WIDELUX

35mm Panoramic Swing-Lens Camera

PANON Camera Shoko Co., Ltd.

COMPLETE USER MANUAL

Operation • Use • Features • Practical Tips

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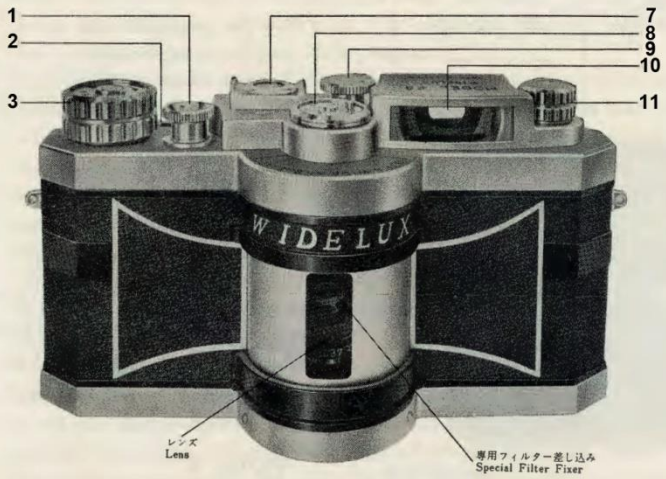

1 Shutter release button
2 Frame counter
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9 Shutter speed dial
#10 Viewfinder
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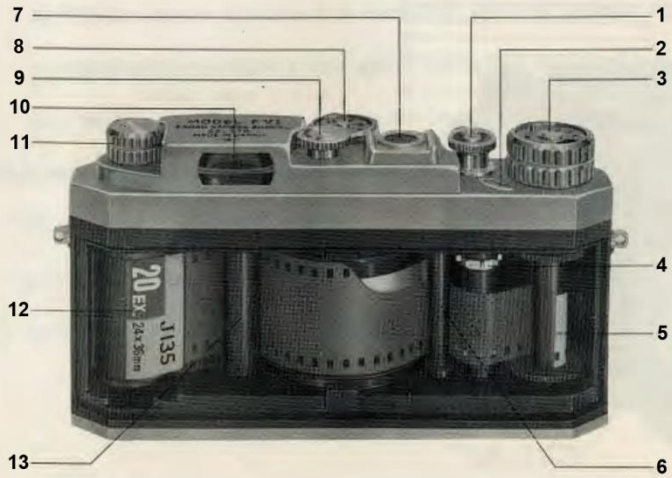
BACK VIEW AND INSIDE



3 Film transport knob
4 Film sprocket gear
5 Film takeup spool
6 Forward film guide roller
#11 Film rewind knob
#12 Film cartridge
#13 First film guide roller

Curve the tip of the film a little as shown by figure A for ease in inserting it.

FIGURE A

1. Introduction to the Widelux

The Widelux is a 35mm panoramic camera designed by the Japanese company PANON Camera Shoko Co., Ltd. (Itabashi-ku, Tokyo). It operates on a radically different principle from any other camera you may have used.

1.1 A unique principle: the swing lens

To achieve a 140-degree field of view — equivalent to normal human vision — without the barrel distortion inherent in conventional wide-angle lenses, the Widelux uses a radically different system: the lens pivots from left to right in an arc during exposure, progressively exposing a curved 24 x 59mm film (1" x 2-1/3") in standard 35mm film.

This so-called "swing-lens" technology produces:

- an exceptional field of view of 140 degrees diagonally (55 degrees vertically),
- an image free of barrel or pincushion distortion,
- a unique panoramic rendering in a 2.5:1 ratio — identical to theatrical widescreen format,
- remarkable sharpness across the entire field, thanks to the constant film-to-lens distance.

The Lux lens is NOT a wide-angle lens
Contrary to what one might think, the Widelux does not use a wide-angle lens.
Its focal length is 26mm — a short normal focal length.
It is the movement of this lens across the curved film that creates the 140-degree field, without the characteristic distortions of wide-angle lenses (foreground exaggeration, fish-eye effect, compressed perspectives at the edges).
Proportions within the image are therefore natural and undistorted.

