



# MAESTRA



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## SAFETY RECOMMENDATIONS

- The physician defines the protocol and ensures that it is correctly implemented (adjustments, session time and frequency of use).
- We recommend that you lock the hand control when you give it to the patient.
- For optimum safety, always give the hand control to the patient before starting the system.
- Explosion hazard: KINETEC Maestra is not designed for use in the presence of flammable anesthetics.
- Check that the electrical socket is in good condition and is suitable for the splint power supply cord. The latter complies with current standards and has a grounding socket. The plug may be connected to any standard socket. The socket must however have a grounded pin. To connect the power supply, only use the original cable supplied with the machine. Check that the cables remain free around the device so that they do not get damaged.

Manuel N°467896276 - Update 03/08/11

## Definition

The KINETEC Maestra is used for passive mobilization of the hand and wrist and permits a wide range of possible joint movements for:

- The forearm
- The wrist
- The thumb
- The long fingers

## • Indications

- Flexor and extensor tenolysis.
- Aponeurectomies for Dupuytren disease.
- Metacarpophangeal arthrolysis.
- Open reduction and internal fixation of intra-articular, diaphyseal, metaphyseal and epiphyseal fractures of the phalanges.
- Prosthetic replacement of the MCP, PIP and DIP joints.
- Rheumatoidal/neurological or after-burn stiffness.
- Capsulotomies, arthrolysis and tenolysis for post-traumatic stiffness of MCP, PIP and SIP joints.
- Synovectomies.

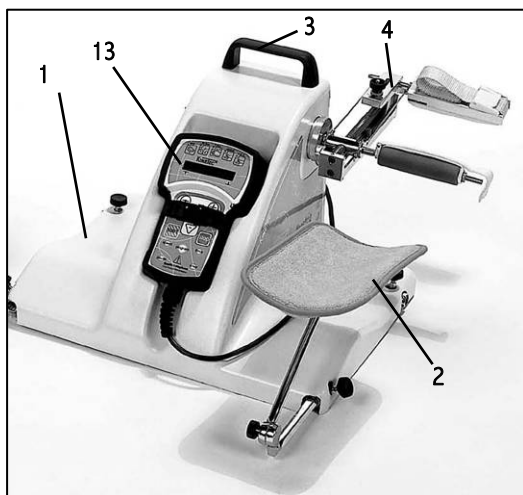
## • Clinical Benefits

- Breaks the cycle of trauma, inflammation and the loss of range of motion.
- Prevents joint stiffness.
- Speeds the recovery of post-operative range of motion.
- Maintains the quality of the joint surface.
- Reduces pain and edema.
- Promotes joint cartilage healing.
- Reduces hospitalization time
- Reduces the need for pain medication.
- Provides immediate post-operative continuous passive motion.
- Digital ROM readout on the patient hand control for positive reinforcement.
- Maintains desired positions for stretching and muscular rest

## • Contraindications

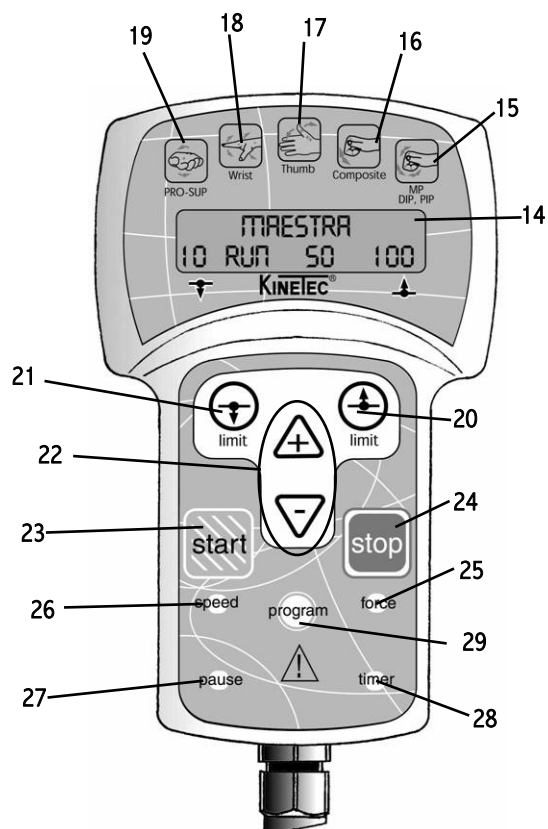
Bone Cancer, Warped joint surfaces, Spastic paralyses, Unstable fractures, Uncontrolled infection.

The KINETEC Maestra is a portable machine, single unit device that can be used on a table. It consists of the following components:



- 1 • Casing encloses the motor and the power PCB.
- 2 • Forearm support.
- 3 • Transport handle.
- 4 • Driving mechanism

- 5 • Case
- 6 • Wrist mobilization accessories.
- 7 • Thumb mobilization accessories.
- 8 • Long fingers mobilization accessories.
- 9 • Spare parts.
- 10 • Miscellaneous textiles.
- 11 • Ulnar deviation mobilization accessories
- 12 • Power supply cable transport position.



