All-New 2014 Mazda3

Global Press Material

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USAGE GUIDELINE

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1. MESSAGE FROM THE PROGRAM MANAGER

Mazda3: Innovating the sports compact

Since the launch of the first generation in 2003, through the second generation and up to the present, the Mazda3 has consistently exceeded both customers' expectations and the industry standards. Responsive handling ensures driving pleasure while excellent environmental and safety performance is topped off with an emotive design complemented by the highest level of craftsmanship. It is no surprise then, that the Mazda3 has established itself as one of Mazda's core models. It is sold in more than 120 countries around the world and accounts for more than 30 percent of Mazda's annual sales volume. Total cumulative sales since the model was launched now exceed 3.5 million units.

There is no doubt that the Mazda3 represents the Mazda brand, and in order to take this key model to the next level, we made it our mission to deliver a product which would exceed the expectations of both long-standing fans and potential new customers. We knew that in addition to further enhancing the vehicle's basic performance and delivering a generous serving of Mazda's renowned driving pleasure, it was essential to offer something new; something never before seen in the segment.

Therefore, we made "innovating the sports compact" our theme, and set about achieving this innovation by considering the vehicle from the customers' point of view. Our aim was to appeal to the customer on two different levels. We wanted to create a "stunning first impression that captures the eye and increases in impact when you climb inside" as well as "a deeper-level appeal that customers will come to understand and appreciate more fully over the years of ownership." The dynamic design captivates viewers at first glance and drivers will note the nimble and linear feedback the first time they get behind the wheel. Of course any model must offer *Jinba Ittai* to be worthy of the Mazda emblem, but our goal with the Mazda3 was that this Mazda-unique experience of unity between car and driver would become stronger and deeper with each passing mile. The Human Machine Interface (HMI), packaging, high-quality interior, and outstanding environmental and safety performance all incorporate this quest to appeal to the customer on a deeper level; to make the vehicle something more akin to a life partner than a simple possession.

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Like the CX-5 and the Mazda6 which preceded it, the all-new Mazda3 brings together the very best Mazda has to offer. At a single glance, the design conveys the unique, instantaneous power of which the Mazda3 is capable. The dynamic expressions of KODO design, from the broad powerful stance, to the bold and rhythmical undulations of the body surface, suggest the exhilarating drive that awaits. The model employs the full suite of SKYACTIV technologies, which delivers both *Jinba Ittai* driving and outstanding environmental performance. It also offers the driver peace of mind, with a wide selection of Mazda's advanced safety technologies dubbed i-ACTIVSENSE. At Mazda, we have always aimed to offer customers driving pleasure and this compelling package ensures the all-new Mazda3 is no exception.

Furthermore, a new car connectivity system that broadens the scope of that driving pleasure is being introduced for the first time with the all-new Mazda3. The new Human Machine Interface (HMI) is designed with ergonomics in mind and places the greatest emphasis on driving safety.

Our approach to the development the new generation model was not to simply benchmark the figures of competitor's models, but rather to consider how we want the customer to use and appreciate the car. As a result the most basic elements of an automobile; dynamic performance, packaging, ride comfort and quality to name but a few, have been raised to a new level.

The all-new Mazda3 is the product of the passion and uncompromising challenging spirit of the R&D team who worked tirelessly to deliver driving pleasure in every area and create a car that exceeds the expectations of the segment. It is our sincere hope that the all-new Mazda3 will win the hearts of customers around the world and will hold a special place in their lives for many, many years to come.

Kenichiro Saruwatari

Mazda3 Program Manager

2. DESIGN

Message from the Chief Designer

A design that will win the customer's heart at first sight

Since the launch of the original model, the Mazda3's design has earned high acclaim around the world for the bold, energetic lines of its finely sculpted form. In developing the design for the all-new Mazda3, our team set out to evolve Mazda's distinctive C-car design. We were resolved to create a car design that would make the new Mazda3 an object of desire.

A great variety of cars exist in the world, as do design expressions. However, even if a design possesses unique character, it does not necessarily mean it will earn the owner's affection or encourage the desire for a long relationship with the model. At Mazda, we have long believed in the importance of firmly setting a design theme and clearly expressing that commitment in the cars we build. This is the way to win the hearts of customers, regardless of country or culture, and to ensure that the appeal of the model doesn't wear off for the full length of their relationship with their Mazda.

The new Mazda3 is the third model to incorporate Mazda's KODO design language. At its heart, KODO expresses dynamic motion in every detail and maximizes the distinct appeal of each Mazda model. In applying this to the new Mazda3, I adopted the Japanese phrase '*shunpatsu yuhatsu*' as our development slogan. The meaning symbolizes design strength that lights a fire within the heart at first sight while also evoking anticipation of new dreams and exciting new experiences to come. In contrast to the powerful dynamism of the new Mazda6's design, which befits a CD-car, we pursued a rhythmical look for the new Mazda3 design that displays energetic tension.

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At the same time, we aimed for a design that will earn the new Mazda3 a place in the hearts of customers as a trusty partner rather than a mere means of conveyance, a pleasing design with unfading appeal. From the way light reflects off the surface of the body to the way plated parts look like real metals, the development team devoted attention to every detail in building the Mazda3 to embody this feeling.

I am confident the passion with which we designed the new Mazda3 makes it a car that will immediately charm all who look upon it, that will prove an enduring partner that brings greater pleasure to the owner’s life, and that will be cherished by many for the life of the car.

Koji Tabata
New Mazda3 Chief Designer

Distinctive and dynamic Mazda3 design

The application of the KODO “Soul of Motion” design theme resulted in a total transformation of the design of the Mazda3. A powerful stance that makes the car look firmly planted on the ground creates a sense of dynamism. One glance at the vehicle and its expression of forward motion evokes anticipation of the exciting drive to come. The rhythmical undulations of the exterior surface complement KODO design’s expression of motion and the proportions convey a sense of off-the-line power.

The interior features a cockpit environment that has been designed around a vector image created by an imaginary vanishing point positioned directly in front of the driver. The lines of this design and a single finely-crafted meter draw the driver’s focus to the road ahead. The cockpit is balanced with a comfortable passenger area that is roomy and feels secure. The overall decorative expression for the interior is emotive and sophisticated, with high-contrast touches and a lustrous finish heightening anticipation of a pleasant driving experience the moment the door is opened.

Exterior design

Mazda aimed to take the sporty, dynamic form of previous-generation Mazda3s and evolve the design by incorporating KODO. This involved positioning the compact cabin back in the vehicle’s stance and emphasizing agility and speed by creating a raked profile that rises dramatically toward the rear. The wheelbase has been stretched and the large-diameter wheels moved as much as possible into the four corners of the vehicle. These are highlighted by boldly flared fenders, creating a wide, strong stance and expressing the new Mazda3’s excellent maneuverability.

Front view

As with the CX-5 compact SUV and Mazda6 midsize sedan, the front grille and signature wing of the new Mazda3 create a distinctive design identity. Viewers will recognize at a glance that this is one of Mazda’s new-generation products.

To help heighten the look of sporty performance, the grille is positioned low on the face and the license plate holder is incorporated into the grille. Emphasizing the low nose expresses a strong sense of forward motion. The thick, bold horizontal bars in the grille establish a three-dimensional look with eye-catching appeal.

The signature wing appears to be chiseled from solid metal, giving it a sculpted finish that suggests quality and depth. The tips of the wing merge into the headlamps, which are designed to resemble the sharp eyes of a predatory animal. Separating them from the turn signals, which are now positioned above the fog lamps, enhances their sleek shape. Attention was devoted to all details of the headlamp construction, including the inner moldings, surface treatment and cut design of the inner lenses. In addition, a lighting signature consisting of an LED light source, inner lens and light-guiding ring further emphasizes the integrated look of the signature wing and creates strong presence when illuminated.

Side view

Dynamic lines express motion in a rhythmical flow that extends from the signature wings at the front across the headlamps and front fenders and along the sides to the rear. As one of the Mazda3's significant design features, the fender shapes create more dramatic three-dimensional contours and taller peaks positioned closer to the center of the body. The resulting design evokes anticipation of nimble performance and driving excitement.

The rear quarter windows of the previous model have been eliminated and the upsweeping beltline finishes within the front and rear doors. This sleek styling makes the cabin look more compact while helping to maintain rearward visibility. The hatchback's license plate holder is positioned on the tailgate rather than on the rear bumper, where it was located on the previous model. This emphasizes the short rear overhang and heightens the overall effect of forward motion.

