

02 - 03 Zoom-Zoom

Reference Exhibits

04 - 19 Mazda Atenza/Mazda 6

20 - 33 Mazda RX-8

34 - 41 Mazda Secret Hideout

42 - 49 Mazda MX Sport Tourer

50 - 51 Mazda Roadster MPS

C O N T E N T S

Product Line-Up

52 - 53 Field Break Series

54 - 55 RV

56 - 57 Sports/Sedans

58 - 59 Micro-mini vehicles/*i* Series

New Technologies

60 - 61 Mazda New I4 2.3L Engine

62 Mazda V6 3.0L Engine

63 DIREC-D Engine

64 - 65 Mazda New I4 1.3L Engine

66 - 67 RENESIS

68 Mazda New I4 DI Engine

69 New Catalyst System
for Next Stage Rotary Engine

70 - 71 Mazda ISG System

72 - 73 Mazda Premacy FC-EV

74 Smart Air Bag System



New Four-Door Sports Car for Four Adults Expresses Mazda DNA to the Full

Mazda Motor Corporation takes the wraps off the mass production design of the company's upcoming flagship RX-8, revealing an innovative sports car with more refined styling.

Mazda unveiled the RX-8 at the 2001 Tokyo Motor Show. Mazda exhibited the RX-EVOLV at 1999 Tokyo Motor Show, as a proposal for a new sports car with an innovative packaging concept based on the next-generation rotary engine. We received a favorable response for the concept car from customers all over the world. At the 2001 North American International Auto Show, we also exhibited a design and engineering model of the RX-8, which was a result of our corporate desire to realize the potential that the RX-EVOLV showed.

Mazda RX-8

RX-8 [Reference exhibit]

In developing the RX-8, Mazda strove to realize conflicting goals: delivering a vehicle with striking, sporty styling with a superior blend of handling and performance, while providing ride comfort and the functionality for four adults. A key factor in achieving these goals is the RENESIS engine, the next-generation rotary powerplant, which is more compact and higher-powered than previous rotary engines. The RX-8 incorporates both genuine sports car styling and an interior package spacious enough for four adults. It also includes a further refined front-midship layout as well as a freestyle, four-door configuration without a center pillar. Exceptional driving performance comes through 50:50 front/rear weight distribution and small yaw-inertia moment. With superior practicality, the RX-8 will meet the expectations of a wider range of customers, not only sports car fans.

The RX-8 is an entirely new sports car embodying Mazda's "Zoom-Zoom" brand message to the maximum, by pursuing "Distinctive design," "Exceptional functionality," and "Responsive handling and performance."



Unprecedented Sports Car Styling Encapsulating Space for Four Adults

The form of a genuine sports classic

Mazda has produced many sports cars with exciting styling that stand the test of time, such as the first-generation Cosmo Sport, the RX-7 and the MX-5/Miata/Roadster. Following this tradition, Mazda designers were determined to give the four-door, four-seater RX-8 unprecedented styling.

They began by sculpting a body with a dynamic feeling of motion. Exciting surfaces run from the aggressive front air intake along the body to the trunk lid. The classic rear-wheel drive sports layout places visual emphasis on the rear tires. Short front and rear overhangs, and characteristic overfenders, underline the vehicle's look of stability. The styling is a classic statement of beauty in motion, reminiscent of a top athlete.

This is the perfect embodiment of Mazda's new design philosophy of "Emotion in Motion." The adoption of the freestyle door system, for four doors without center pillar, means the RX-8 is an unprecedented combination – the look and feel of a genuine sports car in a four-door vehicle.

The shape of the rear pillars and rear window pay homage to the first-generation Cosmo Sport and RX-7, yet its innovative package provides enough space for four adults.

Low, dynamic front end

Aggressive lines extending from the air intake along the low hood that only a rotary engine with its compact design can make possible; a power bulge in the center of the hood with a rotor as the motif; a bumper fascia emphasizing the "cubic" effect; and short front overhang all combine to create a dynamic sports car image and emotional atmosphere,

enhancing the car's Zoom-Zoom spirit. In addition, the front fender wheel arches stand high and clear of the low hood to visually manifest the RX-8's power and provide the driver a clear view of the front corners of the vehicle.

Rear view with emotional and cool styling cues

The rear view is designed to create a vivid impression as the car drives away – an important consideration for a sports car. This is partly achieved by the RX-8's short rear overhang. Rear combination lamps receive a mechanical touch through the addition of chrome accents, a rotor-shaped rear fog lamp is located low in the center of the bumper, and the dual exhaust pipes are placed to the left and right. Taken together, these elements create an impression that is simultaneously emotional and contemporary.



