It's Friday, it's five

BRUM

By the time you read this exclusive article, a new programme on BBC Children's Television should have begun.

The programme is called "Brum" and will follow the adventures of a small car (Brum), as it travels around various places in the centre of Birmingham. Promoted by the city council, the programme has been made for the BBC by a company called 'Ragdoll Productions', for children aged between two and five years old (so most of us R/C racers will be able to appreciate the storylines!).

12 volt battery powers Brum.

Servo using camera winding motor.

e past five, it's time for....

RRC visited a 'shoot' to see Brum, a 4ft long R/C car!

ELS

Controlling Brum.

"Is That Radio Race Car?"

We received a call from Brett Davis, who works for Ragdoll Productions as the technical operator of Brum. He asked us along to one of the 'shoots' to see just how Brum, a fully working radio controlled model of monster proportions, worked. How could we refuse?

"Brum"

We are sure that you will agree that it is an interesting concept to use a model R/C car as the focus for a 13 part children's T.V. series. As you can imagine, there is a lot more to Brum than meets the eye....

It takes three people to lift Brum into its transport van.

It is over four feet long and two feet wide.

The bodyshell is made from a glassfibre mould with the aerial, made from a copper strip, running from the rear wings (made from carbonfibre) along the entire length of the car.

Everything on the car, except for the channel splitters is hand made, including the body, seats and gear stick.

The channel splitters receive signals from the transmitters and turn them into

Underview showing, amongst other things, the steering mechanism.

a current to power the functions.

Brum uses an electric window winder for steering. It takes about one to two seconds for it to react, so it is quite difficult to control. Also there is no neutral to the steering, so once it starts turning left, it keeps going until some right lock is used.

Brum is powered by a Sinclair C5 (remember those?) motor, and is belt driven to the main rear axle.

The car runs off a 12 volt power source, such as an invalid carriage battery or a normal automobile 12 volt depending on what the car is required to do. If no long shots or numerous 50 yard dashes are required, one battery will last about half a day.

Top speed is about 10-12 mph once it gets going, or 15 mph with a good push downhill according to Brett!!

After receiving the design it took over six months to build Brum.

Brum uses a fridge compressor to put the air into its tubular steel chassis to operate all of its functions via compressed air rams. The compressor puts over 400 PSI into the chassis for a days work.

The estimated value of Brum is in excess of £20,000!

The transmitters that control Brum.

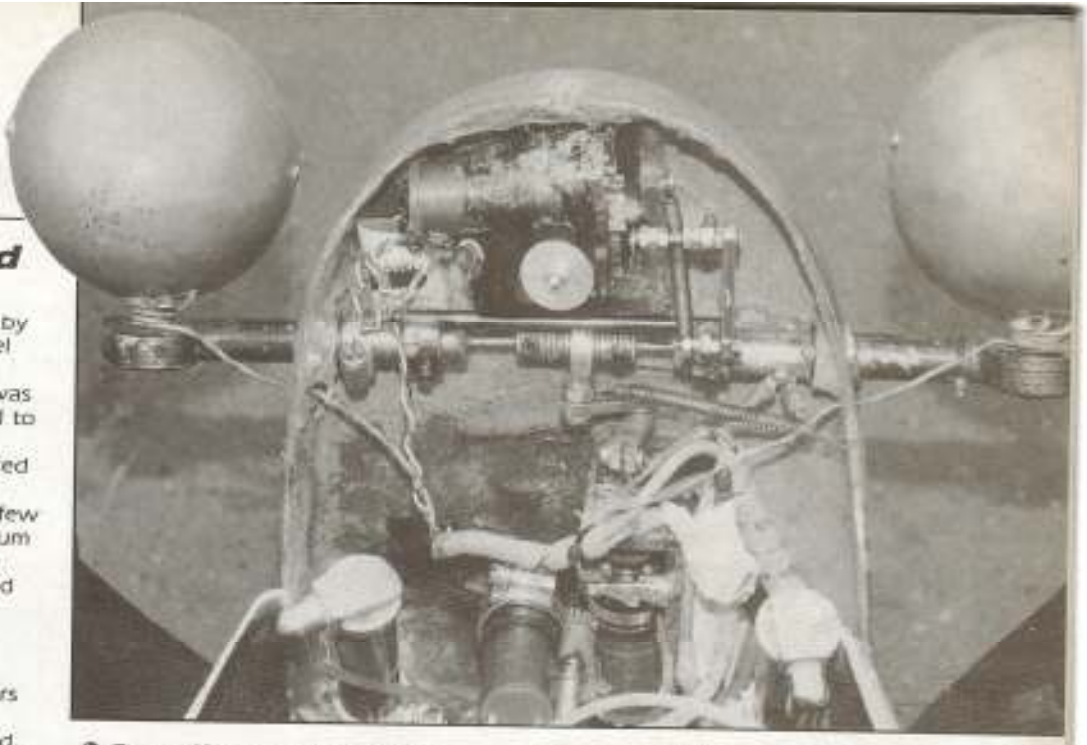
The speed controller on the dashboard is actually the air pressure (PSI) in the chassis.

