

INTRODUCTION



The 7R had to be revved and the gearbox used judiciously to get the most out of the motor. The power only came in properly at about 5500rpm, peaking at 7000rpm and falling away sharply after that. For a 350cc bike with only four ratios in its gearbox this was not a wide power band and it took a skillful rider to get the most out of it

AJS's racing heritage was so strong during the 1920s and 1930s that even during the Second World War work was continuing on its race bikes. A three-cylinder supercharged engine design was quite advanced until the designers Bert and Harry Collier were killed in 1941 and 1944, after which nothing more was heard of it. But a supercharged twin was ready after the war. Its cylinders were laid horizontal, pointing forward, and it had very large cooling fins to cope with the huge amount of heat generated – a shame then that from 1946, superchargers were banned, and the twin, which became known as the Porcupine because of those cooling fins, was adapted to conventional carburation.

However, this bike was never intended to be anything other than a works machine, so AJS also designed a 350cc single as a production race bike to be sold to private owners, although factory versions were also run.

This adhered to AJS's pre-war tradition of overhead camshaft singles and was introduced in February 1948 as the 7R Junior, although within months it became more popularly known as the 'Boy Racer'.

The bike was certainly one of the more reliable race machines, but compared to the Velocette KTT or the Manx Norton it lacked outright speed, so still tended to fill the lower places in fields where these competitor machines were taking part.

Handling was not bad, but AJS also had a habit of sticking with its own make of shock absorbers when others had moved on to superior proprietary items, in particular Girling which was making the most advances in their design.

Over the years there were changes made to the 7R to speed up its steering, which was slow on the first models, including the fitment of smaller 19 inch wheels and a shortening of the wheelbase – the engine was also moved forward in the frame to improve weight distribution. This means that later models feel quite a bit sharper than the first ones.

As for the brakes, for the time they were considered good, although on some race tracks fade through excessive heat build up was always a problem.



Like so many race engines, the 7R did prove to be very sensitive to its carburation, and the factory put a lot of effort into this as it developed the bike over the years

ENGINE



Probably to help reduce development costs, the 7R engine followed the format more of traditional pre-war AJS race bikes with its single overhead camshaft single-cylinder engine and separate four-speed gearbox. Even so, the 7R was a completely new design, penned by Phil Walker.

The engine comprised a vertically split crankcase with the timing side on the right, standard practice on most English singles, with dimensions of 74mm x 81mm producing a capacity of 348cc. The crankshaft was a built up unit with pressed in mainshafts and crankpin, which also, according to AMC practice, had a separate hardened sleeve pressed on for the big end bearing. This was a caged needle roller bearing. The conrod was made of steel with a phosphor bronze bush as the small end.

The right, timing side main bearing was a conventional ball bearing, but on the left was a double row caged ball bearing with an additional outrigger bearing. The crankcase itself was a huge magnesium casting with plenty of ribbing to support the crankshaft bearings. Magnesium was also used for the camshaft drive inner and outer boxes, all of these parts were given a distinctive gold paint finish.

The cylinder was aluminium alloy with a pressed in iron liner, deeply spigoted down into the crankcase and up into the cylinder head. The domed piston carried one oil scraper ring and two compression rings. The two valves were controlled by hairpin-style springs, while carburation was via a TT Amal carburettor with remote float chamber to its left.

The camshaft ran in a pair of ball bearings. It was driven by a combination of gear and chain, a pinion on the end of the crankshaft meshing with a larger gear keyed to a shaft with the lower sprocket. The chain was tensioned on its front, slack side by a spring steel blade with rolled ends. The blade's curve was enhanced by a tension spring stretched between its ends, and to assist this even more, the tensioner was damped with a friction device which worked in slot cut into the back housing and loaded by a flat spring.

CHASSIS

THE 7R's frame was similar to the Porcupine twin's. It was an all welded tubular steel construction with swingarm rear end (not universal at all at the time, of course), with a pair of angled shock absorbers.

The tubing was oval cross-section, with the seat supported on a subframe and the main frame comprising a double cradle with single top tube. At the front were fitted a pair of Teledraulic, hydraulically damped telescopic forks.

Braking was taken care of by a huge twin-leading shoe drum with conical hubs for extra surface area. The hubs were made of magnesium alloy and were spoked to high tensile steel rims. Tyre sizes were 3.00 x 21 at the front and 3.25 x 20 rear.

The rear mudguard was originally supposed to have been a heavily valanced item, but production bikes were instead fitted with a smaller aluminium alloy item - this is worth comment because if the original had been used a common 7R problem of stones being flung down the carburettor mouth would never have happened.

A friction-type steering damper was fitted.

Although clearly motorcycle design has moved on a long way since the 7R, the use of expensive lightweight materials indicates just how advanced this machine was, and still raises eyebrows today.

