



THE APPLIANCE OF SCIENCE

Previewed
briefly last
month,

Mark Hughes spends a little more time
with Citroën's innovative
suspension system





Don't be fooled by the name of Citroën's new Xantia Activa, for it doesn't have active suspension. It does, however, have something which goes some way towards that: active roll control.

That is the obvious technical highlight of the car, but it comes wrapped in an interesting package that is not available elsewhere in the range. It gets the light pressure two-litre turbo engine from the bigger XM model. This gives only an extra 15 bhp over the normally-aspirated Xantia 2.0, but there is a healthy torque advantage of 42 lb ft. Available only in one trim level, this isn't quite as plush as the VSX version of the standard car but includes more highly bolstered front seats. In fact the whole tone of the Activa is more sporting than that of the standard car with bigger wheels on lower profile tyres filling out the bodywork, a rear spoiler and an extended, more aggressive looking front end.

All this helps lend the Activa a sporting persona that the standard Xantia has always pointedly lacked, something that is confirmed when you get behind the wheel. The standard Xantia is all about wonderful ride comfort and a light, flowing, fluid feel to its handling, but sporting is not an adjective you'd choose. The Activa on the other hand immediately transmits a different set of messages.

First of all there's the ride comfort, then there's the roll-free handling and, not least, there's the performance which has the sort of mid-range guts that no Citroën since the CX Turbo II of the 1980s has enjoyed.

It feels decidedly odd to be in a Citroën that has only an averagely compliant ride. At high speeds it's fine, little different from the Hydractive VSX, but around town it's decidedly firm. Bumps that you simply wouldn't expect to feel in a Xantia find

their way through to you with surprising authority. And should you happen to drop a wheel in a pot-hole it does not like it one bit. Furthermore, over medium speed, badly-surfaced B-roads it gets quite fidgety; not uncomfortable exactly, but never cossetting in the way that even the better

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conventionally-suspended cars do.

So, a car that doesn't ride particularly well from the company that brought the world hydropneumatic suspension 41 years ago. There must be some payback?

Sure there is. If you have the hydractive button in its standard setting rather than firm, you might

just feel the body begin to roll as you turn into a corner, but before you can say, "see, it does roll..." it will have righted itself no matter how hard you've thrown it in. With the hydractive's full-time firm button selected you won't even feel that.

This helps with turn-in grip enormously. With the outside front tyre no longer supporting such a big proportion of the cornering load, there is a very noticeable increase in roadholding. So good is it at sudden direction changes that you do need to relearn your technique if you're to get the best out of it. Given a clear sightline through a corner your entry speeds can be supercar-high and right-left switches need hold no fears. Eventually, you do get used to this from the driver's seat, but the sensation is even more bizarre for the passenger because the speed the scenery is passing by through the corner seems unrelated to how little drama there is inside.

But it's not all so rosy. Even the standard Xantia has a slightly nervous feel in high speed corners, with not much feedback coming through the steering telling you what's going on. In the Activa you get even less, yet you need it more because it is not as benign and flowing in its handling. The instant turn-in gives it a very darty, aggressive feel but thereafter it doesn't really settle down into a comfortable set. You constantly feel that it might want to do something else, yet the steering isn't really telling you what. Actually, it never does do anything very naughty but it takes quite a bit of mileage to get you to the point where you have complete faith in that.

At the limit the car will simply begin to understeer wide, but lifting off the throttle only stops the understeer, you cannot balance it delicately between front and rear in the way of the best conventionally-suspended front-drive cars.

The suspension is obviously the most interest-



Activa is not overtly sporting, although styling contains a few performance clues. Cabin (left) is comfortable; passengers liable to be surprised by improbably small ratio of drama/speed.

ing feature of the car but arguably it's the engine that does the Xantia more favours. Its 150 bhp is not enough to give what is quite a heavy car great all-out performance, but the turbo's boost is virtually lag-free and comes in very insistently from low revs, addressing the one real weak point of the Xantia. Citroën claims it can achieve 60 mph in under 9s; we reckon it takes slightly more. But the in-gear times are more than a

match for most of the more outwardly sporting hot hatches on the market.

Something of a curate's egg the Activa may be, but its very uniqueness makes it an appealing package. However, for all its technical trickery we couldn't, with hand on heart, say that it was a better car than something as commonplace as a Mondeo 24v, which can be had for around the same money.

Active history

As yet, active ride has been seen only on the racetracks (banned from F1 at the end of '93). For a production car it has been considered too expensive and bulky. The Activa is the only road car which has gone some way towards encompassing the concept with its active roll control.

A true active ride system ditches springs and dampers and uses electronically-controlled hydraulics to give infinitely variable stiffness according to vertical and lateral load. In communication with a microprocessor hundreds of times per second, the wheels will always follow the contour of a bump exactly, giving a superb ride, and the car will always remain flat and level during cornering.

Ever since the DS of 1955, Citroën has specialised in suspension that does away with springs and dampers. The current variation of this on the Xantia VSX is Hydractive, using a mixture of gas and fluid-filled spheres. It gives two possible levels of stiffness and can automatically select the firmer of these under cornering reverting to the softer one in straightline running. It also has a button which allows you to select the firmer

setting full-time.

With this set-up Citroën was already a long way down the road of active suspension. With the Activa it has taken a further step by addressing the non-roll part of active ride. But there is no active control of the wheels' movements so there are no ride comfort benefits and the Activa is still able to pitch and dive just like a conventional car.

The active roll control works through hydraulically-operated rams - connected to the suspension arms and the roll bar at each end - which effectively push the car level during cornering. These act from the same sensors as those already used to firm up or soften off the Hydractive suspension. The rams are fed by the hydraulic pressure actuator feeding through an auxiliary sphere to cushion the effect when running in a straight line (though they can be tricked into firming up if you run over a pot-hole).

As you turn in, this auxiliary sphere is isolated and this has the effect of doubling the roll-bar's stiffness.

If roll then reaches more than half a degree the rams themselves come into action and physically push the body level.



SPECIFICATION CITROËN XANTIA ACTIVA

ENGINE	
Location	transverse, front-mounted
Cylinders	in-line four, turbocharged
Bore x stroke	86 x 86mm
Capacity	1,998cc
Compression ratio	8:1
Valve gear	dohc, four valves per cylinder
Power	150 bhp/5300rpm
Torque	173 lb ft/2500rpm
Fuel	unleaded, 95 RON

TRANSMISSION

Type five-speed manual, front-wheel drive

SUSPENSION

Front	Hydractive MacPherson struts, active anti-roll bar
Rear	Hydractive, trailing arms, active anti-roll bar
Wheels	light alloy, 6J x 15"
Tyres	Michelin SX-GT 205/60 R15

BRAKES

Front/Rear ventilated discs/discs, ABS

STEERING

Type rack and pinion, power assisted

Turns, lock to lock 3.0

DIMENSIONS

Wheelbase	2740mm
Front/Rear track	1488/1454mm
Overall length	4444mm
Overall width	1755mm
Overall height	1387mm
Kerb weight	1410kg
Fuel tank	14.3 gallons

PERFORMANCE

0-60 mph	8.9s
Maximum speed	132 mph

FUEL CONSUMPTION

Average for test	28.3 mpg
Government figures:	
Urban	22.6
56 mph	40.9
75 mph	33.6

LIST PRICE £18,480