



# The 44th Tokyo Motor Show 2015

# **Press Information**

Note:

This press information is a summary of Japanese specifications. All figures and specifications may vary according to market. Also, data are subject to change upon homologation.

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# Heritage

# Mazda's everlasting spirit — Never Stop Challenging

Mazda's history as a carmaker has also been a history of challenge. Daring to defy convention and take on challenges that others thought impossible, Mazda has constantly broken through the barriers, even when facing difficult problems or tall hurdles. Most symbolic of this "never stop challenging" spirit is Mazda's bringing the rotary engine to production vehicles. It took staunch determination on the part of Mazda's engineers to accomplish a feat that was considered impossible. This same spirit of challenging convention continues to be passed down carefully within the company as can be seen in the development of SKYACTIV TECHNOLOGY.

#### Challenging the impossible — the history of rotary engine development

The story of Mazda and rotary engine development began in 1961. At the time, motorization in Japan was finally emerging from the confusion of the postwar period and starting on an upward climb. There were clear signs that competition was intensifying among the carmakers, and the pace of the industry's reorganization and capital tie-ups was gaining pace. Within this environment, a late starter such as Mazda faced having to make tough decisions as how best to display its distinctive character if it were to maintain its independence. This is when talk of the rotary engine first appeared on the scene as a dream technology for the future. Tsuneji Matsuda, president of Toyo Kogyo (today's Mazda) at the time, paid a personal visit to the headquarters of NSU Motorenwerke AG in West Germany, developer of the Wankel engine, where he signed a technical cooperation contract. The goal was to commercialize an unknown new technology and thereby make its presence known to a broad audience and appeal to the market as a company with a high level of technological prowess. It could be said to be a highly romantic adventure by which Mazda bet its corporate identity on a major challenge. In other words, Mazda felt that, by taking on the challenge to create new value with the rotary engine, it could make a giant leap forward in establishing its identity as a unique, independent carmaker.

Actual development of the engine proved extremely difficult. The team of 47 engineers in Mazda's rotary engine research department faced a number of tall hurdles, not the least of which was how to tackle the chatter marks, also known as "the devil's nail marks", left on the inside walls of the rotor housing as the result of friction caused by the rotor turning at high speed. Despite this, the engineers refused to compromise as they doggedly chased every possibility until finally clearing the way for bringing the rotary engine to market.

Mazda unveiled the Cosmo Sport on May 30, 1967. The debut of the world's first production car powered by a two-rotor rotary engine marked a new step forward in automotive history. The following year, the Cosmo Sport competed in the 1968 Marathon De La Route, an 84-hour endurance race staged at Germany's famed Nürburgring. Completing the 3-1/2 day nonstop race and taking fourth place overall, the Cosmo Sport proved that the rotary engine delivered excellent performance and was highly durable. The Cosmo Sport was the product of the engineers' unrelenting efforts to keep coming back after each setback and overcome every obstacle. This same spirit lives on today as Mazda continues taking on new challenges to further evolve the rotary engine.

#### Evolution of the rotary engine opens roads to a new era

Following the launch of the Cosmo Sport in 1967, Mazda continued to introduce one car after another powered by the rotary engine. Examples include the Familia Rotary, Luce Rotary Coupe, Capella Rotary (RX-2 outside Japan), and Savanna (RX-3). Events during this same period, such as the U.S. Congress passing the Clean Air Act Extension (the so-called "Muskie Act") in 1970 and the 1973 oil crisis, led to greater demands for better environmental performance and fuel economy; and these in turn presented Mazda with some big new challenges. Rising to the challenge of being the lone company developing the rotary engine for commercial use, Mazda engineers proved their mettle and challenging spirit in greatly evolving emissions performance and fuel economy, as well as a sense of loyalty to the company's customers and fans.

In 1978, the Savanna RX-7 sports car became a big hit. Playing no small part in this success was the huge leap forward in fuel economy achieved under the Phoenix Project, and it became symbolic of the rotary engine's comeback. With its appealing design and the uniquely powerful feel of its rotary engine, the Savanna RX-7 was active in motorsports events and earned high acclaim as a sports car that delivered speed, durability and excellent fuel economy. The launch of the RX-7 gave new life to the rotary engine and, like the proverbial phoenix rising from the ashes, it took its first step toward a new era.

From there, rotary engine development continued to pursue the evolution of both power and fuel economy with the implementation of turbocharging, the addition of a third rotor, and other advances introduced as a result of feedback from motorsports activities. Then, in 1991, the 700-horsepower, four-rotor rotary engine-powered Mazda 787B was the overall winner in the 24 Hours of Le Mans, marking a first for any Japanese car. The overall victory was a crowning moment for Mazda's relentless challenging spirit after 18 years of competing in the world's most grueling endurance race that demands the highest level of performance.

Time passed and, as Mazda started down a new path as a member of the Ford Group in the late 1990s, the existence of the rotary engine was considered of great importance in restructuring the Mazda brand. In other words, it was of immense symbolic value to the brand. In 2003, Mazda brought the new-generation RENESIS engine to market, marking an evolution that took the rotary engine's winning combination of small size, light weight and high performance to the next level. Mazda combined the dynamic performance of the RENESIS engine with authentic sports car styling to give birth to the RX-8 and create new value with a full-fledged a four-door, four-seat sports car.

#### The soul of the Mazda brand

To Mazda, the history of the rotary engine is the very history of its growth as an independent carmaker that continues to offer unique value to the market. The rotary engine is not just another product in the Mazda lineup. Rather, from the difficulties its commercialization presented to the miraculous comeback it later achieved, the rotary engine established its presence as the soul of the Mazda brand, symbolizing the company's tirelessly challenging spirit and creativity throughout its history.

Mazda is the only carmaker in the world presently developing the rotary engine. It is truly a frontier technology for which no rivals or textbooks exist. And, that is exactly why Mazda continues the challenge of further evolving it. Challenge is in Mazda's DNA, and it would not be an exaggeration to say its history of taking on one challenge after another is precisely why the company exists as it does today.

In 2011, Mazda once again broke the mold and defied conventional thinking about internal combustion engines when it redefined every aspect of the basic technology used in building cars in creating SKYACTIV TECHNOLOGY. Believing in the technical possibilities, Mazda put everything it had into challenging the unknown to provide new value in its own unique fashion. The same persistent challenging spirit nurtured over the years of developing the rotary engine lives on today at Mazda.

1961	NOV	First Mazda rotary engine prototype completed
1967	MAY	First rotary engine announced and Cosmo Sport launched (with 10A engine)
1968	JUL	Familia Rotary Coupe launched
	AUG	Cosmo Sport becomes the first rotary engine powered car to compete in the Marathon De La Route 84-hour endurance race and finishes in 4th place overall.
1969	OCT	Luce Rotary Coupe launched (with 13A engine)
1970	MAY	Capella Rotary (RX-2) launched (with 12A engine)
1971	SEP	Savanna (RX-3) launched
1973	FEB	The rotary engine passes American 1975 emissions regulations
1975	ОСТ	Cosmo AP (RX-5) with "Anti-Pollution" rotary engine launched (13B engine)
1978	MAR	Savanna RX-7 launched
1979	FEB	Savanna RX-7 competes in IMSA series 24 Hours of Daytona race and wins with first and second place finish in the GTU class (fifth and sixth place overall)
1985	OCT	Second-generation RX-7 launched (with turbocharged 13B engine)
1990	SEP	RX-7 competes in IMSA San Antonio 45-minute race and wins with a first place finish in the GTO class (and first place overall), becoming the first car model in history to earn 100 wins
1991	JUN	Mazda 787B competes in The 24 Hours of Le Mans race and wins overall
	OCT	Hydrogen-powered HR-X concept car exhibited at the Tokyo Motor Show
	DEC	Third-generation RX-7 launched (with 255PS 13B-REW engine)
2003	APR	RX-8 launched (with RENESIS engine)
2006	FEB	Hydrogen-powered rotary engine released and leasing begun
2007	ОСТ	Next-generation RENESIS engine (16X) exhibited at the Tokyo Motor Show

# History of rotary engine development at Mazda

# Mazda RX-VISION concept car

# Mazda RX-VISION rotary sports car concept A vision of the future that harbors the soul of the Mazda brand

Mazda's vision is to deliver true driving pleasure that will earn its cars a position as the customer's partner, and will enrich their motoring lives. That motivates Mazda to continually defy convention and push the boundaries, building cars that match its unique vision.