- 13 • Hand control
- 14 • Liquid-crystal display (2 lines of 16 characters).
- 15 • Selective movement of long fingers key.
- 16 • Complete fist key.
- 17 • Thumb opposition key.
- 18 • Wrist key.
- 19 • Pronation / supination key.
- 20 • Upper limits setting.
- 21 • Lower limits setting,
- 22 • Increase / decrease keys.
- 23 • START key.
- 24 • STOP key.
- 25 • FORCE key.
- 26 • SPEED key.
- 27 • PAUSE key.
- 28 • TIMER key.
- 29 • PROGRAM access key.

The physician defines the protocol and ensures that it is correctly implemented (adjustments, session duration and frequency of use).

The patient must know the start/stop/reverse function on the control handle. Hand control must be accessible to patient at all times. (See page 5).

KINETEC Maestra complies with Directive 93/42/CEE.

**EXPLOSION HAZARD:**  
KINETEC Maestra is not designed for use in the presence of flammable anaesthetics.

In case of electromagnetic interference with other devices move the device.

KINETEC Maestra is in compliance with standards in force (IEC 601.1.2), electromagnetic compatibility standard for medical devices.

Please, do not touch the moving parts while the unit is running, pinching risk.

## Electrical Connection

KINETEC Maestra is a type B class I device.

Before connecting the device to the power supply, check that the mains voltage matches that shown on the identification plate (100-240 V~ 50-60Hz).

Connect the hand control (1)

Connect the power supply cable (2).

### IMPORTANT

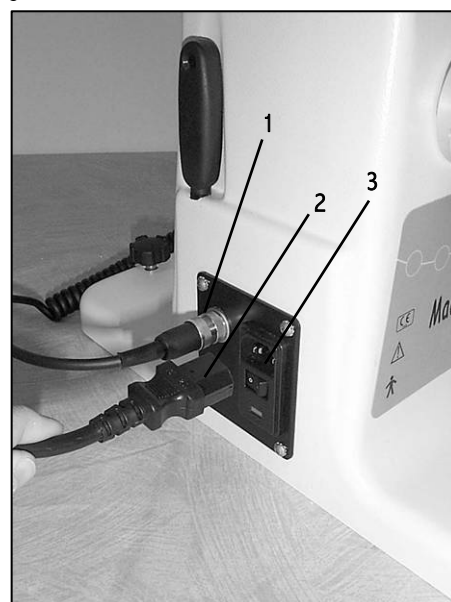
Check that the electrical socket is in good condition and is suitable for the splint power supply cord. The latter complies with current standards and has a grounding socket.

The plug may be connected to any standard socket.

The socket must however have a grounded pin.

To connect the power supply, only use the original cable supplied with the machine.

Check that the cables remain free around the device so that they do not get damaged.



## Starting the unit


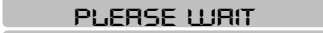








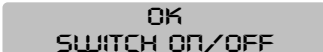
Switch on (3).

While the unit begins an auto diagnostic, the display shows the following



Your KINETEC Maestra is ready to be used.

## Select your language

Beginning	Keys to press	Display	Remarks
Switch the unit ON		  	Check if the hand control is not locked (See page 5).
Press the 2 keys in the same time	 		The display indicate the language selected.
To change the language	 or 		The English language is selected.  English French German Italian Spanish
To validate the new language.			To exit and confirm the new language, switch OFF and Switch ON the unit.

## Locking the hand control setting

The hand control allows the patient to control the machine as appropriate.



Simultaneously press the  and  keys to lock the hand control,

The display reads "LOCK", you can not change the parameters, if you try the display reads "LOCK".

To unlock the hand control, simultaneously press the  and  keys, The display reads "UNLOCK".


**We recommend that you lock the hand control when you give it to the patient.**


Comment: The hand control is unlocked when you switch the unit ON/OFF.

## START/STOP/REVERSE function

As with all KINETEC systems, KINETEC Maestra is equipped with a START/STOP/REVERSE function.

When the unit is running, the display reads RUN

Press the  key of the hand control. The movement stops. The display reads STOP.


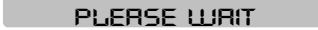










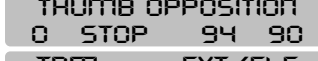
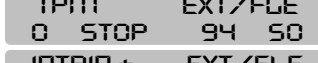

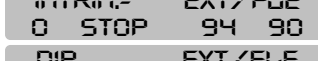





Press the  key of the hand control. The movement starts in the opposite direction and the display reads RUN.

**Caution:**






**For optimum safety, always give the hand control to the patient before starting the system.**

## Quick Start






Set up the patient and proceed as below:

Beginning	Keys to press	Display	Remarks
Switch the unit ON		  	Check if the hand control is not locked (See page 5).
To choose the movement	    	        	The display shows the new movement selected and the default settings of the upper and lower limits of this movement.  Successive presses on the keys  or  allows to select different movements.
Start the session with the original parameters of the movement (default setting).			The value change at the speed of the movement.






















