

## My Next Kit Project

*Steve Churchill*

## Introduction

I have now been a member of the society for just under seven years along with my wife, Gloria, who is an associate member. Although I have given one or two short talks at club nights, I have somehow managed to avoid doing an article for the Gazette, so here goes.

The last two years have been rather hectic at home doing or having done, work on the house, which has left me with little or no time to devote to any modelling. I was doing a steam model of the 1918 Naval Tug, Resolve, which due to the above work is residing, half done, in the loft out of harms way. The question was, as I had done four boat projects in a row before, should I continue with the tug or do something new? In January Gloria and myself decided to take a day off work and go to the London Model Engineering Exhibition at Wembley. While having a good look round at the numerous trade stands we just happened upon the Maxitrak stand where I took a shine to their kit of a "Super Sentinel" steam wagon. Casually mentioning this fact to Gloria I steeled myself for the inevitable reply! Just as I was wondering if I had been heard she calmly said "let's go and have a coffee and think about it". Half an hour, one cup of coffee and a happy me later, we were back at the stand placing the order and paying the deposit. The next project had been decided. The tug was on the back burner for a while.

The kit I had just ordered was of a circa 1926 Super Sentinel Steam Lorry and comes complete with a "Cheddar Models Puffin" steam engine and boiler and a two channel, 27 mghz, Radio control system. The delivery time was estimated to be about four weeks.

Just four weeks later early on Saturday morning 23<sup>rd</sup> Feb. 2002 accompanied by Gary Marshall, I was on my way down to Staplehurst in Kent, where Maxitrak have their shop, showroom and machine shop, to collect the kit. It was ready bang on time.

Their premises are in two modern units on a small trading estate only "a stones throw" from Staplehurst station. Their showroom is well laid out with a good display of the finished versions of their products of Steam and Electric Locomotives, Traction Engines, Steam Lorries etc. There is also a shop where raw materials, components and books can be purchased. The shop is actually "Maidstone Engineering Supplies", another company, which Maxitrak acquired in Sept. 2000. After looking round for a while we went just over the road to the other unit, which are "Maxitrak's" machine shop and office and where I was to pick up the kit. Bernard of Maxitrak met us here and went quickly through the kit to check that everything was OK before I paid the remainder of the invoice. I was then the proud owner of two large, heavy and expensive plain cardboard boxes.

Maxitrak models can be purchased in several different ways, either as a ready to run model, a ready painted kit or an unpainted kit and as a kit in stages. I had chosen to buy the Super Sentinel steam wagon as an unpainted kit, which is the cheapest option but still rather expensive. I hope the expense is justified.

On arriving home the boxes were taken out to my shed/workshop and opened, ready for work to start. The larger box seems at first to have been simply filled up with lots of bits thrown in, any old how, with no thought of any order, although they were in plastic bags. The smaller box contained the only immediately recognisable part, the partly assembled cab, which had been primed, the only bit of the kit, which had any paint on it at all.



Photo No. 1 Two large and expensive boxes.



Photo No. 2 The parts out of the box.

After a quick rummage the Instruction Book was found in one of the plastic bags. This is in the form of a loose-leaf binder with the words “*The Super Sentinel Construction Manual*” on the cover. In fact it isn’t. It is in fact the manual for the Atkinson Lorry, with an extra page telling the builder that the Super Sentinel manual isn’t done yet and then listing the various differences. They then have the cheek to date this page 12<sup>th</sup> April 2001, nearly a year ago. Come on Maxitrak it shouldn’t take that long to do the proper manual, a bit of a “Cop Out” I think! The instructions are laid out in 12 different stages with drawings to match or I should say, free hand sketches to match. There are no photos or proper drawings of the kit stages or finished model. There is also a general guide of notes and tips on preparing and painting the model and a section on driving and maintaining the vehicle. In the same bag was a parts list, which was also split up into 12 different sections. The penny was beginning to drop! Those bits that were “thrown in any old how” weren’t. They had been put in 12 plastic bags to match the stages in the manual and parts lists. The only problem was that the bags hadn’t been labelled. It didn’t take long however to sort them into order and label them up. It was then a simple matter of checking off the parts against the lists. This took about 3hrs.

The construction stages are as follows:-

Stage 1 - Chassis.      Stage 2 - Front Axle.      Stage 3 - Rear Axle.      Stage 4 - Differential.  
 Stage 5 - Engine.      Stage 6 - Boiler.      Stage 7 - Boiler Fittings and Pipework.  
 Stage 8 - Gas Tank and Condenser.      Stage 9 - Wheels and Tyres.      Stage 10 - Radio Control.  
 Stage 11 - Cab.      Stage 12 - Body.

No parts were missing according to the checklist and there were spare nuts and bolts supplied for each stage. Nuts and Bolts seem to be mainly 10, 8, or 6 BA. The parts in the kit seem well made only requiring some slight deburring, although to get a good paint finish on the cab some slight filling may be necessary. Materials mainly used are steel, brass, copper, wood, rubber, unknown alloy casting and plastic for the windscreens. The oil lamps shown on the finished model photograph in the Maxitrak catalogue are not supplied, I was told these were an “EXTRA” and needed to be ordered separately, which I have done although I feel that this is a slight “Cop Out” like before. The burner is butane gas fired from a refillable tank but no fill adapter is supplied, on queering this Maxitrak weren’t sure whether one should be supplied or not as it is a Cheddar Models part. It is not on the parts list so I guess not. I believe it should be but it is an arguable point. I shall check with Cheddar and see what they would supply to a “Puffin Steam Plant” direct customer when I get a chance. In order to run the completed model

it definitely is required. Apart from just a few niggles, the kit appears well thought out and the components well engineered. The instruction manual is well written but could perhaps have better pictures although should prove to be adequate for the job.

