

GR
LENS

RICOH

GR LENS
A12 50mm F2.5 MACRO

Instruction Manual

The serial number may be found on the bottom of the lens.

Package Contents

Before using your Ricoh lens, confirm that the package contains the items listed below.



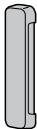
Camera unit

The serial number may be found on the bottom.



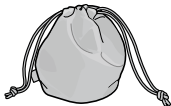
Lens cap

Comes attached to the camera unit.



Connector cap

Comes attached to the camera unit.



Soft case

- Instruction manual (this manual)
- Warranty

Introduction

To use this lens, you need to attach it to a compatible camera body.

Refer to the Camera Body User Guide for details about how to operate shooting and playback functions and change settings and to read important precautions for use. This instruction manual will refer to this lens as the “camera unit” and will explain functions and operating procedures that are available only when this camera unit is used with a compatible camera body. **See also the GXR Camera Body User Guide.**

To make the best use of this product’s functions, read this manual thoroughly before use. Please keep this manual handy for ease of reference.

Ricoh Co., Ltd.

Safety precautions	Read all safety precautions thoroughly to ensure safe use.
Test shots	Take test shots to ensure that the camera is working properly before taking photos on important occasions.
Copyright	Reproduction or alteration of copyrighted documents, magazines, and other materials, other than for personal, home, or other similarly limited purposes, without the consent of the copyright holder, is prohibited.
Exemption from liability	Ricoh Co., Ltd. assumes no liability for failure to record or display images as a result of product malfunction.
Warranty	The warranty supplied with this product is only valid within the country of purchase. The manufacturer assumes no responsibility for servicing the product in other countries or bearing any expense thereby incurred.
Radio interference	Operating this product in the vicinity of other electronic equipment may adversely affect both the camera and the other device. Interference is particularly likely if the camera is used in close proximity to a radio or television. This can be resolved by moving the camera as far as possible from the other device, reorienting the radio or television antenna, or plugging the radio or television into a different outlet.




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Every effort has been made to ensure the accuracy of the information in this document. Should you nevertheless notice any errors or omissions, we would be grateful if you would notify us at the address listed on the back cover of this booklet.

Safety Precautions


Warning Symbols

Various symbols are used throughout this instruction manual and on the product to prevent physical harm to you or other people and damage to property. The symbols and their meanings are explained below.


 Danger	This symbol indicates matters that may lead to imminent risk of death or serious injury if ignored or incorrectly handled.
 Warning	This symbol indicates matters that may lead to death or serious injury if ignored or incorrectly handled.
 Caution	This symbol indicates matters that may lead to injury or physical damage if ignored or incorrectly handled.


Sample Warnings




The  symbol alerts you to actions that must be performed.




The  symbol alerts you to prohibited actions.

The  symbol may be combined with other symbols to indicate that a specific action is prohibited.

Examples

 = Do not touch

 = Do not disassemble

Observe the following precautions to ensure safe use of this unit.

Danger



Do not attempt to disassemble, repair or alter the equipment yourself. The high-voltage circuitry in the equipment poses significant electrical hazard.

Warning



Keep the equipment out of the reach of children.



Do not touch the internal components of the equipment if they become exposed as a result of being dropped or damaged. The high-voltage circuitry in the equipment could lead to an electric shock. Remove the battery as soon as possible, being careful to avoid electric shocks or burns. Take the equipment to your nearest dealer or service center if it is damaged.



Do not use the equipment in wet areas as this could result in fire or electric shock.



Do not use the equipment near flammable gases, gasoline, benzene, thinner or similar substances to avoid the risk of explosion, fire or burns.

- Do not use the equipment in locations where usage is restricted or prohibited as this may lead to disasters or accidents.
-

 **Caution**



Do not allow the equipment to get wet. In addition, do not operate it with wet hands. Both pose the risk of electric shock.

**Safety Precautions
for Accessories**

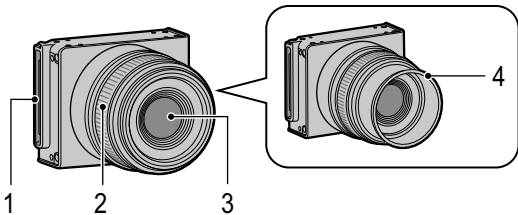
When using optional products, carefully read the instructions provided with the product before using that product.

