Leica CE/ Leica CN

Knife holder

Instruction Manual

Leica knife holder CE/ knife holder CN
V2.2 English – 08/2005

Always keep this manual near the instrument.
Read carefully prior to operating the knife holders.

Leica
MICROSYSTEMS

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Danger!
Microtome knives and blades have extremely sharp cutting edges!

Fig. 1

Fig. 2

For disinfection we recommend Leica Cryofect disinfection spray.

Mounting the knife holder base

1. Mount the knife holder base **(1)** as shown in Fig. 1.

2. Rotate lever **(2)** clockwise to clamp.

Mounting the knife holder

1. Mount the knife holder as shown in Fig. 2.

When inserting the knife holder base, apply sufficient pressure towards the left to overcome the resistance of the spring in the bottom part of the knife holder.

2. Rotate lever **(3)** clockwise to clamp.

Fig. 3

Mounting the anti-roll system

1. Insert the glass plate into the changing frame and clamp evenly with the knurled screws **(7)**.
2. From above, insert the axle **(8)** of the metal frame into the opening of the swivel arm of the anti-roll system **(4, Fig. 2)**, so that the pin **(6)** rests in the groove **(5, Fig. 2)**.
3. From below, slide the white plastic washer **(9)** onto axle **(2)**.
4. Screw knurled nut **(10)** onto axle **(2)** from below.

All 4 longitudinal edges of the anti-roll glass plate can be used.

Fig. 4

Inserting the blade into knife holder CE

1. Tilt anti-roll system to the left – to do so hold system at lever **(11)** (**not** at the set screw of the anti-roll system) to avoid altering the height of the anti-roll system.
2. Open clamping lever **(12)** by rotating it counter-clockwise.
3. Carefully insert the blade **(13)** between clamping plate and back plate, either from above or from one side. Make sure the blade is properly **centered**.
4. Rotate lever **(12)** clockwise to clamp.
5. Grip anti-roll system at lever **(11)** and tilt back onto blade.

ATTENTION!
Anti-roll system also works as finger guard!

Fig. 5

Lateral adjustment

If sectioning results are not satisfactory, adjust the knife holder laterally to section with another part of the blade.
For that purpose:

1. Rotate clamping lever **(14)** backwards to loosen and slide the knife holder laterally into the desired position.
2. Rotate clamping lever **(14)** forward to clamp.

Fig. 6

Inserting the knife into knife holder CN and knife height adjustment

Knife holder CN can be operated with all wedge-shaped c- and d-profile knives. To fit disposable blades into knife holder CN, use the blade holder for disposable blades. Prior to inserting the knives (from above) completely loosen the two clamping screws **(15)**.

Adjust the knife height before retightening screw **(15)**.

Fig. 7

The knife height is adjusted via the knurled nuts **(16)**. The upper edge of the back plate (rear clamping plate) serves as an index to determine the appropriate knife height. The knife edge should be at the same level as the back plate; even knives that have been greatly reduced in height by frequent resharpening (up to a height of 25 mm) can be properly height-adjusted and clamped in the knife holder CN.

Fig. 8

The anti-roll system is laterally adjustable (84-mm wide system only). A groove **(17)** in the axle **(18)** facilitates centering of the anti-roll system.

Fig. 9

Finger guards

The finger guards are integrated into the clamping jaws. Use handles **(19)** to slide them back and forth. The width of the finger guards is sufficient for knives up to 22 cm long. Once you finish sectioning, always cover the knife edge with the finger guards.

Prior to any work on knife and object, each time before changing the specimen block and during work breaks the knife edge must be covered with the finger guards!

Fig. 10

Fig.11

Shifting the clamping jaws

In the factory, the clamping jaws are mounted at a distance of 64 mm from each other. If necessary, the clamping jaws can be relocated to a distance of 84 mm.

To shift the clamping jaws the knife holder must be removed from the knife holder base. Loosen lever **(20)** and remove knife holder from base. With a size 4 Allen key, loosen the screws **(21)** located at the bottom surface of the knife holder. Shift the clamping jaws **(22)** and retighten the screws. Insert the longer of the two knife support bars (part of standard delivery).

Never work with just one clamping jaw. Otherwise sufficient stability for the sectioning process cannot be guaranteed. In addition, long knives will no longer be sufficiently covered by the finger guard.

Knife support bar

Ensure that the recess (24) is pointing away from the microtome.

Danger!
Microtome knives and blades have extremely sharp cutting edges! Never try to catch a falling knife!

Fig. 12

Clearance angle adjustment

The harder the specimen the wider the clearance angle. However: the wider the clearance angle the greater the compression of the sections.

If the clearance angle is too small, thick-thin sections may result.
Also, remember that by adjusting the clearance angle, the position of the knife edge relative to the specimen may be altered.
Therefore, always place the specimen block above the knife prior to adjusting the clearance angle. Otherwise, the specimen block may collide with the knife when it is moved back upwards.

Clearance angle adjustment - knife holder CE

Fig. 13

Readjust the clearance angle with every new type of specimen material!