I am now ready to start building the kit and hope to report my progress in future reviews of the Gazette so watch this space.



Photo 3. Components.



Photo 4. As collected

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### **Building starts**

Now that all the parts had been checked off its time to start building. The 3hrs., doing the check list was well worth the time and effort as it helped to familiarise myself with the parts. I would advise anybody doing a kit to take time over this very important part of the build process, especially if it's the first time a kit such as this is being attempted. A day doing this now could save days further on if parts are misidentified or wrongly assembled.

A few points to note here. As this model is radio controlled and uses a modified Cheddar puffin steam plant, it would not be practical to make it an exact replica of a Super Sentinel steam lorry. Therefore a fair bit of "Artistic Licence" has had to be used in its design. I will point out the obvious differences that exist between the real lorry and the model as I go.

The first place to start is the Chassis and running gear. Basically this kit is built in the order of the Parts List Stages. Most parts need painting, which is where a kit is different to a scratch built model. A scratch built model is normally built then disassembled for painting. There is no real need to build a kit model up then take it apart for painting. The hard work has been done, simply paint the parts first then assemble them. It is however necessary to study the instructions and think ahead.

The chassis main frame is about 22inches long and has been welded together by Maxitrak, unlike a real chassis, all the rivets are false, simply glued in for show. This I did first then gave it two coats of primer along with all the spring hanger brackets. When dry they were then bolted to the chassis and three coats of colour were applied to the chassis assembly. The chassis was done in Rover Flame Red.

I decided to use spray can paint available from Halfords and normally used for home car repairs. Yes I know that synthetic enamel such as that made by Precision Paints (Excellent Quality) gives a more durable and hardwearing finish. But if, like me, you have a garden shed type workshop then you may know that there is a lot of dust floating around which over a period of 20 to 30 mins., the touch drying time of enamel, seems to all settle on your freshly applied paint spoiling the finish. Spray can car paint touch dries in just 2 mins., greatly reducing this problem. For this type of relatively small model, car paint is fine. I have a small working traction engine I built some 8-yrs. ago, painted with spray can car paint which is still in good condition. I then painted all the parts I would need for the next 3 stages, Front Axle, Rear Axle and Differential. Again I put on 2 coats of primer and 3 coats of finish, as I would throughout the model, in Rover Flame Red colour. I also decided at this point to paint the 3 box type components that would be housing the Radio Control and Gas Tank/Oil Condenser assemblies. The colour used was gloss black. It's that "Thinking Ahead thing" again.

I then made my first mistake! I decided to follow the instructions and assemble the steering wheel, steering box and column to the chassis. The steering box is bolted to the chassis, no problem there, then the column is glued into the box and the wheel is glued to the column. By riveting the end of the column over after assembling the wheel to the column I was able to make the steering wheel turnable, great! Because of the radio control the steering wheel doesn't actually turn the steering but at least you could twiddle it. What I hadn't accounted for was the nuisance that this assembly would cause later on. Every time I turned the chassis upside down this "thing" sticking up, or "down", at the front would get in my way. So much for "Thinking Ahead".

The Front Axle was built up next and assembled to the chassis, as per the instructions, with no real problems. I lightly greased all the moving parts as they were assembled. The only tricky bit was finding a spanner or socket to do up the spring retaining bolts (8 BA). I ended up grinding a small socket down to get it into the small space available. A note here, a lot of the

bolts have to be cut to length before use as most of them are too long. This is mentioned in the manual. Also the same diameter bolts seem to have two different head sizes i.e. some 8 BA bolts have a 10 BA spanner size head. Others have a 9 BA spanner size head while all the 8 BA nuts use a 9 BA spanner, none seem to use an 8 BA spanner. Is that weird? Or is that not weird? This fact is not mentioned in the manual. Perhaps someone knows why? If they do please let me know.

The Rear Axle was then built up as per the manual, I decided to build the Differential and single chain final drive at the same time as they all have to be assembled to the chassis together. Again this went fairly smoothly although getting the axle, bearings and suspension to all line up is a bit tricky. I had the same problem with the nuts and bolts regarding spanner sizes and fit as I did with the front axle. I did however discover another problem.



Assembling the front spring to the stub axle.

The differential is in the back axle and is of the ball bearing type, which means that the gears normally in a differential have been replaced by ball bearings and friction plates. For the technically minded:- the planet gears become 8 ball bearings housed in holes in the chain driven sprocket gear. The star or sun gears become 2 friction plates attached 1 each to the 2, axle output shafts. The output shafts sandwich the sprocket gear and bearings between the 2 friction plates and are pressed together by a bolt, small ball bearing race and belville washers. Incidentally the drawing says there are only 6 ball bearings, it's wrong, you need 8, 9 are supplied giving you 1 spare.

