

Canon

RF LENS

**Pursuing further high image
quality, high specs and compact,
lightweight performance**

RF70-200mm F2.8 L IS USM
An interview with the developers





Kaishi Kawai
Product Planning

Image Communication Business Operations
ICB Optical Business Group



Toshihiro Okuda
Development Leader/
Mechanical Design

Image Communication Business Operations
ICB Optical Products Development Center



Kenji Shinohara
Optical Design

Image Communication Business Operations
ICB Optical Products Development Center



Kazuharu Osawa
Mechanical Design

Image Communication Business Operations
ICB R&D Center 3



Satoshi Maruyama
Electrical Design

Image Communication Business Operations
ICB Optical Products Development Center

Researching a new everyday use lens for pros with an RF mount resulted in a variable overall length zoom for a compact, lightweight design.



The variable overall length zoom design utilizes a large-diameter mount and short back focus distance, resulting in a significantly shorter length and lightweight form.



The RF70-200mm F2.8 L IS USM can be stored in a small to medium-sized camera bag while attached to the EOS R so photographers never miss a sudden photo opportunity.

A new flagship model has been developed for the F2.8 L zoom lens series, utilizing the large diameter and short back focus distance unique to the RF mount. The reason for this was a strong desire from the developers to provide such a lens as soon as possible for pros that use the EOS R system.

Concepts: High image quality and superb portability

◆ **First please tell us about the RF70-200mm F2.8 L IS USM development concept, then how it came into commercialization.**

Kawai (Product Planning) ● The development concept was to use the unique large diameter and short back focus distance of the RF mount to achieve high image quality appropriate to the F2.8 L zoom lens series. At the same time, we wanted to achieve superior portability for comfortable handheld shooting. The EOS R system makes it possible to place priority on design aspects such as high image quality, high functionality, and a compact form, so we maximized these points. The reason we decided to commercialize an item in the F2.8 L zoom lens series at this time was because of a strong desire to have pros experience the attractiveness of the EOS R system as soon as possible. This series is highly praised for its fast aperture, a zoom range that covers a wide variety of shooting scenes, superior descriptive performance, controls, durability, and toughness. In the development process, the optical designers, mechanical designers, and electrical designers discussed what kind of design was possible utilizing

the features of the RF mount. The result of studying what kind of product would satisfy both pros and advanced amateurs alike as a new everyday lens that makes use of Canon's storehouse of technical knowledge was a variable overall length zoom that delivers both a shortened overall length and lightweight form.

Okuda (Development Leader/Mechanical Design)

● Although the EF70-200mm f/2.8L IS III USM received high praise for its image quality, it requires a large camera bag when shooting overseas and deep in backcountry locations, making it difficult for some to carry.

Kawai (Product Planning) ● With this in mind, we set our sights on creating a shortened overall length that could easily fit in a small camera bag.

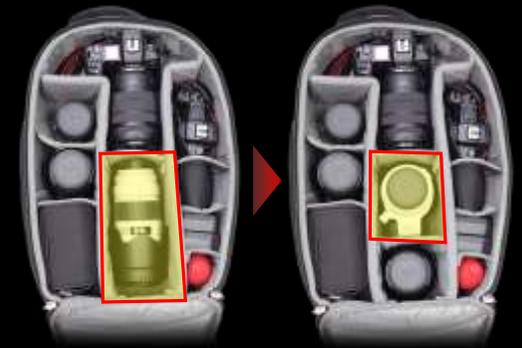
Image quality and controls equal to or surpassing the EF lens

◆ **How has the reaction been since the announcement in February 2019?**

Kawai (Product Planning) ● I feel like it is greater than we imagined. There was even excitement at Canon, with some saying that this design could dramatically improve mobility for pros. We believe this lens will surprise users with its significantly

shortened overall length.

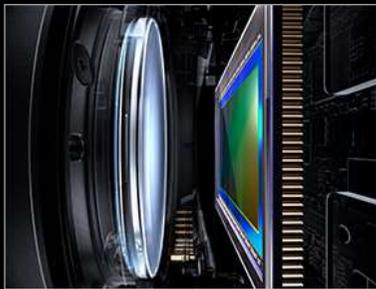
Users said they wanted a compact telephoto lens for the EOS R system, and the reaction from the announcement motivated us in the development process to deliver a product that meets expectations as soon as possible.



