

# ALL-NEW '04 APRILIA MILLE R

## Smaller, Lower and Faster

by Danny Coe & Dave Searle



FOR 2004, THE Mille will be available in two different versions, either the Mille R, as tested here, reasonably priced at \$13,899 (at least compared to Ducati's \$17,695 for the standard 999), or for an additional four grand, a model designated the "Factory"—a single-seater equipped with premium Ohlins suspension, radial-mount Brembo brakes, lightweight forged OZ wheels and an assortment of carbon fiber bits, all saving just under nine pounds.

Both are powered by an updated version of Aprilia's water-cooled, DOHC, fuel injected 60° V-twin, and supported in an all-new aluminum chassis, wrapped in gorgeous new bodywork sculpted by Martin Longmore (who also penned the striking Audi TT sportscar). The changes reflect a willingness to improve a machine we already considered one of the best in its class. Although the Ducati 999 preceded it to market by a year, Aprilia has now covered Ducati's raise in the supersport stakes to make a buyer's purchasing decision harder than ever.

### ENGINE

The Mille's new power plant is now named the "V60 Magnesium," as it employs mag rocker box and clutch covers to save 3 lbs. Architecturally, the basic dimensions of bore, stroke, valve sizes and the 60° vee-angle remain, but its cylinder heads have revised port shapes and the combustion chambers provide for increased squish area, allowing the use of only one central spark plug per cylinder (rather than two as before). The camshafts are again combination gear/chain-driven but have different lobe profiles and benefit from better lubrication for less drag, while new valve springs, larger

intake ports and oval-section exhaust manifolds are included in the top end updates. The connecting rods have also been strengthened and the twin counterbalancers are redesigned.

To supply the requisite fuel and air, the new Mille is fitted with two 57mm throttle bodies, 6mm larger than before, each fitted with single injectors (FYI: the Ducati 999's are 54mm, while the RC51's are huge 62mm units). To allow greater intake flow, a new, less restrictive replaceable panel-type filter is fitted, and the air-box volume has also been increased to 10.3 liters while, inside, two different sized Helmutz resonators reduce intake "honk." At the other end, additional exhaust volume has been achieved by the use of two side-mounted stainless steel mufflers, rather than just one as before, but which adds some weight.

Power is delivered through a close ratio six-speed gearbox via Aprilia's unique PPC slipper clutch to prevent wheel hop caused by engine drag during deceleration.

At the handlebars, both clutch and brake actuation is now provided by the latest compact remote reservoir Brembo radial-pump master cylinders that offer greater reach adjustability. The clutch feel is excellent and the pull is light.

The most distinctive feature of the new Mille is its central ram air intake. Named the "Air Runner," it's now located directly between the headlights where pressure is greatest. Planned as an integral part of the machine's redesign, it is similar to the RC51's arrangement, with channels cast on either side of the steering head. Its forward extension also provides support for the fairing and instrumentation. And inside the air channel is a new computer-controlled valve

that matches intake vacuum to rpm and load. Aprilia attributes a 3% increase in hp output at maximum speeds to the new system. And although that claim can't be verified on a dynamometer, we did note an increase in power above 7500 rpm. But, on the down side, we found noticeably less power in the midrange—as much as 15% less at 5800 rpm. And, as before, there is a distinct soft spot in the power curve at 3500 rpm that made dragstrip launches difficult—giving either not enough or too much power on either side of this range. The engine's rpm limit has also been raised by 500 rpm. Aprilia says to 11,000, but the dyno indicates 10,500. All told, the new model was just fractionally quicker than the 2002 model we last tested, only 0.03 sec. quicker in the ¼-mile, but posting a best-in-class top speed that is 4.6 mph faster. However, as the performance comparison sidebar (next page) indicates, the class is extremely close, and rider skill makes a much greater difference than any outright performance potential.

### ELECTRONICS

As on the Ducati 999, the component wiring is now handled by a C.A.N. line (Controlled Area Network), which allows data to be transmitted digitally using a wiring harness made of just two lightweight wires. Also, a heavily improved engine management system now uses a faster, 16-bit ECU that receives data from a vast array of 15 sensors. Some measure the temperatures of the ambient air, and oil. Others monitor pressures; the engine oil, airbox and crankcase pressures. Rotational sensors transmit information from crankshaft, camshafts, throttle position and the rear wheel—very impressive. And should there be any electronic gremlins; the electronic control module diagnoses itself via codes displayed on the instrument panel.

### CHASSIS, SUSPENSION AND BRAKES

To achieve the aim of improved mass centralization from their all-new chassis, for starters, the engine has been moved 4mm to the right for better lateral balance. Steering rake has also been reduced to 24.8° and, to lower the machine's center of gravity, Aprilia's engineers repositioned the steering head and moved the swingarm mounting point forward and down. Additionally, the rear sub-frame has also been lowered, and is now made of thinner tubing for reduced weight, allowing a lower seat and narrower frame section between the rider's knees. All totaled, the changes make the machine lower by 25mm. The wheelbase remains unchanged at 55.7". Aprilia claims that the new chassis is 5% stiffer, yet loses 1.34 lbs.

The switch to dual mufflers required Aprilia to fit an attractive double banana

swingarm design to retain good cornering clearance. Made from a combination of extruded arms and castings around the pivot and shock linkage, the arm stays stiff and compact while saving a full pound from the previous design through the elimination of upper braces.

