zoom-zoom

ALL-NEW

MAZDA MX-5 RF

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CONTENTS

A MESSAGE FROM THE MX-5 AMBASSADOR

Bringing the joy of open-top driving to a wider audience: A new challenge to awaken a latent sense of excitement

Having an MX-5 makes life richer and more fun. With this small, convertible sports car, we want to offer even more people a fun-filled life through driving pleasure.

Many people who would love to own a convertible end up choosing a car with a fixed hardtop roof instead.

Hoping to share the wonder and thrill that come with putting the top down, we offered a Power Retractable Hardtop for the first time on the third-generation MX-5.

The first and second generations had both offered a detachable hardtop, but with its motor-driven retractable roof, the third-generation model made the joy of open-top driving accessible to a wider range of people and was a hit with customers around the world.

With the hardtop version of the fourth-generation Mazda MX-5, we stayed true to our aim of making open-top driving more accessible, but freed ourselves from traditional ways of thinking and took on new challenges in order to create something completely new; the All-New Mazda MX-5 RF.

Beautiful fastback styling and a new kind of open-air feel

The development of the All-New Mazda MX-5 RF was a new undertaking that entailed broadening the appeal of the fourth-generation soft-top model, a car that further hones the pure driving fun that has defined the model since going on sale in 1989.

The basic premise of the soft-top model is top-down driving, and in comparison we expect MX-5 RF owners will spend more time with the top closed.

So we began development by throwing our thinking into reverse; our aim was a convertible sports car with gorgeous fastback lines when the roof is closed and an exhilarating open-air feel when open.

We asked ourselves what it meant to make a driver's car with a power-retractable roof, ditched the traditional idea of stowing the entire roof and developed styling that further articulates an iconic sports car design.

The cabin is luxurious and quiet when closed, and the rear roof produces a completely new open-air driving feel when the top is down. And with the ability to smartly and smoothly transition between the two, the car will provide thrills in any driving conditions.

I believe the MX-5 RF is a car that could only have been created at Mazda, where everyone involved in the creative process aspires to take on new challenges.

Envisioning the future with two MX-5 models

The MX-5 has been tremendously popular with car enthusiasts around the world and global production volume reached the one million mark last April.

While the fourth-generation soft-top model honed the pure driving pleasure of a lightweight sports car, the hardtop model, with its exquisite fastback styling and a new open-top feel, has a personality of its own.

I hope the launch of the All-New Mazda MX-5 RF will awaken hidden emotions and dormant sensibilities among our customers.

And with these two MX-5 models, I hope we can help introduce the joy of driving a convertible sports car to a wider audience and help even more people live rich, fun-filled lives.

In order to achieve this, now and into the future, we will continue our efforts to "innovate in order to preserve."

Nobuhiro Yamamoto
Mazda MX-5 Ambassador

A MESSAGE FROM THE CHIEF DESIGNER

Creating a compact sports car that envelops you in beauty: Craftsmanship that offers the ultimate in KODO design

I wanted to introduce the fun of driving a lightweight sports car to a broader audience, and it was my love for the Mazda MX-5 that gave birth to the design of the All-New Mazda MX-5 RF.

If we consider the soft-top model to represent the purist appeal of the lightweight sports car, which we recently honed in a stoic effort to reach new heights, then the retractable fastback represents a new type of MX-5 that aims to be a compact sports car with a natural charm that anybody and everybody will find beautiful.

I figured the addition of a hardtop version of the fourth-generation MX-5 demanded that we introduce a sleek fastback design with a smooth line joining the roof to the rear end so that we could create a look of beauty that would appeal to all.

I considered this point critical to the design, and didn't waver over that conviction for a moment.

To convey the fun and charm of the MX-5 experience to a larger, more diverse range of people rather than just sports car fans, I felt the Mazda MX-5 RF must embody natural beauty and not attempt to attract attention by merely being different.

This led me to quickly decide to adopt fastback styling. The rub was that this also became the biggest hurdle in designing the MX-5 RF.

It may not look like it at a glance, but this is a car with a retractable roof! It's a car that lets drivers enjoy the pleasure of open-air driving along with a unique sense of being ensconced securely in the cabin.

It would be impossible to achieve a combination of this new form of driving pleasure and beautiful fastback styling if I applied conventional thinking.

Anything short of creating a new design expression and teaming up with the design and production engineers to approach the project with passion and determination as a team, and the whole concept would be just pie in the sky.

I am hoping the Mazda MX-5 RF will surprise a wide variety of people and contribute to increased interest in the MX-5, while increasing the number of people who enjoy the car's beauty and the pleasure of driving without limiting the appeal to those interested in sports cars.

Masashi Nakayama
Mazda MX-5 Program Manager
& Chief Designer

INTRODUCTION

CHANGING STYLE, UNCHANGING VALUE, NEW NAME

By the end of the third-generation MX-5's model life, the retractable hard top model accounted for more than half of all MX-5s sold globally and was popular with those who wanted all-season comfort and utility.

As a member of the MX-5 family, the fourth-generation retractable hardtop model embodies the core value of "lots of fun," which the MX-5 has consistently offered over the past 27 years.

At the same time it features a new and unique design and lets occupants enjoy a new kind of open-air driving feel.

Therefore, our challenge was to create a name that would more accurately define this new, more premium experience we envision will attract a new kind of buyer, yet preserve the unchanging values that MX-5 fans have admired since the inception of the model.

The result was All-New Mazda MX-5 RF - Retractable Fastback - a name that denotes the model's retractable hardtop and fastback styling, and will surely resonate with enthusiasts and drivers around the world.

Same philosophy. New design.
Mazda MX-5 RF.

THREE DISTINCTIVE MX-5 CHARACTERISTICS STAUNCHLY PRESERVED

The first decision made when preparing to develop the Mazda MX-5 RF was to retain the following three key features. It had to be lightweight and compact; it had to have the same wheelbase as the soft-top model; and it could not significantly sacrifice boot space.

By no means was the wheelbase to be extended or the practicality of the boot space overly compromised in building a retractable hardtop version of the MX-5.

At the same time, every effort to keep the model as light as possible was to be made. It is this firm resolve that makes the Mazda MX-5 RF true to the MX-5 heritage.

The fastback styling, a result of reverse ideation, creates a beautiful design that will delight any viewer at a glance.

The MX-5 RF does not feel heavy and its compact body delivers all the pleasure of *Jinba-ittai* driving.

Its boot delivers all the convenience and ease of use of the soft-top model. Its new open-air styling delivers a pleasing sense of freedom. In every aspect of its design, the MX-5 RF faithfully carries on the open-top sports car characteristics of the soft-top model.

THREE KEY VALUES THAT MAKE THE MX-5 RF UNIQUE AND FUN

1. Beautiful fastback styling that resonates with any car lover

Exterior Design

- Appealing fastback styling with a beautiful smooth line joining the roof to the rear end. This is at the heart of all true sports car design
- Designers worked hard to give the cabin the perfect teardrop shape
- It features the same compact packaging as the soft-top model, including overall length, width and wheelbase (Overall height has increased 5mm).

Interior design

- The soft touch of real nappa leather adds a feeling of even higher quality and contributes to the relaxed, sophisticated ambience of the interior
- The information display to the left of the three-meter cluster adopts a dedicated 4.6-inch colour TFT LCD screen that displays an animation of the roof when it is opening or closing.

2. A new open-air sensation with a feeling of being ensconced securely in the cabin as well as a pleasing sense of freedom

Retractable hardtop

- The MX-5 RF's retractable hardtop consists of a front roof, middle roof, rear roof and back window glass
- Synchronising and overlapping the various movements of the roof sections enables MX-5 RF to achieve an opening/closing time of approximately 13 seconds, one of the fastest for any vehicle with retractable hardtop as genuine parts on the market*
- When the roof is open, the front and middle roof sections are stowed together with the back window glass in the space behind the seats
- A new power top lock makes it possible to open and close the roof with a simple flip of a switch
- A new control system enables the roof to be opened or closed, even when in motion at speeds of 10km/h or less.

New open-air sensation

- The unique shape of the rear roof and the retractable back window, which automatically opens when the roof is lowered, delivers a new open-air experience that combines a feeling of being ensconced securely in the cabin with an invigorating sense of freedom
- The model's unique design featuring a back window glass that retracts when the top is down, enabling the driver to fully enjoy the pleasing exhaust note coming from the rear, helping to deliver the true pleasure of the open-top driving experience
- A large acrylic aero board wind blocker helps prevent air from the rear blowing back into the cabin, but maintains visibility out of the rear.

Boot

- With a 127 litre boot capacity, it is almost the same as the soft-top model, even when the roof is stowed. The boot can accommodate two carry-on bags measuring 550mm x 400mm x 220mm†.

3. A quiet cabin with the relaxed feeling of a quality ride

- The Mazda MX-5 RF adopts a dedicated tunnel member that matches changes in front-rear rigidity that result from the change to a retractable hardtop. The overall balance was enhanced to achieve both a feeling of high rigidity and of the unity between driver and car that is characteristic to the MX-5
- In addition to thoroughly revising the suspension settings, the dampers and Electric Power Assist Steering (EPAS) system were tuned specifically for the Mazda MX-5 RF. This maintains the lively driving performance one expects of the Mazda MX-5, while at the same time delivering relaxing comfort and a refined ride
- The front and middle roof panels adopt a sound-absorbing headliner. Sound-absorbing and insulation materials selected specifically for use on the MX-5 RF were also added inside the body and door trim. The result is a significantly quieter ride when the roof is closed and an improved engine note, which in turn provides a refined cabin environment that heightens the feeling of a quality ride

Other noteworthy product features are as follows:

- The powertrain lineup consists of a 2.0 litre SKYACTIV-G petrol engine paired with either a six-speed SKYACTIV-MT manual transmission or six-speed automatic transmission
- A human-centred perspective was adopted in pursuing advanced safety based on the company's safety philosophy, Mazda Proactive Safety
- The i-ACTIVSENSE advanced safety technologies employed by MX-5 RF include Blind Spot Monitoring (BSM) and Rear Cross Traffic Alert (RCTA)
- MZD Connect makes it less distracting and easier to take advantage of phone and internet connectivity services while enjoying a drive.

*Measured from the time the switch is pressed until the roof locks in the lowered or raised position (Mazda in-house study, August 2016). † Stated dimensions determined by testing with soft-sided carry-on bags.

AT A GLANCE

FAST FACTS

- The fourth generation Mazda MX-5 soft top with 1.5L engine went on sale in August 2015
- Sales for the 2.0L engine alternative started in December 2015
- Production of Mazda MX-5 passed 1 million in April 2016, with sales reaching the same milestone in December
- The All-New Mazda MX-5 RF starts from $38,550 plus on road costs
- RF stands for Retractable Fastback
- In Australia the RF is available in two grades – the RF entry grade and high grade RF GT
- The RF GT is also available with a black painted roof and premium nappa leather interior trim – meaning there is technically a third RF option
- Locally, the RF is offered with a 2.0L SKYACTIV-G petrol engine mated to a six-speed SKYACTIV-MT manual or six-speed automatic transmission
- With six body colours to choose from, Machine Grey Metallic makes its MX-5 debut replacing Meteor Grey Mica (RF model only)
- The retractable hard top is made up of four parts, the front, middle and rear roof and a back window glass panel
- The front roof is made of aluminium, the middle of steel and the rear of molded plastic
- Push button operated, the retractable roof can be opened and closed at speeds of up to 10km/h and takes 13 seconds from start to finish
- The hardtop for the 6MT adds 47kgs compared to the 2.0L soft top Roadster, and up to 49kg to the 6AT versus the 2.0L Roadster GT
- Fuel economy numbers start from 7.0L/100km for the 6MT, rounding out at 7.4L/100km for the 6AT
- Both grades come with the following standard safety: ABS, BSM, DSC, EBD, ESS, HLA, RCTA, TCS & TPMS.

