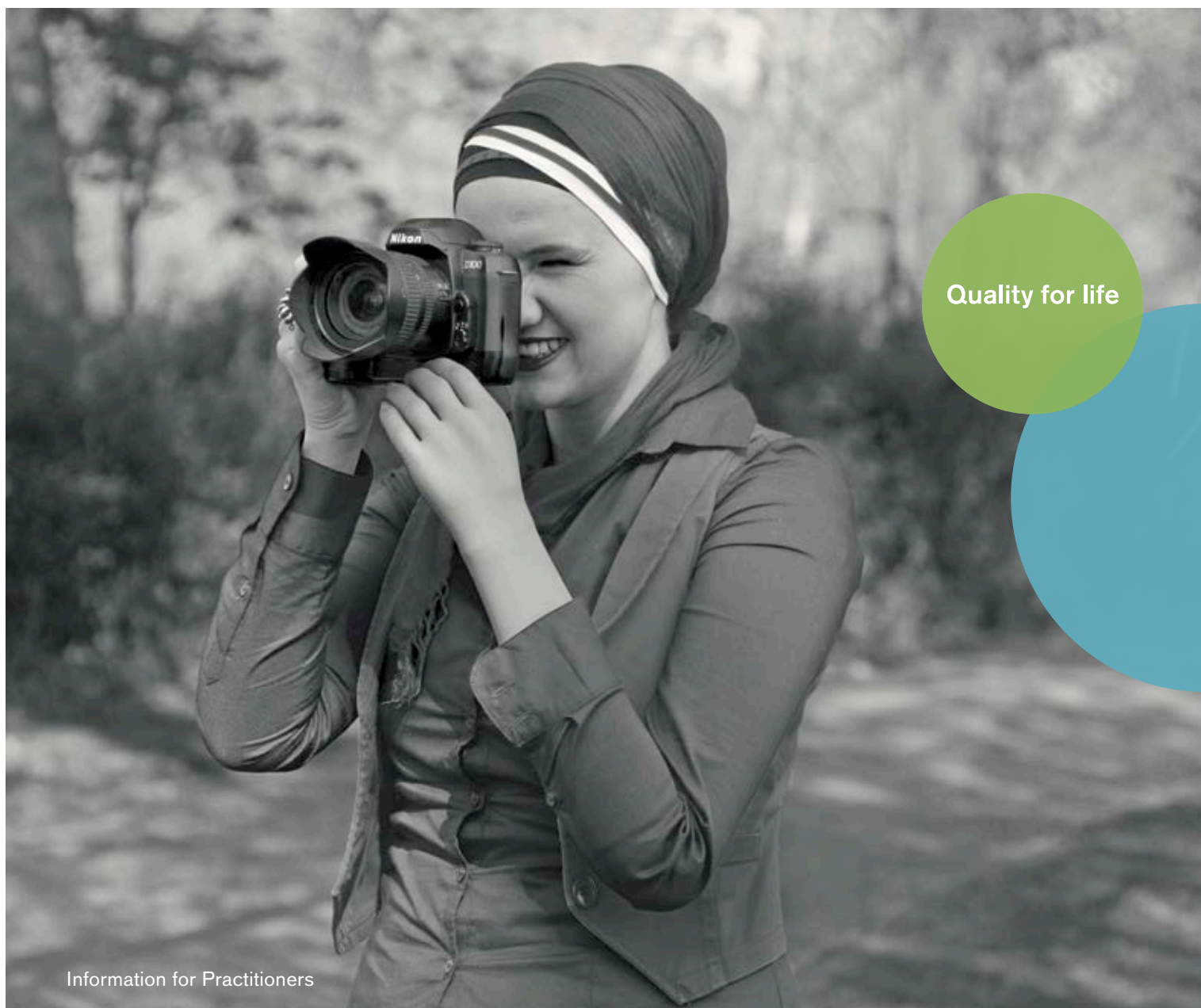


# Elbow Components – At a Glance

Features, Improvements, Differences



Quality for life



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# The optimum elbow component for each prosthetic fitting

For the user, the elbow component is an essential element of the prosthesis: the joint has to help lift the hand and allow certain positions to be reached with it. It should also be inconspicuous and support the user during everyday activities. This is why the needs of the user as well as the type of prosthetic fitting are crucial in reaching a decision on the optimum elbow joint in each

specific case. On the following pages, you will find a selection of elbow components developed by Ottobock for transhumeral fittings, shoulder disarticulation and forequarter fittings – from elbow joint for children to flexible and functional ErgoArm and DynamicArm with electric positioning. All elbow joints are suitable for unilateral or bilateral fittings.