Fully adjustable suspension is naturally fitted to both ends of the Mille R. In front is an inverted 43mm Showa fork is mounted on a new triple clamp assembly that gives slightly more trail than the previous model, and now sports stylish weight reduction cut-outs in its cast upper clamp, similar to the 999 Ducati's.

In the rear, the Mille R uses a Sachs piggyback reservoir shock and, to adapt to the new frame and swingarm, the rear suspension linkage has also been revised.

Significantly, Aprilia now provides a suspension chart that suggests a range of recommended settings, including ride heights, for both sport riding and competition, something we feel all manufacturers should provide on equipment of this level. Our test bike arrived with just over 1000 miles on the clock with its suspension damping set at the maximum end of the factory specified range. In this condition, travel is minimized, and for all but the smoothest of roads, proved too harsh. But by simply turning out the damping adjustment screws to the recommended settings, the ride quality dramatically improved, into what we originally expected from this caliber of machine. Afterward, suspension performance was excellent for all of the demands of our testing. And although Aprilia saves the top shelf Ohlins components for the Factory model, we really could not ask for more than the Showa and Sachs units provided.

Stopping the Mille is easy. Barely two fingers will slow you strongly from almost any speed. Credit goes to a pair of Brembo "Triple Bridge" four-piston calipers with four individual pads working against floating, 320mm stainless rotors up front. And, to optimize the rider's feel for the stopping power, braided stainless brake lines are used in front and rear. Again, the pricier Factory version uses the latest Brembo radial-mount calipers, but even the most discerning sport rider will be hard pressed to demand more than the Mille R's front brakes can deliver.

But at the back, Aprilia elected to use a Brembo two-piston caliper and a fixed 220mm rotor which required a significant amount of pedal pressure to reach lockup. Under hard braking, it was difficult to modulate. Despite the good front brakes, and

perhaps because the machine now has more forward weight bias than before, our 60-to-0 stopping distance increased from 113.7' to 119.3', as it was too eager to lift the rear wheel, limiting maximum braking.

### STYLING, CONTROLS AND INSTRUMENTATION

The sweeping changes to the '04 machine make the new Mille instantly recognizable as a cutting edge design, and it easily withstands direct styling comparisons to Ducati's flagship 999. The Mille's new bodywork has also been simplified with 11 fewer pieces, reducing the number of panel seams. A compact LED tail light replaces the previous dual bulb unit, and the shapely removable plastic seat cowl with its built-in storage com-



### PERFORMANCE COMPARISON

	Top Speed	1/4-Mile	0-60	60-0	Price
Aprilia MilleR	173.3	10.43@135.44	3.09	119.3'	\$13,899
Ducati 999	172.2	10.36@132.89	2.90	111.6'	\$17,695
Honda RC51	168.2	10.57@132.79	3.10	115.2'	\$10,999

partment can be replaced with a seat pad to accommodate a passenger.

Wind tunnel testing suggested such features as its flush-mounted turn signals front and rear, which combine with the very dramatic restyling of the nose, ram air intake, four-bulb headlights and sharply chiseled tail section to result in a .06 reduction in its drag coefficient as well.

But the improved streamlining has its penalties and the smaller fairing now affords less wind protection for upper body and shoulders. Riding in a tuck below the wind-screen requires real effort and is sustainable for only short periods. Also noticeable was a strong flow of heat exiting the fairing around the rider's ankles and wrists, as well as heat at the gastank and seat.

Comfortable sportbikes are generally an oxymoron, but Aprilia has made the Mille relatively more comfortable by lowering the seat .5", and the footpegs 2.2", for a less cramped leg position, but has also moved the handlebars 1.75" lower. The bike now

feels less bulky because it is much narrower between the rider's knees, although the Ducati 999 is even narrower. But, for seat comfort, the Aprilia wins *derrieres* down, easily out-cushioning the 999, and more padding spells extended happy seat-time.

Details: The use of Brembo's compact remote reservoir masters also allows increased steering lock, and the eccentric adjustability at the foot pedals remains a useful feature. However, the mirrors are too narrowly placed for a good rear view, and are not free of vibration, although for track use they are designed to be easily removed. At engine rpm where the counter balancers are the least effective, a glance over the shoulder tends to be more informative.

One of MCN's previous gripes was the difficulty of manipulating the complex dashboard. But this is now improved with an all-new instrument unit that is lighter, smaller and simpler to program, yet still offers all of the previous high tech tricks. For security, the ignition key is now encoded with an immobilizer, so don't lose it.

### RIDING IMPRESSION

Aprilia's new Mille has accurate, planted steering, goes exactly where it's pointed, and is always stable even without a steering damper. The ergonomic updates and changed geometry make the Mille feel less top heavy, and provide a better feel of the contact patches. Its US-spec Michelin Pilot Sport rubber worked very well, but the front tire is slightly triangular, causing the Mille to stand up under trail braking. When we fit Metzeler's new, more rounded Roadtec Z6 radials during a recent press introduction, this propensity disappeared.

The low fuel light illuminates at around 140 miles, just about the time your hands need a rest. The Mille is not a bad shaker, but a constant high frequency vibration is present in the footpegs and grips at almost all rpm. But if a single glaring fault with the Mille could be identified, it was with ground clearance. Aggressive riding, even with stiff suspension settings, had the foot of the removable side stand touching down.

### CONCLUSION

From the front to the rear, the new Mille R garners positive adjectives. It's more comfortable, smarter, brighter, a touch faster, quieter and handles better. Besides being all-new and better everywhere, it's even priced attractively with an MSRP of \$13,899. For the true sporting connoisseur, it's a hard one to pass up. ☺