Mazda is the only carmaker in the world to successfully bring to market and mass-produce the rotary engine. It is a symbol of the company's tirelessly challenging spirit and, as the soul of the Mazda brand, it represents the unique and innovative technology that helped establish the brand and create a solid bond between Mazda and its customers. That is why rotary engine research and development continues today, even though there are no rotary-powered cars in the current product lineup.

The Mazda RX-VISION rotary sports car concept introduces the next-generation SKYACTIV-R rotary engine and Mazda's vision of the ultimate in front-engine, rear-wheel-drive sports car styling. Making its world premiere in Tokyo, the RX-VISION represents a vision of the future that harbors the soul of the Mazda brand.

# One-of-a-kind FR proportions born of KODO design and the rotary engine

RX-VISION adopts the beautiful proportions of an FR sports car as could only be envisioned by Mazda. The styling is modern but maintains a sense of lineage and authenticity, encapsulating Mazda's entire history of sports car design.

A low and wide body, short overhangs and taut cabin make the model immediately recognizable as a sports car. These elements combine with the low overall height and incredibly low hood made possible by the compact and lightweight next-generation SKYACTIV-R rotary engine to create truly one-of-a-kind proportions.

The design aim was to shave away all but the essentials and give birth to the dynamic tension and ambience of a machine that is all business. The fine craftsmanship of

Mazda's renowned clay modelers creates reflections that convey motion and thereby capture the spirit of the KODO design language without relying on character lines or other such elements. It is an elegant and highly vital form that changes expression with the slightest change of viewing angle.

A special red chosen for the body color features both energetic brightness and depth. It helps bring out the luster and contrast between light and shadow that are present on the RX-VISION.

Weaving some design motifs that reflect the history of Mazda sports cars into the design of the RX-VISION expresses Mazda's unchanging passion for the sports car.

For the interior, the design team pursued an ultimately simple yet powerful image, while fusing it with the tactile feel of handcrafted work and a sophisticated mechanical expression. Intricate instruments give the cockpit a true machine appeal, which in combination with the simple instrument panel and genuine leather trim with a saddle motif for the center tunnel create an interior atmosphere that speaks of handcrafted warmth and quality yet maintains a sense of tension.

# The next-generation SKYACTIV-R rotary engine aims toward the future

Working to realize the ideal internal combustion engine, Mazda returned to the drawing board and built the SKYACTIV-G gasoline engine and SKYACTIV-D diesel engine from scratch.

Even after discontinuing production of the RX-8 in 2012, Mazda continued research and development to further evolve the rotary engine. This next-generation rotary engine has been christened SKYACTIV-R, a name intended to represent the company's firm resolve in applying the most advanced technologies and the same high aspirations that yielded SKYACTIV TECHNOLOGY towards achieving a breakthrough in addressing the three key issues with rotary engines — fuel economy, emissions performance and reliability.

Mazda will never stop challenging to deliver new rotary engines that provide its unique brand of driving pleasure.

<b>/</b> / /	
Seating capacity	2 persons
Overall length x width x height	4,389mm x 1,925mm x 1,160mm
Wheelbase	2,700mm
Engine	SKYACTIV-R
Powertrain	Front engine, rear-wheel drive
Tires	Front: 245/40R20 / Rear: 285/35R20
Rim width	Front: 9.5J / Rear: 11J

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# Mazda RX-VISION major specifications

# Mazda KOERU concept car

# Mazda KOERU concept car The all-new crossover concept proposed by Mazda

The Mazda KOERU crossover concept is making its Japanese debut in the Mazda Motor Corporation booth at this year's Tokyo Motor Show. It demonstrates Mazda's unique and daring interpretation of a crossover vehicle, proposed for the fast-growing crossover market. Featuring the full suite of Mazda's new-generation SKYACTIV TECHNOLOGY and designed under the KODO—Soul of Motion design language, the concept offers sporty yet delightfully refined styling and driving performance.

The name "KOERU," which literally means "exceed" or "go beyond" in Japanese, comes from Mazda's aspiration to deliver value that goes well beyond the existing category norms and standards. As the latest incarnation of Mazda's new-generation products, the Mazda KOERU crossover concept offers styling that exudes power, vitality and a new level of polished refinement. Targeted at customers with a cutting-edge mind-set, the Mazda KOERU is a bold challenge to the existing crossover market and embodies Mazda's on-going quest to deliver pure driving pleasure.

**Evolution of KODO design through the expression of "vitality" and "dignity"** One look at the Mazda KOERU reveals the qualities of KODO design — the power and vitality of a wild animal. Focusing on the expression of refined dignity, Mazda has imparted the KOERU with awe-inspiring proportions and an intriguing form that hints of a Japanese aesthetic. The outcome is an evolution of the KODO design theme adapted to the crossover vehicle.

Given a stronger presence than ever before, the signature wing is expressive of unwavering determination, whilst the LED guiding rings evoke the bright, strong-willed eyes of an untamed animal. A tight canopy and a modulating body generate a sense of speed and volume, creating a unique presence that sets the Mazda KOERU apart from existing crossover offerings. Highlights on the front and rear fenders extend towards the large wheels, suggesting powerful legs pounding the earth.

# Jinba-ittai driving performance and refined ride comfort

Throughout its history, Mazda has continually pursued responsive, exhilarating driving. Fully adopting the latest SKYACTIV technologies, the Mazda KOERU responds linearly to the driver's operations, providing a true *Jinba-ittai* driving experience.

Impressive aerodynamic performance is achieved by a sleek body shape and optimization of the airflow over the upper body, as well as creating a turbulence-rectifying under-floor structure. These elements also enhance vehicle stability when driving at speed. The Mazda KOERU is significantly quieter and more relaxing due to Mazda's breakthrough NVH technology that thoroughly quells noise and vibration paths. Those technologies deliver high-quality, amazingly refined driving not offered by the existing crossover vehicles on the market today.

Overall length x width x height	4,600mm x 1,900mm x 1,500mm
Wheelbase	2,700mm
Seating capacity	5 persons
Tires	265/45R21
Maior aveterna/tachralagiaa	i-ACTIVSENSE*1
Major systems/technologies	Mazda Connect*2

# Mazda KOERU major specifications and technologies

<sup>\*1</sup> i-ACTIVSENSE is an umbrella term covering a series of advanced safety technologies that have been developed in line with Mazda's safety philosophy, Mazda Proactive Safety which represents Mazda's thinking about safety, and focuses on understanding, respecting and trusting the human driver. Mazda aims to support the essential functions for safe driving, such as recognizing potential hazards, exercising good judgement and operating the vehicle in an appropriate fashion. These technologies are designed to help to prevent or reduce the damage resulting from an accident despite changing driving conditions.

