Continuous Passive Motion and Controlled Active Motion Devices



INTRODUCTION

ARTROMOT®

ARTROMOT CPM products are developed and manufactured in Germany by DJO Germany (Ormed GmbH), part of DJO Global. As the market leader in motorized CPM devices, DJO Germany has over 30 years of experience in designing leading edge CPM products. All products are classified MDD IIa and registered according to all current valid standards, for providing maximum safeness in clinical and rental usage.

DJO Global is a leading global developer, manufacturer and distributor of high-quality medical devices that provide solutions for musculoskeletal health, vascular health and pain management. The company's brands address the continuum of patient care from injury prevention to rehabilitation after surgery, injury or degenerative disease.



directly, via rental programs.





















CLINICAL STUDIES

Evidence-based therapy

Excerpt from Prof. Kirschner's meta-analysis*.

"Thanks to the overall benefits conferred, CPM must today be used as an essential treatment modality (...) in an inpatient as well as an outpatient setting because clear treatment advantages have been observed (...)."

Excerpt from an open, prospective, randomized clinical multi-center study involving patients with massive rotator cuff rupture:**

- "Statistically significant results were obtained, attesting to the superiority of combination therapy comprising CPM and physiotherapy vs patient treatment based only on physiotherapy.
- In the CPM group 90° abduction was achieved much earlier
- Patients in the CPM group were able to resume occupational activities more quickly
- CPM therapy markedly reduced pain
- There was no evidence of complications or dangers posed by CPM treatment in the domiciliary setting"

Results: CPM therapy with ARTROMOT

META-ANALYSIS*	MULTI-CENTER STUDY**
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^{*} Results of the meta-analysis, Kirschner, P. (2004): "CPM-Continuous Passive Motion: Behandlung verletzter und operierter Kniegelenke mit Mitteln der passiven Bewegung. Metaanalyse der gegenwärtigen Literatur"

Der Unfallchirurg, Band 107, 4/04

A. Imhoff, V. Martinek, S. Braun; DRK Klinikum Westend, Berlin; B. Dreithaler, C. Koch; Arcus Sportklinik,

Pforzheim: M. Speck, L. Bös, A. Bidner; Klink am Ring, Köln: S. Preis, F. Windgasse, J. Bernholt, T. Rudolph, N. Bernards; Praxis Dr. Hübscher, Kaufbeuren: Dr. Hübscher

"Effektivität der postoperativen Behandlung mit CPM-Bewegungsschienen in Kombination mit krankengymnastischer Therapie im Vergleich zu ausschließlich krankengymnastischer Therapie bei Patienten mit vollständiger Ruptur der Rotatorenmanschette"

^{**}Results of the open, prospective, randomized clinical multi-center study study centers: Klinik und Poliklinik für Orthopädie der Universität zu Köln: P. Eysel, P. König, J.W.P. Michael; Stiftung Orthopädische Universitätsklinik, Heidelberg: M. Loew, M. Rickert; Klinikum Rechts der Isar, München:

ORDERING INFORMATION **Part Number** Description 80.00.070 ARTROMOT Active-K Therapy Unit **ARTROMOT ACTIVE-K patient chip cards** 0.0040.210 passive: blue (only CPM functions) 0.0040.211 active: green (only CAM functions) 0.0040.212 protocol: orange (only therapy protocols) 0.0040.213 special: red (all functions) Patient chip card set including: patient chip cards upon individual choice 0.0040.21X-S Marker pen for patient chip card (2x) Eraser for patient chip card (2x) 0.0031.006 Marker pen for patient chip card 5001558 Eraser for patient chip card 0.0040.100 Active-K strap set (4 straps) 2 0037 024 Connection cable for muscle stimulator 80.00.056 Transport trolley 80.00.068 Transport trolley (modular) TK-001 Transport box

Range of Motion Extension / Flexion	
Knee	10°/0°/120°
Нір	0°/7°/115°
Features	
Extension/Flexion	ROM adjustment passively (by using the hand controller) or active ROM adjustment (by bending and stretching the leg)
Pauses (Extension and/or Flexion)	1 – 59 s/1 – 59 min
Timer	1 – 59 min/1 – 24h/continuous operation
Warm up protocol	Gradual progression to the maximum set ROM
Speed	5 % - 100 % (separately for passive of active training)
Reverse on load in steps	10 kg — 60 kg, patient safety feature in passive mode
EMS control	For an optimal combination of CPM treatment and electrotherapy
New patient	Activates the default setting for new patients
Therapy documentation	Graphic representation of the overall treatment cycle
Key lock function	0 – 4 in steps, limits the changeable features and prevents accidental changes of the parameter setting
Transport setting	Moves the carriage to the transport position
Set up	For basic adjustments of the device (e.g. language set up, service menu, date/time)

ACTIVE-K

FOR THE KNEE AND HIP JOINT



The Active-K is a motorized physiotherapy unit that delivers a unique mix of rehabilitation therapies through a single device. Combining the benefits of CPM (Continuous Passive Motion), CAM therapy (Controlled Active Motion) and the onboard protocols, the patient is able to regain coordination and reduce proprioceptive deficit.