1. The clearance angle scale is located on the left side of the knife holder.
2. Loosen the lever (**23,** Fig. 11) on the right side of the knife holder and select a clearance angle setting of '0' (index marker **(25)** must be in line with figure '0'). Retighten lever (**23**, Fig. 11). If the sectioning results are not satisfactory, increase the clearance angle setting in 1° steps, until the desired result is achieved.

Clearance angle adjustment - knife holder CN

Fig. 14

Prior to setting the clearance angle, the knife edge must be located exactly in the spin axis of the knife holder.

First, set a clearance angle of '0'. To do so, loosen lever (**23**, see Fig. 11) and bring the index marker **(26)** in line with the figure '0' on the clearance angle scale **(27)**. Retighten the lever **(23)**. If the sectioning results obtained are not satisfactory, slowly increase the clearance angle in 1° steps, until the desired section quality is achieved.

Fig. 15

Parallel adjustment - knife holder CE (Adjusting the anti-roll system)

This type of adjustment has to be done each time after exchanging either the entire anti-roll system or the change frame.
Loosen Allen screw **(28)** and then, via the axle extension **(29)**, adjust the upper edge of the glass anti-roll plate parallel to the knife edge. Retighten Allen screw **(28)**.

Fig. 16

Parallel adjustment - knife holder CN (Adjusting the anti-roll system)

After loosening the two screws **(30)** the anti-roll system can be adjusted parallel to the knife edge. After carrying out the adjustment, retighten the screws **(30)**.

Use the knurled nut to height-adjust the anti-roll system:

- rotate counterclockwise to move the anti-roll system towards the knife;
- rotate clockwise to move the anti-roll system away from the knife.

If the anti-roll system is not correctly adjusted relative to the knife edge, the following problems occur:

I

Fig. I: The sections roll up on the glass plate of the anti-roll system.

Problem: glass plate situated too low. **Solution:** rotate knurled nut counterclockwise until the section slides down between blade and anti-roll plate as shown in Fig. III).

II

Fig. II: The sections tear and after each section the specimen block collides with the glass plate.

Problem: glass plate situated too high. **Solution:** rotate knurled nut clockwise until the section slides down between blade and anti-roll plate as shown in Fig. III).

III

We recommend pre-adjusting the anti-roll system at a relatively high section thickness setting (e.g. 10 µm). – From there, slowly decrease the section thickness, slightly readjusting the anti-roll system via the knurled nut (see description above) each time you select a lower section thickness setting.

Fig. 17

Fig. 18

Fig. 19

Fig. 20

From time to time, lubricate axles **(37)** and **(38)**, as well as groove **(39)** with a drop of cryostat oil (type 407).

Cleaning the knife holder CE
Daily cleaning procedure

1. Tilt the anti-roll system **(33)** to the left, hold at lever **(34)** while doing so.
2. Loosen clamping lever **(35)** of pressure plate.
3. Now you can remove the pressure plate **(36)** for cleaning (use alcohol or acetone).

For disinfection purposes, standard commercial detergents and disinfectants can be used – our recommendation is Leica Cryofect.

Cleaning the knife holder CN
Daily cleaning procedure

For daily cleaning, it is sufficient to remove section waste from the knife holder with a dry brush. Make sure to use a cold brush, otherwise the sections will thaw and stick to the knife holder.

Thorough cleaning

From time to time, all movable parts should be removed for cleaning and subsequent lubrication with cryostat oil, type 407.

Disinfection

Use e.g. Leica Cryofect.
Spray disinfectant generously and evenly on all contaminated surfaces (or apply generously with cloth moistened with disinfectant), allow to soak for 15 minutes and wipe dry.

Ordering information - knife holder CE

- Knife holder CE for low-profile blades, assy.
- Knife holder CE for high-profile blades, assy.
- Pressure blade for high-profile blades
- Pressure blade for low-profile blades
- Anti-roll systems (metal change frame w/ glass insert)
- Retrofit kit (metal change frame w/ glass insert and swivel arm)
- Glass insert, 70 mm wide
- Low-profile blades - 50 blades in dispenser
- High-profile blades - 50 blades in dispenser
- Leica Cryofect spray disinfectant

Technical specification - knife holder CN

- Variable working distance between clamping jaws: 64 mm or 84 mm
- Usable knife lengths: 12 cm - 22 cm
- Knife height: min. 25 mm - max. 40.3 mm
- Knife height adjustment: max. 16 mm
- Clearance angle setting: 0 - 10, continuously adjustable

Ordering information - knife holder CN

- Knife holder CN, assy.
- Knife support bars – 13 cm and 15 cm long
- Anti-roll system CN (metal change frame and glass insert)
- Glass insert, 50 mm wide
- Knives from 12 to 22 cm long
- Leica Cryofect spray disinfectant

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If you require technical service or replacement parts, please contact your Leica sales representative or dealer who sold the product.

Please provide the following information:

- Model name and serial number of the instrument.
- Location of the instrument and name of the person to contact.
- Reason for the service call.
- Date of delivery.

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