Simple, Functional Interior Enhances Driving Pleasure

Snug, comfortable cabin

In line with the exterior styling, the interior has the emotional impact expected of a true sports car. The design concept is “pleasingly snug,” and features newly developed textures and metallic material to produce a bright, modern atmosphere. Once again, the “Emotion in Motion” design philosophy is realized through the combination of the traditional style expected of a sports car with an advanced character suitable for a next-generation four-door sports machine.

Genuine sports cockpit

The cockpit follows Mazda’s traditional sports spirit, giving a feeling of urgent expectancy as soon as you open the door. The interior’s basic framework – strong, contoured surfaces flowing from the power bulge on the hood, through the dashboard and the center console to the rear parcel shelf – and the center console, designed with characteristic aluminum frame, show the form of the center “backbone” that lies beneath them. All in all, the RX-8 cabin provides a pleasingly snug feeling and a sense of anticipation.

Vivid, high-quality sports taste

A stylish two-tone color scheme employs black and exterior body color for seats and trim. Aluminum trim is tastefully used for areas within the driver’s reach such as the center console, transmission tunnel and shift lever. The dashboard is compact and features a dimpled surface that varies by location to present a modulated appearance.

In addition, the shift lever, front-seat headrests and side-sill covers feature a rotor motif taken from the

rotary engine. In this way, the RX-8 generates a high-quality sporting impression by integrating the traditional with the modern.

Lightweight sports seats

The lightweight front bucket seats feature a rigid molded form for the seatbacks, allowing reduction of cushion thickness without sacrificing comfort. This reduces weight and assures ample legroom for passengers in the rear. Thanks to wraparound styling with side and shoulder support, the front seats hold occupants firmly in place even during aggressive, sporty driving. Sun visors use a mesh texture material to further reduce weight.



Freestyle Door System for Four Adults

Front and rear legroom equal to a sporty sedan

Beneath the unmistakably sports car styling lies a comfortable cabin tailored to fit four adults, helping achieve exceptional functionality – a Mazda DNA trait. This is made possible through highly efficient packaging centered around the compact, lightweight RENESIS next-generation rotary engine, the 2,700mm wheelbase, and lightweight sports seats with thinner cushions and seatback. As a result, the RX-8 achieves head-, shoulder- and legroom comparable to those of some conventional sporty sedans.

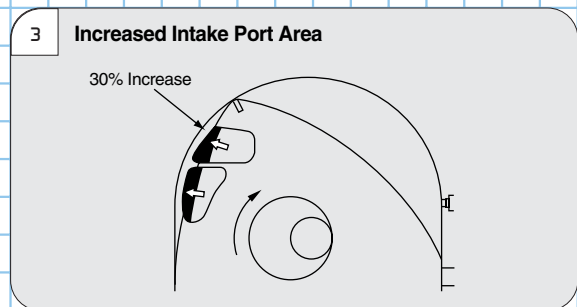
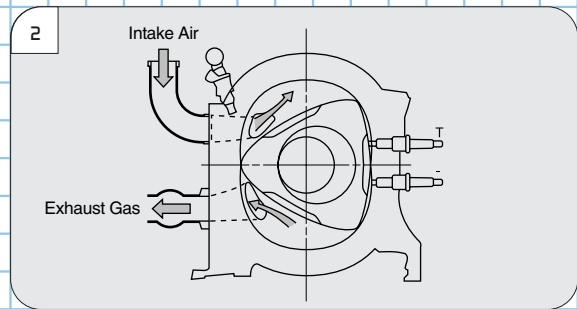
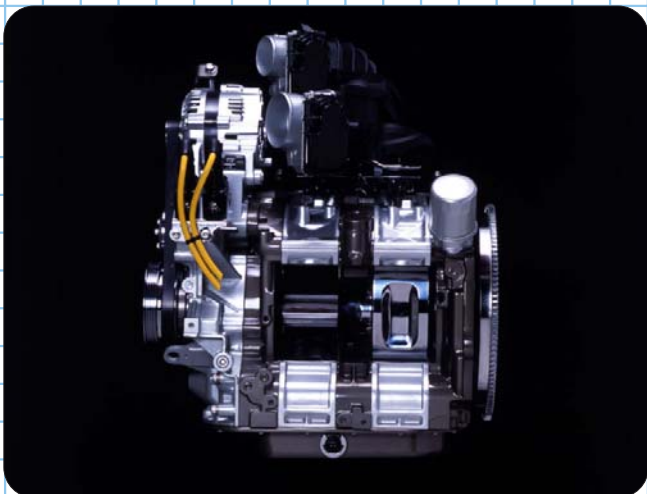
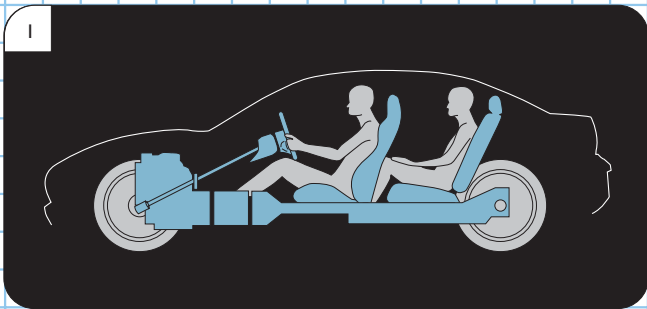
Freestyle door system with no center pillars