## Possible values for each parameter:

		1 <sup>st</sup> press		2 <sup>nd</sup> press	3 <sup>rd</sup> press			1 <sup>st</sup> press		2 <sup>nd</sup> press	3 <sup>rd</sup> press
• Lower limit	-90°	-50°	-50°	-30°	0°	180°	225°	0°	0°	0°	0°
• Upper limit	90°	90°	140°	60°	180°	225°	90°	180°	70°	70°	70°
• Speed	1 to 9 (from 150° to 440° per minute)										
• Force	1 to 6										
• Extension Pause	0 to 900 seconds (15 minutes)										
• Flexion Pause	0 to 900 seconds (15 minutes)										
• Timer	No timer (00H00) to 24H00										

## Default setting values for each parameter

		1 <sup>st</sup> press		2 <sup>nd</sup> press	3 <sup>rd</sup> press			1 <sup>st</sup> press		2 <sup>nd</sup> press	3 <sup>rd</sup> press
• Lower limit	-10°	-20°	0°	0°	0°	90°	0°	0°	0°	0°	0°
• Upper limit	10°	20°	60°	40°	90°	50°	40°	90°	40°	40°	40°
• Speed	2										
• Force	6										
• Extension Pause	0										
• Flexion Pause	0										
• Timer	0										

How to adjust the basic parameters of the movement?

Beginning	Keys to press	Display	Remarks
To stop the unit		PRONA/SUPINATION -10 STOP 5 10	Check if the hand control is not locked (See page 5).
To choose the movement	     	PRONA/SUPINATION -10 STOP 5 10 WRIST EXT/FLEX -20 STOP 94 20 WRIST+MP EXT/FLE 0 STOP 94 60 ULNAR DEV.ADD/AB 0 STOP 94 40 THUMB OPPOSITION 0 STOP 94 90 TPM EXT/FLE 0 STOP 94 50 INTRIN.+ EXT/FLE 0 STOP 94 40 INTRIN.- EXT/FLE 0 STOP 94 90 DIP EXT/FLE 0 STOP 94 40	The display shows the new movement selected and the default settings of the upper and lower limits of this movement.  Successive presses on the keys  or  allows to select different movements.
To display the extension or flexion limit of the movement	 or 	DIP EXT/FLE 0 EXT 94 40 DIP EXT/FLE 20 FLEX 94 40	The value blinks.
To change the limit if necessary	 Or 	DIP EXT/FLE 20 FLEX 15 70	The new value blinks.
To validate the new value, press another key or wait more than 3 seconds.	  	DIP EXT/FLE SPEED 2 LOAD  NO TIMER	While the value blinks press the  or  key to change if necessary.
Or Or to display pause in extension or flexion limit		DIP EXT/FLE PAUSE HIGH 0 PAUSE LOW 0	Successive presses on this key selects the pause at the extension or flexion limit.
To change the pause if necessary	 or 	DIP EXT/FLE PAUSE LOW 15	The new pause value blinks.
To validate the new value press another key or wait more than 3 seconds. The display shows the selected mode.		DIP EXT/FLE 20 STOP 94 70	The unit is ready to start with the new parameters.

Comments:

- The values shown in the 'Display' column are examples.



How to modify programs PROGRAM MODE

Beginning	Keys to press	Display	Remarks
<b>To switch off the unit</b>			
Press the two keys at the same time and switch the unit ON			
Then		KINETEC MAESTRA VO1.0	Welcome text during 3 seconds.
		PROGRAM 2 EMPTY	The program number blinks.
To change the program if necessary	or	PROGRAM 10 EMPTY	The new program number blinks.
To choose the movement	    	PRONA/SUPINATION -10 PRG NR 10 10 WRIST EXT/FLEX -20 PRG NR 10 20 WRIST+MP EXT/FLE 0 PRG NR 10 60 ULNAR DEV.ADD/AB 0 PRG NR 10 40 THUMB OPPOSITION 0 PRG NR 10 90 TPM EXT/FLE 0 PRG NR 10 50 INTRIN.+ EXT/FLE 0 PRG NR 10 40 INTRIN.- EXT/FLE 0 PRG NR 10 90 DIP EXT/FLE 0 PRG NR 10 40	The display shows the new movement selected. Successive presses on the keys  or  allows to select different movements..
To display the extension or flexion limit of the movement	or	DIP EXT/FLE 0 PRG NR 10 40 DIP EXT/FLE 20 PRG NR 10 40	The value blinks.
To change the limit of movement if necessary	or	DIP EXT/FLE 20 PRG NR 10 70	The new value blinks.
To validate the new value, press another key or wait more than 3 seconds	   	DIP EXT/FLE SPEED: 2 LOAD : NO TIMER PAUSE LOW 0	While the value blinks press the  or  key to change if necessary.
To record the program 10		DIP EXT/FLE SAVE:+ CLEAR:-	
Then		PROGRAM 10 SAVING PROGRAM 11 EMPTY	The program 10 has been recorded and the display indicates the next program so you can change another program.
OR To cancel the program		PROGRAM 10 CLEARING PROGRAM 11 EMPTY	The program 10 has been cancelled and the display indicates the next program so you can change another program.
To exit program mode, switch OFF and switch ON the unit.		KINETEC MAESTRA VO1.0	To use the modified program see page 10.

Comments:

- When a program has been deleted, the display shows

PROGRAM 11  
EMPTY

Program table:

Program number	Movement type	Lower limit	Upper Limit	Speed	Force	Pause on upper limit	Pause on lower limit	Timer
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								



The KINETEC Maestra allows you to store up to 16 programs, including the type of movement, ROM, speed, load, pauses and timer.

The original parameter values of the program are empty.

These values can be modified and recorded at any time (see 'How to enter a program' page 10).