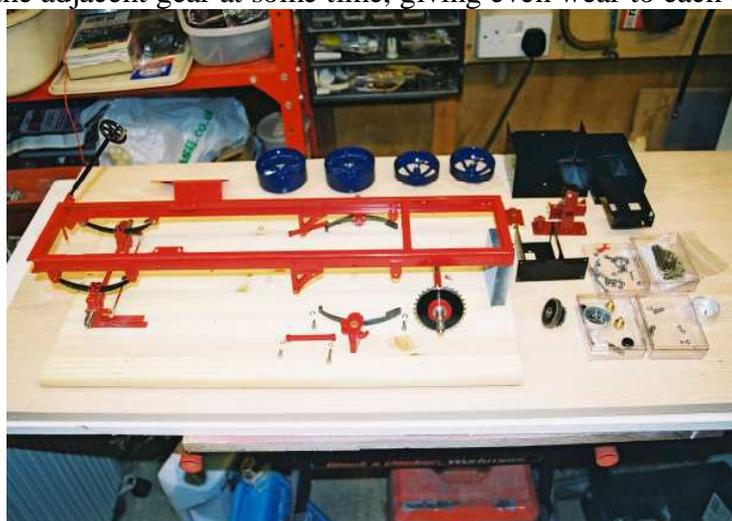
This differential arrangement is offset to the inner left-hand side of the chassis and an axle bearing on the left-hand suspension supports the left-hand output shaft. A third extension shaft is then passed through an axle bearing attached to the right hand side suspension and then into the right hand output shaft and locked in position by a grub screw. I had painted the right hand extension shaft, which meant that I could not slide it through the right hand support bearing and into the differential. I had to strip the paint off the extension shaft. I could now assemble the back axle and as necessary take out the extension shaft to adjust the differential. The problem now was that the axle looked bad because half of it was bare metal. Making a painted sleeve that fitted over the extension shaft as you slid it into position easily rectified this. All moving parts were greased as they were assembled.



The back axle and differential ready to fit to the rear suspension. The parts for this were shown in the April journal, photo #3.

Note that on the real lorry 2 final drive chains are used and the differential is not in the back axle. The underslung steam engine is mounted inside the chassis directly driving the differential, also mounted inside the chassis. This drives each rear wheel independently via a set of sprockets and chains, 1 on each outside of the chassis, to each rear wheel.

The Engine mount and lay shaft was then attached to the chassis as per the manual with no problems. The chain for the drive was joined together by a split link as it was fitted over the 2 sprocket wheels and then tensioned by sliding the engine mounting backwards and forwards and tightening the mounting bolts. Alignment was achieved using washers between the layshaft gear and layshaft bearing. The final drive ratio between engine and rear wheels is 9.77:1. This may seem a little odd but is worked out from the engine pinion gear of 12 teeth meshing with layshaft gear of 47 teeth, giving a ratio of 3.91:1. Multiply this by the result of the drive sprocket of 12 teeth, driving a chain to a back axle sprocket gear of 30 teeth, a ratio of 2.5:1. Overall Ratio therefore is  $3.91 \times 2.5 = 9.77:1$ . One wonders, at first, if the layshaft gear should have 48 teeth, which would have made the final drive ratio between engine and rear wheels 10:1. Many vehicles however have odd gear ratios so it could be right, as Peter of Maxitrak told me, the reason is simple. It's standard engineering practice to have one gear wheel with an odd number of teeth to ensure even wear on all teeth. Each tooth on one gear will then mesh with every tooth on the adjacent gear at some time, giving even wear to each tooth.



The chassis ready for the axle to be assembled to it.

The engine build would be my next job but I'm afraid you will have to wait until the next edition of the Gazette.

## **My Next Kit Project**

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## **The finished Rolling Chassis**