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Parts of the Lens



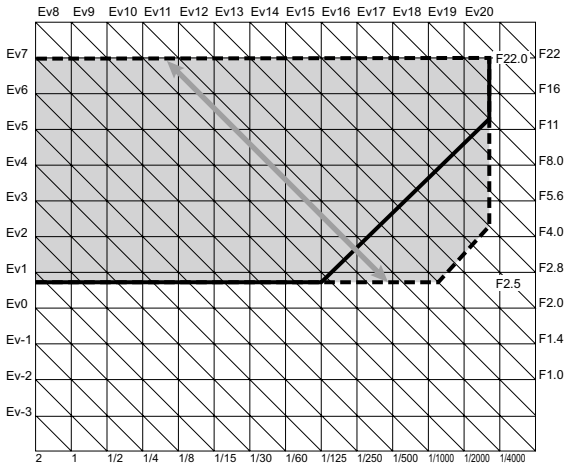
- 1 Connector
- 2 Focus ring
- 3 Lens
- 4 Built-in hood

Shooting

Mode P: Program Shift

The following shows the approximate ranges available for shutter speed and aperture combinations. The actual values may vary depending on EV (exposure value).

In these examples, the flash mode is set to [Flash Off], and the ISO setting is set to [ISO200].



Mode M: Manual Exposure

If [Auto] or [Auto-Hi] is selected for ISO Setting, ISO will be fixed at 200 while the camera is in manual exposure mode.

Settings

[Picture Quality/Size] Setting (Shooting Menu)

The following picture quality, image size and aspect ratio options are available for the [Picture Quality/Size] setting in the shooting menu.

A photograph's file size will depend on the combination of picture quality and image size used. When recording movies, you can select the movie size.

Photographs

Item	Aspect ratio	Compression	Image size (pixels)
RAW	16:9 ^{*2}	FINE/NORMAL/VGA ^{*1}	4288×2416
	4:3	FINE/NORMAL/VGA ^{*1}	3776×2832
	3:2 ^{*2}	FINE/NORMAL/VGA ^{*1}	4288×2848
	1:1 ^{*3}	FINE/NORMAL/VGA ^{*1}	2848×2848
L (Large)	16:9 ^{*2}	FINE/NORMAL	4288×2416
	4:3	FINE/NORMAL	3776×2832
	3:2 ^{*2}	FINE/NORMAL	4288×2848
	1:1 ^{*3}	FINE/NORMAL	2848×2848
M (Middle)	16:9 ^{*2}	FINE/NORMAL	3456×1944
	4:3	FINE/NORMAL	3072×2304
	3:2 ^{*2}	FINE/NORMAL	3456×2304
	1:1 ^{*3}	FINE/NORMAL	2304×2304

Item	Aspect ratio	Compression	Image size (pixels)
5M	4:3	FINE	2592 × 1944
3M	4:3	FINE	2048 × 1536
1M	4:3	FINE	1280 × 960
VGA	4:3	FINE	640 × 480

- *1 When [RAW] is selected, this is the setting used for the JPEG copy.
- *2 Depending on the area photographed, black bands may appear on the top and bottom of the picture display.
- *3 Depending on the area photographed, black bands may appear at the right and left sides of the picture display.

Movies

Item	Movie size
HD1280	1280 × 720
VGA640	640 × 480
QVGA320	320 × 240

[ISO Setting] Setting (Shooting Menu)

- When [Auto] is selected and the flash is used, the sensitivity used will gain up to ISO800 equivalent.
- When [Auto] is selected and the flash is not used, the range of the sensitivity used will be as follows.

Picture size (pixels)	Default	Minimum	Maximum
RAW	200	200	400
L	200	200	400
M	200	200	400
5M	200	200	400
3M	200	200	400
1M	200	200	400
VGA	200	200	400

[Reg. My Settings] (Key Custom Options)

In [Reg. My Settings], you can also set [Focus Ring Settings] options in the setup tab. For other options available, refer to the “Camera Body User Guide”.

[Digital Zoom Image] Setting (Setup)

The size of the recorded image varies depending on the auto resize zoom, as follows.