Rear view

The new Mazda3 inherits a number of distinguishing features from the previous generations, including its boldly contoured fenders, wide stance and the V-shaped rear window of the hatchback. It then adopts the characteristic form of KODO design that heightens the impression of energy being concentrated in the rear of the car. One example is the tailgate garnish of the hatchback. Its trapezoidal shape expands outward toward the bottom, creating a look of volume and a strong stance.

The sleek, compact shape of the rear combination lamps establishes a unified look with the headlamps. Tail lamp rings add sporty flair, while two-tone black and silver internal finishing enhances the look of quality when the lamps are not illuminated. High-grade models feature a wing-shaped illumination signature that extends from either side of the top of the tail lamp rings.

The roof spoiler on the hatchback and rear spoiler on the sedan emphasize the sense of speed expressed throughout the body design.

Wheel design

The lineup of 18-inch aluminum wheels, 16-inch aluminum wheels and 16-inch steel wheels with full wheel caps are designed to express dynamic motion from hub to rim. They also show a combination of sure-footed stability and nimbleness.

The dynamic twists in the spokes of the 18-inch aluminum wheels create a strong character with three-dimensional impact that further accentuates the overall stance. While adopting a relatively simple design for the 16-inch aluminum wheels, height variations incorporated into the spokes create a three-dimensional look. For the steel wheels, variations in surface height combine with bold twists to overcome the challenge of giving the full wheel caps a three-dimensional look.

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Interior design

The interior design goal for the new Mazda3 was to create a driver-oriented environment that makes customers want to get in and drive away the instant they open the door, while at the same time realizing a roomy, comfortable environment for the passenger. To create an environment that allows the driver to naturally focus on the road ahead, Mazda's design team created a theoretical vanishing point directly ahead of the driver, and subsequently designed all elements within the cabin to flow along the lines projecting back from this single point. In addition to creating a snug-fitting cockpit environment that helps the driver to focus on driving, this design method helped to achieve an open yet secure-feeling environment for the front seat passenger and rear seats that do not feel cut off from the front. As a result, all occupants feel that they can fully enjoy the driving experience together.

As part of a layout that aims to make the driver feel physically at one with the car, the center of the driver's seat lines up along the same front-rear axis as the steering wheel and single, centrally-positioned analogue meter.

Each item in the interior projects a simple unified design expression, with accents and contrasting textures emphasizing the quality finish.

Cockpit design

● Active Driving Display

The new Mazda3 introduces a newly-developed heads-up display system called Active Driving Display. Vehicle speed, turn-by-turn directions from the navigation system and other important driving information are displayed a clear panel vertically mounted above the meter hood.

(Please refer to p.46 for more information on the Active Driving Display.)

● Meters

The new meter cluster design features a centrally positioned analog meter surrounded by a pair of wing-shaped digital displays. The three-dimensional dial face of the meter is surrounded by a metallic ring, heightening the impression of fine craftsmanship. The high-grade specification Mazda3 equipped with Active Driving Display employs an analog tachometer in the center with a digital speedometer incorporated in the bottom right corner. Other trim levels place a speedometer in the center and a tachometer in the digital display wing on the left. On all grades, the wing on the right displays the external temperature, fuel level, as well as various indicators related to safety equipment. A carbon-fiber-look material introduced on the meter hood adds to the interior's sporty ambience.

● Steering wheel

The black leather steering wheel for the new Mazda3 features contrasting red stitching that heightens the interior's sporty image. The left and right spokes of the three-spoke wheel incorporate operational switches and are finished in carbon-fiber-look material, while the vertical lower spoke is finished in satin chrome.

● Shift lever

Shift lever designs for the new Mazda3 aim for a sporty look and excellent operating feel. The shift knob for the automatic transmission was developed with ergonomics in mind, resulting in a design that is easy to operate, fits snugly into the driver's palm and makes the driver feel fully engaged with the car. Further emphasizing its sporty appearance, the shift knob is covered in leather and satin chrome plating. For both the automatic and manual transmissions, the design includes the use of a shifter boot. The shifter boot and parking brake lever for the high-grade specification feature the same red stitching as the leather steering wheel.

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Instrument panel design

The new Mazda3 is the first Mazda vehicle to position the center display for the audio and navigation systems on top of, rather than set into, the dashboard. A long horizontal decorative panel extends across the passenger seat side, making the area feel wider.

Raised forms in the left and right corners of the dashboard suggest lines that appear to begin at the theoretical vanishing point in front of the driver and extend uninterrupted through the cabin as far back as the B-pillars. The design of the side ventilation louvers as well as the front door handle bezels also conform to these lines, which heighten the sense of unified design throughout the cabin.

The center console extends gracefully forward into the cabin from where it intersects with the instrument panel. Finished in lustrous piano black contrasted against the metallic look of satin chrome trim, the console has a high quality look.

Seat design

The seats feature a minimalist design and the use of different colors and materials heightens their taut and sporty look. The front seats provide plenty of lateral support and feature seatback shoulder sections that are slim enough to help prevent passengers in the rear seats from feeling constrained.

Color design

Body colors

A lineup of eight exterior colors was prepared for the new Mazda3. This includes Soul Red Premium Metallic as well as two colors newly developed for the model. Titanium Flash Mica is a new dark titanium color that expresses the sophistication and beauty of a fine metallic finish. The other new color is Deep Crystal Blue Mica. Intended to express power and speed as inspired by the image of a lightning bolt piercing a dark sky, it adds glimmering body highlights that instill a strong impression of dynamic styling.

The five colors that round out the lineup are Blue Reflex Mica, Snowflake White Pearl Mica, Liquid Silver, Meteor Gray Mica and Jet Black Mica.

Interior colors

The interior is available in off-white or black leather (both leather and leatherette for vehicles with black interior in North America), and in two types of fabric of which each is available in black or sand.

The off-white interior combines genuine leather with white and gray stitching on the off-white sections and red stitching on the black sections. This gives the interior design a dynamic look that speaks of high quality. The black leather interior uses red stitching throughout that adds an accent to the seats, steering wheel, shifter boot, armrests, etc.

A great deal of attention was paid to achieving striking textures for the interior fabrics through geometric weave patterns and a metallic luster.

3. DESIGN CRAFTSMANSHIP

Quality that stirs the senses

The concept behind design craftsmanship was to synthesize Mazda's tradition of craftsmanship, based on fine workmanship, functional beauty and the desire to delight customers with the emotional realm of design. Its aim was not to produce a superficial appearance of quality but to combine painstaking attention to detail in both the finish and design to realize an intrinsic quality feel that customers can appreciate with a range of senses.

An example of design craftsmanship in the new Mazda3 involves the exterior design. New methods to minimize the gaps between panels and a review of the entire manufacturing process was necessary to yield the high level of precision required to achieve the beautifully sculpted form of KODO design. This passion for craftsmanship and technology bore a sense of quality that further enhances the joy of viewing, driving and owning the new Mazda3.

In pursuit of ideal exterior fit and finish

Advanced manufacturing technology combined with precision assembly processes to minimize the gap tolerances of parts and produced a finished product that expresses the emotional form the designers aimed to achieve. For example, the development team set stringent new standards to maintain the minimum gap necessary for functionality, with adjustments made at 0.1mm levels. To minimize the gaps between the front fenders and leading edge of the front doors, this included everything from revising the method for attaching the doors to setting paint thickness tolerances along the panel edges.

Pleasing, natural feel to opening and closing the doors

The design goal was to create a smooth and natural feeling to opening and closing the doors that matches the movement of the user. The development team analyzed the characteristics pertinent to making door operation feel completely natural. The door checker, hinges and moment of inertia were optimally tuned based on their findings.

Startup action that welcomes the driver

When the driver opens the door, the red ring around the center meter slowly pulsates on and off a few times, as though the car is waking up. When the ignition is turned on, the red ring stops pulsing and instead remains illuminated. The meter’s needle also lights up, as do the numbers on the dial face and the digital meters on the wings to its left and right. Once the engine is started, the Active Driving Display rises into position and displays the Mazda3 logo, informing the driver that all preparations for heading out to drive are complete.

4. PACKAGING

Relaxing comfort combined with excellent functionality

The development team paid great attention to creating a functional, comfortable and roomy interior cabin. The new Mazda3 is the first in the lineup to introduce a new generation Human-Machine Interface (HMI)* that fully supports the latest car connectivity system. The basic concept focuses on creating a human-centered design that does not compromise driving pleasure and safety even as the amount of information processed while driving increases. Mazda has long been committed to enhancing the fundamental performance of its vehicles and the new HMI does just that, offering an optimum driving position and wide field of vision.

