

Carl Zeiss

Lightweight Zoom LWZ.2

Mount Change Instructions



We make it visible.



Congratulations on the purchase of the Lightweight Zoom LWZ.2 lens. We are convinced that your new lens will bring you much pleasure and success.

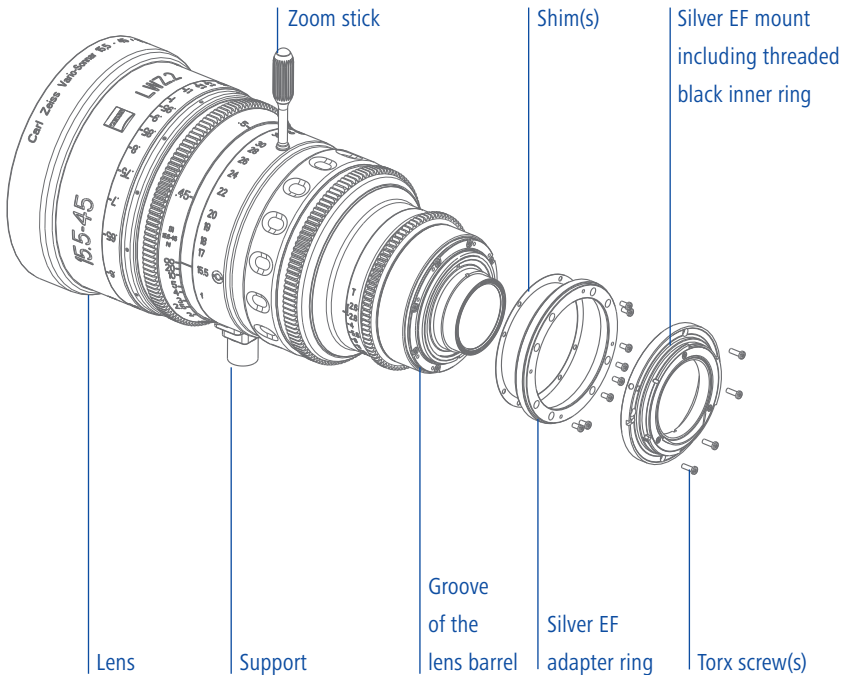
This zoom lens is the first on the market to combine outstanding optical image quality with an interchangeable mount. The LWZ.2 is a cine lens designed for use with HD/SLR as well as traditional cine cameras. The interchangeable mount guarantees high flexibility for present and future use in any situation and for a wide range of camera platforms. With the three different mounts available (PL, EF and MFT mount) there is no need for adapter solutions anymore. Exotic glass materials and the T* XP anti-reflex coating ensure a sharp, high resolution image that covers the entire Super 35 frame and perfectly matches the other ZEISS cine lenses.

In this manual we take a Lightweight Zoom LWZ.2 15.5-45mm/T2.6 with EF mount, scaled in meter as an example to explain how to change the lens mount and the subsequent matching of your lens to a DSLR camera. Proceed in the same sequences to switch to any other LWZ.2 mount.

General instructions

- The use of a T6 torque wrench with a torque of 0.4 Nm is strongly recommended. This wrench can be purchased from Carl Zeiss (see appendix 3, page 11).
- Ensure that the environment is clean and free from dust so that no dust particles can enter the lens during the adjustment.
- Smudges and fingerprints on the lens surface can be gently removed with a soft brush and then with a dry and clean cotton cloth. The ZEISS lens cleaning kit will give superior results and is highly recommended for this purpose.
- When matching the lens, ensure that the colored shims lie on top of each other in the groove of the lens barrel and do not cover the screw holes. Please use for shimming only the shim set for the Lightweight Zoom LWZ.2. It is highly recommended to handle the shims carefully as they can easily kink or tear which makes them unusable.

General drawing



C | Changing from an EF to a PL mount

1. Remove the lens rear cap.



2. Remove the torx screws of the silver EF mount with a T6 torque wrench and place the mount and the screws on one side. The size of the black inner ring is securely fastened to the EF mount at the factory.