<sup>\*2</sup> Mazda Connect is Mazda's new-generation car-connectivity system, developed in line with Mazda's unique human machine interface (HMI) concept called the Heads-Up Cockpit concept. The new-generation car-connectivity system was designed to support safe driving and driver concentration while the driver handles increasing amounts of information and maintains an appropriate driving posture. Mazda Connect is the name used in Japan, the US and Mexico. The system is referred to as MZD Connect in other markets.

# Mazda Spirit

# Mazda Spirit

Mazda introduced the "Zoom-Zoom" slogan in 2002 to represent its commitment to providing an exhilarating driving experience. The same spirit was behind Mazda announcing its "Sustainable Zoom-Zoom" long-term vision for technology development in 2007. This conveyed Mazda's commitment to build exciting vehicles that look inviting, are fun to drive and make you want to drive them again, and that will help to achieve an exciting, sustainable future for vehicles, people, and the Earth.

To this end, Mazda is promoting its Building-Block Strategy, which begins with introducing SKYACTIV TECHNOLOGY to improve all the basic performance aspects of its cars before incrementally introducing electronic devices. It is a commitment to building cars that will continue to provide true driving pleasure along with excellent environmental performance and safety.

To date, Mazda has launched six models in its new-generation product lineup, each of which incorporates SKYACTIV TECHNOLOGY, the KODO—Soul of Motion design language, and Mazda Proactive Safety philosophy. Concerted effort is also going into applying the latest advances in each of these technologies to the existing models. For example, in early 2015 the CX-5 and Atenza (Mazda6 outside Japan) each received major updates three years after their original release. Not settling for mere updates of their designs and functions, the models were evolved to a degree that surpasses the conventional notion of a mid-cycle update, introducing breakthrough advances and technologies that Mazda had never featured before. Aiming to further enhance the appeal of Mazda cars and to create an even stronger bond with customers, Mazda remains committed to building cars that reflect the company's spirit.

# [SKYACTIV TECHNOLOGY]

# SKYACTIV TECHNOLOGY

SKYACTIV TECHNOLOGY is the collective name for Mazda's comprehensive suite of innovative technologies that enhance the efficiency of powertrain components such as engine and transmission, reduce vehicle weight, improve aerodynamics, and more. First introduced in 2012 with the launch of the CX-5 and fully adopted since on the Atenza,

Axela (Mazda3 outside Japan), Demio (Mazda2), CX-3 and Roadster (MX-5), the six models that currently comprise Mazda's new-generation product lineup all benefit from SKYACTIV TECHNOLOGY.

- SKYACTIV-G high-efficiency direct-injection gasoline engine
- SKYACTIV-D clean diesel engine
- SKYACTIV-DRIVE high-efficiency automatic transmission
- SKYACTIV-MT high-efficiency manual transmission
- SKYACTIV-CHASSIS high-performance lightweight chassis
- SKYACTIV-BODY lightweight, high-rigidity body

#### [Mazda Design]

#### **KODO—Soul of Motion**

Throughout its history, Mazda Design has explored various forms that depict motion. This led to a focus on the power and graceful beauty seen in the instantaneous movement of animals or humans. One example can be found in the moment motion begins, such as when an animal gathers its strength and releases it to leap into action. It is a moment in which the most finely honed balance of strength and streamlined beauty is witnessed. In this instant, the viewer senses a burst of speed, a dignified tension and a refined beauty that is, in its own way, quite seductive. It is the intrinsic appeal of such motion that serves as the basis for the KODO design theme. This instantaneous movement filled with vitality and the emotions it stirs renders cars that adopt its appeal as entities that go beyond being mere lumps of steel and plastic to become a partner with which one forms an emotional bond, much like a favored horse. Mazda instills this appeal into each model of its lineup, thereby expressing a form of beauty as only Mazda can offer.

#### [MAZDA PROACTIVE SAFETY]

#### Mazda Proactive Safety

Averting risks early on minimizes the chances of an accident occurring and maximizes the driver's ability to operate the vehicle more safely. Based on this, Mazda's safety philosophy, Mazda develops and offers a range of technologies that help the driver recognize potential hazards, exercise good judgment and operate the vehicle in an appropriate fashion, thereby helping to prevent accidents and reduce the amount of damage should they occur.

#### i-ACTIVSENSE advanced safety technologies

i-ACTIVSENSE is a unique suite of advanced Mazda safety technologies developed in accordance with Mazda's safety philosophy. Employing monitoring and detection devices such as sensors and cameras, it helps promote safer driving by offering support in the three areas of driving support technologies, hazard recognition support technologies, and collision avoidance/damage reduction support technologies.

# Mazda Roadster Innovate in order to preserve. Creating a yet deeper expression of *Jinba-ittai*

"Joy of the moment, joy of life" was the product concept behind development of the fourth-generation Roadster (MX-5 outside Japan). More than a quarter century down the road since the launch of the original Roadster, Mazda focused on "innovating in order to preserve" to respond to current demands for environmental friendliness and greater safety, while carrying the Roadster's tradition of exhilarating driving pleasure on every type of road into the future. "Sensations" became the keyword for adding further polish to the Roadster's characteristic *Jinba-ittai* driving experience and "lots of fun" nature. Concerted effort went into evolving the Roadster through the adoption of KODO design and SKYACTIV TECHNOLOGY, and evolving the essence of what appeals to the senses and sensations through which people enjoy cars. Uncompromising design and a dedicated effort to reduce weight greatly enhance the Roadster's driving pleasure and raise the level of fun associated with every detail when it comes to owning, viewing and customizing the car, or simply meeting up with friends.

# [Design]

# A design that will set anybody's heart racing

Mazda's only desire was to satisfy its vision of how an open-top lightweight sports car (LWS) should look. It had to instantly light a fire of excitement in the hearts of all those who relate to the stance Mazda assumed in developing the model over the past quarter century, and who have been anticipating the launch of the fourth-generation Roadster.

By addressing every detail to achieve a layout that realizes the fundamental principles of a human-centric LWS design, the development team created an exterior design that is particularly striking when the top is down, with beautiful proportions that make the driver stand out and look good. The interior design features body panels that wrap around to extend right into the door trim and thereby dissolve the visual boundaries between the vehicle's interior and exterior. It is a design that attempts to heighten the pleasure of driving an open-top sports car by enabling the driver to experience the change in the surrounding environment in real time.

#### [Weight reduction]

# Back to its roots: Almost as light as the first-generation Roadster

Building a lightweight, compact open-top sports car has been the basic principle behind Roadster development since work began on the first-generation model. To continue carrying on this heritage, every detail of the fourth-generation Roadster was redesigned to achieve a radical reduction in weight.

SKYACTIV TECHNOLOGY pursues the ideal structure for the body, chassis and engine. Mazda applied its latest advances to optimize distribution of functions, introduce compact components, implement structural innovations, and increase the use of aluminum and other lightweight materials. At the same time, the new Roadster continues to advance the "gram strategy" that has played a major role in the development of all Mazda's sports cars to date. This calls for the elimination of every possible gram of expendable weight from every part on the car.

Tenaciously and cleverly applying these measures resulted in a significant weight reduction of more than 100kg\* over the previous generation. Weighing in at 990kg, the Japan-specification base grade Roadster is almost as light as the first-generation model. \*This figure varies according to the specific vehicle specification.

#### [Packaging]

# Striving for beautiful styling with pure driving pleasure

The new Roadster retains an amount of cabin space that is on par with the previous model, all while shortening the front and rear overhang as well as the wheelbase. In addition to evolving the front-midship engine, rear-wheel drive layout and lowering the hip-point, the development team also reduced the yaw inertia moment, lowered the center of gravity and established a 50:50 front-rear weight distribution. At the same time, creating a compact and well-toned looking cabin that naturally fits the seating position of its occupants helped achieve both proportions that make the occupants stand out and look as good as possible, and further enhance the car's driving dynamics and performance specifications for an even more exhilarating driving experience.