1.2 A precision mechanism from the 1950s

The Widelux is above all a precision mechanism, designed in the 1950s. Its operation relies on four interdependent elements:

- a motor spring (the winding mechanism),
- a rotating drum carrying the lens,
- a slit shutter (metal focal-plane shutter),
- a curved film guide maintaining a constant distance between the film and the lens.

Unlike modern cameras, no electronic circuit automatically corrects deviations or imperfections. Every photograph depends directly on the mechanical condition of the camera, its lubrication, and how it is handled.

The body is made of die-cast aluminum alloy, coated with a double layer of aventurine nickel and hard chrome, with crystal black coating on the caps. Robust yet lightweight.

1.3 Technical specifications

Image format	24 x 59mm on standard 35mm film
Aspect ratio	2.5:1 ("Super 35 / WideScope")
Field of view	140 degrees (diagonal) — 55 degrees (vertical)
Lens	Lux 26mm f/2.8 — factory-fixed focus
Available apertures	f/2.8 — f/4 — f/5.6 — f/8 — f/11 (intermediate positions possible)
Shutter speeds	1/15 s — 1/125 s — 1/250 s (exact positions mandatory)
Frames per roll	21 frames (36-exposure roll) — 11 frames (20-exposure roll)
Viewfinder	External wide-angle optical viewfinder (90% of frame visible)
Spirit level	Yes (built-in)
Flash synchronization	NO (no flash sync)
Power source	None (entirely mechanical)
Dimensions	16 cm x 8.5 cm x 6 cm (6" x 3-1/2" x 2-3/8")
Weight	900 g (1 lb 14 oz) — comparable to a 35mm SLR

1.4 Model history

The Widelux was produced in several successive versions from the late 1950s to the late 1990s. The table below lists the seven known models, with their production periods and main specifications.

Model	Period	Lens	Finish	Available speeds
Widelux FI	1959?	Lux 26mm f/2.8-f/22	Chrome	1/5 - 1/50 - 1/200
Widelux FV	1958-...	Lux 26mm f/2.8-f/11	Chrome	1/5 - 1/50 - 1/200 (some: 10/100/250 or 10/100/300)
Widelux FVI	~1964-...	Lux 26mm f/2.8-f/11	Chrome	1/10 - 1/100 - 1/250
Widelux F6	~1970-...	Lux 26mm f/2.8-f/11, 6 blades	Black or chrome	1/15 - 1/125 - 1/250 (some: 10/100/250; ser. 3455xx: 7/70/125)
Widelux F6B	~1970	Lux 26mm f/2.8-f/11	Black or chrome	1/15 - 1/125 - 1/250
Widelux F7	**1975-1988**	**Lux 26mm f/2.8-f/11**	**Black**	**1/15 - 1/125 - 1/250**
Widelux F8	**1988-199?**	**Lux 26mm f/2.8-f/11, 8 blades coated**	**Black**	**1/15 - 1/125 - 1/250**

F7 and F8: the most common models

The F7 (1975-1988) and F8 (1988-1990?) are the most widely available models on the used market.

The F8 features a coated anti-reflection lens and an 8-blade diaphragm (vs. 6 blades for the F6).

This manual primarily covers these two models, whose shutter speeds are 1/15 — 1/125 — 1/250 s.

Earlier models (FI, FV, FVI) have different speeds (1/5, 1/50, 1/200 for the earliest ones).

Some intermediate-production F6 cameras have non-standard speeds — check the serial number.

1.5 The Widelux in history

The Widelux is not merely a camera. It has been used in remarkable contexts:

- NASA selected the Widelux as one of the cameras used by astronauts during the Gemini V mission. The combination of an extremely wide field of view and remarkable definition made it a valuable tool for space exploration.
- The photograph of the opening ceremony of the Tokyo Olympic Games (1964) is among the most famous images taken with a Widelux — a photograph that perfectly illustrates the camera's ability to capture a grand event in a single exposure.
- Many professional photographers and journalists worldwide have used the Widelux for reportage, publications, and large-format wall prints.