Vertical storage in a camera pack

The RF70-200mm F2.8 L IS USM can be packed vertically in a camera pack or camera bag that can store the camera with attached battery grip, allowing room for an extra lens.

All existing technology was poured into this variable overall length zoom along with new technology for reliability and durability pros can trust in the field.



Large-diameter, short back focus distance RF mount

A large inner diameter 54mm mount and short back focus distance was employed to enable lens element placement near the focusing plane and to achieve a greater level of optical design freedom. Because the space where the SLR mirror was can now be effectively used, the camera and lens system overall can be made more compact.

Delivering new value and unchanging reliability to EF lens users

◆ It seems like many EF lens users are paying attention to this model.

Kawai (Product Planning) ● We believe that this will deliver image quality and controls that are even more satisfying than conventional EF lenses. However, some EF70-200mm f/2.8L IS III USM and EF70-200mm f/2.8L IS II USM users mentioned that it would be better if the front lens does not extend, from a durability standpoint. With that in mind, some of us wondered if we could change the design to an inner zoom (zoom type that moves the center lens group inside the lens) construction where the overall length does not change, like on the EF70-200mm f/2.8L IS III USM. However, we were focused on maintaining constant stable performance with the reliability typical of the L lens even in difficult shooting conditions, as well as a compact design.

Okuda (Development Leader/Mechanical Design)

● The reason we were able to achieve a variable overall length 70-200mm F2.8 was because of the large-diameter mount and short back focus distance of the RF mount.

We had experience with variable overall length L telephoto zoom lenses on the EF70-300mm F4-5.6L IS USM and EF100-400mm F4.5-5.6L IS II USM, so we used that technology and made further modifications.

The design ensures reliability and design that is equal to or surpasses conventional lenses.

Handles a wide variety of scenes even during handheld shooting

◆ A more compact, lightweight design vastly expands shooting capabilities, doesn't it?

Kawai (Product Planning) ● Close attention was paid to image quality from infinity to extreme close-ups, so we believe it can handle a variety of shooting situations.

The compact, lightweight design of this model makes it possible to take it along on shoots without any hesitation. We also believe this compact, lightweight design is a major advantage due to the desire of many photographers to take as much camera equipment as possible as carry-on luggage when flying.



An RF mount-focused design with two NANO USM units were included in a new mechanical design to achieve both a compact form and high image quality.



Overall length
Approx. **146.0**
mm
(Shortest length)

Weight
Approx. **1,070 g**

(With tripod: approx. 1,200 g)

Adopting a variable overall length zoom design makes for the world's shortest, lightest* setup on a 35mm full-size sensor camera with 70-200mm F2.8 interchangeable lens.

*As of October 2019, according to Canon research.

The designers decided on a variable overall length from the initial stages to achieve a compact, lightweight design. Various technical challenges were faced along with the entire development department and factory departments to achieve high image quality and reliability in addition to the above design.

A completely new optical design contributes to a much shorter overall length

◆ How did development for a compact, lightweight design proceed?

Okuda (Development Leader/Mechanical Design)

● From the initial stages of development we decided to use a variable overall length zoom design. We frequently met with factory staff to discuss what new technologies would need to be developed and what would need to be modified. We believe this product is the result of using the very best abilities of the Development Department.

◆ What technologies made the compact size possible?

Okuda (Development Leader/Mechanical Design)

● The shortened overall length of the optical system was possible thanks to maximizing the properties of the large-diameter mount and short back focus distance. All mechanical and electrical components needed to fit when shooting at wide angle, which is the shortest length, and there was no leeway compared to an inner zoom design. This challenge was overcome by optimizing the layout of the components and also miniaturizing them.

Also, this model includes an electronic floating focus control equipped with two NANO USM units to enable high image quality across the entire shooting range including close-up shots. The details will be explained later, but this technology provides independent focus control over two lens groups via the two NANO USMs. Trial and error was needed to figure out the optimal placement of the NANO USM amid constraints for such thorough miniaturization.

◆ What challenges did you face in optical design?

Shinohara (Optical Design) ● Various lens types were used in the design that makes use of a short back focus distance, and we incorporated all of our technology.

