



Sentinel S4 Steam Truck No 9178 built in 1934.

Many people imagine that steam was only a motive power on the railways but in earlier days steam was a power source for road vehicles. We are all aware of traction engines and road rollers powered by steam, some examples of which are in the Sandstone collection. What is less well known is that steam also powered trucks. The most famous of these were made by Sentinel in the UK. Originally manufactured by Alley & MacLellan in Polmadie, in Glasgow, the company moved to Shrewsbury in 1915 and became the Sentinel Wagon Works in 1920.

Their first model was the Super series from which was developed the DG4 series. Their main competition in the steamer market was Foden but new legislation in the 1930s saw demands for lighter vehicles and Sentinel survived the longest. In 1934 they defied the odds and produced the S type with a single acting four cylinder underfloor engine with a longitudinal crankshaft suited to cardan shaft drive to an overhead worm-drive rear axle.

The S series was much lighter than earlier models and featured a modernised cab with a setback vertical boiler.



Sandstone's S4 Sentinel waggon at full steam ahead!

“Sentinel” Advantages

Larger Paying Load Carried
Larger Platform Area
Shorter Overall Length
Shorter Wheel Base
Much More Easily Manœuvred

N. B. → All Controls under one Man !!

Perfect and Automatic Lubrication
Absence of Noise and Nuisance
Maximum Comfort for Driver
Reliability and Durability
Low Cost of Operation and Upkeep

Sentinel were proud of their “Advantages”

Built in four, six and eight wheeled forms designated S4, S6 & S8 they were quite sophisticated but could not compete with diesel powered trucks for ease of operation and payload capacity and production was phased out in the late 1930s. However, the company did go on to build another 100 steam powered wagons for Argentina in 1950.

Ultimately Sentinel went into the production of diesel trucks using their own engines. The company finally ceased production in 1956, and the factory was sold to Rolls Royce. Sandstone has in its collection a Sentinel Steam lorry, serial number 9178, built in 1934 This was acquired from the James Hall Museum of Transport in Johannesburg. Being in poor condition, the machine was completely rebuilt and the boiler refurbished in 2007 by Keith Stevens. The Sentinel S4 was fired up in chassis form and given a brief test drive by Keith and found to be perfect. Although it came complete with cab this has had to be replaced with a new one which Keith fabricated. New tyres were acquired from Dunlop in Durban and, although a non-standard size, they were found ex stock. The rear body was also restored before the unit was returned to Sandstone.

Interestingly a numberplate, TS 3718, was found on the vehicle indicating registration in Springs under the old Transvaal numbering system.

Steam lorries were the best road lorries of their day. The Sentinel S4 was easily capable of attaining 60 mph (97 km/h) at a time when petrol lorries would be lucky to achieve 35 mph (56 km/h),

2007 was a long time ago but since then the Sentinel has run well with positive annual boiler inspections and regular timetabled ongoing general maintenance. In early 2025, however, the Sentinel began to show signs that a major overhaul was required to be expected after 18 years of hard work!

With Keith Stevens now retired to the Cape, Brian Nicholl, and his team, who look after our road steam units, including the Sentinel, brought in Charles Viljoen for an initial inspection of the S4 and a list of areas needing attention was drawn up.

Initial work was done on the braking system as this had been showing signs of wear and tear with cracks repaired in the pedal cylinder and the unit could soon stop again safely. The pedals and cylinder assembly just await painting. Brian Nicholl also overhauled and renewed all the control shaft bushes which were seriously worn, these have been painted.



The S4 boiler awaiting its test.

The heart of the Sentinel and any other steam powered machine is the boiler, and a total strip down was undertaken for a full inspection. The Boiler inspector was called in and an MPI (Magnetic Particles Test) was done together with a visual check. This is a Non - Destructive Test (NDT) to detect microscopic surface cracks or flaws in a boiler without damaging it and the Sentinel passed safely. A thickness test was also done together with a hydraulic test, the Sentinel both tests within safe limits. At present the boiler is 90% assembled after this work.



The boiler test complete



The boiler from the top after testing showing the tubes.

Similar to a conventional internal combustion engine, except propelled by pressurised steam, the Sentinel's engine has been overhauled and new valves and seats installed by Charles Viljoen and Lukas Nel.



The crankshaft of the Sentinel showing the engine's similarity to a normal internal combustion engine.



The valve area of the engine

One of the problems experienced on the Sentinel was leakage (blow by) through the regulator (throttle) assembly which meant the wagon would creep forward occasionally without the Driver's assistance which can be dangerous of course! All the bushes and spindles have been replaced or re-machined where possible. These components just need to be reassembled.



The regulator bolts drilled out and the seats machined.



The regulator assembly after overhaul

With most of the work completed Brian and his team together with Lukas and Charles are aiming for an end September test run giving time for any snags that may arise to be rectified in time for the next Sandstone event in November 2026.