The cockpit positions the driver close to the ground toward the center of the car. The thorough efforts to make the driver feel as one with the car also include the layout of the control devices and the panoramic field of view from the driver's seat.

#### [Driving dynamics]

# Aiming for a dialogue between car and driver that leads to greater driving pleasure with every outing

In the area of driving dynamics, development aimed for an experience unique to the Roadster that would captivate all drivers. To this end, Mazda further refined the experience by which the driver converses with the car in a manner that makes driving more fun with every outing.

Working under the keyword "sensations," the goal for the new Roadster was to deliver faithful response with handling that matches the driver's intention in every driving scene. Development focused on enabling the driver to leverage the full potential of the car while operating it as though the Roadster is a natural extension of his or her own body. The pleasure of the *Jinba-ittai* driving experience by which the driver and Roadster communicate while taking corners with the rhythm the driver envisions is born of the "sensations" derived through masterful implementation of the latest advances SKYACTIV TECHNOLOGY has to offer.

# SKYACTIV TECHNOLOGY adopted on the new Mazda Roadster

# • High-efficiency SKYACTIV-G 1.5 direct-injection gasoline engine tuned especially for the FR layout

High compression ratio: 13.0:1 Maximum output: 96kW (131PS)/7,000rpm Maximum torque: 150N·m (15.3kgf·m)/4,800rpm

# • SKYACTIV-MT six-speed manual transmission for the FR layout

This new transmission retains the same short shift stroke and precise action at the flip of the wrist that has been a feature of the Roadster since the first generation, while at the same time realizing a light, smooth shift feeling and positive response in the hand.

#### Six-speed automatic transmission

The automatic transmission aims to deliver a direct shift feeling and excellent fuel economy, while the adoption of Drive Selection provides an even more direct feeling to gear changes.

#### • Lightweight, high-rigidity SKYACTIV-BODY

Based on the fundamental concept of using straight beams wherever possible and creating a continuous framework, the structure designed for this open-top LWS is built so the individual sections function in harmony. In addition, the use of aluminum and high-tensile steel provides safety and rigidity.

#### High-performance lightweight SKYACTIV-CHASSIS

Mazda thoroughly revised the suspension and steering functions to realize a fine balance between *Jinba-ittai* driving pleasure and a comfortable, confident driving experience.

[Open-top driving]

#### Design considerations for open-top driving pleasure

Mazda devoted itself to delivering open-top driving pleasure, using the unique sense of pure freedom one feels with all five senses when driving an open-top LWS as a development theme.

A new lightweight top developed to be easy to open or close while seated reduces the amount of force required for the task almost in half compared to the previous model. The fourth-generation Roadster also introduces a new function that automatically lowers the windows slightly when the lock levers are operated, thereby making it easier and more convenient to open and close the top. Rearward placement of the front header minimizes the amount of wind striking the occupants' heads or faces directly when driving with the top down and the windows wide open. It also helps to prevent unpleasant drafts from wrapping around from behind. At the same time, design changes that include the shape of the upper door trim actively guide a refreshing breeze to where it will be felt on the arms and chest.

#### [Environmental performance and safety]

# Original Mazda technologies deliver excellent environmental performance • i-ELOOP brake energy regeneration system

i-ELOOP instantaneously stores large amounts of electricity harvested from the vehicle's kinetic energy when braking for effective use later. This contributes to improved real-world fuel economy by reducing the load on the engine to generate electricity.

#### i-stop idling stop system

The i-stop system improves fuel economy by saving the gasoline wasted when stopped

in traffic or at a signal, while delivering smooth engine restarts for a more satisfying driving experience.

# Mazda's i-ACTIVSENSE advanced safety technologies

In addition to the linear response of its excellent driving performance, the new Roadster incorporates i-ACTIVSENSE, Mazda's comprehensive suite of advanced safety technologies. These technologies support the driver in recognizing potential hazards, avoiding collisions, and minimizing damage in the event an accident does occur. i-ACTIVSENSE helps the Roadster achieve a world-class level of safety. (Equipment features differ according to grade.)

# i-ACTIVSENSE technologies on the Mazda Roadster

# Hazard recognition support technologies

- · Blind Spot Monitoring (BSM) with Rear Cross Traffic Alert (RCTA) function
- · Adaptive Front-lighting System (AFS)
- · High-Beam Control system (HBC)
- · Lane Departure Warning System (LDWS)

# Mazda CX-3

# Mazda CX-3 Creating the standard for a new era

Since 2011, Mazda has completely reinvented each of its core models one by one through the application of its groundbreaking KODO — Soul of Motion design language and convention-defying SKYACTIV TECHNOLOGY. This led to developing the CX-3 as a vehicle capable of setting the standard for a new era. It features a stylish, quality design that benefits from the beautiful proportions born of KODO design. The CX-3 adopts the full suite of SKYACTIV TECHNOLOGY and has been carefully crafted to match human sensibilities in order to deliver performance that can be enjoyed without reservation. Its size and packaging aim to make it easy to use in the widest possible variety of situations. The product of Mazda's latest design and technologies, the CX-3 is a vehicle that can suit the diverse lifestyles of today's customers in any scene, from inner-city driving to enjoying the great outdoors.

#### [Design]

# Pursuing beauty and radical design with the latest iteration of KODO

The CX-3 expresses Mazda's KODO design language in the most stylish fashion as it takes on the challenge of not being fettered by preconceived notions and leaping far ahead of the pack.

For the exterior, the design team worked to create a straight expression of beauty and radical styling. Achieving this involved an uncompromising approach to refining the proportions that form the foundation of its beauty, painstaking efforts to eliminate every unnecessary element, and a refusal to be bound by styling preconceptions for any particular genres or categories. The interior adopts a styling theme that coordinates with the exterior in aiming for a deeper expression of high quality and stylish perspective. A concerted effort to achieve the appropriate expression to the ambience and fine textures of the materials used realizes a comfortable and sophisticated cabin environment.

# [Packaging]

# Packaging aimed at driving pleasure and true ease of use

In addition to applying the latest iteration of the KODO design language to realize its stylish proportions, the packaging for the CX-3 is designed to set a standard for a new era that is unfettered by any preconceptions.

In particular, a concerted effort went into developing a seating position that maximizes driving pleasure, the fun of mobility, and the ease of cabin entry and exit. Detailed ergonomic studies led to an eye-point setting that offers a clear view of the surrounding scenery, unobstructed by items such as guardrails. This combines with the car's low center of gravity to provide a seating position that enables the driver to drive comfortably with a feeling of confidence. Despite the relatively tall vehicle height, efforts to optimize hip-point height and the shape of the side sills realize excellent ease of cabin entry and exit with a minimum of burden on people of any size.

#### [Driving dynamics]

# Dynamic performance that provides unrestricted driving enjoyment

Mazda is in constant pursuit of driving pleasure and faithful response to the driver's will. Based on this philosophy, the CX-3 development team focused on delivering ease of handling on city streets, reassuring confidence on the highway, and, in particular, faithful response when negotiating gently curving rural roads.

By fully adopting SKYACTIV TECHNOLOGY and tuning all the characteristics to match human senses, Mazda produced light, linear response to the driver's actions along with the handling stability that helps define the *Jinba-ittai* driving experience. Attention to the powertrain includes the exclusive use of a diesel engine that produces powerful torque (on the Japanese specification CX-3.) With a reassuring feeling of power and excellent environmental performance, the CX-3's driving dynamics provide unrestricted driving enjoyment.