Zoom ratio	Image size (pixels)	Zoom ratio	Image size (pixels)
Approx. 1.0×	L	Approx. 1.8×	3M
Approx. 1.2×	M	Approx. 3.0×	1M
Approx. 1.5×	5M	Approx. 5.9×	VGA

Focus Ring Settings (Setup)

In [Focus Ring Settings], you can set either a mode that enables functions for both autofocus and manual focus or a mode that enables functions for manual focus only.

When [AF + MF] is selected, after the shutter button is pressed down halfway to set the focus, the focus can be fine tuned by turning the focus ring.

Item	
AF + MF	MF Only



Note

If the shutter button is re-pressed after fine tuning, autofocus will activate and fine adjustment will be cancelled.

Specifications

Specifications are given for the camera unit mounted on a GXR body.

Effective pixels	Approximately 12.3 million	
Image sensor	23.6 mm × 15.7 mm CMOS (total pixels: approx. 12.9 million)	
Lens	Focal length	33 mm (35-mm format equivalent: 50 mm)
	Aperture (f-number)	f/2.5 – f/22 (ND filter used for apertures of f/22 in auto shooting mode)
	Focus range (from lens)	Approx. 30 cm – ∞
		Approx. 7 cm (0.5× optical zoom) in macro mode
	Construction	9 elements in 8 groups (1 aspherical lens elements with 2 surfaces)
Filter diameter	40.5 mm	
Zoom	4.0× digital zoom (photographs), 3.6× digital zoom (movies); approx. 5.9× auto resize zoom (VGA)	
Focus mode	Contrast AF-based multi and spot AF; MF; Snap; ∞ (focus lock and AF-assist)	

Shutter speed	Photographs	1/3200 – 180 s (upper and lower limits vary according to shooting and flash mode)
	Movies	1/30 – 1/2000 s
Exposure control	Metering	TTL-CCD metering in multi (256-segment), center-weighted, and spot modes with autoexposure lock
	Mode	Program AE, aperture priority AE, manual exposure, shutter priority AE, move target function
	Exposure compensation	Manual (+4.0 to -4.0 EV in increments 1/3 EV or 1/2 EV), auto bracketing (-2 EV to +2 EV in increments 1/3 EV or 1/2 EV)
ISO sensitivity (Standard Output Sensitivity)		Auto, Auto-Hi, ISO 200, ISO 400, ISO 800, ISO 1600, ISO 3200
White balance		Auto, Multi-P AUTO, Outdoors, Cloudy, Incandescent Lamp, Fluorescent Lamp, Manual Settings, Detail; white balance bracketing
Flash	Range (built-in flash)	Approx. 20 cm – 3.0 m (ISO auto)
Shooting mode		Auto, program shift, aperture priority, shutter priority, manual, scene (movie, portrait, sports, landscape, nightscape, skew correction), "My Settings"

Continuous mode	Number of pictures shot in Continuous (Picture Size: RAW)	Noise Reduction off or on (Weak): 4 pictures, Noise Reduction on (Strong): 3 pictures
	Number of pictures shot in M-Cont Plus (1 set)	HI (1280 × 856) : 30 pictures (24 Frames/Sec), LO (4228 × 2848) : 15 pictures (3 Frames/Sec)
Compression *1		FINE, NORMAL, RAW (DNG) *2
Image size (pixels)	Photographs	4288 × 2416, 3776 × 2832, 4288 × 2848, 2848 × 2848, 3456 × 1944, 3072 × 2304, 3456 × 2304, 2304 × 2304, 2592 × 1944, 2048 × 1536, 1280 × 960, 640 × 480
	Movies	1280 × 720, 640 × 480, 320 × 240

File size (approx.)	RAW	16:9	NORMAL: 17,800 KB/frame, FINE: 19,515 KB/frame, VGA: 15,587 KB/frame
		4:3	NORMAL: 18,387 KB/frame, FINE: 20,157 KB/frame, VGA: 16,124 KB/frame
		3:2	NORMAL: 20,946 KB/frame, FINE: 22,967 KB/frame, VGA: 18,337 KB/frame
		1:1	NORMAL: 13,991 KB/frame, FINE: 15,333 KB/frame, VGA: 12,273 KB/frame