Beginning	Keys to press	Display	Remarks
To Stop the Unit		PRONA/SUPINATION -10 STOP 5 10	Check if the hand control is not locked (See page 5).
To access the program mode		WRIST EXT/FLEX -30 PRG NR 2 30	The program number blinks.
To change the program if necessary	or	THUMB OPPOSITION 0 PRG NR 5 30	The new program number blinks.
To exit and validate the selected program		THUMB OPPOSITION 0 STOP 10 30	The current parameters have been recorded in program 3.
To exit without validation of selected program		PRONA/SUPINATION -10 STOP 5 10	Back to the starting parameters.
Start the unit		THUMB OPPOSITION 0 STOP 20 30	The value change at the speed of the movement.

### Reading the values of a program: example SPEED

Beginning	Keys to press	Display	Remarks
To Stop the Unit		WRIST EXT/FLEX 25 STOP 20 90	Check if the hand control is not locked (See page 5).
To access the program mode		PRONA/SUPINATION -10 PRG NR 4 30	The program number blinks.
To change the program if necessary	or	THUMB OPPOSITION 0 PRG NR 3 50	To change the program if necessary.
To read the speed value		THUMB OPPOSITION SPEED : 2	Displays the speed value.
After 5 seconds or after pressing on another key		WRIST EXT/FLEX 25 STOP 20 90	
To exit and validate the selected program		THUMB OPPOSITION 0 STOP 20 50	The current parameters have been recorded in program 3.
Start the unit		THUMB OPPOSITION 0 RUN 20 50	The value change at the speed of the movement.

#### Comments:


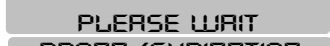











- The values shown in the 'Display' column are examples. They actually depend on the stored programs.
- The current movement parameters can be changed while using that program but no data will be stored in the original program. See the programming mode (p 8) to modify programs.

How to define the upper and lower movement limits?

• At the start of a session

The MANUAL MODE is a way to set within the tolerance of a patient at the beginning of a session.








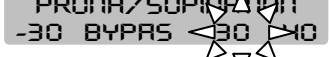

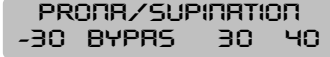
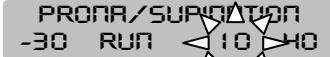
Set up the patient and proceed as below:

Beginning	Keys to press	Display	Remarks
Switch the unit on		  	Check if the hand control is not locked (See page 5).
To select the MANUAL MODE for upper limits by continually holding pressure on the key	continuous press 		The unit is moving to the upper limit of the movement.
To set the pain level when reached, immediately press	 limit		The new upper value limit of the movement is recorded.
To select the manual mode for lower limits	continuous press 		The unit is moving to the lower limit of the movement
To set the pain level when reached, immediately press	 limit		The new lower value limit of the movement is recorded.
To start the session with the new movement limits	 start		The angle display changes with current movement.

• During the session

This function, The BY-PASS MODE is a way to address the pain threshold of a patient during a session.

**IMPORTANT: Can be used only when the machine RUN.**

Beginning	Keys to press	Display	Remarks
The unit is running	 start		Check if the hand control is not locked (See page 5).
To select the BY-PASS MODE	continuous press 		The unit exceeds the recorded upper limit.
To set the new pain level when reached, immediately press	 limit		The new upper value limit of the movement is recorded.
To select the BY-PASS mode for lower limits	continuous press 		The unit is moving to the lower limit of the movement.
To set the new pain level when reached, immediately press	 limit		The new lower value limit of the movement is recorded.
Continue the session with the new movement limits.			The angle display changes with current movement.

**Comments:**

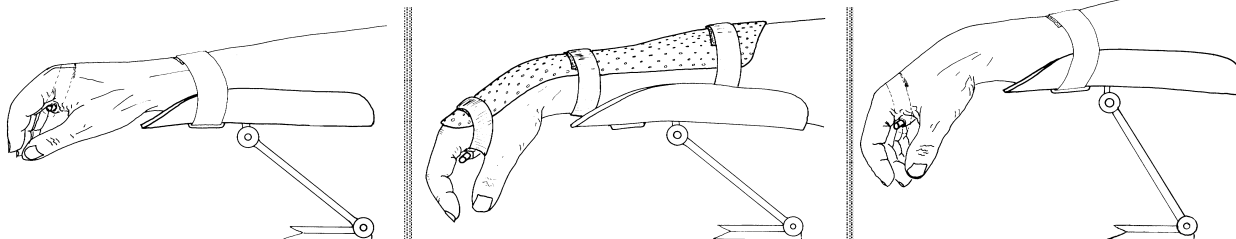
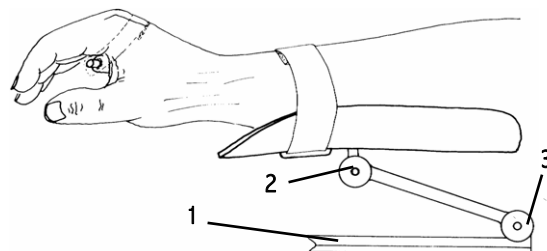
- The values shown in the 'Display' column are examples.

### Setting up the forearm support

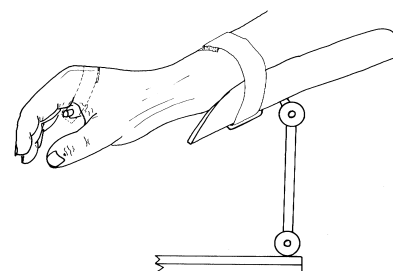
The forearm support should be attached on the RIGHT for the LEFT Hand on the LEFT for the RIGHT Hand. For Pronation-supination of the wrist, the support should be attached to the base directly IN FRONT of the motor axis.

