TILT FOCUS

Instruction Manual
as of: May 1999


scale for tilt
clamping for tilt
socket for
flexible shaft
ARRI TILT-FOCUS
clamping for rotating the lens

1. Contents

2. Safety Specifications

Warning Indications

Danger of injury
or equipment damage possible!

General safety specifications

- To ensure optimal performance, it is essential that you acquaint yourself with this instruction manual.
- Set-up and operation of the equipment should only be carried out by persons who are familiar with the equipment!
- Repairs must only be carried out by authorised professionals!
- Use only original ARRI spare parts and accessories!

Important Indications

- Avoid operational errors!
- Attach lens cap and protective cap to prevent damage!
- Clean optical surfaces only with a lens brush or a clean lens cloth! In cases of solid dirt moisten a lens cloth with pure alcohol.
- Do not use solvents to clean the Tilt Focus Lens!
- Do not loosen any screws which are painted over!

Product Identification

When ordering parts or accessories, or if any questions should arise, please advise your type of product and serial number.

Meaning of the symbols in this user manual

⇨ **photo** indicates objects which are shown in illustrations.

3. General Description

The ARRI Tilt Focus lenses can be tilted out of their optical axis and turned. This is possible because the lenses depict a larger image circle than is necessary to cover the actual negative format.

The creative possibilities are considerably more far-reaching than with focus and aperture stop alone on conventional lenses.

Examples of use:

- Free displacement of a focal plane, i.e. focusing on an object plane not parallel to the filmplane.

- Isolation of a particular part of an image through a specifically set focal plane.

The ARRI Tilt Focus lenses are especially robust and precise. An index scale simplifies exact reproduction of the chosen settings. Focusing is carried out using a normal lens ring into which both normal follow-focus mechanisms and adjustment motors can be inserted.

An important advantage of the ARRI Tilt Focus lenses is the fact that the image centre hardly moves at all while tilting the lens, considerably simplifying tilting during a shot.

The easily readable aperture scale is calibrated in T-stops, can be read sideways and is printed on both sides of the lens. Unified design, the same front diameter of 87 mm and the gearing of the aperture ring offer further user comfort.

4. Mounting the Lens

- Pull tight the clamp on the lens for lens rotation ⇨ **photo**.
- Open the bayonet ring on the lens mount receptacle of the camera completely by turning anti-clockwise.
- Push the lens into the lens mount receptacle without catching it. The slot on the lens mount must fit over the index pin.
- Press the lens flat onto the lens mount receptacle and close the bayonet ring by turning clockwise.

clamping for rotating the lens

5. Operation

5.1 Focusing

Focusing is carried out using the lens' focusing ring.

- After tilting, it is essential to check focus again on the camera's ground glass. Through tilting the line of focus drifts out of the centre.

5.2 Adjusting the Working Aperture

The working aperture can be adjusted on the aperture ring according to the light values measured.

- When tilting the lens, the viewfinder image will darken somewhat. This relates only to the viewfinder and will not be visible on the film!

5.3 Tilting

On lenses which are mounted rigidly to the camera, the focused plane runs parallel to the filmplane. In tilting a Tilt Focus lens, the focused plane is displaced in accordance with the tilting movement.

The Tilt Focus lenses thereby enable:

- free displacement of a focal plane, i.e. focusing on an object plane not parallel to the filmplane, or

- isolation of a particular part of an image through a specifically set focal plane.

Through tilting or shifting of the lens, the object to be depicted may also be at the edge of the image circle of the lens. This could cause vignetting. After every tilting or turning movement, and/or when altering the set working aperture, the viewfinder image should be checked for unintentional shading. This could also be caused by a matte box, despite a sufficiently large image circle.

- Before tilting, the corresponding locking knob ⇨ **photo** on the Tilt Focus lens must be released.

- When tilting the lens, the viewfinder image will darken somewhat. This relates only to the viewfinder and will not be visible on the film!

- A flexible shaft, K2.34890.0, can be used on the operating knob for tilting ⇨ **photo** to enable comfortable adjusting.

Scheimpflug Condition

By tilting the lens it is possible to adjust a focal plane that is not parallel to the filmplane. The Scheimpflug Condition establishes that a plane in the subject area will be depicted in focus when
- the filmplane,
- the lens plane and
- the image plane in the subject area to be depicted

all intersect in one line.