2. Description of Controls

Before using the camera, familiarize yourself with its various controls.

Ref.	Description
1	Shutter release button
2	Frame counter
3	Film transport knob
4	Film sprocket gear
5	Film takeup spool
6	Forward film guide roller
7	Spirit level
8	f number indicator (aperture)
9	Shutter speed dial
10	Viewfinder
11	Film rewind knob
12	Film cartridge
13	First film guide roller

2.1 Finger clearance zones

On the front face of the body, on either side of the rotating turret housing, two recessed areas form the sides of a decorative "Maltese cross". These zones are delimited by two arrows engraved on the lens housing, spaced exactly 140 degrees apart — precisely the width of the field covered by the lens.

No fingers in the danger zones

No finger must ever extend forward into the zone delimited by these two arrows.
The two lateral sections of the Maltese cross are specifically recessed to accommodate fingers
BEHIND the front plane of the body.
On your first test exposure, watch the lens pivot: you will immediately understand why any part of the body extending beyond the housing would appear in the photograph.

2.2 The viewfinder

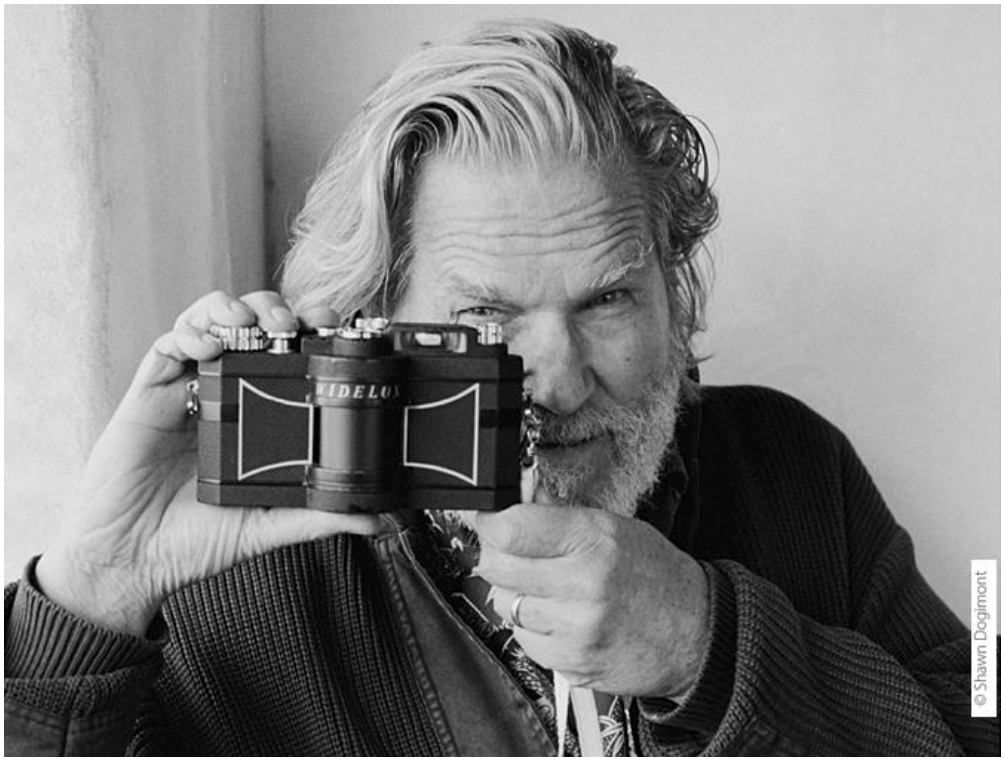
The Widelux's wide-angle viewfinder is bright and accurate, designed to match the camera's enormous field of view. However, one important point must be noted:

The viewfinder shows only 90% of the image

What you see in the viewfinder represents approximately 90% of the surface actually recorded on film.

Elements barely visible in the viewfinder will appear clearly in the photograph.

