TransferMan® NK 2

Operating manual
Version ENA
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1 Operating instructions

1.1 Using this manual
- Read this operating manual completely before using the device for the first time. If required, please also observe the instructions for use of the accessories.
- This operating manual is part of the product. Thus, it must always be easily accessible.
- Enclose this operating manual when transferring the device to third parties.

1.2 Danger symbols and danger levels
The safety instructions in this manual appear with the following danger symbols and danger levels:

1.2.1 Danger symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Hazard point</th>
<th>Cuts</th>
</tr>
</thead>
<tbody>
<tr>
<td>!</td>
<td>Material damage</td>
<td></td>
</tr>
</tbody>
</table>

1.2.2 Danger levels

<table>
<thead>
<tr>
<th>Danger level</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANGER</td>
<td>Will lead to serious injuries or death.</td>
</tr>
<tr>
<td>WARNING</td>
<td>May lead to serious injuries or death.</td>
</tr>
<tr>
<td>CAUTION</td>
<td>May lead to light to moderate injuries.</td>
</tr>
<tr>
<td>NOTICE</td>
<td>May lead to material damage.</td>
</tr>
</tbody>
</table>

1.3 Symbols used

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>•</td>
<td>Actions in the specified order</td>
</tr>
<tr>
<td>•</td>
<td>List:</td>
</tr>
<tr>
<td>•</td>
<td>Name of fields in the software</td>
</tr>
<tr>
<td>•</td>
<td>Useful information</td>
</tr>
</tbody>
</table>

1.4 Abbreviations used

- O.D. Outer diameter
- I.D. Inner diameter
2 Product description

2.1 Features
The TransferMan NK2 has been especially developed for work processes that require the proportional movement of capillaries. Proportional movement is particularly suitable for manipulation of suspension cells such as animal ICSI, the transfer of embryonic stem cells (ES cells) into blastocysts and for other work techniques that require the intuitive control of capillary movements.

The TransferMan NK2 combines the classical advantages of a mechanical system (intuitive control of capillary movements) with the benefits of a precise electrically driven system. The movement of the capillary is directly linked to that of the joystick. Different speed settings can be selected at the touch of a button. The TransferMan NK2 can store three different positions with all three spatial coordinates and pilot them precisely and quickly. A Z limit can be defined to prevent the capillary from braking.

2.2 Field of movement
In the case of a three-dimensional manipulator with a motor standing for each coordinate, the field of movement forms a cube with equal sides (Cartesian field of movement).
2.3 Delivery package

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Order No. (North America)</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1        | —                         | **TransferMan NK 2**  
See chapter *Ordering Information* for corresponding device version, equipment and order number |
| 1        | —                         | **Mains cable**  
Compatible to the country where the order was placed or determined |
| 1        | —                         | **Power supply** |
| 1        | —                         | **Motor module** |
| 1        | —                         | **Hinged bracket** |
| 1        | —                         | **Allen key set**  
6 pieces |
| 1        | —                         | **Screws**  
2 x M5x16, 1 x M4x10 |
| 1        | —                         | **Replacement screws**  
2 x M5x16, 2 x M4x10, 2 x M3x16, 2 x M3x12 |
| 1        | 920005764                 | **X head with angle adjustment**  
With 1x M3x12 screw |
| 1        | 920005829                 | **Positioning aids**  
for universal capillary holders  
set of 2 |
| 1        | 5188900056                | **Operating Manual TransferMan NK 2** |
2.4 Main illustration

The control panel accommodates the keypad, the display and the joystick with integral button, as well as the turn wheel on the side. The movements performed on the joystick are transmitted to the motor module. The movement modes, directions and speeds, as well as movement sequences, are preset and triggered using the keypad, the turn wheel and the joystick.

Fig. 1: Control panel

<table>
<thead>
<tr>
<th>1 Joystick</th>
<th>2 Display</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moves the capillary on the X, Y and Z axes.</td>
<td>Shows the set parameters.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3 Turn wheel</th>
<th>4 Keypad</th>
</tr>
</thead>
<tbody>
<tr>
<td>For increasing or reducing the working range.</td>
<td>For setting functions and parameters.</td>
</tr>
</tbody>
</table>

The motor module moves the universal capillary holder to which the capillary is attached. The motor module comprises the two-axis module for movements on the Y axis and the Z axis and the one-axis module for movements on the X axis. The injection angle is adjusted manually using the straight guide.
The motor module is mounted on the microscope tripod and is separate from the control panel to protect it against oscillation and vibration. Mounting is possible on all commonly used inverse microscopes. The capillary can be mounted at any angle on the motor module. It can be moved out of the working range and back for simple capillary exchange.

Fig. 2: Assembled motor module (right side mounted)

<table>
<thead>
<tr>
<th>1 Two-axis module</th>
<th>2 Straight guide</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 One-axis module</td>
<td>4 X head with angle adjuster</td>
</tr>
</tbody>
</table>

2.5 Joystick

The proportional joystick moves the capillary in proportion to the position of the joystick in the selected working range. The speed of the capillary is determined by the movement speed of the joystick.

Three different movement speeds are available: Coarse, Fine and Xfine. Read the chapter "Working ranges" for information how to change the size of a working range and how to move the working range (see p. 30).

Movements on the X and Y axes

- Moving the joystick positions the capillary directly proportional to the desired location in the working range. The speed of the capillary is determined by the movement speed of the joystick, in relation to the selected working range size.

Z axis movements

- Rotating the upper part of the joystick clockwise causes the capillary to move down.
- Rotating the upper part of the joystick counterclockwise causes the capillary to move up.

Overlaid movements in all three coordinate directions are possible.
2.6 Keypad

The keypad can be used to set or trigger numerous settings and movement sequences. Rarely used settings can be entered by key combinations. The LEDs indicate the activated state of a function. Some functions are only triggered after the keys have been released.

| 1 Home key | Triggers the **Home** and **Clean** functions (see p. 34). |
| 2 Display | |
| 3 Y off key | Enables or disables movements on the Y axis. If the Y axis has been disabled, the LED of the key lights up and the display shows **Y off**. |
| 4 Standby key | Switches the device off or on. This function can also be used as a reset function (see p. 48). |
| 5 Position keys | The position keys are used to store, clear or approach positions (see p. 32). |
| 6 Menu key | Opens and closes the menu. **Notice**: We recommend moving the joystick to mid-position before opening the menu. |
| 7 Limit key | Stores or deletes the Z limit (see p. 34). The Z limit is shown on the display. |
| 8 Coarse/Fine key | Toggles between the working ranges, or gradually reduces the working range (see p. 32). The selected size of the working range is indicated by the LED and the display. |

**Joystick button**

Used for moving the working range (see p. 31) and for approaching positions (see p. 33).

