TransferMan® NK 2

Operating manual

eppendorf

5188 900.013-10/092012

Table of contents

1 User instructions

1.1 Using this manual

- Please read this operating manual completely before using the device for the first time.
- Please view this operating manual as part of the product and keep it somewhere easily accessible.
- When passing the device on to third parties, be sure to include this operating manual.
- If this manual is lost, please request another one. The current version can be found on our website www.eppendorf.com.

1.2 Warning signs and hazard icons

1.2.1 Hazard icons

	**Hazard point**		**Cuts**
	**Material damage**		

1.2.2 Degrees of danger

The degree of danger is a part of a safety note and distinguishes the possible results of non-observance from each other.

DANGER	*Will* lead to severe injuries or death.
WARNING	*May* lead to severe injuries or death.
CAUTION	May lead to light to moderate injuries.
NOTICE	May lead to material damage.

1.3 Symbols used

Depiction	Meaning
▸	You are requested to perform an action.
1. 2.	Perform these actions in the sequence described.
•	List.
Text	Terms and key names from the software.
	References useful information.

1.4 Abbreviations used

O.D. Outer diameter
I.D. Inner diameter

2 Product description

2.1 Features

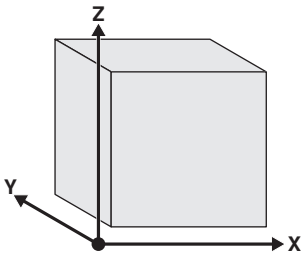
The TransferMan NK 2 has been especially developed for work processes that require the proportional movement of capillaries. Proportional movement is particularly suitable for intracytoplasmic sperm injection (ICSI), the transfer of embryonic stem cells (ES cells) into blastocysts and for other work techniques that require the intuitive control of capillary movements.

The TransferMan NK 2 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 NK 2 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).



Cartesian field of movement

2.3 Delivery package

Quantity	Order No. (International)	Order No. (North America)	Description
1	-	-	**TransferMan NK 2** See chapter *Ordering Information* for corresponding device version, equipment and order number
1	-	-	**Power cable** Compatible to the country where the order was placed or determined
1	-	-	**Power supply**
1	-	-	**Motor module**
1	-	-	**Valve hinge**
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	5181 150.043	920005764	**X head with angle adjustment** With 1x M3x12 screw
1	5171 130.001	920005829	**Positioning aids** for universal capillary holders 2 pieces
1	5188 900.013	920005276	**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.

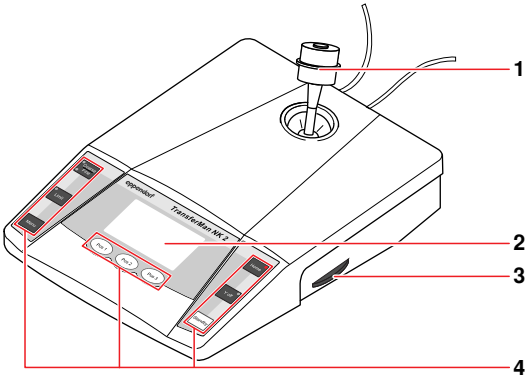


Fig. 1: Control panel

1 Joystick Moves the capillary on the X, Y and Z axes.	**2 Display** Shows the set parameters.
3 Turn wheel For increasing or reducing the working range.	**4 Keypad** For setting functions and parameters.

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.

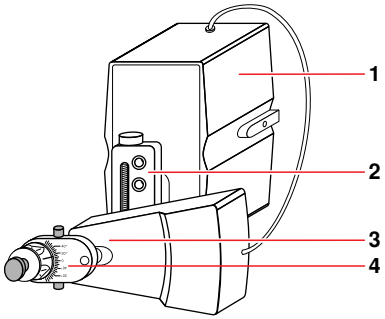


Fig. 2: Assembled motor module (right side mounted)

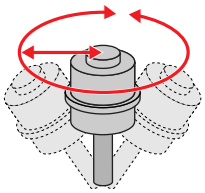
1 Two-axis module	**2 Straight guide**
3 One-axis module	**4 X head with angle adjuster**

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. 27).

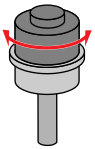
Movements on the X and Y axes



- 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

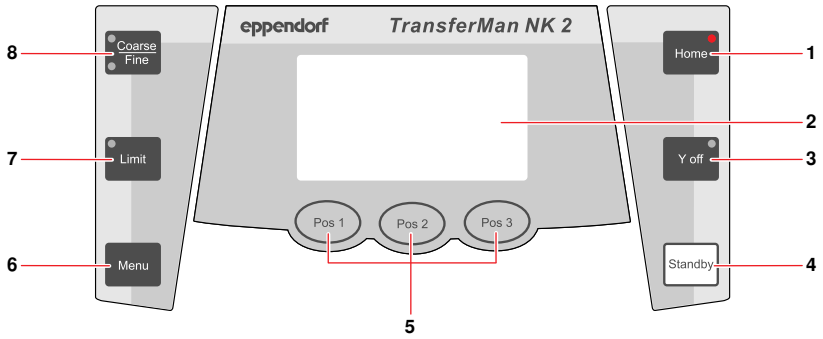


- Rotating the upper part of the joystick clockwise causes the capillary to move down.
- Rotating the upper part of the joystick counterclockwise causes the capillary to move up.

