



SLING
DYNAMIC ARM SUPPORT

Manual

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INTRODUCTION

This is the user manual of a dynamic arm support SLING (hereinafter called SLING) that can be mounted on a wheelchair, chair or a movable carriage. The SLING is manufactured and supplied by FOCAL Meditech, a company that specializes in body supports. This guide provides infor-



mation about the article on its implementation and the consequences of use. The purpose of this information is a sustainable, successful and effective use of the dynamic arm support. You will know what to expect from the dynamic arm support, how to set and adjust it (in general), and the things you need to pay attention to. You will also find all the information to contact the vendor.

Please read this information carefully: good knowledge of the device leads to better use and better results. Consider letting other people in your area read this manual too, for example those who may be involved in your care!

WHOM IS THE SLING INTENDED FOR?

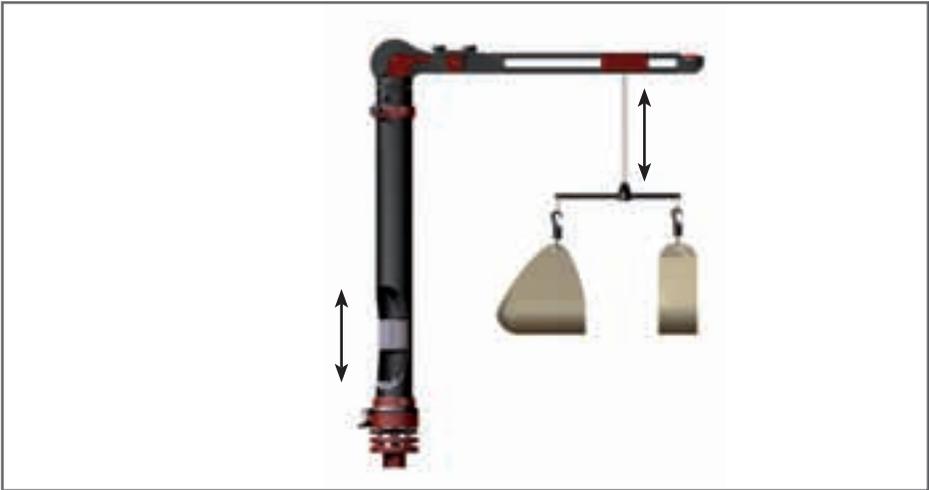
The SLING is intended for all persons whose forearm or hand are not functioning properly in terms of positioning and use, caused by a muscular or neurological failure. However, some functionality of the pectoral girdle and upper arm are required for a proper use of the device, as well as some usable hand functionality (grasp, manipulate). The arm support can also be used by healthy people regularly adapting awkward working postures. The SLING can be used on one or both sides. Whether one or two dynamic arm supports are used depends on several factors, including the individual limits and capabilities of the user and his needs. The user of the SLING can operate in all kinds of environments: at home, in school, in a workplace, outdoors or in an institution. The SLING can also be used as a therapeutic device, for example in physiotherapy with gradually larger getting areas or resistance.



When reading, please note the instructions relating to safe use. Important passages relating to safety are displayed with a safety symbol.

OPERATING PRINCIPLE OF THE SLING

The dynamic arm support SLING is a set of axes equipped with a string. The string connects an arm-fitting with a counterweight. The SLING will always be attached to the 'material' world (chair, wheelchair or frame). The forearm rests in the arm-fitting, the SLING can now largely bear the weight of the arm and relieve the pectoral girdle. The counterweight will allow every movement of the arm and hand against gravity.



Dynamic arm supports are mainly used by people with limited strength in the pectoral girdle or arm due to neurological or orthopedic state of these areas. By using their own residual capabilities, these people can move their hands to where it is useful. Reaching, grasping, moving things and all kinds of everyday activities are now possible. The SLING works in both the horizontal and the vertical way and requires no electrical power. A typical feature of the SLING is that the whole suspension approaches the user's arm from above. In this way, unlike other types of arm support, there are no parts under the arm that may occupy space. Arm support systems of this type are very suitable in case the device could come into conflict with objects such as the working table, joystick, armrest or keyboard. As a result, the SLING is used by people with their own capabilities and desires.

