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## **MAZDA RX-8: A NEW SPORTS CAR ERA**

*– Rotary-Powered RX-8 Demonstrates Excellence in Engineering and Design –*

IRVINE, Calif. – The Mazda RX-8 redefined the sports car segment when it was launched in summer 2003, and it continues to shake up the automotive world's definition of what a sports car can be. With an exterior suggesting athletic tension, a twin-rotor engine that continues to win accolades from the automotive press and an interior offering comfort and practicality, the 2005 Mazda RX-8 is a new breed of sports car.

“The sleek, powerful and agile RX-8 debunks the notion of sports cars as fun but impractical,” said Weldon Munsey, RX-8 vehicle line manager. “The RX-8 is a car equally at home zooming around a track or taking the kids to soccer practice. It is a true sports car that can pull double duty.”

The 2005 Mazda RX-8 is available as either a 238-horsepower model fitted with a six-speed manual transmission, or a 197-horsepower model fitted with a four-speed automatic with Sport Shift, which incorporates steering-wheel-mounted paddle shifters for a Formula 1-style driving experience. Both automatic and manual transmission cars come equipped with power windows, mirrors and door locks, cruise control and a thumping AM/FM/CD audio system with six speakers.

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**NEW FOR 2005**

New for 2005 models is the addition of Whitewater Pearl to the exterior color palette and a Sirius® satellite radio option. Sirius provides more than 120 satellite channels from coast to coast and is compatible with both the stock and upgraded sound systems. Mazda dealers need only add an antenna and satellite receiver kit (\$399 not including installation) and customers need only subscribe to activate the Sirius system.

### **RENESIS ROTARY ENGINE**

Forty years of rotary-engine racing success went into the design of the RX-8's advanced RENESIS (Rotary Engine genesis – or rebirth of the rotary engine) engine. Incorporating many elements that made the RX-7 the most successful model in International Motor Sports Association (IMSA) history and brought Mazda the 1991 24-Hours of Le Mans overall win, the RENESIS engine is exceptionally well-built and capable. This racing pedigree is evident through the various motorsports series employing the RX-8, including Pro Formula Mazda and the Grand Am Cup.

By turning a triangular rotor in a cocoon-shaped combustion chamber, the RX-8's rotary engine efficiently performs the four processes of intake, compression, combustion and exhaust. The RENESIS engine is remarkably smooth and high revving — all the way to 9000 rpm — and offers a smaller engine footprint than traditional internal combustion engines (some 60 percent smaller than a comparably powered V-6, and 40 percent smaller than a four-cylinder).

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Improving upon 40 years of rotary designs, the RENESIS engine boasts side intake and exhaust ports with nearly 30 percent more intake area and twice as much exhaust

area than previous rotary engines. The efficiencies gained through larger intake and exhaust ports exclude the need for forced induction, a feature found on the last rotary-powered sports car from Mazda, the vaunted third generation RX-7.

The RX-8's normally aspirated 1.3-liter engine might appear diminutive to the untrained eye when compared to large-displacement V-8s or heavyweight V-10s or V-12s. However, through the incredible efficiencies of a rotary powerplant, an advanced three-stage intake system and an electronic throttle, the RENESIS engine delivers smooth, linear power on a grand scale.

The 2005 RX-8 does not sacrifice emissions for power, though. Through improvements to the port design, overlap between the intake and exhaust ports has been eliminated, greatly reducing exhaust emissions, improving fuel economy and allowing the car to meet the strict Bin 5-A Federal emissions classification. The effort made by Mazda engineers to improve emissions is a prime example of the concern for environmental impact maintained throughout the development process.

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The RX-8 benefits from placing the powerplant low and far back in the engine bay in what Mazda calls an advanced front-midship layout, which lowers the center of gravity

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and improves vehicle balance. In addition, the fuel tank is placed ahead of the rear axle, and all seating is within the wheelbase and track of the car. Combined, these factors contribute to a perfect 50/50 vehicle weight distribution, low yaw-inertia movement and superb handling characteristics. With such excellent balance, it is little wonder the RX-8 feels right at home on even the most challenging race tracks or negotiating a tight freeway onramp.

### **FIT FOR THE TRACK**

The RX-8's comfort on the track is not overlooked by the motorsports community. The same RENESIS engine found in production RX-8s is used in the Pro Formula Mazda series, a popular open-wheel racing format run on the nation's most demanding race tracks. Pro Formula Mazda is widely regarded as a training ground for developing drivers looking to build a career in motorsports. That this popular series uses a showroom-stock, non-modified RENESIS engine is a testament to the power, reliability and light weight of the RX-8 powerplant.

The RX-8 also campaigns in the Grand American Road Racing Association's Grand Am Cup Sports Touring division. The Sports Touring division consists of production cars driven straight from the showroom to the race track with limited racing modification. Here, the superb handling characteristics and near-bulletproof RENESIS engine already have taken the RX-8 to victory circle twice in 2004, and all indications point to return visits.

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### **SUSPENSION AND STEERING**

The RX-8 uses a newly developed aluminum double-wishbone front suspension, reducing unsprung weight over the use of steel components. By mounting the upper and lower arms on a highly rigid sub-frame, the long arms ensure linear alignment changes throughout the jounce and rebound of the front wheels. All wheels receive mono-tube gas-filled shock absorbers designed with large-diameter internal pistons and valving, which offer excellent road feedback and a smooth ride.