More information on handling the joystick can be found in the chapter "Joystick" (see p. 10).
2.7 Display

The display shows the current settings and is designed to support operation with specific depictions.

1 Cartesian coordinates
These indicate the current position of the 3 axes as relative values. Arrows after the values denote that the corresponding motor is at the end of the travel distance.

2 Y off
Appears when movements on the Y axis are disabled.

3 Active user
Appears when you have enabled multi-user operation (see p. 35).

4 Positions
Appears when positions have been stored. If the capillary is currently at a stored position, this is framed by a cursor (➤ ◄).

5 limit
Appears when you have set the Z limit with the Limit key.

6 Size of the working range
The setting for the working range is described in the chapter “Setting the working range” (see p. 30).

7 Speed symbol
If you change the working range, the speed and the speed symbol also change.
3 Safety

3.1 Intended use
The TransferMan NK2 has been designed and manufactured for the manipulation of suspension cells.
The TransferMan NK2 is intended exclusively for indoor use and for operation by qualified staff.
The TransferMan NK2 has been designed and manufactured for research use only.

3.2 Warnings for intended use

WARNING! Risk of injury due to flying glass capillaries and slivers.
Under high pressure, capillaries can detach themselves from the grip heads and become a projectile, or shatter due to incorrect handling or contact with the petri dish or other objects.
- Always mount the capillaries when depressurized.
- Never point the capillaries at other people.
- Always wear protective glasses.
- Do not touch the petri dish or other objects with the capillary.
- Check the correct attachment of the capillary in the grip heads.
- Check that the outer diameter of the capillary corresponds to the specifications of the grip head.
- Check whether the capillary is clogged.
- Check whether the capillaries of external manufacturers are capable of withstanding the applied pressure.

CAUTION! Cuts due to bursting glass capillaries.
Glass capillaries are very fragile.
- Always mount the glass capillaries depressurized.
- Handle the glass capillaries very carefully.
- Always wear protective glasses.

NOTICE! Damage to the motor module due to overloading.
- Load the motor module with maximum of 100 g.
- Do not operate the motor module against mechanical obstacles.
3.3 Information on product liability

In the following cases, the designated protection of the device may be compromised. Liability for any resulting property damage or personal injury is then transferred to the operator:

- The device is not used in accordance with the operating manual.
- The device is used outside of its intended use.
- The device is used with accessories or consumables which are not recommended by Eppendorf.
- The device is maintained or repaired by people not authorized by Eppendorf.
- The user makes unauthorized changes to the device.
4 Installation

4.1 Preparing installation

NOTICE! Damage to the joystick due to incorrect handling.

- Never carry or pull the device by the joystick.
- Only use the housing to lift the device.
- Never place the device upside down on the joystick.
- To connect or disconnect the cables, lay the device on its side and secure it against tipping over.

NOTICE! Damage to the motor module due to incorrect handling.

The motor module consists of a two-axle module and a one-axle module. They are connected by a cable.

- Do not place the cable under tension.
- Only transport the motor module with the transport securing devices in the original packaging.
- Never transport the motor module in an assembled state.
- Never place the assembled motor module at an angle.

**Hint!** Keep the packaging and the transport securing devices for later transport or storage.

**Hint!** Do not operate the device if there is visible damage to the device itself and/or to its packaging.

The packaging comprises two levels. The first level contains the accessories. The bottom level contains the motor module and the control panel.

1. Check that the standard accessories are present and complete.
2. Carefully lift the control panel and the motor module out of the packaging.
3. Unscrew the yellow transport securing device from the two-axis module.
4. Slacken the orange fixing screw on the one-axis module. Remove the yellow transport securing device. Do not remove the orange fixing screw from the one-axis module.

4.2 Installing the motor module

The motor module can be installed on the left or the right. Right side installation is described in the following.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Two-axis module</td>
</tr>
<tr>
<td>2</td>
<td>Straight guide</td>
</tr>
<tr>
<td>3</td>
<td>One-axis module</td>
</tr>
<tr>
<td>4</td>
<td>X head with angle adjuster</td>
</tr>
</tbody>
</table>
4.2.1 Installing the one-axis module

The one-axis module is connected to the two-axis module by means of the straight guide. For the sake of clarity, the one-axis module is not represented in some graphics.

**NOTICE! Damage to the motors due to incorrect assembly.**

If the one-axle module is assembled too low, the motor module might come into contact with the microscope during movements.

- Allow sufficient space when assembling the motor module.

**Hint!** The one-axis module can be moved up or down by fastening the straight guide to another hole on the two-axis module. The further the straight guide is moved down, the flater the injection angle setting that can be achieved.

1. Turn the spindle of the straight guide to move the one-axis module until the desired hole is accessible.

2. Fix the straight guide through the hole to the two-axis module with a M4x10 cheese head screw.
4.2.2 Installing the X head

1. Place the X head with the hole on the tool holder of the one-axis module.
2. Insert the fitting pin into the hole provided.
3. Join the X head to the one-axis module with an M3x12 cheese head screw.

4.2.3 Mounting the hinged bracket

Align the hinged bracket depending on the side on which you want to install the motor module. The following instructions describe left side mounting.

For the sake of clarity, the one-axis module is not represented.

Alignment with left side mounting
1 Upper hole
2 Hinge

Alignment with right side mounting
Opening the hinged bracket 0° – 45°

1. Push the pin on the hinge side up with a tool.

Opening the hinged bracket 45° – 90°

2. Push the pin on the hinge side down with a tool.
   The mounting holes on the motor module are then accessible.

3. Join the hinged bracket to the motor module by its inner inclined surface by means of a M5×16 screw.
4. Close the hinged bracket.

**Left side mounting**
The hinge is visible. The mounting point of the one-axis module is facing down.

**Right side mounting**
The hinge is not visible.
4.2.4 Mounting the motor module on the microscope

Motor module mounting is dependent on the chosen side of the microscope. All commonly used inverse microscopes can be used. The module is mounted on the microscope tripod by means of a microscope-specific adapter. Mounting of the adapter is described in the accompanying mounting instructions. If none of the adapters fit your microscope, a universal stand will be needed.

We recommend the use of an inverse microscope.

