

Canon EF LENS

TS-E24mm F3.5L

TS-E45mm F2.8

TS-E90mm F2.8

Instructions



Thank you for purchasing this Canon product.

Canon's TS-E lenses are tilt-shift lenses designed for EOS cameras. The tilt-shift mechanism enables photographers to control the depth of field and the area photographed and to correct image distortion, making it possible to take sophisticated pictures that cannot be shot using a conventional lens.

- To ensure that you make the most of the TS-E lens functionality, it is recommended that you use it with an EOS camera with 100% viewfinder visibility (EOS-1, EOS-1D or EOS-1Ds series) and use the laser matte with grid focusing screen Ec-D and a tripod.
- On EOS cameras with a built-in flash, some partial restrictions may apply to the shift and rotation functions.
- On EOS cameras equipped with a grip for vertical shooting, some partial restrictions may apply to the shift and rotation functions.

Features

1. The lens can be tilted up to $\pm 8^\circ$ and shifted up to ± 11 mm.
2. The tilt and shift functions can be used singly or in combination.
3. The lens can be rotated to change the tilt or shift direction.

Conventions used in this instruction



Warning to prevent lens or camera malfunction or damage.



Supplementary notes on using the lens and taking pictures.

Safety Precautions

Safety Precautions

1. **Do not look at the sun or a bright light source through the lens or camera.** Doing so could result in loss of vision. Looking at the sun directly through the lens is especially hazardous.
2. **Whether it is attached to the camera or not, do not leave the lens under the sun without the lens cap attached.** This is to prevent the lens from concentrating the sun's rays, which could cause a fire.

Handling Cautions

If the lens is taken from a cold environment into a warm one, condensation may develop on the lens surface and internal parts. To prevent condensation in this case, first put the lens into an airtight plastic bag before taking it from a cold to warm environment. Then take out the lens after it has warmed gradually. Do the same when taking the lens from a warm environment into a cold one.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Do not make any changes or modifications to the equipment unless otherwise specified in the instructions. If such changes or modifications should be made, you could be required to stop operation of the equipment.

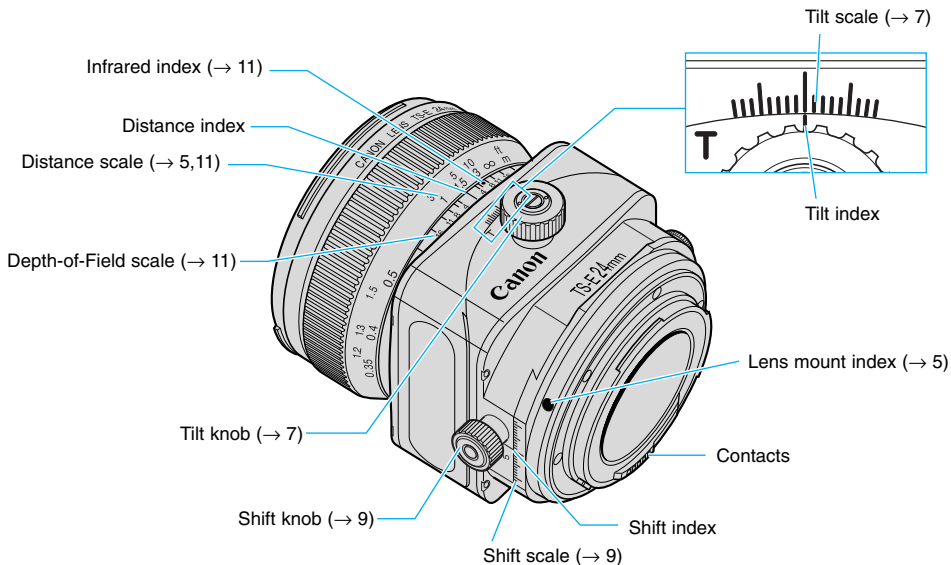
This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Consult the dealer or an experienced radio/TV technician for help.