## Overview of elbow components for adults and their features:

Elbow Component	12K41 ErgoArm	12K42 ErgoArm plus	12K44 ErgoArm Hybrid plus	12K50 ErgoArm Electronic plus	12K100N DynamicArm	12K110N DynamicArm Plus
<b>Feature</b>						
Passive	●	●				
Body-powered	●	●				
Myoelectric			●	●	●	
Myoelectric with TMR						●
Ratchetless lock	●	●	●	●	●	●
Slip-stop function	●	●	●	●	●	●
Automatic Forearm Balance (AFB)		●	●	●	●	●
Easy Plug (electric through connection)			●	●	●	●
Electric motor driven					●	●
Continuously variable vario-gear					●	●
Mandatory certification <sup>1</sup>			●	●	●	●

<sup>1</sup> For the subject matter and dates of the certification courses, please consult the current Ottobock seminar brochure.



# Elbow Joint for Children

## 12K12 MovolinoArm Friction

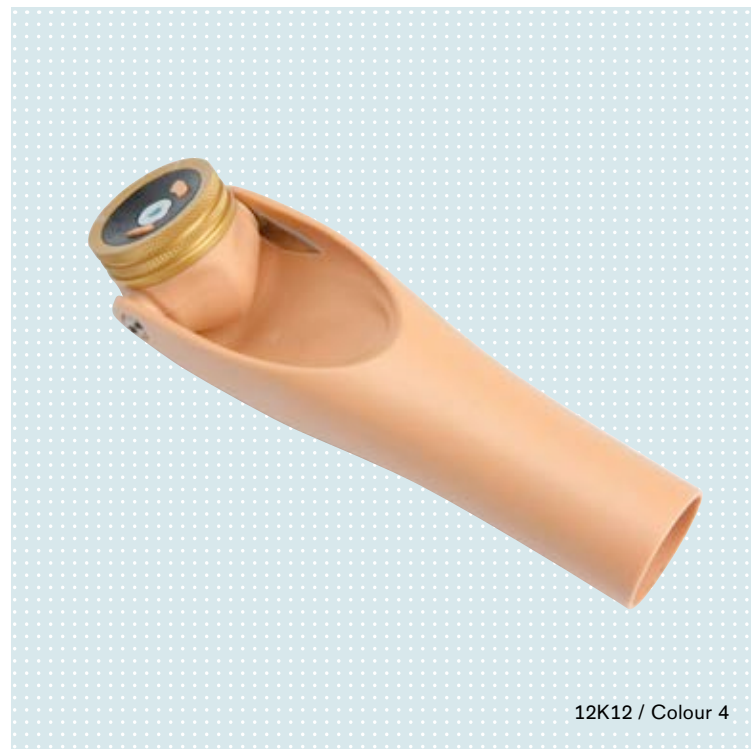
Proper care from the very beginning

The MovolinoArm Friction is suitable for fittings for children aged 3 to 5 years. It is available in one size and compatible with passive, body-powered and myoelectric prosthetic hands. It's important that children's fittings allow them to move and play with as little interference as possible.

The increase in functionality can help improve a child's acceptance of the prosthesis. The MovolinoArm Friction has one friction setting for humeral rotation and one for flexion or extension of the forearm.



Parents can easily adjust the friction setting – making it more flexible for everyone.



12K12 / Colour 4

## Additional Features

- The design offers a highly natural shape with excellent contours.
- The MyoEnergy battery system offers enhanced socket design possibilities. It is easy to install in the hollow of the elbow joint.
- Thanks to the connection that goes through the elbow ball, all cables run internally, so that the system is well protected against dust, dirt and splashed water.
- It is possible to change the length of the prosthesis by shortening the forearm during assembly.

## The Fitting

The elbow joint is compatible with the components of the 7.4 volt system for children:

- 9E420=\* 7in1 Controller
- 60X6 MyolinoLink
- 560X3=\* MyolinoSoft
- 757B35=\* MyoEnergy Integral

The hand adapter of the MovolinoArm Friction can be combined with:

- The 10A40 Wood Adapter for a passive prosthetic fitting
- The 10V18=34 Wrist Joint for a body-powered fitting
- The 8E51=\* Electric Hand 2000 for a myoelectric fitting

### Technical Data

Article Number	12K12
Weight (g)	180
Upper arm connection Ø (mm)	43.5
Wrist connection Ø (mm)	34
Length by which the forearm component can be shortened relative to the elbow pivot point, from-to (mm)	165–115

### Ordering Information

Designation	Article Number
MovolinoArm Friction	12K12

# Elbow Joints for Adults

## ErgoArm Family

Lightweight and flexible

Four elbow components in ErgoArm family offer modern technology to meet many demands. They feature low weight, extraordinary functionality and attractive appearance.