# SKYACTIV TECHNOLOGY adopted on the CX-3

# SKYACTIV-D 1.5 clean diesel engine

Low compression ratio: 14.8:1 Maximum output: 77kW (105PS)/4,000rpm Maximum torque: 270N·m (27.5kgf·m)/1,600-2,500rpm

#### • SKYACTIV-DRIVE six-speed automatic transmission

Features a direct feel similar to that of a manual transmission; contributes to fuel economy.

#### • Highly efficient SKYACTIV-MT six-speed manual transmission

Delivers a light and positive shift feeling that enhances driving pleasure.

# • Lightweight, high-rigidity SKYACTIV-BODY

The use of straight beams wherever possible and a continuous framework that makes the individual sections function in harmony aims to achieve a balance between high rigidity and light weight to deliver greater driving pleasure and improved collision safety.

#### High-performance lightweight SKYACTIV-CHASSIS

Mazda thoroughly revised the suspension and steering functions to realize a fine balance between the enjoyment of car and driver acting as one and a driving experience that brings comfort and reassuring confidence.

#### New-generation all-wheel-drive system i-ACTIV AWD

The front wheel slip warning detection system of Mazda's new-generation AWD system accurately monitors driving conditions in real time, making it possible to instantly distribute optimal torque where it is needed. Employing a compact, lightweight power take-off and rear differential unit along with a low-viscosity synthetic oil that maintains its low viscosity even in extremely cold weather helps minimize energy loss, the system realizes a fine balance between excellent drivability and stability characteristics and fuel economy.

#### [Environmental performance and safety]

# Original Mazda technologies deliver excellent environmental performance

#### • i-ELOOP brake energy regeneration system

i-ELOOP instantaneously stores large amounts of electricity harvested from the vehicle's kinetic energy when braking for effective use later. This contributes to improved real-world fuel economy by reducing the load on the engine to generate electricity.

#### i-stop idling stop system

The i-stop system improves fuel economy by saving the gasoline wasted when stopped in traffic or at a signal, while delivering smooth engine restarts for a more satisfying driving experience.

# Mazda's i-ACTIVSENSE advanced safety technologies

In addition to the linear response of its excellent driving performance, the CX-3 incorporates i-ACTIVSENSE, Mazda's comprehensive suite of advanced safety technologies. These technologies support the driver in recognizing potential hazards, avoiding collisions, and minimizing damage in the event an accident does occur. i-ACTIVSENSE helps the CX-3 achieve a world-class level of safety, including excellent collision safety performance. (Equipment features differ according to grade.)

# i-ACTIVSENSE technologies on the Mazda CX-3

# Hazard recognition support technologies

- · Blind Spot Monitoring (BSM) with Rear Cross Traffic Alert (RCTA) function
- · Adaptive Front-lighting System (AFS)
- · High-Beam Control system (HBC)
- · Lane Departure Warning System (LDWS)

#### Driver support technologies

Mazda Radar Cruise Control (MRCC)

# Collision avoidance and damage mitigation technologies

- Smart City Brake Support Forward (SCBS F) & Pre-collision Throttle Control – Forward (PTC F)
- Smart Brake Support (SBS)

# Mazda Demio

# Mazda Demio

# A subcompact to shatter all notions of class

The Demio (Mazda2 outside Japan) is the fourth model to join Mazda's new-generation product lineup in adopting the KODO — Soul of Motion design language and full range of SKYACTIV TECHNOLOGY, and the first new-generation product to condense the essential Mazda DNA into a subcompact model. The aim was to create a car that would "shatter all notions of the subcompact class," one that customers would feel demanded no compromises and would be truly proud to own. It features a beautiful design with remarkable presence, nimble performance with refined ride quality delivered by a small-displacement clean diesel engine and other systems, and excellent safety performance delivered by Mazda's advanced safety technologies. The Demio enhances all aspects of quality to overturn the conventional thinking that a car's value is proportionate to its size. Earning high acclaim for its ambition and product strength, the Mazda Demio won Japan's Car of the Year award for 2014-15.

# [Design]

# A design with presence and vitality that surpasses the class

Though Mazda's KODO — Soul of Motion design language was cultivated through its application on larger cars, re-engineering it to adapt to the Demio's small body created a new subcompact car that surpasses all generally accepted notions about what might be offered in this class.

The exterior design conveys an explosive sense of forward momentum engendered by concentrating energy into its compact body and presents a physique with a powerful stance. Fine craftsmanship creates a handsome and lively expression, while giving birth to a dynamic form full of vitality. The interior establishes a balanced contrast between a cockpit zone that enables the driver to concentrate on driving and a passenger seat zone that provides an open-feeling space. Every detail of the interior benefits from careful selection of all the materials and forms used within, creating a high-quality, crafted feel. In addition, the lineup of stylish, highly individualistic interior offerings features detailed attention to color coordination.

[Driving dynamics]

# Faithful response that delivers a fun and confident driving experience

The Demio carries on the characteristic of the other new-generation models in responding faithfully to the driver's will, while also further evolving aspects related to ease of in-town handling.

While inheriting the SKYACTIV TECHNOLOGY concept, every aspect was re-engineered for the B segment. It was the first model in the lineup to adopt the small-displacement SKYACTIV-D 1.5 clean diesel engine. Uncompromising attention to the body and chassis design includes Mazda's dedication to achieving an ideal driving position and pedal placement, and to delivering a high degree of collision safety. Whether driving on city streets, in the suburbs, or on the highway, the Demio delivers a reassuring driving experience that all can enjoy.

# SKYACTIV TECHNOLOGY adopted on the Mazda Demio

# • SKYACTIV-D 1.5 clean diesel engine

Low compression ratio: 14.8:1 Maximum output: 77kW (105PS)/4,000rpm Maximum torque: 250N·m (25.5kgf·m)/1,500-2,500rpm (FWD/6AT) 220N·m (22.4kgf·m)/1,400-3,200rpm (FWD/6MT)

# • High-efficiency SKYACTIV-G 1.3 direct-injection gasoline engine

High compression ratio: 12.0:1 Maximum output: 68kW (92PS)/6,000rpm Maximum torque: 121N·m (12.3kgf·m)/4,000rpm

# SKYACTIV-DRIVE six-speed automatic transmission

Features a direct feel similar to that of a manual transmission; contributes to fuel economy.

# • High-efficiency SKYACTIV-MT manual transmission

Delivers a light and positive shift feeling that enhances driving pleasure. The gasoline engine is paired with a five-speed, and the diesel engine is paired with a six-speed gearbox.

#### • Lightweight, high-rigidity SKYACTIV-BODY

The use of straight beams wherever possible and a continuous framework that makes the individual sections function in harmony aims to achieve a balance between high rigidity and lightweight to deliver greater driving pleasure and improved collision safety.

#### High-performance lightweight SKYACTIV-CHASSIS

Mazda thoroughly revised the suspension and steering functions to realize a fine balance between the enjoyment of car and driver acting as one and a driving experience that brings comfort and reassuring confidence.

#### New-generation all-wheel-drive system i-ACTIV AWD

The front wheel slip warning detection system of Mazda's new-generation AWD system accurately monitors driving conditions in real time, making it possible to instantly distribute optimal torque where it is needed. The Demio is equipped with a compact, lightweight power take-off and rear differential unit. A smoother flow of oil reduces resistance and helps minimize energy loss and the system delivers improved drivability and stability characteristics, as well as fuel economy.

#### [Environmental performance and safety]

# Original Mazda technologies deliver excellent environmental performance

#### • i-ELOOP brake energy regeneration system

i-ELOOP instantaneously stores large amounts of electricity harvested from the vehicle's kinetic energy when braking for effective use later. This contributes to improved real-world fuel economy by reducing the load on the engine to generate electricity.