Compact size and high image quality have a contradictory relationship. The refractive power of the lenses was increased to maximize the ability of each lens and shorten the overall length. Of course this also affects image quality, so we proactively incorporated new glass materials such as Super UD lenses and UD aspherical lenses for chromatic aberration and spherical aberration correction. Normally, several lenses are required to correct aberrations, but achieving the same effects with a single lens contributed to a compact design. The number of lenses has a significant impact on the weight, so reducing the number of lens elements is directly related to a lightweight design.



Glass-molded aspherical lens molds



UD lens and Super UD lens

Lenses were optimally arranged for ideal chromatic aberration correction, resulting in high image quality with suppressed color bleeding from the center to the edges of the image.

A culmination of all Canon Development Department techniques were used to achieve the goal of providing benefits for all users.



A lightweight design goal to surprise users and deliver greater convenience

◆What technologies were incorporated to achieve a lightweight design?

Okuda (Development Leader/Mechanical Design)

● Part of the zoom mechanism from the EF70-200mm f/2.8L IS III USM consisting of a mechanical cam (mechanical lens group control) was replaced with a USM electronic cam. This eliminated the need for mechanical cam components, contributing to a more lightweight design.

We set an ambitious target for a lightweight form, consolidating our technologies and finally removing the tripod base plate to arrive at a weight of approximately 1,070 g. Compared with the nearly 1,480 g of the EF70-200mm f/2.8L IS III USM, this model is nearly one third lighter.

Kawai (Product Planning) ● From a user standpoint, smaller means lighter, so we communicated this likely request to design staff. Many photographers use the 1.5 kg EF70-200mm f/2.8L IS III USM for handheld shooting. We always kept in mind how light the product could be made on an RF lens to amaze users and make shooting more convenient.



A lens NANO USM was developed for a telephoto lens that can handle significant lens group movement, while maintaining a compact design.

Challenges faced in mechanical design due to a variable overall length zoom

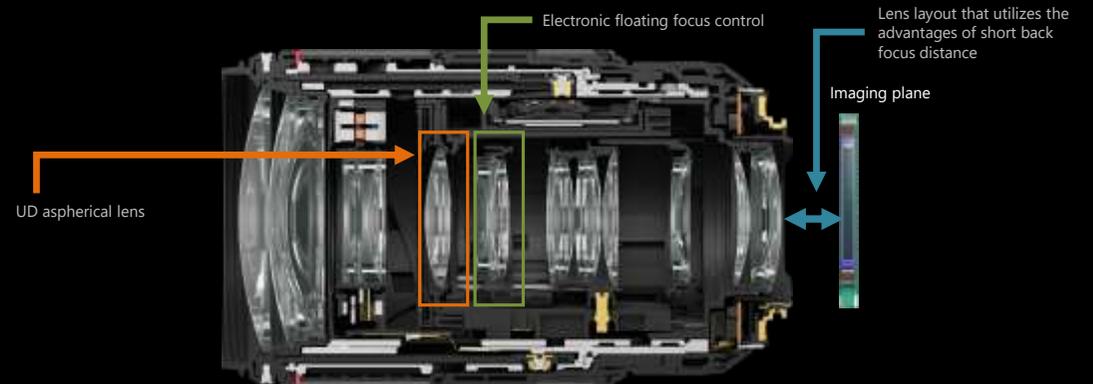
◆What exactly is the NANO USM used on the product?

Osawa (Mechanical Design) ● The NANO USM is an

ultrasonic motor that is not only super compact, but also possesses high torque, and is capable of high-speed AF for still images and smooth, silent AF for shooting movies. This was first included on the RF24-105mm F4 L IS USM, resulting in a drastically smaller size compared to other NANO USM units at the time, and further modifications have been made on this model for telephoto zoom operation. The lens groups on telephoto lenses move a lot (large stroke), making NANO USM design more difficult. For this model, we succeeded in developing a NANO USM that can deal with the long stroke while maintaining a small size and AF performance. This is expected to be applied on future RF lenses and super telephoto lenses.

◆Were there other aspects in the compact and lightweight design process?

Okuda (Development Leader/Mechanical Design)



The significantly shorter overall length was achieved thanks to taking advantage of the large-diameter, short back focus distance and adopting an electronic floating focus control with two NANO USM units, along with a Super UD lens and UD aspherical lens.

Two lens groups independently driven by two NANO USM units via electronic floating focus control for high image quality across the entire zoom range.



This is the first Canon model to use electronic floating focus control with two NANO USM units. The optical designers modified Canon development optical design tools in order to maximize the potential of this new technology.