Please refer to p.46 for more information on the new generation HMI.

Exterior dimensions

The overall length of the five-door remains the same at 175.6 inches, while the sedan is 1.6 inches shorter than the previous model at 180.3 inches. At 106.3 inches, the wheelbase of both the five-door and sedan has been lengthened by 2.4 inches. Overall width is 1.6 inches wider at 70.7 inches and the overall height is 0.6 inches lower at 57.3 inches. The front overhang has been shortened by moving the front tire 2.2 inches further forward, and the size of the largest tires is increased from 205/50R17 to 215/45R18. Despite the longer wheelbase, the new Mazda3 realizes a minimum turning radius of 17.39 feet.

Five-door exterior dimensions (North American specification vehicles)

		New Mazda3	Previous Mazda3
Overall length	inches	**175.6**	177.4
Overall width	inches	**70.7**	69.1
Overall height	inches	**57.3**	57.9
Wheelbase	inches	**106.3**	103.9
Front overhang	inches	**36.4**	37.9
Rear overhang	inches	**32.9**	33.7
Tire size		**205/60R16**	195/65R15

		215/45R18	205/50R17
Minimum turning radius	feet	**17.39***	17.1*

**Tread-to-tread*

Sedan exterior dimensions (North American specification vehicles)

		New Mazda3	Previous Mazda3
Overall length	inches	**180.3**	108.9
Overall width	Inches	**70.7**	69.1
Overall height	inches	**57.3**	57.9
Wheelbase	inches	**106.3**	103.9
Front overhang	inches	**36.4**	38.2
Rear overhang	inches	**37.6**	38.6
Tire size		**205/60R16**	195/65R15
		215/45R18	205/50R17
Minimum turning radius	feet	**17.39***	17.1*

**Tread-to-tread*

Interior dimensions

The front and rear hip points are lowered in conjunction with the 0.6-inch reduction in overall height, so the new Mazda3 retains about the same headroom as previous generations. Downward range for the driver's seat height adjustment is extended by approximately 0.4 inches to allow easier access and greater comfort for taller drivers. In addition to realizing comfortable rear legroom of 35.8 inches for both the five-door and sedan, increased front and rear shoulder room contributes to greater comfort on the sides.

Five-door interior dimensions (North American specification vehicles)

		New Mazda3	Previous Mazda3
Front headroom	inches	**38.6 (37.3*)**	38.9 (37.4*)
Front shoulder room	inches	**57.2**	54.9
Front legroom	inches	**42.2**	42.0
Rear headroom	inches	**37.5 (37.4*)**	38.0 (37.7*)

Rear shoulder room	inches	**54.4**	54.0
Rear legroom	inches	**35.8**	36.2
Rear knee clearance	inches	**0.6**	0.5

**With sunroof*

Sedan interior dimensions (North American specification vehicles)

		New Mazda3	Previous Mazda3
Front headroom	inches	**38.6 (37.3*)**	38.9 (38.1)
Front shoulder room	inches	**57.2**	54.9
Front legroom	inches	**42.4**	42.0
Rear headroom	inches	**37.5 (37.4*)**	37.5 (37.4*)
Rear shoulder room	inches	**54.4**	54.0
Rear legroom	inches	**38.8**	3.2

**With sunroof*

Comfortable cabin environment born of ingenuity

Repositioning the base of the A-pillars 3.9 inches further back heightens the sense of speed and the compact look of the cabin, while also realizing clear forward visibility for the driver. At the same time, the resulting interior dimensions bring the A-pillars physically closer to the cabin occupants, so development efforts focused on maintaining a feeling of unconstrained space. Thorough studies and analysis of the eye point of occupants in relation to the pillar surfaces, the angle of inclination and their spread as well as the thickness and cross-sectional shape of the pillars combine to realize a design by which the pillars do not feel constraining despite their actual location.

The rear seatbacks are 1.97 inches taller and the seatbacks of the front seats are hollowed to provide more knee room so that passengers in the rear can ride in comfort. In addition, the floor mounts for the front seats are positioned wide apart to give rear seat occupants more space in which to place their feet.

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Efforts also focused on designing the shape of the front seats such that they offer rear seat occupants a visual sense of roominess and comfort. Narrowing the front seat headrests and giving them a more rounded back creates a greater feeling of distance between them and rear seat occupants. Limiting the breadth of the front seat shoulder sections makes the rear seat area feel less cramped. The left and right seating positions are also positioned slightly closer to the car's center line than the front seats, giving occupants in the rear seats a clearer view of the road ahead and a feeling of greater openness.

Convenient storage space for all cabin occupants

After dividing the cabin into zones for the driver, passenger and rear seats, a thorough study was conducted to determine what small items occupants use in each of these three zones. Storage spaces were then designed to allow smooth access to these respective items, placing them where they are easy to reach and where minimal eye movement is required to locate them.

Particular attention was paid to accommodating the customer's smartphone. A storage space in the front console makes it easy to connect to the car's connectivity system* via an installed USB adapter. Front seat storage includes a large open space at the bottom of the center panel (vehicles with a CD player installed excepted), large cup holders that can accommodate L-size cups, door pockets that can hold 1-liter plastic bottles, sun visor cardholders and a sunglass holder in the overhead console. Rear seat storage includes a pair of L-size cup holders in the center armrest and a handy storage pocket on the back of the passenger seat that can hold maps, a sun shade and other items.

Please refer to p.45 for more information about the connectivity system.

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Practical space in the luggage compartment

The luggage compartments of both the hatchback and sedan provide ample capacity and easy loading and unloading. With capacity of 12.4 cu. ft. (VDA), the five door's luggage compartment is 0.35 cu. ft. larger than on the previous model. Even with the rear seats in use, there is enough room to hold a pair of large (26.5 cu. ft.) suitcases. The sedan's 14.8 cu. ft. (VDA) trunk adopts swan hinges that make the lid easier to open and close, while also widening the opening by 3.9 cu. ft. This combines with the expanded compartment width to accommodate three 26.4 inches suitcases.

Optimized driving position supports *Jinba Ittai* driving

In addition to carefully distributing control switches around the driver's seat, the development team considered the characteristics of mechanically operated controls in relation to the physical nature of the driver. This effort aimed to find the most relaxed operating position with body joints at angles that let the driver react quickly and accurately. Accordingly, pedals, the steering wheel and other controls directly involved in operating the vehicle are positioned to maintain natural angles that help achieve this relaxed posture.

● Pedal layout enables quick, accurate operation

The pedals are laid out symmetrically to the left and right of the driver's center line, with the accelerator pedal and footrest positioned where the driver's foot extends naturally. Moving the front wheels further forward does away with the wheel housing interfering with the accelerator pedal (on right-hand drive vehicles). This is one advantage gained by incorporating KODO design. The new hinged organ type accelerator pedal realizes stable operation, fine control and smooth foot transfer to the brake pedal.

Reexamination of the role the footrest resulted in the decision to position and angle it such that the driver's foot can also be planted against it to maintain driving posture while cornering. The new design strikes a balance between comfortable cruising and the fun of exhilarating performance when cornering.

● Steering wheel and shift knob

The steering wheel is positioned closer to the driver and in a lower position than on the previous model. It offers a 1.8-inch tilt range and 2.2-inch telescopic range.

The shift knob is optimally positioned to operate smoothly and easily without applying force, and such that the driver's hand lands on it naturally without the need to visually confirm its current position. Shift knob design included ergonomic studies of the bone structure of the human hand, how the hand moves when operating it and where it contacts the hand. The result is a shift knob that fits naturally in the palm and the driver can operate without experiencing fatigue on long drives.

● Application of KODO design improves the driver's field of vision

The rearward positioning of the A-pillars that accompanies KODO design greatly broadens the horizontal range of vision from within the cabin when compared to the previous model. The increase from 25.5 degrees to 27.3 degrees for the driver's seat, and from 57.9 degrees to 59.7 degrees for the passenger seat ensures clearer visibility from both seats. For example, when entering a corner, the driver can easily determine the point the new Mazda3 will reach a few seconds later and this enables the driver to better confirm the road conditions ahead. Mounting the outer mirrors on the doors instead of on the body expands the range of visual confirmation when looking over the mirrors from the driver's seat. The advantage of this is readily noticeable when making a left turn at an intersection.

