

14th scale Mercedes Fire Engine



After building a Tamiya MAN TGX 26.540 truck and trailer I looked around for something a little more challenging. AWL had been invited to display at an open day for the new Gloucester North Fire station and I became intrigued with the various fire appliances on show.

After an exhaustive search of the internet it became apparent that nobody has ever attempted to build a British fire engine on a large scale so I spent many hours downloading images of fire tenders from various counties. With no really detailed information available I approached the Gloucester North Fire Station and spoke to the watch commander who gave me access to photograph, video and measure their appliances.

The only 14th scale truck available was the Tamiya Mercedes 1050L delivery truck which I purchased for the chassis, suspension, drive mechanism and cab, the rest being scrapped. Fortunately the chassis of the 10.5 Tonne Mercedes was exactly correct in wheel base and also sported twin rear wheels on the rear axle.

The next issue was that all modern fire appliances have a 'crew' style cab to accommodate the rest of the fire-fighters and so the existing cab, which was far too short, had to be modified along with the aluminium base chassis plate.

The rest of the appliance was scratch built to include the six side lockers which had to have roller shutter style doors. These were fabricated from obechi strip so that they were functional, giving access to the contents of the lockers. The frame of the rear unit was fabricated with 4mm brass angle upon which the scratch built styrene body was attached giving the construction a very solid finish.

The rear 'pump room' compartment has opening doors which allows access to the pump controls and various accessories that are normally carried in there.

The electronics posed a greater problem as there was nothing commercial available to use. In the end two back to back boards were designed and built with discrete integrated circuits from my own drawings which gave me the facilities I desired. These included flashing lights, siren sounds and the normal road lights along with direction indicators and reverse/brake lights. The completed boards were then placed in the rear of the appliance fitting between the backs of the side lockers and then cabled off to the various lights at the front, back and the blue emergency light bar mounted on the front of the cab roof.

The radio gear was provided with a 2.4Gh five channel receiver which controlled the steering, gear selection, ESC and the electronic switching for the sounds and lights.

The cab was sprayed with Plasitkote insignia red enamel paint and detailed with yellow enamel spray from the same company. The interior was sprayed with aluminium enamel paint as were the roller shutters after being treated with a coat of stabilising grain filler.

All the sign writing was copied from the photographs I had taken of the Gloucester machine and printed on either white or clear water-slide transfer paper.

The Build.



The cab had to be modified to add the rear 'crew' compartment and this was done by cutting the back off the moulding and inserting a scratch built section before replacing the back section. The aluminium base of the container section needed to be moved back and raised to allow room for the rear mudguards necessitating drilling and tapping new holes in the chassis and supplying four standoff spacers to raise the plate.

After cutting the rear window apertures, the entire cab was sprayed red before the windows were put in place.



Now began the long job of constructing the rear of the appliance.

In the image to the left you can see the brass angle frame that gives the structure its rigidity. Using a thick superglue the H section styrene strips were added to the frame. These are used to guide the roller shutter doors. There was no styrene strip available to fabricate the shutters so 1/16 x 1/4 strip obechi was used, cut to length in a jig with two ribbons glued to the back.

The roof was now fabricated from styrene sheet and made removable by fitting side panels and the rear door plate was added. In the photo to the right you can see the base frame of the brass angle which is fixed to the aluminium chassis plate.



The next challenge was to fill the grain of the obechi strip used for the roller shutters and this was done with several coats of Rustins grain filler rubbed down between coats and finally sprayed with a white undercoat before being finished in aluminium paint.

The yellow and red chequered pattern on the side shutters was then applied by careful masking and the shutters finally added to the rear unit. The diagonal red and yellow diagonal flash on the rear of the appliance was done by spraying the entire rear door plate yellow and then applying some self-adhesive reflective red strip, cutting it around the various hinges and struts.