1. Join one of the two longer rollers of the adapter to the hinged bracket with the supplied M5×16 screw.

2. Join the adapter on the rear mounting position to the roller with two M5×16 screws from the adapter accessories.
3. After installation, call the *Install* submenu and set the *Side*, *Direction* and *Angle* parameters according to the mode of mounting (see *Install* on p. 45).

### 4.3 Installing the capillary holder

The X head can hold capillary holders with a diameter of 4 mm. We recommend the use of an Eppendorf universal capillary holder. This is included among the accessories for the FemtoJet or the CellTram or can be ordered as an option (see *Accessories* on p. 54).

1. Slacken the knurled screw of the X head.

2. Place the universal capillary holder into the X head.

---

The universal capillary holder can also be mounted in the lower mount of the X head.
3. Tighten the knurled screw.

Optional: Mounting the positioning aid

To avoid having to reposition the universal capillary holder every time a capillary is changed, a positioning aid can be used.

4. Mount the positioning aid on the universal capillary holder so that it fits in the center hole in the X head.

4.3.1 Setting the injection angle

- Rotate the knurled screws on the X head to set the injection angle.
4.3.2 Setting the height of the one-axis module

1. If necessary, slacken the orange fixing screw on the front narrow front side of the one-axis module.

2. Turn one of the two knurled screws of the straight guide to set the one-axis module to the desired height. This height adjustment is used in conjunction with the angle adjustment and the capillary position (see p. 23).

3. Tighten the orange fixing screw.

4.3.3 Changing the position of the motor module on the X axis

If the capillary is too long or the angle needs to be adjusted, you can move the motor module further away from the work point.

You have two options:

Changing the mounting point of the hinged bracket

- Mount the hinged bracket on another hole of the motor module.

Changing the mounting point of the X head on the one-axis module

- Mount the X head rotated by 180° on the front hole of the one-axis module.
4.4 Connecting the cable

**WARNING! Risk from incorrect supply voltage**
- Only connect the device to power supplies which correspond with the electrical requirements on the nameplate.

**NOTICE! Damage to the joystick due to incorrect handling.**
- Never carry or pull the device by the joystick.
- Only use the housing to lift the device.
- Never place the device upside down on the joystick.
- To connect or disconnect the cables, lay the device on its side and secure it against tipping over.

**NOTICE! Material damage from incorrect connections.**
- Only electrical connections may be made to devices described in the operating manual.
- Other connections are permitted only following consultation and agreement with Eppendorf AG.

**NOTICE! Short circuit caused by incorrect installation.**
- Failure to observe the order of steps may result in a short circuit.

Fig. 3: Underside of the control panel

<table>
<thead>
<tr>
<th>1</th>
<th>Connection for foot control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For changing the position</td>
</tr>
<tr>
<td>2</td>
<td>Connection has no function</td>
</tr>
<tr>
<td>3</td>
<td>Connection for power supply</td>
</tr>
<tr>
<td>4</td>
<td>Connection for motor module</td>
</tr>
<tr>
<td>5</td>
<td>Connection for PC (RS232)</td>
</tr>
</tbody>
</table>

For remote PC control of the TransferMan NK2 you require the data cable 5181 150.094.
Requirement
• TransferMan NK2 is switched off.
• The power plug is disconnected.

1. Insert the cable from the motor module into the "Connection for motor module".
2. **Optional:** Connect the foot control to the "Connection for foot control".
3. **Optional:** Connect the "Connection for PC" to a PC via the suitable data cable.
4. Insert the power supply plug into the "Connection for power supply".
5. Insert the power supply plug into the socket outlet.

4.5 Configuring the TransferMan NK2
- After installation, call the Install submenu and set the Side, Direction and Angle parameters according to the mode of mounting (see Install on p. 45).
5 Operation

If you switch on the TransferMan NK2 at least half an hour before use, it will be virtually drift-free.

Do not move the joystick immediately after power-on. Wait until the initialization is completed. The completion of initialization is indicated by an acoustic signal or by the display switching back to the operating state.

5.1 Switching the TransferMan NK2 on and off

Switching the TransferMan NK2 on

- Press the **Standby** key to switch the TransferMan NK2 on.
  The device runs through an initialization phase.

If you have set a value in the **Install** submenu in the **MultiUser** parameter that differs from 1, you will be requested to select a user (**User**).

- Use the turn wheel to select another user and press the **Home** key to confirm the selection.
  The activated user is indicated on the display during operation.

Switching the TransferMan NK2 off

- Press the **Standby** key to switch the TransferMan NK2 off.
  When the device is switched off, the unlit display shows **STANDBY**.

Use the **Standby** function as a reset function to reset the injection parameters (see p. 48).
5.2 Mounting the capillary

**WARNING! Risk of injury due to flying glass capillaries and slivers.**
Under high pressure, capillaries can detach themselves from the grip heads and become a projectile, or shatter due to incorrect handling or contact with the petri dish or other objects.
- Always mount the capillaries when depressurized.
- Never point the capillaries at other people.
- Always wear protective glasses.
- Do not touch the petri dish or other objects with the capillary.
- Check the correct attachment of the capillary in the grip heads.
- Check that the outer diameter of the capillary corresponds to the specifications of the grip head.
- Check whether the capillary is clogged.
- Check whether the capillaries of external manufacturers are capable of withstanding the applied pressure.

**CAUTION! Risk of injury from capillary when the motor module is swiveled out.**
If the motor module is swiveled out, the capillary faces forward.
- The motor module must **only** be swiveled out by gripping it by the two-axis module. Never swivel out the motor module by gripping it by the one-axis module.

**NOTICE! Risk of injury and damage to the drives due to mechanical obstacles.**
- Do not operate the motor module against mechanical obstacles.
- Do not reach between guide and module or between module and obstacle.

**Hint!** When using standard capillaries: Only capillaries with an external diameter of 1.0 mm to 1.1 mm may be used with the grip head 0. When using other capillaries, the corresponding grip head must be ordered (see **Accessories** on p. 54).
5.2.1 Setting up the capillary

1. Move the motor module to the top outermost position.

2. Screw in the grip head into the front knurled screw of the universal capillary holder.

3. Insert the capillary into the grip head through the O-rings to the stop position and tighten the grip head.

4. Align the universal capillary holder with the capillary so that the capillary tip is positioned approx. 20 mm above and approx. 20 mm outside of the working point.

5. If necessary, correct the height setting or the position in X direction.

By means of the positioning aid the universal capillary holder can be dismantled and refitted without changing the adjustment.