In practice, allow for an additional margin on each edge when composing the shot.



3. Loading the Film

Before loading your Widelux, read these instructions carefully. Practice first without film to familiarize yourself with the mechanism.

3.1 Opening and inserting the cartridge

1. Turn the lock on the rear panel to the "unlocked" position.
2. Pull the rewind knob (ref. 11) upward until the drive claws disengage, then insert the film cartridge (ref. 12) into its housing.
3. Release the rewind knob to hold the cartridge in place, and return it to the down position.
4. Turn the knob slightly to engage the spindle into the cartridge.

3.2 Threading the leader

1. Gently curl the tip of the film leader outward (as shown in the PANON manuals) to reverse its natural curl. This makes it easier to feed into the curved channel.
2. Carefully guide the leader under the first film guide roller (ref. 13), then along the curved channel, under the forward guide roller (ref. 6).
3. Engage the film onto the sprocket gear (ref. 4), then onto the takeup spool (ref. 5) by sliding the tip under the slot provided.
4. Turn the takeup spool using its serrated edge to start winding, emulsion side out. Pull only the minimum length needed to engage the mechanism, then begin turning the transport knob (ref. 3).

Important: winding direction
The film emulsion must face outward on the takeup spool.
Thread only the minimum necessary length to avoid wasting frames.
The curved film loads slightly harder than flat film: this is normal.

3.3 Closing and preparation

1. Close the rear cover by aligning the red "UNLOCK" indicator to the left, then lock the lock.
2. Continue turning the transport knob (ref. 3) until it stops by itself.
3. Take up cartridge slack by gently turning the rewind knob (ref. 11) in the direction of the arrow until you feel slight resistance.

Caution: do not pull too hard
NEVER pull too hard on the rewind knob — risk of scratching the film emulsion.

3.4 First calibration exposure

The camera is now ready for the first exposure. As with any film camera, the first frames are used to advance the film exposed to light during loading:

- Place the camera on a table or tripod in normal shooting position.
- Set the shutter speed (see chapter 4.1).
- Press the shutter release button (ref. 1). This first exposure brings the blank film into position.
- You are now ready for your first subject.

Frame counter
The frame counter (ref. 2) resets automatically when the camera is opened.
It indicates the number of exposed frames.
36-exposure roll: 21 frames available. 20-exposure roll: 11 frames available.

Non-standard film cartridges
Use only standard-size film cartridges.
Non-conforming cartridges may not seat correctly in the camera,
may jam the film transport, or may cause the film to break.
If the film breaks, the camera can only be opened in a darkroom or changing bag.

4. Exposure Settings

4.1 Selecting the shutter speed

The Widelux offers three shutter speeds: 1/15 s, 1/125 s and 1/250 s (1/10 s on earlier models). These speeds are selected by a gear-train system, analogous to a car gearbox. Just as you cannot put a car transmission half-way between two gears, the speed must be set exactly on the desired marking.

ABSOLUTE RULE — Never force the shutter speed dial

This is the most important rule in this manual.

ALWAYS advance the film (wind one frame) BEFORE changing the shutter speed.
If the dial does not click into place easily, NEVER FORCE IT.
Return the dial to the previous position (without forcing), advance the film one frame, then try again. Repeat 2 or 3 times if necessary, handling gently.

Forcing the dial can irreparably destroy the camera mechanism.
This is the only manipulation (apart from dropping) that can permanently damage a Widelux.

Why the dial sometimes resists

The Widelux's speed mechanism is both archaic and complex to adjust. PANON mentioned it in the user manual from the very first release of the F7: never force when the dial does not align with the desired speed. Changing speed before winding the mechanism can jam the gears. The correct sequence is always:

- 1. Advance the film (wind).
- 2. Select the speed.

The incorrect manipulation is easily recognized: the dial does not click into place. Simply return it to the previous position (without forcing), advance the film, then try again. When the film is wound, the dial positions correctly without resistance.