An electric-assist rack-and-pinion power-steering system transmits just the right amount of road information back to the driver. Mazda engineers have chosen to pursue their own path by using an electric motor for steering assistance – rather than a conventional power-steering pump. The electric motor provides additional assistance at low speeds to ease parking and reduces steering assistance at higher speeds to provide greater road feel, responsiveness and feedback.

### **STYLING**

The trend of innovation in the engine bay and suspension continues to the RX-8's styling with a unique "freestyle" four-door design. Mazda has broken the notion of sports cars as cramped coupes by effectively demonstrating that a true sports car does not need to sacrifice space or convenience. With ample passenger room for four full-size adults and enough trunk space for a weekend's worth of luggage or two full-size golf bags, a new era of sports car design has arrived.

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The RX-8's body shell, due to the advanced design of the rear-hinged rear "freestyle" doors, provides a large door opening (front doors open to 67 degrees and

rears open to a near-perpendicular 80 degrees), making for easy adult-sized ingress and egress. This also is advantageous when securing a baby or small child in the back seat.

The styling of the Mazda RX-8 is made up of taut muscular lines, suggesting the look of an athlete in motion. The muscular design maintains classic sports car proportions while adding a Zoom-Zoom edge that is unmistakably Mazda. Integrated throughout the exterior is the unique triangular rotor design, which clearly can be seen in the front fascia, head lamps, hood and rear bumper valence. RX-8's exterior dimensions are virtually identical to the Porsche 911, yet it still manages to seat four adults and offers sufficient rear-seat room to install a rear-facing child seat.

The RX-8's exterior styling presents a genuine sports car form, while the interior boasts a comfortable and intelligently designed cabin. An extremely low cabin floor allows the seats to be mounted low in the chassis, which, along with a low instrument cluster and hood, enhance driver visibility. Mazda designers concentrated on the shape of the front seat backs and the rear seat cushions to ensure adequate rear-seat knee room. Front seat slide-rails are positioned to allow maximum leg room for rear-seat passengers.

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The rotary design element is carried through the interior of the RX-8 in creative ways, appearing in the seats, center console, shift knob and emergency brake. The cabin also evokes a sense of style and high-end quality. Mazda's design team examined every

aspect and component of the interior and has created an elegant, performance-minded atmosphere. Through the use of advanced ergonomic research, Mazda engineers determined improper seating posture to be a cause of driver fatigue and built in optimum support in the front seats to help counteract discomfort. In addition, the soft blue lighting used in the RX-8's instrument cluster was found to minimize eye fatigue and strain.

### **SAFETY**

When designing the RX-8, safety was given as much consideration as performance. For Mazda, the safety process incorporates both accident avoidance and accident protection. In practice, this approach to safety means the RX-8 can avoid many dangers and protect occupants in the unfortunate event of a collision. In a recent rollover test performed by the National Highway Traffic Safety Administration (NHTSA), the RX-8 was the only car of the 68 tested vehicles to receive a five-star rating.

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Mazda engineers incorporated numerous active and passive safety elements throughout the car. Active safety features, which require input from the driver, include the use of large ABS-equipped disc brakes on all wheels as well as precise steering and suspension systems. Dynamic Stability Control (standard on manual transmission cars with Sport Package, optional on RX-8s with automatic

transmissions) provides a superior level of handling that can be disabled safely when driving and road conditions allow.

Passive systems, or those that take effect automatically without driver intervention, also are present throughout the RX-8. Despite the absence of a center B-pillar, the RX-8 has an exceptionally rigid body, a feat accomplished through the use of a series of locking pins, which hold the doors together and tie each door directly into the roof and floor. Integrating the frame components helps dissipate crash energy through the vehicle's structure.

More standard passive systems on the RX-8 include a dual-stage inflation system for the front airbags, seat-mounted side-impact airbags and side-curtain airbags. Additionally, the front end and engine bay have ample crumple zones, the front seats are designed to minimize whiplash injuries, the brake pedal is designed to break away in the event of a collision of sufficient force to protect feet and legs and all four seating positions are fitted with three-point seatbelts. Consideration even was given to pedestrian protection as the RX-8 is fitted with Mazda's "shock-cone" hood design that yields more to the impact of a pedestrian onto the hood than a standard design, yet is strong enough to not deform in normal use.

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### **TRIM AND WARRANTY**

Four trim packages are available for both automatic and manual transmission RX-8s: a Standard Model, a Sport Package (adds Xenon headlights, fog lamps and DSC to M/T cars; adds 18-inch wheels, a limited-slip differential, sport-tuned suspension and larger

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brakes to these items for A/T cars), a Touring Package (adds moonroof, auto dimming mirror with Homelink® and Bose® audio system to the Sport Package offerings) and a Grand Touring Package (adds power-adjustable driver's seat with lumbar support, leather seating surfaces — heated in front — and heated outside mirrors to the Touring and Sport Packages). A DVD-driven satellite-navigation unit is available as a stand-alone option and uses a single DVD for mapping the entire United States and portions of Canada.

The Mazda 2005 RX-8 comes with a four-year roadside assistance program. With a call to a toll-free number, RX-8 owners can access roadside assistance 24 hours a day, 365 days a year throughout the United States and Canada. For all 2005 Mazda vehicles, the company will provide a free loaner car in the event a warrantable condition requires alternative transportation.

The RX-8 is covered by a comprehensive four-year/50,000-mile warranty that covers every part on the vehicle except those subject to normal wear. In addition, the RX-8 is covered by a five-year/unlimited-mileage corrosion warranty.

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Mazda North American Operations is responsible for the sales and marketing, customer parts and services support of Mazda vehicles in the United States. Headquartered in Irvine, Calif., MNAO has more than 700 dealerships nationwide.

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