout was once again fitted to the base; this time in a slightly different way hopefully it was to be the definitive layout complete with point's motors and buffers (Picture 4).

The track was screwed into position using very small self tapping screws and secured into position masking tape was placed all along the edges of the track. The track was then removed and the resulting gap between the masking tape painted a dull grey to simulate the track cinders/ gravel. When the paint was dry the track was replaced but not before soldering all the necessary connecting wires to the tracks. Next my attention was drawn to the design of a controller for the Railway layout. The system would have two train controllers one for the Inner Track and one for the Outer Track plus of course points switching and provision for two isolating rails one on the outer track and the other on the inner track. The system for controlling the trains would be provided by two Mtronics 15 amp Marine controllers which in turn would be controlled by two home designed and manufactured servo testers. The whole system will be powered by a 12 volt battery One consideration, was to ensure that when the points where operated, connecting both the inner and outer tracks ovals together the two train controllers did not get connected and try to blow each other up! To which ends a set of isolating relays where fitted. These switch off the inner train controller when the two sets of points are activated. When the points are switch back, the inner train controller is re-instated. Picture 5 shows the inside of the control box; Picture 6 shows the front panel with all the controls.

I purchased a short length of 15 way cable in order to connect the control box to the track layout and with everything wired up tested the system. The train on both the tracks which worked just fine the points on the siding of the inner oval also worked satisfactory but the twin points connecting the inner and outer tracks refused to work together. On investigation it was found that the points motors each took 3 amps when activated giving a total of 6 amps when activating the dual points, this was proving too much for the thin multi-core cable. The cable was removed and substituted for individual 16/015 wires which cured the points switching problem.

Tony Martin donated a small Tank Engine together with some rolling stock and both trains where placed onto the track layout and run together. The total current taken by both trains when running on the tracks was about 0.4 amps thus giving about 14 hours running time from my 7.2 ampere hours Lead Acid battery.

Pictures 7 to 19 show the completed layout with the trains running in various positions on the track – have you noticed the RED dots alongside the track? This indicates where the isolation rails are situated. This layout is just the start as there is always room for improvement. We can add Stations, Signal Box's, Signals and even a tunnel or two all practical suggestions welcome.

Trust you have found this small article of interest and may be look forward to being a train driver at exhibitions or at one of the Club monthly meetings.

Tony Dalton

Servo Tester (built on Vero Board)

When I put pen to paper and wrote the article on the model train layout, in describing the control system I indicated that I used a home design and built Servo Tester to drive and control the Mtronics Electronic Speed Controllers. I thought that I have previously published such an article in the Club Magazine, but alas not. So in order to correct the situation please find below all the information to build such a device. I should mention that if you just require a servo tester for the testing of servo's, it would be cheaper to purchase a ready built commercial device with more features and not the item that I have describe in this article.