MAZDA MX-5 RF RANGE HIGHLIGHTS

ALL-NEW MAZDA MX-5 RF

Manufacturer's List Price (MLP) from $38,550

Powertrain

- 2.0 litre in-line 4 cylinder 16 valve DOHC SV-T (SKYACTIV-G) petrol engine
- Max power: 118kW @ 6,000rpm
- Max torque: 200Nm @ 4,600rpm
- Transmission: 6-speed manual (SKYACTIV-MT) or 6-speed auto
- Fuel Consumption (combined): 7.0L/100km (manual) or 7.4L/100 (auto)

Mazda MX-5 RF features include:

- 17" alloy wheels with 205/45 tyres
- Body coloured retractable roof
- Daytime running lamps (LED)
- Headlamps (LED)
- Power mirrors (piano black)
- Seat trim: black cloth
- Air-conditioning
- Cruise control
- Audio system with: AM/FM tuner and 6 speakers
- 7-inch touchscreen display (MZD Connect)
- Bluetooth® hands-free phone and audio capability
- Internet radio integration (Pandora®, Stitcher™ and Aha™)
- Multi-function commander control
- Satellite navigation
- Airbags SRS: front and side (driver and passenger)
- Blind Spot Monitoring (BSM)
- Limited-Slip Differential (MT only)
- Rear Cross Traffic Alert (RCTA)
- Tyre Pressure Monitoring System (TPMS)

ALL-NEW MAZDA MX-5 RF GT

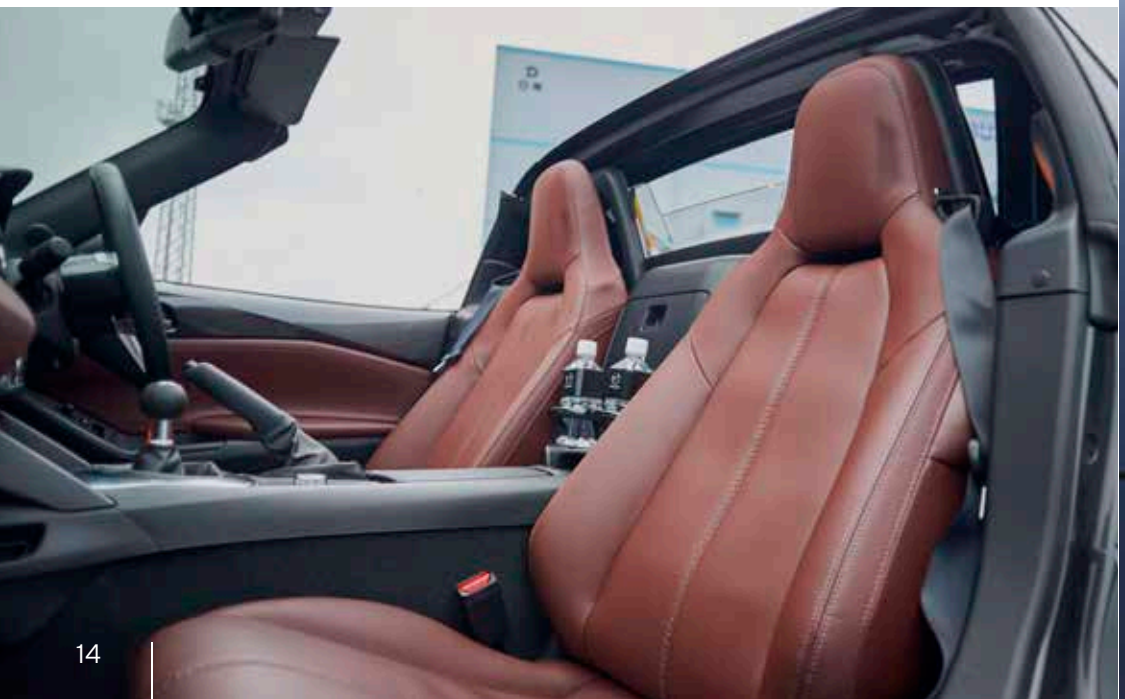
Manufacturer's List Price (MLP) from $43,890

Powertrain

- 2.0 litre in-line 4 cylinder 16 valve DOHC SV-T (SKYACTIV-G) petrol engine
- Max power: 118kW @ 6,000rpm
- Max torque: 200Nm @ 4,600rpm
- Transmission: 6-speed manual (SKYACTIV-MT) or 6-speed auto
- Fuel Consumption (combined): 7.0L/100km (manual) or 7.4L/100 (auto)

Mazda MX-5 RF GT additional to RF:

- Body coloured or two-tone retractable roof
- Headlamps auto on/off
- Power mirrors (body coloured with heating)
- Rain-sensing wipers
- Seat trim: black or tan leather, or Chroma brown nappa leather
- Front seats with: heating function
- Climate control air-conditioning
- Rear-view mirror with auto dimming function
- Premium Bose® 203 watt amplifier with 9 speakers
- Satellite navigation
- Adaptive Front-lighting System (AFS)
- Advanced keyless entry



SALES AND PRICING

Since the arrival of All-New Mazda MX-5, more than 2,500 have been sold including 1,577 in 2016 – making it the biggest calendar year result in Australian MX-5 history.

When the RF goes on sale in February, Mazda is expecting a 60:40 hard top v soft top sales split, with approximate overall MX-5 sales of 140 per month over the 2017 calendar year.

Looking ahead, over the course of the financial year (April 1, 2017 – March 31, 2018) Mazda expects the following sales splits:

OVERALL GRADES		
Roadster | RF	40%	30%
Roadster GT | RF GT	60%	70%
RF GRADES		
2.0 RF 6MT	20%	
2.0 RF 6AT	10%	
2.0 RF GT 6MT	50%	
2.0 RF GT 6AT	20%	
SOFT TOP v HARD TOP		
1.5 Soft-top	25%	
2.0 Soft-top	15%	
2.0 RF	60%	
MANUAL v AUTO	**1.5L**	**2.0L**
6MT	60%	70%
6AT	40%	30%

	Forecast FY2017/18
1.5 Roadster 6MT	6%
1.5 Roadster 6AT	4%
1.5 Roadster GT 6MT	9%
1.5 Roadster GT 6AT	6%
2.0 Roadster 6MT	3%
2.0 Roadster 6AT	1%
2.0 Roadster GT 6MT	8%
2.0 Roadster GT 6AT	3%
2.0 RF 6MT	13%
2.0 RF 6AT	5%
2.0 RF GT 6MT	29%
2.0 RF GT 6AT	13%

All-New Mazda MX-5 RF – Manufacturer's List Price (MLP)*

GRADE	Transmission	Interior	MLP
Mazda MX-5 RF	6MT	Cloth	$38,550
	6AT	Cloth	$40,550
Mazda MX-5 RF GT	6MT	Black or Tan Leather	$43,890
	6AT	Black or Tan Leather	$45,890
Mazda MX-5 RF GT with Black Roof	6MT	Nappa leather	$44,890
	6AT	Nappa leather	$46,890
Soul Red Metallic / Machine Grey Metallic price premium			$300

*Manufacturer's List Price (MLP) includes GST and Luxury Car Tax (LCT) where applicable but excludes dealer delivery, registration, third party insurance costs, stamp duty and other mandatory charges.

DESIGN

EXTERIOR DESIGN

Beautiful Fastback styling that resonates with any car lover

The design goal for the All-New Mazda MX-5 RF was to create the ideal form for a hardtop version of the MX-5.

In other words, it was to achieve an entirely new roof design with a beautiful cabin accentuating the hardtop silhouette when the roof is closed, while also offering the same level of open-air comfort and freedom afforded by the soft-top version when the roof is open.

To this end, Mazda set about creating an uncompromising design based on the following four ideals:

1. A beautiful silhouette

In contrast to the open styling of the soft-top model, the Mazda MX-5 RF will often be appreciated for its hardtop styling with the roof closed. This demands that the cabin presents a beautiful silhouette when the roof is closed.

The rear roof features side sections that slope down gently toward the rear, while also tucking in at the sides to create a perfect teardrop shape for the cabin. The flowing roof line along the A-pillars, roof sides and rear roof, combine with the straight body line that runs from the low bonnet through to the rear deck, creating an elegant, beautiful fastback silhouette that accentuates its styling.

While the overhead roof panels and back window glass are stowed out of sight, the rear roof stays in position when the top is down. This differs from any other hardtop model on the market to create a truly unique new design expression.

2. Compact packaging

The only change to the Mazda MX-5 RF's exterior dimensions is a 5mm increase in the height of the roof, bringing the overall height to 1,235mm.

Its 3,915mm overall length and 2,310mm wheelbase remain exactly the same as on the soft-top model.

By maintaining the MX-5's characteristic compact packaging, the MX-5 RF achieves the same stable and dynamic stance, and a cockpit that, from the instant the driver climbs into it, continues to evoke anticipation of faithful response and the driving pleasure to come.

3. A new open-air experience

Mazda MX-5 RF features unique styling when the roof is open by which the overhead roof panels and back window glass are stowed away out of sight.

The result is a pleasing sense of freedom combined with a reassuring feeling of being wrapped securely in the cabin.

This combines with the enjoyable exhaust note coming from the rear of the car to amplify the fun of open-air driving.

4. Independent boot

Mazda MX-5 RF does not sacrifice practicality for the sake of offering a retractable roof.

In addition to the efforts of the designers and packaging engineers to create a beautiful silhouette while adopting the hardtop, the independent boot capacity is only three litres smaller than the soft-top model.

Effort devoted to the parting lines between the roof and body

A concerted effort went into creating fine parting lines that make the Mazda MX-5 RF's roof and body appear as a single piece and heightens the beauty of its unique fastback styling.

One example is the great care devoted to creating a wedge construction by which the four corners of the rear roof section fit snugly into grooves in the body that hold them firmly in place.

The design minimises the gap between the roof and body, creating a smooth fit all the way around with no breaks in the line. This creates the impression of the two sections forming a single solid part.

Made through a cooperative effort between the design, planning and production departments, it achieves a higher level of functionality when opening and closing the roof, as well as a more beautiful silhouette.

BODY COLOURS

Machine Grey Metallic

This is a newly developed body colour first introduced on the Brand-New Mazda CX-9 three-row crossover SUV. Machine Grey Metallic was developed to express the beauty of a machine's strength and precision. With strong contrast between light and shadow and a sleek, high-density finish, it gives the impression that the vehicle's body has been sculpted from a solid steel ingot.

A lineup of six body colours

In addition to Machine Grey Metallic, the lineup includes Soul Red Metallic, Ceramic Metallic, Blue Reflex Mica, Crystal White Pearl Mica and Jet Black Mica.

Roof colour

The sides of the roof are colour matched to the body colour, while the rear roof is black on all models. The top of the roof is available in either piano black, which establishes a two-tone look, or the body colour, for a monotone finish.

INTERIOR DESIGN

Major interior design features include body panels that wrap around and extend right into the door trim, as well as a cockpit zone centred on the driver and around which all major controls are laid out in perfect symmetry.

Benefitting from its hardtop, Mazda MX-5 RF significantly improves ride quietness and heightens the feeling of high quality.

Detail design

The basic design features are essentially the same as on the soft-top model.

This includes the elaborate three-meter cluster and sharp-looking, compact steering wheel, as well as the horizontal layout of the instrument panel and strong sense of front-rear movement conveyed by the door trim.

The two points that differ on the Mazda MX-5 RF are as follows:

▷ **Meters**

The information display to the left of the three-meter cluster adopts a dedicated 4.6-inch colour TFT LCD screen that displays an animation of the roof when it is opening or closing.

▷ **Hardtop open/close button**

A button for opening and closing the roof is positioned on the panel below the dials for the air-conditioning system.

Seat design and interior colours

In addition to the black interior, available in black fabric or black and tan leather, the Mazda MX-5 RF also offers an auburn-coloured nappa leather interior option.

▷ **Fabric seats**

The grid-like pattern for the fabric seats features a dull glow similar in appearance to rubber and expresses a solid three-dimensional quality. Three rows of vertical stitching create a rich expression that changes depending on how shadows fall on the material.

▷ **Leather seats**

The pleat in the centre section features hexagonal diamond-shaped stitching. Detailed, precision finishing expresses high-quality craftsmanship.

▷ **Nappa leather seats**

The higher level of quality and soft touch of Auburn-coloured nappa leather seats enhances the interior's relaxing and sophisticated ambience. Grey stitching is used on the seats and centre sections of the door trim.

Aerodynamics

To optimise lift balance in conjunction with adopting the MX-5 RF's fastback styling, an air dam was added to the centre of the radiator undercover.

This suppresses the generation of turbulence when air flows from the front wheel housings to the sides of the body.

As a result, it contributes to better straight-line stability and a feeling of stability when changing lanes.

PACKAGING

A NEW OPEN-AIR SENSATION WITH BOTH A FEELING OF BEING ENSCONCED IN THE CABIN AND A SENSE OF FREEDOM

By combining a beautiful and functional compact body with an innovative new power retractable hardtop design, the Mazda MX-5 RF gives birth to an entirely new open-air sensation with a feeling of being ensconced securely in the cabin as well as a pleasing sense of freedom.

Power retractable hardtop roof

The Mazda MX-5 RF adopts a power retractable hardtop that consists of three sections – a front roof, middle roof and rear roof – as well as a back window glass panel.

Its innovative new styling leaves the rear roof in place on the body while stowing away the overhead (front and middle roof) sections when the roof is open.