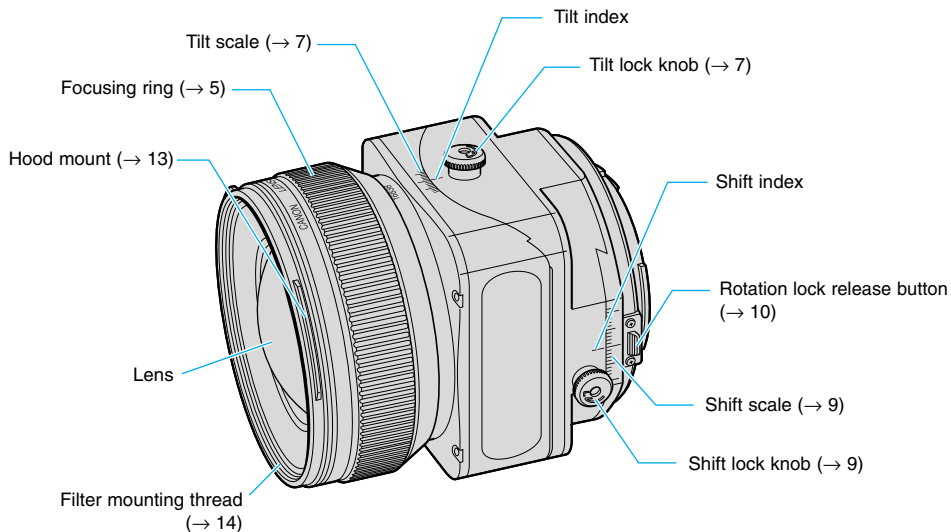
This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus", ICES-003 of the Industry Canada.

Nomenclature



For detailed information, reference page numbers are provided in parentheses (→ **).


Nomenclature



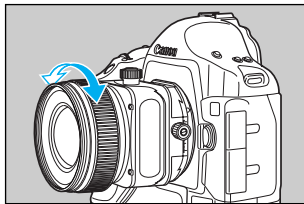
For detailed information, reference page numbers are provided in parentheses (→ **).

1. Mounting and Detaching the Lens

See your camera's instructions for details on mounting and detaching the lens.

- When mounting or detaching the lens, always ensure that the tilt and shift scales are set to the "0" position.
- After detaching the lens, place the lens with the rear end up to prevent the lens surface and contacts from getting scratched.
- If the contacts get soiled, scratched, or have fingerprints on them, corrosion or faulty connections can result. The camera and lens may not operate properly.
- If the contacts get soiled or have fingerprints on them, clean them with a soft cloth.
- If you remove the lens, cover it with the dust cap. To attach it properly, align the lens mount index and the  index of the dust cap, and turn clockwise. To remove it, reverse the order.

2. Focusing



Focus a TS-E lens by turning the focusing ring.
(Shots cannot be taken using the auto focus.)

- After using tilt or shift, readjust the focus.
- The distance scale is only valid when the tilt scale is set to the "0" position.

3. Tilt Function

Tilting inclines the lens relative to the image plane. When the tilt scale is set to the “0” position, the focusing and imaging planes are parallel. However, tilting puts the focusing plane at an angle to the imaging plane.

● Example 1

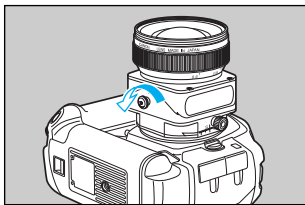


● Example 2

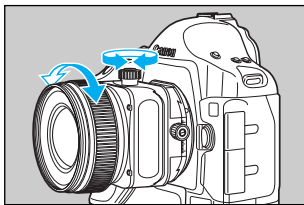


To shoot so that all of an extensive subject is in focus, you must normally use a small aperture to obtain a large depth of field. But tilting allows you to keep all of the subject in focus even when there is insufficient depth of field (Example 1). Or, by tilting in the opposite direction, you can focus on a specific part of the subject (Example 2).

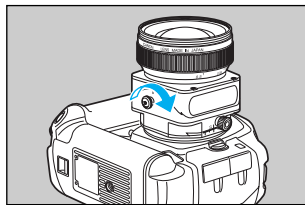
Using Tilt



- 1 Loosen the tilt lock knob by turning it in the direction of the arrow.



- 2 Turn the tilt knob to adjust the amount of tilt. Focus the shot by turning the focusing ring.



- 3 Turn the tilt lock knob in the direction of the arrow to lock the amount of tilt for the shot.

- When you tilt the lens, sharp portions of the tilt mechanism are exposed and care should be taken to avoid touching these portions.
- If you use the tilt and shift functions on the TS-E24mm f/3.5L at the same time, only use them within the area of the light-gray tilt scale settings. Tilting the lens to other settings may cause vignetting. However, if the tilt function is used alone, none of the tilt scale settings cause vignetting.