Close-up shooting to approximately 0.7 m and improved maximum image magnification

◆ **What technical points allowed you to achieve high image quality in a compact, lightweight design?**

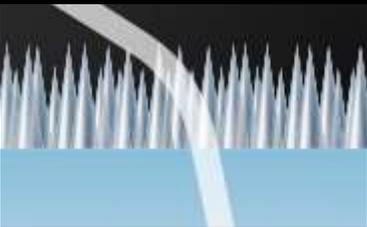
Shinohara (Optical Design) ● Using two NANO USM units enables us greater freedom over lens group placement, which links to high image quality. The two NANO USM units provide independent control over the focusing lens and floating lens. The electronic floating focus control, which drives the floating lens electronically, is a Canon first.

◆ **How does this result in improved specs?**

Shinohara (Optical Design) ● It improves close-up image quality and shortens the minimum focusing distance. This was 1.2 m for the EF70-200mm f/2.8L IS III USM, but it has been shortened to 0.7 m on this product. It eliminates the dissatisfaction over the inability to get close enough to subjects, improving shooting convenience. The maximum magnification is approximately 0.23x, which is nearly 0.21x better than on the EF70-200mm f/2.8L IS III USM.



This is a UD aspherical lens used on the RF70-200mm F2.8 L IS USM. It enables spherical aberration correction and a shorter overall length



SWC (Subwavelength Structure Coating) is a special coating that provides superior anti-reflective properties particularly for light with a high angle of incidence. It is capable of suppressing flares and ghosts at the edges of lenses with a large curvature.

Fewer lens elements while retaining high image quality

◆ **What difficulties did you face in optical design?**

Shinohara (Optical Design) ● We had to modify Canon development optical design tools to maximize the potential of electronic floating focus control.

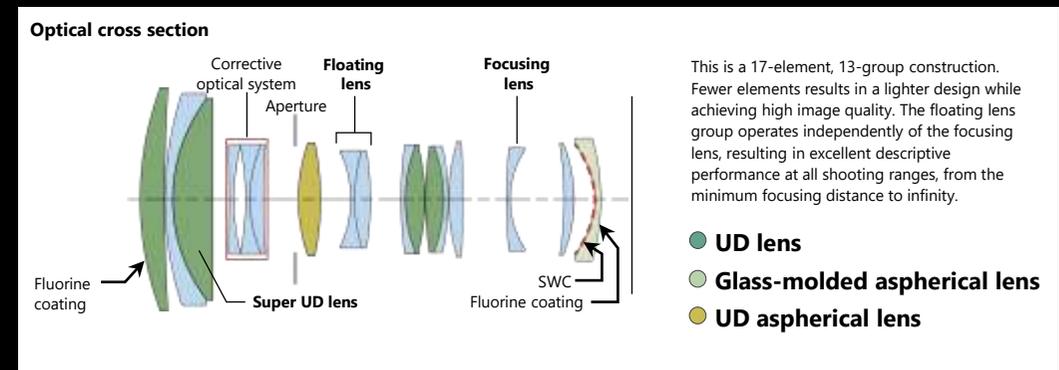
This product uses a 17-element, 13-group lens design with one Super UD lens, three UD lenses, one UD aspherical lens, and one glass-molded aspherical lens. The glass-molded aspherical lens close to the image plane is treated with special SWC to reduce flares and ghosts. SWC provides more effective glare suppression on large-diameter RF mount lenses

which can be placed close to the image plane thanks to the short back focus distance.

Although we reduced the number of lens elements on this model, it has high image quality that is equivalent to or better than conventional lenses. As optical designers, we are proud of its high degree of perfection.

◆ **Generally it's not possible to maintain high image quality when reducing the number of lens elements, right?**

Shinohara (Optical Design) ● That's true, it's difficult. You could say that optical design technical innovation on the RF70-200mm F2.8 L IS USM allowed us to maintain high image quality while reducing the number of lenses.



Electronic floating focus control enables high-speed AF for still images and quiet, smooth AF for movie shooting.



Electronic floating focus control contributes to high image quality and improved AF precision. The mechanical, optical, and electrical design departments all worked together to overcome each and every challenge faced in coordinating two NANO USM units.

Electronic cam employed for control of the lens group during zooming

◆What are the advantages of electronic floating focus control on this product?