New roof construction

- In pursuit of achieving a lightweight and functional design, the Mazda MX-5 RF uses different materials for each of the three respective hardtop sections. The front roof is made of aluminum, the middle roof is steel, and the rear roof is molded from SMC (Sealed Mold Compound) plastic. In addition, the black garnish that creates a graphic continuity between the rear roof and door windows, and also enhances the beauty of the arc described by the rear roof line, is made of a new bio-based engineering plastic that achieves a look of high quality without requiring a painted finish
- Meticulous care was devoted to minimising the weight of each and every part needed to make the change to a hardtop design. As a result, the amount of weight the roof assembly adds over that of the soft-top model was kept to approximately 47kg.

Opening and closing of the power retractable roof

The roof can be opened and closed with the simple press of a switch positioned on the panel below the air-conditioning system dials.

The roof opens when the upper part of the switch is pressed continuously, and it closes when the lower part is pressed in the same fashion.

In addition, a power top lock replaces the manual top lock of the previous hardtop model to make the opening and closing operations easier and more convenient.

- On the previous generation, the door windows automatically lowered when opening or closing the roof. The MX-5 RF enhances this feature by also raising the windows back to their original positions once the roof is opened or closed. This function operates if the windows are within 55mm of being fully raised before the roof is opened or closed
- The front roof, middle roof and back window glass are controlled to overlap as each part moves when the roof is opened or closed. This ensures a smooth operation and achieves an opening/closing time of approximately 13 seconds, to be one of the fastest of any retractable hardtop on the market*
- To help ensure safe operation, the system also incorporates a mechanism that prevents objects from getting trapped and pinched. If the system detects an object being pinched, it immediately ceases the opening or closing operation.

*Measured from the time the switch is pressed until the roof locks in the lowered or raised position (Mazda in-house study, August 2016).

The roof can now be opened or closed while the car is in motion

- A new control system enables the roof to be opened or closed when the MX-5 RF is in motion, provided it is traveling at speeds of 10km/h or less. This function also requires the switch to be pressed and held
- For example, when stopped at a traffic light and opening or closing the roof, the driver can pull away when required to move, even before the operation is completed, and then finish opening or closing the roof while proceeding at low speed. By allowing the driver to open or close the roof while also accelerating from a standstill, the system delivers greater reassurance and convenience.

Animated display when the roof is opening or closing

- The information display to the left of the three-meter cluster adopts a dedicated 4.6-inch colour TFT LCD screen that displays information related to the state of the roof
- A five-step animation of the roof's current state is displayed while it is opening or closing. This enables the driver to visually confirm its progress without turning around to check on it. The system also displays a text explanation when the roof cannot be opened or closed for reasons that might include the boot being open or some sort of system failure.

New open-air sensation

The shape of the rear roof's upper section is optimised, and the MX-5 RF also adopts a larger aero board wind blocker than on the soft-top model.

These changes improve the balance of air pressure inside and outside the car when driving with the roof open, while also effectively suppressing air blowing back into the cabin from the B-pillar or rear.

Using a transparent acrylic material for the aero board achieves sufficient rigidity to withstand even powerful wind forces, while also securing visibility out of the rear. The angle of the aero board is also optimised to prevent it from reflecting instrument panel illumination in the rearview mirror at night.

The inside of the rear quarter trim is shaved away to help control the flow of air coming in from the sides, so it travels smoothly toward the rear instead of swirling around within the cabin.

Independent boot

The Mazda MX-5 RF boot does not sacrifice practicality for the sake of offering a retractable hardtop roof.

With a capacity almost the same as on the soft-top model (127L v 130L), it can accommodate two carry-on bags measuring 550mm x 400mm x 220mm*.

In addition, the design minimises variations in protrusions and recesses in the trim around the opening, and the number of ridgelines within, to produce a clean look of roominess and maximum space.

Also stowed within the boot is a multipurpose box for storing tools and other items that add extra convenience.

* Stated dimensions determined by testing with soft-sided carry-on bags.

Audio system

The Mazda MX-5 RF is available with a standard equipment six-speaker audio system, as well as a nine-speaker Bose® premium sound system on the RF GT.

This is the same lineup as available on the soft-top model.
Vehicles equipped with the six-speaker configuration include a pair of headrest speakers on the driver's side that make listening to music more pleasant and also deliver clearer sound during hands-free phone conversations.

Those with the Bose® premium sound system include an additional pair of headrest speakers for the passenger seat as well.

The MZD Connect car connectivity system

MZD Connect makes it safer and easier to take advantage of functions including internet connectivity and access to social networking services while driving the Mazda MX-5 RF.
In addition to the audio functions, it also offers hands-free telephone operation, access to Twitter and other communication functions, as well as navigation functions.

DRIVING DYNAMICS

A QUIET CABIN WITH THE RELAXED FEELING OF QUALITY RIDE COMFORT

New personality that delivers a quality *Jinba-ittai* experience.

Based on the keyword "sensations", the fourth-generation Mazda MX-5 aimed to deliver the pleasure of faithful response that matches the rhythm the driver envisions.

The Mazda MX-5 RF now aims to bring the fun of open-top sports car driving to a broader audience by further enhancing the quality of the *Jinba-ittai* experience Mazda has pursued since launching the first generation MX-5.

The Mazda MX-5 RF provides true driving pleasure and comfort in any situation, as well as the quiet cabin environment of a hardtop model.

At the same time, it delivers the driving sensation unique to the MX-5 by which the car instantly and faithfully responds to the driver's every action as though it were a natural extension of his or her own body.

With a personality all its own, the Mazda MX-5 RF brings a deeper, higher quality *Jinba-ittai* experience to the world of MX-5 driving fun.

Body rigidity

The Mazda MX-5 RF employs the SKYACTIV-BODY for an open-top light weight sports car (LWS) that was developed for the fourth-generation soft-top model.

It is a lightweight yet highly rigid body that provides excellent safety performance.

Additional tuning for the MX-5 RF enhances the balance of front-rear rigidity in consideration of the introduction of the hardtop that connects with the left and right arches in the body.

Detailed studies to achieve this led to developing a dedicated tunnel member design that ads optimally positioned weight-reducing holes.

The result is the feeling of high rigidity that one expects of a hardtop model combined with the characteristic MX-5 behaviour that instills a sense of oneness between driver and car.

The development team did not blindly seek to simply achieve a high level rigidity. Rather, by focusing efforts on how people experience the sensations of driving, it aimed to build a car that further enhances *Jinba-ittai* and the faithful response to the driver's intentions it provides.

Suspension system

The Mazda MX-5 RF employs in-wheel double-wishbone suspension in the front and multilink suspension in the rear.

Although the change to a hardtop design increases its weight and overall height, the settings for the suspension system's various components were thoroughly revised specifically for the Mazda MX-5 RF.

No compromises were made in further evolving the model's ride characteristics. At the same time, these new settings also provide a smooth, quality feeling to the ride that befits a hardtop model.

- The gas pressure in the dampers was enhanced to compensate for the increased weight that accompanies the change to a hardtop design and to improve the feeling of the suspension's stroke and grip on the road
- The settings for the front stabiliser bar and the springs, bump-stops and suspension links in the rear were all revised to account for the hardtop model's change in weight and structural rigidity.

Steering system

The weight increase that accompanies the introduction of the new hardtop design and the subsequent changes made to the suspension settings greatly affect the feel of the steering system.

Accordingly, the Dual-Pinion Electric Power Assist Steering system first adopted on the soft-top model is carried over, but its steering assist characteristics were specially tuned for use on the Mazda MX-5 RF.

The result is a further evolution in conveying the response the driver requires from the steering wheel to handle the car precisely in a wide variety of driving situations, while also achieving greater linearity in the feel of steering the Mazda MX-5 RF.

- To evolve the feeling of crispness the instant the driver begins to turn the steering wheel, the amount of assist supplied is increased when turning the wheel very slowly to enhance its responsiveness
- To precisely convey to the driver the counterforce coming from the tyres when the wheel is turned further, the amount of assist is reduced in response to the torque of input from the driver while turning the wheel in a limited range. This results in a more direct feeling to steering wheel operation
- To give a more stable feeling in the way the steering wheel sits when driving at high speeds, the amount of retaining force was made more stable in relation to the speed of steering actions.

Brake system

The brake system employs ventilated discs in the front and solid discs in the rear.

It is designed in the same way as the soft-top model to provide positive control over load shifts and stability when braking.

The brake system employs 15-inch brake calipers and features improved brake booster characteristics.

It delivers linear response to braking operation in the low G-force range and demonstrates solid braking power under higher G-force loads.

In addition, when decelerating, turning and accelerating during cornering, the system provides smooth transfer between longitudinal G-force and lateral G-force, thereby giving greater control when releasing the brake.

NVH performance

In addition to achieving the quiet environment that users expect of a hardtop model, the development team also worked to balance the sounds heard within the interior as they strove to deliver a sense of quality for those riding in the Mazda MX-5 RF.

Particular effort was devoted to quietness when the roof is closed, and to providing a quality cabin environment that further enhances the MX-5 RF driving experience.

- The Mazda MX-5 RF adopts a three-layer headliner with sound insulating characteristics on the inside of the front roof and middle roof sections.

  This combines with the change to a hardtop to contribute significantly to preventing road noise from intruding into the cabin and reducing wind noise when the roof is closed
- The rear wheel housing adopts the same sound insulating material as used in the engine compartment, and also adopts a vibration-damping panel.

  Sound insulating material was also added to the right and left body panels where the rear floor overlaps with the side sills.

  Other measures, including a detailed effort to seal up holes that would otherwise allow sounds to leak into the cabin, combine to greatly reduce that amount of road noise that penetrates the cabin from the rear.

  The result is a quiet cabin that allows occupants to enjoy clearer conversations when the roof is closed

- In addition to adding sound insulating material to the tunnel section, the sound absorbing material in the engine compartment was made thicker and it now covers a larger area.

  Other measures implemented to dampen noise include the use of larger floor mats that cover a larger area, and the sealing of the holes around the shifter.

  As a result, sounds people find annoying, in the 1kHz or higher range, are reduced by approximately 2dB when compared to the soft-top model.

  A small C-shape wall is also mounted on the inside of the rear roof and a lip was adopted to reduce the gap between the rear roof and the B-pillar.

  This suppresses unpleasant wind noise from swirling around the upper part of the B-pillar near the ears of cabin occupants. Attention to subtle changes in the shaping of parts effectively reduces wind noise.

NVH measures shared with the soft-top model

- Measures including a reduced span (distance) between the engine mounts, improved mount characteristics, and the adoption of a C-shape aluminum Power Plant Frame (PPF) reduce the vibration generated by the powertrain
- Optimisation of the suspension system to prevent vibration from resonating between parts, controlling vibration characteristics of the body panels and other measures help reduce road noise
- Adoption of an aerodynamically efficient design for the rear edge of the bonnet, the A-pillars and header reduces wind noise around the windshield and side windows.

Performance that enhances the *Jinba-ittai* experience

The performance feeling the Mazda MX-5 RF development team aimed for does not differ in any way from that of the soft-top model.

Both models consistently follow in the tracks of their predecessors in pursuing a yet higher level of the direct response, expansive power output, engine sound, and shift and clutch feeling that distinguish an LWS.

The pursuit of a performance feeling that delivers a *Jinba-ittai* experience when developing the soft-top model combines with the efforts made to further enhance and refine that experience on the MX-5 RF, resulting in a nimble yet relaxing ride that will satisfy mature drivers.

POWERTRAIN LINEUP

SKYACTIV-G high-efficiency direct-injection petrol engine

The SKYACTIV-G 2.0 litre engine powers the Mazda MX-5 RF.

In addition to its unique piston cavity design, multi-hole injectors, and 13.0:1 compression ratio, the engine adopts a flywheel developed exclusively for the MX-5 and achieves a fine balance of linear performance characteristics and excellent fuel economy.

SKYACTIV-G 2.0 litre petrol

With significantly higher torque output at low- to mid-rpm than that in the previous generation model, the SKYACTIV-G 2.0 petrol engine provides an easy-going torque-rich driving experience.

This engine has already earned high acclaim in the fourth-generation soft-top model.

Further refinement delivers finer control over acceleration rates in response to accelerator pedal action, heightening the feeling of unity between driving operations and the car's behaviour.

See Chapter 15 for full specifications.

SKYACTIV-MT

The All-New Mazda MX-5 RF employs a six-speed SKYACTIV-MT manual transmission, for rear-wheel-drive, that brings out the full potential of *Jinba-ittai* driving.

Features include the short 40mm shift stroke carried over since the first-generation MX-5, a precise and smooth shift feel, and optimised clutch pedal operation based on the application of ergonomics.

Six-speed automatic transmission

The automatic transmission aims to deliver a direct feeling in response to accelerator pedal action and excellent fuel economy, employing features such as lockup control from second gear up and slip control that operates from third gear up.

It also features Drive Selection, which allows the driver to select modes at the flip of a switch to provide an even more direct shift feeling when changing gears.

Sporty engine sound

The sound has been tuned for the Mazda MX-5 RF to take advantage of the quieter cabin environment that accompanies the change to a hardtop design.