4. Shift Function

Shifting moves the optical axis of the lens in parallel off the center of the imaging plane. Shift can be used to good effect in the situations shown below.

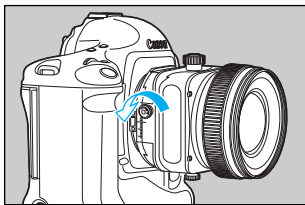


- If you photograph a subject such as a building with a normal lens, the top of the building tapers away. But by placing the camera parallel to the building and shifting the lens, you can correct this tapering effect.

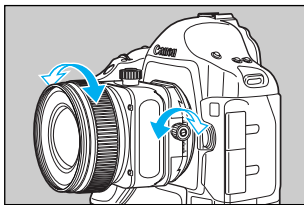


- When you are shooting a reflective subject, you can move the camera to a position where the camera does not appear in the shot and then use shift to take the picture. This lets you keep the camera out of the shot without having to change the shot composition.

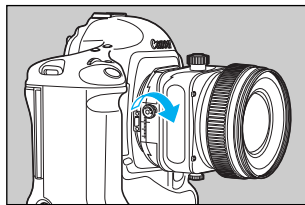
Using Shift



- 1 Loosen the shift lock knob by turning it in the direction of the arrow.



- 2 Turn the shift knob to adjust the amount of shift. Focus the shot by turning the focusing ring.

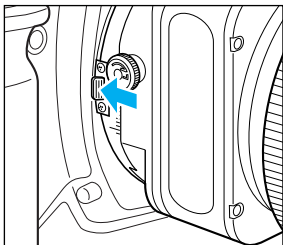


- 3 Turn the shift lock knob in the direction of the arrow to lock the amount of shift for the shot.

- When you shift the lens, sharp portions of the shift mechanism are exposed and care should be taken to avoid touching these portions.
- If you use the tilt and shift functions on the TS-E24mm f/3.5L at the same time, only use them within the area of the light-gray shift scale settings. Shifting the lens to other settings may cause vignetting.

- 📄 With large amounts of shift, the amounts of peripheral light at the top and bottom or left and right sides of the screen may differ, so shooting with a small aperture is recommended.

5. Rotation

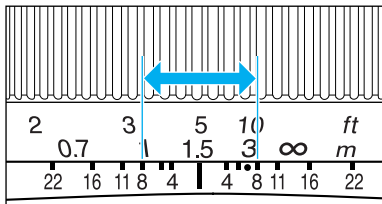


The rotation function enables you to change the direction of tilt or shift by rotating the tilt-shift mechanism.

With the lens mounted on the camera, push the rotation lock release button towards the mount and then turn the tilt-shift mechanism.

- The mechanism can be rotated through $\pm 90^\circ$. The lens clicks every 30° and locks in place in the 90° position.
- When rotating the lens, set the tilt and shift scales to the "0" position.
- Note that rotating the tilt-shift mechanism quickly while pressing on the rotation lock release button may cause the shift lock knob to strike your fingers.

6. Depth-of-Field Scale (TS-E24mm f/3.5L)

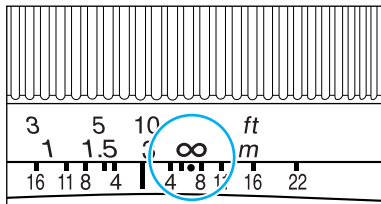


The depth of field is the distance in front of and behind the plane of focus on the subject that appears sharp. The depth of field is indicated by the area between the depth-of-field scale lines below the distance scale. Numbers in the scale are in F values, and for example, if the shooting distance is 1.5m and the aperture is f/8, the sharp area will extend from about 1m to 3m.



- The depth-of-field scale is only valid when the tilt scale is set to the "0" position.
- The depth-of-field scale is an approximate indicator.

7. Infrared Index (TS-E24mm f/3.5L)



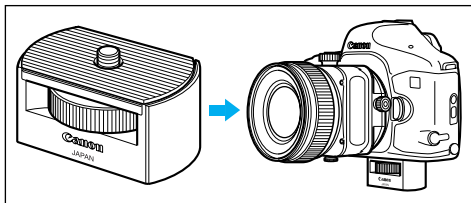
The infrared index corrects the focus setting when using monochrome infrared film. Focus on the subject, then adjust the distance setting by moving the focusing ring to the corresponding infrared index mark.