The support is set on a telescopic rod (1) which has two notched joints (2 and 3). These joints enable placement of the wrist in any of following positions:

- Dorsal flexion,
- ZERO position,
- Palmer flexion



The joints also permit the forearm support to be tilted up or down. However, if this is done, the angle of tilt should be taken into account when setting the range of motion on the display.



### Setting up the driving mechanism

The driving mechanism should be attached to the motor axis.

In order to facilitate the setting up of the driving mechanism, use the intrinsic + movement and to stop the unit at 0°.

LEFT Hand

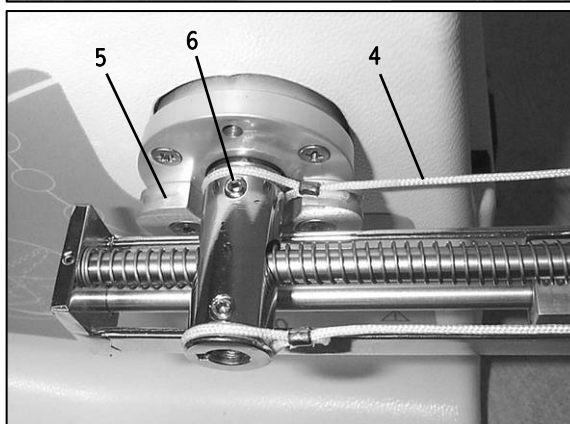


RIGHT hand



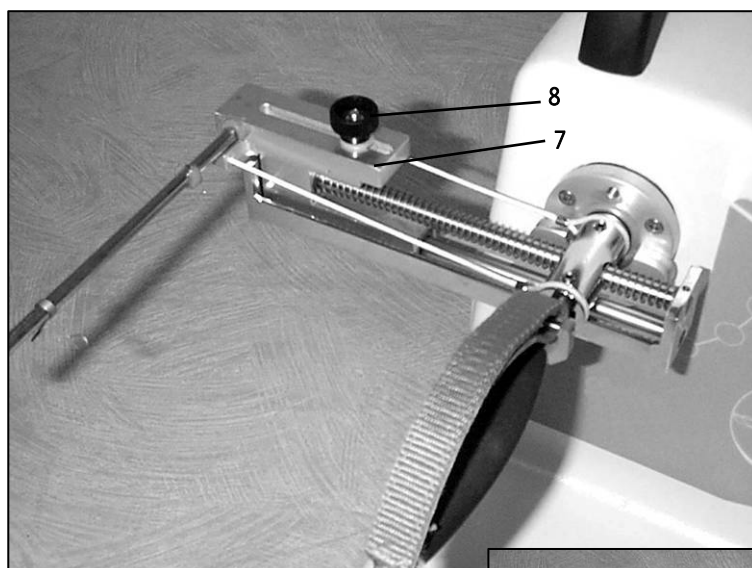
**CAUTION**

Make sure that when the driving mechanism is inserted on the motor axis, the cable (4) is ABOVE the groove of the cam (5). The driving mechanism should then be locked in place by tightening the screw (6) with the Allen key included in the accessory case.

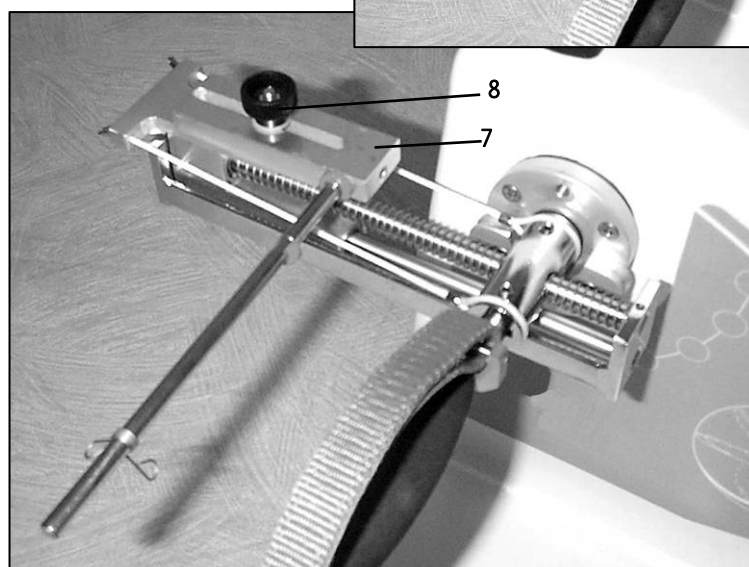
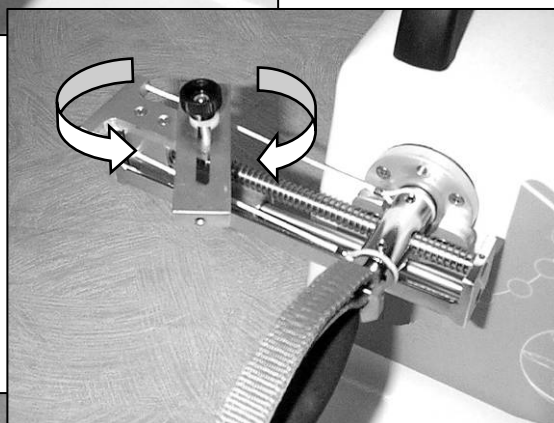


## Adjusting the length finger

To better fit individual hand lengths and polar radii depending on the fingers or thumb to be mobilized the guide will be oriented as follows by unscrewing the nut (8) and lifting the guide (7), in position (A) or in position (B).



