

OEMs sketchy on what to show at NAIAS

The battle for small-car supremacy in the United States will ratchet up considerably in 2006 when the **smart** unit of **DaimlerChrysler** puts its made-for-the-U.S. formore on sale. At the North American International Auto Show (NAIAS) in Detroit next month, the company will unveil a concept car—what it calls a “vision”—offering ideas about what the actual production SUV (smart utility vehicle) will look like, inside and



Bound for an unveiling at the NAIAS in January is smart's formore.



Ford reportedly will introduce the Fusion midsize sedan at the NAIAS.



The Charger will be available in 2005, but Dodge is not saying whether it will be unveiled in Detroit.

out. The company to date has released only an exterior sketch of the vehicle.

Industry insiders will get to see the “vision” during NAIAS Preview Days January 12-13. The media will get first look on NAIAS Press Days January 9-11. Public Days begin January 15.

Smart is using the NAIAS to introduce not just the formore, but the entire brand. DaimlerChrysler launched smart in Europe five years ago. It offers the fortwo coupe, fortwo cabrio, roadster, roadster-coupe, and forfour there and in more than 30 other markets. A spokeswoman for smart said in early November that several models will be displayed at the auto show, but that it hadn't been determined which or how many. It also hadn't been determined by then—and might not by the time of the show—which of them will be brought to the U.S. But at least one model definitely will be sold in the U.S. at some undetermined point after the formore launches.

The formore will be sold in non-U.S. markets as well.

Toyota used the NAIAS a year ago to introduce the **Scion** brand, which is also youth-oriented.

DaimlerChrysler had not released many technical details about the formore, other than it will be an all-wheel-drive unit “suited to all roads and driving conditions.”

The smart forfour uses many components developed in collaboration with **Mitsubishi Motors**, in which DaimlerChrysler has a 37% stake.

Mitsubishi will unveil a new midsize pickup truck at the NAIAS, along with the new Eclipse sport coupe. The Eclipse is slated to go on sale in summer 2005, followed by the truck in early fall.

Both new vehicles feature interior and exterior designs created by Mitsubishi Motors Cypress, California design studio.

Called the Raider, the pickup truck is based on the **Dodge** Dakota midsize truck and will feature a standard V6 engine and an optional V8, two cab configurations, and unique interior and

exterior styling distinctive to Mitsubishi. The V8 will be of 4.7-L displacement and generate 230 hp (172 kW) and 290 lb-ft (393 N·m).

The Eclipse will offer more powerful four- and six-cylinders than provided by the current model's engines. A six-speed manual transmission will be offered.

Hyundai has said it will unveil a concept crossover vehicle at the NAIAS.

Ford reportedly will introduce the Fusion, a midsize sedan, but the company had not confirmed that as of early November.

Similarly, the **Chrysler** Group of DaimlerChrysler will be re-introducing the Dodge Charger in 2005, but the

company has not indicated whether the vehicle's unveiling will be at the NAIAS, also referred to as the Detroit Auto show, or another auto show. To date, it has released only a sketch of the production car and its **NASCAR** racing counterpart. A spokeswoman said more information on the car will be made available at the NAIAS.

It is certain that there will be many unveilings of production and concept cars at the auto show, automakers already having announced much of their product plans. But automakers like to keep things secret and so are not providing much information as to what they will be displaying and introducing at the NAIAS. There

are enough other North American auto shows with sufficient prominence that automakers spread out introductions among them. Some of the larger shows that feature introductions are ones in Orange County, CA (called the California Auto Show), Los Angeles, Chicago, and New York.

A newsletter put out by the Detroit show sponsor, **NAIAS**, an association of Detroit area auto dealers, reports that **Chevrolet** will unveil the Corvette Z06 convertible and the new Monte Carlo. It also reports that **Audi** will debut the A6 Avant station wagon and that **Porsche** will introduce a new production model.

Patrick Ponticel

2004 Paris Motor Show highlights: part 2

In the November issue we highlighted some of the Paris Motor Show debuts from European brands, but non-European brands were also busy unveiling concepts and introducing new production vehicles. Here are some of the highlights.



Chevrolet S3X



Chevrolet M3X



Chevrolet's WTCC contender

Chevrolet—Chevrolet Europe presented two show cars (S3X and M3X) and a new production model (3-door Kalos) at Paris in an effort to promote the Chevrolet badge in Europe. Just as the Kalos five-door heralded the establishment of **GM Daewoo Auto & Technology** Co. (GM DAT) in South Korea two years ago, the Chevrolet S3X show car is to ring in a new era for Chevrolet in the UK, with new products fully designed, engineered, and manufactured in South Korea, according to GM.