The result is a more refined engine note that emphasises the sounds the human ear hears best at each respective engine speed range, as well as the sounds people find most pleasing.

Mazda's Induction Sound Enhancer (ISE) is also adopted on RF GT, amplifying the engine's natural induction sound and delivers it to the cockpit as a lively and pleasing note.

Particularly at engine speeds of 5,000rpm and above, it sounds as though the engine could continue to increase its speed without limit.

SAFETY

THE HUMAN-CENTRED PERSPECTIVE OF MAZDA PROACTIVE SAFETY

Based on Mazda Proactive Safety – Mazda's safety philosophy – the Mazda MX-5 RF introduces a range of i-ACTIVSENSE advanced safety technologies and excellent passive safety features, to what is already a 5-star ANCAP safety rated car.

Active safety

The MX-5 RF employs Mazda's i-ACTIVSENSE advanced safety technologies to help identify potential risks early on and reduce any chance of damage or injury.

These enable the driver to enjoy every outing, whether driving on city streets, on the highway, or on winding roads.

i-ACTIVSENSE combines with the basic performance aspects of excellent dynamic performance with linear response and clear visibility to support the driver through each of the driving processes of recognising hazards, making judgments, and taking the appropriate action.

- **Blind Spot Monitoring (BSM)**
  Now standard across the MX-5 range, this system helps keep the driver aware of vehicles approaching from the blind spot areas at the sides and rear when, for example, making lane changes
- **Rear Cross Traffic Alert (RCTA)**
  This assists you when you're reversing from a parking space, warning if a car is approaching from either side of your vehicle. The LED icon on both mirrors is accompanied by a beeping alert
- **Adaptive Front-lighting System (AFS)**
  The powerful LED headlamps swivel up to 15 degrees in the direction you're steering, revealing more of the corner.

Passive safety

Excellent passive safety features that help protect occupants and pedestrians alike include an FR open-top configuration of Mazda's high-strength SKYACTIV-BODY, airbags and other equipment that aims to make the MX-5 RF fully capable of earning high-level ratings in collision tests around the world.

High-strength SKYACTIV-BODY

Using straight beams wherever possible and a continuous framework that makes the individual sections function in harmony produces a high-strength body that features high rigidity, light weight and a high level of collision safety performance.

A complete lineup of safety equipment

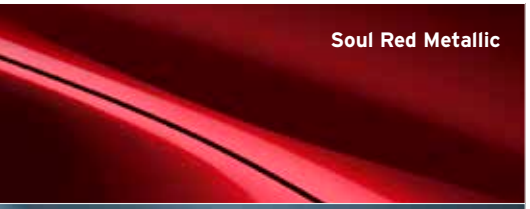
The wide variety of safety mechanisms and equipment designed to help to reduce the chances of harm coming to occupants, or to help prevent them from incurring secondary injuries in the event a collision does occur includes seatbelts equipped with pretensioners and load limiters, an SRS airbag system, and a seat structure that mitigates shock to the neck.

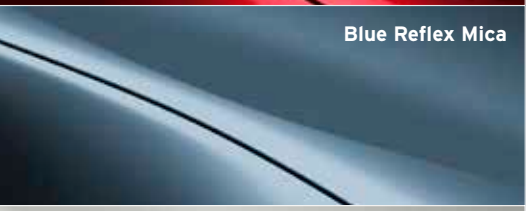
Pedestrian Protection

Structures that help to absorb impact energy and protect pedestrians include Mazda's Active Bonnet, which raises to help to protect the pedestrian's head the instant an impact is detected.

COLOURS

A choice of six contemporary colours:





Interior variations:

Fabric cloth with red stitching (RF)

Black leather (RF GT)

Tan leather (RF GT)

Nappa leather (RF GT option)

PEOPLE BEHIND THE MX-5

BEHIND-THE-SCENES STORIES FROM THE DEVELOPMENT OF MAZDA MX-5 RF

Take a moment to imagine life with the Mazda MX-5 RF. Imagine the first time you park it in the driveway. Imagine adding to your daily routine the wide open sky, the hush of the closed cabin, and the thrill of the drive. The MX-5 RF is a companion as suited to formal occasions as it is to wind-in-your-hair jaunts.

The spirit of the MX-5 – a car to make everybody happy – has been nurtured over the model's 27-year history, and it is certainly not exclusive to the overtly playful soft-top model. It is this same passion that drove the people behind the development of the MX-5 RF to ask, "How much joy can a car bring?" Mazda's engineers want nothing more than to introduce as many people as possible to the joy of driving a car that moves exactly as you expect. This is the story of the people who created the MX-5 RF, all of whom share this goal.

A refusal to compromise set the bar high

The development team didn't need to be convinced that the ultimate form for the next retractable hardtop MX-5 was a fastback design, with the roof sloping down to the rear in a seductive, unbroken curve. But the decision to pursue this design set the team on a course entailing technical challenges more difficult than they had imagined.

By mid-2013, development of the fourth-generation soft-top was entering its final stages, and the nitty-gritty details, such as the finer points of the Gram Strategy, were being decided. The team's single-minded determination to pursue beauty of line and surface in a compact package meant the soft-top design would not allow for the stowage of the much bulkier retractable hardtop.

Just as work on the soft-top was winding down, development of the hardtop got into full swing. The team comprised people from departments throughout the company, and they would frequently visit each other's offices and development sites.

In each of their minds was an image of the next hardtop MX-5, sketched in blue and red ink.

This simple line drawing had determined the course of the development of the future model. It was the solution to the riddle of how the new hardtop could deliver the essentials that have defined the MX-5 since the beginning – light and compact for flawless control, the right wheelbase for *Jinba-ittai* driving and enough luggage room for a weekend away – just as the new soft-top had.

What it showed was the next MX-5 hardtop with a beautiful fastback roofline.

The team was determined to create the model in that sketch, no matter the challenges involved. And they knew it would require uniting the efforts of many different departments. The co-creation mindset, which had established itself during development of the soft-top, made it easy for the engineers and designers to drop in on each other at the various development sites and design studios where they worked.

Creating new value with the MX-5 RF

The MX-5 had never been a fastback before. Would it be possible to produce that feeling of driving with the wind and sky? What shape for the rear roof would look best in the side-view mirror? And where should it attach to the body? What was the best material for the roof in terms of weight? What about quality? Durability? And reducing noise in the cabin? What adjustments would need to be made to the steering and suspension to preserve the *Jinba-ittai* driving feel? The engineers faced a seemingly endless series of such questions, and their days consisted of nothing but seeking the answers, one after another.

But no question was more complicated than that of reconciling the design with the presence of the retractable hardtop, which some thought was simply not possible. With the fourth-generation soft-top, beams of light are unleashed from the tip of the nose, along the ridge of the front fender and past the driver's shoulder to the tail. This striking line is the reason people the world over fell in love with the design.

But with a hardtop, the mechanism required to quickly and smoothly fold away the different sections of the roof is extremely complex and usually quite large. The entire contraption somehow had to fit within the diminutive curves of the MX-5. The engineers in charge joined the designers in the studio and explained just how tight the physical restrictions were. Of course, the designers were already well aware of this.

"We need you to put your heads together and come up with something cutting-edge."

As they looked at a mock-up of the future MX-5 RF, all they could think about was building that car – not seeking compromises in each other's domain – and they were determined to work together to figure out how to get the car to the people around the world who were anticipating its arrival.

"I guess we don't have a choice."

And so, the engineers' job became even tougher. The layout of the motor, gears, and the linkages that support the roof parts was changed many times, and spaces between parts reduced as much as possible in order to minimise the width of the mechanism.

Digital designers tested different patterns for opening and closing, varying the sizes of the roof sections and dimensions of the linkages using a digital prototype. They were concerned not only with its appearance and not disturbing the passengers, but also with the beauty of the choreographed movements of each section. In the end, they came up with a mechanism narrower than anything they'd seen before, one that opens and closes the roof with grace.

Built with the cooperation of production line engineers; a car to delight the world

There was something else unique about the development of this car.

As the designers and engineers puzzled over how to incorporate the hardtop without interfering with the essentials of the design, the engineers who would create the production line were working alongside them. Rather than simply waiting for development to take its course, they came of their own accord to the design rooms and the R&D areas, offering advice on the latest manufacturing techniques. Of course, the designers and engineers welcomed them with open arms. At the same time, the manufacturing know-how required to make the car both high-quality and affordable was refined. And the results of this co-creative endeavor will soon be rolling off the production line in Hiroshima.

The MX-5 RF brings together elements that at times seemed impossible to unite: open-top *Jinba-ittai* driving, a beautiful design and a retractable hardtop to help bring the pleasure of the MX-5 to an even wider audience. It is the product of a co-creation process, which brought together creative abilities across departments, and an aspiration focused unwaveringly on the essence of the MX-5. The day is coming when the MX-5 RF will bring smiles to the faces of both drivers and those who see it on the street.

MASANORI MINAMISAWA
Exterior Designer

In pursuit of a car that represents the pinnacle of beauty and functionality

Masanori Minamisawa, exterior designer of the MX-5, is well-known at Mazda for his musical endeavors. He plays a Fender Stratocaster and says that through this guitar he has discovered "oneness with music."

"The first time I held it, I was impressed by the way its shape conformed to the human body, its functional layout that lets you play exactly the way you imagine, its expressive tone, and its distinctive, timeless design", says Minamisawa. "The value of musical instruments is in playing them. They're not just objects to be admired for their beauty. The same thing applies to automobile design. When designing the MX-5, I kept one thing in mind: What kind of design will let the driver feel at one with the car?"

Bringing the magic of design to the world through the MX-5 RF

"There's magic in design." Minamisawa, who led the exterior design team under chief designer Masashi Nakayama, was inspired to become a car designer by something he read in a magazine around the time he graduated from high school.

"The article said something like 'in order to make a surface more beautiful, it's important to give it a slight roundness.' I enjoyed drawing, so I decided to go into design. I felt it would stimulate my creativity," he says. "I was also influenced by my big brother, who was a rotary engine fan. I felt Mazda was making real sports cars, so I came to work here. I've worked exclusively in exterior design and learned a lot over the years. Then I was put in charge of the Verisa (available only in Japan) and the third-generation MX-5. I was really happy when they asked me to lead the exterior design team for the new MX-5 because it was my first chance to be involved in the development of a sports car from the start."

Minamisawa gave the soft-top a form that embodies the pleasing feeling he gets when playing his electric guitar softly. The shape of the car is such that just by sitting in it and looking around, you get a sense of oneness with the car. Once you start driving it, you get an exhilarating feeling as if you're plunging headlong through the light that streams from the edge of the front fender. And the details work together to emphasize the feeling of perfect control. The beauty of the soft-top is both timeless and universal. And it's fair to say that its combination of functionality and beauty is an example of design magic. But Minamisawa would get another chance to "perform."

And it was in designing the rigid hardtop that Minamisawa, who had never been interested in beauty for its own sake, had a chance to demonstrate his real ability.

Minamisawa was involved in the design of the third-generation MX-5 *(design sketch shown on page 44)*.

A focus on design and functionality with the soft-top meant space was limited, and it was going to be difficult to house the rigid roof of the hardtop in the body.

Various ways to divide the roof and stow it were considered in an effort to make the roof parts and the way they moved together beautiful.

Various ideas, some of them extremely complex, were studied using a 3-D computer model that made it possible to see how the roof would move. The images were very realistic, and the designers spent days gathered around the computer discussing the advantages and disadvantages of each proposal. Nakayama entrusted the computer design work to Masanori Ito, a digital modeling expert.

"Ito owns a first-generation MX-5, and he knows all about the feelings the car inspires," Nakayama says. "He's a very quiet guy and doesn't go on and on about what he does, but his work is very important. He didn't just create the image we had in mind on the screen. He put his skill as a digital modeler to use to give expression to the MX-5 and created several digital models that allowed us to check the roof's movements."

A revolutionary idea that came about by recalling the spirit of the MX-5

But space limitations made it next to impossible to stow the entire roof. Time went by, and Minamisawa still couldn't come up with a design for the rigid hardtop that felt right. It was clear that fusing beauty with functionality would be no easy task.

"It was then that I sat down and asked myself what it was that we were trying to make," Minamisawa says. "Was our goal with the hardtop the joy of a fully stowed roof? No. Our aim was to bring the pleasure of being at one with the car and the wind and the sky to a wider audience. So what was necessary to achieve that? That gave me an idea, and I realised that was what it was all about. After that I found the solution."

In June 2013 a meeting was held to consider how to proceed with the rigid hardtop. The engineers presented their findings, and made it clear that, with the retracting mechanism in place, there simply wasn't room to stow the entire roof within the body of the soft-top.

Then Minamisawa showed a sketch he had drawn while they were talking. It showed a strikingly beautiful fastback MX-5 with a rear roof that curved down to blend with the rear fender. The room fell silent.