Guide in position A




Guide in position B

### Pronation / Supination

The KINETEC Maestra provides a motion from 90° of pronation to 90° of supination



- Choice of the Pronation / Supination movement:

- Press  and adjust your parameters (see page 7).


- Or select a program  (see page 10).

### Extension / Flexion of the wrist

The KINETEC Maestra provides a motion from -50° to 90°.



- Choice of the 1<sup>st</sup> movement of the wrist:

- Press  and adjust your parameters (see page 7).



- Or select a program  (see page 10).

## Extension / Flexion of the wrist and the MP joints of the fingers

The KINETEC Maestra provides a motion from  $-50^{\circ}$  to  $140^{\circ}$ .



- Choice of the 2<sup>nd</sup> movement of the wrist:



- Press 2 times  and adjust your parameters (see page 7).
- Or select a program  (see page 10).

## Ulnar deviation

The KINETEC Maestra provides a motion from  $-30^{\circ}$  to  $60^{\circ}$ .



- Choice of the 3<sup>rd</sup> movement of the wrist:

- Press 3 times  and adjust your parameters (see page 7).
- Or select a program  (see page 10).



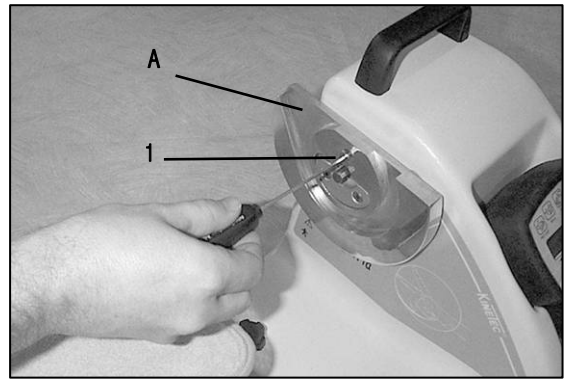
## Possible movements

### Thumb opposition

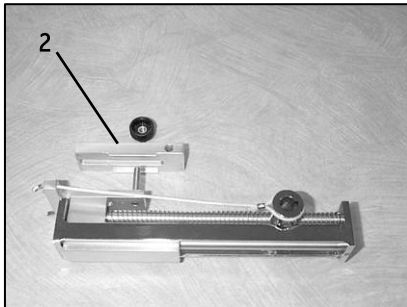
The Kinetec Maestra provides a motion from 0° to 180°.



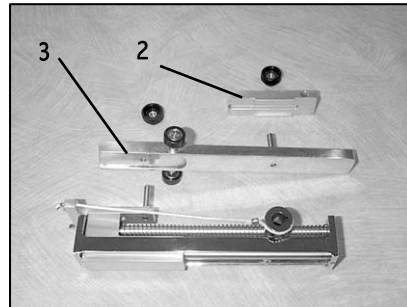
- Select the accessories



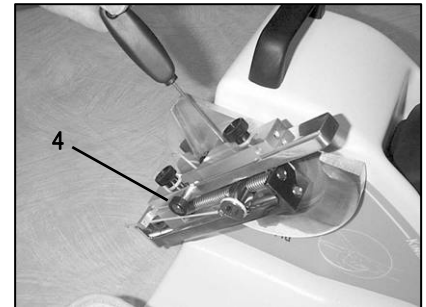
- Set up the guide disc for the thumb movement  
- Make sure that the opening (A) is correctly positioned.  
- Screw the guide with the screw (1).



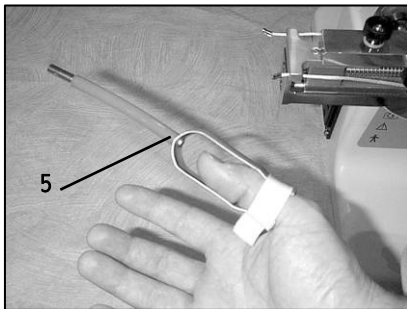
- Remove the guide (2) from the driving mechanism



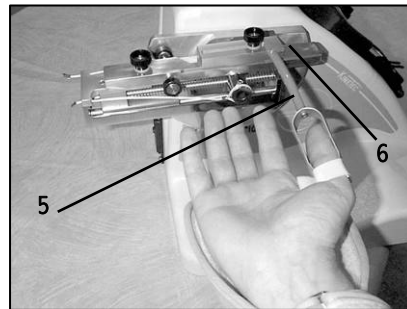
- Set up the extension (3) of guide.  
- Set up the guide (2).



- Set up the driving mechanism on the motor hub.  
(see p 12 for more details)



- Set up the thumb attachment (5)




- Fix the thumb attachment (5) on the driving mechanism.  
- Screw tightly (6).



### Starting the unit

• Choice of the thumb opposition movement:

- Press  and adjust your parameters (see page 7).



- Or select a program  (see page 10).

## Complete fist

The KINETEC Maestra provides a motion from  $-30^{\circ}$  to  $225^{\circ}$ .