The CentrMot function simplifies the positioning of the capillary (see p. 46).

5.2.2 Changing the capillary

CAUTION! Risk of injury from capillary when the motor module is swiveled out.

If the motor module is swiveled out, the capillary faces forward.

The motor module must only be swiveled out by gripping it by the two-axis module. Never swivel out the motor module by gripping it by the one-axis module.

1. Move the capillary out of the working range with the joystick or by triggering the Home function with the Home key.

2. Grip the motor module by the two-axis module and swivel it out.

3. Slacken the grip head in the front knurled screw on the universal capillary holder.

4. Carefully pull the used capillary out of the grip head.

5. Insert the new capillary into the grip head through the O-rings to the stop position and tighten the grip head.

6. Swivel the motor module back.

7. Move the capillary back into the working range by pressing the Home key or using the joystick.
5.3 Working ranges
There are three preset working ranges:

- Coarse
- Fine
- Xfine

The maximum radius of the working range is 12 500 μm. The radius is shown on the display. You can set the default values of the working ranges and their positions in the menu (see Speed on p. 42). You can also set the working range with the turn wheel during operation (see p. 32).

Coarse
This working range is suitable for covering large distances at high speed.

Fine
This working range enables more precise movements at a lower speed.

Xfine
In this working range enables very precise movements at low speed.

Before you can select the Xfine working range, you must set a value > 0 μm in the Xfine parameter in the Speed submenu (see p. 42).
5.3.1 Moving the working range
If the position of the working range is not correct, you can change the position of the joystick relative to the capillary as follows:

- Keeping the joystick button pressed, move the joystick to move the working range.
  The tool is not moved during the adjustment.

Example application

1. Move the capillary to the edge of the working range.

2. Keep the joystick button pressed and move the joystick to mid-position to move the working range. The capillary is not moved during the adjustment.

3. Release the joystick button.
5.3.2 Setting the default values of the working ranges in the menu

- In the *Speed* submenu you can set the default values for the *Coarse*, *Fine* and *Xfine* (see p. 42) working ranges.

5.3.3 Setting the size of the working range using the turn wheel

The turn wheel can be used to gradually increase or reduce the working range. The step size shrinks or grows proportional to the size of the set working range. The radius that can be set with the turn wheel depends on the selected working range. If the size of the working range differs from its default value in the menu, the symbol ⬇ will appear on the display next to the name of the working range.

- Turn the turn wheel to gradually reduce or increase the working range to the minimum or maximum possible radius.

5.3.4 Setting the size of the working range with the "Coarse/Fine" key

The *Coarse/Fine* key can be used to gradually reduce the working range. The step size shrinks proportional to the size of the set working range. If the size of the working range differs from its default value in the menu, the symbol ⬇ will appear on the display next to the name of the working range.

- Press and hold down the *Coarse/Fine* key.
  
The size of the working range appears on the display. Each change to the working range is indicated by an acoustic signal. If the minimum radius is exceeded, this will be indicated by a long acoustic signal and the radius will change to the maximum level. You can set the minimum radius in the *Speed* submenu (see p. 42).

5.4 Storing, approaching and clearing positions

Positions can be stored, approached and cleared using the *Pos 1*, *Pos 2* and *Pos 3* position keys.

We recommend storing a working position and a parking position to secure the capillary when moving the petri dish, and then quickly returning to the working position afterwards. With some applications it may be useful to store three positions on the petri dish. You can set the speed at which the positions should be approached in the *Position* submenu (see p. 44).

5.4.1 Saving a position

- Press and hold down a position key to store the current position of the capillary with the 3 spatial coordinates.
  
  Save again to overwrite the previously stored positions.
5.4.2 Approaching a position

If a position is below the set Z limit, the position on the Z axis is only moved to the defined limit.

There are two ways of approaching a stored position.

With a position key

- Press a position key.
  
  The display indicates when the position has been reached.

With the joystick button

In the Speed submenu or in the position submenu, the 2x Click parameter must be set to Position. If the parameter is set to Fine/Xfine, you can toggle the speed mode by double-clicking on the joystick.

- Double-click on the joystick button. Each time you double-click on the button, the next stored position (maximum of three) is approached.

5.4.3 Clearing a position

1. Press the corresponding position key to approach the position.
2. When the position has been reached: press and hold down the same position key.
   This clears the position.

You can also clear positions with the Standby (reset function) key or with the ClearAll function in the Position (see p. 44) submenu or by saving a new position.
5.5 Z limit
To protect the capillary and the preparation against damage during contact with the petri dish, and for specific work techniques, a Z limit can be defined.

**Defining the Z limit**
1. Use the joystick to move the capillary to a position slightly above the bottom of the petri dish.

2. Press the Limit key to set the Z limit.
   The defined Z limit is shown on the display. The capillary cannot be moved any lower.

**Deleting the Z limit**
3. To delete the Z limit, press the "Limit" key again.

5.6 Home function
The Home function is intended for changing capillaries, or for the quick removal of capillaries out of the working range.

You can enable or disable the Home function in the Home submenu, as well as set additional parameters (see Home on p. 43).

- Press and hold down the Home key until the Home function is triggered.
  The capillary moves axially out of the working range up to the technically maximum possible distance. During the movement, Home appears in the display and the LED of the Home key flashes. When the end position has been reached, the LED of the Home key stays lit constantly.

- Press the Home key again or move the joystick to move the capillary back into the working range. This ends the Home function.

- If the Clean function is disabled, you only need to briefly press the Home key to trigger the Home function.

- If in the Home submenu the BackMan parameter is set to OFF, the Home function cannot be ended by joystick movement (see p. 43).
5.7 Clean function

The Clean function is used to clean capillaries. When "Clean" is triggered, the capillary is moved out of the working range by a freely definable distance (can be set in the Home submenu in the Distance parameter). As the capillary moves out of the medium, cell particles adhering to the medium boundary layer are removed from the capillary.

You can enable or disable the Clean function in the Home submenu, as well as set additional parameters (see Home on p. 43).

![Home key]

- The movement can be aborted by pressing the Standby key.

- Briefly press the Home key to trigger the Clean function.
  - The capillary moves axially out of the working range. During the movement, CLEAN appears in the display and the LED of the Home key flashes. When the end position has been reached, the LED of the Home key continues to flash.
  - Press the Home key again or move the joystick to move the capillary back into the working range. This ends the Clean function.

![Home key]

- If in the Home submenu the BackMan parameter is set to OFF, the Clean function cannot be ended by joystick movement (see p. 43).