What happens if the speed is not correctly engaged

If the speed is not perfectly engaged, the turret will not start when the shutter button is pressed — the button may even remain depressed. The mechanism must then be wound again, which will advance the film one unexposed frame. This behavior is inherent to the Widelux's design and does not indicate a malfunction — it already existed on brand-new cameras fresh from the factory.

"DON'T"s

1. Don't release the shutter without setting the shutter speed control knob exactly on the desired speed-because the shutter of the WIDELUX is a unique mechanism. It is similar to the transmission system of an automobile. Just as in an automobile transmission the improper use of the gears can damage the system, so can the improper use of the shutter speed control knob damage the shutter mechanism.
   To change shutter speed, it is not necessary to lift the control knob; simply turn it to the desired setting. If the knob does not turn easily, do not force it, but turn it in the opposite direction slightly, then try to turn it back. When the camera is new, this may happen often, but never use force to turn the knob, as this will damage the shutter mechanism.
2. Don't forget what kind of film is loaded in the camera, because, with your WIDELUX, you can obtain only 21 pictures on a standard long roll, and only 11 on a short roll. DO NOT TRY TO GET MORE THAN THAT, or the film may break, and it will be impossible to rewind the film and unload the camera. If the film does break, the camera may be unloaded in a darkroom or changing bag.
   CHECK THE AUTOMATIC FILM COUNTER BEFORE TAKING EACH PICTURE.

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Correct speed engagement — correct selector position (PANON document)

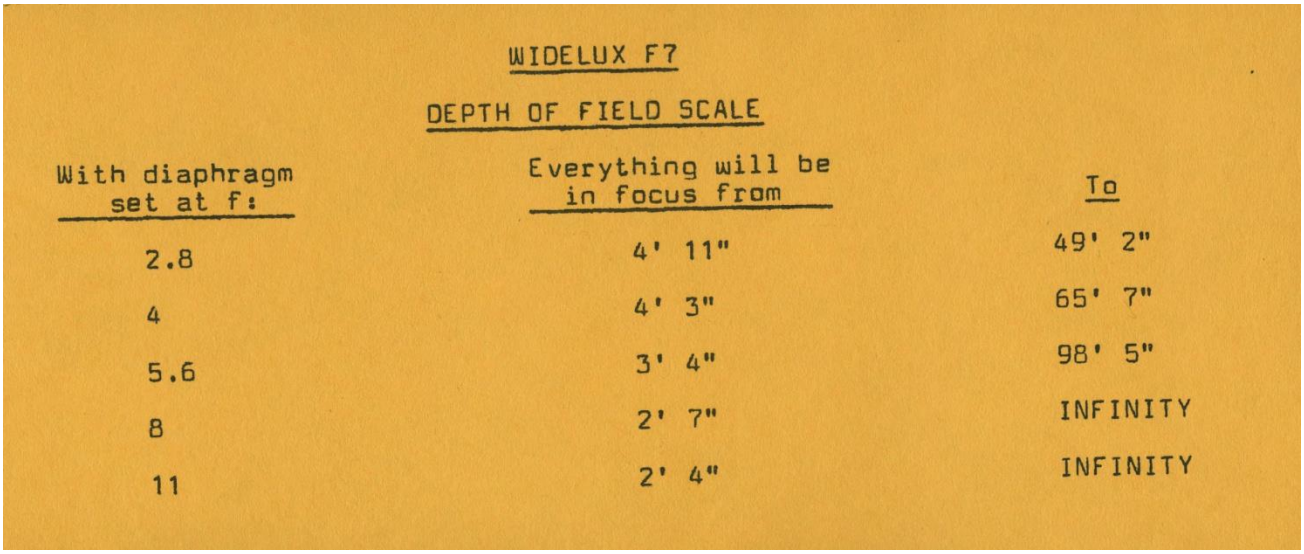
4.2 Setting the aperture

The aperture is freely adjustable between f/2.8 and f/11, at any intermediate value. Unlike the shutter speed dial, it is not necessary to align on an exact position.