"While it was unquestionably an MX-5, with its retractable hardtop and fastback styling it offered new value through and unprecedented beauty," says Minamisawa. "That sketch represented a revolutionary idea. It was only because I had thought long and hard about our original intentions that I was able to come up with it."

The development team had spent months discussing how to reconcile the retractable hardtop with the design. At that moment it was clear to everyone in the room that that was the answer they had been searching for.

Working together to create the retractable fastback of our dreams: the MX-5 RF. The power of co-creation brings new value to the MX-5

Now all that remained was the struggle to find a way to make the solution they had settled on a reality. Minamisawa and the design engineers traded numerous proposals as they slowly but steadily advanced toward their goal. The beautiful MX-5 RF with a roof that opened and closed smoothly gradually began to take shape on the computer on Ito's desk, proving that both the engineers' requirements and the designer's vision could be met. It was not unusual for the production engineers to be present as well.

"The design and production engineers communicated with each other frequently. They really put a lot of energy into this project. Or perhaps it would be better to say they put a lot of heart into it," Minamisawa says. "They worked hard to make the opening and closing mechanism as narrow as possible. It also had to be fitted on the production line. Little by little, their efforts enlarged the space between the rear roof and the rear fender, which was essential for the success of the design. It was my job to take this width of only a few millimetres and find the line that would embody the beauty of the MX-5."

At each stage in the process Minamisawa would find the best line and then meet with the engineers again. They knew they were working to create the car of their dreams, but each meeting confirmed that they weren't there yet. "Thinking about all the other people involved brought home how critical it was to find the perfect line."

The MX-5 RF made its debut at the 2016 New York International Auto Show in March. When its fastback-styled rear roof suddenly rose and the hardtop began to fold away, there was a roar from the audience and a burst of camera flashes. Clearly, no one had imagined that the rear roof, which blended beautifully with the rear fender, would detach from the body and rise.

Minamisawa was in Japan watching the event streamed live via the Internet. "When it went well, I was relieved and felt tears in my eyes. Fusing universal beauty with high functionality is not something a designer can do alone. Being able to achieve that as a team was a great joy for me as a vehicle designer."

With his design of the MX-5 RF, Minamisawa sought a fusion of beauty and functionality. What kind of music does the car make? Drive it and see.

IN PURSUIT OF ALLURING RETRACTION

KOUICHI MATSUMOTO
Roof System Engineer

Early days of development: quietly determined, but with no solution in sight

Kouichi Matsumoto, leader of the team that developed the MX-5 RF's retractable roof, leans over a mock-up on his desk and carefully moves each part. "The roof separates into three sections like this," he says. "The rear window's movement is quite complicated." Matsumoto smoothly stows the roof and returns the rear roof to its original position, where it joins neatly with the body to create a characteristic fastback style. "That's how it works," he says, looking up.

The soft-spoken Matsumoto answers our questions about the development of the new roof, whose complicated and beautiful movements would inspire curiosity in anyone.

"When development of the new MX-5 began, the aim was to get the soft-top just right," he says. "From the beginning, the plan was to develop a hardtop, but we didn't originally intend to incorporate the features of both models. Nobody was thinking about how to stow the hardtop. As development proceeded, I started to worry about how the hardtop would work out. That was early 2013."

What Matsumoto was worried about was space. It was obvious that trying to fit the rigid hardtop into a space just big enough for the folding cloth-top would be like trying to pour a large jug of water into a smaller jug. It simply wasn't going to fit.

"Development went through several stages. At first, we wondered if we could use a mechanism like the one on the third-generation MX-5. The model is 10 years old, but it's still competitive in terms of how quickly and smoothly the roof opens and closes. We looked at various options, like using the same basic mechanism but pulling the rear of the roof back and using the space that would be created underneath. We also looked into making the deck cover bigger, and even considered dividing the roof into seven parts.

But everything we tried was ugly. And if you divide the roof into many sections, it sticks up when folded making the car look like it's carrying a load on its back. So, we were at a loss."

Repeated trials lead to a solution: fastback styling

As Matsumoto continued investigating different stowage methods, it became increasing clear that it would be physically impossible to stow the entire roof.

"It seemed as if all that testing was fruitless, but in fact that steady effort was necessary to find the real solution," he says. "Because we examined each idea thoroughly, we were able to discuss the possibilities among all the members of the development team, regardless of their department. That opened up new avenues."

Matsumoto presented his results to the MX-5 team just before development of the hardtop got into full swing. He soon convinced everyone that, under the current assumptions, it wasn't possible to stow the whole roof and still have a good-looking car.

"After my presentation, Minamisawa-san, who was in charge of exterior design, showed us a sketch of a rigid hardtop as a fastback that he'd drawn while I was talking. As a matter of fact, a few days before that, Nakayama-san, the Chief Designer, had stopped by to ask me whether the rest of the roof could be stowed if we made the car a fastback and left the rear roof in place. I told him it should be doable but hadn't given it any more thought. When I saw Minamisawa-san's sketch, I recalled that conversation and everything just fell into place."

Matsumoto's task thus far had been to prove that what the team was trying to do was impossible. If he hadn't been so convincing, they might never have arrived at the solution of adopting a fastback design. They had to explore every possibility to finally come up with the MX-5 RF they were after. And as development moved forward, another of Matsumoto's talents, his creativity, came into play.

Exploring the possibilities of design through co-creation

"Everyone agreed that this was the way to go, so there was no going back now. And there were a lot of issues to tackle: How wide should each section of the roof be? What kind of linkages should be used to support each part to facilitate stowage? How should each part move? The linkages on the old model weren't rigid enough to support the new roof, so they had to be redesigned.

"When considering the linkage structure, we first design it on the computer to ensure that it meets our basic requirements and won't be in the way of passengers in the car. Once we've made sure that they move smoothly, we test the rigidity of the linkages. If one is not rigid enough, it must be redesigned. When the shape of one part is changed, many other parts have to be changed as well. We repeated this process over and over again.

"This is a highly specialised technology, and the suppliers we worked with were really dedicated. I was sometimes surprised at the lengths they would go to meet or exceed our requests, which went beyond usual development. But they understood what we were aiming for with the MX-5 RF, and worked on its development with great enthusiasm."

MX-5 RF's roof: a quiet yet dynamic mechanism enables beautiful motion

One day, when Matsumoto was repeatedly changing the layout by mere tenths of a millimetre, Minamisawa came to his office and asked him to move part of the mechanism 70 millimetres further inside for the sake of the design. Matsumoto was shocked.

"I told him it couldn't be done. He said he figured as much, and then said he had something he wanted to show me. He took me to the design studio and then started sticking narrow black tape used to try out different designs onto a clay model of the MX-5 RF. 'Take a look at this line,' he said. 'Now look at this one. This one looks better, right?' I couldn't help laughing as I agreed. So, I had to throw everything out and start over.

And it wasn't just design. I got the mechanism right only after having similar conversations with members of many other teams, including production."

At the end of our interview, Matsumoto, who has spoken quietly and matter-of-factly throughout, stands up and says, "If I'd just rejected the designers' request out of hand, they might have given up. But I'm not that type of person. I knew how serious they were about this car, and how determined they were to find that perfect line. Both personally and as an engineer, I couldn't allow myself to ruin their design without giving it my best shot as the person in charge of layout."

Underneath the beautiful roof of the MX-5 RF is a mechanism that is both quiet and powerful, not unlike Matsumoto himself. When you witness its exquisite motion, spare a thought for the soft-spoken engineer who was behind it.

The faint lower line was dictated by the mechanism layout; black tape marks the line the design originally hoped to achieve.

The line on the finished product is even closer to perfection than the design's original line.

FREEDOM OF DESIGN MADE POSSIBLE BY INGENUITY AT THE PRODUCTION SITE

TAKAKI NAKAMURA
Final Assembly Engineer

A car designed and produced with ingenuity

What does the "development" of a new car refer to? Conceiving of and designing a highly efficient engine that runs smoothly, and a transmission with a crisp feel? Creating a beautiful and functional design? These are the elements that many members of the news media focus on when a new car is launched. But is that all there is to it?

Takaki Nakamura is an engineer who develops new cars at Mazda, but his job does not entail coming up with parts for the suspension or creating a beautiful form. He works in production. His job is to understand the spirit behind a highly inventive design, to be thoroughly familiar with the possibilities of the factory's production equipment, and to serve as a bridge between the two to bring the design to life.

So, of course, he was often seen bustling about the R&D departments during development of the MX-5 RF.

Creating new possibilities in production through thorough knowledge of development

"I've loved cars since my student days," Nakamura said. "I loved driving too, but I had more fun dismantling cars and tinkering with them. When I came to work for Mazda I wanted to get my hands dirty, not be tied to a desk."

But he soon realised he'd need to spend time at a desk too. His career path led him to become an expert in the technology required to assemble a car exactly the way it was designed. And, in his effort to master those skills, he set a goal of first becoming an engineer who could truly understand the monotsukuri spirit. He decided to sign up for a special educational program the company started in 2008. There he spent time learning about the development that takes place at the design stage.

"It was a good experience that allowed me to work out how I felt about my job. I decided that production should be actively involved in development. "

"There are inherent limitations in production related to equipment and processes. On the other hand, if design proceeds with an awareness of these limitations, new monotsukuri possibilities can open up.

"Production takes place amid a lot of machinery but involves craftsmanship. When you find something in the drawings for a new car that won't work with the equipment you have, the car can't be produced. So you have to ask for the specs to be changed. This has happened quite a bit.

"But, by understanding the intent behind the design, you can appreciate the importance of the functions needed for the car included in the drawings and the value the designer wants to offer the customer. You don't just do what you can. You have to consider what can be done from the production standpoint and how problems can be solved. I came to feel that was my job."

Conveying the spirit of innovation to customers

Solving problems by taking on challenges

When the concept for the car was decided on, it was clear that production of the MX-5 RF would be more difficult than anything that had come before.

"In the early stages of development when the design for the vehicle was revealed, so many problems arose that I wondered whether we'd even be able to make the car. So I went to see the designers and the engineers who designed the mechanisms and offered some suggestions.

"For example, in the soft-top model the back end of the glass in the doors is round, but in the RF it is angular. I said that in terms of efficient production it would be better to use the same design as the soft-top. But the designers wouldn't compromise on that point. They said they'd come up with that shape after a lot of thought. They insisted it was not only a key to the beauty of the design but also a way to ensure a good field of vision for the driver. It comes down to a choice between difficulties associated with production and the originality devised for the benefit of the customer. I understood the situation, so of course I gave the go-ahead, because coming up with a strategy for that purpose is our job."

The biggest obstacle in producing the MX-5 RF was combining the beautiful design with the complex mechanism for opening and closing the retractable roof.

"A lot of thought went into both the design and functionality of the retractable hardtop. When I saw the design drawing, the first thing I thought was 'This is unusual.' Adjoining parts are packed into a small space whether the hardtop is open or closed, and if they get even the slightest bit out of alignment, the top may not open and close properly.

"In terms of product quality, at Mazda we believe that trouble-free operation and preventing noise and vibration are a matter of course when manufacturing cars. When we focus on a specific area to express a vehicle's uniqueness, we refer to that as 'appeal quality.' With the retractrable hardtop on the MX-5 RF, a very high level of technical capability was needed just to achieve 'matter-of-course quality.' And we had a strong sense that this in itself would lead to 'appeal quality.'

"If we had the luxury of lots of time and plenty of craftsmen to produce each car, the obstacles wouldn't be so great. But with Mazda's flexible production various models come down the same line; from MX-5s to Mazda2s. And we have to produce tens of thousands of high-quality MX-5 RF cars without holding up the line.

"I have to rack my brains to figure out what to do. Knowledge and hard work will open up a path. That's the only way I can move forward. I don't want to go to the engineers and designers and try to argue them down. They were driven by a passion and it was infectious. I decided to take up the challenge, so I had to follow through."

Beauty, functionality and pleasure

The MX-5 RF: a product of knowledge and ingenuity

It's fun to see the big rear roof on the MX-5 RF lift up, see the roof retract into the body and then see it go back to its original position. The beautiful parting line that is created lines up perfectly, making the roof appear part of the body.

It's not just the fun of seeing this change happen. This movement also demonstrates the excellence of Japan's manufacturing. It's achieved with interlocking wedges on each of the four corners so that the rear roof fits the body beautifully. This idea, which was developed through cooperation between design and production, perfected the MX-5 RF. And if you look more closely you'll see that kind of knowledge and ingenuity in every inch of the car.

What keeps this enthusiastic 27-year-old going?

This interview with Nakamura took place not long before the start of full-scale production, and he dashed in barely in time, beads of sweat on his brow. He'd been in the plant working out production methods since morning, he said.