5.8 Setting multi-user operation

You can set up to four different user profiles. Individual parameters can be set for each user profile. Installation parameters apply to all users and become effective for all users when changed. If multi-user operation is active, the following display appears during power-on:

```
Select User
User: 2
Turn speed to select
Press Home to cont.
```

Enabling the user profile

- In the Install (see p. 45) submenu in the MultiUser parameter set the number of desired user profiles.
  - If you have set more than one user, you will have to select the user’s number during device power-on.
Disable user profile

- In the Install submenu in the MultUser parameter, reduce the number of user profiles to 1. Only user 1 is authorized to reset the number of users to 1.

> The parameter settings are not lost when user profiles are disabled. If you increase the value of the MultUser parameter again, the user profiles with the parameters will be available again.

Deleting user profiles

- Trigger a general reset to delete all the user profiles (see p. 48).

5.9 PC control of the TransferMan NK2

You can control the TransferMan NK2 by means of a terminal program remotely via PC. PC control is only recommended for highly specialized applications and is not described in this operating manual. A special operating manual for this functionality is available at the following Internet address: www.eppendorf.com.

> Eppendorf does not provide any support for controlling the TransferMan NK2 via PC.
6 Function menu

6.1 Menu structure

The menu can be used to call different submenus (Submenu) and change parameters. The selected menu item is framed by a cursor (► ▼).

The start screen of the menu displays the submenus (Submenu) on the left side and the parameters of the selected submenu on the right side. The figure shows the Speed submenu.

```
►Speed ◄ –Submenu –
Home Coarse
Position Fine
Install Xfine
Function PosSpeed
          HomSpeed
          2x click
```

The following submenus are available:

<table>
<thead>
<tr>
<th>Submenu</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPEED</td>
<td>Includes all speed parameters</td>
</tr>
<tr>
<td>Home</td>
<td>Includes all the parameters relevant to the Home and Clean functions</td>
</tr>
<tr>
<td>Position</td>
<td>Includes all the parameters associated with the Position function</td>
</tr>
<tr>
<td>Install</td>
<td>Includes all the parameters required for basic setup, such as during installation</td>
</tr>
<tr>
<td>Function</td>
<td>Includes specific functions required for tests or special setups</td>
</tr>
</tbody>
</table>
6.2 Navigating in the menu
The joystick or the keypad can be used to navigate around the menu.

6.2.1 Navigation using the keypad

<table>
<thead>
<tr>
<th>Pos1</th>
<th>Pos3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left</td>
<td>Right</td>
</tr>
<tr>
<td>Turn wheel backwards up</td>
<td>Turn wheel forwards down</td>
</tr>
<tr>
<td>Pos2</td>
<td>Confirm</td>
</tr>
</tbody>
</table>
6.2.2 Example

If a submenu or a parameter is only visible by scrolling, it appears in the screenshots separated by a dashed line.

1. Open menu
   - Press the Menu key.

   The menu appears. The left hand column of the display lists the main menu options. The currently selected main menu option is framed by a cursor (► ◄). The right hand column lists the submenus (Submenu) associated with the selected main menu option. The right hand column changes accordingly when a new main menu option is selected. You can exit the menu at any time with the Menu key.

2. Select main menu item
   - Turn the turn wheel to select a main menu item.

3. Open submenu
   - Press the Pos 3 key to open a submenu (Submenu).

   The left hand column contains the available parameters and the right hand column contains the associated values or setting options.
4. Select parameters
   - Turn the turn wheel to select the parameter to be changed.

5. Select parameter value
   - Press the Pos 3 key to select the value of the parameter to be changed.

6. Change parameter value
   - Turn the turn wheel to change the value of the parameter.

7. Save set value
   - Press the Pos 2 key to save the set value.
   The cursor returns to the column of parameters. You can also change additional parameters if necessary.
8. Back to main menu item

- Press the Pos 1 key to return to the main menu items.

9. Exit menu

- Press the Menu key to exit the menu and to return to the working range.

6.2.3 Navigating with the joystick

- Move the joystick to mid-position before opening the menu.
- Menu control via the joystick (MenuJoy) can be switched on or off (see p. 45).

Move joystick to the left

- One level to the left.

Press the joystick button

- Save changes.

Move joystick to the right

- One level to the right.

Turn joystick upper part

- Scroll up and down.
6.3 Submenus

6.3.1 Speed

All parameters in the "Speed" submenus are user-dependent.

<table>
<thead>
<tr>
<th>--Submenu Speed --</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse 12500μm</td>
</tr>
<tr>
<td>Fine 500μm</td>
</tr>
<tr>
<td>Xfine 0μm</td>
</tr>
<tr>
<td>PosSpeed 1500μm/s</td>
</tr>
<tr>
<td>HomSpeed 7500μm/s</td>
</tr>
<tr>
<td>2x click Position</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coarse</th>
<th>Working range with coarse manipulation. Adjustable from 12 500 μm to 5 μm in 5 μm increments.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine</td>
<td>Working range with fine manipulation. Adjustable from 2 000 μm to 5 μm in 5 μm increments.</td>
</tr>
</tbody>
</table>
| Xfine | Working range with extra fine manipulation. Adjustable from 600 μm to 1 μm in 1 μm increments.  
Setting 0 μm = working range Xfine not activated. |
| PosSpeed | Speed of movement to stored position. Adjustable from 7 500 μm/s to 5 μm/s in 5 μm/s increments. |
| HomSpeed | Speed of Home and Clean movement. Adjustable from 7 500 μm/s to 5 μm/s in 5 μm/s increments |
| 2x Click | Double-click function setting for the joystick button. This parameter can be set from both the "Speed" and Position submenus.  
Setting options: Position / Fine/Xfine  
Position: By double-clicking on the button, the next stored position is approached.  
Fine/Xfine: A double-click toggles between the Fine and Xfine working ranges. To enable this function, a value > 0 μm must be set in the Xfine parameter. |
6.3.2 Home
All parameters in the "Home" submenu are user-dependent.