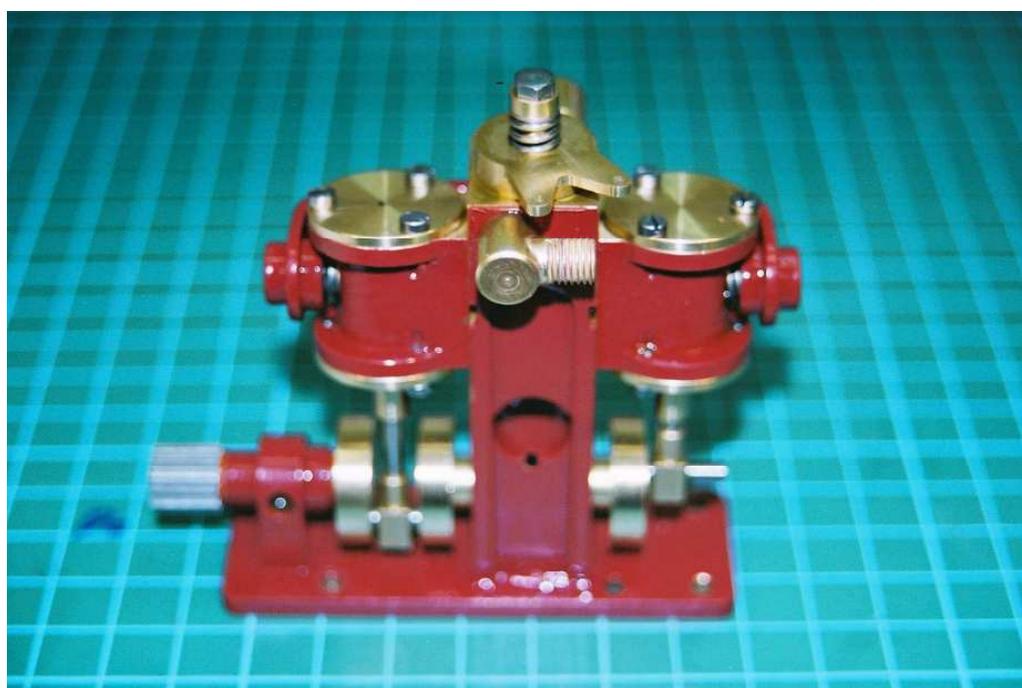
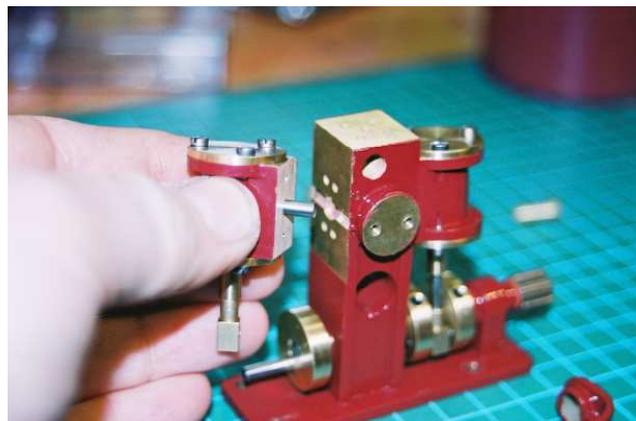
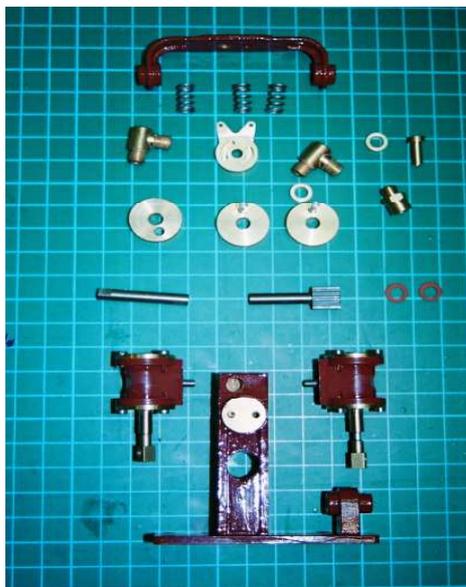
As a point of interest, Sentinel tended to call their Lorries, Waggon spelt with two 'g's, I had to tell my spell checker this as it kept correcting my deliberate mistake. So now to continue with building the model.

Following the instructions the engine is the next assembly to be built. This is a slightly modified version of the Cheddar Mk.2 Puffin steam engine. There are two sets of instructions supplied with the kit, one set is the Cheddar instructions and the other is a copy of these but with minor changes for the slight differences between the lorry version and a boat version. The main changes to the engine are.

1. A pinion gear fitted to the output drive shaft of the engine instead of just a plain shaft to couple to a propeller shaft.
2. The crankshaft main bearing lubrication holes have been moved to the sides to allow for the fact that the engine, when installed, lies on its side and the lube oil applied when running will flow down the holes to the bearings.

The engine is a two cylinder double acting oscillating valve steam engine, with the cranks offset to each other by 90 degrees. This means that the engine has no 'dead' spots and will self start by just opening the regulator to admit steam to the engine. The rotary operation Regulator is built into the main support pillar of the engine and incorporates forward and reverse direction as well so that only one servo is required to operate the engine. From its centre off position push it one way for forwards and speed, centre for stop, and the other way for reverse and speed. The exhaust port is one side of the engine and the steam port is the other, each can be the other as it doesn't matter which way you connect them, the engine will simply work the other way round. In the case of this kit with the engine on its side, the top port is the steam inlet and the bottom port is the steam exhaust.

The engine was relatively straightforward to construct, the instructions being easy to follow as usual just a bit of patience and care is required. I hand painted the parts that I wanted in colour, mainly the cylinders, mounting and stanchion, using a couple of coats of Humbroll maroon enamel before assembly. All sealing is done with a liquid-sealant, which is supplied with the kit, no gaskets are used. The sealant can also be used as a threadlock and is sometimes used for both purposes. The only really awkward bit is the fitting of the pressure springs holding the cylinder port faces to the valve ports on the centre stanchion. Be prepared to duck followed by a search for the little devils if you slip and get it wrong. The assembly is then bolted to the mounting between the chassis taking care to mesh the pinion gear with the Layshaft gear. Before doing this I test ran the engine on compressed air of around 20 lbs. Per Sq. inch. It ran perfectly first time.