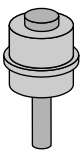
Overlaid movements in all three coordinate directions are possible.

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. 31).	**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. 44).
5 Position keys The position keys are used to store, clear or approach positions (see p. 29).	**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. 30). 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. 29). The selected size of the working range is indicated by the LED and the display.



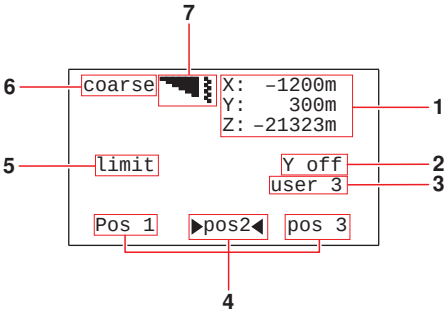
Joystick button

Used for moving the working range (see p. 28) and for approaching positions (see p. 29).

More information on handling the joystick can be found in the chapter "Joystick" (see p. 9).

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. 32).	**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. 27).
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 NK 2 has been designed and constructed for use in the field of intracytoplasmic sperm injection (ICSI) in conjunction with Eppendorf VacuTips and TransferTips. Therefore, the TransferMan NK 2 is a medical device within the meaning of Directive 93/42/EEC.

The TransferMan NK 2 is intended exclusively for indoor use and for operation by qualified staff.

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 protection provided by the device may be impaired. The liability for the function of the device passes to the operator if:

- The device is not used in accordance with the operating manual.
- The device is used outside of the range of application described in the preceding chapters.
- The owner has made unauthorized modifications 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.

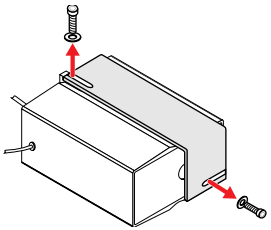
- Do not place the cable under tension.
- Only transport the motor module with the transport securing devices in the original packaging.
- Never transport the motor module in an assembled state.
- Never place the assembled motor module at an angle.

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

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

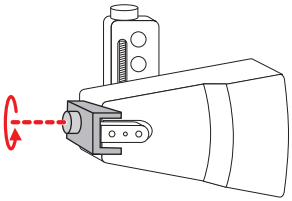
The packaging comprises two levels. The first level contains the accessories. The bottom level contains the motor module and the control panel.

1. Check that the standard accessories are present and complete (see *Delivery package* on p. 7).
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.



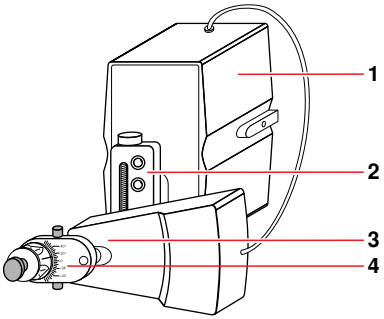
4. Slacken the orange fixing screw on the one-axis module. Remove the yellow transport securing device.

   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.



1 Two-axis module	**2 Straight guide**
3 One-axis module	**4 X head with angle adjuster**

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.

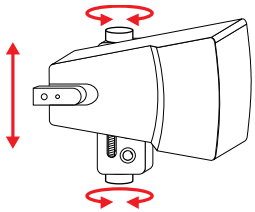
NOTICE! Damage to the motors due to incorrect assembly.

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

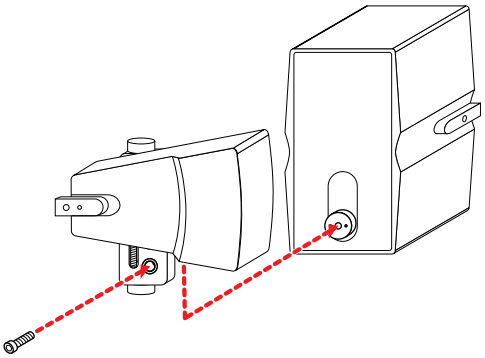
- Allow sufficient space when assembling the motor module.

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.

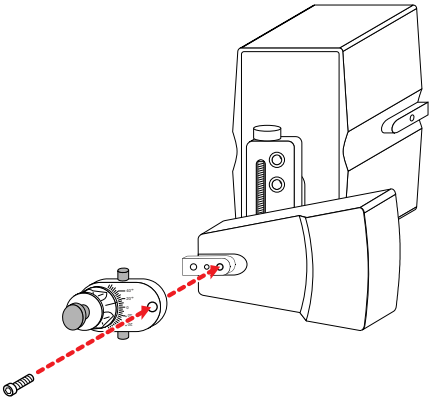


2. Fix the straight guide through the hole to the two-axis module with a M4x10 cheese head screw.



4.2.2 Installing the X head

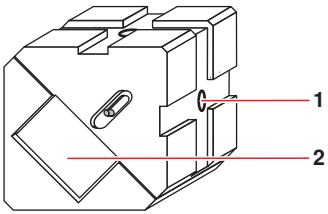
1. Place the X head with the hole on the tool holder of the one-axis module.
2. Insert the fitting pin into the hole provided.
3. Join the X head to the one-axis module with an M3x12 cheese head screw.



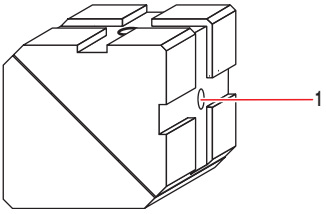
4.2.3 Mounting the hinged bracket

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.