---Submenu Home---

<table>
<thead>
<tr>
<th>HomSpeed</th>
<th>Sets the speed for the Home and Clean movement. Adjustable from 7500 μm/s to 5 μm/s in 5 μm/s increments.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offset</td>
<td>Sets the height of the position to which the capillary is to move on completion of the Home movement. Adjustable from 0 μm to 2000 μm in 5 μm increments. The Offset position is on the Z axis above the start point.</td>
</tr>
<tr>
<td>Home</td>
<td>Switches the Home function on (ON) or off (OFF) (see p. 34).</td>
</tr>
<tr>
<td>Clean</td>
<td>Switches the Clean function on (ON) or off (OFF) (see p. 34).</td>
</tr>
<tr>
<td>Distance</td>
<td>Sets the distance to be used for the Clean function. Only operative when the Clean function is enabled. Adjustable from 0 μm to 15000 μm in 5 μm increments.</td>
</tr>
<tr>
<td>BackMan</td>
<td>ON: The Home position can be left manually by moving the joystick. OFF: The Home position can only be left with the Home or Standby (reset function) key.</td>
</tr>
</tbody>
</table>

---Submenu Home---
### 6.3.3 Position

<table>
<thead>
<tr>
<th>Submenu</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PosSpeed</td>
<td>Sets the speed at which the stored positions should be approached. Adjustable from 7 500 μm/s to 5 μm/s in 5 μm/s increments.</td>
</tr>
<tr>
<td>ClearAll</td>
<td>Executing this function (Execute) clears all the stored positions.</td>
</tr>
<tr>
<td>2x click</td>
<td>Double-click function setting for the joystick button. This parameter can be set from both the Speed and Position submenus. Setting options: Position / Fine/Xfine Position: By double-clicking on the button, the next stored position is approached. Fine/Xfine: A double-click toggles between the Fine and Xfine working ranges. To enable this function, a value &gt; 0 μm must be set in the Xfine parameter.</td>
</tr>
</tbody>
</table>

---

**To enable this function, a value > 0 μm must be set in the Xfine parameter.**
6.3.4 Install
The installation parameters set at the factory for the TransferMan NK2 are right (RIGHT), vertical (UP) and 0°. When using a default installation you only need to set the mounting side if the motor module is to be mounted on the left side of the microscope (LEFT).

```
--Submenu Install --
Side     RIGHT
Direction Up
Angle 0°
LCDLight ON
Beep ON
MenuJoy ON
MultiUser 1
Z Factor 100
Invert Y OFF
```

1 From this point the following data is only visible by scrolling

<table>
<thead>
<tr>
<th>Side</th>
<th>Specifies on which side of microscope the module unit is mounted on. Setting options: RIGHT or LEFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direction</td>
<td>Indicates how the two-axis modules is mounted. Default value: Vertical (UP) The setting automatically changes the value for the Angle parameter. Check both parameters! For horizontal (FLAT) different components are required, as well as a different mode of mounting (see Accessories on p. 54). Setting options: Horizontal (FLAT) or vertical (UP).</td>
</tr>
<tr>
<td>Angle</td>
<td>Angle at which the one-axis module is mounted to the plane of the microscope table. Changing the Direction parameter changes the value of the Angle parameter. Check both parameters! Only the setting 0° is possible for vertical mounting (UP).</td>
</tr>
<tr>
<td>LCDLight</td>
<td>Switches the display illumination on or off. Setting options: ON / OFF</td>
</tr>
<tr>
<td>Beep</td>
<td>Switches the speaker on or off. Setting options: ON / OFF</td>
</tr>
<tr>
<td>MenuJoy</td>
<td>Switches menu navigation with the joystick on or off. Alternatively, the keys can be used for navigation in both cases. Setting options: ON / OFF</td>
</tr>
<tr>
<td>MultiUser</td>
<td>Sets multi-user operation (see p. 35). Setting options: 1 - 4</td>
</tr>
<tr>
<td>Z Factor</td>
<td>Adapts the interaction between the movement performed by the joystick and the rotation of the joystick upper part. The higher the set value, the greater the speed in Z direction. Setting options: 50 % - 500 % in 50 % increments</td>
</tr>
</tbody>
</table>
6.3.5 Function

The Function submenu does not allow parameters to be set; it is only possible to call preset functions. Any functions that have been called inadvertently can be aborted with the Standby key.

<table>
<thead>
<tr>
<th>--Submenu</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>▼ZeroCord ▼</td>
<td>Execute</td>
</tr>
<tr>
<td>CentrMot</td>
<td>Execute</td>
</tr>
<tr>
<td>Selftest</td>
<td>Execute</td>
</tr>
<tr>
<td>MotorOff</td>
<td>Execute</td>
</tr>
<tr>
<td>UsrDeflt</td>
<td>Execute</td>
</tr>
</tbody>
</table>

---

**CAUTION! Splintering capillary and damage to capillary holder when triggering the CentrMot and Selftest functions.**

The motors are moved when the CentrMot and Selftest functions are triggered. As a result, the capillary may splinter, causing glass splinters to flying around.

- Remove the capillary and universal capillary holder before triggering the functions.
- Exit the function with the Menu key.
- Abort the function with the Standby key.

---

<table>
<thead>
<tr>
<th>ZeroCord</th>
<th>This function sets the coordinates of the X, Y and Z axes to zero.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CentrMot</td>
<td>This function sets the motors to mid-position. Can be used to install a capillary (see p. 28).</td>
</tr>
<tr>
<td>Selftest</td>
<td>This function triggers a self-test. An error message is issued if an error is detected.</td>
</tr>
<tr>
<td>MotorOff</td>
<td>This function switches off the motors. The motors can then no longer be operated.</td>
</tr>
<tr>
<td>UsrDeflt</td>
<td>This function resets the user parameters to defaults (user default).</td>
</tr>
</tbody>
</table>
## 7 Troubleshooting

### 7.1 General errors

<table>
<thead>
<tr>
<th>Symptom/message</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor axes move in wrong direction or do not match joystick movement.</td>
<td>• Motor module mounted incorrectly.</td>
<td>▶ Check whether the installation parameters match the structure of the motor module.</td>
</tr>
<tr>
<td></td>
<td>• Incorrect installation parameters entered.</td>
<td></td>
</tr>
<tr>
<td>Parameters are not accessible for certain operations.</td>
<td></td>
<td>▶ Enter parameters again.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▶ Perform general reset (see p. 48).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▶ Readjust device.</td>
</tr>
<tr>
<td>Device does not respond to keystroke when Home function is active.</td>
<td></td>
<td>▶ Press the <strong>Home</strong> key again.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▶ The capillary moves down.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▶ Move the joystick.</td>
</tr>
<tr>
<td>Capillary does not move down far enough.</td>
<td>• The <strong>Limit</strong> function is active.</td>
<td>▶ Disable the <strong>Limit</strong> function.</td>
</tr>
<tr>
<td></td>
<td>• Capillary is incorrectly adjusted.</td>
<td>▶ Readjust the capillary.</td>
</tr>
<tr>
<td>Capillary moves to the side when the joystick is moved forwards or backwards (Y axis).</td>
<td>The <strong>Y off</strong> function is active.</td>
<td>▶ Disable the <strong>Y off</strong> function.</td>
</tr>
<tr>
<td>The display does not show anything or the device cannot be activated although the device is connected.</td>
<td>• The power cable or the power plug is loose.</td>
<td>▶ Check the power cable or the power plug.</td>
</tr>
<tr>
<td></td>
<td>• Power supply is defective.</td>
<td>▶ If the power supply is defective: contact Technical Service.</td>
</tr>
<tr>
<td>Capillary wobbles.</td>
<td>• Orange fixing screw missing or is slack.</td>
<td>▶ Tighten the orange fixing screw on the one-axis module.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8 Maintenance

