

Historic repli-racers are plentiful enough nowadays, allowing anyone who so desires to compete in Classic/Vintage racing with an eligible motorcycle. It means you don't have to be concerned about sourcing an original piece of period equipment, pay a price reflecting its history and rarity, then worry about keeping it in one piece on the racetrack.

The replica option offers the added benefits of using a modern piece of purpose-built hardware, incorporating the latest in materials and construction technology, with spare parts availability and — as often as not — after-sales back-up by the replica manufacturer, including the fruits of ongoing development.

It's as good as going racing in a current category with a modern motorcycle — which is, of course, precisely what a Classic race replica is, only it's built to the overall design parameters of a quarter century or more ago.

Yet in spite of the fact that two-strokes were an integral part of the 'swinging sixties' racing scene, it's surprising that, until now, nobody has marketed a ring-ding race-replica. You've been able to buy a brand new Manx Norton (with original Featherbed or later Petty chassis), G50 Matchless/7R AJS (choose original, Seeley or Metisse frames), or even a four-cylinder works Benelli in replica form, all complete down to a recreation of the engine and gearbox, or

you can choose from literally dozens of ways of constructing a Classic-eligible race replica by using a freshly-built chassis to house a period engine embodying the benefits of modern R&D. However, the fact that until very recently the replica shopping list didn't include a stroker is curious, especially given the huge advances made in two-stroke tuning knowledge over the past 25 years, coupled with the improved reliability delivered by modern materials and the lower inherent costs of two-stroke manufacture.

Well, someone had to do it sooner or later, and perhaps it was inevitable that it should be done in Spain, the country which produced the most user-friendly pri-

vateer two-stroke of the Classic era, in the shape of the TSS Bultaco single built in various capacities from 125cc up to 350cc between 1960 and 1969 (see sidebar).

Armando Moli and Javier Perez de Vega are two Historic racing aficionados from the country's motorcycling capital, Barcelona, who have developed not only an incredibly faithful replica of Bultaco's ultimate customer racer, the TSS350, but have also established a modern, purpose-built factory north of the city equipped for series production of the AJR (Armando + Javier Replica) Bultaco.

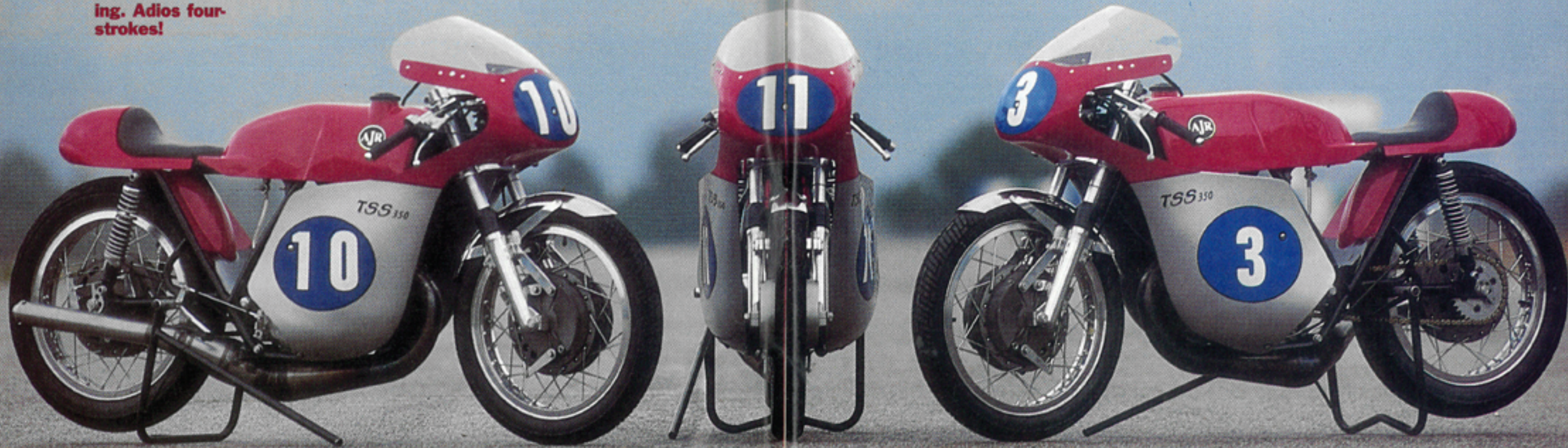
AJR is a spotlessly-clean, superbly-equipped motorcycle factory, whose layout and facilities would do credit to



left: Cathcart flicks the little Spanish flier through one of the tight Calafat turns. The 'Bul' picks up revs dramatically out of slow corners.