Like all of FOCAL Meditech arm support systems, the device has a very robust construction and a very slight backlash between the different axes. The axes are equipped with high quality bearings, so all motions can be carried out smoothly. The light motion, combined with good fit and a great adjustability only require very little effort from the user. The SLING is well adaptable; if required, individual modifications can be produced.

PARTS

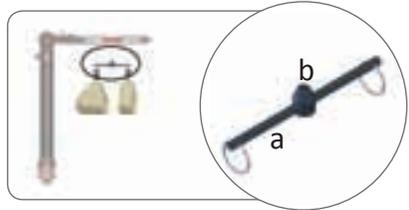
DESCRIPTION

Following are the components of the SLING, described from the arm of the user.

- When using the device, the arm of the user rests in the arm-fitting. The arm-fitting usually consists of two components of leather, namely a wrist- and elbow piece. If necessary, the wrist piece can be replaced by a combined wrist/hand piece. Sometimes only a loose wrist piece is used.



- The combined arm-fitting has a tilt in the form of a rod (a). This tilt will set the forearm's balance. The rod is attached to a string with a bobbin (b). This bobbin is not required if only a loose wrist piece is used.



- The string runs through a linear guide (horizontal guide arm) and various pulleys to the counterweight in the vertical tube. The linear guide folds out so the system can be taken during transport or can be stored when not in use.



- The linear guide is attached to a trolley that moves back and forth. The function of the trolley is to ensure that the string, during all forward/backward movements, remains perpendicular to the linear guide. This will prevent any undesirable forces in the direction of the user's forearm.



- The linear guide is attached to the rotational element. This rotational element connects the linear guide to the tube and allows the linear guide to rotate towards the tube horizontally.



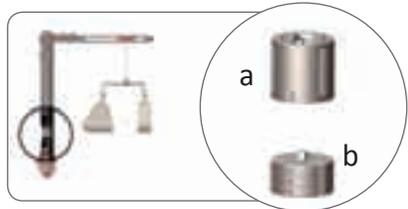
- At the top of the tube and bottom of the rotation element you'll find the components that can be used to limit the rotation. There is a metal plug in the bottom of the rotation element (a) and metal pins can be placed into drilled holes (b) at the top of the tube. After applying this, only limited rotations can be executed by the linear guide. The goal is to prevent the user from moving into unwanted directions, for example when passing a door. This limitation is optional.



- Directly below the rotation element, on the back of the tube, there is a pawl spring. This makes it possible to completely block all rotations. The facility is used during transport in a bus for example, when outside forces can make the linear guide to swing back and forth. Blocking the rotation is possible in various positions. This blocking of rotations is optional.



- The tube contains the counterweight (a). This counterweight may be extra aggravated after delivery. To do this, there are three separate weights in the tube in the form of round, flat disks. These 'additional weights' (b) can be hung underneath the counterweight. This feature is also optional.



- The bottom of the tube is placed into the adjustment unit which is located at the top of the adapter for mounting on a chair, wheelchair or movable carriage. The aforementioned adjustment unit ensures that the tube can always be aligned perpendicularly to the ground surface. The alignment is provided by three setting rings. The alignment prevents the arm from undesirable inward or outward swings under normal circumstances.



ASSEMBLY OF THE SLING

After passing extensive testing and evaluation, FOCAL Meditech or its representative will place the dynamic arm support on to the chosen facility. This is individual and accurate business. The transfer of the SLING to a new facility should also be carried out by FOCAL Meditech or its representative.

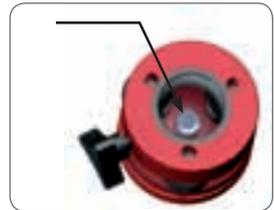
SETTING OF THE SLING



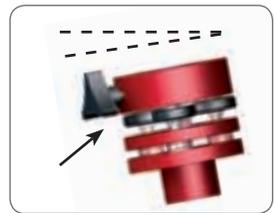
Attention! Before setting the SLING, the seating of the (wheel) chairs must be placed in the most common active sitting position.

Horizontal adjustment.

First, the adjustment unit that is mounted on top of the adapter must be placed horizontally, using the included level and Allen key. This is done by loosening the central socket screw inside the adjustment unit.