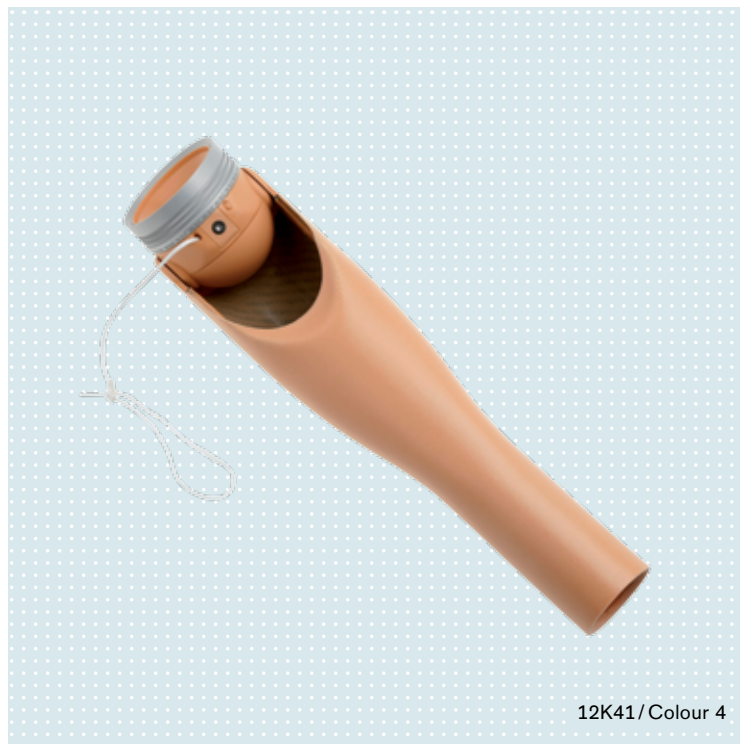




# 12K41 ErgoArm

With ratchetless lock and slip-stop function

As a base model, the 12K41 ErgoArm is a lightweight but robust mechanical elbow component. It is suitable for passive and body-powered prostheses.



12K41 / Colour 4

## Special Features

### Ratchetless lock

The ratchetless lock of the ErgoArm is positioned on the inside of the elbow. It is operated using the lock cable and can be unlocked or locked in any position, even under load.

### Slip-stop function

The slip-stop function permits controlled lowering of the forearm. When slight tension is applied to the pull cable, the joint is unlocked – but only as long as the pull cable is not released again. Firmly pulling on the pull cable fully unlocks or locks the joint. The lock can bear a load of up to 230 N at a forearm length of 305 mm.

## Additional Features

- Humeral rotation joint (humeral rotation feature)
- Adjustable friction
- Elbow ball made of skin-coloured synthetic material
- Forearm can be shortened (length 305 mm, circumference approx. 250 mm)
- Weight: approx. 550–580 g

## Ordering Information

Designation	Article Number	Upper arm connection Ø	For hand size	For lamination ring Ø	Colour
ErgoArm	12K41=45	70 mm	7–7¼	45 mm	No. 4
ErgoArm	12K41=50	70 mm	7¾–8¼	50 mm	No. 4
ErgoArm	12K41=45-1	70 mm	7–7¼	45 mm	No. 11
ErgoArm	12K41=50-1	70 mm	7¾–8¼	50 mm	No. 11
ErgoArm	12K41=45-2	70 mm	7–7¼	45 mm	No. 15
ErgoArm	12K41=50-2	70 mm	7¾–8¼	50 mm	No. 15

# 12K42 ErgoArm plus

With Automatic Forearm Balance (AFB)

The 12K42 ErgoArm plus mechanical elbow joint is suitable for passive and body-powered prostheses. With the same features as the 12K41 ErgoArm, it also offers enhanced comfort thanks to the flexion assist.



12K42/Colour 15

## Special Features

### Automatic Forearm Balance (AFB)

Energy released when extending the arm is stored with the help of AFB (Automatic Forearm Balance) and subsequently used to support flexion. This makes a smoother motion when swinging the arm, and makes it easier to lift the forearm.