Ring-ding revolution

AJR's Bultaco TSS repli-racer will redefine the limits of 350 and 500 classic racing. Adios four-strokes!



Right: Externally AJR has set out to keep the bike as authentic-looking as possible, but beneath the carbon clothing the company has taken a great deal of trouble to improve the internal specification of the engine.

an established manufacturer of modern street or competition bikes. You half expect to walk round a corner and find a 1997 Bultaco roadster staring at you!

The AJR Bultaco project has been more than three years in the making. Successful businessmen in their own right — Armando in the computer field, Javier as Spain's only manufacturer of brake discs for cars and bikes — the two fortysomething friends decided back in 1993 that there was a need for a replica of a Spanish two-stroke single, and that since nobody else seemed to want to do so, they better go ahead and build it themselves.

Stimulating interest

"We wanted to stimulate interest in Historic racing in Spain by offering enthusiasts like us the chance to compete with a bike that was an authentic copy of a period GP racer, but which didn't require great mechanical expertise or expense to maintain and enjoy," says Armando.

"For the traditional reasons why the Bultaco singles were the privateer's favoured mount in the 1960s, we believed there was a market for such a bike today. It was only once we started racing the prototype and winning international races outside Spain, that we realised there was a worldwide market for our bike which was bigger than we thought."

Javier Perez takes up the story. "To begin with, we thought our customers would be collectors who wanted to enjoy themselves on the track, without risking their genuine period-pieces or having to worry about whether a 25-year-old component was going to break or not."

"But, almost as soon as we began to get involved in Historic racing from the inside, we realised that this is a very serious form of motorcycle sport — people are there to win! The fact that from the beginning our bike has proved very competitive, made us change our priorities. Without sacrificing authenticity, we raised our sights in terms of per-



formance, and have focused on delivering a competitive bike that can win races, not just a faithful recreation that can make up the numbers."

Working together with ex-Ossa factory GP mechanic Freddy Sanjuan, the two partners finished the prototype AJR Bultaco in April 1994, since when they've been developing it via countless hours on the AJR factory dyno, coupled with an intensive race programme in Spain and at nearby Paul Ricard

which has yielded many race victories and rostrum places (even in the 1000cc class!), to the point that construction has now begun of

the first batch of 70 customer versions, retailing at Ptas 1,780,000 ex-factory, tax free (about \$13,000) to include a full range of sprockets and a back-up spares kit.

Given the quality of manufacture and materials used, as well as the faithfulness of the recreation, and — judging by my test day at the Calafat track aboard the two factory prototypes and the first of the customer 'replica replicas' — the performance on offer, this is truly a bargain. It will also alter the face of Classic racing around the world, because until now, no two-stroke has successfully competed in the 350 and 500cc blue riband classes.

That is about to change — and the fact that AJR has cut a deal with British classic racing ace and multi-time Classic Manx GP winner Bob Heath to race the

Bultaco this year, starting in the Pre-TT Southern 100 meeting in the Isle of Man in May, is an indication of how competitive the Spanish two-stroke promises to be. Heath goes racing to win!

To create their TSS350 replica, Armando and Javier had to start from scratch. Parts and patterns for the original Bultaco TSS350 have long since been consigned to the scrap heap of history, so they stripped an original Bultaco down to the last nut and bolt, then set about copying it. And this included manufacturing all the components no longer available — which is to say, most of them.

All-Spanish effort

AJR is justifiably proud of the fact that the majority of this was done in-house, and that what little had to be subcontracted out was made locally — this is a 100% Spanish-built motorcycle, just as the original was in the Franco era, when it was difficult and costly, if not impossible, to import components, let alone complete bikes.