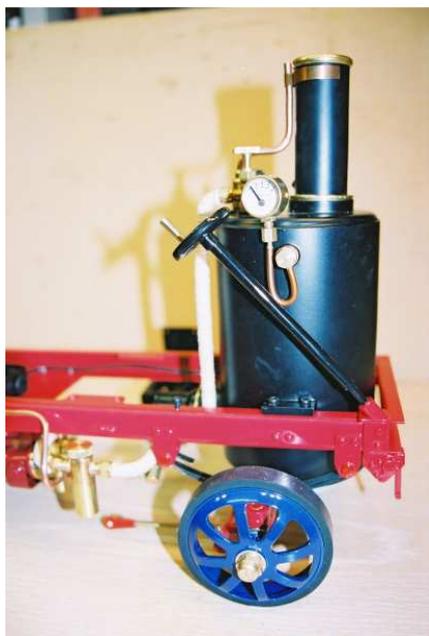


The next job was to put together the Boiler, also made by Cheddar models. It does not require painting as it is already finished in a heat resistant satin black paint. It is merely a matter of assembling the fittings such as pipe connectors, sight glass, safety valve etc. to the boiler using the sealer supplied. My kit also required a little electronic sensor to be fitted for the automatic control of boiler pressure. Again this was mostly straightforward careful fitting and no problems were encountered. I also added two other modifications to the boiler. First a steam valve to turn the steam off or on to the engine, a useful feature particularly when getting up steam. Second a vacuum suckback valve to allow air to be sucked back into the boiler after the fire is turned off and the boiler cools down. This prevents any sucking back of steam lubricating oil into the boiler and making a mess. Both of these devices can be obtained from Cheddar Models. The boiler assembly was then bolted to the front of the chassis, the holes are pre drilled and tapped so no problem there. At this point I decided to pressure test the boiler for any signs of leaks. Going for a steam test first time I thought might be a bit iffy, if the sight glass broke for example, well it didn't bear thinking about. I haven't got a hydraulic test rig so I used the following procedure to test the boiler and fittings.

Fill the boiler to the very top with cold water and screw in the safety valve which also doubles as the filler cap. Connect an airline to the steam tap via a pressure regulator set to 0 p.s.i. keeping the pipe as short as possible between the regulator and boiler. Cover the sight

glass with a piece of cloth to prevent glass flying should it break. While wearing a pair of safety goggles open the steam tap just a small amount then gradually increase the pressure to the boiler with the regulator while keeping a sharp lookout for any leaks. Keep one hand on the steam tap to turn off the pressure quickly if necessary, and increase the pressure with the other until it reaches the max. Operating pressure, 45 p.s.i. in this case. At this point the safety valve should start leaking which it did, turn the regulator down to about 40 p.s.i. to stop the safety valve blowing off. Check for any signs of leaks and if there are any, turn the pressure down to 0 and rectify any leaks. Repeat the test and recheck. It is extremely unlikely that a commercially made boiler will burst, if there are any leaks they will almost certainly be on a joint just assembled. The only other problem may be if the sight glass breaks, which may happen if it has been assembled out of line or cracked on assembly. Do not attempt to rectify a leak on the sight glass while there is pressure in the boiler. Using this procedure may not be perfect but generally means the worst that can happen is one gets very wet. Better than being scolded.

As all was well I decided that before steaming the boiler I would connect up all the steam pipes first.



This was fairly easy, as all the pipes are pre bent to shape. Only small adjustments were necessary to get a good fit. Other fittings are also installed at this stage, such as a steam lubricator, supplied, and pipe lagging if you want to add it. This is simply cotton based string wound tightly around the pipe and super glued in place taking care not to glue any gland or joining nuts at the same time.

Before test running, a steam oil condenser and gas fuel tank were fitted to the rear of the chassis, where on the real waggon the water tank is placed. This was fairly straightforward. A pipe, which I lagged, runs under the waggon connecting the steam exhaust to the condenser, which removes any steam oil so as not to pollute the environment. The steam is then normally exhausted out the back of the model but for a more realistic look I ran a length of silicone tube back to the boiler funnel so that the steam would exhaust there.

The next task was to install the gas feed and burner. Again these pipes are pre-bent to shape and relatively simple to fit. As my model had the optional extra of electronic boiler pressure control a gas control valve has to be installed about halfway along the right side of the chassis. The instructions say to use double-sided servo tape for this, which I didn't like so mine was drilled and bolted to the chassis, a much better way I thought. This valve is operated by a servo controlled by a little electronic box of tricks, sensing the boiler pressure, which turns the valve up and down automatically as needed. Cheddar Models manufacture this unit. The instructions are very good for this and setting up later on was straightforward.

The Radio control was fitted next and is installed in a purpose made steel box situated mid chassis. The boiler pressure electronic control is also housed in this box. Another metal box just in front of the engine houses the regulator and steering servos. I decided I would use a different radio control system than that supplied in the kit for two reasons.

1. I wanted a 40mhz. system, not 27mhz. as supplied.
2. I was thinking of adding working lights to the model, which would require a third function on the radio equipment.

I chose to use a High Tech Ranger 3 function 40mhz. unit which gave me a small problem. The servos made by High Tech are very slightly larger than those made by Sanwa and supplied with the kit. This meant that the servo mounting box had to be filed slightly to get the servos to fit. This was soon done and the radio control system installation carried out. Again the instructions are fairly easy to follow and no real problems other than that just mentioned were forthcoming. Connecting the regulator servo mechanically to the regulator is a little bit tricky, as there is not much room for the connecting link and setting it up took a little while. The steering servo is easier to connect as there is plenty of room. However I thought a servo saver should be fitted. This is a small sprung loaded device, which fits to the output of the servo to damp out any sudden shocks from the steering to the servomechanism. Shocks caused by hitting stones etc with the front wheels can soon strip the gearing in a steering servo. Unfortunately a servo saver is not included in the kit so I had to purchase one from a Radio Control model car shop; fortunately there is one in Watford. They cost around £3.50, which isn't bad compared to the cost of a replacement servo. This problem doesn't occur in model boats as water is a lot softer than stones.