File size (approx.)	L	16:9	NORMAL: 2,222 KB/frame, FINE: 3,816 KB/frame
		4:3	NORMAL: 2,315 KB/frame, FINE: 3,960 KB/frame
		3:2	NORMAL: 2,615 KB/frame, FINE: 4,493 KB/frame
		1:1	NORMAL: 1,761 KB/frame, FINE: 3,009 KB/frame
	M	16:9	NORMAL: 1,475 KB/frame, FINE: 2,509 KB/frame
		4:3	NORMAL: 1,574 KB/frame, FINE: 2,662 KB/frame
		3:2	NORMAL: 1,744 KB/frame, FINE: 2,968 KB/frame
		1:1	NORMAL: 1,186 KB/frame, FINE: 2,003 KB/frame
	5M	4:3	FINE: 2,287 KB/frame
	3M	4:3	FINE: 1,474 KB/frame
	1M	4:3	FINE: 812 KB/frame
	VGA	4:3	FINE: 197 KB/frame
Battery life (based on CIPA standard)		DB-90: approx. 320 shots *3	

Dimensions (W×H×D)	<p>Camera unit only: 68.7 mm × 57.9 mm × 71.3 mm (including the lens barrel; excluding the connector)</p> <p>When mounted on the camera body: 113.9 mm × 70.2 mm × 77.1 mm (including the lens barrel)</p>
Weight (approx.)	<p>Camera unit only: 263 g (not including the lens cap or connector cap)</p> <p>When mounted on the camera body: 423 g (not including the battery, memory card, neck strap, connector cap, or lens cap)</p>
Operating temperature	0°C to 40°C
Operating humidity	85% or less
Storage temperature	-20°C to 60°C

*1 The options available vary with image size.

*2 A JPEG file is also recorded (the JPEG file may be a FINE- or NORMAL-quality file with the dimensions as the RAW file or a VGA file 640×480 pixels in size). RAW files use the standard DNG format promoted by Adobe Systems, Inc.

*3 For reference only; actual number of shots varies greatly according to how camera is used. We recommend that you carry spare batteries when in use for extended periods.

Internal Memory/Memory Card Capacity

The following values are given as a reference of the storage capacity of the internal memory and memory cards of various sizes, by picture quality and image size, when using the FINE picture quality.

Photographs

Compression	Image size (pixels)	Internal memory	1 GB	2 GB	4 GB	8 GB	16 GB	32 GB
RAW* FINE	4288 × 2416	4	49	100	197	404	810	1625
	3776 × 2832	4	47	97	191	391	784	1573
	4288 × 2848	3	42	85	168	343	688	1380
	2848 × 2848	5	63	128	251	513	1029	2065
L FINE	4288 × 2416	21	235	476	935	1912	3830	7684
	3776 × 2832	20	227	462	907	1854	3715	7453
	4288 × 2848	18	200	407	799	1633	3272	6565
	2848 × 2848	27	299	608	1195	2442	4893	9815

Compression	Image size (pixels)	Internal memory	1 GB	2 GB	4 GB	8 GB	16 GB	32 GB
M FINE	3456 × 1944	32	357	724	1419	2902	5814	11662
	3072 × 2304	30	337	683	1341	2741	5491	11014
	3456 × 2304	27	302	614	1206	2466	4941	9913
	2304 × 2304	41	447	903	1774	3627	7267	14578
5M/FINE	2592 × 1944	34	373	758	1490	3045	6101	12238
3M/FINE	2048 × 1536	53	581	1182	2321	4744	9503	19063
1M/FINE	1280 × 960	96	1059	2118	4160	8505	17039	34181
VGA/FINE	640 × 480	395	4316	8778	17237	35231	70579	141581

* When [RAW] is selected, this is the compression used for the JPEG copy.

Movies

Image size (pixels)	Internal memory	1 GB	2 GB	4 GB	8 GB	16 GB	32 GB
1280 × 720 24 frames/second	21sec.	3min. 49sec.	7min. 46sec.	15min. 58sec.	31min. 10sec.	62min. 26sec.	125min. 15sec.
640 × 480 24 frames/second	1min.	11min. 2sec.	22min. 27sec.	46min. 10sec.	90min. 7sec.	180min. 32sec.	362min. 9sec.
320 × 240 24 frames/second	2min. 25sec.	26min. 24sec.	53min. 43sec.	110min. 27sec.	215min. 35sec.	431min. 52sec.	866min. 19sec.

