

RADMEC Fact Sheet - Locomotives

We often get asked how our locomotives are powered; the simple answer is either by steam or electricity.

Steam Locomotives - these are miniatures of full-size steam locomotives and work exactly the same way. They burn coal to boil water in their boilers and the steam is used to power them. Needless to say, these locomotives get very hot and little fingers (big ones too) must not be allowed anywhere near them!

When running, water has to be added to the boiler as the level drops when the water boils and turns to steam. Depending on the type of locomotive, water is either stored in a tender, in a saddle tank - a curved tank that wraps around the top of the boiler - or side tanks, which fit either side of the boiler. The boiler will have one or two sight glasses to show the water level within the boiler. It is imperative that the water level does not drop too low, as if it does the boiler could melt! Locomotives are usually fitted with three methods to get water into the boiler:

Hand pump - used to initially fill the boiler prior to lighting the fire and as a manual means to top up the boiler should it be necessary.

Axle pump(s) - these mechanical devices draw water from the storage tank(s) and pump it under pressure into the boiler. A bypass valve, operated by the driver, is used to circulate the water back into the storage tanks when the boiler holds sufficient water.

Injector(s) - Most steam locomotives have one, or sometimes two of these very clever devices that uses steam pressure to draw water from the storage tank(s) and force it into the boiler. Again, the driver controls these devices, turning them off when the boiler holds sufficient water.

Steam locomotives have to stop periodically to take on coal and water, just like a full size one. As the locomotives we run are small and cannot hold large amounts of water and coal, they need 'topping up' fairly frequently.

Electric Locomotives - These are battery powered, usually using one or two car batteries. Most electric locomotives carry the batteries inside the bodywork, which is why most electric models tend to be of a larger size - bigger diesel or diesel electric locomotives – these can accommodate two batteries, usually connected in series giving 24 volts to power the motor(s).

The locomotives we run are powered by various different size and numbers of motors, ranging from 240W total power output, to 700W, or possibly higher. They are controlled by an electronic speed control unit that gives them the ability to run at variable speeds and usually in either direction.

General - Steam and electric motors provide maximum torque at zero revs, so are very powerful and can pull heavy weights. They have no problem pulling a fully loaded riding wagon. Some of our locomotives could easily pull several fully loaded riding wagons, but we choose to run one riding wagon per locomotive.