The time had come to steam up and test all systems. The gas tank was filled first and is done in the same way as filling a gas cigarette lighter. By the way the gas fill adapter is I found out another 'Extra' and needs to be purchased separately, its not cheap at around £9. Fortunately I already had one of these so I didn't need to buy one. The water level was checked and the lubricator filled with oil, again another extra to purchase as none was supplied in the kit. The burner is lit by turning on the gas and applying a flame to the top of the funnel. The Air fuel mixture was adjusted as per the manual and didn't cause any problem. Similarly the Electronic boiler control was adjusted as per the instructions when steam pressure was achieved. This device seems to be capable of controlling boiler pressure to within 5 p.s.i. I set it to just under the safety valve blow off pressure of 45 p.s.i. This conserves steam.

During this first steam up I found a few minor problems.

1. There is a chassis cross member just above the engine which prevents easy oiling of the engine bearings and pinion gear. I cured this by drilling a couple of 5mm diameter holes in strategic places of the cross member.
2. The model had to be supported on wooden blocks in order to steam up and run the engine to clear any water that would condense in the engine on the first few revolutions when opening the regulator for the first time. Once the wheels were on the model it would of course run along, as there is no clutch to disengage the drive. This would make life difficult so I decided to make a stand for the model to be tested and started up on. I wished that I had done this earlier as it would have made some of the assembly a little easier. This was made from aluminium tube and flat strip.
3. I hadn't made the wheels and tyres so I couldn't actually try the model on the ground. I had forgotten the obvious; vehicles run on wheels and tyres, so that was my next job.

The wheels are made of brass; the rear ones being cast and the front ones are turned from solid stock metal. The finish of the rear wheels is superb and virtually no preparation other than degreasing is necessary before painting. The front wheels are not so good and a lot of sharp edges had to be removed, especially on the spokes before they could be painted. The wheels were painted Ford Royal Blue as would be the Cab and Body Later on.

The Tyres are solid rubber and are made from a length of solid rubber strip. You wrap the rubber round the wheel and cut it about 5mm shorter than the wheel circumference. The

two ends are then superglued together. This is a tricky job as the ends must be lined up perfectly so as not to cause a bump at the joint. The manual tells you to use a square butt joint but I decided to do an angled joint as this would be stronger and would roll better over the ground. By lying the ends flat down on a polythene flat surface, applying a bead of glue to one end and then bringing the two ends firmly together I found a good joint could be made. Six tyres are needed and if doing a butt joint there is just enough rubber strip to make 7, 1 spare. If however a spliced angle joint is made there is only enough for 6 tyres, no room for error. Once made the tyres are stretched over the wheel, carefully lined up and superglued in position as per the instruction manual.



Extreme care must be used when using superglue here as apart from sticking ones fingers together, any glue spilt on the painted surface will destroy the finish and a repaint job will be necessary. Glue spilt on the rubber tyre isn't so bad as it can be rubbed down carefully with wet or dry paper once it has set and won't notice.

The wheels were now fitted to the axles. They are held in place by brass hexagon headed bolts screwed into the axle end, the front ones being designed to rotate freely when the bolts are tightened and the rear wheels being clamped to the axles so that the drive is transmitted to them. I wasn't happy with the rear wheel fitting arrangement as I realised that in use the rear bolts could loosen and drive would be lost. Therefore a flat was filed on the rear axle shaft near the ends so that a grub screw could be added to the rear wheel hubs and tightened onto the axle for a more secure drive to the rear wheels. This done I was ready for my first 'Drive'.

The Waggon was fuelled, watered and relubed and steamed up. A test drive up the garden path was then carried out. I must admit the first time I try out a new model always gives me a thrill and this time was no exception. Apart from a little trimming of the steering control and regulator control the model ran really well. Top speed seemed about walking pace, around 4mph. A successful test-drive, all that remains to do is build the Cab and Body.

## My Next Kit Project

*Steve Churchill*

### Cab & Body to completion

The Cab was the next unit to build. Some parts of the cab are already partly assembled. These are the front at the front, to which been bolted, assembly has been imagine this has been frame and 'W' shape need to be selection are made from sheet made from plywood simulate wood internal bench seat plywood. The Perspex sheet.



These are the front window frames and 'W' shape the front, sides and floor have whereupon the whole painted with grey primer. I done because the window is a brass casting and would fitted to the other parts which steel. The back of the cab is and is vertically grooved to planking. The cab roof and parts are also made from sheet windscreens are made from

Before painting I tried the to check for fit. extremely snug room for error. there is no to the chassis, I just sit there using good idea on a couple of holes floor and 2 threaded hole were



chassis members to take some 3mm cap head bolts to hold it down. The cab back, roof and bench seat were easily made up from the provided parts and fitted, only some sanding down to get a good fit. I had to remember that the roof is made to be simply lifted off for access to the boiler and therefore a loose fit is required to allow for paint etc.

doing any assembly or cab shell on the chassis This was fine but it is around the boiler, no There was one problem, provision to hold the cab presume that it should the force of gravity, not a working model so a were drilled in the cab corresponding 3mm put in the top of the

As I wanted to have working lights (the reason for the need of 3 function radio control) and Maxitak make the oil lamps as an extra I purchased three of these, two for the front and one for the back. These had to be modified to take some 3 volt grain of wheat bulbs. A 4mm threaded hole was tapped into the side of each one to take a short length of copper steam pipe externally threaded for a short distance at each end. One end of each pipe then screwed into a 4mm threaded hole in the chassis at the back for the rear light and into a hole either side of the cab for the front lights. The grain of wheat bulbs then had their wires pushed down the pipe so that the



bulb end protruded out of the pipe. The lamps were then screwed over the grain of wheat bulb onto the end of the pipes. The wires from the cab lights were wired to a small socket at the rear of the cab. A model electric aircraft miniature speed controller was used to control the lights from the radio control. This device is extremely small, about 15mm long by 8 mm wide, while the radio control batteries were also used to power the lights so no extra batteries were required. This device was wired via a small plug to the cab lights at the front and hard wired to the rear light. The beauty of this system is that the lights can be turned up and down, just like real oil lamps.