Fig 1 Circuit Diagram using a NE556 Dual Timer

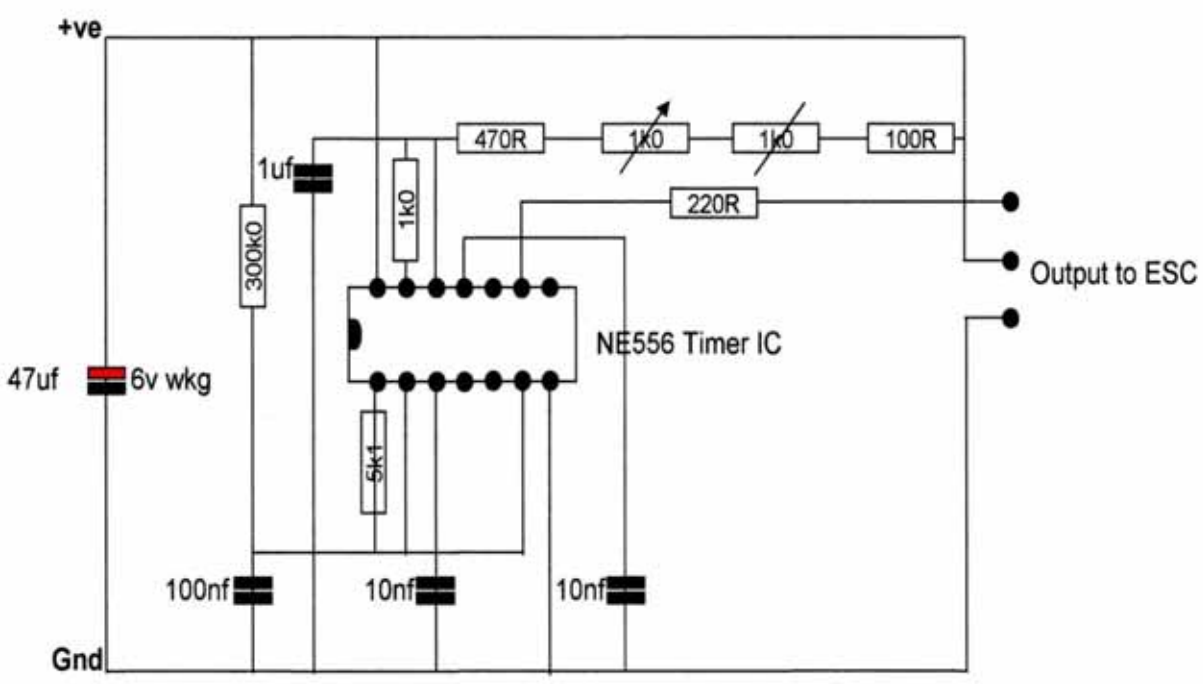
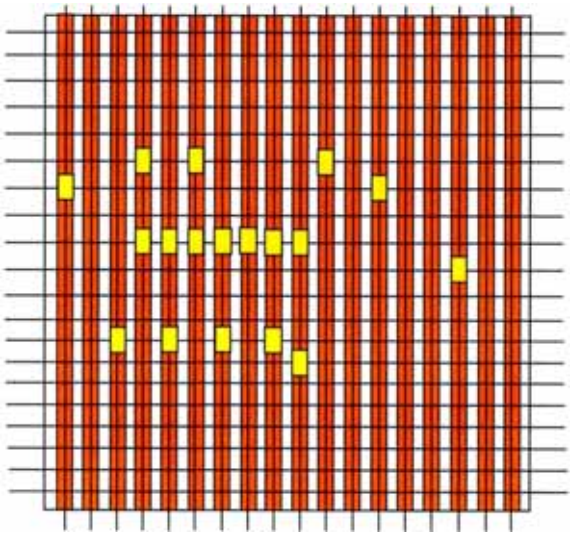


Fig 2 - Materials List

1	Timer IC NE556N
1	14 pin IC Holder
1	47uf Capacitor 6volt wkg
1	1.0uf Capacitor
2	10nf Capacitor
1	100nf Capacitor
1	5k1 Resistor
1	300k Resistor
2	1k0 Resistor
1	470R Resistor
1	220R Resistor
1	100R resistor
1	1k0 Preset Potentiometer
1	1k0 Potentiometer (Pulse Control)