The level is now placed on top of the adjustment unit. Next, using the three adjustment rings, an exact horizontal position is sought. Now tighten the central socket screw again. The tube can now be placed into the adjustment unit. Both on the adjustment unit and on the tube, there is an arrow. Both arrows must be opposite of each other.



This will prevent the linear guide to move into an area where movement is not desired. The height of the system can now be set using the button at the bottom of the adjustment unit.



Set rotation limitation.

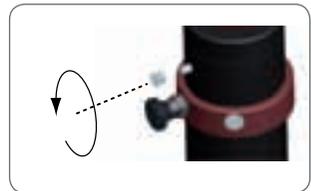
Now set, if desired, the working range.

Do this by loosening the ring nut at the back and on top of the tube.

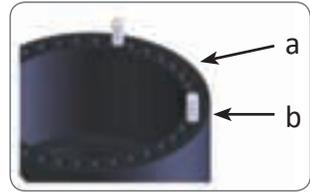
Then use the supplied Allen key (2.5 mm) to loosen the socket screw you found under the ring nut. This socket screw used to secure the rotation mechanism.

Finally, the pawl which can completely block the rotation element, must be unlocked. Do this by pulling out and quarter turn the pawl.

The rotation mechanism attached to the linear guide can now be lifted.



On top of the tube, there is a pattern of holes (a) where small metal pins (b) can be placed.



At the bottom of the rotation element, there is a rotation stopper, located between the two locking pins. This stopper and the pins limit the rotation of the SLING, to make sure the arm cannot reach an undesirable area.

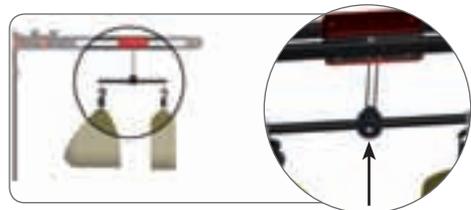


Place the rotation unit with the linear guide back on the tube. Note that the rotation stop fits between the two locking pins at the top. Tighten the bolt until it is attached to the rotation element on the inside. Now turn the bolt three strokes and tighten the lock nut for security reasons.

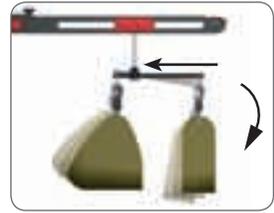
Set balance arm.

The desired balance of the forearm can be set by shifting the bobbin with regard to the rod. Try to find a balance such that the forearm can be easily tilted up and back in the support elements.

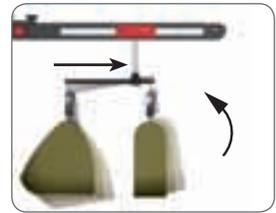
The shifting of the spindle is done by loosening a socket screw at the bottom. Slide the rod into the spindle, and tighten the socket screw again.



The more the bobbin is placed backwards (towards the elbow), the easier the arm and hand can be tilted down.



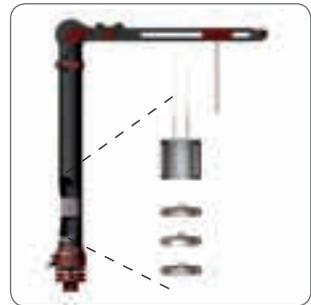
The more the bobbin is placed forwards (towards the wrist), the easier the arm and hand can be tilted up.



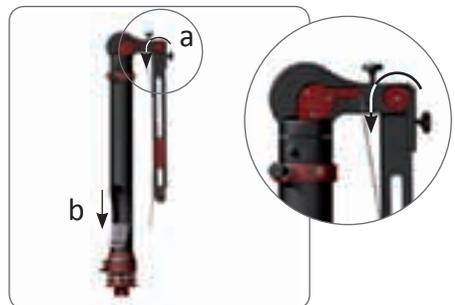
The settings should be such that the forearm can rest on the armrest or on the lap of the user.

Adjust the counterweight.

With the help of the optionally enclosed additional weights, the counterweight can be adjusted. When ordered, three additional weights are included. These additional weights are located at the bottom of the vertical tube. To avoid annoying rattle, they are initially mounted together. In order to adjust the counter weight, follow the following steps:



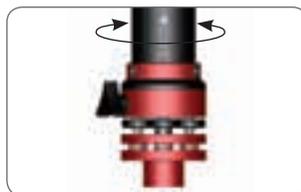
- 1) Fold the linear guide as described on page (15).
- 2) Remove the strings from the guide rollers near the hinge mechanism (a). This will relocate the counterweight to the lowest position of the tube (b).