## Additional Features

- Ratchetless lock
- Slip-stop function
- Humeral rotation joint (humeral rotation feature)
- Adjustable friction
- Elbow ball made of skin-coloured synthetic material
- Forearm can be shortened (length 305 mm, circumference approx. 250 mm)
- Weight: approx. 570–610 g

## Ordering Information

Designation	Article Number	Upper arm connection Ø	For hand size	For lamination ring Ø	Colour
ErgoArm plus	12K42=45	70 mm	7–7¼	45 mm	No. 4
ErgoArm plus	12K42=50	70 mm	7¾–8¼	50 mm	No. 4
ErgoArm plus	12K42=45-1	70 mm	7–7¼	45 mm	No. 11
ErgoArm plus	12K42=50-1	70 mm	7¾–8¼	50 mm	No. 11
ErgoArm plus	12K42=45-2	70 mm	7–7¼	45 mm	No. 15
ErgoArm plus	12K42=50-2	70 mm	7¾–8¼	50 mm	No. 15



# 12K44 ErgoArm Hybrid plus

With Easy Plug

In addition to the functions of the ErgoArm plus, the 12K44 ErgoArm Hybrid plus features Easy-Plug integrated internal wiring. This elbow component is especially well suited for use in hybrid prostheses with a myoelectric hand and an elbow joint lock operated using an above-elbow harness.



12K44 / Colour 4

## Special Features

### Easy Plug (electric through connection)

The electrode and battery cables are simply connected to the elbow ball. This means all cables are concealed inside the prosthesis. The risk of defects caused by broken cables is reduced and the appearance enhanced. Electric signals are transmitted to the hand inside the elbow joint over modern flexprints.

## Additional Features

- Automatic Forearm Balance (AFB)
- Ratchetless lock
- Slip-stop function
- Humeral rotation joint (humeral rotation feature)
- Adjustable friction
- Elbow ball made of skin-coloured synthetic material
- Forearm can be shortened (length 305 mm, circumference approx. 250 mm)
- Weight: approx. 670–700 g

## Ordering Information

Designation	Article Number	Upper arm connection Ø	For hand size	For lamination ring Ø	Colour
ErgoArm Hybrid plus	12K44=45	70 mm	7–7¼	45 mm	No. 4
ErgoArm Hybrid plus	12K44=50	70 mm	7¾–8¼	50 mm	No. 4
ErgoArm Hybrid plus	12K44=45-1	70 mm	7–7¼	45 mm	No. 11
ErgoArm Hybrid plus	12K44=50-1	70 mm	7¾–8¼	50 mm	No. 11
ErgoArm Hybrid plus	12K44=45-2	70 mm	7–7¼	45 mm	No. 15
ErgoArm Hybrid plus	12K44=50-2	70 mm	7¾–8¼	50 mm	No. 15

# 12K50 ErgoArm Electronic plus

With electronic lock

12K50 ErgoArm Electronic plus is recommended for use with myoelectric prosthetic hands. With the same features as ErgoArm Hybrid plus, it goes even further: the electronic lock is locked and unlocked solely via electrodes that pick up myoelectric signals.



12K50/Colour 15

## Special Features

### Electronic lock

The internal, continuously adjustable electronic lock can be locked or unlocked by myoelectric signals or by means of a switch. Various programmes, which are accessed with 757T13 MyoSelect, permit individual adaptation of the lock control system to the user's specific requirements.\* Seven switching modes are available. Locking happens inconspicuously in a fraction of a second and works reliably – even with heavy loading of the joint.

\* Selection is also possible via coloured coding plugs

## Additional Features

- Easy Plug (electric through connection)
- Automatic Forearm Balance (AFB)
- Electronic ratchetless lock
- Slip-stop function
- Humeral rotation joint (humeral rotation feature)
- Adjustable friction
- Elbow ball made of skin-coloured synthetic material
- Forearm can be shortened (length 305 mm, circumference approx. 260 mm)
- Weight: approx. 680–710 g

### Technical Data

Current draw:	3.5 mA
<b>Power supply:</b>	
MyoEnergy Integral	757B35=* – 7.4 V (Li-Ion technology)
EnergyPack	757B20 – 7.2 V (Li-Ion technology)
EnergyPack	757B21 – 7.2 V (Li-Ion technology)
Replaceable battery	757B15 – 6 V (NiMH technology)