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● Seat design helps the driver better engage with the car

The new seat comfortably wraps around the driver, encouraging him or her to feel at one with the car. Making the cushion area larger while optimizing the seatback to better hold the hips in place realized a natural seating position with ample support. The seat bolsters hold the occupants securely when subjected to lateral G forces while cornering. A new suspension mat adopted in the seatback suppresses displeasing vibration, while urethane foam that absorbs vibration well is used for the seat cushion. The result is a new seat design that offers a comfortable ride whether driving in town or on winding country roads.

Seat position is highly adjustable enabling drivers of varying sizes to find a stable and comfortable driving position that heightens the pleasure of the driving experience. This includes 10.2 inches of fore / aft adjustment, 102 degrees of recline*, and 2.2 inches of vertical height adjustment. Lumbar support and a six-way power adjustable seat are also available.

**Measured from the foremost to rearmost angle of the power seat.*

5. DRIVING DYNAMICS

Every passing mile deepens the *Jinba Ittai* connection between car and driver

The pleasure of *Jinba Ittai* driving, where car and driver merge together as one, cannot be achieved through speed and power alone. It requires that the car responds to the driver's inputs linearly and precisely as he or she anticipates. The result is exhilarating, responsive driving as demonstrated in the CX-5 and Mazda6.

Based on this concept, the driving pleasure which has been a top priority with the Mazda3 since the first generation, has been advanced through the complete adoption of SKYACTIV TECHNOLOGY—engine, transmission, body and chassis—resulting in a vehicle that more closely follows the will of the driver. Lively acceleration and a pleasing engine sound respond directly to the most subtle 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 new Mazda3 has been crafted with the greatest importance placed on human senses, resulting in an even greater feeling of unity between car and driver.

At the same time, the synergies from combining the above features with a highly efficient powertrain, lightweight body and chassis, idling stop system, brake energy regeneration system and excellent aerodynamic performance realizes class leading environmental performance.

Three areas where *Jinba Ittai* driving stands out

Accelerator control that responds precisely as the driver expects

The new Mazda3 employs a control function that precisely adjusts the amount of time required to reach peak acceleration in accordance with the speed with which the driver presses the accelerator pedal. This gives a consistent linear response to accelerator pedal action, whether it is pressed slowly or quickly. The driver is therefore able to anticipate how the vehicle will respond to accelerator pedal action, allowing for smooth operation exactly as the driver intends.

The driver can also use accelerator pedal action to control the shift timing of the six-speed automatic transmission. For example, when pressing the pedal gently to accelerate slowly on urban roads, the control function limits the rate of acceleration so it changes very little. Pressing the accelerator pedal quickly causes the transmission to shift down immediately to attain a higher rate of acceleration. Flooring the accelerator pedal to pass another vehicle causes the transmission to shift down with satisfying quickness.

With each mile driven, a stronger feeling of oneness with the car

In developing the chassis, Mazda engineers aimed at achieving smooth pitch and roll throughout the actions of driving, cornering and stopping and a nimble load transfer between the four tires that the driver can feel.

When cornering the load is transferred to the front wheels when the driver brakes and then to the outside front wheel as the car changes direction. The chassis realizes a smooth body roll and the linear change in G-forces means the car corners exactly as the driver intends.

Building on the quick and responsive steering of the previous generation Mazda3, development was aimed at making the feedback that the driver feels through the steering wheel more linear.

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Pleasing engine sound in response to accelerator pedal action

In addition to accelerating as the driver expects in direct response to pedal operation, the new Mazda3 produces a pleasing engine sound the instant the driver presses the accelerator pedal. Increasing the rigidity of the powertrain suppresses flexural resonance. This eliminates the muffled noise caused by vibration-induced resonance that increases as engine speed climbs. The engine intake and exhaust systems were optimized to curb the amount of unpleasant high-frequency noise that infiltrates the cabin when the driver steps down hard on the accelerator pedal. This results in a powerful sound of a frequency near 300Hz.

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High-performance, lightweight SKYACTIV-Chassis

Adopting the SKYACTIV-Chassis improves driving dynamics while also offering a comfortable and reassuring ride. In addition, the suspension and steering systems are thoroughly revised to help deliver the pleasure of Mazda's *Jinba Ittai* driving experience. Special attention went into engineering load transfer that delivers a firm grip on the road as well as linear feedback to the driver.

Suspension strikes a balance between nimble performance, ride comfort

While carrying over the layout of MacPherson struts in the front and multi-link suspension in the rear, the suspension system for the new Mazda3 realizes a linear feeling to changes in cornering G force when steering into a corner as well as a smooth transfer of load to the outer front tire.

The front suspension is mounted on a new perimeter frame with an increased caster angle and trail delivering greater self-aligning torque. The rear suspension adopts link positioning and bushing hardness that increases the lateral grip of the rear tires. This increases straight-line stability and reduces yaw gain at high speeds to realize an appreciable feeling of stability. A faster steering gear ratio at low to mid-range speeds increases yaw gain for a lighter feel to steering operations. In addition, an optimized spring rate and damping force of the rear dampers yields greater ride comfort.

Steering system employs next-generation electric power steering

The new Mazda3 features a column-type electric power assist steering system that integrates the ECU and steering motor to realize a compact, lightweight unit. In addition, the steering gear ratio was lowered from 16.2:1 in the previous model to 14:1, enabling precise control with minimal steering input and limiting driver fatigue. The amount of power assist is lowered when driving at highway speeds to deliver a smooth feel to steering and to achieve a high level of stability. The system also adopts a new 12-slot 10-pole starter motor armature coil that reduces power consumption. A function that suppresses ECU heat build-up when it runs continuously also contributes to smooth steering operation.

Brake system delivers excellent control

The brake system employs ventilated discs in the front and solid discs in the rear. Development focused on delivering braking performance that enables confidence-building driving pleasure under various road conditions through better control characteristics, particularly when first pressing the brake pedal. Changes to the booster's internal components and tuning to produce the desired amount of hysteresis actualize linear response to brake pedal operation. The purpose is to ensure smooth vehicle behavior throughout cornering, from pressing the brake pedal during turn-in as load builds on the front wheels and when the driver eases off the brake and steers through the corner.

At the same time, using the latest analytic technology to reduce the weight of the front disc rotors and increase cooling efficiency ensures solid braking performance, even when braking hard repeatedly. Paired with the newly developed high-grip tires*, which exhibit excellent water channeling for consistent traction on wet roads, the Mazda3 is class-leading in braking distance tests. Tuning of the piston seals for the disc brakes suppresses unnecessary brake play and reduces running resistance. This helps ensure positive response and improved fuel economy.

* *Tire specifications differ according to market.*

SKYACTIV-Body features lighter weight, higher rigidity

The new Mazda3 adopts the SKYACTIV-Body, which features the high level of rigidity needed to support driving pleasure and deliver excellent crashworthiness. It is built around the concept of a continuous framework that disperses energy broadly across the entire structure by constructing the basic framework from straight beams wherever possible and making the individual sections function in harmony.

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Every curve possible was removed from the underbody to create a straight frame running from the front to the rear. Sections that require some curvature use a strong closed cross-sectional structure and are connected with horizontal cross-members ensuring a high level of rigidity combined with reduced weight. The entire body is designed to control the flow of energy, with the upper body formed from four ring structures that encompass the roof rails, B-pillars and the entire reinforced area of the underbody. Also adopted is a dual brace structure that joins the body to the floor and left and right rear suspension mounting points. This holds down the rear corners to suppress deformation when cornering. Dozens of simulations covering dimensions, materials and material thickness produced a structure that is light in weight, ensures ample cargo space, realizes the high level of rigidity needed to handle the lateral G forces of cornering and provides excellent body control.

The SKYACTIV-Body for the new Mazda3 increases torsional rigidity on the hatchback by 31% over the previous model, and by 28% for the sedan.

Nimble handling born of stem to stern weight reduction

The adoption of the lightweight SKYACTIV powertrain and thorough review of more than 300 components that comprise the vehicle body reduces overall weight. This is achieved despite measures implemented to enhance performance such as increasing the size of the brakes to accommodate the change to larger wheels and tires as well as the increased weight of the powertrain resulting from changes to the intake, exhaust and cooling systems. Weight of the North American specification 2.0-liter sedan with automatic transmission is reduced by 99.2 lb, from the 2,926 lb of the previous model to 2,826 lb for the new Mazda3. The European specification five-door weight is reduced by 31 lb for the 1.5-liter manual transmission, by 185 lb for the 2.0-liter manual transmission, and 196 lb for the diesel engine vehicle with manual transmission.