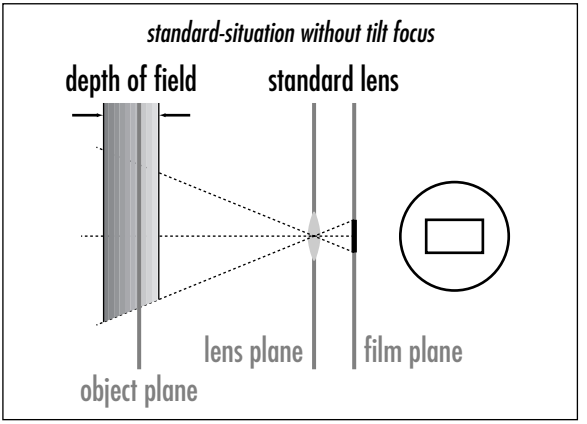
This plane will then be completely in focus, even at maximum aperture.

Through tilting and turning simultaneously the plane depicted in focus can be "tipped" in any direction.

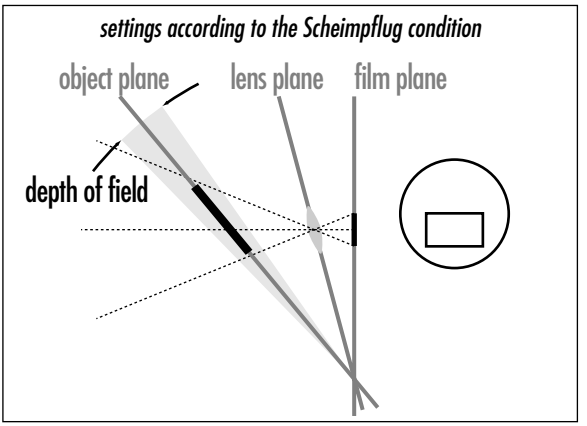
The depth of field of a lens depends on
- the lens' focal length of the lens
- the set working aperture and
- the distance at which the lens is focussed

When the lens is tilted and/or rotated, the depth of field is displaced along with the focus plane.

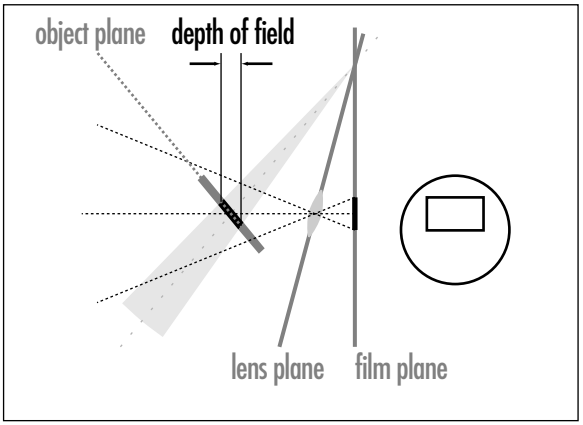
Working examples



Setting a focal plane



Isolating a particular subject area with selective focusing



By setting the lens plane against the Scheimpflug Condition, an extremely small depth of field can be achieved. This can be used for optically isolating individual objects.

5.4 Turning

By turning the lens, the focal plane can be turned in any desired direction.

- Before turning the lens, the clamp for lens rotation ➪ **photo** on the Tilt Focus lens must be released, and after turning fixed in position.

The lens has soft stops every 90°. If a stop is not desired the pressure pad ➪ **photo** can be twisted out slightly with a screwdriver.

6. Technical Data

Mount camera side ..... PL-mount

Rotation ..... 360 degrees

Tilt-Adjustment ..... + / - 8 degrees
(scale division = 1 degree)

	24/T4	**45/T2,8**	**90/T2,8**
Focal length:	24 mm	45 mm	90 mm
Max. aperture:	1:3.5	1:2.8	1:2.8
No. of lenses:	11	10	6
No. of lens groups:	9	9	5
Image Circle diameter: ...	58.2 mm (2.29")	58.2 mm (2.29")	58.2 mm (2.29")
Front diameter:	87 mm	87 mm	87 mm
T-Stop scale:	4...22	2,8...22	2,8...22
Close-up distance:	0,3m (0.98")	0,4m (1.31")	0,5m (1.64")
Weight [g/lb.]:	990 2.18	1120 2.46	1230 2.71
lens angle [degree]			
TV horizontal:	46	25	13
TV vertical:	35	19	10
1,85:1 horizontal:	47	26	13
1,85:1 vertical:	27	14	7

Note:
the values above relate to standard 35 mm format, 1.85:1 projected image and TV transmitted image area 1.33.

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