4.3 Depth of Field Table

The Widelux has a factory-fixed focus. The depth of field according to the selected aperture is as follows:

Aperture (f)	Sharp from	Sharp to
f/2.8	1.50 m (4'11")	15.0 m (49'2")
f/4	1.30 m (4'3")	20.0 m (65'7")
f/5.6	1.02 m (3'4")	30.0 m (98'5")
f/8	0.79 m (2'7")	Infinity
f/11	0.71 m (2'4")	Infinity



WIDELUX F7

DEPTH OF FIELD SCALE

With diaphragm set at f:	Everything will be in focus from	To
2.8	4' 11"	49' 2"
4	4' 3"	65' 7"
5.6	3' 4"	98' 5"
8	2' 7"	INFINITY
11	2' 4"	INFINITY

Depth of field table — original PANON document

Practical advice

At f/8 or f/11, the entire field is sharp from less than one meter to infinity.
These apertures are ideal for landscape or architectural photography.
At f/2.8, depth of field is limited to approximately 13 meters.
Use this aperture only in low-light conditions.
It is virtually impossible to obtain a blurred image with the F7, except for camera shake.

5. Shooting

5.1 Holding the camera

The Widelux's field of view is 140 degrees horizontally and 55 degrees vertically. Fingers and hands can easily enter the frame if the camera is not held correctly. Uninitiated users frequently include their fingertips in their first photographs.

Essential holding rule
Always hold the camera so that no part of your fingers or hands
extends beyond the front plane of the body.
By watching the lens pivot during a test exposure, you will immediately understand
why any part of the body projecting beyond the housing would appear in the photograph.

Recommended handheld technique:

- Place both palms against the back of the camera.
- Fingers are positioned on the side edges in the recessed zones — they do not extend over the front face.
- The right index finger is placed on the shutter release button.
- Press the camera against the right eye to see the field of view.
- Press gently ("squeeze", do not push) on the shutter release.

5.2 Using the spirit level

The use of the spirit level (ref. 7) is essential. A characteristic of the swing-lens system is that if the camera tilts upward, horizontal lines appear concave; if it tilts downward, they appear convex. A non-horizontal camera gives an arched horizon.

With a tripod: strongly recommended to guarantee horizontality and stability, especially at slow speeds (1/15 s) and for static subjects.

Without a tripod: align the camera with a visible horizon in the scene. When no horizon is visible, compose through the viewfinder, then slightly lower the camera (without changing the horizontal orientation) to check the spirit level, stabilize, then shoot.

Framing tip
Place your eye as close as possible to the viewfinder and align a horizontal line in the scene
with the bottom edge of the viewfinder frame. This technique is quickly learned.

5.3 Shooting sequence

- Check and set the shutter speed AFTER winding the film (see chapter 4.1).
- Set the aperture according to available light.
- Check that your fingers do not extend beyond the front face (clearance zones).
- Use the spirit level to ensure horizontality.
- Press gently (do not push) on the shutter release.
- Advance the film one frame using the transport knob (ref. 3) — this also winds the mechanism.

5.4 Special shooting techniques

Vertical shooting

The Widelux can be held vertically to exploit the 140-degree field vertically. However, two additional precautions apply:

> **Caution when shooting vertically**
> Your feet may appear at the bottom of the negative if you photograph downward.
> Your fingers may appear in the frame if the grip is not adapted to vertical orientation.
> Anticipate these risks before pressing the shutter.

Creative and experimental uses

The Widelux is so different from other cameras that its possibilities are limited only by the imagination. A few unusual uses suggested by experienced users:

- 360-degree panorama: take three successive exposures while rotating the camera on a tripod at 120-degree intervals (a 140-degree field x 3 covers more than 360 degrees). Assemble the photos by joining them cleanly to obtain a complete circular view.
- Creative panning: at 1/250 s, follow the action in the direction of the lens movement when firing, then in the opposite direction. The two attempts give very different results.
- Extreme vertical format: with the camera turned 90 degrees on its side, the 140-degree field applies vertically — original perspectives that exist on no other camera.

