



## Newsletter - June 2014

### *MDMC Annual Model Show 2014*



Now that the summer has officially begun, well that's what the met office says, its time to dust off those models and get flying again.

And it won't be long before its time for our Annual show that will take place on September 13/14 at our usual venue at the Thorpe Road playing fields.

As in previous years we hope to provide the public with a flying display as well as other attractions. The Melton & District Model Engineering Society will bring along their miniature steam engines and the ride on steam train., and King Lear Model Boat Club will provide their portable pool. We will, in association with the Quorn Slot Car Club be have a number of slot car tracks for the public to try.

Each year the Club supports a charity, and this year our chosen charity is Marie Curie Cancer Care who will attend the show on both days.

We have been very fortunately in past years to secure a flypast by aircraft from the Battle of Britain Memorial Flight (BBMF). We have been successful again this year and the BBMF are providing a DC3 Dakota flypast on the Saturday with a Spitfire on the Sunday, both subject to weather and serviceability. The Dakota is very appropriate given that this year is the 70th anniversary of D-Day in which the Dakota played a significant role.

But the most important part of the show is the club's members. We need your support to assist on the day as helpers and pilots on Saturday and Sunday, as well as on the Friday to erect the marquees and take them down on the Sunday afternoon.

So make a date in your diary and come along to support your club.

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## 24 hour 'Oxygen' Digital Le-Mans Event

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5<sup>th</sup> and 6<sup>th</sup> April saw the running of the third 'Slot-it' sponsored, digital 24 hour Le-Mans event at Warwickshire College at Henley in Arden. The event is planned as a recreation of the real event but on 1/32 scale, excepting of course the most important thing of all, the time.

The event was truly international, this year with 14 teams competing, seven from Europe, with four countries represented, Germany, Spain, Italy and Netherlands (A further Portuguese team apparently dropping out at the last minute)

Run in a digital format, means that all Teams run simultaneously on a four lane 'Ninco' plexi-track, specially constructed for the event from 776 pieces, including a 90ft long replica of the famous Mulsanne straight.

This year we are pleased to report that MDMC was represented by our own 2013 Club Champion James Savidge, competing in a Quorn/Melton. mix aptly named the 'Hopeful Six'. The team comprised our own JS, together with Martin Thorpe, Steve White, Richard Hill and Alex Jones, one of the event organisers. (Yep we have already noted that counting was not their strong point!).

As in the real event, cars were split into classes, P1 (LMP1), P2 (LMP2) and GT with each team choosing their own chassis, running gear and gear ratios but choice of motor limited to Slot It Flat 6, or V12/3, a fixed issue of tyres and of course the 'Oxygen' digital chip set.

Hopeful Six opted for an Avant Slot Chassis with Avant Slot Porsche RS

Spyder body, an unusual choice and one that they would later perhaps regret owing to difficulties in mounting the electronics.

Friday pre-qualifying did not go well and practice was very limited with the team working late into the night to find a workable set-up in order to deliver some practice time.

With the race scheduled to start at 3:00pm on the Saturday afternoon, gremlins struck again and unfortunately any hopes of a good start were dashed due to further controller problems causing the team to miss the rolling start. Once running however things did not get any better when their aerial dropped off causing further delays.

All in all 60 mins lost, however once rolling the team settled into a steady pace, first of all getting to know the track following their very restricted practice. Two hours in however they were within 10 laps of the last but one team and catching fast.

As the race drew on steady progress was made with the lights gradually dimming until a total 'lights out' occurred at 10:40pm. It was then into night racing with only LED's to guide. The rules specified that each car must be equipped with headlights, tail lights and other identification lights as required.

OK so we have identified another potential cause of failure, yep and that's right the car's lighting system failed resulting in another long pit stop!



With lights back on at 5:45am and coming to the end of the race, the closest competition on the board was between our Hopeful Six, who had now clawed their way up to 12<sup>th</sup> and the German 'Prospeed' racing team and their 'Slot-It' Audi R18.

With only minutes to go there was only two laps in it when the Germans had to make a brief pit stop at the 23hrs and 56mins mark to fix a loose rear wing allowing our intrepid team to squeeze into 11<sup>th</sup> place by three laps.

Victory went to the 'Dutch Touch Racing' Team, with 4639 laps. over Pendle Slot Racing's 4593 circuits. 'Hopeful Six' ended on 3842 laps however probably a good result for a debut team.

All in all then some useful experience and look out next year for a full MDMC team applying for one of the limited number of places available.