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Major items for which weight was reduced (North American specification, comparison with the previous Mazda3)

Part	Weight reduction (lb)	Weight reducing technology
Body shell	-2.2	Adoption of high-tensile steel allows use of thinner material while increasing strength. Optimization of shape increases torsional rigidity while maintaining weight on par with the previous model
Bumper beam (Front/Rear)	-8.8	Reinforcing material for the front and rear bumpers uses 1,800MPa grade hot stamping
Front suspension	±0	Even with the addition of the perimeter frame, maintains weight on par with the previous model
Rear suspension	±0	Increases front-rear span while maintaining weight on par with the previous model
Steering system	-4.4	Change from electro-hydraulic power steering to column-type electric power assist steering system
Brake system	-4.4	Optimization of the structure
Front seat	-13.2	Use of high-tensile steel and revised internal structure
Rear seat	-2.2	Change in shape and smaller (shorter) seat cushion
Tires	-4.4	Optimization of the structure
Electric equipment	-6.6	Optimization of the parts layout shortens the wiring harness and integration of control units reduces their number
Instrument panel	-8.8	Optimization of structure for protection against impact and number of members reduced from two to one

● Body shell

Wide use of high-tensile steel and optimization of component shapes increases the strength and torsional rigidity of the body while achieving a weight that is on par with the previous model. Use of high-tensile steel increased to 60 percent on the new Mazda3, up from the 50 percent on the previous five-door and 51 percent for the sedan (North American specification). Ultra-high-tensile steel rated at 980MPa is introduced as reinforcing material for the side sills, and use of 780MPa high-tensile steel increased from 4 to 9 percent. A thorough review of the functions of the front frame allowed the number of parts to be minimized and component shapes to be optimized, resulting in a 38-percent reduction in weight compared to the previous model. Thickness of the inner roof rail members is reduced from 0.06 inches to 0.05 inches for a weight reduction of 1.4 lb.

● Suspension system

The front lower arms and rear trailing arms are the first on a Mazda vehicle to adopt 780MPa high-tensile steel. Optimization of the sheet thickness for the front section of the front perimeter frame, rear cross member and each arm, along with a new manufacturing process that eliminates the welding flanges from the previous model makes the welds both lighter and more rigid. Approximately the same weight is achieved in the front as a result, even with the addition of the new perimeter frame. The rear suspension also comes in at a weight on par with the previous model, even while adopting large, highly rigid side members on the sub-frame.

● Steering system

The change to a new electric power steering system eliminates the need for the hydraulic pump and piping of the electro-hydraulic power steering system from the previous model. This combines with the new lightweight structure of the integrated ECU and steering motor to reduce weight by approximately 4.4 lb.

● Seats

Use of high-tensile steel on the internal structure of the front seats and addition of the neck injury-mitigating function to the seats themselves eliminates the need for the active headrests of the previous model and reduces weight by approximately 13.2 lb per seat. Modifications to the shape of the rear seats and use of a shorter rear seat cushion reduce weight by approximately 2.2 lb.

● Mudguards

Close examination of the position and depth through the beading of the front mudguard made it possible to reduce wall thickness by 13 percent while retaining the same level of rigidity as the previous model. This reduced weight by a total of 0.82 lb for the left and right sides, and created one of the thinnest mudguards in the world.

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Aerodynamics contribute to stability and fuel economy at highway speeds

Development based on Mazda's "aerodynamically efficient ground line" aimed to improve the drag coefficient. Directing the flow of air under the floor and creating a swift updraft as it exits the rear improves the flow across the top and bottom of the body, while also reducing turbulence. To streamline airflow along the underbody, in addition to the engine undercover, floor undercover and front tire deflector of the previous model, the new Mazda3 adopts, a tunnel cover, a large tunnel member, a rear tire deflector and a new center floor cover which even covers the fuel tank. A roof spoiler and rear side spoilers on the hatchback and rear spoiler on the sedan suppresses turbulence as air passes over the roof and sides of the upper body, and guides the air smoothly toward the rear.

The result of these measures is excellent aerodynamic performance on par with the previous model, with a drag coefficient of 0.275 for the hatchback and 0.255 for the sedan. (These values are for vehicles that feature the active grille shutter, which opens and closes automatically in response to changing conditions. The active air shutter is described below.)

Active grille shutter contributes to improved real-world fuel economy

A new active grille shutter is introduced on vehicles equipped with the SKYACTIV-G gasoline engine and i-ELOOP. The shutter, which is mounted in front of the radiator, opens and closes automatically depending on driving conditions. An intake temperature sensor monitors factors such as ambient temperature, water temperature and vehicle speed while the powertrain control module determines the need for engine cooling. When cooling is not required, the shutter closes to prevent air from flowing into the lower grille. This improves aerodynamic performance and contributes to gains in real-world fuel economy. The shutter also closes when the ambient temperature is low. This minimizes excessive engine cooling and increases the efficiency of cabin heating while also reducing warm-up time to further improve real-world fuel economy.

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Excellent NVH performance enhances driving pleasure and comfort

After determining which parts are more susceptible to causing vibration or noise, careful CAE analysis to examine how the body frame vibrates and hollow structures resonate resulted in changes that realize excellent cabin quietness.

To minimize vibration that can cause noise, vehicles powered by the SKYACTIV-G 2.5-liter gasoline engine and the SKYACTIV-D 2.2-liter clean diesel engine adopt a balance shaft that reduces vibration from the engine itself. In order to shut out routes by which noise enters the cabin, a new lightweight material with a high level of noise absorption is used for the dash insulator and floor mats. Insulating material is also positioned for maximum effectiveness behind the instrument panel. Particularly effective in suppressing annoying high frequency whining noises that originate from the engine and tires, these measures achieve a level of cabin quietness that stands among the top in the class. For the rear seats, the rear package tray was designated as a line of insulation and a sound-absorbing zone established below that line. Insulators positioned within the trim suppress high frequency noise emanating from the rear tires. On the hatchback, the area between the C-pillar trim and body adopts a structure that shuts out road noise, and lightweight sound insulating material is used for the side trim in the luggage compartment. Building sound-absorbing properties right into the trim material allowed for a reduction in the use of felt amounting to approximately in 2.2 lb weight.

A wide range of SKYACTIV powertrains

To meet the divergent needs of customers around the world, the new Mazda3 offers a wide lineup of SKYACTIV powertrains. The gasoline engines include 2.0-liter and 2.5-liter displacements that deliver plenty of torque. New to the SKYACTIV gasoline engine lineup is a 1.5-liter version that greatly increases torque output and improves fuel economy compared to the same displacement engine of the previous model. The North American market will receive the 2.0-liter and 2.5-liter engines. Also available in certain markets is Mazda’s innovative SKYACTIV-D 2.2-liter diesel engine that achieves a fine balance of dynamic performance and environmental responsibility.

The transmission lineup includes a SKYACTIV-Drive six-speed automatic transmission that delivers powerful acceleration and smooth shifts, and a SKYACTIV-MT six-speed manual transmission with Mazda's characteristic precise shift feel. The engine and transmission pairing delivers performance faithful to the driver's will, combined with excellent fuel economy. Mazda's i-stop idling stop system and i-ELOOP brake energy regeneration system are also available on some configurations.

A hybrid system is available in the Japanese market on the Mazda3 sedan. The SKYACTIV engine and hybrid system deliver excellent fuel economy and the dynamic driving performance expected of a sports compact from Mazda.

Powertrain lineup (As of April 2013)

Engine	Transmission	Drive	Europe		North America		Japan		Australia
			SDN	HB	SDN	HB	SDN	HB	SDN, HB
SKYACTIV-G									
1.5	SKYACTIV-MT	FF	□	□			□	□	
	SKYACTIV-DRIVE	FF	□	□			□	□	
	SKYACTIV-DRIVE	AWD					□	□	
2.0	SKYACTIV-MT	FF		●	○	○			□
	SKYACTIV-DRIVE	FF			○/■	○		●	□
2.0 Standard Power for Europe	SKYACTIV-MT	FF	□	□					
	SKYACTIV-DRIVE	FF	□	□					
2.5	SKYACTIV-MT	FF							□
	SKYACTIV-DRIVE	FF			○/■	○/■			□/●
SKYACTIV-D									
2.2 High Power	SKYACTIV-MT	FF						●	
	SKYACTIV-DRIVE	FF						●	

2.2 Standard Power	SKYACTIV-MT	FF	□	□					
	SKYACTIV-DRIVE	FF		□					
HEV (2.0 liter)	E-CVT	FF					♦		

○: No i-stop or i-ELOOP □: with i-stop ■: with i-ELOOP ●: with i-stop and i-ELOOP ♦: HEV

SKYACTIV-G 2.0

This highly efficient direct-injection gasoline engine benefits from its high compression ratio, light weight and reduced mechanical resistance in realizing excellent fuel economy combined with linear response to its dynamic performance. Using a high tumble port and 4-2-1 exhaust system increases engine output over the previous model. Maximum output of 121kW and maximum torque of 210Nm deliver more powerful performance while CO_2 emissions of 129g/km combines with excellent fuel economy. (Values are for the European specification five-door with manual transmission.) A special fuel-efficient version is also available for European specification vehicles. It produces maximum output of 88kW, maximum torque on par with the regular version and CO_2 emissions of 119g/km. (All figures are target values.)