"Amid all this hecticness, I realised something interesting: Although I'm a Mazda employee, I've lost the sense that I'm working for Mazda's benefit. Sometimes I fire myself and my co-workers up, saying: This part has to be assembled like this! Now, at times like that, my mind is on the customer.

"What expression will customers have on their faces when they see the cars we've made here? I'm sure they'll smile.

"And what will their expression be after they've enjoyed driving the car for quite a while? I want them to be smiling then too. I feel that my job is to ensure that that happens. And when I think about that, I have the customers in mind rather than Mazda. I'm not just saying this. That's how I truly feel now at the age of 27."

When the time allotted for our interview was up, Nakamura dashed out of the room and was gone in no time at all. Soon, the first MX-5 RF will roll off the production line.

Now you know how the retractable roof of the MX-5 RF was developed.

HISTORY OF MX-5

A PERPETUAL QUEST FOR DRIVING PLEASURE THAT'S ACCESSIBLE TO ALL

Mazda unveiled the first-generation MX-5 at the Chicago Auto Show on February 9, 1989. At that time, virtually no lightweight open-top sports cars were available.

Roadsters, which had blossomed in England in the latter half of the 1940s, gained popularity thanks to their agile handling, characteristic style and affordability.

But after the 1960s, with the market focused more on safety and comfort, these cars had all but disappeared.

The aim of the engineers and designers at Mazda who produced the first-generation model was simple: To bring back a fun-to-drive lightweight sports car for people around the world like themselves – people who love cars and love to drive.

To build a car that satisfies this passion for driving, they developed the MX-5 based on the principle that it would combine a lightweight, compact open-top two-seater body with a front-midship engine, rear-wheel drive configuration, a 50:50 front-rear weight distribution, a low yaw inertia moment and an affordable price.

The simple, familiar nature of its compact sports car styling, the light feeling and faithful, linear response Mazda defined as *Jinba-ittai*, and the open feeling it offered resonated with car lovers around the globe.

It soon won a number of awards, gained widespread popularity, and fan clubs big and small began to spring up worldwide.

The second-generation model was revealed at the Tokyo Motor Show in October 1997, the third generation debuted at the Geneva Motor Show in February 2005, and the fourth generation was unveiled simultaneously in Japan, the US and Europe in September 2014.

Going on to earn high acclaim worldwide, the fourth generation has been crowned 2015-16 Car of the Year Japan, 2016 UK Car of the Year, as well as 2016 World Car of the Year and 2016 World Car Design of the Year.

Total production of the MX-5 reached one million units in April 2016.

TIMELINE

1983	NOV	Mazda begins considering the development of an open-top lightweight sports car
	NOV	Development project begins
1986	FEB	Development for mass production begins
1987	SEP	Final design is set
1989	FEB	World debut of the Mazda MX-5 at the Chicago Motor Show
	MAY	Sales begin in the U.S.
	SEP	Sales of the Eunos Roadster begin in Japan
	OCT	Sales begin in Australia
1990	FEB	Sales begin in Europe (U.K. and the Netherlands)
1993	JUL	Minor revision: Updated product with 1.8-litre engine replaces the 1.6-litre engine
1997	OCT	Second-generation Mazda MX-5 debuts at the Tokyo Motor Show
1998	DEC	Mazda MX-5 10th Anniversary Model introduced • A special limited edition model with the same specifications worldwide to commemorate the model's 10th anniversary • Production numbers: 7,500 units worldwide (500 for Japan and 7,000 divided between North America, Europe and Australia)
2000	MAY	Certified by the Guinness World Records as the world's bestselling two-seater sports car (total production of 531,890 units)
	JUL	Minor revision to the second-generation MX-5 • Significant improvements to the product, including changes to both the exterior and interior, improved output from the 1.8-litre engine, increased body rigidity, etc.
2005	MAR	Third-generation Mazda MX-5 debuts at the Geneva Motor Show
	MAR	Mazda MX-5 3rd Generation Limited Edition premieres at the New York International Auto Show to celebrate the debut of the third-generation MX-5 (Production limited to 500 units)
	APR	Guinness record updated after production reaches 700,000 units
2007	JAN	Total production reaches 800,000 units
2008	OCT	Minor revision to the third-generation MX-5 • Improvements include changes to both the exterior and interior, enhanced output from the 2.0-litre engine, increased body rigidity, etc.
2009	JUL	Mazda MX-5 20th Anniversary Model goes on sale
2011	FEB	Total production reaches 900,000 units
2013	JUN	Second record in Guinness World Records: largest parade of Mazda cars (683), achieved by Mazda MX-5 at the RDW Test Centre in Lelystad, Netherlands, on 15 June 2013.
2014	APR	Chassis of the fourth-generation Mazda MX-5 and Mazda MX-5 25th Anniversary Edition debut at the New York International Auto Show • A special limited edition with the same specifications worldwide to commemorate the model's 25th anniversary
	SEP	Fourth-generation Mazda MX-5 unveiled simultaneously in Japan, the U.S. and Spain
2016	MAR	New Mazda MX-5 RF debuts at the New York International Auto Show
	APR	Total production reaches one million units

MAZDA MX-5 AWARDS

FOURTH-GENERATION MAZDA MX-5 ND

Year	Country/ Region	Award
2016	Germany	Automotive Brand Contest: Exterior Volume Brand category
2016	U.K.	The Telegraph: Car of the Year 2016
2016	U.K.	The Telegraph: Best Sports Car 2016
2016	U.K.	Auto Express: Roadster of the year 2016
2016	Australia	Australian Good Design Awards: Best in Category (Auto and Transport)
2016	Asia	Autocar: Asian Autocar Car of the year Award 2016
2016	World	World Car Awards: 2016 World Car Design of the Year
2016	World	World Car Awards: 2016 World Car of the Year
2016	U.S.A.	Autobytel: 2016 Autobytel Sports Car of the Year
2016	U.S.A.	Autobytel: 2016 Autobytel Convertible of the Year
2016	U.S.A.	Automobile Magazine: 2016 Automobile All Star
2016	U.S.A.	New York Daily News: 2016 Daily News Autos Fun Car Winner
2016	U.S.A.	MotorWeek TV: 2016 Driver's Choice Awards Best Convertible
2016	Mexico	Automovil Panamericano: 2016 Best Convertible of the year
2016	U.S.A.	Consumer Reports: 10 Top Picks of 2016: Best Cars of the Year
2016	Canada	TSN Motoring TV: Sports Car of the Year 2016
2016	Portugal	Turbo Magazine: Best Cabrio of the Year 2015
2016	U.K.	Association of Scottish Motor Writers: Scottish Drop Top of the Year 2015
2016	U.K.	What Car?: Best Convertible 2016
2016	U.K.	What Car?: Best Convertible 2016 under £25,000
2016	Spain	GOEM INDEX: Best model year 2015
2016	U.S.A.	U.S. News & World Report: Best Sports Car for the Money
2016	U.K.	UKCOTY: Best Open Top Car of the Year
2016	U.K.	UKCOTY: UK Car of the Year 2015
2016	U.S.A.	U.S. News & World Report: Best Sports Car for the Money
2016	Japan	clicccar.com: cliccar of the year 2015: Readers Award
2016	Australia	Wheels Magazine: The 2016 Wheels Car of the Year
2016	U.S.A.	Automobile Magazine: 2016 Automobile All Star
2016	U.S.A.	Car and Driver: 2016 10 Best Cars

Year	Country/ Region	Award
2015	Japan	CAR GRAPHIC: Car Graphic Award 2015 1st Prize
2015	Japan	CAR GRAPHIC: Car Graphic Award 2015: CG Club Award
2015	U.K.	The Sunday times: Top 100 Cars: Winner of the Best roadster and Spider category
2015	New Zealand	National Business Review: Sports Car of the Year
2015	New Zealand	NZ Herald/NZME: Driven Small Car of the Year – Mazda MX-5
2015	New Zealand	AutomotiveNews.co.nz: Sports Performance Car of the Year – Mazda MX-5
2015	New Zealand	Radio Live Cars of the Year: Best Sports Car – Mazda MX-5
2015	New Zealand	Radio Live Cars of the Year: Car of the Year – Mazda MX-5
2015	Japan	RJC: 2015 RJC Car of the Year 6 Best
2015	Japan	RJC: 2015 RJC Technology of the year: Weight reduction technology for Mazda MX-5
2015	Malaysia	The New Straits Times Press / Maybank: 2015 NST-Maybank 'Sportscar of the Year'
2015	Philippines	C! Magazine Awards: Best in Class (Roadster)
2015	Philippines	The Car Awards Group, Inc. (CAGI): Speedlab's Tuner's Choice Award
2015	Singapore	Torque Magazine: Best Convertible
2015	Singapore	Straits Times: Number 4 of Top 10 in Straits Times Car of the Year Award 2015
2015	Singapore	Top Gear Magazine: Cars of the Year 2015
2015	Singapore	Wheels Asia Magazine: Compact Sports Car of the Year 2015
2015	Hong Kong	Top Gear: Top Gear Awards 2015 - Car of the Year
2015	Hong Kong	Hong Kong Automobile Association: 2015 AA Professional Critics' Recommended Model
2015	Hong Kong	Car Plus: The Best Roadster
2015	Hong Kong	Automobile: Convertible of the Year
2015	Hong Kong	Oriental Daily News: The Most Outstanding Roadster
2015	Hong Kong	Men's Machine: The Best Convertible
2015	Hong Kong	Car1.hk: Editor's Choice Award 2015 - Convertible of the Year
2015	Japan	Automotive Industry Writer Club: Automotive Industry Writer Club Car of the Year 2015

FOURTH-GENERATION MAZDA MX-5 ND (CONT...)

Year	Country/ Region	Award
2015	U.K.	Scottish Car of the Year: Scottish Car of the Year: Best Drop Top
2015	Japan	Car of the Year Japan: Car of the Year Japan 2015-2016
2015	U.K.	Association of Scottish Motor Writers: Scottish Car of the Year 2015: Scottish Drop Top of the Year 2015 Mazda MX-5
2015	Philippines	Top Gear Philippine: Top Gear 2015 Stig Awards Car Of The Year is the Mazda MX-5
2015	Philippines	The Car Awards Group, Inc. (CAGI): 2015 Car of the Year - Philippines: Sports Car Category – Mazda MX-5 M/T
2015	Japan	Japan Automotive Hall of Fame: 2015-2016 JAHFA Car of the Year
2015	Japan	DIME: DIME Trend Award 2015 : @DIME AWARD
2015	U.S.A.	IntelliChoice and AutoPacific: the 2015 Motorist Choice Awards: Sports Car Category
2015	Japan	All-New Roadster's Introduces Digital Owners Manuals Win Manual of the Year Japan 2015
2015	Japan	Japan Institute of Design Promotion: Good Design Award 2015 Best 100
2015	Japan	Hot Dog Press: Super Trend Ranking by Hotdog Press 2015 first season No.1
2015	U.K.	Honest John.co.uk: 2015 Honest John Awards: Most Popular Convertible
2015	Canada	Le Guide de l'auto (the Car Guide): 2016 New Car of the Year
2015	Canada	Le Guide de l'auto (the Car Guide): 2016 Best Buy Cabriolets and Roadsters less than $50,000
2015	U.K.	Auto Express: Roadster of the Year 2015
2015	Japan	ENGINE: ENGINE's The Hot 100 New Cars 1st prize
2015	U.S.A.	Automobile Magazine: The 10 Cheapest Convertibles You Can Buy in 2015
2015	Germany	Red Dot.de: Red Dot Award: Product Design 2015: Best of the Best
2015	Japan	Cliccker Inc.: Tokyo International Custom Car Contest 2015: Concept Car Div. (2nd Prize)

THIRD-GENERATION MAZDA MX-5 NC

Year	Country/ Region	Award
2015	U.K.	Auto Express: 2015 Auto Express Used Car: Best Cabriolet
2015	U.S.A.	KBB.com: 2015 5-Year Cost to Own Awards: Best Sports Car
2015	U.S.A.	J.D. Powers Initial Quality Survey Compact Sporty Car
2013	U.S.A.	U.S. News Auto Rankings: #1 in Affordable Sports Cars (2014)
2013	Chile	Chilean Car of the Year 2014: Sport Car of the Year 2014
2013	U.S.A.	2013 U.S. IQS Compact Sporty Car segment award
2012	Canada	Golden Key: Best sports car - under $50,000
2012	Canada	Le Guide de l'auto (the Car Guide): Best new Roadster under $50,000
2012	Canada	2013 Convertible of the Year: Mazda MX-5 (The 4th annual Auto123.com Awards)
2012	U.S.A.	KBB.com: 10 Best Road Trip Convertibles
2012	Indonesia	2012 Autocar Indonesia Reader's Choice Awards: Favorite Convertible
2012	Germany	AutoBild: Best brands in all categories
2012	Singapore	Singapore Car of the Year 2011 (SGCM EDITOR'S PICK)
2012	Germany	First Place, sports car category (up to 50,000 km and 100,000 km), in the DEKRA used car report 2012
2011	U.S.A.	Car and Driver: 10 Best Cars of 2012
2011	U.K.	Auto Express: New Car Awards Best Roadster 2011
2011	U.K.	J.D. Powers Customer Satisfaction Surveys 2011: Winner, sports car segment
2011	Hungary	Playboy Car of the Year 2011: Open-top sports car category
2011	U.K.	CarBuyer Car of the Year 2011: Best Convertible
2011	U.S.A.	2011 J.D. Power U.S vehicle dependability study: Highest ranked compact sporty car
2010	U.S.A.	Car and Driver: 10 Best Cars of 2010
2010	Germany	Auto Trophy 2010: Best imported convertible under €30,000
2010	U.K.	2010 UK Vehicle Ownership Satisfaction Study: Best sports car
2010	U.S.A.	Edmunds 2010 lowest True cost to own vehicles: Convertible under $35,000
2010	Slovakia	Auto Motor a Sport: Best cars 2010 (B-section)
2009	Germany	Auto Trophy 2009: Best imported roadster/convertible under €30.000

THIRD-GENERATION MAZDA MX-5 NC (CONT...)