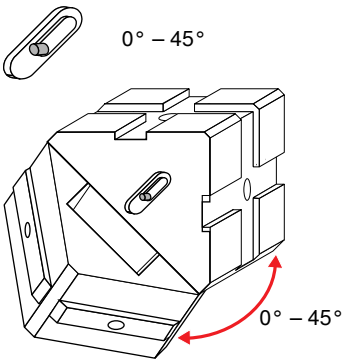
Alignment with left side mounting



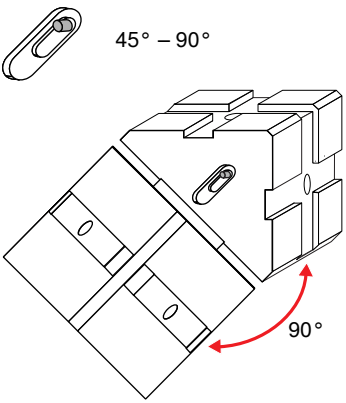
Alignment with right side mounting

1 Hole	**2 Hinge**

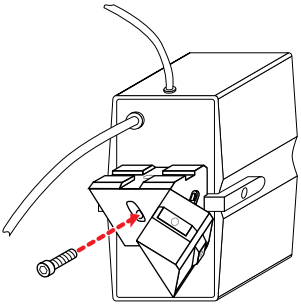
1. Opening the hinged bracket 0° - 45°.



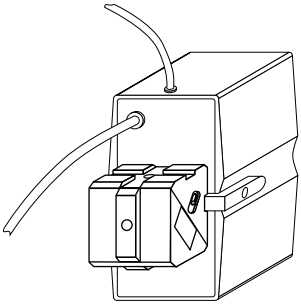
2. Opening the hinged bracket 45° - 90°. Push the pin on the hinge side up with a tool.
   The mounting holes on the motor module are then accessible.

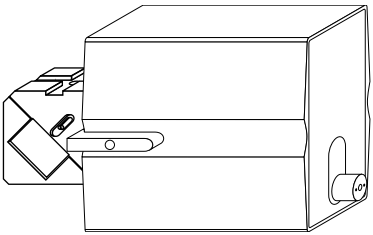


3. Join the hinged bracket to the motor module by its inner inclined surface by means of a M5x16 screw.



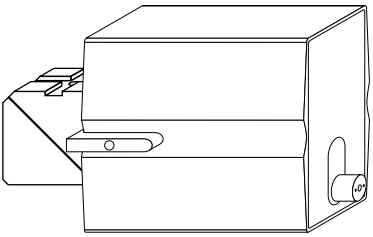
4. Close the hinged bracket.





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 (see *Adapter for microscopes* on p. 47). 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 (see p. 47).

We recommend the use of an inverse microscope.

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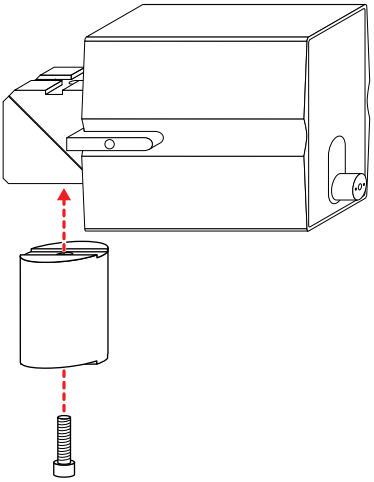
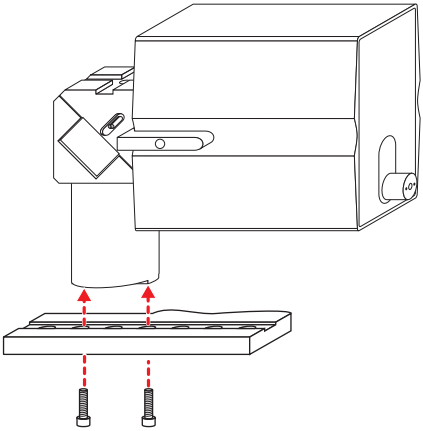
1. Join one of the two longer rollers of the adapter to the hinged bracket with the supplied M5x16 screw.

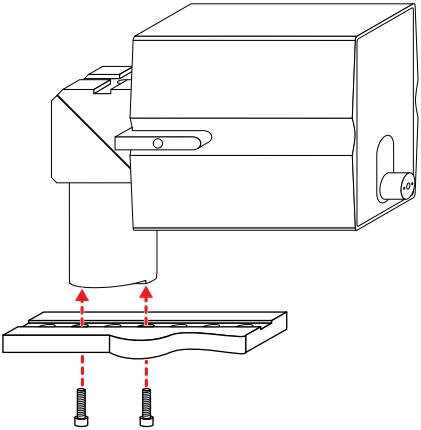


2. Join the adapter on the rear mounting position to the roller with two M5x16 screws from the adapter accessories.



Left side mounting

- **Side** = **LEFT**
- **Dirction** = **UP**
- **Angle** = **0°**



Right side mounting

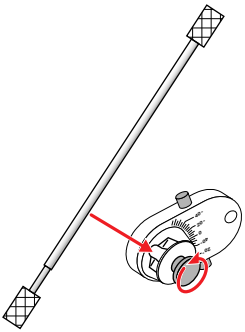
- **Side** = **RIGHT**
- **Dirction** = **UP**
- **Angle** = **0°**

3. After installation, call the **Install** submenu and set the **Side**, **Dirction** and **Angle** parameters according to the mode of mounting (see *Install* on p. 40).