5.5 Rewinding the film

At the end of a roll, rewind the film into its cartridge before opening the camera:

- Press the rewind release button on the bottom of the camera and hold it.
- Turn the rewind knob (ref. 11) in the direction of the indicated arrow. To ease rewinding, slightly lift the knob to clear the body.
- At the end of the roll, you will feel the leader detach from the takeup spool and retract into the cartridge.
- Open the camera and remove the exposed cartridge.

6. Understanding the Widelux's Characteristics

The Widelux's swing-lens design produces specific behaviors that are important to understand in order to get the best results and avoid misinterpretation.

6.1 Horizontal line distortion at the edges

A phenomenon inherent to the Widelux system is that parallel horizontal lines may appear to curve at the edges of the image. It is important to understand that this is NOT a lens defect, but the natural property of perspective images: as the distance to an object increases, parallel objects appear to converge.

This phenomenon is controlled by the camera's tilt angle:

- Camera tilted upward: horizontal lines appear to curve upward (concave).
- Camera tilted downward: horizontal lines appear to curve downward (convex).
- Camera perfectly horizontal: horizontal lines remain straight.

How to avoid curved lines
Keep the camera strictly horizontal using the spirit level.
Use a tripod for architecture or landscapes requiring perfectly straight lines.

6.2 The "banding" phenomenon

One of the most frequently discussed topics regarding the Widelux is the occasional appearance of irregular exposure bands, sometimes called "banding". These density variations can appear under certain conditions:

- large uniform skies,
- snowy or desert surfaces,
- very low-contrast subjects,
- fast speeds (1/250 s),
- very even lighting.

A slight exposure variation is not necessarily a sign of a defective camera. Even at the time of manufacture, PANON's engineers continuously worked to reduce these phenomena without ever managing to eliminate them entirely.

6.3 Why fast speeds are more demanding

On a Widelux, the fastest speeds require extremely high mechanical precision. At 1/250 s, the slightest variation in rotational motion becomes proportionally more visible than at 1/125 s or 1/15 s. This is part of the inherent characteristics of this type of design.

Practical recommendation
In sufficient lighting conditions, prefer 1/125 s over 1/250 s.
The 1/250 s speed is reserved for situations that absolutely require freezing motion.
At 1/15 s, a tripod is mandatory to avoid camera shake blur.

6.4 Optical limitations when shooting into the light

The Widelux is sensitive to shots that include the sun in the frame, significant reflections, or extreme backlight. Since the lens pivots during exposure, the angle of incidence of light changes constantly during the sweep. This can lead to flare, internal reflections, local contrast loss, or light veiling in part of the image. These phenomena are normal and part of the nature of the instrument.

6.5 Why modern scanners reveal more imperfections

When the Widelux was designed, photographers judged their images from contact sheets, paper prints, or slide projections. Today's professional scanners detect density variations so small they would have remained completely invisible on a traditional silver print. Furthermore, processing software allows strong contrast increases, which can reveal or amplify variations that would never have been perceived in the original context.

A defect visible at 100% on a high-resolution screen may be practically invisible on a normal photographic print.

6.6 Restoration has its limits

A mechanical restoration can clean mechanisms, replace certain worn parts, and restore original performance. However, it does not transform a 1950s camera into a modern one and cannot eliminate the limitations inherent to the swing-lens principle.

On cameras as complex as the Widelux, each disassembly involves many interdependent adjustments. An additional intervention aimed at correcting an extremely minor defect can sometimes disturb an already satisfactory mechanical balance.

7. How to Properly Evaluate a Widelux

A Widelux in good condition should not be evaluated according to the standards of a modern digital camera. The most important elements to observe are:

- overall consistency of exposure,
- stability of the rotational motion,
- absence of mechanical breaks or jumps in the panorama,
- geometric coherence of lines in the panorama,
- quality of focus,
- reliability of film transport.

The occasional appearance of very slight density variations under difficult conditions (see chapter 6.2) does not necessarily mean the camera has a mechanical defect.