Shinohara (Optical Design) ● Floating focus was originally used on the EF100-400mm f/4.5-5.6L IS II USM and EF100mm f/2.8L Macro IS USM lenses, however, these used a comparatively simple mechanical cam. The RF70-200mm F2.8 L IS USM uses an electronic cam to independently operate the two lens groups for high-speed, high-precision still image AF and improved image quality at close distances.

Maruyama (Electrical Design) ● Being in charge of electrical design, I started thinking of how the two lens groups could be moved from the very beginning. The independent movement of the lens groups is complex, and achieving faster movement and synchronization while considering the impact on camera AF precision were difficult technical hurdles. This was also the first time an electronic cam system was used for lens group control during zooming on an F2.8L series zoom lens. This product employs a system that predicts user zoom control for smooth lens movement. This delivers quick control sensations that are not inferior to mechanical cams.

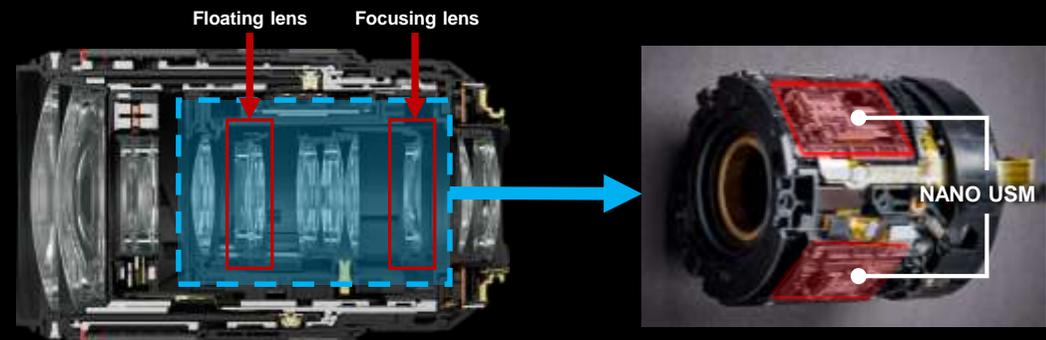
Okuda (Development Leader/Mechanical Design)

● We paid particular attention to ensuring that controls felt natural even for persons who use EF zoom lenses.

Maruyama (Electrical Design) ● We assumed a product with two NANO USM units in order to achieve electronic floating focus control, so we began basic research early on. Simulations from the concept stage helped those of us in the Mechanical Design Department and Optical Design Department consider how to synchronize the groups and how to

optimize movement, resulting in the final form of this product.

Inclusion of two actuators (NANO USM) results in double the amount of noise when the lens is being driven. We repeatedly measured actual operation sounds such as how to suppress sounds when moving the lenses, sounds during manual focus (MF) and sounds during zoom operations. The design was optimized for movie and still image conditions to ensure that drive sounds were not too loud.



This is the first Canon model to use electronic floating focus control with two NANO USM units. Independent operation of the focusing lens group and floating lens group reduces the minimum focusing distance for improved close-up shooting and further AF precision improvements.

A high-precision electronic focusing ring was adopted for this model. This responds perfectly to focus peaks during MF.



Pursuing comfortable controls by allowing focus sensitivity setting

◆ Tell us about the focus speed.

Maruyama (Electrical Design) ● We established a speed goal based on the premise that this model had to be faster than previous lenses, and that it had to be superior to competitor products. We focused on responsiveness for still images and speed for focusing on subjects. On the other hand, too much speed is not good for movies, so we focused on smoothness and speed that maintains a certain level of silence. Using different parameters for still images and movies, we took extra care in tuning the lens. Although moving subjects involves camera body performance, we made adjustments on the lens to optimize focus movement when combined with the camera. We attached the lens to the camera to test how it works when actually tracking moving subjects, conducting various practical tests to ensure sufficient responsiveness, finally arriving at the optimal algorithm.

High-precision, slim encoder used on the electronic ring

◆ I'm also interested in the response precision when operating the focusing ring.

Okuda (Development Leader/Mechanical Design) ● An electronic ring that does not connect directly to the mechanical mechanism is used on the focusing ring.

A high-precision, slim encoder (component that converts the ring rotation position into an electronic signal) was adopted for this product. Because it is slim, it contributes to a compact design. It enhances the resolving power of rotation detection, applying the fine movements of one's fingertips when searching for focus peaks in MF. We also pursued more comfortable operation by enabling sensitivity settings.