4.3 Installing the capillary holder

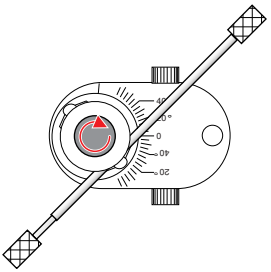
The X head can hold capillary holders with a diameter of 4 mm. We recommend the use of an Eppendorf universal capillary holder. This is included among the accessories for the FemtoJet or the CellTram or can be ordered as an option (see *Accessories* on p. 49).

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.



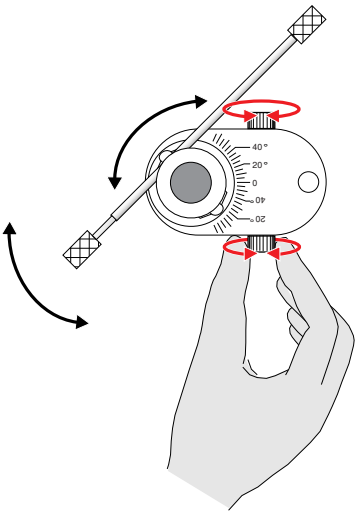
Optional: Mounting the positioning aid

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.

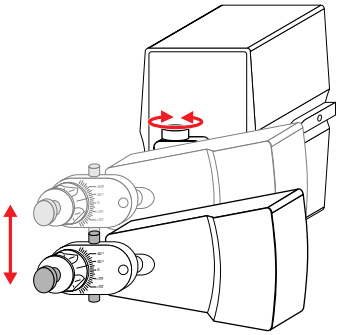
4.3.1 Setting the injection angle

- 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. 21).



3. Tighten the orange fixing screw.

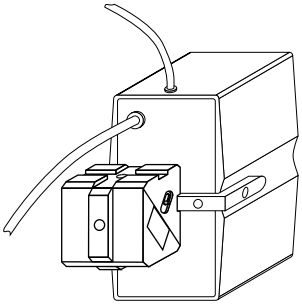
4.3.3 Changing the position of the motor module on the X axis

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:

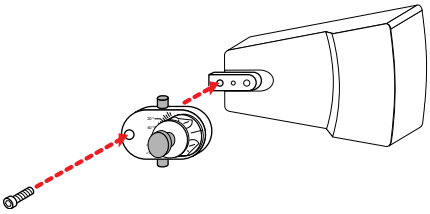
Changing the mounting point of the hinged bracket

- 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.

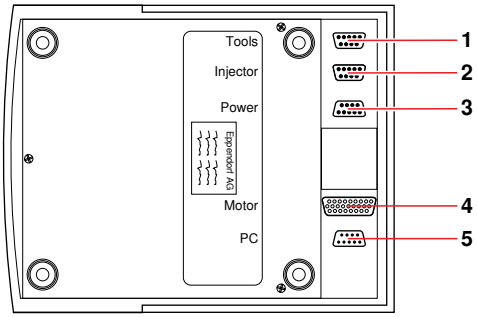


Fig. 3: Underside of the control panel

1 Connection for foot control For changing the position	**2 Connection has no function**
3 Connection for power supply	**4 Connection for motor module**
5 Connection for PC (RS232)	

For remote PC control of the TransferMan NK 2 you require the data cable 5181 150.094.

Requirement

- TransferMan NK 2 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 NK 2

- After installation, call the **Install** submenu and set the **Side**, **Direction** and **Angle** parameters according to the mode of mounting (see *Install* on p. 40).

5 Operation

If you switch on the TransferMan NK 2 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 NK 2 on and off

Switching the TransferMan NK 2 on

- Press the **Standby** key to switch the TransferMan NK 2 on.
  The device runs through an initialization phase.

If you have set a value in the **Install** submenu in the **MultUser** 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 NK 2 off

- Press the **Standby** key to switch the TransferMan NK 2 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. 44).

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.

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. 49).

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.

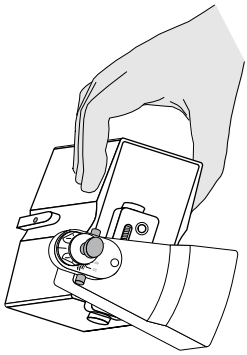
The **CentrMot** function simplifies the positioning of the capillary (see p. 42).

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

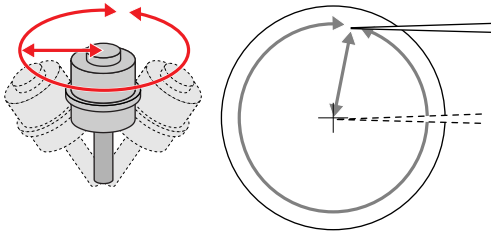
There are three preset working ranges:

- **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. 38). You can also set the working range with the turn wheel during operation (see p. 29).