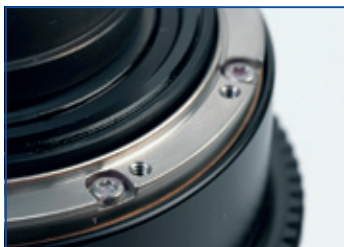
3. Remove the torx screws of the silver EF adapter ring and place the ring and the screws on one side.



4. Now you see the colored shims in the groove of the black lens barrel.



5. Important note: Please do not remove the screws which are beneath the colored shims. This would end in a readjusted lens.



6. Now place the PL mount on the lens in such a way that the groove on the underside of the PL mount fits over the silver screw on the lens barrel. Tighten the torx screws with the T6 torque wrench using a torque of 0.4 Nm.



7. When the torx screws have been tightened, the lens can be fitted to a camera and used.
8. Check the flange focal distance of the lens (see section D) in combination with your camera.

D | Adjusting the LWZ.2 to a camera you use

As the flange focal distance varies from camera to camera, it is necessary to adjust the LWZ.2 lens to the camera used when changing the mount or camera model (=shimming). In order for you to be able to do this, Carl Zeiss provides colored shims in different thicknesses to make the process of adjusting the lens to the camera easier for you.

When the mount has been unscrewed, these shims can be placed in a groove in the lens barrel. Any possible combination of shims can be used to achieve the required thickness and therefore the required flange focal distance. The lens already contains shims when delivered. Please use for shimming only the shim set for the Lightweight Zoom LWZ.2. It is highly recommended to handle the shims carefully as they can easily kink or tear which makes them unusable.

- Carl Zeiss recommends that the camera is set to the usual standard settings (cf. works settings). You can obtain further details from the instruction manual of the camera you use.

Procedure

In the following chapter we explain how to adjust your Lightweight Zoom LWZ.2 lens to a DSLR camera.

1. Fasten the Carl Zeiss test chart on a wall at 1.5m (=1500mm, 5 ft) distance and ensure that the lighting is bright and uniform.
2. Mount the camera and lens on a tripod and level the camera, making sure that the centre of the image is aligned with the centre of the Siemens star.



3. Activate the live view of your camera.
4. Set the distance of 1.5m on the lens focus ring and use the zoom level at 45mm.
This setting must not be changed during the adjustment process.
5. Set the largest aperture of T 2.6 on the aperture ring.
6. Obtain maximum image sharpness on the live view by varying the distance between the test chart and the camera. Set the live view to maximum magnification in order to obtain the highest level of precision when checking image sharpness.
7. Now re-measure the distance between the image plane mark on the camera body and the test chart (= the actual distance).



8. If the distance has changed, the flange focal distance of the lens must be adjusted by using the colored shims.
9. You find the differences between the actual and the theoretical distance to the test chart in the appendix (page 10) to calculate the resultant change in the flange focal distance.
10. Now remove the lens from the camera after you have defined the number and thickness of the shim(s) needed.
11. Remove the EF mount and EF adapter ring from the lens barrel (cf. section C 2-4).

12. Change the shims as indicated in the tables in the appendix (page 9) by using a flat-bladed screw-driver or a pair of tweezers.



13. Please align the EF mount with the EF adapter so that the four screw holes are lying upon each other.



14. Now place them on the lens in such a way that the groove on the adapter ring is facing to the index ring on the lens barrel. Tighten the screws of the EF adapter ring and then the screws of the EF mount using a torque of 0.4 Nm. Please note the different lengths of the torx screws to tighten the different LWZ.2 mounts:

- EF and MFT mount: M 2 mm x 6 mm
- PL mount: M 2 mm x 3.8 mm



15. Recheck the flange focal distance of the lens in combination with the camera you use.

Table for shims to adjust a Lightweight Zoom LWZ.2 lens when used on digital cameras

Shim color	Thickness [mm]
silver	0.012
gold	0.019
purple	0.025
light blue	0.032
red	0.038
blue	0.051
white	0.064
green	0.076
orange	0.102
light purple	0.127
clear	0.152
clear matt	0.190
tint blue	0.203

Example

- Using a Lightweight Zoom LWZ.2 15.5-45mm/T2.6 with EF mount, scaled in meter and a test chart at a distance of 1500 mm, an actual distance (object distance to best focus) of 1530mm is measured. A light-blue shim 0.032mm thick must therefore be added to the lens groove.