Some EOS cameras cannot use infrared film. See the instructions for your EOS camera.

8. TS-E Tripod Adapter (Sold Separately)

With some camera models, the tilt, shift and rotation functions can no longer be used when the camera is mounted directly on a tripod. When this happens, fit the optional TS-E tripod adapter into the tripod mount socket on the camera before mounting the camera on the tripod.



9. Exposure

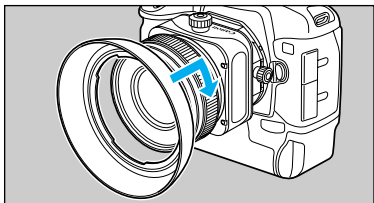
Shots can be taken using AE (automatic exposure) as long as the tilt and shift scales are set to the "0" position.

The use of AE is not recommended when the lens is tilted or shifted as exposure errors may result. It is recommended that you use the exposure values when the tilt and shift scales are set to the "0" position as a guide and then take the shot with as many exposure settings as possible.

10. Hoods

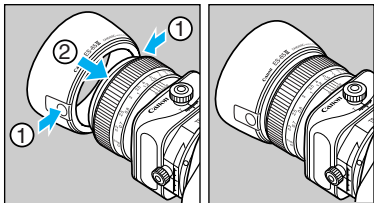
The EW-75BII, EW-79BII and EW-65III hoods can keep unwanted light out of the lens, and also protect the lens from rain, snow, and dust.

Attach the hood using the following procedure.



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Align the hood with the hood mount and then turn the hood clockwise to securely lock it in place.



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- 1) Pressing the buttons on the base of the hood inwards, push the hood onto the hood mount on the lens.
- 2) Release the buttons so that the catches on the hood fit into the grooves on the mount.

Hoods

- Part of the picture may be blocked if the hood is not attached properly.
- When attaching or detaching the hood, grasp the base of the hood to turn it. To prevent deformation, do not grasp the rim of the hood to turn it.

11. Filters (Sold Separately)

You can attach filters to the filter mounting thread on the front of the lens.

- One filter can be attached.
- Use only Canon's filters.
- If you need a polarizing filter, use Canon's polarizing filter.
- When the Canon's polarizing filter is attached, the lens cap cannot be attached.

Specifications

	TS-E24mm f/3.5L	TS-E45mm f/2.8	TS-E90mm f/2.8
Image Size	24 × 36mm		
Focal Length/Aperture	24mm f/3.5	45mm f/2.8	90mm f/2.8
Lens Construction	9 groups, 11 elements	9 groups, 10 elements	5 groups, 6 elements
Minimum Aperture	f/22	f/22	f/32
Angle of View Diagonal/Vertical/Horizontal	84°/53°/74°	51°/30°/44°	27°/15°11'/22°37'
Min. Focusing Distance	0.3m (1.0ft.)	0.4m (1.3ft.)	0.5m (1.6 ft.)
Max. Magnification /Field of View	0.14× /173 × 262.5mm (6.8 × 10.3inch)	0.16× /150 × 226mm (5.9 × 8.9inch)	0.29× /81.9 × 122.8mm (3.2 × 4.8inch)
Tilt amount	±8°		
Shift amount	±11mm		
Tilt scale display	Each degree from 0 to ±6° (light gray), ±7° and ±8° (red)	Each degree from 0 to ±8° (light gray)	
Shift scale display	Each mm from 0 to ±7mm (light gray), ±8 to ±11mm (red)	Each mm from 0 to ±11mm (light gray)	
Rotation mechanism	Locks at -90°, 0° and +90°, clicks every 30°		

Specifications

	TS-E24mm f/3.5L	TS-E45mm f/2.8	TS-E90mm f/2.8
Filter Diameter	72mm		58mm
Max. Diameter and Length	78 × 86.7mm (3.1 × 3.4inch)	81 × 90.1mm (3.2 × 3.5inch)	73.6 × 88mm (2.9 × 3.5inch)
Weight	570g (18.4oz)	645g (20.8oz)	565g (18.2oz)
Hood	EW-75BII	EW-79BII	ES-65III
Lens Cap	E-72		E-58
Case	LP1216		LP1016

- The lens length is measured from the mount surface to the front end of the lens. Add 21.5mm when including the lens cap and dust cap.
- The size and weight listed are for the lens only, except as indicated.
- Aperture settings are specified on the camera.
- This lens cannot be used with the EF1.4× II or EF2× II extenders.
- All data listed is measured according to Canon standards.
- Product specifications and appearance are subject to change without notice.