8.1 Perform reset

8.1.1 Reset
The **Standby** function is also a reset function.

- Press the **Standby** key to switch the device to standby mode.

8.1.2 General reset
The general reset function resets the device to its delivery defaults. All the parameters, including the installation parameters and the number of users, are reset to the defaults set at the factory.

1. Press the **Standby** key to switch the device to standby.
2. Press the **Standby** key and then immediately press and release the **Home** key.
   - The device runs through the initialization phase.

8.2 Software version polling
The software version is shown on the display during the power-on routine. Alternatively, the software version can be indicated acoustically. It is output in 3 signal sequences, with the digit 0 represented as 10. To set the acoustic output, proceed as follows:

- Press the **Standby** key to switch the device to standby.
- Press the **Standby** key and then immediately press the **Y off** key.
  - The device runs through the initialization phase and the acoustic output begins.
8.3 Cleaning

DANGER! Electric shock as a result of penetration of liquid.

- Switch off the device and disconnect it from the power supply before starting cleaning or disinfecting work.
- Do not allow any liquids to penetrate the inside of the housing.
- Do not complete a spray disinfection on the housing.
- Only reconnect the device to the power supply once it is completely dry.

NOTICE! Damage from the use of aggressive chemicals.

- Do not use any aggressive chemicals on the device or its accessories, such as strong and weak bases, strong acids, acetone, formaldehyde, halogenated hydrocarbons or phenol.
- If the device becomes contaminated with aggressive chemicals, clean it immediately with a mild cleaning agent.

1. Wipe the painted parts and the aluminum surfaces with a cloth and mild detergent.
2. Wipe with a dry cloth afterwards.

8.4 Disinfection/decontamination

Choose the disinfection method which corresponds to the legal regulations and guidelines in place for your range of application.

If you have any further questions regarding the cleaning and disinfection or decontamination, or regarding the cleaning fluid to be used, contact Eppendorf*AG Application*Support. The relevant contact details are provided on the back of this operating manual.

1. Disinfect/decontaminate all parts of the device, accessories and cable. Use an alcohol-based disinfectant, e.g., isopropanol or ethanol.
## Technical data

### 9.1 Power supply

<table>
<thead>
<tr>
<th>Power supply</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>120 – 240 V AC; 50 – 60 Hz</td>
</tr>
<tr>
<td>Output</td>
<td>15 – 18 V DC; 25 W</td>
</tr>
<tr>
<td>Power consumption</td>
<td>&lt; 50 W</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control panel</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Power connection</td>
<td>15 – 18 V DC</td>
</tr>
<tr>
<td>Power consumption</td>
<td>25 W</td>
</tr>
<tr>
<td>Protection class</td>
<td>II</td>
</tr>
<tr>
<td>Overvoltage category</td>
<td>II (IEC 61010-1)</td>
</tr>
</tbody>
</table>

### 9.2 Ambient conditions

<table>
<thead>
<tr>
<th>Environment</th>
<th>For indoor use only.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
<td>max. 40 °C</td>
</tr>
<tr>
<td>Max. relative humidity</td>
<td>max. 80 %</td>
</tr>
<tr>
<td>Degree of pollution</td>
<td>2 (IEC 664)</td>
</tr>
</tbody>
</table>
9.3 **Weight/dimensions**

### Dimensions

<table>
<thead>
<tr>
<th>Component</th>
<th>Width</th>
<th>Height</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control panel</td>
<td>270 mm</td>
<td>205 mm</td>
<td>160 mm</td>
</tr>
<tr>
<td>One-axis module</td>
<td>120 mm</td>
<td>60 mm</td>
<td>50 mm</td>
</tr>
<tr>
<td>Two-axis module</td>
<td>120 mm</td>
<td>100 mm</td>
<td>68 mm</td>
</tr>
</tbody>
</table>

### Weight

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control panel with power supply</td>
<td>2.7</td>
</tr>
<tr>
<td>Motor module with guide</td>
<td>1.4</td>
</tr>
</tbody>
</table>

9.4 **Application parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. movement per axis</td>
<td>&gt; 18 mm</td>
</tr>
<tr>
<td>Resolution per micro step</td>
<td>approx. 40 nm</td>
</tr>
<tr>
<td>Max. speed of capillary movement</td>
<td>7 500 μm/s</td>
</tr>
<tr>
<td>Max. load of the motor module</td>
<td>100 g</td>
</tr>
</tbody>
</table>

9.5 **Interfaces**

- Connection for foot control: SER2; SubD9, male
- Connection for motor module: SubD25, female
- Connection for PC: Serial interface; SER0; SubD9, male
## 10 Ordering Information

### 10.1 TransferMan NK2

<table>
<thead>
<tr>
<th>Order No. (North America)</th>
<th>Description</th>
</tr>
</thead>
</table>
| 920000011                | TransferMan NK 2  
Proportional micromanipulator for microinjection into suspension cells  
with mains/power plug USA/Canada |