Note

- Any combination of shims is possible to achieve the required thickness and therefore the desired flange focal distance.
- Always use the closest possible combination of shims.

Carl Zeiss AG reserves the right to make changes to the published specifications without prior notice.

All rights reserved. No part of this material may be reproduced, stored in retrieval systems, or transmitted, in any form or by any means, electronic, mechanical, photocopy, recording or otherwise without the prior written consent of Carl Zeiss. Copyright 05/2011, Carl Zeiss AG

Tables for adjusting the flange focal distance of a Lightweight Zoom LWZ.2 lens

Key

- **Minus sign:** Shims must be removed
- **Plus sign:** Shims must be added

Lightweight Zoom LWZ.2 15.5-45mm/T2.6

Please note: This table is only valid for the zoom level of f=45mm.

Meter distance scale		Feet distance scale	
Focal length setting [mm]: 45		Feet distance scale [mm]: 45	
Distance to test chart [mm]: 1500		Distance to test chart [ft]: 5	
Object distance at best focus [mm]:	Change of total shim thickness [mm]:	Object distance at best focus [ft]:	Change of total shim thickness [mm]:
1460	-0.04	4ft 10'	-0.04
1470	-0.03	4ft 10 1/2'	-0.03
1480	-0.02	4ft 11'	-0.02
1490	-0.01	4ft 11 1/2'	-0.01
1500	0.00	5ft 0'	0.00
1510	+0.01	5ft 1/2'	+0.01
1520	+0.02	5ft 1'	+0.02
1530	+0.03	5ft 1 1/2'	+0.03
1540	+0.04	5ft 2'	+0.04

Lightweight Zoom LWZ.2 – Accessories and spare parts

Accessories/spare parts	Carl Zeiss Ident-No.
Interchangeable Mount Set PL	1867-925
Interchangeable Mount Set EF	1867-926
Interchangeable Mount Set MFT	1893-185
Carl Zeiss LWZ.2 Transport Case	1890-874
Front Lens Cap EF/PL/MFT	0097-227
Rear Lens Cap EF	1793-167
Rear Lens Cap PL	102160-0052-000
Rear Lens Cap MFT	1889-118
Torx torque wrench (T6, torque moment 0,4 Nm)	0520-065
Carl Zeiss test chart	1849-755
Colored Shims LWZ.2 (Set)	1855-032

Technical Information

Focal length range	15.5 - 45 mm	
Focal length ratio	3 : 1	
Aperture	T2.6 – T22	
Number of aperture blades	9	
Close focus	0.45 m / 18 inches	
Angle of focus rotation	337°	
Angle of zoom rotation	120 °	
Pitch of the follow focus gears	m 0.8 / number of pitches Z=112	
Angle of views (for Super 35)	at 15.5 mm:	at 45 mm:
• horizontal:	77.0°	32.6°
• vertical:	61.2°	24.9°
• diagonal:	90.2°	39.9°
Front diameter	114 mm / 4.5"	
Length (Front – PL mount flange)	209 mm / 8.2"	
Weight	around 2000 g / 4.4 lbs	
Lens Coating	Carl Zeiss T* XP coating	
Coverage	ANSI Super 35 image area (24.9 x 18.7 mm / 0.98" x 0.7362")	
Camera mounts	PL mount; EF mount; MFT mount	

For further information, please contact us:

Carl Zeiss AG

Camera Lens Division
73446 Oberkochen
Germany
cine@zeiss.de
www.zeiss.com/cine