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キヤノン株式会社 <http://canon.jp>
キヤノンマーケティングジャパン株式会社
〒108-8011 東京都港区港南2-16-6
canon.jp/ef

CANON INC.

30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo 146-8501, Japan

U.S.A.

CANON U.S.A. INC.

One Canon Plaza, Lake Success, NY 11042-1198, U.S.A.
For all inquires concerning this product, call toll free in the U.S.
1-800-OK-CANON

CANADA

CANON CANADA INC. HEADQUARTERS

6390 Dixie Road, Mississauga, Ontario L5T 1P7, Canada

CANON CANADA INC. MONTREAL BRANCH

5990, Côte-de-Liesse, Montréal Québec H4T 1V7, Canada

CANON CANADA INC. CALGARY OFFICE

2828, 16th Street, N.E. Calgary, Alberta T2E 7K7, Canada
For all inquiries concerning this product, call toll free in Canada
1-800-OK-CANON

EUROPE, AFRICA & MIDDLE EAST

CANON EUROPA N.V.

Bovenkerkerweg 59-61, P.O. Box 2262, 1180 EG Amstelveen, The Netherlands

CANON COMMUNICATION & IMAGE FRANCE S.A.S.

12 Rue de l'Industrie 92414 Courbevoie Cedex, France

CANON UK LTD.

Woodhatch Reigate Surrey RH2 8BF, United Kingdom

CANON DEUTSCHLAND GmbH

Europark Fichtenhain A10, 47807 Krefeld, Germany

CANON ITALIA S.p.A.

Via Milano 8 I-20097 San Donato Milanese, Milano, Italy

CANON Schweiz AG

Geschäftsbereich Wiederverkauf, Industriestrasse 12, CH-8305 Dietlikon, Switzerland

Canon GMBH

Zetschegasse 11, A-1230 Wien, Austria

CANON España, S.A.

C/Joaquín Costa, 41, 28002 Madrid, Spain

SEQUE Soc. Nac. de Equip., Lda.,

Praça da Alegria, 58, 2°, 1269-149 Lisboa, Portugal

CANON Belgium N.V./S.A.

Bessenveldstraat 7, B-1831 Diegem, Belgium

CANON Netherland NV

Neptunusstraat 1, 2132 JA Hoofddorp, The Netherlands

CANON LUXEMBOURG S.A.

Rue des Joncs 21, L-1818 Howald, Luxembourg

CANON DANMARK A/S

Knud Høejejaards Vej 1 DK-2860 Soeborg, Danmark

CANON OY

Huopalahdentie 24 PL 1 00351 Helsinki, Finland

CANON SVENSKA AB

Gustav III:s Boulevard 26 169 88 Solna, Sweden

CANON NORGE as

Hallagerbakken 110, Postboks 33, Holmlia, 1201 Oslo, Norway

CENTRAL & SOUTH AMERICA

CANON LATIN AMERICA, INC.

703 Waterford Way, Ste. 400 Miami, FL 33126, U.S.A.

ASIA

CANON (China) Co., Ltd.

15F Jinbao Building No.89 Jinbao Street, Dongcheng District, Beijing 100005, China

CANON HONGKONG CO., LTD.

19/F., The Metropolis Tower, 10 Metropolis Drive, Hunghom, Kowloon, Hong Kong

CANON SINGAPORE PTE. LTD.

1 HarbourFront Avenue, #04-01 Keppel Bay Tower, Singapore 098632

CANON KOREA CONSUMER IMAGING INC.

Startower Bldg.17F, 737, Yeoksam-Dong, Kangnam-Ku, Seoul, 135-984, Korea

OCEANIA

CANON AUSTRALIA PTY.LTD.

1 Thomas Holt Drive, North Ryde, N.S.W. 2113, Australia

CANON NEW ZEALAND LTD.

Akoranga Business Park, Akoranga Drive, Northcote, Auckland, New Zealand

JAPAN

CANON MARKETING JAPAN INC.

16-6, Kohnan 2-chome, Minato-ku, Tokyo 108-8011, Japan

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