### 10.2 Adapter for microscopes

<table>
<thead>
<tr>
<th>Order No. (North America)</th>
<th>Description</th>
</tr>
</thead>
</table>
| 920008500                | Adapter for microscope  
Leica DMIL/HC |
| 920008526                | Leica DMIRE 2  
Leica DMI-family |
| 920008534                | Nikon Diaphot / Diaphot TMD |
| 920008551                | Nikon Eclipse TS100 |
| 920008542                | Nikon Ti-E / -U / -S |
| 920008585                | Olympus IX 50/51/70/71/IX II 80/81 |
| 920008577                | Olympus IMT-2 |
| 920008569                | Olympus CK-30/CK-40 |
| 920008607                | Zeiss Axiovert 100/135/S100 |
| 920008593                | Zeiss Axiovert 10/35 |
| 920008615                | Zeiss Axiovert 200 / AxioObserver |
| 920008623                | Zeiss Axiovert 25, 25C/40C, 40CFL |
| 5181238005               | Zeiss Axio Vert.A1 |
| 5181234000               | Hund Wilovert 30 |
| 920008674                | X-Y extension plate  
For expanding the mounting possibilities |
| 920008631                | Universal stand |
| 960008666                | Spacer  
For the universal stand for large microscopes |
## 10.3 Capillaries

<table>
<thead>
<tr>
<th>Order No. (North America)</th>
<th>Description</th>
</tr>
</thead>
</table>
| 930001040 | **TransferTip (ES)**  
25 pieces, sterile |
| 930001104 | **Piezo Drill Tip (ES)**  
for transfer of ES cells into blastocysts  
25° angle, 6 mm rigid flange, 15 μm inner diameter, sterile, set of 25 |
| 930001091 | **Piezo Drill Tip**  
for mouse ICSI  
25° angle, 6 mm rigid flange, sterile, set of 25 |
10.4 Accessories

CAUTION! Poor safety due to incorrect accessories and spare parts.
The use of accessories and spare parts other than those recommended by Eppendorf may impair the safety, function and precision of the device. Eppendorf cannot be held liable or accept any liability for damage resulting from the use of incorrect or non-recommended accessories and spare parts or from the improper use of such equipment.

- Only use accessories and original spare parts recommended by Eppendorf.

<table>
<thead>
<tr>
<th>Order No. (North America)</th>
<th>Description</th>
</tr>
</thead>
</table>
| 920007392                 | **Universal capillary holder**  
For holding Femtotips, Femtotips II or grip heads  
Including grip head 0, adapter for Femtotips and spare O-rings |
| 920007414                 | **Grip head 0**  
For microcapillaries with an outer diameter of 1.0 mm to 1.1 mm, set of 2 |
| 920007708                 | **Grip head 1**  
For microcapillaries with an outer diameter of 1.2 mm to 1.3 mm, set of 2 |
| 920007716                 | **Grip head 2**  
For microcapillaries with an outer diameter of 1.4 mm to 1.5 mm, set of 2 |
| 920007406                 | **Grip head 3**  
For microcapillaries with an outer diameter of 0.7 mm to 0.9 mm, set of 2 |
| 920005870                 | **O-ring set**  
For grip heads 0-3 with removal tool |
| 920005888                 | **Service kit**  
For grip heads and capillary holder  
Consisting of O-ring set, adapter for Femtotips |
| 920005799                 | **Foot control** |
| 920005756                 | **Straight guide** |
| 920005837                 | **Data cable 5181**  
To connect a PC with 5181, 5183, 5188 |
| 920005781                 | **Service kit**  
Screws M3x8, M3x16, M4x10, M4x14, M5x16 and div. M4, M5, M8 |
| 920005764                 | **X head with angle adjustment**  
With 1x M3x12 screw |
| 920007767                 | **TwinTip-Holder**  
for TransferMan NK2 |
| 920005900                 | **10° adapter for TransferMan NK 2, PatchMan NP2** |
10.4.1 Microinjection and cell transfer

<table>
<thead>
<tr>
<th>Order No. (North America)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>920002030</td>
<td>CellTram Oil</td>
</tr>
<tr>
<td>920002111</td>
<td>CellTram vario</td>
</tr>
<tr>
<td>920002021</td>
<td>CellTram Air</td>
</tr>
</tbody>
</table>
11 Transport, storage and disposal

11.1 Storage

<table>
<thead>
<tr>
<th></th>
<th>Air temperature</th>
<th>Rel. humidity</th>
<th>Air pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>In transport packaging</td>
<td>-25 – 55 °C</td>
<td>10 – 95 %</td>
<td>70 – 106 kPa</td>
</tr>
<tr>
<td>Without transport packaging</td>
<td>-5 – 45 °C</td>
<td>10 – 95 %</td>
<td>70 – 106 kPa</td>
</tr>
</tbody>
</table>

11.2 Decontamination before shipment

If you are shipping the device to the authorized Technical Service for repairs or to your authorized dealer for disposal please note the following:

**WARNING! Risk to health from contaminated device**

1. Follow the instructions in the decontamination certificate. It is available in PDF format on our homepage (www.eppendorf.com/decontamination).
2. Decontaminate all the parts you want to dispatch.
3. Enclose the fully-completed decontamination certificate for returned goods (including the serial number of the device) with the dispatch.

11.3 Transport

**NOTICE! Damage to the joystick due to incorrect handling.**

- Never carry or pull the device by the joystick.
- Only use the housing to lift the device.
- Never place the device upside down on the joystick.
- To connect or disconnect the cables, lay the device on its side and secure it against tipping over.

<table>
<thead>
<tr>
<th></th>
<th>Air temperature</th>
<th>Rel. humidity</th>
<th>Atmospheric pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>General transportation</td>
<td>-25 – 60 °C</td>
<td>10 – 95 %</td>
<td>30 – 106 kPa</td>
</tr>
<tr>
<td>Air freight</td>
<td>-40 – 55 °C</td>
<td>10 – 95 %</td>
<td>30 – 106 kPa</td>
</tr>
</tbody>
</table>

Carry out the following steps before transport:

1. Dismantle the module unit before transport.
2. Attach the supplied transport securing devices according to the red supplement sheet.
3. Only use original packaging for transport.
11.4 Disposal
In case the product is to be disposed of, the relevant legal regulations are to be observed.

Information on the disposal of electrical and electronic devices in the European Community:
Within the European Community, the disposal of electrical devices is regulated by national regulations based on EU Directive 2002/96/EC pertaining to waste electrical and electronic equipment (WEEE).

According to these regulations, any devices supplied after August 13, 2005, in the business-to-business sphere, to which this product is assigned, may no longer be disposed of in municipal or domestic waste. To document this, they have been marked with the following identification:

![WEEE symbol]

Because disposal regulations may differ from one country to another within the EU, please contact your supplier if necessary.

In Germany, this is mandatory from March 23, 2006. From this date, the manufacturer has to offer a suitable method of return for all devices supplied after August 13, 2005. For all devices supplied before August 13, 2005, the last user is responsible for the correct disposal.
Evaluate your operating manual

www.eppendorf.com/manualfeedback