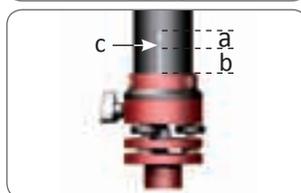
3) At the bottom of the tube (through the opening), the bottom of the counterweight (a) will now be visible. The three additional weights (b) were already visible.



4) Rotate the counterweight using a small screwdriver, until the socket screw of the counterweight is accessible.



5) The counterweight (a) now covers the top additional weight (b). This additional weight can now be attached to the counterweight by tightening the lower socket screw (c) in the counterweight. At this moment all additional weights are attached to the counterweight.



6) For each additional weight, approximately 100 grams will be added to the counterweight. You can now choose to add one, two or three additional weights. If you loosen the socket screw in the **first additional weight**, the other additional weights will be released and only the first additional weight will be added. If you loosen the socket screw in the **second additional weight**, the other additional weight will be released and only the first two additional weights will be added. If you loosen the socket screw in the **third additional weight**, the last additional weight will be released and all three additional weights will be added.



7) Put the strings back on the guide rollers.

8) Spread out the linear guide again as described on page 15. Now rate the functioning of the adjusted counterweight.

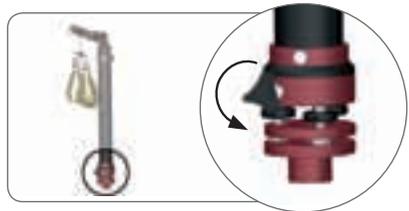
9) If its functioning is not as you wish, repeat steps 1 to 8 to get the correct weight.

USE OF THE SLING

The use of the SLING is determined by the individual needs and desires of the user and the environment in which he intends to use the device. The number of activities than can be carried out with the help of the dynamic arm support is unlimited. In ADL situations, mostly activities like eating and drinking independently, activities such as facial and dental care and applying amenities such as glasses or hearing aids are meant. Common activities include writing, computer use, doing certain work tasks, household activities, childcare, playing and hobby activities. However, even with everyday activities such as pushing switches and push buttons and operating equipment, the SLING is very suitable. Frequently, the dynamic arm support is mounted on a hand-driven or electric wheelchair; mounting on a work chair is also common.

For everyday use, the following acts are important:

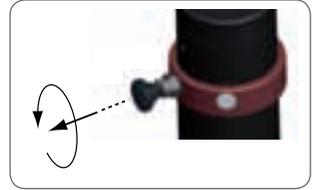
- Removal. The SLING can be easily removed from the adjustment unit. This is done by turning the lever on the unit one stroke.



- Now pull the SLING straight up. The SLING can now be placed on another facility or on the included base plate. Placing the SLING on the base plate is done if the SLING will not be used for a longer period.



- Block. During transport it might be necessary to block the rotation of the linear guide. Do this by pulling out the pawl on top of the tube and giving it a quarter turn. Rotate the linear guide slightly, until it locks. To cancel the blockage, pull the pawl out again and give this quarter turn again.



Reduce size

To reduce the SLING's size (e.g. during storage), the linear guide can be folded down:

- On top of the linear guide there is a moving plate with turning knobs. Turn the front knob one turn, and turn the back knob until its lower edge protrudes above the moving plate.
- The moving plate can now be moved forward.
- Now the linear guide can be folded down. Folding up will occur in reverse order; support the end of the linear guide. Please note that the two buttons of the moving plate are fully tightened.



In case the assistance by the counterweights is no longer sufficient, please contact FOCAL Meditech or its representative.

WARNING



When passing doors, please note that the linear guide won't stick out of the wheelchair to prevent it from touching the doorway.

When moving the linear guide in close proximity to other persons, please avoid striking against them.

MAINTENANCE

The dynamic arm support requires little maintenance. The SLING can be cleaned using a damp cloth and a non-aggressive detergent.

CE MARK



This product is CE approved and complies with European guidelines for medical devices.