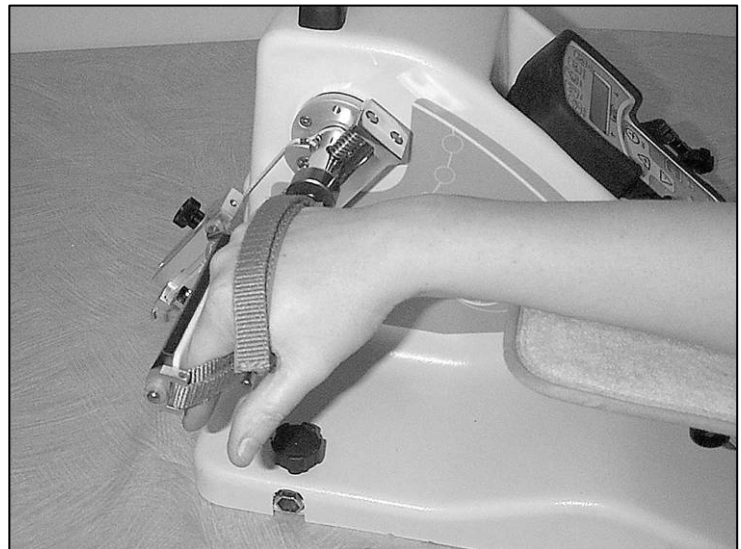


• Choice of the complete fist movement:



- Press  and adjust your parameters (see page 7).
- Or select a program  (see page 10).

## Intrinsic +

The KINETEC Maestra provides a motion from  $0^{\circ}$  from  $90^{\circ}$ .



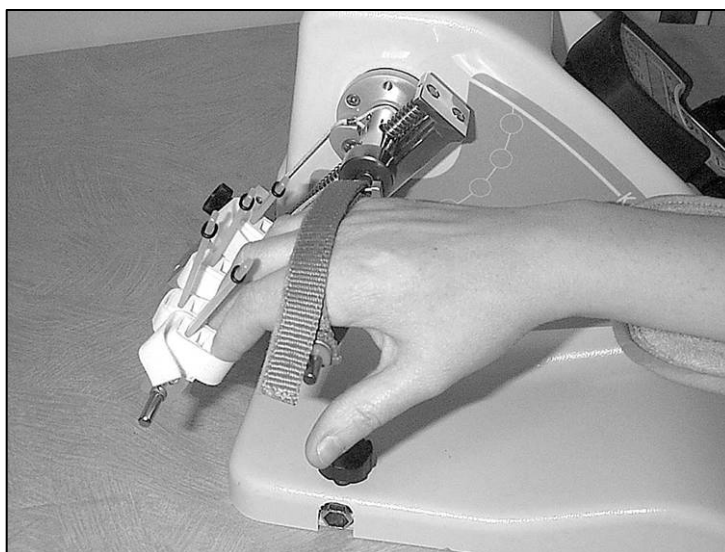
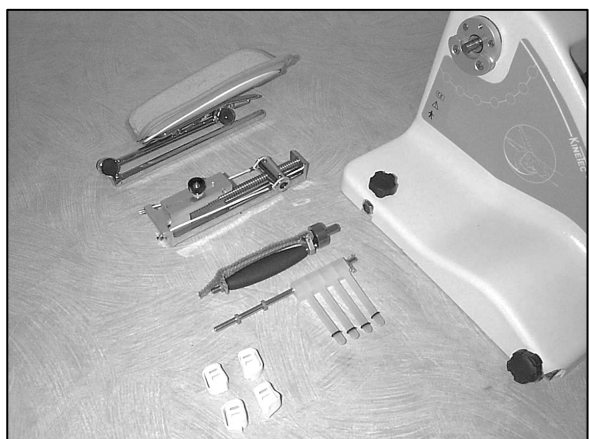
• Choice of the intrinsic + movement:

- Press 1 time  and adjust your parameters (see page 7).
- Or select a program  (see page 10).


## Possible movements

### Intrinsic -

The KINETEC Maestra provides a motion from 0° to 180°.



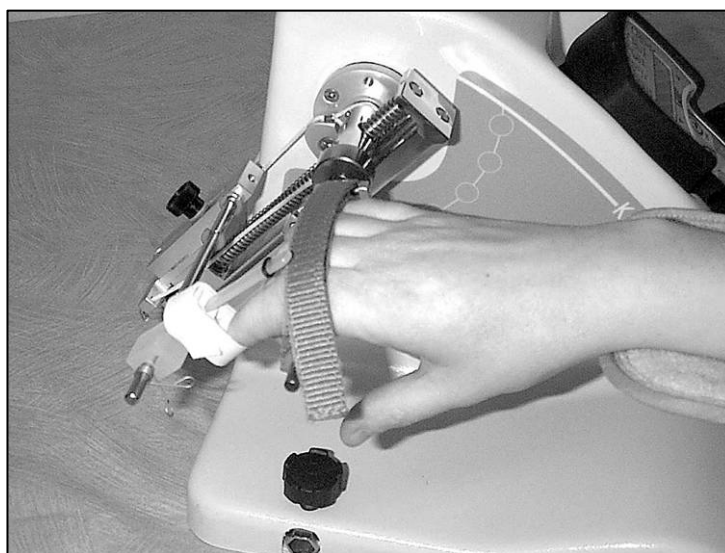
- Choice of the intrinsic - movement:

- Press 2 times  and adjust your parameters (see page 7).