Based on the EF lens series, the IS unit has been made smaller, with better performance. Harmonized control with the camera results in higher precision IS for still images and movies.



The idea of miniaturization was also applied to the IS unit. In this area as well, technical development skills were utilized to adopt the first ever Canon-original mechanism, resulting in a new, compact IS unit. Improved communication between the camera and lens thanks to the RF mount also contributes to IS precision.

5 stops of CIPA-compliant IS effects

◆ Is IS functionality also improved (image stabilization mechanism in the lens)?

Okuda (Development Leader/Mechanical Design)

● Two groups on the RF70-200mm F2.8 L IS USM are IS units, so naturally, the large-diameter lens becomes larger as a result. Technology to miniaturize the IS unit is incorporated to achieve the mission of making the lens smaller. One example that was touched on previously is the elimination of the IS mechanical lock.

The IS unit on this product is a new design based on the proven track record of the IS unit from the EF lens series. Technology developed on super telephoto and L lenses has been incorporated for further durability.

◆ The RF mount has improved camera and lens communication by leaps and bounds. The camera and lens work together for improved IS precision, resulting in better handling of low-frequency shaking than ever before, something that was difficult for conventional IS. How does this product fare in that regard?

Maruyama (Electrical Design) ● This product is the same. Harmonized control with the camera results in higher precision IS for still images and movies. The

gyro sensor in the lens detects shaking for still images, and information from camera CMOS sensor images is used to detect and correct low-frequency camera shake. A comparative analysis of these two pieces of information is conducted and used for correction in dual sensing. This system provides five stops of CIPA-compliant IS effects. Combination IS uses in-lens optical IS and in-camera 5-axis electronic IS for movies.

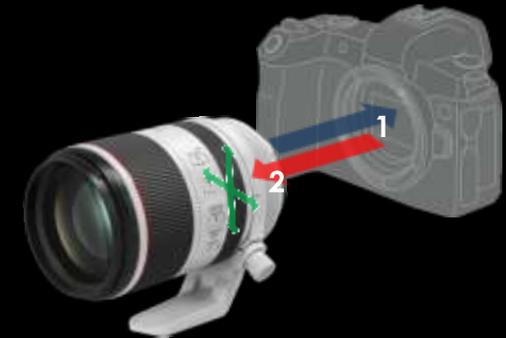
Equipped with 3 IS modes to match subject movement

◆ How are the three IS modes used?

Maruyama (Electrical Design) ● MODE 1 is used for still subjects, and can handle any kind of shaking. MODE 2 is for panning shots of moving subjects. MODE 3 is for shooting subjects that move unpredictably. These modes continuously calculate the amount of camera shake and only operate during the exposure, not while the photographer is checking the composition. Some pros mentioned that the image in the viewfinder feels unnatural due to rebound when the camera is moved while IS continues operating. MODE 3 is recommended for such users.

Kawai (Product Planning) ● Because this product is extremely compact and has a bright f/2.8 aperture and IS, I believe it is a good lens for indoor sports.

MODE 3 is a good choice for such scenes. There is a lot of intense movement in sports such as basketball, so MODE 3 enables shooting without rebound in the viewfinder.

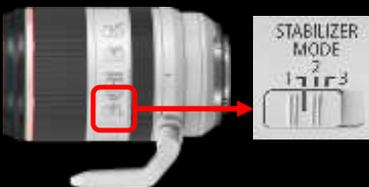


Harmonized control with the camera enables Dual Sensing IS which delivers five stops* of IS effects for still images, and Combination IS utilizes the optical in-lens IS and in-camera 5-axis electronic IS for movies.

*At a focal length of 200mm, when using EOS R. CIPA standard compliant.



The EOS R system uses 12-pin electronic contacts to provide significantly improved communication between the camera and lens. Information such as the focus, zoom, aperture, and IS is instantly transmitted to the camera.



Switching the IS mode selection switch makes it possible to select three IS modes according to the shooting scene.

Reliability and durability built up on the F2.8 L zoom lens series is carried on in this product. An original dust and water-resistant construction keeps out dust, which is an issue in variable overall length zoom lenses.



The F2.8 L zoom lens series stands up to the punishing use of pro photographers. The developers accepted no compromises in their dedication to the dust and water-resistant construction in order to maintain the reliability and durability of the series.