*Chris Savidge*

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## Trevor Main's Avro 707A

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### Introduction

The Gloster Javelin has always been a favourite aircraft of mine from the days of the Keil Kraft Jetex powered flying scale series of models. These models cost around 3s and 6d, 17.5p in new money. (*equivalent to £3.50 today -ed*).

Having already completed and test flown my 65 inch wingspan outrunner powered Javelin powered with prop to determine a satisfactory C of G and getting it trimmed, my thoughts then turned to the intended conversion to Electric Ducted Fan power.

The Javelin was designed from the outset to house two E-flite 80mm EDF units, but at this stage I had had no experience of what to performance expect. Then the November 2013 RCM&E had a free plan for a 36" wing span Avro 707A designed for a 70mm and constructed using pink foam and depron. Not my materials of choice and anyway I needed one to fit the 80mm units. This model appealed to me as it was a semi scale version of the 707A and I figured it would serve as a test bed allowing me to check the intended Javelin equipment.

### The real Avro 707A

Conceived by AVRO in the late 1940's to test the delta plan form being destined for the Avro Vulcan bomber. There were 5 variants each modified to test a different design feature and the first flight was serial no VX784 on the 4<sup>th</sup> September 1949 at Boscombe Down.

### The model Avro 707A

So out with the "drawing board" for a

slightly larger version to suit the 80mm EDF unit and constructed using balsa, plywood etc. To get the 80mm fan into the fuselage I reckoned on an increase of 10% which gave  $70 \times 1.1 = 77\text{mm}$ , which will do nicely for me. This would give a wing span of 41" which would fit easily into the back of the estate car.

### Design

An out of the box Eflite Delta-V32 80mm EDF unit with their 2150kv motor was to be used. The Eflite instruction manual says that when installed in their HABU aircraft using a 6s 5000 mAh 30C LiPo and an 80A ESC the performance is :-

Static thrust: 4.5lbs, RPM: 38,500

Current: 62 Amp, Watts : 1400

This looked quite promising if a model weight of say 5lb 8oz could be achieved as the guide for good EDF performance is reckoned to be 200 watts/lb.

The weight of various components (excluding airframe) are listed below:

80mm fan unit and motor	10oz
6s 5000mAh LiPo	1lb 12oz
Turnigy 85A ESC	3oz
E-flite electric retracts (25 size)	5oz
Light weight sponge tyres...	3oz
4 servos @ 3/4oz each.....	3oz
Hitec 2.4 GHz 6 ch Rx.....	1oz
Total of fixed weights.....	3lb 5oz

This allowed about 2lb to build and cover the airframe and meet my target weight of 5lb 8oz so at this stage all seemed quite possible.

My thoughts on the ducting came from various sources and there seemed to be design features that should if possible be



worked to, some of these are as follows:-

1. Intake opening size: 100% of the Fan Swept Area.
2. Inlet lip to be oval (elliptical) in section.
3. Ducting to be smooth with minimum bends.
4. Ducting to be sealed with the minimum of gaps at any joints.
5. The fan unit should be positioned 3 to 4 times the fan diameter from the end of the thrust tube.
6. The thrust tube exit area should be 100% of the Fan Swept Area for maximum static thrust and reduced to give more speed but with the loss of static thrust.

The outline shape of the enlarged version of the Avro 707A was more or less as the free plan but as already decided 10% bigger.

The free plan gave no indication as to where the all important centre of gravity should be and after an email to the RCM&E they admitted it was not shown but they consulted the designer and advised me that it should be on the centre line of the wing joining carbon rod.

I double checked this position first of all using a test chuck glider and then by a *C* of *G* calculator for deltas from the internet. Fortunately they both gave very similar answers and confirmed the plans intended position on the wing joiner. Looking at drawings I had of the 707A it showed that the wing was set at a positive angle relative to the fuselage datum. The free plan version was set at zero degrees and my version was set at +1 degree.

The undercarriage was next and the "sit" of the fuselage datum relative to the ground was looked at and the free plan showed +2 degrees so this was duplicated on my version. These two features combined gives the wing +3 degrees angle of attack relative to the air flow during take off. Another feature changed was the wings horizontal angle when viewed from the front (i.e. Dihedral or Anhedral) The free plan was set to the horizontal and my version was set at minus 1.5 degrees each side which is similar to the real 707A.

One other change was to include an operating rudder which meant that a small servo was fixed inside a slightly thicker fin. In an attempt to provide the best airflow for the fan unit through the fuselage a straight tube was deemed the best solution. Then a route for the servo and motor power wiring could be provided by the space between the inner tube and the outer skin. So a double skin construction seemed to be a good idea if somewhat more complicated to construct.