SKYACTIV-G 2.5

The 4-2-1 exhaust system and other innovative technologies achieve a compression ratio of 13.0:1. In addition, reducing the weight of the individual components and reducing mechanical resistance produce a gasoline engine with a high level of combustion efficiency. Torque output at low- to mid-range speeds is increased by 10-15 percent over the MZR 2.5-liter engine while use of lightweight aluminum alloy for the engine block reduces weight by 10 percent.

In the North American-specification sedan with manual transmission, the SKYACTIV-G 2.5-liter produces a maximum output of 184hp and maximum torque of 184 lb-ft of torque, while also exhibiting excellent fuel economy of 30mpg in city testing and 41mpg in highway testing (for sedan vehicles with i-ELOOP). The engine also employs a balance shaft that reduces secondary vibrations and improves low-frequency booming noise, which helps ensure excellent NVH. (All figures are target values.)

● **Sport mode (North American specification automatic transmission vehicle only)**

With the North American Mazda3s equipped with the 2.5-liter engine and automatic transmission, pressing a switch on the transmission's shift gate lets the driver switch between Normal and Sport drive modes. The system defaults to Normal mode when the engine is started and this mode provides the optimal balance between daily driving performance and excellent fuel economy. Selecting Sport mode results in more direct response to accelerator pedal action that exhibits a heightened sense of linearity to acceleration.

The major technologies of SKYACTIV-G

High tumble port: Generates a powerful tumble (vortex) within the combustion chamber. The flame is more evenly distributed throughout the combustion chamber, and this improves the speed of combustion. It suppresses knocking and improves torque production.

Multi-hole injectors: The six holes on each nozzle inject gasoline directly into the cylinder to form a homogeneous air-fuel mixture with a powerful flow. Intake is handled as a two-stage injection process that promotes mixing to maximize the homogeneity and flow strength. Its latent heat vaporization improves the in-cylinder cooling effect and suppresses knocking.

Cavity pistons: The aluminum pistons incorporate a cavity in the piston crown that reduces cooling loss. Efforts to reduce the weight of the pistons include removing all material possible from the underside of the piston, which is not subject to direct pressure from combustion. The cylinder block is also designed to maintain circularity when the engine is running. This allows lower tension to be used for the piston rings without increasing oil consumption.

Dual S-VT: Controls intake and exhaust valve timing, instantly optimizing them in response to the engine operating conditions of the moment. The advantages include maximizing fuel economy under light loads, and suppressing knocking when starting the engine in cold weather or under heavy load. The system reduces pumping loss under light load by greatly delaying intake valve closing to the timing of 110 degrees, while at the same time delaying exhaust valve closing to increase internal EGR volume for maximum effectiveness. Under heavy load, the electric-powered S-VT used by the intake valves advances the timing of valve opening and closes the valve early, increasing the amount of air intake and increasing torque output.

4-2-1 exhaust system: The four exhaust pipes running from the exhaust manifold first collect into pairs and then into a single pipe. This allows greater distance for the exhaust gases from individual cylinders to travel before merging. This lowers the effect of reflected waves reaching another combustion chamber and the scavenging effect reduces exhaust resistance to enable efficient combustion. In addition, the loop design of the exhaust pipe reaps space savings. This allows the large-capacity catalytic converter to be positioned near the engine, which improves vibration characteristics.

Lighter weight and reduced mechanical resistance: Detailed efforts aimed at reducing weight produced lighter pistons, connecting rods and crankshaft. Measures implemented to reduce mechanical resistance include the following. Camshaft journal surface treatment and valve spring load are reduced. The drive-chain system is optimized, including the chainline and chain itself. The

engine adopts a plastic impeller that improves the efficiency of the water pump and in conjunction a change in the shape of the water jacket reduces resistance in the cooling passages. The layout of the auxiliary equipment was also optimized.

Optimized oil lubrication system: The structure of the engine oil lubrication system is revised. The reduced resistance in the oil passages reduces pressure loss and the reduced amount of pressure required enables the use of a smaller size oil pump. The system provides optimized control over oil pump discharge pressure, using a two-stage electronic control to switch output in response to engine speed and load conditions.

SKYACTIV-Drive: a highly efficient six-speed automatic transmission

SKYACTIV-Drive achieves a direct feel and excellent acceleration by employing four compact multi-plate wet clutches that deliver ample cooling, full-range direct drive with a torque transfer mechanism that uses a compact torque converter, along with a full range lock-up clutch. The transmission also adopts a direct solenoid and electric control mechanism in an integrated mechatronic module that responds well to the hydraulic control mechanism. This improves the precision and reliability of hydraulic operation.

In addition, the characteristics of the hydraulic control mechanism are measured at the time of manufacture. The result is stored in the ECU for use by a newly adopted trimming technology that can revise any variations to maintain system precision. Linking the engine and transmission computers to harmonize control over engine torque and hydraulic operation strikes a balance between smooth, fast gear changes and minimal shift shock.

SKYACTIV-MT: a highly efficient six-speed manual transmission

A new compact module spline is adopted that realizes precise synchronization and torque transfer, along with a 10 percent shorter stroke than on the previous manual transmission. To achieve a light feeling that enables shifts with a simple flick of the wrist, 1st gear is placed at the top of the gear change mechanism. A new down-type system leverages gravity to ease upshifts following a natural downward motion, and the lock ball type synchronizer mechanism enables smoother gear changes. The shift link structure is also optimized, with the shift load canceller making shift lever action feel lighter and a slide ball bearing reducing resistance in the slide action. In addition, shortening the shift lever shaft approximately 2.8 inches and increasing the tilt angle of the shift knob makes it easy to recognize the shifter's position at a glance to help support more precise operation. Efforts to reduce the number of components cut the weight of the gear train by approximately 6.6 lb over the previous manual transmission (European specification.)

i-ELOOP brake energy regeneration system

The new Mazda3 employs Mazda's original i-ELOOP brake energy regeneration system. This system converts the kinetic energy generated during deceleration into electricity that can be used once again. Conventional engine setups must tap approximately 10 percent of the engine's power to run the alternator and generate electricity. That electricity is subsequently stored in the battery to run the vehicle's electrical equipment. In contrast, supplementing the electricity to run the electrical equipment with energy regenerated during deceleration makes it possible to use 100 percent of the engine's power to drive the powertrain, and this conserves fuel.

i-ELOOP uses a variable voltage alternator with output voltage from 12V to 25V and a large-capacity Electric Double Layer Capacitor (EDLC) capable of instantly storing large amounts of electricity and efficiently supply it for use by the vehicle's electrical equipment. The alternator does not generate electricity as long as a sufficient amount remains in the capacitor and lead-acid battery.

Electricity stored in the capacitor supplements what is needed to run the engine’s electrical systems as well as the headlamps, air conditioning, audio and other electrical equipment. The system can be expected to improve fuel efficiency in real-world driving situations that involve frequent acceleration and deceleration.

6. SAFETY

World-class safety features support pleasant driving

*Mazda Proactive Safety**1 aims to help the driver avoid dangerous situations before they occur by minimizing the risks that can lead to an accident and maximizing the range of conditions in which the vehicle can be driven safely and with peace of mind.

In addition to outstanding dynamic performance that responds to the driver's input, the all-new Mazda3 adopts a wide range of Mazda's advanced safety technologies dubbed i-ACTIVSENSE*2. These technologies use sensing devices such as milliwave radars and cameras to support the driver in recognizing hazards, avoiding collisions and minimizing damage when accidents do occur. At the same time, the high-rigidity, lightweight SKYACTIV-Body offers world class crash safety performance.