The production S3X is to be launched in early 2006 and will be the first diesel-powered Chevrolet in Europe and the first vehicle in the lineup to be developed by GM DAT. It provides likely styling cues for future Chevrolet models for Europe. The SUV concept's dimensions include 4639-mm (182.6-in) length, 1848-mm (72.8-in) width, and 1722-mm (67.8-in) height. It has 20-in wheels; a large, louvered glass roof; and three rows of seats to seat seven.

The Chevrolet M3X show car presages the next-generation Matiz city car due for sale early next year. It features round LED headlamps and it, too, has a glass panoramic roof. The car is 3.5 m (11.5 ft) long and 1.5 m (4.9 ft) wide. Its 1.0-L engine produces 47 kW (63 hp).

Chevrolet is to race in the 2005 FIA World Touring Car Championship (WTCC), the first time it will have entered a full factory team for an official FIA world championship. Three Chevrolet Lacetti sedans (formerly **Daewoo** Nubria in some markets) are being developed

and entered by British race team **RML**. The WTCC replaces the current European Touring Car Championship (ETCC) and will be run in 10 countries in Europe, Latin America, and China. The Chevrolet entry is a 2.0-L engine producing 270 bhp (201 kW) at 8400 rpm with 267 N·m (197 lb-ft) at 5800 rpm. Transmission is a six-speed sequential shift with mechanical linkage. Top speed is close to 160 mph (257 km/h).

Honda—Honda was in "world debut" mode at Paris, showing the new FR-V and the 2.2-L i-CTDi diesel-engined CR-V, its engine already used for the Accord. The FR-V has 3+3 seating (two rows of three) with sliding and folding center seats and what it terms a "dive-down" rear seat mechanism. Honda puts emphasis on the packaging flexibility of the FR-V, saying that, even with six passengers on board, there is 439 L (15.5 ft³) of luggage space (by VDA measurements). With three in the front seat and the rear seats folded flat, that expands to 1049 L (37.0 ft³).

The front center seat can be slid longitudinally 270 mm (10.6 in), vs. the outer seats' 230 mm (9.1 in), and the rear center seat's 170 mm (6.7 in). The rear seats can be folded and tucked into the floor leaving a flat horizontal surface. The front center seat occupant gets a dedicated sun visor, footrest, heater outlet, and air vent.

There is a choice of three engines including the 2.2-L turbodiesel and 1.7- and 2.0-L gasoline units. The car is based on the CR-V but has an extended 2680-mm (105.5-in) wheelbase. Styling includes a tapering nose, an upward sweep



Honda FR-V

Also making its world debut at Paris was the new Sportage compact SUV. Throughout the development of the conventionally powered Sportage, the fuel-cell model had a parallel engineering program, stated the company. The Sportage FCEV's fuel cells were supplied by **UTC Fuel Cells**, and a next-generation hybrid-electric drivetrain, motor, and controller by **Enova Systems**. The FCEV uses aluminum bodyshell components



Mazda5



Kia Sportage

to achieve a power-to-weight ratio similar to the production model SUV launched at Paris. The latter comes with a choice of three engines, two drivetrains (front- or all-wheel drive), two transmissions, and two equipment levels. A significant combination is a 112-PS (82-kW) 2.0-L turbodiesel allied to an automatic gearbox.

Kia also took its Sport Concept Car to Paris. It is based on the five-door hatchback version of the company's new B-segment model slated for launch next spring. Its engine is a 200-PS (147-kW) turbocharged gasoline unit.

Mazda—The Mazda5 was given its global premiere at Paris. Fitting into the European C-MAV (Multi Activity Vehicle) segment, the car has double sliding doors and seats for seven with a flexible configuration. Seating is unusual in that there are "permanent" seats for six with a seventh "karakuri" seat, which can be unfolded from the second row of seats.

A 7-in DVD display and DVD player are ceiling-mounted for second- and third-row passengers. Engine choice includes two derivatives of a new 2.0-L turbodiesel—producing 110 and 143 PS (81 and 105 kW)—with particulate filter, and two gasoline engines of 1.8- and 2.0-L capacity. Depending on engines, transmissions are five- or six-speed units.

Mazda also premiered its 6 MPS model, which has a newly developed direct-injection turbocharged 2.3-L MZR gasoline engine producing 260 PS (191 kW), 380 N-m (280 lb-ft) at 3000 rpm, six-speed manual gearbox, and a new Active Torque Split all-wheel-drive system. Suspension and brake capability have also been upgraded.