Even with spacious front and rear seats, a two-door design makes access to the rear seats more difficult, reducing customer convenience. Conversely, a conventional four-door design simply cannot realize genuine sports car styling.

The freestyle door system solves this problem at a stroke. The front doors are hinged at the front in the conventional manner, while the lightweight aluminum rear doors are hinged at the rear. Thus the system does away with the center pillar. When both front and rear doors are open, the entry space is free and easy.

Practical, spacious trunk

The RX-8 has plentiful storage space for everyday use and short trips. Thanks to the freestyle door system, it is easy to stow luggage on the rear seats, and the deep trunk has space for two golf bags.



Sporty Performance for Daily Driving Comfort

Evolved front-midship layout

RX-8's responsive handling and performance deliver driving pleasure far beyond the normal. A key factor in achieving the RX-8's unrivaled performance and superb handling is its light weight, perfectly balanced 50:50 weight distribution, and small yaw-inertia moment and low center of gravity.

The front-midship layout is further enhanced by RENESIS, the next-generation rotary engine (Fig. 1). Naturally aspirated, the RENESIS is smaller and lighter than Mazda's previous turbo rotary engine (13B-REW), and it is only 338mm high, the same as the transmission. This made it possible to mount the engine about 60mm further rearward and some 40mm lower than in the RX-7, which already has the engine's center of gravity behind the front axle.

As a result, RX-8 has perfect 50:50 front/rear weight distribution, a small yaw-inertia moment and a low center of gravity the same as the RX-7. In addition, the RX-8 realizes nimble, controllable performance and stable high-speed handling thanks to its 2,700mm wheelbase.

Next-generation rotary engine RENESIS

RENESIS, the key to the RX-8's front-midship layout, features a side-intake, side-exhaust layout, with the exhaust ports moved to the side housing of the rotor chamber (Fig. 2). This allows the size of the ports to be freely set, resulting in an expanded air-intake port area – 30% larger than in conventional rotary engines (Fig. 3) – greatly improving intake resistance and contributing to the high maximum output targets of 184kW (250PS)/8,500rpm and maximum torque of 220Nm (22.4kg-m)/7,500rpm even with natural aspiration.

In addition, the adoption of dual exhaust ports for each chamber achieves twice the port area of conventional designs and also allows exhaust port timing to be delayed for increased thermal efficiency in the expansion process. Unburned hydrocarbons are retained for combustion in the next cycle, which greatly reduces emissions. A three-stage induction system, featuring shutter valves at the intake ports of each rotor, utilizes the incoming air's dynamic charge effect and improves filling efficiency, while twin electronic throttles precisely and flexibly control the valve operation. Furthermore, a wet-sump lubrication system with oil-pan height just half that of conventional designs also reduced engine size and weight. (See page 66, RENESIS)



RESPONSIVE HANDLING AND PERFORMANCE

High-mount backbone frame

To give the RX-8 the rigidity a genuine sports car demands, a strong, high-mount backbone is located in the upper part of the transmission tunnel. This backbone runs from the front bulkhead through the cabin to the rear bulkhead and functions as the main frame of the chassis, enhancing rigidity and allowing reduction of body-panel thickness and weight. It also contributes to safety in the event of a collision.

Closed-section power plant frame (PPF)

The lightweight closed-section PPF locks the entire powertrain – including the differential gear – into a single rigid unit. This mechanism enhances direct and linear acceleration feel and crisp shift operation with plenty of sports car driving pleasure.

One-piece, carbon-fiber propeller shaft

Even with a 2,700mm wheelbase, the RX-8's front-midship layout drastically shortens the distance from the gearbox to the differential. This allowed engineers to install a one-piece propeller shaft made of carbon fiber, which further reduced weight.