Shock resistance that up to pro use

◆What did you focus on to ensure reliability and durability on a variable overall length zoom lens?

Okuda (Development Leader/Mechanical Design)

● We made sure that nothing changed in regard to reliability and durability. Specifically, this product is designed for reliability and durability that is equal to or surpasses the EF70-200mm f/2.8L IS III USM. Some photographers that use a variable overall length lens have said that the lens barrel is inadvertently extended when pointing the camera downward, so the latest RF lens was used to solve this issue. It also has the same level of shock resistance as other L lenses, and technology that prevents changes to optical performance due to long-term usage.

Kawai (Product Planning) ● Current F2.8 L zoom lens series models including the EF70-200mm f/2.8L IS III USM experience hard use by photographers. One could say that this is proof that the series requires a high level of reliability and durability. We were absolutely committed to maintaining that reputation, so the RF70-200mm F2.8 L IS USM was developed with zero compromises.

Also, the front most and rearmost surfaces of the



— Dust and water resistant sealing locations

Dust and water-resistant sealing is applied to all lens joints and switch panels to keep out water and dust. It also maintains reliability for pro use with the same shock resistance as other L lenses.

*Does not completely keep out dust and water droplets.

lens features a fluorine coating. Oil and moisture are easily repelled, and oil can be easily wiped off with just a dry cloth without solvents.

Clears Canon dust and water-resistant standards

◆How are dust and water-resistant performance?

Okuda (Development Leader/Mechanical Design)

● Developing a variable overall length zoom lens poses structural challenges in keeping out dust. Pressure is generated when extending the lens from the wide to tele front group, sucking in air. We designed the ventilation route of the lens so that air would not be sucked in from any unexpected locations, ensuring that air flow is exactly as designed. We used materials that ensure good air flow while preventing moisture. Dust-resistant materials were also used to keep out dust.

◆The white coating seems a bit different than conventional white lenses.

Kawai (Product Planning) ● Although the reason Canon makes white lenses is to prevent overheating when used in direct sunlight, the heat insulating

properties of this coating are better than the EF70-200mm f/2.8L IS III USM. This heat insulating coating was first used on the EF400mm f/2.8L IS III USM and EF600mm f/4L IS III USM, but this is the first time it has been used on an RF lens.

Fluorine coated surface



Effects of fluorine coating



Fluorine coating is used on the front most and rearmost lens surface, making it easy to wipe off any oil from the lens with a dry cloth.

The “beauty of light collection” is a focus of the controls. The tradition of the L lens series is carried on while pursuing a universally sophisticated design that remains valid even 10 years in the future.



Pros on the frontlines of photography have many demands for capturing once-in-a-lifetime shots. Feedback from users around the world was incorporated while improving usability based on design skills that have been developed over time.

Keeping in mind the overall contrast with the first RF white lens

◆ Please tell us about the design concept.

Kawai (Product Planning) ● We have already announced several RF lenses, and the base shape is derived from functionality, and we aim for a design that does not go obsolete, and remains universal even 10 years in the future. The design philosophy of “beauty of light collection” from the EF lens series is carried on the RF lens along with the tradition of the L lens series.

The RF70-200mm F2.8 L IS USM is the first white RF lens, so we wanted to give it as much white space as possible, by including the same color when the lens barrel is extended. The hood and control ring are also white for a sense of consistency. The white hood has been used on super telephoto EF lenses before, but this is the first time it has been used on an F2.8 zoom lens.

A dark gray color was chosen for the zoom ring and focusing ring. At a glance, it appears to be a similar color, however, it has a stronger sense of gray tones compared to previous models. The overall contrast was purposely lowered to ensure that the design blends into the background.

Pursuing comfortable controls

◆ In what way did you modify usability?

Okuda (Development Leader/Mechanical Design)

● The zoom ring, which is the most frequently used control, was designed to operate smoothly at a certain torque from the wide to tele ends. In principle, the torque changes easily on a variable overall length zoom lens, but optical design and mechanical design were coordinated to optimize the

lens in this regard. We also made the zoom ring as wide as possible for enhanced finger fit, and placed it toward the front of the lens for quick controls. On the other hand, the focusing ring was adjusted for finer adjustments, such as changing the width of the rubber ring and the pitch of the texture.

