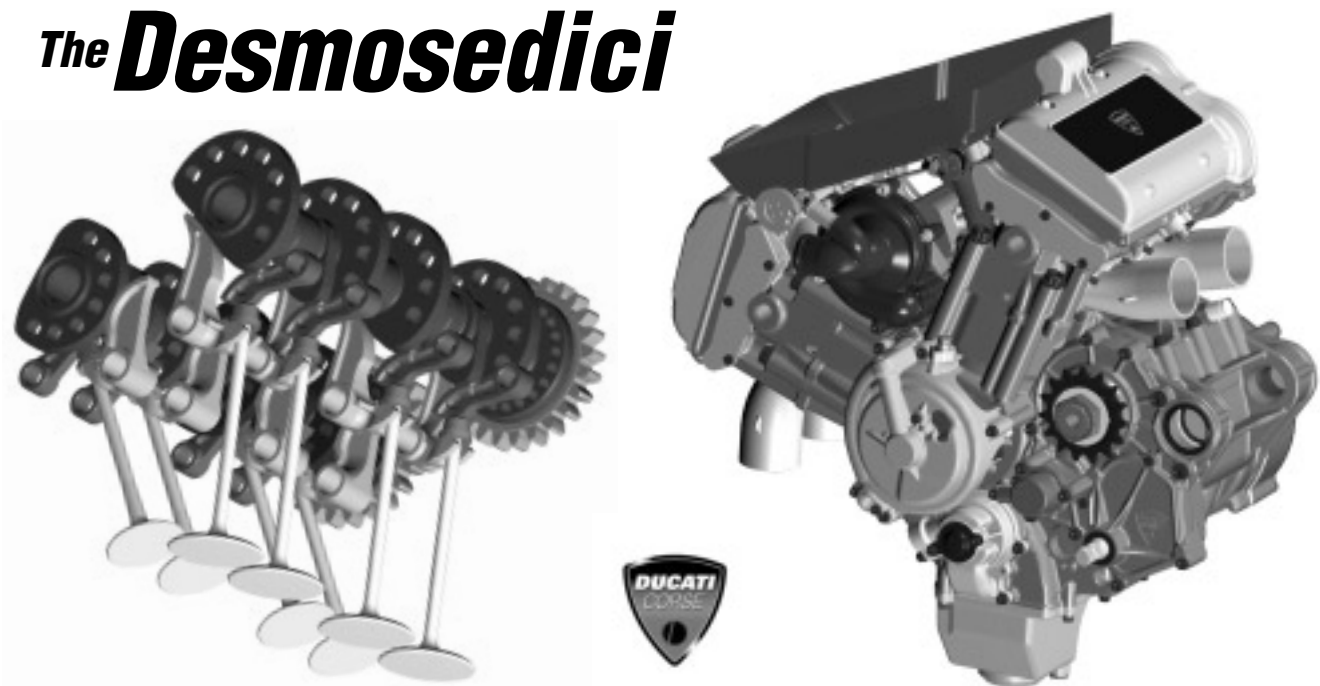


Ducati unveils plans for a V-Four to contest 2003 MotoGP series

# The Desmosedici



**D**ESPITE EARLIER ASSERTIONS that Ducati would contest the MotoGP series with a V-twin during the second year of the new series, in 2003, the latest news from Bologna is that a V-four will be the Ducati Corse's choice instead.

Ducati is apparently convinced that MotoGP will become a horsepower contest. Initial predictions were that rear tires could not deal with power outputs greater than 220 hp over the course of a race distance. With that in mind, a number of teams have built engines with that number as an upper limit on development. Will more horsepower simply go up in rubber smoke? Honda's V-five is a sure bet that it won't. And, although tire manufacturers will be challenged, they may rise to the occasion faster than anyone imagined.

So, rather than rely on its traditionally superior handling to overcome a big power deficit vs. the Honda (Ducati's been there and done that), like Yamaha and Suzuki, Ducati will go with four cylinders.

But, what makes Ducati's effort unique is that it will combine the traction-enhancing firing order of a twin with the high-rpm capability of a four, in a "big-bang" configuration that fires the paired cylinders together. It will also utilize Ducati's proven desmodromic valve system rather than F1-style pneumatic valve return. Above is an engineering drawing of the proposed desmo valve train for one pair of cylinders.

Ducati Corse Managing Director Claudio Domenicali explains the choice of engine design thusly:

*"After analyzing all the possibilities offered by the regulations and on the basis of computer simulations, we are convinced that a massive power output is required to be competitive in MotoGP. It would have been difficult to obtain this power with conventional twin-cylinder engines, which amongst other things are only given a 10 kg weight advantage over 4 and 5 cylinder engines in the regulations. As a result, the bore size would have to be taken to an extremely high value, with the risk of incurring serious combustion problems.*

*For this reason, in the preliminary study phase, we considered a twin-cylinder oval piston engine to be an excellent layout for the new regulations. With the same weight as 4 and 5 cylinder engines, this layout combines the typical advantages of a twin in terms of power output and delivery, with the performance necessary to compete at the same level as the multi-cylinder units.*

*But further analysis led us to decide that the best solution was a 'double twin' and therefore we designed an engine with four round pistons which, thanks to a simultaneous two-by-two firing order, reproduce the working cycle of a twin. This will generate the 'big bang' effect, making the rear tire work in a way that extends its duration and improves rider feeling when exiting curves.*