In part 2 Trevor describes the construction and first flight of his Avro 707A.



*Trevor Main*

## Airfield Repair

On Sunday 18th May some 15 club members assembled with brooms, shovels, wheelbarrows and water containers to repair a significant area of potted runway.

Trevor Main and Richard Phillips had concocted a mixture of self levelling compound, PVC glue and water that was very effective, and surprisingly easy to apply.

Whilst Trevor and Richard were busy applying the magic mixture, Ray Muse was busy mixing another batch whilst others were preparing the next area. They was also a group that started to clear some weed, cut the grass near the pits area and removed an unwanted bush.



As can be seen from the above photograph the effort was well worth it.

Thanks go to all who came along to assist, and it was pleasing to see some new faces in the work party.

## 40 years ago

**ROSSI ENGINES**  
'DESIGNED FOR SPEED'  
WHATEVER YOUR INTEREST—SPEED, R/C OR MARINE—ROSSI HAVE AN ENGINE TO FIT YOUR REQUIREMENTS

**THE POWERFUL ONES!**  
'SERIES 71'  
KB TORPEDO 40 R/C

Rossi 60 R/C £38.25

Rossi 60 SPEED £33.15

Rossi 60 MARINE £54.40

'SERIES 71' 40 rear intake £18.50

'SERIES 71' front intake Perry carburettor £17.95

**IRVINE ENGINES**  
31, The Fairway,  
New Barnet,  
Herts

Those of you with long memories may recognise some in the motors in the above advertisement in the Aero Modeller Annual 1974. They may look similar to those we use today but the quality, materials and power have dramatically improved since then, but what about the cost?

With inflation £1 in 1974 is equivalent to about £10.50 today. So the Rossi 60 R/C would cost £403.72 and the Rossi Marine 60 a staggering £574.18!

I dread to think what a simple analogue 4 channel 27MHz Transmitter/receiver setup would have cost in today's money! We've certainly made progress in the last 40 years.

# Ray's Techie Bit

## IC engine mounting

Have you drilled the mounting holes on your engine mount only to find them slightly out of line with those of the engine and end up filing elongated holes?

Well it's something we all have done at some time and it was something I was determined not to do again. After some thought I came up with this method to ensure I could accurately drill the holes.

I made a jig, using scrap ply, that replicated the mounting holes of the engine I wanted to use thus would allow me to easily drill the holes.

First fit the engine mount to the airframe and then position the engine on the mount in the required position and make a mark on the side of the mount corresponding to the position of one of the mounting holes with a felt tip pen or something like Tipex.

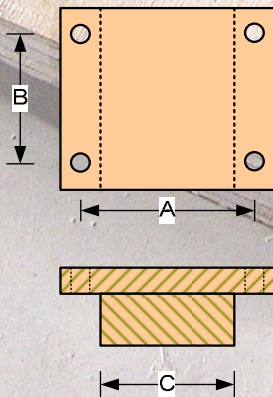
Now remove the engine and mount, and

then fit the jig so that the appropriate hole line up with the mark. With the jig in place drill one of the mounting holes, preferably with a pillar drill.

Using a suitable nut and bolt attach the jig to the engine mount. With the jig firmly in place drill the diagonally opposite mounting hole and the use another nut and bolt to further lock the jig in place. The remaining two holes can now be drilled.

This method is much easier to use than trying to use the engine to position the holes although some care needs to be taken when making the jig.

Most engines of a similar size use the same mounting holes, for example most 40 size engines can be easily interchanged. Typical dimensions (mm) are shown below.



	IRVINE 15/20/24	IRVINE 40/46/53 JEN 47/57	JEN 91 ASP 91 NGH 17
A	36	44	52
B	15	17.5	25
C	30	36	44
	mm		

Ray Pinchin

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## *Whissendine Miniature Steam Open Days*

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The weather on Sunday was very much better even allowing Chris Jones to display his hexacopter as the photo below shows.

Thanks to all who provided display models and acted as stewards over the weekend.



On June 7/8th the Melton & District Model Engineering Society once again held their annual miniature steam fair at the Whissendine sports ground. As in past years we were invited to display some of our models.

The weather on Saturday was dismal with few visitors attending, thankfully all our models were under cover.



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### *"A" certificate*

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The Club's flying training program have allowed many members to attain the BMFA "A" proficiency standard.

The latest member to receive their "A" certificate is Gary Osborne.

Congratulations Gary, we look forward to seeing you flying solo at the flying field.

*Melton & District Model Club*

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