### Ordering Information

Designation	Article Number	Upper arm connection Ø	For hand size	For lamination ring Ø	Colour
ErgoArm Electronic plus	12K50=45	70 mm	7 – 7 ¼	45 mm	No. 4
ErgoArm Electronic plus	12K50=50	70 mm	7 ¾ – 8 ¼	50 mm	No. 4
ErgoArm Electronic plus	12K50=45-1	70 mm	7 – 7 ¼	45 mm	No. 11
ErgoArm Electronic plus	12K50=50-1	70 mm	7 ¾ – 8 ¼	50 mm	No. 11
ErgoArm Electronic plus	12K50=45-2	70 mm	7 – 7 ¼	45 mm	No. 15
ErgoArm Electronic plus	12K50=50-2	70 mm	7 ¾ – 8 ¼	50 mm	No. 15

# Elbow Joints for Adults

## DynamicArm Family

Dynamic and powerful

Elbow components in the DynamicArm family are myoelectrically controlled and electric motor driven. A special feature of the DynamicArm is the electronically controlled electric elbow joint with continuous gearing. Thanks to the vario-gear and extremely fast signal transfer, it closely approximates the natural movement characteristics of the human arm, offering the greatest possible everyday independence for the user.

Natural movement characteristics are achieved through the continuous adaptation of the gear ratio to the environmental conditions (input signal of the user, movement phase, load to be lifted). Fitting a user with DynamicArm or DynamicArm Plus may only be carried out by prosthetists who have completed the training course and who have been authorised by Ottobock.



# 12K100N DynamicArm

High lifting and holding force

The 12K100N DynamicArm is a myoelectrically-controlled elbow joint driven by an electric motor and is intended users with transhumeral or higher amputation levels.



12K100N / Colour 4

## Differentiation from the ErgoArm Family

The technology of DynamicArm makes movements even more physiological. The DynamicArm combines all advantages of ErgoArm Electronic plus. Furthermore, it is controlled entirely by myoelectric signals. In addition to hand and rotation of wrist joint, elbow joint flexion can also be controlled by muscle signals.

## Additional Benefits

- High lifting and holding force
- Natural, delicate control with quick, precise positioning
- Attractive appearance
- Low noise level, no noise at all during free swing
- Natural free swing behaviour

The prosthesis is particularly inconspicuous, thanks to operating noise optimized by sound engineering as well as the slightly dampened – and completely silent – free swing phase. These special technology features are integrated in an elbow joint-forearm system with a natural, anatomic design. The shape and basic colour blend in with the overall image of the human body. Silicone elements dampen noise and shocks that are caused, for example, when leaning on a hard surface.

## This is New

The 12K100N DynamicArm is even more natural and reliable. This is achieved through the following innovations:

- The elastomer protector in the hollow of the elbow joint has been removed. All other protectors are now the same colour as the rest of the forearm, providing a more natural look.
- A powerful Bluetooth module, which provides an optimised connection, permits secure configuration via a computer.
- Thanks to the modified strap clamp, trial fittings are easier and faster. The strap cable mounting has been modified so that the DynamicArm can be threaded directly into the lamination ring on the socket.
- The stain gauge compensates for temperature fluctuations even more reliably.
- Thanks to these improvements, and based on a new warranty, maintenance is only required every 24 months.





## Fitting

DynamicArm can be combined with other myoelectric prosthesis components from Ottobock, such as:

- 10S17 Electric Wrist Rotator
- 8E38=\* System Electric Hand
- 8E33=\* System Electric Greifer

Following components can **not** be used in combination with DynamicArm:

- 8E39=\* and 8E41=\* System Electric Hand
- 8E34=\* System Electric Greifer
- 8E44=\* Transcarpal Hand
- 8E51=\* Electric Hand 2000

The DynamicArm can be configured using the 646C42 ElbowSoft software. In order to do so, DynamicArm is connected to PC using an integrated Bluetooth module.

## Technical Data

Power supply	Li-Ion battery
Charging temperature	> 0 °C
Weight (dependent on forearm length)	approx. 1,000 g
Maximum lifting force	50 N
Flexion angle	approx. 15°–145°
Operating temperature	5–40 °C
Storage and transport temperature in original packaging	-25 to 70 °C

## Ordering Information

Designation	Article Number	Upper arm connection	For hand size	For lamination ring	Colour
DynamicArm	12K100N=45	70 mm	7–7¼	45 mm	No. 4
DynamicArm	12K100N=50	70 mm	7¼–8¼	50 mm	No. 4
DynamicArm	12K100N=50-1	70 mm	7¼–8¼	50 mm	No. 11
DynamicArm	12K100N=50-2	70 mm	7¼–8¼	50 mm	No. 15
ElbowSoft	646C42=*				