However, while careful to retain exact external authenticity, AJR has taken pains to improve the internal specification of the air-cooled 83.2 x 64mm piston-port two-stroke engine via uprated design and/or materials, aimed at improving reliability as well as increasing per-



formance.

The original twin-transfer/single-exhaust port cylinder has been replaced by a four-transfer/twin-exhaust design, however, still with a cast-iron sleeve which, not only permits the dedicated home tuner to get busy with the porting file if he so wishes without having to re-Nikasil the cylinder, but also allows the engine to be bored out to accept the two oversizes of piston which AJR can supply, in 0.5mm increments.

The bigger of these in fact delivers the same 356cc engine capacity that Ginger Molloy used to register his rostrum place with his TSS350 in the 1969 Spanish 500cc GP. AJR owners can thus compete in both 350 and 500cc Historic classes with the same bike, by the simple expedient of swapping cylinders and pistons between races.

The customer bike delivered 53bhp to the rear wheel at 8,000rpm on the AJR factory dyno in front of my very eyes and was then drained of fuel and proved to weigh a remarkable 216lb (98kg) half-dry. I'd say the British four-strokes currently dominating the 500 class in modern-day Classic racing are about to have a wake-up call. And Javier Perez says that another six bhp or more is available from the TSS350, but only at the cost of increased maintenance and component replacement — as well as making the bike less forgiving to ride.

In case four-stroke riders reckon the old two-stroke Achilles heel of reliability might ride to their rescue, consider this: the two prototype AJR bikes each covered a total of more than 30 hours of racing and testing during 1996, in the hands of hard riders like former Spanish Supermono champion Xavier Arenas and (very appropriately!) Paco's son, Ignacio Bulto — a star road racer for more than 15 years in Spain.

This took place without any breakdown or component replacement, other than repairing the effects of one crash (by Bulto!), winning all the 350 races included in this and all but one of the 500cc events, as well as finishing fourth in the Paul Ricard one-hour Historic race behind three 750/1,000cc bikes — but ahead of many more. Pretty impressive!

To explain how the Bultaco engine has been re-engineered internally to achieve this would take a separate technical article in its own right, but included in the highlights are a stronger conrod with a larger diameter crankpin fitted to a redesigned, stiffer crankshaft with uprated main (ball) bearings, which has resolved the problems of crankshaft flex which plagued early TSS350 owners; a revised single-ring piston (twin-ring before), forged from new material.

Beefed-up primary

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production racer to have gear rather than chain primary drive, thus removing one of the main weak points of the smaller bikes); a five-speed gearbox with the same ratios as before, but using better materials; a completely new dry clutch with aircraft alloy basket, 3lb (1.4kg) lighter than before thanks partly to the fibre plates giving improved take-up.

A Motoplat ignition — built out of new/old parts stock by one of the factory's old technicians — sparks a twin-plug head as on the original TSS350. The combustion chamber has, however, been completely redesigned on the AJR, and

is now a hemispherical type with squish band, rather than the curious oval design of the original bike. This worked so poorly, with the twin plugs firing together, that Frank Sheene for one, welded it up on Barry's bike, and remachined it as it is on the AJR, but with a single central plug rather than the dual ignition retained on the AJR, which dyno tests have been shown to work best.

The 38mm Spanish-made Amal Monobloc carb has been the only problem area, due to poor manufacturing quality. AJR may offer a Mikuni carb where local rules permit.

It took AJR three years to establish this purpose-built factory and begin production of the TSS replica. The facility is spotlessly clean, superbly equipped and even has an in-house dyno.

Right: The frame is a faithful replica of the original TSS, itself a down-sized copy of the Featherbed twin-loop design. Originally it would have been constructed from poor-quality mild steel, hence the extra bracing, but the AJR is created from TIG-welded F-222 chromemoly. Far right: AJR opted to make its own exquisite Fontana replica 210mm four-leading shoe front drums rather than go for copies of the original — and puny — 160mm twin-leading shoe brakes.



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