
High Tech Voyager Prototype

The Ducati was intended as an uncompromising proof of the FF concept. This 850 Reliant-powered demonstrator was intended to be an equally uncompromising proof that a small, lightweight and practical FF could also feature heated, two-seat comfort and all the details regarded as essential in a mainstream vehicle. The performance was related to the class of car it was intended to replace, the Ford Sierra, Vauxhall Cavalier range, but with all the improvements in fuel consumption and running costs to be expected of a feet-first two-wheeler.

It was also essential that the vehicle demonstrate the practicality of production. For this reason all the major components needed to be examples of current production practice combined in a straightforward package that would cause no production problems. Where the Ducati had shown that the idea worked the Voyager needed to show that there was money in making it as well.

This consideration was responsible for the choice of power train. The availability and suitability of the Reliant 850 engine and the Moto-Guzzi gearbox and transmission literally made this production project possible, eliminating the need

for the heavy investment needed to produce a new engine or gearbox. The Voyager project went Active when we confirmed that the engine and gearbox did indeed go round the same way!

The 850cc Reliant engine is not regarded with any great respect by motorcyclists used to much higher outputs but it is capable of substantially better performance than it is allowed in the Reliant three-wheelers. Reliant were perfectly happy with our plan to extract 60 bhp at 7,500 rpm and claimed that the engine was safe to 9,000 rpm. The engine has a long and respectable history as a car racing engine in the 750 racing club formula where it is known for reliability. In addition to these useful capabilities this British engine is remarkably cheap to buy and is the smallest engine of this capacity and sophistication we were able to find.

The Reliant engine was modified to accept the Moto-Guzzi flywheel/clutch assembly and connected to the gearbox with a cast alloy adapter plate that includes chassis mounts. The moderate power increase over the three-wheeler specification was achieved by fitting a Piper stage 2 cam with stronger valve springs. A '4 into 1' exhaust system with tuned primary lengths completed the engine modifications and experience showed that there was sufficient power to



justify fitting the higher final drive gearing from the Moto Guzzi 'Convett' range. At a minor cost in initial acceleration this allowed relaxed high speed cruising with excellent fuel economy.

The chassis followed the same structural principle as the Ducati prototype, but the larger, very stiff Reliant/Moto-Guzzi assembly allowed the elimination of much of the structure. This was reduced to a frontal assembly, which attached to the Reliant engine mounts and cylinder head, with a rear structure fitted to the adapter plate and gearbox. There were ancillary tubes on each side to complete the structure. All the structure was made from steel tube and folded sheet bronze-welded together.

The front suspension, steering, hand-controls and indeed the very great proportion of the components came directly from the Ducati and as a result the Voyager prototype was completed relatively quickly. The total build time was a few days under eighteen months and took 1600 man hours of actual work. The use of the Difazio front suspension from the Ducati on this slightly longer vehicle proved to be a minor inconvenience but a re-design of the front suspension was always seen as essential for production purposes.

Body work was made using the same technique as the Ducati, carving and shaping polyurethane foam forms that are then covered in hand-bid glass-fibre. The process of flattening, polishing and painting the resultant surface is fairly laborious but the technique allows a completely free choice of shape while providing a stiff, light-weight body section. It also gives very good crash protection and can be readily repaired or modified.

When compared with the Ducati much more care was taken over the styling. Apart from a general need to make the vehicle easy on the eye it was felt that the 'space-age' styling of contemporary FFs was intimidating. The Voyager shape, inspired somewhat by the Bluebird record breaking car, was intended to appear familiar and comfortable. Similar efforts were expended on achieving a good finish although this was less successful in terms of the upholstery at least. The paintwork however was applied professionally by a friend, a low-bake urethane/acrylic in British Racing Green, and the deep, indestructible gloss astonished me daily!

Performance was very satisfactory. Engine performance was probably limited by the standard inlet arrangements but steady improvements

were achieved and a top speed approaching 140 mph (220kph) had been reached by the time of the accident that ended this vehicle's career. Cruising speed, acceleration and fuel consumption were also comfortably ahead of the target four-wheelers.

Despite the higher maximum and cruising speeds the character of this vehicle was rather more sedate than the Ducati's. The very basic Moto-Guzzi shaft drive system imposed limits on the handling performance, as it does on all two-wheelers and various other components would have been improved had development continued. This is also true of Sierras and Cavaliers!

This vehicle's most significant quality however was that it was a successful demonstrator. Many companies saw it and commented favourably on the prototype even when they declined to take up the idea. Eventually however it succeeded in its main purpose and convinced a manufacturer that a production example could be an attractive and profitable product.

For all these reasons this vehicle was regarded with considerable affection. The carefully collected assembly of automotive parts was largely undamaged by the accident and even the Difazio hub has been repaired. A complete restoration of the Voyager prototype is impossible simply because prototype engineers are incapable of building the same thing twice.

This vehicle, when it eventually emerges from the longest build period yet, will take this particular package another step onwards. Options left unconsidered during the production project will be explored. Any chance to make it smaller, lighter and quicker will naturally be taken. Although the Reliant/Moto-Guzzi power train is obsolete as a production design and no longer very credible even as a demonstrator, I look forwards to many years of pleasant motoring with this first, and last, Voyager.

Data: Wheelbase 63" (1.600m)
 Weight 530lbs (240Kg)
 Engine 850cc Reliant