- Or select a program  program (see page 10).

### Selective mobilization of the DIP joint

The KINETEC Maestra provides a motion from 0° to 70°.





- Choice of the Selective mobilization of the DIP joint movement:


- Press 3 times  and adjust your parameters (see page 7).

- Or select a program  program (see page 10).

After 2,000 hours of operation, KINETEC Maestra requires a few lubrication and maintenance operations (lubrication of the joints, pointer stops and ball screws). The need for maintenance is indicated by display of the message **SERV. MOTOR** when the system is switched on. Despite that warning, you can continue to use your KINETEC Maestra by pressing **START**, but you should contact your nearest KINETEC technician to have the maintenance operations conducted as soon as possible.

- A motor running time counter is available. Simultaneously press keys  and , the displays shows

**RESET TIME 924H**  
**RESET: LIMIT LOW**

this counter can be resetting by pressing the key .

limit

Before conducting any cleaning operation, **SWITCH** the unit **OFF** and disconnect the power supply.

Use a **DISINFECTANT** (PROPANOL/ISOPROPANOL or ALDEHYDE-based solution). Spray the disinfectant on the **SURFACES** (plastic shells and metal components).

In order to ensure optimal hygiene, you are advised to clean the covers for each new patient. All the consumables enable hazard-free disposal.

#### Product:

Weight: 17.6lbs (8 Kg) (without case)  
Unit dimensions:  
14 x 16 x 12 inches  
35 x 41 x 30cm  
Angular limits: see page 6  
Speed: from 150 to 440°/min  
Patient sizing:  
all hand sizing until 7 years old

#### Electrical:

Power supply: 100-240 V~  
Frequency: 50-60 Hz  
Power consumption: 50 VA  
Device of type B class I  
IP 20.  
Fuse T 750mA 250V 6.3x32mm  
(KINETEC order: 4610007434)

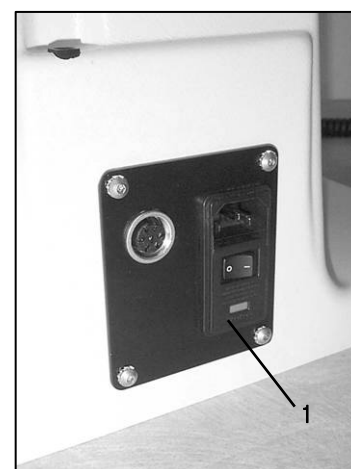
#### Environment

- Storage/transport conditions:  
Temperature: -40 to 160°F / -40 to 70°C  
Relative humidity: up to 90%  
- Operating conditions:  
Room temperature: 50 to 105°F / 10 to 40°C  
Relative humidity: up to 80%








A spare parts list and technical catalog are available to you on request from your KINETEC distributor. If, after connecting the power supply cable to the power supply and switching on KINETEC Maestra:








- The display does not indicate any information:
  - Check that the electrical socket is live using another device.
  - Replace the fuse(s) (32) of the connector with fuses of the same type and caliber: 2 fuses T 750 mA 250V (6.3 x 32) (KINETEC order: 4610007434).
  - If the display still does not indicate any information, contact your nearest KINETEC technician.
- Your KINETEC Maestra does not work and the display indicates **50 STOP 25 115**, Press **START** again.  
Your KINETEC Maestra still does not function: Contact your nearest KINETEC technician.
- Your KINETEC Maestra does not function and the display indicates:  
ANGULAR POSI.: angle measurement function failure,  
or NO MOVEMENT: no movement,  
or BAD WAY: motor rotation failure,  
or LOAD MAXI: abnormal consumption,  
or POWER SUPPLY: power failure;








Contact your nearest KINETEC technician if the same message is displayed after having switched the device off, then on, and started it by pressing **START**.



Symbols used

	TYPE B device (protection against electric shocks)
	Caution (consult the accompanying documents)
	STOP (power off)
	ON (power on)
	Start movement
	Stop movement
	Program access

	Speed
	Timer
	Force
	Pause
	Increase
	Decrease
	Lower limit

	Upper limit
	Pronation / supination movement
	Wrist movement
	Thumb movement
	Complete fist movement
	Selective movement
	Alternative current

Warranty

The KINETEC warranty is strictly limited to the replacement free of charge or repair in the plant of the component or components found to be defective. KINETEC guarantees its continuous passive motion systems for 2 years against all defects of manufacture from the date of purchase by the consumer. KINETEC is the only organization able to assess the application of the warranty to its systems. The warranty will be considered null and void if the device has been used abnormally or under conditions of use other than those indicated in the user's manual. The warranty will also be considered null and void in the event of deterioration or an accident due to negligence, inappropriate surveillance or inappropriate maintenance, or due to transformation of the equipment or an attempt to repair the equipment.

Serial number: \_\_\_\_\_  
Purchasing date: \_\_\_\_\_

Date: _____	Operations done: _____
Technician: _____	_____
Running time (see page 18): _____	_____
Exchange parts: _____	_____
_____	_____

Date: _____	Operations done: _____
Technician: _____	_____
Running time (see page 18): _____	_____
Exchange parts: _____	_____
_____	_____

Date: _____	Operations done: _____
Technician: _____	_____
Running time (see page 18): _____	_____
Exchange parts: _____	_____
_____	_____