

14th scale Oshkosh Birmingham Airport Fire appliance

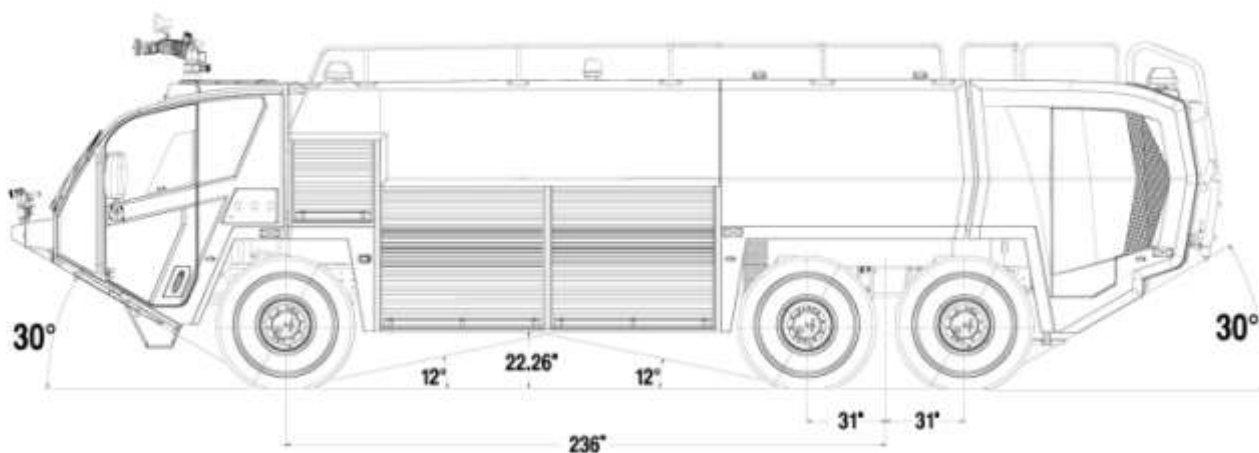


Built by Pete Dickinson

Following on from the build of the Gloucestershire Fire and Rescue fire appliance I began to look around for another model based on a Tamiya chassis.

At the time Birmingham Airport had just acquired six Oshkosh ARFF fire appliances and I searched the internet to find as much detail as possible relating to them. In the end I decided to scratch build their appliance number 2, which is a six wheeled two monitor vehicle and can be seen in the photo opposite. Another attraction for me was the livery, which unlike almost all other fire appliances was not red/yellow but white with two shades of blue to match the airport's colour scheme.

I discovered that the American company supplying the fire appliance had a rather informative website and I managed to download a side view plan of the Striker 3000 6x6 which had dimensions of the vehicle on it in inches.



The next issue was to find a chassis that could be modified to accommodate the body and I found that the 14th scale Tamiya Knight Hauler was the best option. Comparing the Oshkosh drawing with the Tamiya chassis revealed that there were slight discrepancies between the wheelbases which resulted in having to modify the Tamiya chassis so that the measurements were correct. This was achieved by simply moving the entire front axle assembly forward by 1cm.



The tyres on the Oshkosh are of the all-terrain variety and I found a supplier in China that manufactured some 14th scale tyres of a similar type. Sadly the wheels supplied in the Tamiya kit were not wide enough to show the profile correctly so they also had to be modified by widening the beading allowing the tyre to sit

correctly on the wheel. As the Knight Hauler has twin rear tyres and the Striker only has single ones I found that by setting the inboard tyre bead into the inner wheel's outer bead this produced the desired effect. I then turned off the inner bead on two of the rear wheels and attached it on the outside of the front wheel.

Copying and cropping the drawing supplied by Oshkosh into segments I created accurate plans scaled to fit the chassis exactly and had them printed on A3 paper resulting in a full 14th scale copy of the body and used this to start the build, using carbon paper to copy through to mark the Plasticard sheet ready for cutting.



The only part of the appliance that is not scratch built is the modified chassis as the rest had to be fabricated using A3 size Plasticard in 1.0 and 1.5 mm thicknesses. The subtle curves on the rear of the vehicle caused a bit of a headache but in the end I managed to copy the original fairly accurately.



Using the experience obtained when building the first fire engine I then fabricated the roller shutters from 1/4" x 1/16" spruce strip and then began on the cab interior.

In the first fire appliance I hadn't bothered too much with the inside of the cab because it was almost invisible from outside however the Oshkosh was a different story as the cab top and sides are 85% glass which would

reveal the interior to anyone looking in.

Using some images captured from a video of the Birmingham vehicle I managed to copy the dashboard and decided to enhance its appearance by using LED's to light the instrument panel, switches and the various video screens it contained. The original Tamiya kit supplied two seats and the steering wheel for the cab but the driver's seat, which is situated in the very centre of the cab, needed to be scratch built.