Year	Country/ Region	Award
2010	U.S.A.	Edmunds 2010 New Car Buying Guides: Top recommended convertibles under $25,000
2010	U.S.A.	Cars.com: Play Car of the Year 2010
2009	U.S.A.	Car and Driver: 10 Best Cars 2010
2009	Australia	Wheels Gold Star Cars Awards: Best Sports Roadster under $150,000
2009	Ireland	New car magazine 2009: Best Roadster
2009	U.K.	Auto Express New Car Awards: Best Roadster 2009
2009	U.S.A.	Consumer Reports Top Picks 2008: Fun to Drive
2008	Philippines	2008 Philippines Car of the Year: Sexiest Car Award
2008	U.K.	Auto Express Used Car Honours 2008: Best Roadster
2008	U.K.	Auto Express New Car Honours 2008: Best Convertible
2008	U.S.A.	Road and Travel 2008 Annual Sexy Car Buyer's Guide: Top 10
2008	U.S.A.	J.D. Power Initial Quality Study 2008: Highest-Ranked Compact Sporty Car
2008	Thailand	Thailand Car of The Year 2008: The Best Roadster
2008	U.S.A.	Consumer Reports Top Picks 2008: Fun to Drive
2008	Canada	World of Wheels Editor's Choice: Best Convertible of 2007
2007	Germany	Auto Trophy 2007: Best imported convertible under €30,000
2007	U.S.A.	Car and Driver: 10 Best Cars 2008
2007	U.S.A.	Edmunds 10 Most Affordable Convertibles 2007 (1st place)
2007	U.S.A.	Luis Vuitton: Top Ten Sports Cars
2007	Scotland	Scottish Car of the Year 2007: Best Drop-Top
2007	U.S.A.	J.D. Power U.S vehicle dependability of 2004 model year (Compact Sporty Car)
2007	Thailand	Thailand Car of the Year 2007: Best Roadster
2007	U.S.A.	Consumer Reports Top Picks 2007: Fun to Drive
2007	U.S.A.	2007 Cars.com Lifestyle Awards: Best Deal for Empty Nesters
2006	U.K.	Top Gear Awards: Roadster of the Year 2006
2006	Australia	Drive Car of the Year 2006: Best Convertible
2006	U.S.A.	Environment Protection Agency: Most Efficient Two Seaters 2007
2006	Scotland	Scottish Car of the Year: Best Drop-Top

Year	Country/ Region	Award
2006	U.S.A.	Edmunds Editor's Most Wanted Awards: Convertible under $25,000
2006	New Zealand	National Business Review: Sports Car of the Year
2006	Australia	Wheels Automotive Design Awards: Overall Outstanding Automotive Design
2006	Germany	autoscout24.com Internet Auto Award 2006: Best Imported Convertible
2006	U.K.	Auto Express New Car Honours: Best Roadster
2006	U.S.A.	Forbes Best Convertibles 2006: Best entry-level Roadster
2006	U.S.A.	Forbes Best Cars for the Bucks 2006: Best Convertible For The Bucks
2006	World	2006 World Car of the Year: One of the top three finalists
2006	U.K.	Auto Express: Best used Roadster money can buy
2006	Canada	World of Wheels: Best Sport Coupe/Convertible
2006	Thailand	Thailand Car of the Year 2005: Best Roadster
2006	New Zealand	Driver Magazine: Driver Sports/Performance Car of the Year
2006	Hungary	Playboy Car of the Year 2006: Sports Car/Convertible (price value category)
2006	U.S.A.	Car and Driver: 10 Best Cars of 2006
2006	Hong Kong	Car and Driver: 10 Best Cars of 2006
2006	U.S.A.	Playboy: Most Fun on Wheels
2006	Australia	Wheels 2005 Car of The Year
2006	U.K.	What Car? Car of the Year 2006: Best Open-Top
2006	New Zealand	2005 New Zealand Car of the Year
2006	Japan	Sport Nippon: King of Car
2005	Croatia	2006 Roadster of the Year
2005	New Zealand	2005 New Zealand Herald Car of the Year
2005	U.S.A.	Car of the Year 2006 Top 10
2005	U.S.A.	Car and Driver: 10 Best Cars 2006 (Best Roadster)
2005	Japan	Fashion Colour Award (Galaxy Grey Mica Body Colour/Tan Interior Colour)
2005	Japan	Goods of the Year (Vehicle Category)
2005	Japan	Best Design Award

THIRD-GENERATION MAZDA MX-5 NC (CONT...)

Year	Country/ Region	Award
2005	U.K.	Top Gear: Roadster of the Year 2005
2005	Japan	RJC Car of the Year 2006: 2nd Place
2005	Japan	Car of the Year Japan 2005-2006
2005	Canada	Golden Key: Best Sports car under $50,000
2005	U.S.A.	Best Buy in Sport/Performance Car Class
2005	Japan	2005 Good Design Award (G-mark)

SECOND-GENERATION MAZDA MX-5 NB

Year	Country/ Region	Award
2005	U.K.	2006 Auto Express Used Car Honours: Best Used Roadster Money Can Buy
2004	U.K.	Autocar: Excellent Second Hand Buy
2004	Thailand	Thailand Car of the Year 2004: Best Roadster
2004	Denmark	Bil Magasinet: Best Roadster
2003	Israel	Auto Magazine: 2003 Sports Car of The Year
2003	U.K.	Autocar: Best Handling Car
2003	Portugal	Best Speed trophy in Portugal
2003	Thailand	Thailand Car of the Year 2003: Roadster
2003	Denmark	Bil Magasinet: Best Roadster
2003	New Zealand	Best Mid Size Car
2002	Australia	Wheels: Most significant car of the 1980s
2002	Hungary	Playboy Car of the Year
2002	Thailand	Thailand Car of the Year 2002: Roadster
2001	Portugal	Best Speed trophy in Portugal
2001	U.K.	Autocar: Top 10 Performance Car
2001	JA	Auto Colour Award 2001 Grand Prix
2001	U.K.	Auto Express Used Car Awards: Best Roadster
2001	Canada	Automobile Magazine's only "11 time All-Star winner"
2001	U.S.A.	Car and Driver: 10 Best
2000	U.S.A.	Consumer Reports Top picks for 2000: Fun to Drive

Year	Country/ Region	Award
2000	U.S.A.	Automobile Magazine 2000 All Star
2000	U.S.A.	Motor Week TV Driver Choice Award: Best Convertible
2000	U.S.A.	IntelliChoice 2000 Best Overall value of the Year Award: Best Base Sport Model
1999	U.S.A.	Sports Compact Car: Eight Great Rides
1999	U.K.	Used Car Buyer: Best Sports Car under £10,000
1999	U.K.	Good housekeeping: Sports & Coupe winner
1999	U.S.A.	Consumer Reports: Best Buy
1999	U.K.	Auto Express: Used Car winner Sports Car
1999	U.S.A.	Automobile Magazine 1999 All Star Best Entry - Level Sports Car
1999	U.S.A.	Car and Diver: 1999 10 Best Cars
1998	U.K.	Autocar & Motor: Best Sports Car
1998	U.S.A.	Car and Driver: 1998 10 Best Cars
1998	Scotland	Scottish Sports Car of the Year
1998	U.S.A.	Consumers Digest: Best Buy
1998	U.K.	IBCAM Auto Design Award
1998	U.K.	Auto Express: 1998 Best Convertible Car
1998	New Zealand	NZ Autocar Magazine: Sports Car of the Year
1998	U.K.	Autocar: 1998 Best Sport Car
1998	U.S.A.	Consumer Digest: Best Buy in Sport Coupes/Sedan Category

FIRST-GENERATION MAZDA MX-5 NA

Year	Country/ Region	Award
1997	Australia	Wheels Magazine Top 10 of 1997
1997	Israel	Auto Magazine 1997 Sports Car of the Year
1997	U.S.A.	Automobile Magazine 1997 All-Stars
1996	Australia	Wheels Magazine Top 10 of 1996
1996	Israel	Auto Magazine 1996 Sports Car of the Year
1996	U.S.A.	Consumer Digest: Best Buy in Sport Coupes/Sedan Category
1996	U.S.A.	Automobile Magazine The 10 Most Significant Automobiles From the First 10 Years: Perfect 10
1996	U.S.A.	Consumer Reports: 1996 Cars Reliability, Sports/Sporty Cars Category (2nd Place)
1996	U.S.A.	Consumer Reports: MY96 Most Fun to Drive Car
1996	U.S.A.	IntelliChoice: Best Value in the Base Sports Car
1996	Israel	Auto Magazine: Car of The Year
1996	U.S.A.	Automobile Magazine 1996 All Stars
1995	Australia	Wheels Magazine Top 10 of 1995
1995	U.K.	Auto Express: Best Sports Car in 1995
1995	U.S.A.	J.D. Power: Most Problem-Free in Class
1995	U.S.A.	Automobile Magazine: 1995 All Stars
1994	Australia	Wheels Magazine: Top 10 of 1994
1994	U.S.A.	Automobile Magazine: 1994 All Stars
1993	Australia	Wheels Magazine: Top 10 of 1993
1993	Germany	Auto Motor UND Sport readers' poll: Best Import Convertible
1993	U.S.A.	Automobile Magazine: 1993 All Stars
1993	Germany	Auto Trophy 1993 Best Fun Car
1992	Australia	Wheels Magazine: Top 10 of 1992
1992	Australia	Best Buys of 1992 Sports Car under $47,280
1992	Germany	Auto Motor UND Sport readers' poll: Best Import Convertible
1992	U.S.A.	Automobile Magazine: 1992 All Stars
1992	Germany	Auto Trophy 1992 Best Fun Car (readers' poll)
1992	U.S.A.	Car and Driver: 10 Best Cars

Year	Country/ Region	Award
1991	Australia	Wheels Magazine: Top 10 of 1991
1991	Hong Kong	Automobile Magazine: Best Five Exterior Design Award
1991	Australia	Best Sports Car under $45,000
1991	U.S.A.	Motorweek TV: Driver's Choice Awards
1991	U.K.	What Car? Best Sports Car of the Year 1991
1991	Germany	Auto Motor UND Sport readers' poll: Best Import Convertible
1991	Germany	Auto Trophy 1991 readers' poll: Best Fun Car
1991	U.S.A.	Playboy: Sexiest Car For Your Girlfriend
1991	U.S.A.	Automobile Magazine: 1991 All Stars
1991	U.S.A.	Car and Driver: 10 Best Cars 1991
1990	U.S.A.	Road & Track: 10 Best Cars in the World & Best Sports/GT ($13,000-21,000)
1990	Australia	Wheels Magazine: Top 10 of 1990
1990	New Zealand	Car of the Year 1990
1990	Australia	Best Sports Car
1990	Denmark	Prize of Honour 1991
1990	U.S.A.	Motor Trend: Top 10 Trouble-Free Cars
1990	U.K.	Buying Cars: Best Value Sports Car of the Year
1990	U.K.	Middlesborough North Eastern Gazette: Sporting Car of the Year
1990	U.K.	Newcastle Journal: Best Sports Car
1990	U.K.	Autocar & Motor: Best Handling Car in the World
1990	U.S.A.	J.D. Power Initial Quality Study: Most Trouble-Free Sports Car
1990	U.S.A.	Motorweek TV: Best Sports Car, Driver's Choice Awards
1990	U.S.A.	Edison Best New Products
1990	U.S.A.	Playboy: Most Fun to Drive, Cars for 1990
1990	U.S.A.	Motor Trend: 1990 Import Car of the Year (2nd place)
1990	Japan	Cosmopolitan Best Car 1989: Best New Model
1990	Japan	Super Goods of the Year 1989: Golden Award
1990	Australia	Modern Motor: Best Car 1989/1990 & Best Sports Car 1989/1990
1990	Germany	Auto Motor und Sport readers' poll: Best Import Convertible

FIRST-GENERATION MAZDA MX-5 NA (CONT...)