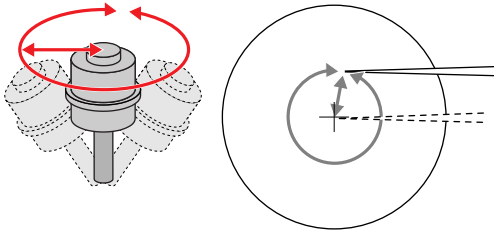
Coarse

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



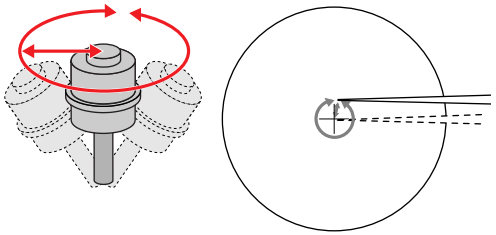
Fine

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



Xfine

In This working range enables very precise movements at low speed.

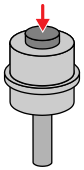


Before you can select the **Xfine** working range, you must set a value > 0 µm in the **Xfine** parameter in the **Speed** submenu (see p. 38).

5.3.1 Moving the working range

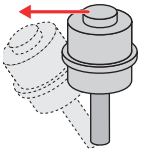
If the position of the working range is not correct, you can change the position of the joystick relative to the capillary as follows:

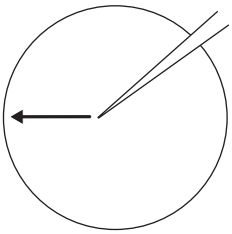
- Keeping the joystick button pressed, move the joystick to move the working range. The tool is not moved during the adjustment.



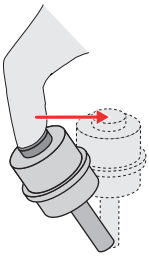
Example application

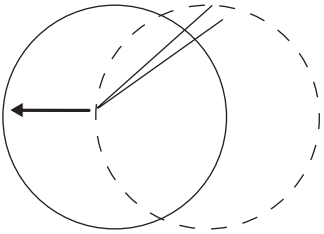
1. Move the capillary to the edge of the working range.





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.

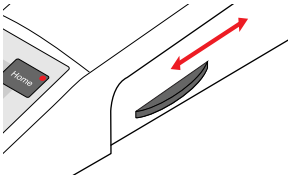
5.3.2 Setting the default values of the working ranges in the menu

- In the **Speed** submenu you can set the default values for the **Coarse**, **Fine** and **Xfine** (see p. 38) 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. 38).

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. 40).

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.

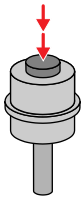
With a position key

- 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.

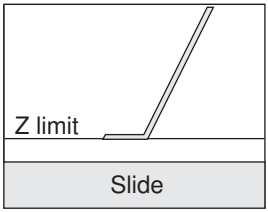
You can also clear positions with the **Standby** (reset function) key or with the **ClearAll** function in the **Position** (see p. 40) submenu or by saving a new position.

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. 39).

- 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. 39).

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. 39).

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

- Briefly press the **Home** key to trigger the **Clean** function.

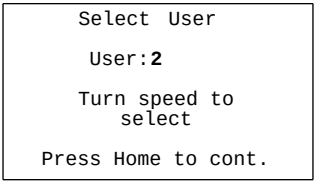
  

  The capillary moves axially out of the working range. During the movement, **CLEAN** appears in the display and the LED of the **Home** key flashes. When the end position has been reached, the LED of the **Home** key continues to flash.
- Press the **Home** key again or move the joystick to move the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

If in the **Home** submenu the **BackMan** parameter is set to **OFF**, the **Clean** function cannot be ended by joystick movement(see p. 39).

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:



Enabling the user profile

- In the **Install** (see p. 40) submenu in the **MultUser** 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. 44).

5.9 PC control of the TransferMan NK 2

You can control the TransferMan NK 2 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 NK 2 via PC.

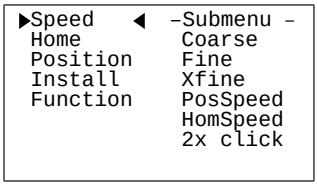
---

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.



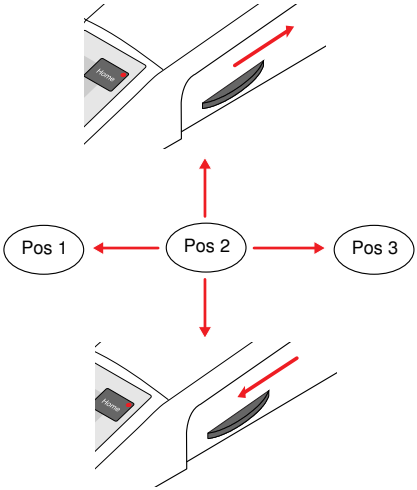
The following submenus are available:

Speed	Includes all speed parameters
Home	Includes all the parameters relevant to the **Home** and **Clean** functions
Position	Includes all the parameters associated with the **Position** function
Install	Includes all the parameters required for basic setup, such as during installation
Function	Includes specific functions required for tests or special setups

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



Pos1 Left	**Pos3** Right
Turn wheel backwards Up	Turn wheel forwards Down
Pos2 Save	

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

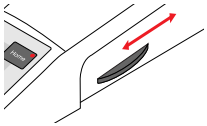
- Press the **Menu** key.

```
▶Speed◀      -Submenu  -
 Home         Coarse
 Position     Fine
 Install      Xfine
 Function     PosSpeed
              HomSpeed
              2x click
```

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.

