

RANSOMES AND RAPIER

45 Ton STEAM BREAKDOWN CRANE No. 1561S

Steam breakdown crane 1561S, with Match Wagon 1561SM, was built by Ransomes & Rapier at their Waterside Works in Ipswich, Suffolk. This was under order number E8136 and paid for by HM Government's Ministry of Supply as part of preparations for it's Air Raid Precautions and also, possibly, for use on the continent once a foothold had been achieved after D-Day. It was outshopped in the Southern Railway's breakdown crane fleet Black/very Dark Grey livery.

It was delivered to the Southern Railway's depot at Guildford on Tuesday 23rd July 1940. This was close enough to London, to deal quickly with air raid damage, without exposing it to the risk of damage itself. However, it was sent eastwards almost straight away. No new conversions for riding vans were done at this time, so it appears existing coaches/vans continued in use for some time – probably until after WW2. It is believed, but by no means certain, that Guildford had an ex-LBSCR 54 ft coach at that time - either 5-compartment bogie brake third or brake composite.

The crane proper weighed around 93 tons in working order plus two Stokes-type weight relieving bogies [one at each end] and a match wagon to support the jib when travelling to/from work sites. Two propping girders were provided, that draw out from either side, to prevent the crane from toppling over sideways. These girders were used when loads were being lifted with the jib at an angle to the track.

With propping girders in position a load of 45 tons could be lifted at 20 ft radius, 25 tons at 30 ft radius or 16 tons at 40 ft radius. Un-propped, the crane's lifting capacity was reduced to 15 tons at 20 ft, 8 tons at 30 ft and 4½ tons at 40 ft. The maximum speed of lift varied with weight of course. 45 tons was at around 10 ft per minute or 15 tons at 30 ft per minute. Also, with 45 tons 'on the hook' the speed of slewing amounted to around one minute to achieve a complete 360° revolution.

The crane is self-propelled and could move along the track slowly at around 180 ft per minute, with a 15 ton load, or up to 270 ft per minute when unladen. Powering the crane's activities are two double-acting engines fixed one on each side frame. They have 9½ in diameter x 14 in stroke cylinders supplied with steam at 120 psi from a 'squat' type Cochran-Hopwood cross-tube boiler 4 ft 6 ins diameter and 7 ft high. An unusual feature of the crane's steam operating equipment being fitted with Walschaerts valve gear rather than the normal Stephenson's Link motion.

The crane carries a 600 gallon capacity water tank with ½ ton (10 cwt) of coal in the bunker. Two powerful electric lights were fitted to the end of the jib for use at night with current supplied by a turbo generator. Despite the complete crane assembly being quite long it was designed to negotiate, at dead slow speeds, curves as sharp as 5 chains radius.

Regarding the weight relieving bogies mentioned above. Breakdown cranes had become much larger in lifting capacity over the years, to cope with heavier locomotives, but were restricted as to where they could travel due to high axle loads. In 1904, Ransomes & Rapier's chairman and managing director Wilfred Stokes (1860 - 1927)

invented weight-relieving bogies as an answer. He had been New Works Engineer for the GWR before moving to Ransomes & Rapier in 1896.

Stokes's design of weight-relieving bogies were two-axle trucks, located one to the front and one to the rear of the crane itself, onto which some of the crane's weight could be transferred so as to reduce axle loadings for travel. At the work site, the transferred weight would be reinstated onto the crane before the lifting commenced. The jib runner and bogies could either be lifted off the track altogether, or just shunted out of the way, thus giving as close access to the job as possible.

Although full details of I561S's use are not available, due to wartime security, two 45 Ton Southern Railway cranes (I561S and I560S) along with LNER's Kings Cross depot 45 Ton crane 941600 built by Cowans Sheldon were sent to Martin Mill Military Railway near Dover. Between June 1940 and January 1941, we do know that the three cranes were used to help construct two giant cross-channel guns "Winnie" and "Pooh". Spare 14 inch calibre "King George V" class battleship guns, modified for coastal artillery use, were manned by men of the Royal Marines Heavy Siege Battalion. They were joined, shortly afterwards, by Coastal Defence batteries at nearby Wanstone Down whose main guns were called "Clem" and "Jane". These used even larger 15 inch calibre battleship guns which, again, had barrels weighing around 100 Tons (including breech block) requiring three cranes lifting in tandem to install them into position.