#### i-stop idling stop system

The i-stop system improves fuel economy by saving the gasoline wasted when stopped in traffic or at a signal, while delivering smooth engine restarts for a more satisfying driving experience.

# Mazda's i-ACTIVSENSE advanced safety technologies

In addition to the linear response of its excellent driving performance, the Demio incorporates i-ACTIVSENSE, Mazda's comprehensive suite of advanced safety technologies. These technologies support the driver in recognizing potential hazards, avoiding collisions, and minimizing damage in the event an accident does occur. i-ACTIVSENSE helps the Demio achieve a world-class level of safety. (Equipment

features differ according to grade.)

# i-ACTIVSENSE technologies on the Mazda Demio

- Hazard recognition support technologies
- · Blind Spot Monitoring (BSM) with Rear Cross Traffic Alert (RCTA) function
- High-Beam Control system (HBC)
- · Lane Departure Warning System (LDWS)
- Collision avoidance and damage mitigation technologies
- $\cdot$  Smart City Brake Support Forward (SCBS F) &
- Pre-collision Throttle Control Forward (PTC F)

# Mazda Axela

# Mazda Axela THE MAZDA: Innovating the sports compact

Developed on the theme of "innovating the sports compact," the Axela (Mazda3 outside Japan) was the third model to join Mazda's new-generation product lineup. KODO design gives it a powerful sense of dynamic styling. SKYACTIV TECHNOLOGY delivers faithful response to the driver's will. Features such as i-ACTIVSENSE, Mazda's comprehensive suite of advanced safety technologies, and the Mazda Connect car connectivity system combine to create appeal that is experienced at first glance, again the moment you climb into the cabin, and that grows stronger the more you drive the Axela. It is also the first car from any of the Japanese makers to offer three powerplants in a single model in the domestic market, giving customers the choice between a gasoline, diesel or hybrid powertrain.

#### [Design]

# The immediate appeal of a distinctive and dynamic design

The application of KODO design instills the Axela with a sense of unbridled dynamism and a form that suggests strong forward momentum. One glance at the design evokes immediate anticipation of the exciting drive to come.

The powerful, rhythmical undulations of the exterior design create a sense of dynamism and concentrated mass. The body's proportions convey a sense of off-the-line power. The interior features a cockpit environment with a sense of speed created by a vector image placing an imaginary vanishing point ahead of the driver, a design balanced by the roomy, secure comfort afforded by the passenger zone. While items throughout the cabin adopt a simple design, the contrast of textures used to create accents realizes a sophisticated ambience with emotional appeal.

#### [Driving dynamics]

# Every passing mile deepens the *Jinba-ittai* connection between car and driver

Mazda has constantly strived to deliver the satisfying performance of faithful response to the driver's will. The true pleasure of the *Jinba-ittai* driving experience has been a top priority since the first-generation Axela and cannot be achieved through speed and power

alone. The latest model further enhances this driving pleasure by fully adopting SKYACTIV TECHNOLOGY in its engine, transmission, body and chassis.

Lively acceleration and a pleasing engine sound respond directly to the subtlest variations in accelerator input. Excellent straight-line stability at high speed is realized together with a refined and comfortable ride feel. Every element of the Axela has been crafted with the greatest importance placed on human senses, resulting in an even greater feeling of unity between car and driver. Also offered for the first time in the lineup is the SKYACTIV-HYBRID power plant, which achieves a fine balance of excellent fuel economy and the driving pleasure one expects from Mazda.

#### SKYACTIV TECHNOLOGY adopted on the Mazda Axela

#### • SKYACTIV-D 2.2 clean diesel engine

Low compression ratio: 14.0:1 Maximum output: 129kW (175PS)/4,500rpm Maximum torque: 420N·m (42.8kgf·m)/2,000rpm

#### • High-efficiency SKYACTIV-G 1.5 direct-injection gasoline engine

High compression ratio: 13.0:1 Maximum output: 82kW (111PS)/6,000rpm Maximum torque: 144N·m (14.7kgf·m)/3,500rpm

#### • High-efficiency SKYACTIV-G 2.0 direct-injection gasoline engine

High compression ratio: 13.0:1 Maximum output: 114kW (155PS)/6,000rpm Maximum torque: 196N·m (20.0kgf·m)/4,000rpm

#### SKYACTIV-HYBRID Mazda hybrid system

Total output of the system: 100kW (136PS) Dedicated SKYACTIV-G 2.0 High compression ratio: 14.0:1 Maximum output: 73kW (99PS)/5,200rpm Maximum torque: 142N·m (14.5kgf·m)/4,000rpm Motor Motor Maximum output: 60kW (82PS) Maximum torque: 207N·m (21.1kgf·m)

#### SKYACTIV-DRIVE six-speed automatic transmission

Features a direct feel similar to that of a manual transmission; contributes to fuel economy.

#### • High-efficiency SKYACTIV-MT six-speed manual transmission

Delivers a light and positive shift feeling that enhances driving pleasure.

# • Lightweight, high rigidity SKYACTIV-BODY

The use of straight beams wherever possible and a continuous framework that makes the individual sections function in harmony aims to achieve a balance between high rigidity and lightweight to deliver greater driving pleasure and improved collision safety.

#### • High-performance lightweight SKYACTIV-CHASSIS

Mazda thoroughly revised the suspension and steering functions to realize a fine balance between the enjoyment of car and driver acting as one and a driving experience that brings comfort and reassuring confidence.

#### New-generation all-wheel-drive system i-ACTIV AWD

The front wheel slip warning detection system of Mazda's new-generation AWD system accurately monitors driving conditions in real time, making it possible to instantly distribute optimal torque where it is needed. Detecting slip before it occurs and eliminating unnecessary torque distribution greatly reduces energy loss. As a result, the system delivers improved drivability and stability characteristics, as well as fuel economy

#### [Environmental performance and safety]

# Original Mazda technologies deliver excellent environmental performance

#### • i-ELOOP brake energy regeneration system

i-ELOOP instantaneously stores large amounts of electricity harvested from the vehicle's kinetic energy when braking for effective use later. This contributes to improved real-world fuel economy by reducing the load on the engine to generate electricity.

#### i-stop idling stop system

The i-stop system improves fuel economy by saving the gasoline wasted when stopped in traffic or at a signal, while delivering smooth engine restarts for a more satisfying driving experience.

# Mazda's i-ACTIVSENSE advanced safety technologies

In addition to the linear response of its excellent driving performance, the Axela incorporates i-ACTIVSENSE, Mazda's comprehensive suite of advanced safety technologies. These technologies support the driver in recognizing potential hazards, avoiding collisions, and minimizing damage in the event an accident does occur. i-ACTIVSENSE helps the Axela achieve a world-class level of safety. (Equipment features differ according to grade.)

# i-ACTIVSENSE technologies on the Mazda Axela

# Hazard recognition support technologies

- · Blind Spot Monitoring (BSM) with Rear Cross Traffic Alert (RCTA) function
- Rear Vehicle Monitoring system (RVM) (Available only on hybrid models)
- · Adaptive Front-lighting System (AFS)
- · High-Beam Control system (HBC)
- · Lane Departure Warning System (LDWS)

#### Driver support technologies

· Mazda Radar Cruise Control (MRCC)

#### Collision avoidance and damage mitigation technologies

- Smart City Brake Support Forward (SCBS F) & Pre-collision Throttle Control – Forward (PTC F)
- Smart Brake Support (SBS)

# Mazda Atenza

# Mazda Atenza Mazda's flagship model achieves a new level of polish

Mazda released the third-generation Atenza (Mazda6 outside Japan) in 2012 as the second entry in its new-generation product lineup. Embodying Mazda's unique product values as the lineup's flagship model, the Atenza combines styling that conveys KODO design's powerful sense of vitality with the driving pleasure and environmental and safety performance delivered by SKYACTIV TECHNOLOGY.