The control ring, to which the aperture, shutter speed, ISO speed, and exposure compensation can be assigned, was modified to deliver a clicking sensation for easier control.



Although the amount of white surfaces has increased, the zoom lens and focusing ring are dark gray. This is the first F2.8 L zoom lens to have a white hood.

What is the “beauty of light collection”?

This idea is a visualization of the image of light entering the front lens and being collected on the focusing plane. The beauty of light collection on the EF and RF lenses is visualized in the elegant lines of the design.

Feedback from pros on the frontlines of photography was used to make various modifications to details. The power of design technology resulted in improved usability.



The lens is adjusted for a compact design, including a compact tripod base plate which is included with the lens. It can easily be removed.

Improved convenience for portrait and landscape shooting with a new tripod base plate included

Kawai (Product Planning) ● The tripod base plate is included with the lens. Some people wondered if we could eliminate the tripod base plate to make it even lighter since the lens will mainly be used for handheld shooting due to its compact, lightweight design. However, we decided to include this feature to improve convenience when shooting portraits and landscapes with the lens attached to a tripod so there is no need to change the optical axis. Initially, there were concerns that adding a tripod base plate would result in a longer overall length, adversely affecting the compact design, however, this obstacle was overcome thanks to modifications by the mechanical and design departments, resulting in a compact design harmonized with the lens. The tripod base plate knob is a truncated cone shape that expands outward, making it easy to turn and remove. The knob and control ring are finished with an intricate knurled pattern that makes them easier to turn.

Okuda (Development Leader/Mechanical Design)

● The lens body is equipped with a tripod base plate attachment index, with a vertical index on the left and right sides for quick composition changes. The included lens hood also has a filter adjustment window for greater usability. This is already available on the EF100-400mm F4.5-5.6L IS II USM, and can be used to manipulate the polarizing filter without removing the hood during landscape shots. This was

added because we anticipate many photographers using the lens for landscape photography.

Kawai (Product Planning) ● The RF70-200mm F2.8 L IS USM incorporates feedback of pro photographers from around the world, melding the good points of the EF lens series with the new features only made possible on an RF lens. We believe that pros will find the usability aspects of this lens satisfactory.

A sliding filter adjustment window is included on the hood, enabling control of the polarizer from the open window.





Kazuharu Osawa Mechanical Design

The RF70-200mm F2.8 L IS USM uses electronic floating focus control and two NANO USM units for excellent tracking performance of moving subjects when shooting still images and smoother rack focusing for movies. The compact, lightweight design makes this lens more accessible to a wider range of users in addition to the usual pros and advanced amateurs who can experience its high level of performance.

Satoshi Maruyama Electrical Design

The new electronic floating focus control was an extremely difficult aspect of the electrical design. This lens is the result of uncompromising dedication, resulting from earnest efforts. I personally shoot photos of my children playing soccer games, so I am looking forward to utilizing the compact, lightweight design casually in everyday shooting situations. I look forward to taking on the challenge of creating the 'best lenses in the world' only possible at Canon.

Toshihiro Okuda Development Leader/ Mechanical Design

Many technical hurdles were anticipated during the development of a compact, lightweight F2.8 zoom lens, so we came together with the full strength of Canon. When prototypes were completed, I could see what an attractive product we had made, wondering if such a compact F2.8 telephoto zoom lens was possible. I was very happy to hear that so many users were interested in the product after the development announcement.

Kenji Shinohara Optical Design

It is said that compared to wide-angle lenses, telephoto lenses are more difficult to miniaturize. With this in mind, we used the advantages of a large-diameter mount and short back focus distance along with actively incorporating other new technologies in the design. Even if we were able to design the product, we still needed to complete the actual physical item, and we managed to do so thanks to cooperation between various departments. I look forward to being involved in future development of lenses utilizing the possibilities of the RF mount.

Kaishi Kawai Product Planning

With the RF70-200mm F2.8 L IS USM, we aimed for a lens that could still be used on the forefront of photography even 10 years in the future. We hope that anyone who hesitated to use such a lens due to size and weight will try this item, both pros and general users alike. Usually when photographing during mountain climbs I use an F4 zoom lens, however, with a lens this light, I want to try it out to capture new ways of expression. I look forward to expanding the attractive lens lineup utilizing the large-diameter, short back focus distance particular to this series in order to expand the EOS R system even further.