Precautions for Use

- The warranty supplied with this product is only valid within the country of purchase.
- Should the product fail or malfunction while out of the country, the manufacturer assumes no responsibility for servicing the product locally or bearing any expenditure incurred thereby.
- Do not drop the equipment or subject it to physical shocks.
- When carrying the equipment, be careful that it does not strike other objects. Particular care is required to protect the lens.
- Abrupt changes in temperature may cause condensation, resulting in visible condensation inside the lens or malfunction of the equipment. This can be avoided by placing the equipment in a plastic bag to slow the temperature change, and removing it only after the air in the bag has reached the same temperature its surroundings.
- Keep the equipment dry and avoid handling it with wet hands. Failure to observe these precautions could result in malfunction of the equipment or electric shock.
- Keep the connector clean.



Tip: Avoiding Condensation -----

Condensation is particularly likely to occur if you move to an area with a sharply different temperature, if humidity is high, in a cold room after the heater has come on, or where the camera is exposed to cold air from an air conditioner or other device.

Equipment Care and Storage

Caring for the Equipment

- Photographs can be affected by fingerprints and other foreign matter on the lens. Avoid touching the lens with your fingers. Remove dust or lint with a blower from a camera supply store, or gently clean the lens with a soft, dry cloth.
- Clean the equipment thoroughly after using it at the beach or handling cosmetics. Do not expose the equipment to volatile substances such as thinner, benzene, or pesticides. Failure to observe this precaution could result in damage to the equipment or its finish.
- In the unlikely event of malfunction, visit a Ricoh Repair Center.
- This equipment is a high precision device. Do not disassemble.

Storage

Do not store the camera where it will be exposed to: extreme heat or humidity; large changes in temperature or humidity; dust, dirt, or sand; severe vibration; prolonged contact with chemicals, including mothballs and other insect repellent, or with vinyl or rubber products; strong magnetic fields (for example, in the vicinity of a monitor, transformer, or magnet).

Warranty and Servicing

1. This product is backed by a limited warranty. During the warranty period mentioned in the Warranty supplied with your equipment, any defective parts will be repaired free of charge. In the event of equipment malfunction, contact the dealer from which you purchased the equipment or your nearest Ricoh Repair Center. Please note that you will not be reimbursed for the cost of bringing the equipment to the Ricoh Repair Center.
2. This warranty does not cover any damage resulting from:
 - 1 failure to follow the instructions in the instruction manual;
 - 2 repair, modification or overhaul not conducted by an authorized service center listed in the instruction manual;
 - 3 fire, natural disaster, act of God, lightning, abnormal voltage, etc.;

- 4 improper storage (noted in the "Camera Body User Guide"), leaking of battery and other fluids, mold, or otherwise insufficient care of the equipment.
- 5 submergence in water (flooding), exposure to alcohol or other beverages, infiltration of sand or mud, physical shock, dropping of the equipment, or pressure on the equipment, and other unnatural causes.
3. After the warranty period has passed, you will be liable for all repair fees, including those incurred at an authorized service center.
4. You will be liable for all repair fees, even within the warranty period, if the warranty card is not attached or if the distributor's name or the purchase date have been changed or are not indicated on the card.
5. Expenses for overhaul and thorough inspection by special request of the customer will be charged to the customer, whether or not they are incurred during the warranty period.
6. Any consequential damages arising from failure of the equipment, such as expenses incurred in taking pictures or loss of expected profit, will not be reimbursed whether they occur during the warranty period or not.

7. The warranty is only valid in the country in which the equipment was purchased.
 - * The above provisions refer to repairs offered free of charge, and do not limit your legal rights.
 - * The intention of the above provisions is also described in the warranty card provided with this equipment.
8. Parts essential to the servicing of the equipment (that is, components required to maintain the functions and quality of the equipment) will be available for a period of five years after the equipment is discontinued.
9. Please note that if the equipment is seriously damaged by flooding, submergence, infiltration of sand or mud, violent shocks or dropping, it may not be repairable, and restoration to its original condition may be impossible.



Notes -----

- Before sending the camera in for repair, check the camera body and read the instruction manual again to ensure proper operation.
- Some repairs require a significant amount of time to complete.
- When sending the equipment to a service center, please include a note which describes the defective part and the problem as precisely as possible.
- Remove all accessories not related to the problem before sending the camera to the service center.

If You Encounter a Problem with This Product

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