*The Desmosedici engine will have a relatively short development period and reasonable costs and it will then be easily available also for external teams, since it is Ducati Corse's intention to become a point*

*of reference for private teams in MotoGP, as already it is in World Superbike.*

*The Desmosedici power-unit, designed to tolerate the greater stress generated by simultaneous combustion, is therefore a unique engine with a further advantage: It allows two different versions to be tested. As well as the Twinpulse, we will also be testing a layout with a traditional firing order, which will have a slightly higher power output, but probably to the detriment of traction. Track testing and rider feeling will decide which layout will be used for racing."*

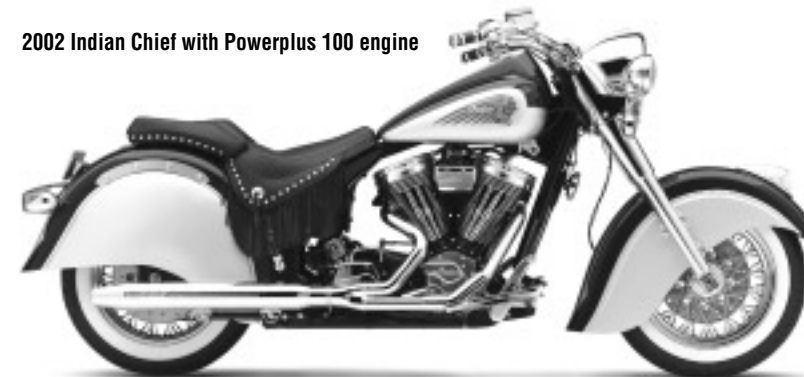
Initial projections for output of the Desmosedici ("desmo-sixteen," for its valve count) are coy, stating simply "over" 220 hp at 16,000 with the possibility to exceed 18,000 rpm. Expected torque is suggested as 73.8 lb. ft. @ 14,000 rpm.

The engine will be very compact, but arranged in the traditional Ducati "L-twin" layout, with the forward cylinders closer to horizontal and the rear pair closer to vertical. The gearbox is listed as a six-speed, Magneti Marelli will supply the ignition and fuel injection, and Termignone the exhaust.

No V-four Ducati has ever previously reached production, but the Apollo, a 1257cc V-four designed by Ing. Tagliani back in 1964 could have been the first. Intended to capture a share of the U.S. police-bike market, the powerful machine ironically exceeded the tire technology of the day and was stillborn. But, stay tuned, Ducati insiders say we may see a V-four streetbike in as little as two years!

Indian to utilize its own proprietary engine—the Powerplus 100

2002 Indian Chief with Powerplus 100 engine



**A**FTER THREE YEARS of development, Indian has finally unveiled a proprietary motor, to be installed first on its flagship-model Chief, said to be available in the Spring of 2002.

Although the crankshaft and valve train components are still based on the design of the S&S—a beefed-up Evo-derivative—the new engine has rounded cylinders and heads capped with serrated billet valve covers that evoke the style of Indians past.

Breathing through a 42mm Mikuni flat-slide carburetor, mounted to the left side of the motor, the way Indian used to do it, its 45° cylinders displace 1638cc, or 100 cubic inches. Designed in-house, the prototypes were built with the help of Thunder Heart Performance Corporation, a large aftermarket manufacturer, and refined with the help of Lotus Engineering. Vepro, Ltd., a U.K.-based engineering group was contracted for assistance with technical support and supply development.

By sticking to a tried and true configuration, Indian says it has spared itself the expense of stumbling through the learning curve with an all-new design, as well as producing an engine that will be familiar to the majority of mechanics right from the start.

The new motor will not be built by S&S, who will continue to supply 88-cu.in. motors for the rest of the Indian line through 2002, but rather by Performance Assembly Solutions, an automotive aftermarket powerhouse that builds the Roush Stage III Mustangs and assembles high-performance crate engines for General Motors Service Parts Organization. Performance Assembly Solutions itself is a joint venture of Uni Boring Co., an engine component supplier to Detroit, and Roush Industries, owned by Jack Roush, heavy hitter in NASCAR and provider of R&D services to the Big Three. With talent like this to back up the design, the engine should be very good, and will finally get the "Harley-clone kit-bike" monkey off Indian's back.



## Triumph Speed Four announced for 2002

Based on the TT600, the new Speed Four will give Triumph an entry into the hot-selling 600cc naked bike market, which has continued to be the best-selling segment both in Britain and Europe. It also builds on the success of Triumph's own 955i Speed Triple, a hooligan bike *par excellence*.

The chassis is the same aluminum twin-beam design used on the TT600, as is the steering geometry, which insures that the handling will be excellent.

The motor has been retuned for more mid-range grunt and, judging by the remapped fuel injection we sampled recently on the '02 TT600, should run very nicely. Triumph is doing its own fuel mapping in-house now and is contemplating a switch to Keihin fuel injection for all its bikes next year (probably out of frustration with the TT600's teething problems).

An abbreviated instrument fairing above the twin headlights creates a family resemblance with the Speed Triple, and individual ducts on each side feed the ram-air. It's at your dealers now.

—Dave Searle



For more information on bikes or parts featured in World Motorcycling, you can fax the World's Motorcycles News Agency at: 011-441584-876419, e-mail to: wmcna@netmatters.co.uk, or write to: WMCNA, 51 Greenacres, Ludlow, Shropshire, England SY8 1LY.