Nissan—Nissan unveiled its Tone concept car at Paris and announced that it will build a fifth model at its UK plant. Patrick Pelata, Nissan Executive Vice President, said the new model would be

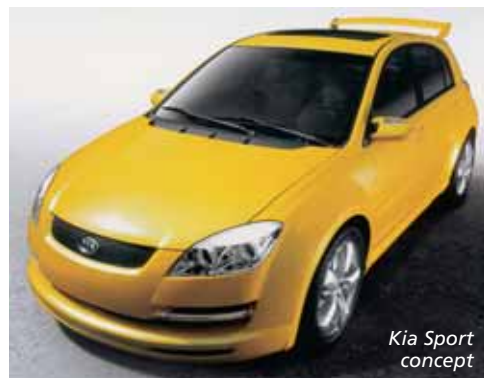


Mazda6 MPS

based on the concept. "The Tone represents our thinking in the area of the mini-MPV market," he said. "The niche market where Tone would compete is forecast to grow by a factor of four from 2002 to 2007. We will introduce a car based on this design at the beginning of 2006. It will be built at our Sunderland plant, Europe's most productive car factory."

Nissan describes the five-door Tone as taking styling influences from the distinctive Micra together with its recent concepts including the crossover Qasqai seen at the Geneva Motor Show early this year. It has a high waistline and an arched roof with the highest point above the B-pillar. Length is just over 4 m (13 ft) and the wheelbase 2600 mm (102.4 in), slightly shorter than the X-Trail 4x4. Height is 1542 mm (60.7 in). Twin glass strips run the length of the roof.

Suzuki—Suzuki chose Paris to reveal its new Swift. It is the company's first



Kia Sport concept

to the waistline, and sloping tailgate. Honda says that it wanted to get away from the "somewhat utilitarian approach" typical of this type of vehicle.

Kia—The immediacy of fuel-cell technology development has diminished in the past year or two, but at Paris Kia unveiled its Sportage FCEV. It has an 80-kW output and uses a lithium-ion polymer 152-V battery. Top speed is said to be 150 km/h (93 mph) and the range from a 152-L (40-gal) hydrogen storage tank is 300 km (186 mi). "With the new Sportage FCEV, Kia takes a big step towards our goal of developing a commercially viable zero-emissions vehicle based on fuel-cell technology by 2010," said Kim Sang-Kwon, President of R&D, Hyundai-Kia Group.



Nissan Tone concept



Suzuki Swift



Toyota Prius GT concept

compact car to be researched and partly designed in Europe and will be built in Hungary. It marks a new, globally oriented approach for Suzuki, with the car giving a "glimpse of the new ideas and design approaches that will shape Suzuki

models in years to come." Suzuki designers spent six months in Europe refining the Swift. The car's handling is also said to reflect European tastes. Its "1.5 box style" has a pronounced shoulder line and flared wheel arches.

Engines are 1.3- and 1.5-L gasoline and a 1.3-L intercooled and turbocharged common-rail diesel. The gasoline engines have variable valve timing. Transmissions are five-speed manual, five-speed automated manual, and four-speed auto.

The Swift's platform has a 2390-mm (94.1-in) wheelbase and overall length of 3695 mm (145.5 in). The front suspension has a new design in which the lower arms, steering box, and rearmost engine mounting are attached to a suspension subframe. This design is said to give substantially higher mounting rigidity, which translates into lower road noise and a stronger feeling of stability. Rear suspension is torsion beam, contributing to lower unsprung weight.

High tensile steel and tailored blanks are used "extensively" in the Swift's structure. As well as ABS, it has brake force distribution and brake assist.

Toyota—The D-4D 180 Clean Power concept car was shown by Toyota at Paris, signaling the start of production of its engine in 2005. Toyota also revealed a GT version of its Prius hybrid and the 2005 MY Land Cruiser with new transmissions and revised 3.0-L D-4D

power unit. The D-4D 180 diesel is said to achieve substantial improvements in performance and exhaust emissions, and the production version will have a capacity of between 1.9 and 2.2 L. Toyota sees it as establishing a new benchmark in its class for power and torque. As fitted to the Clean Power concept car, it is said by the company to deliver the world's lowest combined levels of NOx and particulate matter emissions for a diesel, 50% and 80% below Euro IV levels, respectively. It is fitted with Toyota's D-CAT (Diesel Clean Advanced Technology) system, which is also fitted to the 2.0-L D-CAT engine available in the Avensis. It has a four-way catalyst and second-generation common-rail technology. The D-4D produces in the region of 130 kW (174 hp) and 400 N·m (295 lb-ft), according to Toyota.