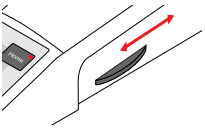
3. Open submenu

- 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.

```
--Submenu   Install --
▶Side     ◀   Right
 Dirction      Flat
 Angle         45°
 LCDLight      ON
 Beeper        ON
 MenuJoy       ON
 MultUser      1
 ----------------------
 Z Factor      100
 Invert Y      OFF
```

4. Select parameters



- Turn the turn wheel to select the parameter to be changed.

```
--Submenu   Install --
 Side          Right
▶Dirction◀     Flat
 Angle         45°
 LCDLight      ON
 Beeper        ON
 MenuJoy       ON
 MultUser      1
 ----------------------
 Z Factor      100
 Invert Y      OFF
```

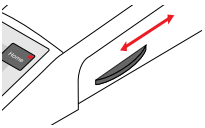
5. Select parameter value

Pos 3

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

```
--Submenu   Install --
 Side          Right
 Dirction    ▶Flat    ◀
 Angle         45°
 LCDLight      ON
 Beeper        ON
 MenuJoy       ON
 MultUser      1
 ----------------------
 Z Factor      100
 Invert Y      OFF
```

6. Change parameter value



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

```
--Submenu   Install --
 Side          Right
 Dirction    ▶Up      ◀
 Angle         0°
 LCDLight      ON
 Beeper        ON
 MenuJoy       ON
 MultUser      1
 ----------------------
 Z Factor      100
 Invert Y      OFF
```

7. Save set value

Pos 2

- 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.

```
--Submenu   Install --
 Side          Right
▶Dirction◀     Up
 Angle         0°
 LCDLight      ON
 Beeper        ON
 MenuJoy       ON
 MultUser      1
 ----------------------
 Z Factor      100
 Invert Y      OFF
```

8. Back to main menu item

Pos 1

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

```
 Speed           -Submenu  -
 Home             Side
 Position         Dirction
▶Install ◀        Angle
 Function         LCDLight
                  Beeper
                  MenuJoy
                  MultUser
```

9. Exit menu

Menu

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

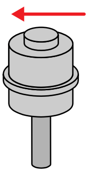
```
coarse        X:   -1200µm
              Y:     300µm
              Z:  -21323µm
```

6.2.3 Navigating with the joystick

Move the joystick to mid-position before opening the menu.

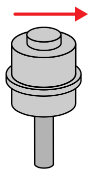
Menu control via the joystick (**MenuJoy**) can be switched on or off (see p. 40).

Move joystick to the left



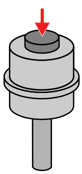
- One level to the left.

Move joystick to the right



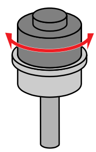
- One level to the right.

Press the joystick button



- Save changes.

Turn joystick upper part

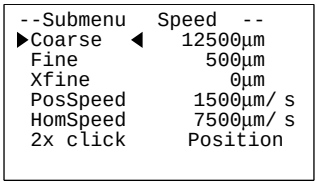


- Scroll up and down.

6.3 Submenus

6.3.1 Speed

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



Coarse	Working range with coarse manipulation. Adjustable from 12 500 µm to 5 µm in 5 µm increments.
Fine	Working range with fine manipulation. Adjustable from 2 000 µm to 5 µm in 5 µm increments.
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 ti 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.

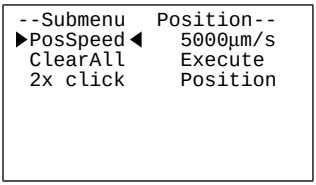
6.3.2 Home

All parameters in the **Home** submenu are user-dependent.

```
--Submenu   Home  --
▶HomSpeed◀    7500µm/s
 Offset       2000µm
 Home         ON
 Clean        OFF
 Distance     3000µm
 BackMan      ON
```

HomSpeed	Sets the speed for the **Home** and **Clean** movement. Adjustable from 7 500 µm/s ti 5 µm/s in 5 µm/s increments.
Offset	Sets the height of the position to which the capillary is to move on completion of the **Home** movement. Adjustable from 0 µm to 2 000 µm in 5 µm increments. The **Offset** position is on the Z axis above the start point.
Home	Switches the **Home** function on (**ON**) or off (**OFF**) (see p. 31).
Clean	Switches the **Clean** function on (**ON**) or off (**OFF**) (see p. 31).
Distance	Sets the distance to be used for the **Clean** function. Only operative when the **Clean** function is enabled. Adjustable from 0 µm to 15 000 µm in 5 µm increments.
BackMan	**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.

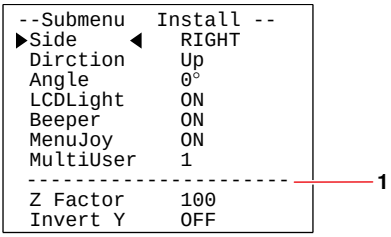
6.3.3 Position



PosSpeed	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.
ClearAll	Executing this function (**Execute**) clears all the stored positions.
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.

6.3.4 Install

The installation parameters set at the factory for the TransferMan NK 2 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**).