Year	Country/ Region	Award
1990	Japan	Best Car: Grand Prix Exterior
1990	U.S.A.	TIME Best and Worst of the Year 1989: Best (one of)
1990	U.S.A.	Newsweek Best of the Decade: Best Design (one of)
1990	U.S.A.	Business Week: Best Products of 1989
1990	Australia	Car Australia: Best Sports Car 1989
1990	Australia	Car Australia: Car of Australia 1989
1990	Australia	Modern Motor: Best Car of 1989/1990
1990	Australia	Wheels Car of the Year 1989
1990	U.S.A.	1990 Automobile of the Year (inaugural award)
1990	U.S.A.	Car and Driver: 10 Best Cars
1990	Japan	Nikkei: Design of the Year
1989	Japan	Trendy Goods 1989 Grand Prize (Hobby & Play category)
1989	U.S.A.	Life: Hot Products for 1990
1989	U.S.A.	Business Week: The holiday gift-giving section
1989	U.S.A.	Automotive News: Coupe of the Year
1989	Japan	Best Sporty Car, Kings of the Cars 1989
1989	Japan	Promoters' Cup, My Best Choice 1990
1989	Australia	Wheels Magazine: Top 10 of 1989
1989	U.S.A.	Popular Science: Best 100 Products
1989	Japan	First prize, Smash Hit Goods 1989
1989	U.S.A.	Motor Trend: Top 10 Import Buys 1990
1989	U.S.A.	Road & Track: Five Best Cars in the World (inaugural awards)
1989	U.S.A.	Autoweek: Most Fun, Chicago Auto Fair awards

SPECIFICATIONS & EQUIPMENT

POWERTRAIN		1.5L I4 Petrol	2.0L I4 Petrol	2.0L I4 Petrol RF
Bore and stroke	mm	74.5 x 85.8	83.5 x 91.2	83.5 x 91.2
Compression ratio		13.0 : 1		13.0 : 1
Drivetrain		RWD		RWD
Emissions standard		Euro stage V		Euro stage V
Engine capacity	cc	1,496	1,998	1,998
Engine type		1.5 litre in-line 4 cylinder 16 valve DOHC S-VT petrol (SKYACTIV-G) engine	2.0 litre in-line 4 cylinder 16 valve DOHC S-VT petrol (SKYACTIV-G) engine	2.0 litre in-line 4 cylinder 16 valve DOHC S-VT petrol (SKYACTIV-G) engine
Fuel consumption (l/100km)[1]:	Manual (combined)	6.1	6.9	7.0
	Auto (combined)	6.4	7.1	7.4
Fuel system		Electronic direct injection		Electronic direct injection
Fuel tank capacity	litres	45		45
Gear ratio	1st	5.087 / 3.538		5.087 / 3.538
	2nd	2.991 / 2.060		2.991 / 2.060
	3rd	2.035 / 1.404		2.035 / 1.404
	4th	1.594 / 1.000		1.594 / 1.000
	5th	1.286 / 0.713		1.286 / 0.713
	6th	1.000 / 0.582		1.000 / 0.582
	Reverse	4.696 / 3.168		4.696 / 3.168
	Final drive	2.866 / 4.100	2.866 / 3.454	2.866 / 3.454

POWERTRAIN CONT...		1.5L I4 Petrol	2.0L I4 Petrol	2.0L I4 Petrol RF
Maximum power (kW @ rpm)		96 @ 7,000	118 @ 6,000	118 @ 6,000
Maximum torque (Nm @ rpm)		150 @ 4,800	200 @ 4,600	200 @ 4,600
Recommended fuel		Premium unleaded (95RON or higher)		Premium unleaded (95RON or higher)
Throttle control		Electronic (drive-by-wire)		Electronic (drive-by-wire)
Transmission	Manual	6-speed (SKYACTIV-MT)		6-speed (SKYACTIV-MT)
	Auto	6-speed		6-speed

CHASSIS & POWERTRAIN TECHNOLOGIES	Roadster	Roadster GT	RF	RF GT
Automatic transmission drive selection	•	•	•	•
Automatic transmission kickdown switch	•	•	•	•
Double-pinion electric power assist steering	•	•	•	•
Hill Launch Assist (HLA)	•	•	•	•
Limited-Slip Differential (manual only)	•	•	•	•
Paddle shift gear control (auto only)	•	•	•	•
SKYACTIV-BODY	•	•	•	•
SKYACTIV-CHASSIS	•	•	•	•

MODEL AVAILABILITY		Roadster	Roadster GT	RF	RF GT
2-seat Convertible:	1.5L I4 Petrol RWD / 6-speed manual	•	•	-	-
	1.5L I4 Petrol RWD / 6-speed automatic	•	•	-	-
	2.0L I4 Petrol RWD / 6-speed manual	•	•	•	•
	2.0L I4 Petrol RWD / 6-speed automatic	•	•	•	•

CHASSIS		Roadster	Roadster GT	RF	RF GT
Brake diameter (mm):	Front 1.5L I4 Petrol RWD	258		-	
	Front 2.0L I4 Petrol RWD	280		280	
	Rear 1.5L I4 Petrol RWD	255		-	
	Rear 2.0L I4 Petrol RWD	280		280	
Brake type:	Front	Ventilated disc		Ventilated disc	
	Rear	Solid disc		Solid disc	
Suspension:	Front	Double wishbone		Double wishbone	
	Rear	Multi-link		Multi-link	
Turning circle kerb to kerb	m	9.4		9.4	
Tyre size	1.5L I4 Petrol RWD	195/50 R16		-	
	2.0L I4 Petrol RWD	205/45 R17		205/45 R17	
Tyre index	1.5L I4 Petrol RWD	84V		-	
	2.0L I4 Petrol RWD	84W		84W	
Wheel size	1.5L I4 Petrol RWD	16 X 6.5 J		-	
	2.0L I4 Petrol RWD	17 x 7.0 J		17 x 7.0 J	
Wheel type		Alloy		Alloy	

WEIGHTS & CAPACITIES (SEDAN)		Roadster	Roadster GT	RF	RF GT
Cargo room volume (litres)		130		127	
Kerb weight (kg):	1.5L I4 Petrol RWD / 6-speed manual	1,009		-	
	1.5L I4 Petrol RWD / 6-speed automatic	1,032		-	
	2.0L I4 Petrol RWD / 6-speed manual	1,033		1,080	
	2.0L I4 Petrol RWD / 6-speed automatic	1,057		1,106	

DIMENSIONS		Roadster	Roadster GT	RF	RF GT
Ground clearance laden (mm)	1.5L I4 Petrol RWD	125		-	
	2.0L I4 Petrol RWD	135		135	
Ground clearance unladen (mm)	1.5L I4 Petrol RWD	140		-	
	2.0L I4 Petrol RWD	150		150	
Overall length (mm)		3,915		3,915	
Overall width (mm)		1,735		1,735	
Overall height (mm)	1.5L I4 Petrol RWD	1,225		-	
	2.0L I4 Petrol RWD	1,230		1,235	
Track (mm):	Front	1,495		1,495	
	Rear	1,505		1,505	
Wheelbase (mm)		2,310		2,310	

SEATS		Roadster	Roadster GT	RF	RF GT
Seat trim:	Black cloth	•	-	•	-
	Black leather	-	•	-	•
	Tan leather	-	°	-	°
	Chroma brown nappa leather	-	-	-	°
Front seats with:	Heating function	-	•	-	•
	Rake and slide adjustment	•	•	•	•
	Tilt adjustment (driver)	•	•	•	•

• = Standard, ° = Option, - = Not available

EXTERIOR	Roadster	Roadster GT	RF	RF GT
Daytime running lamps (LED)	•*	•	•	•
Door handles (body coloured)	•	•	•	•
Exhaust extensions	•	•	•	•
Front and rear bumpers (body coloured)	•	•	•	•
Green-tinted windscreen, side and rear windows	•	•	•	•
Headlamps (LED)	•	•	•	•
Headlamps auto on/off function	-	•	-	•
Power mirrors	•	•	•	•
Power mirrors (heated)	-	•	-	•
Power windows	•	•	•	•
Retractable hard-top (body coloured)	-	-	•	•
Retractable hard-top (two-tone)	-	-	-	°
Soft-top (cloth)	•	•	-	-
Tail-lamps (LED)	•	•	•	•
Window demister (rear)	•	•	•	•
Wipers (front) 2-speed with rain-sensing function	-	•	-	•
Wipers (front) 2-speed with variable intermittent function	•	-	•	-

• = Standard, •* = Standard (2.0L I4 Petrol only), ° = Option, - = Not available

INTERIOR		Roadster	Roadster GT	RF	RF GT
Air-conditioning		•	-	•	-
Air-conditioning (climate control)		-	•	-	•
Ambient temperature display		•	•	•	•
Critical function warning lights/chimes		•	•	•	•
Cruise control		•	•	•	•
Cupholders		•	•	•	•
Instrument panel light dimmer		•	•	•	•
Interior illumination:	Entry system with delayed fade	•	•	•	•
	Map reading spot lamps	•	•	•	•
	Power window switch	•	•	•	•
Leather-wrapped:	Gear shift knob	•	•	•	•
	Handbrake handle	•	•	•	•
	Steering wheel	•	•	•	•
One touch (down) power windows		•	•	•	•
Puncture repair kit		•	•	•	•
Rear-view mirror with auto dimming function		-	•	-	•
Tachometer and electronic odometer/ tripmeter		•	•	•	•
Tilt adjustable steering wheel		•	•	•	•
Trip computer[3]		•	•	•	•
Vanity mirrors		•	•	•	•

• = Standard, - = Not available

INFOTAINMENT	Roadster	Roadster GT	RF	RF GT
7-inch full colour touch screen display (MZD Connect)	•	•	•	•
AM/FM tuner	•	•	•	•
Auxiliary-audio input jack (3.5mm mini-stereo)	•	•	•	•
Bluetooth® hands-free phone and audio capability[4]	•	•	•	•
Internet radio integration (Pandora®, Stitcher™ and Aha™)	•	•	•	•
Multi-function commander control	•	•	•	•
Premium Bose® 203 watt amplifier and speakers	-	•	-	•
Radio Data System (RDS) program information	•	•	•	•
Satellite navigation	•	•	•	•
Speakers (6)	•	-	•	-
Speakers (9)	-	•	-	•
Steering wheel-mounted audio controls	•	•	•	•
USB-audio input port (iPod compatible)	•	•	•	•

• = Standard, - = Not available

SAFETY AND SECURITY		Roadster	Roadster GT	RF	RF GT
Adaptive Front-lighting System		-	-	-	•
Advanced keyless entry		-	•	-	•
Advanced keyless push-button engine start		•	•	•	•
Airbags SRS:	Front	•	•	•	•
	Side	•	•	•	•
Anti-lock Braking System (ABS)		•	•	•	•
Blind Spot Monitoring (BSM)		•	•	•	•
Dynamic Stability Control (DSC)		•	•	•	•
Electronic Brake-force Distribution (EBD)		•	•	•	•
Emergency Brake Assist (EBA)		•	•	•	•
Emergency Stop Signal (ESS)		•	•	•	•
Engine immobiliser		•	•	•	•
High mount stop lamp		•	•	•	•
Hill Launch Assist (HLA)		•	•	•	•
Intrusion-minimising brake pedal		•	•	•	•
Rear Cross Traffic Alert (RCTA)		•	•	•	•
Remote central locking (2 transmitters)		•	•	•	•
Seat-belt warning		•	•	•	•
Seat-belts 3-point lap-sash		•	•	•	•
Seat-belts (front) with pretensioners and load-limiters		•	•	•	•
Side impact door beams		•	•	•	•
Traction Control System (TCS)		•	•	•	•
Tyre Pressure Monitoring System (TPMS)		•	•	•	•

• = Standard, - = Not available

Specific disclaimers

1 Fuel consumption figures are based on ADR 81/02 test results. They are useful in comparing the fuel consumption of different vehicles. They may not be the fuel consumption achieved in practice. This will depend on traffic and road conditions and how the vehicle is driven.
2 Leather interior includes some Maztex material on selected high impact surfaces.
3 Trip computer displays current and average fuel consumption, distance to empty and average vehicle speed.
4 Please check the compatibility of your Bluetooth® device (particularly your mobile phone) with the specific Mazda vehicle you intend to purchase as not all devices operate correctly.
Visit **www.mazda.com.au/Bluetooth** or consult your Mazda Dealer for further information.

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