# 12K110N DynamicArm Plus

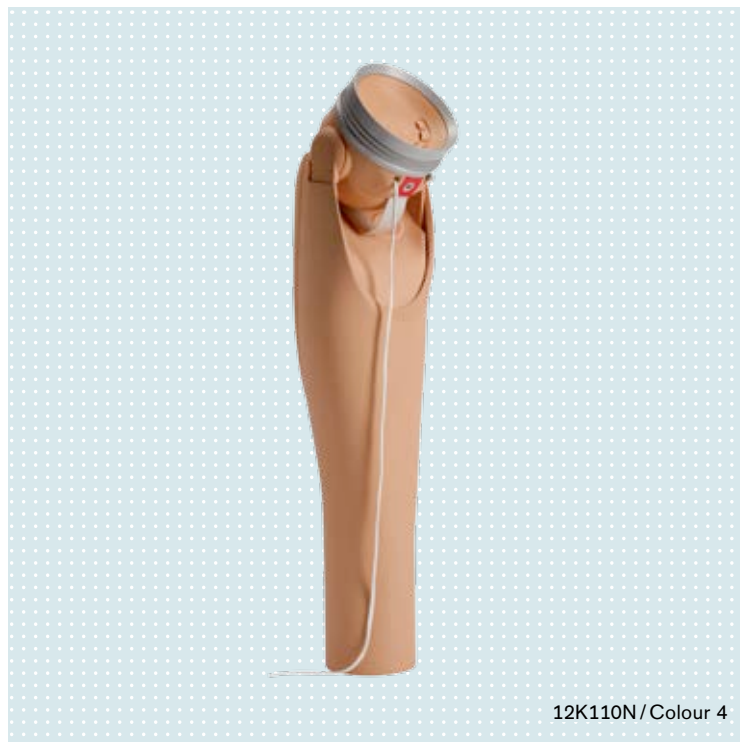
For users with more than 2 myo-signals

Like the DynamicArm, the 12K110N DynamicArm Plus elbow joint is myoelectrically-controlled and driven by an electric motor. It is intended for fitting users with transhumeral or higher amputation levels and TMR-surgery or users with more than 2 original signals.

Targeted Muscle Reinnervation (TMR) is the medical term for the surgical rerouting of nerves. The innovative prosthetic fitting enables the user to make more natural movements because the active joints can be controlled simultaneously. The user acts with the so-called phantom limb, which can be moved instinctively in the user's imagined body perception. Learning control must be accompanied by intensive therapy. Apart from the advantages of a fitting with TMR, the DynamicArm Plus has the same features as the DynamicArm standard. In addition, it can also process up to 8 input signals.

## Key Benefits

- Control with up to 6 MyoBock electrodes and up to 2 switches
- High lifting and holding force
- Natural, delicate control with quick, precise positioning
- Attractive appearance
- Low noise level, no noise at all during free swing
- Natural free swing behaviour



## Fitting

DynamicArm Plus is suitable for combination with other myoelectric prosthetic components from Ottobock, such as:

- 10S17 Electric Wrist Rotator
  - 8E38=8\* SensorHand Speed
  - 8E38=9\* MyoHand VariPlus Speed
  - 8E33=9 System Electric Greifer DMC VariPlus
- Other prosthesis components can **not** be used.

DynamicArm Plus is configured by means of the 646C57 software. In order to do so, DynamicArm Plus is connected to PC via integrated Bluetooth module.

## Technical Data

Power supply	Li-Ion battery
Charging temperature	> 0 °C
Weight (dependent on forearm length)	approx. 1,000 g
Maximum lifting force	50 N
Flexion angle	approx. 15° – 145°
Operating temperature	5 – 40 °C
Storage and transport temperature in original packaging	-25 to 70 °C

## Ordering Information

Designation	Article Number	Colour
DynamicArm Plus	12K110N=45	No. 4
DynamicArm Plus	12K110N=50	No. 4
DynamicArm Plus	12K110N=50-1	No. 11
DynamicArm Plus	12K110N=50-2	No. 15
ElbowSoft TMR	646C57=*	



Otto Bock HealthCare GmbH  
Max-Näder-Str. 15, 37115 Duderstadt/Germany  
T +49 (0) 5527 848-1706 · F +49 (0) 5527 72330  
export@ottobock.de · www.ottobock.com