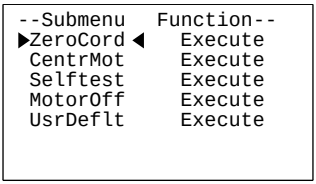


1	From this point the following data is only visible by scrolling

Side	Specifies on which side of microscope the module unit is mounted on. Setting options: **RIGHT** or **LEFT**
Direction	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. 49). Setting options: Horizontal (**FLAT**) or vertical (**UP**).
Angle	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**).
LCDLight	Switches the display illumination on or off. Setting options: **ON** / **OFF**
Beeper	Switches the speaker on or off. Setting options: **ON** / **OFF**
MenuJoy	Switches menu navigation with the joystick on or off. Alternatively, the keys can be used for navigation in both cases. Setting options: **ON** / **OFF**
MultUser	Sets multi-user operation (see p. 32). Setting options: **1** - **4**
Z Factor	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
Invert Y	The **Invert Y** parameter inverts the movement direction of the Y axis. This is useful for microscopes that show a mirrored image, e.g., upright microscopes. Setting options: **ON** / **OFF** **OFF**: The movement of the capillary corresponds to the movements performed on the joystick. **ON**: The movement of the capillary does not correspond to the movements performed on the joystick. The parameters are user-independent.

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.



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.

ZeroCord	This function sets the coordinates of the X, Y and Z axes to zero.
CentrMot	This function sets the motors to mid-position. Can be used to install a capillary (see p. 25).
Selftest	This function triggers a self-test. An error message is issued if an error is detected.
MotorOff	This function switches off the motors. The motors can then no longer be operated.
UsrDeflt	This function resets the user parameters to defaults (user default).

7 Troubleshooting

7.1 General errors

Symptom / message	Cause	Remedy
Motor axes move in wrong direction or do not match joystick movement.	• Motor module mounted incorrectly. • Incorrect installation parameters entered.	▸ Check whether the installation parameters match the structure of the motor module.
Parameters are not accessible for certain operations.	-	▸ Enter parameters again. ▸ Perform general reset (see p. 44). ▸ Readjust device.
Device does not respond to keystroke when **Home** function is active.	-	▸ Press the **Home** key again. The capillary moves down. ▸ Move the joystick.
Capillary does not move down far enough.	• The **Limit** function is active. • Capillary is incorrectly adjusted.	▸ Disable the **Limit** function. ▸ Readjust the capillary.
Capillary moves to the side when the joystick is moved forwards or backwards (Y axis).	The **Y off** function is active.	▸ Disable the **Y off** function.
The display does not show anything or the device cannot be activated although the device is connected.	• The power cable or the power plug is loose. • Power supply is defective.	▸ Check the power cable or the power plug. ▸ If the power supply is defective: contact Technical Service.
Capillary wobbles.	• Orange fixing screw missing or is slack.	▸ Tighten the orange fixing screw on the one-axis module.

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 to switch the device on again 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. Perform cleaning before disinfection/decontamination (see p. 44).
2. Wipe all parts of the device, including the accessories and the connecting cable, with a disinfectant containing alcohol (isopropanol, spirit).

9 Technical data

9.1 Power supply

Power supply	
Input:	120 - 240 V AC; 50 - 60 Hz
Output:	15 - 18 V DC; 25 W
Power consumption:	< 50 W

Control panel	
Power connection:	15 - 18 V DC
Power consumption:	25 W
Protection class:	II
Overvoltage category:	II (IEC 61010-1)

9.2 Ambient conditions

Environment:	For indoor use only.
Ambient temperature:	max. 40 °C
Max. relative humidity:	max. 80%
Degree of pollution:	2 (IEC 664)

9.3 Weight / dimensions

Dimensions	
Control panel:	Width: 270 mm Height: 205 mm Depth: 160 mm
One-axis module	Width: 120 mm Height: 60 mm Depth: 50 mm
Two-axis module:	Width: 120 mm Height: 100 mm Depth: 68 mm

Weight	
Control panel with power supply:	2.7 kg
Motor module with guide:	1.4 kg

9.4 Application parameters

Max. movement per axis:	> 18 mm
Resolution per micro step:	approx. 40 nm
Max. speed of capillary movement:	7 500 µm/s
Max. load of the motor module	100 g

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 NK 2

Order No. (International)	Order No. (North America)	Description
		TransferMan NK 2 Proportional micromanipulator for microinjection into suspension cells
5188 000.012	5188000012	Power plug EU
5188 000.020	920000011	Power plug USA / Canada
5188 000.039	5188000039	Power plug UK / Hong Kong
5188 000.047	5188000047	Power plug Japan
5188 000.071	5188000071	Power plug Australia
5188 000.080	5188000080	Power plug China

10.2 Adapter for microscopes

Order No. (International)	Order No. (North America)	Description
		Adapter for microscope
5181 201.004	920008500	Leica DMIL/HC
5181 202.000	920008526	Leica DMIRE 2
5181 203.007	920008486	Leica DMI-family
5181 210.003	920008534	Nikon Diaphot / Diaphot TMD
5181 212.006	920008551	Nikon Eclipse TS100
5181 214.009	920008542	Nikon Ti-E / -U / -S
5181 220.009	920008585	Olympus IX 50/51/70/71/IX II 80/81
5181 221.005	920008577	Olympus IMT-2
5181 222.001	920008569	Olympus CK-30/CK-40
5181 230.004	920008607	Zeiss Axiovert 100/135
5181 233.003	920008593	Zeiss Axiovert 10/35
5181 235.006	920008615	Zeiss Axiovert 200 / AxioObserver
5181 237.009	920008623	Zeiss Axiovert 25, 25C/40C, 40CFL
5181 234.000	5181234000	Hund Wilovert 30
		X-Y extension plate
5181 236.002	920008674	For expanding the mounting possibilities
5181 250.005	920008631	**Universal stand**
		Spacer
5181 255.007	960008666	For the universal stand for large microscopes

10.3 Capillaries

Various capillaries for sperm injection and the containment of cells are available. VacuTips have been optimized for holding suspension cells (e.g., oocytes or blastocysts). TransferTips have been especially developed for transferring sperm in ICSI applications.