If one looks at real Super Sentinel Waggon, then a few obvious differences can be seen between them and the model. While I was on holiday at the Lincolnshire steam show and the Great Dorset steam fair I took many photos of real sentinel steam waggons and I used these to add some more realistic features to the model. The real waggons were nearly all vertically planked from the rear of the doors to the back of the cab, usually with 8 planks, except on the shortened cabs of tipper waggons which usually had only 5 planks. This addition was easily achieved by super gluing thin strips of balsa wood sheet to the sides to represent the planks. The fixing coach bolts were imitated using brass model rail fixing pins, rounding the heads over first using a nail punch and a former made from a piece of steel rod. These were then cut to length and glued on for effect. Capping strip made from balsa strip was also added to the top and bottom edges of the cab. On the real waggons all the planks seemed to be bolted at the top but only every other plank was bolted at the bottom on all the waggons I saw. I didn't see any bolted halfway down. Plain flat sides were made only on the Standard Sentinels as far as I can tell.

After some slight filling of the cab surface it was primed and painted using Ford Royal Blue spray paint as the wheels were. The interior was also sprayed the same colour and then hand painted cream inside on the back wall of the cab. The bench seat was hand painted matt brown. The Cab roof was primed and spray painted silk finish black and then the inside was hand painted cream. The final touch was to glaze the windows by making paper patterns and then cutting the Perspex to size from these. They were glued in place using flowable silicon sealant which is strong, resilient and heat resistant as they are extremely close to the boiler. In use I have had no problems with them. Some adhesives may have come unstuck with the heat but silicone seems fine. The mudguards were painted gloss black and bolted on next, the bolt holes had to be marked out and drilled first on the cab base as this hadn't been done. This finished the cab apart from the sign writing which I would do later.

The body was the next job. This is mostly woodwork and was built as per the instructions but with a few additions. The first was the addition of a headboard. The kit uses the back of the cab as a headboard but most real waggons have a separate headboard on the body. My waggon was to be a coal merchant's vehicle and would have coal sacks on it so a dedicated body headboard would be necessary to ease the removal of the body when operating and running the model. This was made from some boxwood from the model shop and was edged using some thin balsa wood. Grooves cut across the headboard simulated boarding. Extra longitudinal beams were made from square section wood from the model shop and added underneath the body to rest on the chassis top edges, as real waggon bodies were done. The kit does not include these, simply using the cross beams resting on the chassis. The coach bolts were simulated the same way as the cab except for the fact that their full length was used and they were actually hammered into position and held the body together along with the waterproof white wood glue. The only tricky bit came next which was fixing the chassis locator beams in place allowing the body to drop onto the chassis and not slide off. These have to be accurately positioned so that the body is in the right place and is easy to remove and replace which is necessary when running the model. Careful measurement was needed here. The floor and headboard back area were masked up using paper and masking tape ready for painting. The body was then painted first with spray primer and then royal blue to match the cab. Three coats of primer were used as the wood tended to soak it up like a sponge. Then three coats of colour. The paper and tape was then removed.

The model uses a floor made of plywood but for extra realism I decided to give it a planked floor made from wood strip from the model shop to simulate 6 inch wide boards. These were glued in place onto the plywood floor using slow setting thick super glue and an activator spray, Note: - some wood stops the super glue curing properly, as here, so an activator needed to be used, using this method I had about 30 seconds to position the planks as I laid them. The floor of the kit body is made of plywood sheet but I don't know what sort of wood the planks are made of as the bin in Harrow model shop didn't say. Without the activator spray the glue would not cure. The fixing screws of the boards were represented by dots pencilled on in a line across where the cross members are. After painting, the side stanchions were then glued in place in holes drilled along the side and back edges of the floor, two extra side stanchions were obtained from Maxitrak and added to the sides, one each, to give a more realistic look for a coal waggon. (Maxitrak kindly supplied these at no extra charge). The whole floor and headboard were hand varnished using three coats of exterior satin finish acrylic clear varnish. The rear mudguards were painted gloss black and screwed in position as per the instructions. Brass chain supplied with the kit was then cut into lengths and hooked on the stanchions around the body edge. Care needs to be taken here to get an even chain loop between stanchions. The brass colour of the chain may not be quite right; I think it ought to be black. I may get a chemical kit which will black brass at the Wembley Model Engineering show in January 2003.

The model was now finished apart from some props to add to it. The model is a radio controlled working one and I always think that as such working models need a driver and or crew to give them life when run. Being 1/12<sup>th</sup> Scale, figures are easy to come by as dolls house figures are also this scale. I purchased two figures from June's miniatures, a dolls house stall in Watford market. I also bought a newspaper, a galvanised bucket, a black curled up cat and a bulldog. The two figures were dirtied up using black wash made from black paint and thinners, given caps made from thin leather sheet and sat on the bench seat in the cab. A couple of short strips of self adhesive Velcro hold them in place. The newspaper lies on the bench seat between the crew with the cat asleep on it.