As mentioned above, all three cranes were required, one at the muzzle and two at the breech end, on installation or when replacements were needed after firings wore the bores. Later, two LMS cranes (including Craven Bros. 50 Ton RS1015/50 from Willesden and one other) plus two more Southern Railway breakdown cranes (Nos. I196S and I197S) joined them. The Martin Mill Military Railway was worked exclusively by diesel shunting locomotives requisitioned from the London Midland & Scottish Railway and the Southern Railway. This was done as smoke from steam locomotives would have been visible from across the Channel in France.

All this time there had been some confusion as to who owned I560S and I561S - the Government, who had ordered and paid for them, or the Southern Railway, to whom they had been sent. Despite this, they were always crewed by railwaymen and, from the beginning, had undertaken air raid damage repairs on the Southern Railway network. They were not taken into railway stock formally until Wednesday 23rd December 1942.

Due to coastal defence batteries being decommissioned after D-Day, I561S returned to Southern Railway's Guildford depot. In 1950, it was transferred to Ashford where it remained until 1966. It's next home, for around a year, was Eastleigh followed by Chart Leacon (31st October 1967 - 16th July 1977), Brighton (May 1978 – November 1986) and, finally, Stewart's Lane from April 1988. Under British Railways it was renumbered S1561, then DS1561. It later became ADRR95210 under the Civil Engineers Plant System (CEPS) numbering system introduced from 1974.

At some stage during it's working career, I561 S received Ferodo linings on the slewing clutches as well as the fitment of a through pipe for air brakes (to join the through pipe for operation with vacuum braked trains from new). The air pipe was conspicuous during the crane's Gulf Red era.

In 1985, ADRR 95210 was one of two used to replace a major bridge at Haywards

Heath station. Joining it for this work was Stewart Lane's 36Ton crane ADRR 95201 (originally No. 81S). On Saturday 24th October 1987, ADRR95210 was seen on display in steam at Waterloo Station (as part of the Ian Allan Network Day) attached to Class 73 Electro-Diesel 73004 "*The Bluebell Railway*". In December 1987, ADRR95210 was called upon to re-rail coal train wagons after an accident near Hither Green.

A photograph of ADRR 95210 has come to light on the On Track Plant website [<https://www.ontrackplant.com/photo/95210-2>] showing it in action, on 10th April 1988, lifting one end of a vehicle on an adjacent siding at Stewarts Lane Depot itself. Unfortunately there is no description to help explain the picture.

Soon after withdrawal of ADRR 95201 by BR it was purchased for use on the Kent & East Sussex Railway. It remains based at Rolvenden Depot.

Both ADRR95209/1560S (now scrapped) and ADRR95210/1561S were stored for some time at Stewart's Lane. British Rail withdrew them formally around June 1989 after which they were sold. By December 1990, both cranes had been moved to Cocklesbury Yard, Swindon and then, for some time, they were stabled on the old cut back No 15 road in the BR mileage yard. Incidentally, 1561S and 1560S had been the last two steam breakdown cranes in service with BR and, in fact, were also BR's last two steam powered vehicles.

Swindon was cleared in 2006 with 1561S being moved to Southall depot in West London for a thorough overhaul to operational condition. However, on Wednesday 30th November 2011 a Goodman's lorry extracted 1561S and delivered it to the Swanage Railway the following day so that restoration could continue. During April 2012 new steel ropes were fitted having been delivered from manufacturers Bridon International Ltd.

The year 2013 was notable for 1561S on two grounds. The repaired boiler passed it's insurance steam exam on Monday 17th June and the crane's ownership changed on being purchased by the Swanage Railway Company. Other mechanical restoration continued so that by Wednesday 26th August 2015 an Inspector, from Able Lifting Equipment (Southern) Ltd, carried out a successful Full Load Test. It had to lift 1¼ times the 45 Ton maximum load which is 56.25 Tons (57.15 tonnes). In fact, the weights assembled actually weighed 56.89 Tons or 57.80 tonnes. It has been repainted into the Gulf Red livery carried subsequent to BR's 1959 decision that all breakdown cranes should be repainted from the original Black.

On Friday 4th March 2016, the 45 Ton crane carried out it's first proper lift on the Swanage Railway. It was paired with the Railway's Stothert & Pitt 15 Ton diesel electric crane No. CB 5968 [but known as "FBC 1"] to take part in a tandem lift. The job was to improve Norden Gates sight lines by removing BR Mk1 RMB No. 1865 (the "Norden Nest") from it's site at Norden Station that it had occupied since 2004.

At the time, the Swanage Railway had to request assistance from the Mid-Hants Railway's steam crane team to operate 1561S as it did not have it's own trained crew.

Sadly, during the intervening years, no crews were trained and 1561S has not been used at all. It was stored in a siding, under a tarpaulin, but will now require another overhaul before it can be used again.

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