WARRANTY

GENERAL

These guarantees are part of the General Conditions of FOCAL Meditech. In the Warranty, the provisions in the General Conditions are to be respected.

The following warranty terms are based on EU Directive 99/44/EC and the Dutch Civil Code. The marketing and use of medical devices are also specified in Directive 93/42/EEC and Royal Order 243 of March 30th, 1995. The resulting rights remain unaffected, as well as the warranty from the dealer to the end user.

Warranty Terms and Conditions may be extended or modified if they are in writing and in compliance with the law.

Our products are produced and assembled with the utmost care. However, certain product defects can occur. At request, FOCAL Meditech will repair all defects, both inside and outside, during the warranty period. This guarantees that the product life span is not negatively affected.

WARRANTY PROVISIONS

The warranty for this product is according to the following conditions:

Article 1

We will rectify, free of charge and subject to the conditions 2 to 14, all product defects that are manifest within 24 months from the date of delivery to the end user. In the case of professional or equivalent usage, the guarantee is limited to 12 months. The guarantee for used products is also limited to a period of 12 months.

Article 2

Our guarantee means that the product will be returned in the same condition it was in before the defect occurred. FOCAL Meditech decides whether defective parts are repaired or replaced. Parts that are replaced without charge will become our property.

Article 3

The defect must be reported immediately to prevent possible further damage. The warranty is void if the defect is NOT reported within two months after determining the defect.

Article 4

To invoke the warranty, the personalized sales receipt or proof of delivery or purchase must be submitted. In case these are not available, other convincing evidence should be submitted.

Article 5

The warranty does NOT cover small deviations from the prescribed quality, such as, but not exclusively, deviations in measurement or size which are insignificant for the value, suitability or functionality of the product.

Article 6

The warranty does not cover damage caused by improper or inconsiderate use or use for other uses than the product was designed for.

Article 7

The warranty does not apply when damage is caused by:

- 1) Chemical and electro-chemical influence of water or other liquids.
- 2) Abnormal environmental conditions in general.
- 3) Operating conditions which are unsuitable for the product, e.g. unusual pressures and accelerations.
- 4) Contact with aggressive substances.
- 5) Neglect.
- 6) Any other external cause from outside, for instance bumping or collision.

Article 8

Warranty does NOT cover malfunction because of damage sustained during transport and beyond the responsibility of FOCAL Meditech, installation or assembly by non-qualified persons, poor or inadequate maintenance, or ignoring the instructions.

Article 9

Warranty is void if the defect was caused by repair or interventions by third parties that are not qualified or skilled, or if the product is fitted with accessories or parts that are not original. The warranty also expires if marks or serial numbers have been removed.

Article 10

Repair on site within 14 days will be pursued. However repair on site can only be required in the case of a minor problem, to be determined by the supplier. Transportation of the device to a workplace or the manufacturer may be required.

Article 11

If, during the warranty period, repair of the same defect fails repeatedly or the repair costs are disproportionate, an equivalent replacement is provided in consultation with the user. In case of replacement, we

reserve the right to charge a fee in accordance with the elapsed time of use.

Article 12

Repair under warranty does not extend the guarantee or warranty or the start of a new period except for the part of the product that was repaired. FOCAL Meditech provides a warranty period of 12 months, limited to the particular defect.

Article 13

Necessary or desirable adjustments are not part of the standard product, as documented in the manual. FOCAL Meditech will try to deal with failures of individual adjustments in accordance with the provisions of the standard product warranty. Necessary or desirable individual adjustments do not form part of the warranty.

Article 14

Claims of the purchaser under a warranty are not transferable to third parties.

This warranty covers products that are bought and / or in-service in the Netherlands. If a product is marketed abroad, the user must check whether the conditions there (e.g. voltage, climatic conditions) are in accordance with the established operating conditions. In the case of resale, the reseller should provide guarantee.

FOCAL Meditech attaches great importance to the functioning of its products, which tend to serve persons with significant limitations. Consultation about defects or malfunction of the product due to factors not described in the warranty is highly recommended. The service facilities of FOCAL Meditech are always available to the user, even when the warranty has expired.

CONTACT INFORMATION

The dynamic arm support SLING and all accessories are manufactured and supplied by:

FOCAL Meditech BV
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The dynamic arm support SLING is delivered by