Functions

To give Brum a feel of 'realism' and 'life', it can do lots of different things.

Its doors open, the bonnet opens, it rocks from left to right, dips down at the front, goes forwards, backwards, left and right. Brum can blow smoke, make its starting handle go round, side indicators pop out, wipers move and make its front and rear lights go on and off.

Not bad for a small chap! You may have guessed that Brett can't operate all of these functions on his own at the same time, especially when two transmitters have to be used(!), so animator, Doug Smith, lends a helping hand.



Headlight workings can be seen here.

The People Behind Brum

Brum was designed and constructed by Rex Garrad, who made the Channel Four programme "Secret Life of Machines", with Tim Hunkin. Rex was given the design of what Brum had to do and look like by Bob Berk, who designed Roland Rat, and has worked on "Monty Python".

Once Rex Garrad had worked a few things out he set about building Brum around Bob's specifications, making sure Brum could do all it was supposed to.

Control

Two, eight channel radio transmitters control Brum. The main transmitter operated by Brett controls the forward, backward, left and right movements of Brum. The switches on top of the transmitter control the rocking motion of Brum, and the movement of the side indicators. The other switches on the transmitter, moves the starting handle, and makes Brum dip at the front.

The other transmitter operates the lights, opens the doors, works the wipers and opens the bonnet up.

Problems

Several problems were encountered when building Brum. Home made servo's are used to operate the movement of the lights. Due to the weight of the lights however the team had a long search for an electric motor that could cope with the demands that would be placed upon it. Eventually they decided to use cameras winding motors in the servo's.

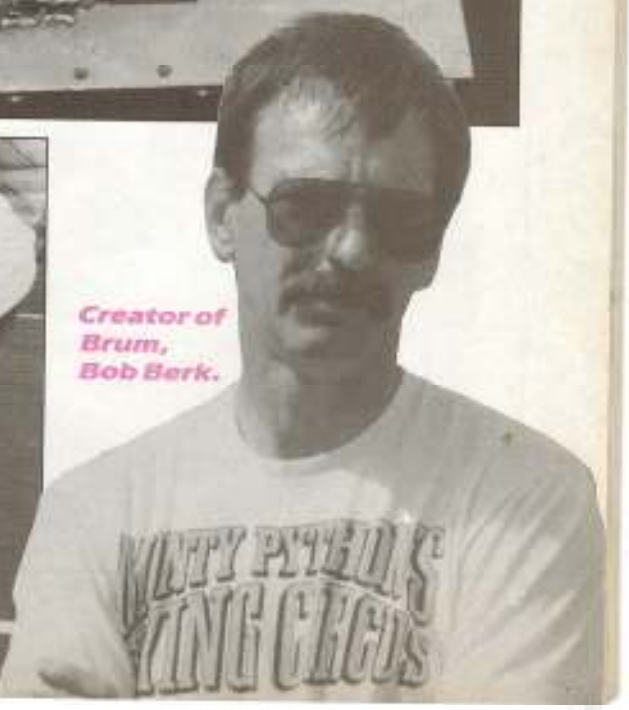
The speed controller was another problem, or rather finding one that could cope with the high amperage rates. A well known speed controller manufacturer was approached to make a speed controller for the job. It had at least 15 FET's but only lasted for about two and half minutes!!! The problem was finding a speed controller that could handle the "phenomenal" current for long enough. Brett had to find such a speed controller, one that would handle around 120 amps continously. This doesn't sound a lot but when the car was going at full speed, or was put into reverse, or braked, it tended to put a huge amount of amps through the speed controller.

Complicated or what!

Finally....

So there you have it. An insight into a soon to be national hero, a radio controlled car! Look out for Brum if you get a chance as you now know what makes him tick!

The purpose made speed controller.



Creator of Brum, Bob Berk.

BRUM
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