The model was updated in January 2015, introducing further refinements of a level that surpasses all previous conventions. It not only introduced the latest in advanced safety technologies and added an AWD model to the offerings, but also further refined the design. Of special note is the interior, which introduced major innovations in the forms and textures employed. The aim was to bring a new level of polish and maturity to the Atenza as befits the flagship model within the current product lineup.

#### [Design]

# Distinctive KODO design combines dynamic proportions with a uniquely Japanese esthetic

The Atenza's design fuses an air of intellect and elegance with that emotional appeal of its dynamic shape to realize a strong presence. The update in 2015 aimed to present a yet bolder image and even more distinguished look as is fitting of the lineup's flagship model. The exterior design features the signature wing and LED headlamp lighting signature that have come to signify the latest iteration of the Mazda brand. This creates a look of greater dimensionality and depth to realize a bolder, more profound expression. The innovative new interior design introduces the Heads-up Cockpit based on Mazda's new Human-Machine Interface (HMI) concept and provides greater comfort and a heightened feeling of openness to realize a sophisticated air and a cabin environment of perceptibly higher quality.

# [Driving dynamics]

# The exhilarating harmony of the Jinba-ittai driving experience

The Atenza fully utilizes Mazda's SKYACTIV TECHNOLOGY to create the union between car and driver that is necessary to realize the pleasures of an exhilarating driving

experience. By focusing on appealing to all the driver's sensibilities for every aspect of driving dynamics, from the feeling of power control to braking performance, quality and agility combine with handling faithful to the driver's intentions to realize a high level of driving performance appropriate to Mazda's flagship model.

Measures implemented as part of the update in 2015 to realize a quality ride that is smooth, flat and extremely comfortable included the adoption of a new structure for the front and rear dampers along with optimized bushing shapes for the front lower arms. Additional polish was added to the flagship model's already excellent high-speed straight-line stability and handling faithful to the driver's intentions. A new-generation AWD system was also newly adopted for the Atenza powered by the SKYACTIV-D 2.2 engine. The system realizes a fine balance between excellent drivability and stability characteristics and fuel economy.

#### SKYACTIV TECHNOLOGY adopted on the Mazda Atenza

#### SKYACTIV-D 2.2 clean diesel engine

Low compression ratio: 14.0:1 Maximum output: 129kW (175PS)/4,500rpm Maximum torque: 420N·m (42.8kgf·m)/2,000rpm

#### • High-efficiency SKYACTIV-G 2.0 direct-injection gasoline engine

High compression ratio: 13.0:1 Maximum output: 114kW (155PS)/6,000rpm Maximum torque: 196N·m (20.0kgf·m)/4,000rpm

#### • High-efficiency SKYACTIV-G 2.5 direct-injection gasoline engine

High compression ratio: 13.0:1 Maximum output: 138kW (188PS)/5,700rpm Maximum torque: 250N·m (25.5kgf·m)/3,250rpm

#### SKYACTIV-DRIVE six-speed automatic transmission

Features a direct feel similar to that of a manual transmission; contributes to fuel economy.

# High-efficiency SKYACTIV-MT six-speed manual transmission

Delivers a light and positive shift feeling that enhances driving pleasure.

#### • Lightweight, high rigidity SKYACTIV-BODY

The use of straight beams wherever possible and a continuous framework that makes the individual sections function in harmony aims to achieve a balance between high rigidity and lightweight to deliver greater driving pleasure and improved collision safety.

#### High-performance lightweight SKYACTIV-CHASSIS

Mazda thoroughly revised the suspension and steering functions to realize a fine balance between the enjoyment of car and driver acting as one and a driving experience that brings comfort and reassuring confidence.

# New-generation all-wheel-drive system i-ACTIV AWD

The front wheel slip warning detection system of Mazda's new-generation AWD system accurately monitors driving conditions in real time, making it possible to instantly distribute optimal torque where it is needed. Other measures implemented to minimize energy loss include the use of a low-viscosity synthetic oil that maintains its low viscosity even in extremely cold weather. The system realizes a fine balance between excellent drivability and stability characteristics and fuel economy.

#### [Environmental performance and safety]

# Original Mazda technologies deliver excellent environmental performance • i-ELOOP brake energy regeneration system

i-ELOOP instantaneously stores large amounts of electricity harvested from the vehicle's kinetic energy when braking for effective use later. This contributes to improved real-world fuel economy by reducing the load on the engine to generate electricity.

#### i-stop idling stop system

The i-stop system improves fuel economy by saving the gasoline wasted when stopped in traffic or at a signal, while delivering smooth engine restarts for a more satisfying driving experience.

# Mazda's i-ACTIVSENSE advanced safety technologies

In addition to the linear response of its excellent driving performance, the Atenza incorporates i-ACTIVSENSE, Mazda's comprehensive suite of advanced safety technologies. These technologies support the driver in recognizing potential hazards, avoiding collisions, and minimizing damage in the event an accident does occur.

i-ACTIVSENSE helps the Atenza achieve a world-class level of safety. (Equipment features differ according to grade.)

# i-ACTIVSENSE technologies on the Mazda Atenza

# Hazard recognition support technologies

- · Active LED Headlights (ALH)
- · Blind Spot Monitoring (BSM) with Rear Cross Traffic Alert (RCTA) function
- · Lane-keep Assist System (LAS) & Lane Departure Warning System (LDWS)
- · Driver Attention Alert (DAA)
- · Adaptive Front-lighting System (AFS)

# Driver support technologies

Mazda Radar Cruise Control (MRCC)

# Collision avoidance and damage mitigation technologies

- Smart City Brake Support Forward (SCBS F) & Pre-collision Throttle Control – Forward (PTC F)
- Smart City Brake Support Reverse (SCBS R) &
  Pre-collision Throttle Control Reverse (PTC R)
- · Smart Brake Support (SBS)

# Mazda CX-5

# Mazda CX-5 Mazda's new-generation crossover SUV delivers advanced driving pleasure

The CX-5 crossover SUV debuted in 2012 as the first model in the new-generation product lineup of Mazda vehicles featuring the KODO design theme and adopting the full range of SKYACTIV TECHNOLOGY. Introduced in the engines, body and chassis, SKYACTIV TECHNOLOGY provided the CX-5 with precise response and a high-quality, rewarding ride matched with outstanding environmental and safety performance.

A major update in January 2015 brought greater refinement to a variety of elements, including design, the quality and functionality of the interior, ride comfort and quietness, as well as safety performance.

#### [Design]

# A sophisticated design that speaks of power and boldness

The CX-5 leverages the unique qualities of KODO design, to embody the graceful, athletic movements of an animal in a manner that creates a fitting image for an SUV. The 2015 update raised the bar in terms of the powerful presence of the CX-5 as a crossover SUV, as well as its level of quality. It realized a sophisticated design that conveys the evolution of the brand.

The exterior retains the tough, active, functional appearance that is characteristic to a crossover SUV, while introducing a more sophisticated front grille design and an even bolder, more powerful image. The interior retains control design and positioning that supports confident operation, while particular effort for this round's update went into enhancing quality throughout. The design of the center stack and floor console were greatly evolved, while the coordination of the ornamentation and mating of parts aim to achieve a unified look. In addition to SUV functionality and a look of power, the new interior design conveys a sense of taste and high quality.