**1 Mazda Proactive Safety aims to minimize the risk of an accident by maximizing the range of conditions in which the driver can safely operate the vehicle*

**2 i-ACTIVSENSE is an umbrella term covering a series of advanced safety technologies which make use of detection devices such as milliwave radars and cameras. They includes active safety technologies that support safe driving by helping the driver to recognize potential hazards, and pre-crash safety technologies which help to avert collisions or reduce their severity in situations where they cannot be avoided.*

Active safety

High Beam Control System (HBC)

By automatically switching between the headlamps' high and low beams, the system reduces the burden of manual operation, improves visibility at night and helps the driver to avoid hazards. It enables the driver to leave the high beams turned on under normal operation. When the monocular color camera detects the headlamps of oncoming vehicles or tail lamps of those traveling ahead, the system switches to the low beams to prevent blinding the drivers of those vehicles and then back to the high beams once the road is clear. It also uses the low beams in situations where it determines the high beams unnecessary, such as when driving in brightly lit urban areas or at low speeds of 18.6 mph or less.

Hill Launch Assist (HLA)

By temporarily maintaining brake pressure when the driver releases the brake pedal to accelerate from a standstill on a hill or slope, HLA prevents the vehicle from rolling backwards to help ensure a smooth start.

Blind Spot Monitoring System (BSM) (North America and Australia only)
Rear Vehicle Monitoring System (RVM) (North America and Australia excepted)

As with the previous model, vehicles for North America and Australia are equipped with BSM, and those for other markets are equipped with RVM in order to best match the driving conditions of the destination market. These safety confirmation systems use quasi-milliwave radar to detect vehicles approaching the vehicle from the blind spot areas at the sides and rear, issuing an alert to assist the driver when making lane changes. If the driver switches on a turn signal while a vehicle is approaching from a blind spot, the system issues a flashing visual indicator in the respective door mirror and also sounds a buzzer.

The new Mazda3 facilitates detection from lower speeds than the previous model. It drops the minimum operating threshold of the BSM to 6.2 mph from the previous model's 18.6 mph. The minimum operating threshold of the RVM is now 18.6 mph (9.3 mph or higher for the Japanese specification vehicle) instead of the previous model's 37.3 mph. A new feature added to the BSM is Rear Cross Traffic Alert, which alerts the driver when the system detects vehicles approaching from either side as the driver backs up.

Lane Departure Warning System (LDWS)

LDWS is designed to prevent accidents caused by the vehicle leaving its lane due to driver distraction or fatigue. It employs a monocular color camera that monitors the lane markings on the road and issues a warning to the driver when it predicts that the vehicle is going to depart from its lane. To prevent issuing superfluous warnings, it is designed to recognize intentional actions on the part of the driver, such as the use of turn signals and accelerator pedal operation.

Emergency Signal System (ESS)

If the driver brakes suddenly from speeds of 31.1 mph or greater, the hazard lamps flash rapidly to warn following vehicles and help prevent rear-end collisions.

Pre-crash safety

Forward Obstruction Warning (FOW) (Selected markets)

This system uses milliwave radar to monitor the vehicle ahead and issues both visual and audible alerts to help the driver take evasive action when it determines a high risk of collision to exist. It operates while travelling at speeds between 9.3 mph and 90.1 mph (124.3 mph for European specification vehicles). FOW is included as one function of the Smart Brake Support system described below.

Smart City Brake Support (SCBS)

SCBS helps prevent or soften impact with the vehicle ahead when traveling at slower speeds on city streets or in traffic jams. The system uses a near-infrared sensor that excels in the rain and when the target is backlit by the sun, and features accurate readings at short distances.

If the sensor mounted in the upper part of the windshield detects a vehicle or obstacle ahead and the system determines a high risk of collision when traveling at speeds between 2.5 mph and 18.6 mph, it begins to pressurize the brakes. This allows them to demonstrate strong stopping power the instant the driver applies the brakes. If the driver fails to take evasive action at this point, the system automatically applies the brakes to slow the vehicle and prevent or soften impact.

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Mazda Radar Cruise Control (MRCC) (Selected markets)

When driving at speeds between 18.6 mph and 90.1 mph, (18.6 to 62.1 mph for Japanese specification and 18.6 to 124.3 mph for European specification), the new Mazda3's milliwave radar determines the distance to the vehicle ahead and its speed. The system automatically controls the engine and brakes to adjust speed and maintain a safe following distance preset by the driver. This frees the driver from operating the accelerator and brake pedals, so eases the burden of driving long distances. The system's radar sensor is capable of accurately monitoring vehicles far ahead, even in the rain, when the target is backlit by the sun and at night.

Passive safety

Highly rigid body delivers a high level of collision safety

The body structure efficiently absorbs energy in an impact from any direction and minimizes cabin deformation. This, in combination with the most up-to-date equipment to protect cabin occupants earns top ratings in collision safety performance tests around the world.

● Protection against frontal impact

X-shaped crush cans at the front of the front frame realize highly efficient energy absorption characteristics. These protect the cabin from various forms of front end collisions.

● Protection against side impact

A solid ring structure joins the roof and B-pillars to the underbody while reinforcements further strengthen the body. The goal is to minimize chances of cabin deformation and mitigate injury to cabin occupants. The cross-sectional size of the B-pillars is increased over the previous model by 20 percent toward the cabin and 10 percent from front to rear. This minimizes deformation in the event of side impact. They also assume an almost straight shape that reduces loss of load transmission in the event of a collision. An impact bar added to the beltline area of the front doors raises the level of protection against impact from the side as well as from the front.

● **Protection against rear impact**

Protecting against rear-end collisions that might occur under varying conditions are the double-hat shape of the rear frame and reinforcing cross shape of the rear bumper. Employing a crushable zone that effectively absorbs impact energy from the rear protects the passenger cabin.

Safety equipment and mechanisms

● **SRS airbag system**

The driver and front passenger seats are equipped with dual front airbags that soften the impact and mitigate injury in the event of a collision. Large side airbags help protect the chest, abdomen and also the hips, while curtain airbags help protect the heads of occupants in the front and rear seats.

● **Three-point seatbelts for all seats**

Each three-point front seatbelt is equipped with a pretensioner that removes slack from the seatbelt in the initial moment of a severe frontal or near-frontal collision and limits forward motion, and with a load limiter that subsequently loosens the belt in a controlled manner to prevent excessive pressure from being applied to the occupant's chest. All three rear seats are also equipped with three-point seatbelts.

(Some regions excepted.)

● **Door armrests that absorb impact energy**

The front and rear door armrests incorporate a hollow construction that improves shock absorption characteristics to minimize shock to the occupant's ribs in the event of a side collision.

● **Shock-absorbing interior trim**

The interior incorporates trim that absorbs impact shock, with particular attention paid to the structure of the trim for the A-pillars and B-pillars. The goal is to protect the heads of cabin occupants in the event they suffer secondary head impact with the pillars in a side or oblique impact that does not cause airbag deployment.

● Rear seat structure resistant to intrusion by luggage

The new reinforced structure of the rear seat helps prevent items in the luggage area from intruding into the cabin and harming occupants in the event of a frontal collision. High-tensile steel is used to strengthen the rear seatback frames, while the catches, strikers, hinges and their body mounts are reinforced.

● Front seats designed to mitigate neck injury

The front seats feature a new structure that firmly supports the occupant's head during initial impact and mitigates shock to the neck. This was realized by optimizing the structure of the cushion frame and seatback, optimizing the headrest shape and positioning, and by making it easier for the occupant's body to sink into the backrest in the event of impact from the rear.

● ISOFIX child seat anchor points

Maximizing protection for infants are ISOFIX anchor points on the left and right rear seats that make it easy to securely attach compatible child safety seats.

● Pedestrian protection

The hood and front bumper are equipped with functionality that mitigates the shock of impact to a pedestrian's head and legs in the event that contact is made with the vehicle.

7. HMI/CONNECTIVITY

A new HMI that places top priority on driving safety and a connectivity system that broadens the scope of driving pleasure

The rapid popularization of smartphones and tablet computing devices has greatly changed the lifestyles of customers who now expect to be connected to the internet at all times. Also, the advent of social media sites such as Facebook and Twitter has given rise to a new form of culture. Those involved openly share their interests, experiences and responses to events in their daily lives with select groups of close friends or the public in general.

Mazda was determined to build a car in which passengers could enjoy being connected to the internet community safely in a way that would maximize driving pleasure and make them want to ride in the car again and again. With the aim of realizing this goal, Mazda developed a new car connectivity system which makes its debut with the new Mazda3. As the operating systems (OS) of smartphones and other devices evolve to add new features and functionality, the in-vehicle connectivity system can be updated at the OS level to support these changes. As such, this innovative platform ensures customers always have access to the latest services without the need to swap out hardware.