The Prius GT uses the 1.5-L engine from the regular Prius but producing 147 bhp (110 kW)—an extra 37 bhp (28 kW). It uses the same electric motor, generator, and battery as the standard car. The GT has updated suspension, and the battery has been moved rearward to provide "near-perfect" front/rear weight distribution. The car has a stripped-out interior with safety cage and only two seats, with total mass savings of 180 kg (395 lb). Its 0-100 km/h (0-62 mph) time is claimed to be 8.7 s.

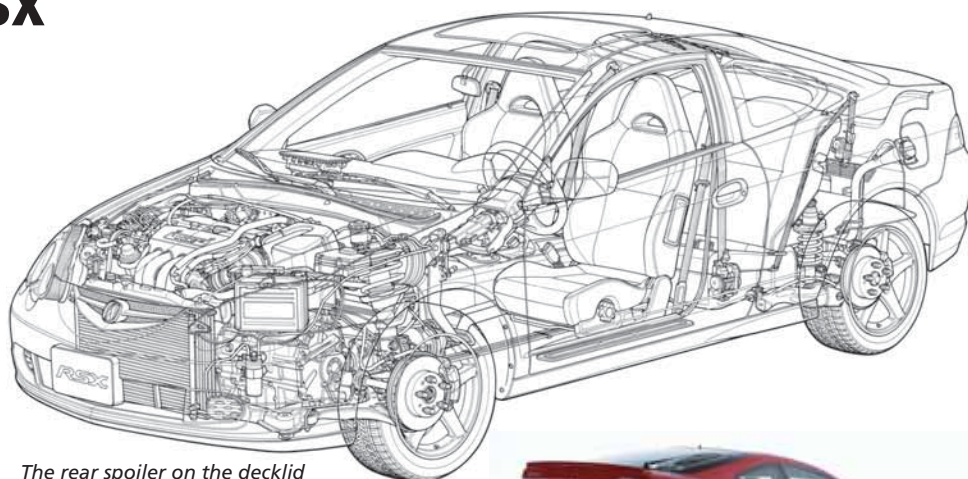
Stuart Birch

Acura refreshes RSX

The **Acura** RSX sport coupe received its mid-life refresh for MY2005, giving the car that was introduced in MY2002 upgrades to carry it through the rest of its product cycle. In addition to the typical styling tweaks, Acura stiffened the chassis and boosted the output of the top-of-the-line Type S model.

"The development goal for the '05 RSX," stated Chief Engineer Kenya Tsutsui, "was to create a sophisticated sports coupe that is exciting to drive on challenging roads, yet refined during everyday driving."

The styling goal was to make the RSX look lower and wider, after consumers said they thought the car looked too tall and skinny. Lowering the car 7 mm (0.3 in) contributed to improved handling and lends the car the low-slung appearance designers sought. They reinforced this



The rear spoiler on the decklid of the 2005 Acura RSX Type-S not only contributes to a sporty appearance, it cuts rear aerodynamic lift in half. Under the skin, engineers addressed NVH concerns in the RSX by adding an engine damper to the front subframe, more insulation to the doors and roof to reduce intrusion of road noise, and weather stripping to the side mirror gaps to cut wind noise.





Designers sought to impart a more refined appearance inside the 2005 RSX using chrome and titanium-look accents to the air vents, shifter, and hand brake.



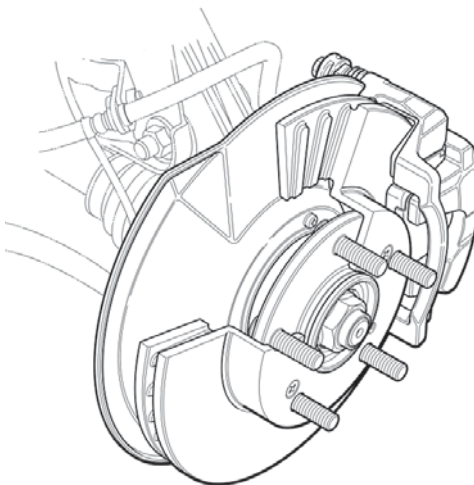
Longer duration intake valve timing and lower restriction intake and exhaust systems boost output of the RSX Type-S 2.0-L engine from 200 to 210 hp (149 to 156 kW).

image with lower side sills and sharply creased front and rear fascias that add to the appearance of width.

The base RSX 2.0-L engine continues unchanged, producing 160 hp (119 kW) and 141 lb-ft (191 N·m), while longer duration camshafts boost Type-S output from 200 to 210 hp (149 to 156 kW) and 142 to 143 lb-ft (193 to 194 N·m). Both engines continue to employ i-VTEC, Honda's combination of variable valve timing and lift by use of two different cam profiles for low- and high-rpm operation.