#### [Driving dynamics]

# Focus on predictable and responsive handling,

#### for a more refined and enjoyable driving experience

With regard to dynamic performance, Mazda concentrated on maximizing the enjoyment provided by predictable, responsive handling. In other words, the focus was on ensuring the car responds exactly as the driver intends and anticipates. The full suite of SKYACTIV TECHNOLOGY was adopted and Mazda's human-centric approach applied to assure maximum ease of use in every interface between car and driver, including the field-of-view and visibility. The update in 2015 aimed to realize a yet smoother, flatter ride that is even more comfortable by introducing a new structure for the front and rear dampers, optimized bushing shapes for the front lower arms, and by adopting Drive Selection on the SKYACTIV-DRIVE automatic transmission on vehicles powered by gasoline engines. The result brings an even more sophisticated and higher quality driving experience to the CX-5's dynamic performance, which already delivered the driving pleasure of faithful response to the driver's will and a sense of oneness between driver and car.

# SKYACTIV TECHNOLOGY adopted on the Mazda CX-5

#### • SKYACTIV-D 2.2 clean diesel engine

Low compression ratio: 14.0:1 Maximum output: 129kW (175PS)/4,500rpm Maximum torque: 420N·m (42.8kgf·m)/2,000rpm

#### • High-efficiency SKYACTIV-G 2.0 direct-injection gasoline engine

High compression ratio: 13.0:1 Maximum output: 114kW (155PS)/6,000rpm Maximum torque: 196N·m (20.0kgf·m)/4,000rpm

# • High-efficiency SKYACTIV-G 2.5 direct-injection gasoline engine

High compression ratio: 13.0:1

Maximum output:	138kW (188PS)/5,700rpm (FWD)
	135kW (184PS)/5,700rpm (AWD)
Maximum torque:	250N·m (25.5kgf·m)/3,250rpm (FWD)
	245N⋅m (25.0kgf⋅m)/4,000rpm (AWD)

#### SKYACTIV-DRIVE six-speed automatic transmission

Features a direct feel similar to that of a manual transmission; contributes to fuel

#### economy.

#### • Lightweight, high rigidity SKYACTIV-BODY

The use of straight beams wherever possible and a continuous framework that makes the individual sections function in harmony aims to achieve a balance between high rigidity and lightweight to deliver greater driving pleasure and improved collision safety.

#### High-performance lightweight SKYACTIV-CHASSIS

Mazda thoroughly revised the suspension and steering functions to realize a fine balance between the enjoyment of car and driver acting as one and a driving experience that brings comfort and reassuring confidence.

#### New-generation all-wheel-drive system i-ACTIV AWD

The front wheel slip warning detection system of Mazda's new-generation AWD system accurately monitors driving conditions in real time, making it possible to instantly distribute optimal torque where it is needed. Other measures implemented to minimize energy loss include the use of a low-viscosity synthetic oil that maintains its low viscosity even in extremely cold weather. The system realizes a fine balance between excellent drivability and stability characteristics and fuel economy.

#### [Environmental performance and safety]

# Original Mazda technologies deliver excellent environmental performance • i-stop idling stop system

The i-stop system improves fuel economy by saving the gasoline wasted when stopped in traffic or at a signal, while delivering smooth engine restarts for a more satisfying driving experience.

#### Mazda's i-ACTIVSENSE advanced safety technologies

In addition to the linear response of its excellent driving performance, the CX-5 incorporates i-ACTIVSENSE, Mazda's comprehensive suite of advanced safety technologies. These technologies support the driver in recognizing potential hazards, avoiding collisions, and minimizing damage in the event an accident does occur. i-ACTIVSENSE helps the CX-5 achieve a world-class level of safety. (Equipment features differ according to grade.)

# i-ACTIVSENSE technologies on the Mazda CX-5

# Hazard recognition support technologies

- · Active LED Headlights (ALH)
- · Blind Spot Monitoring (BSM) with Rear Cross Traffic Alert (RCTA) function
- · Lane-keep Assist System (LAS) & Lane Departure Warning System (LDWS)
- Driver Attention Alert (DAA)
- · Adaptive Front-lighting System (AFS)

# Driver support technologies

Mazda Radar Cruise Control (MRCC)

# Collision avoidance and damage mitigation technologies

- Smart City Brake Support Forward (SCBS F) & Pre-collision Throttle Control – Forward (PTC F)
- Smart City Brake Support Reverse (SCBS R) &
  Pre-collision Throttle Control Reverse (PTC R)
- · Smart Brake Support (SBS)

# Mazda's Motorsports Activities

# Providing a variety of experiences that bring Mazda's unique driving pleasure to a broader audience

The history of Mazda's participation in motorsports also reflects its history of challenging conventions. One symbolic example is Mazda's challenge of running rotary engine powered cars in the 24 Hours of Le Mans endurance race. Mazda's persistence and competitive spirit paid off in 1991 when, 18 years after first taking on the challenge, its team entered the first Japanese car to finish as the race's overall winner.

Today, Mazda continues to compete in the motorsports arena in the USA, Australia, Thailand, China, and other countries around the world. Concurrently, its "Be a driver" Mazda Driving Academy teaches driving basics and skills that promote a safer, more enjoyable driving experience. Mazda hosts open motorsports events for drivers who wish to experience the excitement of racing on a circuit; and it also makes cars designed as base vehicles for use in open motorsports events. Great effort focused on all these activities aims to bring Mazda's fun-to-drive experience even closer to its customers.

# "Be a driver" Mazda Driving Academy in Japan

Mazda established its own driving academy as a venue to provide driver training and experience that goes beyond the simple pleasure of operating the vehicle by teaching the techniques and principles behind safe driving. Drivers who participate in the academy gain the experience of driving around a circuit while practicing the basics of driving, turning and stopping. The academy includes seminars in which participants gain an understanding of Mazda's approach to building cars, as well as a hands-on opportunity to experience the various functions of the car. In addition to exposing a greater number of customers to Mazda's commitment to delivering driving pleasure, the curriculum is designed to respond to each participant's needs and level of experience, helping them improve their driving technique while promoting greater awareness of safe driving.

#### **Open motorsports events**

Mazda is staging open motorsports events in which customers can participate freely. Drivers enter their own cars into the events. These include the "Mazda Fan Circuit Trial" where the cars are divided into classes based on the model and engine displacement and drivers compete to see who achieves the fastest lap time, and also the two-and-a-half hour "Mazda Fan Endurance" where drivers test their abilities to achieve a balance between speed and fuel economy.

One of the most authentic racing events in this open motorsports program is the one-make Global MX-5 Cup race scheduled for 2016. Drivers will compete locally in their home region, and those who earn the best results will then proceed to the global championships to determine the world champion. The MX-5 powered by the SKYACTIV-G 2.0 gasoline engine (export specification) will be the base platform for all races in the series.

#### Base vehicles for use in motorsports events

For the one-make Roadster Party Race II series that Mazda has run in Japan since 2002, Mazda has set up a new NR-A specification MX-5\* as the base vehicle for the ND class races scheduled for introduction in 2016. A new 15MB grade Mazda Demio is also planned with equipment features including a SKYACTIV-G 1.5 gasoline engine paired with a six-speed manual SKYACTIV-MT transmission. This specification will serve as the base vehicle for circuit runs, gymkhana events, and rally racing.

The specifications make these base vehicles legal for street use, so they are equipped to provide driving pleasure in a wide variety of scenes.

\*Entry in the Party Race requires the separate purchase of special equipment to satisfy safety regulations, such as an approved roll bar and dedicated tires.

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Mazda Global Site <u>http://www.mazda.com/</u> Mazda Social Media Official Site (Facebook, YouTube, Pinterest) <u>http://www.mazda.com/socialmedia/</u>

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