However, the enhancement of connectivity systems and the increasing use of sensors have resulted in a rapid increase in the amount of information presented to the driver while behind the wheel. Safety can be compromised if this distracts the driver from concentrating on the operation of the vehicle. So Mazda made the thorough review of safety performance an inherent part of the development of the new connectivity system. In accordance with the concept that convenience should never come at the cost of safety and that the first step in the task of enhancing connectivity was to ensure the highest level of safety, Mazda invested a great deal of time and research into developing a cockpit which places the driver in the optimum position to concentrate on driving while appropriately processing a variety of information. This research resulted in the “heads-up cockpit” concept.

New Human-Machine Interface based on the “Heads-up Cockpit”

Mazda is introducing a next-generation Human-Machine Interface (HMI) based on the *heads-up cockpit* concept to accompany the enhancement of its connectivity system. The thoroughly human-centered design of the HMI starts with the basics* such as improving the driving position and field of vision, and features a newly developed device layout and Graphical User Interface (GUI).
Based around Mazda’s unique commander control, the interface has been designed to be simple and easy to use as well as minimizing cognitive, visual and manual distractions to help the driver concentrate on the task of driving.
Please refer to p.16 for more information on the basic performance features.

Unique device layout

The cockpit is clearly divided into two zones which delineate information that is necessary for the safe operation of the vehicle from that which is infotainment, thus minimizing cognitive distraction

Necessary driving information, including vehicle speed, engine speed and alerts from safety equipment, is presented in the zone located directly in front of the driver. Among these, active data that changes constantly while driving, such as vehicle speed and turn-by-turn directions, is presented on the Active Driving Display, which is positioned to be clearly visible to the driver with the minimum of eye movement. Data that reflects the status of the vehicle, such as engine speed and gear position, are displayed in the meter cluster below.

Infotainment data, such as maps, and audio system controls are shown on a seven-inch center display positioned high on the dashboard slightly closer to the passenger seat so as not to hinder safe operation of the vehicle.

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● Active Driving Display

“Head-up” displays present information without requiring the driver to look away from the road. The Active Driving Display is the first head-up display to be used in a Mazda vehicle. It uses a mirror to reflect images from a display panel and project them on the combiner, a clear panel vertically mounted atop the back of the meter hood to achieve minimal visual distraction. To minimize eye movement and focal adjustment by the driver, the focal point is set at approximately 4.9 feet ahead of the driver’s eye point. The vehicle speed, automatic cruise control speed settings, navigation system turn-by-turn directions and alerts from the advanced safety systems such as the Smart City Brake Support system and Lane Departure Warning System (Japan excepted), are displayed in real time along with other important driving information.

● Seven-inch center display

To date, LCD panels that display audio and navigation system data have been mounted in the center of the instrument panel for the sake of design. This required a great deal of eye movement as the driver looked away from the road and ahead. Introducing an independent seven-inch display positioned at the top of the new Mazda3’s dashboard enables the driver to check the display with a minimal 13 degrees downward movement of the eyes. This contributes greatly to minimizing visual distraction.

● Graphical User Interface (GUI)

The GUI for the new Mazda3 eliminates as many operating steps as possible in order to minimize visual distraction. For example, there are dedicated buttons located in front of the rotary commander to allow direct control over the most frequently-used functions of the audio and navigation systems. Another dedicated button enables the driver to select from a list of preset “favorite” functions. The Back button makes it quick and easy to correct any mistaken selections. The interface also features high-quality graphics that are faithful to the KODO design aesthetic.

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● Multi-function commander control

The commander control, which will be available in all markets for the first time with the all-new Mazda3, minimizes both visual and manual distraction by providing total control over the center display in a single device that can be operated by touch alone. The commander control is positioned where the driver can reach it by simply removing one hand from the steering wheel and moving it down in a natural motion toward the center console. This enables natural control over related operations without requiring the driver to make visual confirmation.

The commander control is comprised of a rotary commander in the center surrounded by five function switches. When the driver reaches down, the five switches lay in a position beneath the five fingers in a manner that allows for natural operation without requiring visual confirmation. The center display is primarily controlled by the commander control but many functions can also be controlled by voice commands or by the touch screen when the car is not in motion.

● Voice commands

The driver can control a number of functions simply by speaking into the microphone. This includes menu switching, the audio system’s play, stop and skip controls, radio station selection as well as zoom in and out for the navigation system’s map displays. When a mobile music player or smartphone is connected to the onboard head unit, voice commands can also be used to search for songs by artist name or to search by name for phone numbers stored in the smartphone’s contact list. Voice commands can also be used to enter addresses, landmark names, and restaurant names when setting destinations for the navigation system.

The new in-vehicle connectivity system by Mazda

Expanding on features already delivered on Mazda's new generation products, which include Bluetooth® connectivity for hands-free phone function, mail reception, Internet radio and real-time traffic reports, the new connectivity system from Mazda greatly advances the level of convenience and responds to a far wider range of needs. Even as the operating systems of smartphone and other devices evolve to add new features and functionality, Mazda's new connectivity system can be updated at the OS level to support the changes. As such, this innovative platform ensures customers always have access to the latest services without swapping out any hardware.

System features

The new connectivity system can be used on its own or connected to a mobile phone or other mobile device that supports USB audio or Bluetooth® connectivity. In addition, it offers a variety of infotainment features accessed from the Internet when connected via Bluetooth to the customer's iPhone or Android-based smartphone.

● Audio features

The onboard system can receive terrestrial AM/FM broadcasts with support for Radio Data System (RDS) in Europe and Hybrid Digital (HD) radio in North America as well as SiriusXM Satellite Radio programming (only on North American specification vehicles). It supports audio playback from CDs, the customer's iPod or other mobile audio player, and USB memory sticks. When connected to a smartphone, the system also allows access to Aha Radio* content and other Internet radio programming.

The first implementation of Aha Radio in a Mazda product allows customers to access more than 30,000 broadcasts from Europe and the United States, specialized programming of various genres as well as broadcasts from distant locations. In addition, the service offers downloads of free audiobooks.

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Another Internet radio service being introduced is Stitcher*. This on-demand service provides more than 15,000 talk shows, music programs and podcasts from around the world. Users can enjoy listening to their favorite content whenever they please.

North American specification vehicles also continue to provide Pandora® radio service. Premium subscription users can create up to 100 personalized stations and listen to continuous music, or search for similar songs for automatic playback. As a result, they can enjoy listening only to music that matches their preferences while driving.

Further heightening the enjoyment of listening to music is the optional Bose® premium audio system. Developed jointly by Bose and Mazda, the system is optimized for the new Mazda3 and incorporates the latest in playback technologies. It also adopts Bose Centerpoint® 2 virtual surround sound playback technology. The updated system delivers rich virtual surround sound for a pleasing listening experience with plenty of power, even when playing back audio from MP3 and other compressed files, radio and other sources.

**Not available in some regions.*

● Communication features

Customers can choose the communication function of their choice, including phone, email and short message service (SMS).

The previous Mazda3 supported hands-free phone communication and contact list access when a mobile phone was connected to the onboard system via Bluetooth. The new Mazda3 adds the ability to receive email and SMS messages while showing a list of sender IDs on the display, and can also read mail aloud using text-to-voice software when the car is in motion. In addition, the system can send replies from a selection of preset messages. Messages can also be edited on the keyboard screen using the commander control or touch screen when the vehicle is stopped.

A connected smartphone in conjunction with Aha's social media contents can be used to read aloud the latest tweets in the customer's Twitter timeline. It can also read aloud the latest Facebook news feed entries and allows the customer to "like" entries or post audio messages using the Shout function.

● Navigation features

As with the previous Mazda3, the navigation system can set the target destination based on the contact list in the customer's mobile phone, making it easy to set a family member or friend's location as a destination. When a smartphone is connected, the system enables the customer to search the Internet for the location of places they want to go (not available in some regions). This makes it easy to set new places to visit as target destinations. Customers can access Yelp using Aha to do more than find the location of restaurants and the distance to them. Yelp entries help to choose a restaurant serving what the customer feels like eating at the moment, to check the reviews, pricing and more. (Yelp is not available in some regions.)

The system displays turn-by-turn directions on the Active Driving Display* mounted directly in front of the driver instead of only showing them on the map, as with previous systems. Displaying the turn-by-turn directions alongside the speedometer and other important information reduces visual distraction and allows the driver to operate the vehicle safely. Offering the navigation system with data provided on SD media cards as an option makes it possible to supply high-quality map data, more accurate destination searches and precise route directions. The customer can use a computer to update the data free of charge for three years.