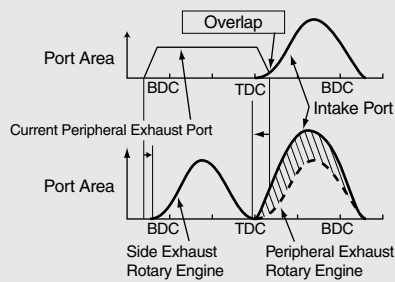
Double-wishbone suspension at front and multi-link beam suspension at rear

Long-arm double-wishbone suspension at the front and multi-link beam suspension at the rear provide ideal suspension geometry. Long arms and links achieve suspension linearity and roll control, while optimum roll-center height maximizes suspension stroke. Tires remain perpendicular to the road throughout the length of suspension travel for superior grip, even under the hardest cornering. The result is superb roadholding with no sacrifice in

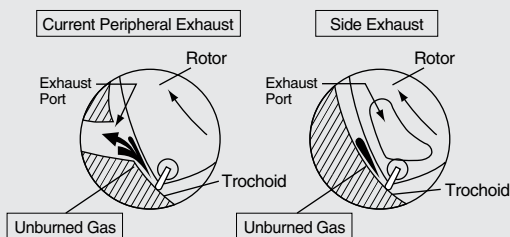
ride comfort. Thanks to the greatly reduced yaw-inertia moment (a result of the front-midship layout), optimum roll-center height and tire camber control, the RX-8 delivers a sharp response to steering inputs and enhanced controllability. This chassis and suspension design also allowed the adoption of large-diameter 18-inch aluminum wheels with high-grip 225/45ZR18 tires. Rack-and-pinion power steering gives accurate feedback on road conditions, while an electric power-steering pump delivers precisely the right amount of assist to match driving conditions. One further benefit of an electric power-steering pump is improved fuel economy, as electrically driven steering, as opposed to the typical belt-driven system, does not drain power from the engine. Large, 17-inch ventilated discs on all wheels give sure, positive braking in support of safe, sporty driving. Six-point rubber mounts on the rear subframe improve both driving stability and road noise.



1 Compatibility of Performance and Fuel Economy



2 Reduced Emission of HC



Major Specifications of Mazda RX-8

Dimensions	Overall length	4,425mm
	Overall width	1,770mm
	Overall height	1,340mm
	Wheelbase	2,700mm
	Track (front/rear)	1,500mm/1,510mm
	Seating capacity	4 persons
Engine	Type	Water-cooled, two-rotor
Transmission	Type	6-speed manual
Suspension	Type (front/rear)	Double-wishbone/multi-link
Brakes	Type (front & rear)	Ventilated disc
Tires & wheels	Tires (front & rear)	225/45ZR18
	Wheels (front & rear)	18 x 8J

Greater Safety and Consideration for the Environment

Improved performance to side-collisions

Placing the RENESIS engine front midship realized a sufficiently large crushable zone between the engine and front bumper. This ensures improved impact absorption in head-on and offset frontal collisions. At the same time, the RX-8 also provides superior performance in side-impacts. It has a highly rigid body structure for a sports car, in spite of the pillar-less, wide-opening design. To achieve this, a large number of measures were adopted including a rigid underbody frame, the high-mount backbone running through the cabin, and carefully planned chassis reinforcements. A reinforcement structure forms a virtual center pillar built into the door frames, while top and bottom latches lock the rear door to the body. In addition, a safety lock mechanism allows the rear doors to open only if the front doors are open, too.

Active-safety measures include large-diameter 17-inch ventilated disc brakes on each wheel, a 4W-ABS (four-wheel anti-lock braking system), and newly adopted DSC (dynamic stability control) that senses when the vehicle begins to skid or spin, and counters it by controlling engine torque and applying the brakes as needed.

Tackling environment problems

Zero overlap between the intake and exhaust ports results in enhanced thermal efficiency for the RENESIS engine, allowing a much leaner air/fuel mixture for fuel efficiency when idling compared to the 13B-REW rotary engine in the RX-7 (Fig. 1). In addition, thanks to the efficiency inherent in the rotary engine, the RX-8 operates with a lean mixture even during high-speed high-load operation. A high

compression ratio and newly developed ultra-fine fuel injectors make virtually perfect combustion possible across the engine's entire speed range.

Rotary engines also have structural qualities that cause them to generate less NO_x (nitrogen oxide) than conventional engines. RENESIS' side-exhaust layout retains unburned HC (hydrocarbons) for the next combustion cycle, further lowering emissions (Fig. 2). In addition, a newly developed catalytic converter for the rotary engine is teamed with a double-skin exhaust manifold that maintains a high exhaust-gas temperature to improve catalyst activation on engine start, even in cold conditions.