Microcapillary	Technical data
VacuTip Microcapillary for holding suspension cells.	• Sterile • 15 µm inner diameter • 100 µm outer diameter • 35° capillary angle • 1 mm flange
TransferTip RP (ICSI) Microcapillary for injecting human sperm (ICSI).	• Sterile • 4 µm inner diameter • 7 µm outer diameter • 35° capillary angle • Rigid 0.5 mm parallel flange
TransferTip F (ICSI) Microcapillary for injecting human sperm (ICSI).	• Sterile • 4 µm inner diameter • 7 µm outer diameter • 35° capillary angle • Flexible 0.4 mm flange
TransferTip R (ICSI) Microcapillary for injecting human sperm (ICSI).	• Sterile • 4 µm inner diameter • 7 µm outer diameter • 35° capillary angle • Rigid 1 mm flange

Order No. (International)	Order No. (North America)	Description
5175 108.000	930001015	**VacuTip** 25 pieces, sterile
5175 114.000	930001074	**TransferTip-RP (ICSI)** 25 pieces, sterile
5175 106.008	930001031	**TransferTip-F (ICSI)** 25 pieces, sterile
5175 113.004	930001066	**TransferTip-R (ICSI)** 25 pieces, sterile

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.

Order No. (International)	Order No. (North America)	Description
5176 190.002	920007392	**Universal capillary holder** For holding Femtotips, Femtotips II or grip heads; including grip head 0, adapter for Femtotips and spare O-rings
5176 210.003	920007414	**Grip head 0** For microcapillaries with an outer diameter of 1.0 mm to 1.1 mm, 2 pieces
5176 212.006	920007708	**Grip head 1** For microcapillaries with an outer diameter of 1.2 mm to 1.3 mm, 2 pieces
5176 214.009	920007716	**Grip head 2** For microcapillaries with an outer diameter of 1.4 mm to 1.5 mm, 2 pieces
5176 207.002	920007406	**Grip head 3** For microcapillaries with an outer diameter of 0.7 mm to 0.9 mm, 2 pieces
5176 196.000	920005870	**O-ring set** For grip heads 0-3 with removal tool
5176 195.004	920005888	**Service kit** For grip heads and capillary holder Consisting of O-ring set, adapter for Femtotips
5181 150.051	920005799	**Foot control**
5181 150.035	920005756	**Straight guide**
5181 150.094	920005837	**Data cable 5181** To connect a PC with 5181, 5183, 5188
5181 150.310	920005781	**Service kit** Screws M3x8, M3x16, M4x10, M4x14, M5x16 and div. M4, M5, M8
5181 150.043	920005764	**X head with angle adjustment** With 1x M3x12 screw
5188 200.011	920007767	**TwinTip-Holder** for TransferMan NK2
5188 110.004	920005900	**10° adapter for TransferMan NK 2, PatchMan NP2**

10.4.1 Microinjection and cell transfer

Order No. (International)	Order No. (North America)	Description
5176 000.025	920002030	**CellTram Oil**
5176 000.033	920002111	**CellTram vario**
5176 000.017	920002021	**CellTram Air**

11 Transport, storage and disposal

11.1 Storage

	Air temperature	Rel. humidity	Air pressure
In transport packaging	-25 to 55 °C	10 to 95%	70 to 106 kPa
Without transport packaging	-5 to 45 °C	10 to 95%	70 to 106 kPa

11.2 Decontamination before shipping

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.

	Air temperature	Rel. humidity	Atmospheric pressure
General transportation	-25 to 60 °C	10 to 95%	30 to 106 kPa
Air freight	-40 to 55 °C	10 to 95%	30 to 106 kPa

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

Always observe the statutory requirements when disposing of the product.

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, to the business-to-business area this product is assigned to, may no longer be disposed of in municipal or household waste. To document this, they have been marked with the following identification:

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 from August 13, 2005. For all devices supplied before August 13, 2005, the last user is responsible for the correct disposal.

EG-Konformitätserklärung
EC Conformity Declaration

Das bezeichnete Produkt entspricht den einschlägigen grundlegenden Anforderungen der aufgeführten EG-Richtlinien und Normen. Bei einer nicht mit uns abgestimmten Änderung des Produktes oder einer nicht bestimmungsgemäßen Anwendung verliert diese Erklärung ihre Gültigkeit.

The product named below fulfills the relevant fundamental requirements of the EC directives and standards listed. In the case of unauthorized modifications to the product or an unintended use this declaration becomes invalid.

Produktbezeichnung, Product name:

TransferMan® NK 2 5188

Produkttyp, Product type:

elektromotorisch getriebener Mikromanipulator / electric motor driven micromanipulator

Einschlägige EG-Richtlinien/Normen, Relevant EC directives/standards:

2006/95/EG, EN 61010-1

2004/108/EG, EN 55011/B, EN 61000-6-1, EN 61000-6-3, EN 61326-2-6

93/42/EWG, EN 980, EN 1041, EN 14971, EN 62304, EN 62366

Klassifizierung / classification 93/42/EWG: I

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27.03.2012

Hamburg, Date:

ISO CERTIFIED 9001

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