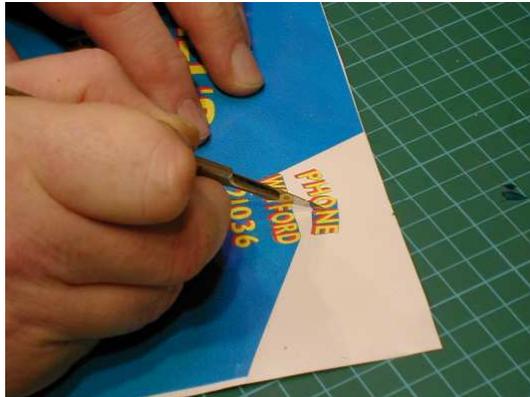
The body required a load. Coal sacks were needed. A cry for help and my wife, Gloria stepped into the breach. After a couple of evenings Gloria supplied me with 32 coal sacks which she had made herself, wonderful. Many thanks!! Gloria. These were stencilled using a black permanent marker with a company name then filled with real coal and the tops sewn up. They were then arranged on the body along with the bulldog to stop people pinching the coal.

The final touch was to add sign writing to the cab. This has always been a problem to me and I suspect to other people as well. The options were as follows.

1. Paint it on by marking out in chalk then painting it on by brush. The way professional sign writers do it. I know that I am not very good at doing this as I have tried before.
2. Use Letraset to put the lettering on as a guide and then paint over the letters. This works, I did it on my 1/12<sup>th</sup> traction engine but it still doesn't look really good.

3. Use a lining pen to do the outline then fill in by brush or pen. I have not tried this but I suspect you need a steady hand.
4. Buy stick on vinyl lettering which can be ordered through Maxitrak.

I decided to try option 4, the vinyl stickers. In order to do this you need to send Maxitrak a design of some sort with Font type and sizes, type of lettering, shading, colour etc. and of course wording using an old program I Print Artist (supplied several years ago) full size picture of the superimpose the required. This I then had a problem as the not be cut out the sign writing normally only do basic this small scale. I also



required. I did this by had on my computer called with a printer I bought which allowed me to have a cab onto which I could design and colour I sent off to Maxitrak. They small size I required could accurately by the machine company used, they lettering in one colour at had fancy styling and

shading which made cutting out even worse. However they could print it onto vinyl which I could then cut out myself. I decided to give this idea a try, Maxitrak had never tried this before and were willing to let me try; I would only have to pay if it worked. This was all experimental.

A few days later the lettering arrived, about 3 sets in case I made a mistake. The printed self adhesive vinyl has a backing paper which one peeled off before sticking the vinyl down. First however I had to carefully cut around each letter (without cutting the backing paper) and remove the surrounding vinyl leaving the letters still stuck to the backing paper. This I found to be tricky but not as bad as it sounds. Next a sheet of sticky paper is laid over the design and the vinyl backing paper carefully peeled off to leave the letters stuck face down on this sticky paper. The whole set is then carefully aligned and stuck to where the design is required, in my case the cab. I tried one of the doors first as this was the smallest design and immediately hit a snag, the lettering had to be positioned exactly because as soon as it touched it stuck. An acquaintance of mine gave me a tip, as he has been involved in putting self adhesive vinyl designs on to full size aircraft. Simply soak the design in water, to which a couple of drops of fairy liquid have been added, for a few minutes and wet the area where the design is to go then apply the design like a transfer. This enables the design to be slid into accurate position whereupon you press it down firmly with a soft cloth and push out the water. The sticky paper is carefully removed and the design is left behind. I tried this and it worked beautifully, it also seemed to help prevent air bubbles being trapped under the design. The result looks pretty effective and once stuck and dry the lettering seems impossible to remove. Maxitrak told me that this type of lettering is good for 10 years in outside conditions on real vehicles so I should not need to do it again for a while.



This basically finishes the model apart from number plates which I have ordered but have not received yet. Those of you that were at the society exhibition in Sept. 2002 may have seen the model running around and although the sign writing wasn't done at the time I think you will agree that it looks pretty good. I certainly have very much enjoyed building and running this kit.

Concluding this article I think Maxitrak have produced an excellent kit which can be built pretty much straight from the box, as is, to produce a model which is very representative of a 'Super Sentinel Steam Waggon'. The kit also has plenty of scope for more experienced modellers to produce a more highly detailed and varied model. All of the components are well made and engineered, fitting together very well. Only a few parts needed minor filing to make

them fit together, most fitted perfectly first time. All the niggles mentioned in this article were very minor although perhaps the occurrence of missing holes in one or two places may be a problem to a complete novice who has never had to drill or tap holes before. Maxitrak however have been extremely helpful on every occasion that I contacted them and I am sure they would help anybody out with any problem that occurred. The instructions are relatively easy to follow, and are more than sufficient to be able to build the model, even for a novice. The model has been a joy to build and has taken me around 11 months to complete during my spare time. Well done Maxitrak for producing an excellent kit.



*Editors note.*

*I hope that anyone else who is building a model from a kit will write up his experiences in the same way. It certainly seems from what I have heard that Maxitrak are on their own in producing a really satisfactory kit.*