



ENGINEERING THE '93s

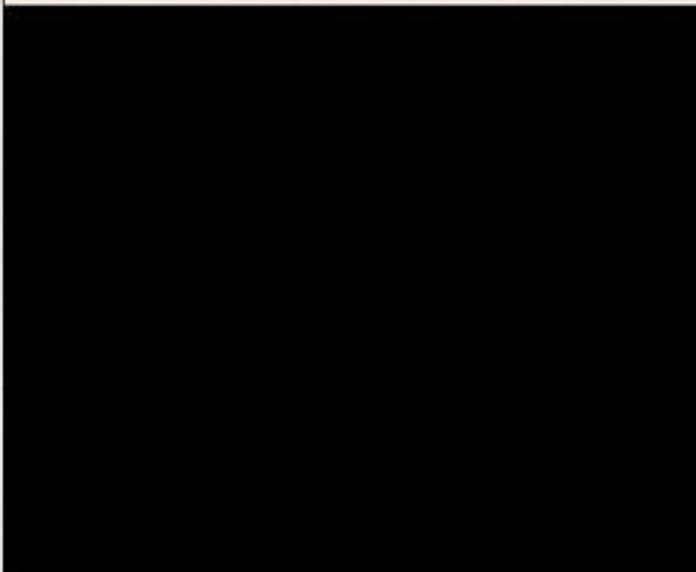
More from Ford

- The SHO Taurus gets an automatic transaxle and a 3.2-liter version of the Yamaha 3.0-liter V6 for extra torque (up from 200 to 215 ft.-lb.).

- Ford's race headquarters (Special Vehicle Team) will offer a 250-hp version (up from a stock 200) of the 5.8-liter V8 in an F-150 Lightning pickup to compete with Chevy's 454 Sport Truck. The engine originally was designed for an anniversary Mustang that never was built. There will also be a high-output 5.0-liter V8 in the Mustang Cobra.

Two new Ford vehicles have ties to

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Flexible-fuel Taurus

The first of the flexible-fuel cars to go to market in '93 is Ford's entry—a

Taurus. A technical key to the car's viability is the sensor that identifies the percentage of methanol in the fuel. Ford uses a sensor—designed by the German electronics giant, Siemens—which measures the fuel's electrical resistance.

One probe is part of a conductance circuit (the inverse of resistance). The other carries an oscillating signal in a capacitive circuit and temperature probe. A microprocessor converts the probes' readings to digital for the engine computer. The frequency of the signal (in a 50- to 150-Hz range) indicates the type of fuel. For example, 50 is gasoline, 150 is pure methanol and different percentages of methanol produce numbers in between, in a straight line (135 would be M85—85% methanol).

When the computer gets the information, it regulates current flow to the fuel pump through a resistor pack to speed up the fuel flow for lower-energy-content methanol blends or to slow it down for pure gasoline.

Japanese manufacturers.

- The Mazda-engineered Probe (built in a jointly owned Michigan plant) is all-new, with a 115-hp 2.0-liter Four with scrapers in the valve guides to remove carbon deposits as they form, protecting driveability.

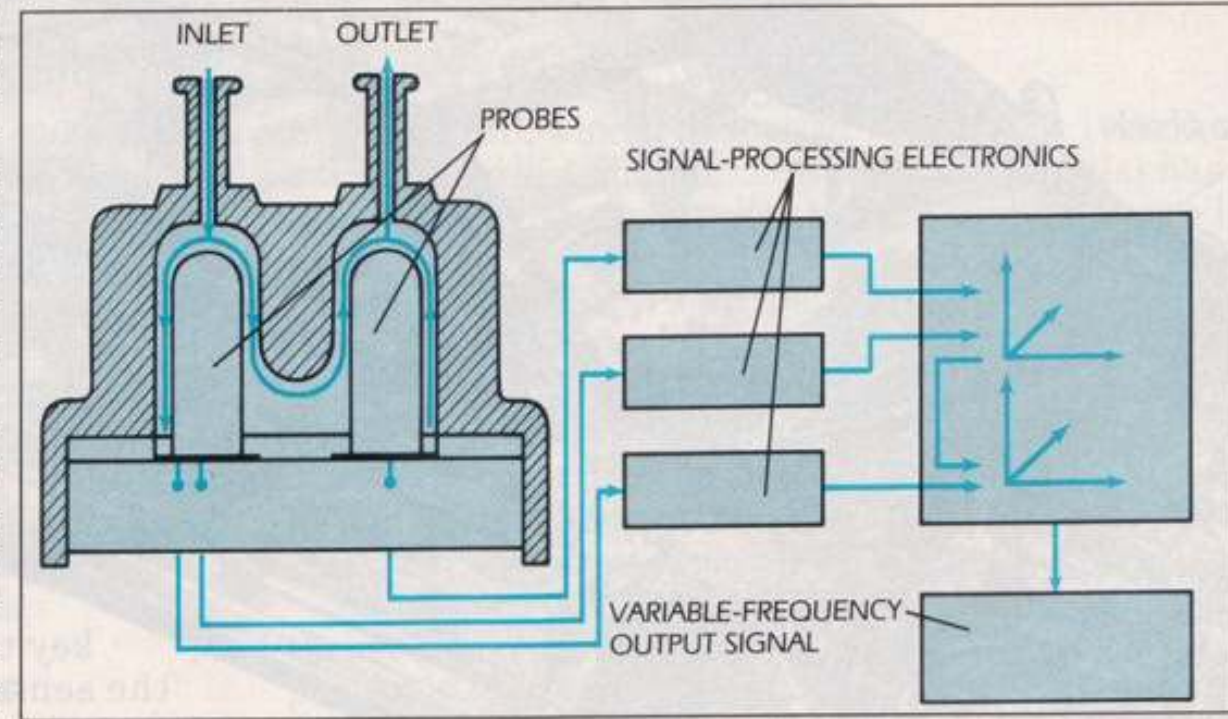
Optional is a 164-hp 2.5-liter V6, replacing both the 2.2-liter turbo and 3.0-liter V6. Dropping the turbo version (with its sudden torque increases) and reworking the front-end geometry minimizes torque steer for '93.

- The Mercury Villager, designed by Nissan (which markets it as the Quest) and built by Ford, has a rarity: a 2-valve Japanese 3.0-liter V6. But a van needs torque and the 2-valver produces 174 ft.-lb., to go with 151 horsepower.

Northstar V8 and a transaxle rated at 460 ft.-lb. will handle the Northstar's 290 ft.-lb. of torque with plenty of margin for future development.

Northstar takes all-aluminum 4-valve, chain-driven 4-cam technology several steps ahead to a new state of

low. A chain around both of intermediate shafts and a third chain at the ends of the chains are light pitch and the shafts are many small teeth



Flexible-fuel Ford Taurus sensor provides digital input for the engine computer.

the art. The tuned intake manifold has

pressing-in or