Then began the long job of fitting the electronics in the narrow space in the centre of the rear unit and cabling from this to the receiver, mounted in the cab and all the lights, necessitating adding several 'break-out' sub boards. The two control boards were fitted onto the aluminium base plate over the cut out that can be seen in the first photo so that some of the necessary controls were able to be adjusted from underneath the vehicle and also to give the maximum space for the shutters when open.



All the LED's were connected and tested before the unit was closed.

The 'blue' light bar was finally fitted and tested, which contains two rotating beacons along with two alternate flashing lights.

There are also two flashing blue beacons in the front radiator grill, either side of the air vent covers and also on the upper rear of the appliance.

The signage was printed and applied to the finished vehicle using both transparent and white water-slide transfer paper.

I now turned my attention to the rear of the appliance and began to finish the pump room locker which also had to be entirely scratch built. The major item was the pump itself which can be seen right and fitted below the control panel (below). After several trials I managed to fabricate the 'pump' from some mains cable, super-glued in a spiral with some scrap styrene tubing added to an old fuse holder and when this was sprayed red it looked quite realistic.



Using one of the photographs I had taken of the full size vehicle I copied and cropped the control panel and printed it the correct size before mounting it above the pump, then using some scrap styrene tube and Robbe 10mm hand wheels made up the outlet valves and fixed them to the lower part of the control board.

I then made up the hydrant extension tube and a water course snorkel and T bar and fitted them to the insides of the rear doors.

The main ladder was next scratch built. This was manufactured from styrene strip and tube, drilled in a homemade jig and carefully assembled. There are three mounting rollers at the front, middle and rear to support the finished ladder, which are just visible in this image. Then, carefully following the photos of the full size vehicle, I scratch built the remaining scaling ladder and roof ladder which were fitted to brackets attached to the rear door plate. These had to be made removable as I still needed to access the electronics situated inside. Both these ladders are mounted on a sliding box section running in rollers which were turned from brass stock rod as shown in the photo below.



The blue lights at the front and rear along with the clear and amber lights over the roller shutter doors

were made next after making four silicon rubber moulds and casting the lenses in clear epoxy with a base of coloured gel to give them the correct look when applied to the vehicle. The clear lenses on the sides and rear were backed by domestic aluminium cooking foil to give them a reflective quality. At this stage I decided not to make these lights working, other than the rear blue ones, however I did buy a blue flashing beacon which I modified to sit on a pole made of styrene tube in the position that the photographs of the original vehicles placed it. This was then connected to the electronics so that it worked in unison with the rest of the blue lights.

I now spent some time in printing and applying some self adhesive clear vinyl labels to adorn the ladders and the 'Night Owl' after copying the wording from the photographs on the full size appliance.

Once this was completed I turned my attention to the currently empty side lockers. These had to be added to as the full size vehicle has extra shelves. So each locker, with the exception of the two rear lockers, had a second shelf installed midway between the frame shelf and the top of the opening. (see the bottom photo) As with all the lockers the bottom of all the shelves were adorned with non-slip 'foot-plate' featured styrene sheet sprayed with aluminium paint. Sadly the two rear lockers had to be left as they were simply because the roller shutters on these were prevented from opening fully because of the existence of the pump locker filling the space that the shutters would occupy in their fully open position.



The empty lockers (left) have been populated by reference to the many photographs I took of the full size vehicles and all the items are scratch built. The many hoses that the lockers contain are made from turned aluminium tube ends connected together with red heat-shrink tubing and rolled to simulate the hoses in the full size vehicle.



All the other items are made from scrap styrene with the exception of the small red fire extinguisher, the metal rubbish buckets and the orange road cones. The driver seen looking through the side window is a model from the Batman series which is the only nearly scale figure available. A second model of the same character stands at the rear of the vehicle ostensibly operating the controls in the pump locker.

The appliance sports a genuine siren sound, recorded from a full size Gloucestershire Fire and Rescue vehicle, which can be activated from the radio transmitter along with all the working lights.

Having spent some 300 hours of work in building this vehicle it is now available for public viewing and helpful criticism.

Pete Dickinson (AWL Model Group)