The next challenge, which I had never been faced with before, was to produce the curved windscreen and using 1.0 mm clear styrene sheet I carefully measured the interior of the cab frame before cutting the sheet to fit the various angles. After the second attempt at heating and bending the styrene I managed to produce a faithful representation of the original and fitted it in place ensuring that it could be removed when the vehicle needed painting.

I now turned my attention to the electronics required to make the vehicle as near to the full size as possible. Again utilising my experience gained during making the Gloucester Fire Appliance I scratch built the electronics using programmable micro computers and servos to control the various micro-switches that allowed the blue flashing lights and siren sounds. To enable the six channel TX to control everything I used an electronic switch that changed the receiver outputs from the steering servo and ESC to two micro-servos that allowed me to pan and tilt the monitor, the other monitor being controlled by the right hand joystick of the TX.

I spent many hours trying to achieve a rotating beacon and in the end decided that there was a commercial unit available which after cutting and removing that rather childish electronics could be driven quite acceptably by a scratch made CMOS unit which also served to run the other flashing blue lights and the alternating headlights.

For the siren I used the audio track taken from a video of Birmingham Airport's Fire service vehicles during a training exercise and recorded it onto a sound chip amplifying it so that the result was quite true to the original. This sound is also controlled by the electronics via the transmitter. Resulting in a sequential operation:- Blue flashing lights: Blue flashing lights and Siren: (The siren will play for around twenty seconds after activation and then remain silent until it is activated again.)

The next issue was to obtain paints to produce the colour scheme used by Birmingham Airport. The white top part was quite easy but the colour of the dark blue lower sides presented a problem and in the end I used an acrylic auto-spray paint for Ford Maritime Blue which gave the nearest match to the full sized vehicle. The diagonal lines were masked and the body sprayed in sections and then I used Tamiya X14 Sky Blue brushing acrylic paint to paint the stripe between the top and bottom colours.

As all the images I could find of the full sized vehicle were taken from ground level I had no idea exactly how the roof was structured. Once again I approached my contact at Oshkosh who eagerly supplied me with high quality images of another similar Striker showing the entire configuration of the roof which allowed me to rebuild the guess that I had made. This resulted in the image below.



I next began to fabricate the plethora of safety rails using some styrene tube and 16th brass rod inserted to give the plastic some rigidity. And then turned my attention to the signage.

The images of the full sized vehicle were not high enough quality to copy, however I discovered on the web an image of the coupled rings used by Birmingham and after deciding that the text was Arial I used Word to produce a very close approximation of the side logo and printed it on clear self adhesive vinyl.

I fitted the four blue flashing beacons to the roof which also can be seen in the photo on the right.

I now began to fabricate the rear ladder which is used to access the items on the roof and ended up making the styles from two layers of scrap 1.5mm styrene cut to the correct width and blind drilled to accept the rungs which were made from the 16th brass rod.



The cab side windows were tackled next and cut using the drawing I had made to mark and cut the body panels. These were heated and bent to conform to the cab sides and the black strips where the windows and doors open were cut from 1 x 1.5mm styrene strip and painted before

being stuck to the 'glass' with canopy cement.

As the original vehicle has 5 orange side lights down each side I purchased some small (3 x 2 mm) oblong orange leds and installed them connecting them to come on when the dashboard lights were on. These were followed by the two diagonal orange flashing beacons mounted on the roof.

Having decided to make the foam and water level indicators working ones I was then presented with the problem of their position at the front just behind the cab as there is a small opening locker directly behind them and ordinary leds would interfere with the operation of that. I purchased some surface mount leds and dropper resistors and after 3d printing the lenses for the indicators managed to fit the leds inside them before fitting them to the side of the body. The photo on the next page shows all these leds operational.

As the model was nearing completion I then began to add the various structures to the roof and made a set of ladders from plasticard strip and mounted them where the number 2 Birmingham appliance had them, along with the extension pipe cradle on the opposite side.

As I wanted to be able to control the lift and turn of both the water monitors I discovered that one of the model suppliers (SHG model supplies) sold the tiniest servo (1.5 x 1 x 0.5 cm) I had ever seen. These were then used for that purpose and at that point I decided to abandon the plan to make the monitors spray water. To enable my six channel transmitter to operate the monitors I used the undercarriage switch to operate a set of micro relays which diverted the channel 1-4 outputs to the monitor servos as the action would only be likely to be used when the vehicle was stationary.

I now prevailed on my contact at Oshkosh once more to supply me with some detailed images of the left hand locker contents. (The right hand lockers are not for display as they contain the control unit and the 7.2volt 3.3 Ah Ni-Mh) The long job of making all the tubes and control cabinets along with the small hose reel began and I had to compromise several times because of the complex nature of it all.

The finished vehicle is now ready to display at shows and can be seen below.



Pete Dickinson (AWL Model Group)

I must give full credit to my contact, Sam Lowe the Marketing Representative at Oshkosh, who has been so supportive and enthusiastic after I first approached the organisation to ask for help. Without his eager responses to my queries I would not have been able to produce this model to my satisfaction.