8. Tips for Good Results

8.1 Film choice

- Favor films with generous exposure latitude (ISO 100 to 400) to absorb possible slight sweep irregularities.
- Avoid very high-contrast films that would make banding more visible.
- ISO 400 films offer a good balance between sensitivity and latitude.
- The Widelux is compatible with all types of color and black-and-white film.

8.2 Managing light

- Avoid pointing directly toward the sun or very intense light sources within the 140-degree field.
- In overcast conditions with diffuse light, banding risk is minimal — ideal conditions for the Widelux.
- Avoid scenes with large uniform areas (clear blue sky, snow, desert) if your goal is perfectly even exposure.

8.3 Framing and composition

- The panoramic 24 x 59mm format (2.5:1 ratio) lends itself to wide horizontal compositions: landscapes, architecture, groups of people.
- Keep important straight lines (horizon, walls) parallel to the bottom edge of the frame to avoid the characteristic arc distortion of the Widelux.
- The spirit level is your best ally — use it consistently.
- The viewfinder shows only 90% of the actual field: allow a margin on the edges when framing.

8.4 Scanning Widelux films

- Use an enlarger or scanner suited to the 6x6cm format (the 24x59mm negative falls in this category), with a 75 or 80mm lens.
- When scanning, use moderate contrast settings to avoid revealing variations that would be invisible to the naked eye on a print.
- Local exposure correction (gentle gradients) may be sufficient to correct slight banding without aggressive processing.
- Always evaluate your images on paper print before concluding that the camera is malfunctioning.
- Widelux transparencies can be projected with any standard 6x6cm (2-1/4") square projector — the result on screen is spectacular, identical to a cinema widescreen.

9. Summary of Essential Rules

PANON rules: never forget

NEVER DO:

1. Never release the shutter without the speed dial exactly on the desired marking.
   (result: irreparable damage to the mechanism)

2. Never forget what type of film is loaded and how many frames have been taken.
   Maximum: 21 frames (36-exposure roll) or 11 frames (20-exposure roll).
   Exceeding this number may break the film; it would then be impossible to rewind.
   CHECK THE FRAME COUNTER BEFORE EACH EXPOSURE.

ALWAYS DO:

1. Keep the camera horizontal — use the spirit level.
2. Keep fingers out of the 140-degree field (behind the front plane of the body).
3. Remember all the important points in this manual.

Additional essential rules

4. ALWAYS wind the film (advance one frame) BEFORE changing the shutter speed.
5. NEVER force the shutter speed dial.
   If resistance: return to previous position -> advance film -> try again.
6. Never leave the speed dial in an intermediate position between two markings.
7. Do not pull too hard on the rewind knob — risk of scratching the film emulsion.
8. Use only standard-specification film cartridges.
9. Do not expect restoration to correct limitations inherent to the camera's design.

What makes the Widelux special

The Widelux's success is not based on absolute technical perfection.
It is based on a unique combination: precision mechanics, ingenious engineering, incomparable panoramic rendering, and photographic character.

Like many iconic historical cameras, the Widelux has its own particularities.
These are an integral part of its identity and explain why, more than sixty years after its creation, it continues to fascinate photographers around the world.

The Widelux is not a perfect camera. It never claimed to be.
But when properly maintained and used in accordance with its design,
it remains one of the most captivating and capable panoramic cameras ever produced.

Sources

This document was compiled from the following sources:

- Instructions for the Use of the Widelux F7 Camera — Harrison Camera Corporation / PANON Camera Shoko Co., Ltd.
- Instructions for the Use of the Widelux Camera (models FV/F6/F6B) — PANON Camera Shoko Co., Ltd.
- Widelux F7 — Commercial brochure and Depth of Field Scale (original PANON documents)
- Le bon enclenchement des vitesses — official PANON document
- Advice on Using Your Widelux — Philippe Raybaudi, www.mondepanneur.fr
- Understanding the Widelux: operation, characteristics and limitations of a swing-lens panoramic camera — Philippe Raybaudi
- Usage tips for the Widelux — Philippe Raybaudi
- Widelux speeds table — Widelux community documentation

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