Fig 3 Vero Board Track Cutting



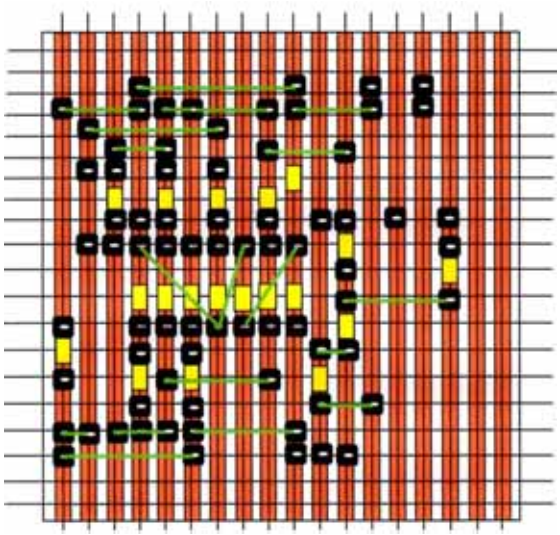
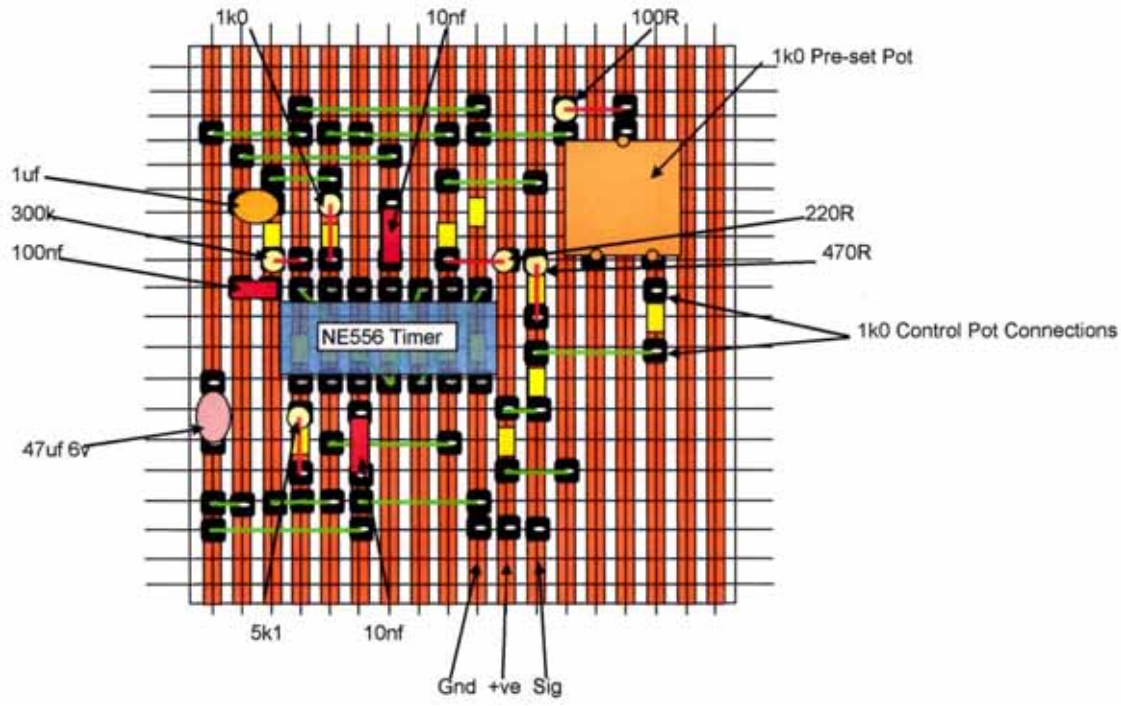


Fig 4 Wire Links Added

Fig 5 Component Assembly scale 2:1



Tony Dalton

For Sale and Wanted

Yacht 2 (Blue Hull) Graupner	
Rudder Servo: Hi-Tech HS303	**Length:** 39” (965mm)
Sail Servo: 2 x Futaba S3001 coupled	**Beam:** 9” (230mm)
Receiver: Spectrum A500 2.4GHz	**Mast Height:** 53” (1346mm)
	Price: £150 ono

Now only £80 ono

Speed Boat - Riva	
Rudder Servo: Acoms AS17	
Motors: 2 x Mtronics 600	
ESC: Mtronics Marine 15	
Receiver: Futaba 168DF 40MHz	
Note: One front seat and dash panel loose. Some blemishes on deck and hull	

Now only £100 ono

The contacts for the sale of the last two items is Pete Carmen or Tony Dalton

Don’t forget, these pages are for you to advertise items and also to find that one elusive part required to complete your current model

The club shop run by Mike Skuce has an enormous range of parts and products to help with your modelling needs.

Mike is also our Safety Officer

Alford Charity Boat Show 2013

What a glorious week end. I arrived on site at the Merchant Seaman's Society at Alfold in Surrey, south of Guildford at around 4pm on Friday 31st May. The event is held in the park area of a large country house which forms the Headquarters of the society. There is a large lake with landing stages for fishing as the lake is stocked with carp up to 15lb plus in weight.

The show was attended by around 27 clubs including the Moorhens from Harlow, Southend, Southern Model Lifeboat Society and the Portsmouth display team who put on a magnificent re-enactment of 1800's sea's battle between the British and French with many loud bangs and lots of smoke. To complement the week end a number of traders attended including Models by Design, Hunter Systems and Model Sounds.

On the Saturday evening the society lays on a B.B.Q at the big house which also has a bar, lounge and conservatory overlooking parkland; all very pleasant.

A bring and buy stall is run by the volunteer organisers and appeared to be busy throughout the weekend with all manner of items on offer as well as books. Sunday saw model judging which was split up into various classes including Lifeboats, Warships, Sail, Novelty and Scale. Very much to my surprise my name was called out as the winner of the scale section for my Clyde Puffer based on the Caldercraft kit which I built around 15 years ago! This was the icing on the cake for what had been a super weekend of model boating and a chance to meet old and make new friends

Chris Jackson