The new Type-S camshafts add 5° of duration on intake and 10° on exhaust. Under normal conditions, the control system retards intake timing at idle for smoother operation and reduced NOx emissions, but advances timing as engine speed rises to increase overlap between intake and exhaust, boosting power and cutting emissions.

The intake tract on the Type-S grew from 63 to 70 mm (2.5 to 2.8 in), easing airflow into the engine, while a larger 70 mm (2.8 in) diameter exhaust pipe eases exhaust flow to the reduced-density catalyst for 10% less back pressure. The new



The larger 11.8-in ventilated front brake rotors of the Type-S combine with the larger wheels and tires to reduce stopping distance by 5.4% on dry pavement and 9.7% in the wet, while a larger diameter master cylinder improves pedal feel.

exhaust system is rated at 98 vs. 95 L/s (3.5 vs. 3.4 ft³/s) of flow.

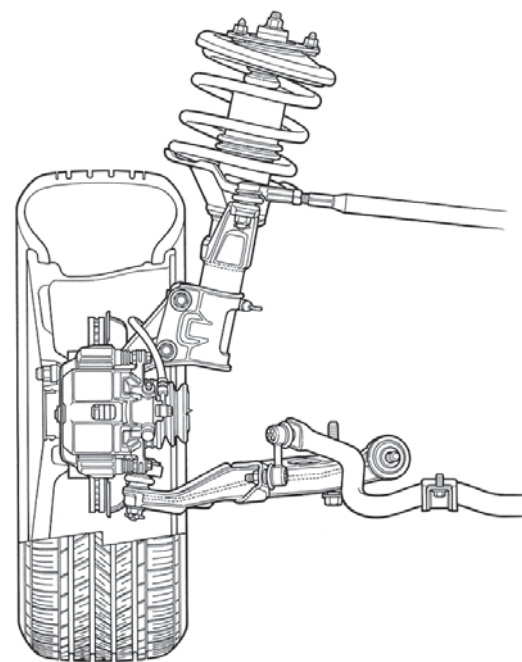
Upgrades to the fuel system and tank reduce evaporative emissions, improving the RSX's certification from Low Emission Vehicle (LEV) to CARB LEV-II status.

The base RSX carries over its five-speed manual and automatic transmissions unchanged, but the Type-S six-speed is improved. To aid acceleration, the final drive ratio was reduced 8.6% to 4.764:1 from the previous 4.388:1. Single-cone carbon synchronizers replace the dual-cone brass examples used on fifth and sixth gears with the goal of reduced shift effort.

The chassis is stiffened for 2005, with thicker sheetmetal and bracing strengthening the front end by 15%, and a thicker rear crossmember stiffening rear rigidity by 21%. The RSX rides on stiffer springs and dampers for more responsive handling. Thicker front anti-roll bars—25.4 and 26.5 mm (1.0 and 1.04 in) for RSX and Type-S, respectively—are made from thicker-walled tubing for reduced cornering roll, and an upgraded strut tower brace on the Type-S minimizes body flex.

A quicker-ratio 14.9:1 steering rack gives sharper responses, and a higher-volume power steering pump provides better assist during extreme maneuvers. Honda installed 10% stiffer front coil springs.

The Type-S mounts the front struts with bearings instead of bushings for reduced friction in the steering, and a new steering rack cuts internal friction in half. Front suspension alignment changes aim to stabilize the car, with Acura going



Ten percent stiffer springs, bearings in the strut mount, thicker front anti-roll bars, and negative camber give the 2005 RSX Type-S sharper steering response than the original version.

from 0 to 0.5° of negative camber and an additional 20 mm (0.79 in) of castor trail. Softer lower control arm bushings contribute to better ride compliance, and the steering column is 45% stiffer for better feel.

For the rear suspension, the wheels roll with a full degree of negative camber to help maintain the tire contact patch during cornering, and the anti-roll bar diameter grows from 19 to 21 mm (0.75 to 0.83 in) for flatter cornering.

A larger brake master cylinder and stiffer brake pedal assembly help improve feel and response. For the Type-S, front-rotor diameter grows to 11.8 in (300 mm) compared to the base car's 10.3 in (262 mm). The Type-S calipers carry smaller pistons now, making the caliper stiffer and more resistant to flexing and contributing to more linear brake feel. Honda claims that dry braking is improved 5.4% and wet braking by 9.7% compared to the 2004 RSX.

The Type-S also benefits from larger wheels and tires, with 17-in alloy wheels mounted with 215/45R-17 Michelin tires. Other RSX models continue with 16-in wheels and tires.

In the cockpit, the new RSX benefits from thicker seat cushions and more supportive side bolsters.

Dan Carney