Using the Active-K allows patients to regain painless mobility of hip and knee joints at an early post-operative stage and stimulates the healing process. Additionally, the active component of the therapy unit is intended to enhance proprioception and functional stability (strength) as mentioned at an early stage and thus improve coordination following joint surgery.

FEATURES

- Lightweight (17 kg) robust design, able to withstand +/-30 kg of force
- Designed to ensure anatomically correct movements are maintained
- Can be secured to a treatment table or bed using the fold-out stabilization supports and/or optional straps
- Integral footplate sensor enables exercise forces to be measured
- Computer controlled motor for CAM and coordination therapies
- Fully adjustable to suit different patient sizes and heights
- Advanced, interactive hand controller incorporating a full color LED screen for instant patient feedback
- · Controller features an easy to use icon based menu system
- Patient Chip Card for storage of therapy data
- A range of pre-programmed protocols for the 3 mayor indications (ACL/PCL, Cartilage repair, TEP) enables easiest usage
- · 2 year warranty

The Active-K has the capacity to allow clinicians to perform therapeutic strengthening exercises by allowing muscular contractions using the following methods:

- Concentric
- Isokinetic
- Eccentric
- Isometric

Additional Therapeutic Benefits for Patients

- Enhancement of joint metabolism
- Prevention of joint stiffness
- Promotion and regeneration of cartilage and damaged ligaments
- Faster hematoma / re-absorption
- Improved blood & lymph circulation
- Prophylaxis for thrombus and embolism
- Bridging the gap from Passive motion to Active training with resistive therapy during rehabilitation
- Expedites coordination & sensory perception following surgery



1 Passive (CPM)

2 Active (CAM)

3 Coordination

Controlled and gentle mobilisation:

- Reduce swelling and pain
- Prevent joint stiffness
- Regain mobility

Functional stabilization:

- Smooth/controlled muscle reactivation and strengthening
- Further reduction of swelling and pain
- Regain functional stability

Stabilizing exercise:

- Muscle reactivation
- To train coordination / proprioception





TECHNICAL SPECIFICATIONS (Continued)

Additional features for a	ctive exercising
Force (Extension and/or Flexion)	Separately for each direction: - Concentric / eccentric training - Adjustable forces: from 0 kg (passive) to max. 30 kg
Active Zone	Zone within the set ROM for active training (max. 0°/0°/90°)
Coordination features	
Maintain force static/ dynamic	Enables isometric or limited isokinetic training
Find angle active/passive	Increases the perception of the current knee angle position
Free training	Active training against adjusted force resistance over entire possible ROM 10° / 0° / 120°
Adjustable features with	in the therapy protocols
Indication	ACL/PCL, Cartilage, TEP
Extension/Flexion	ROM adjustment passively (by using the hand controller)
Treatment level per indication	1-6, increasing activity rate (level $1=100%$ passive / level $6=1%$ passive)
Timer	Duration of a level 20 min – 2 h
Demo	Easy demonstration of a treatment level, to train the patient
Default setting	e.g. language set up, service menu, reverse on load, new patient
Dimensions	
Weight	17 kg
Dimensions*	96 x 38 x max. 57 cm
Suitable for patient height	approx. 135 – 205 cm
max. permanent load on carriage	30 kg
max. patient weight	Approx. 275 kg

^{*} Dimensions are listed as L x W x H

ORDERING INFORMATION

Part Number	Description
80.00.045	ARTROMOT-K1 Classic
80.00.040	ARTROMOT-K1 Standard
80.00.041	ARTROMOT-K1 Standard with chip card
80.00.042	ARTROMOT-K1 Comfort
80.00.043	ARTROMOT-K1 Comfort with chip card
80.00.055	Transport trolley
80.00.065	Transport trolley (modular)
TK-001	Transport box
0.0034.048	ARTROMOT chip card
2.0037.024	Connection cable "muscle stimulation"

ARTROMOT®-K1

FOR THE KNEE AND HIP JOINT

Making good things great!

- **ARTROMOT-K1** combines the best features of the time-tested ARTROMOT knee machine with state-of-the-art, trend-setting technology
- ARTROMOT-K1 was developed for the demanding use in clinics and home care/rental programs
- Using the **ARTROMOT-K1** is made easy by intuitive operation of the handheld programming unit with self explanatory symbols

INDICATIONS

- Arthrotomy and arthroscopy procedures in combination with synovectomy, arthrolysis
- Treatment following mobilization of joints in anesthetized patients
- Surgical treatment of fractures and pseudoarthrosis
- Exercise-stable osteosynthesis
- Operations on soft tissue in the joint area
- Patellectomy
- Corrective osteotomy
- Meniscectomy
- Total knee/hip replacement
- ACL/PCL reconstruction
- Complex knee surgery
- Articular cartilage surgery, e.g. autologous chondrocyte transplantation (ACT)



Handheld programming unit ARTROMOT-K1 Classic



Handheld programming unit ARTROMOT-K1 Standard and ARTROMOT-K1 Comfort













Range of Motion Extensi	ion/Flexion
Knee	-10° / 0° / 120°
Hip	0°/7°/115°
ARTROMOT-K1 Classic - F	eatures
Pauses (extension and flexion)	0 - 59 s 1 - 59 min
Speed	5% - 100 %
Key lock function	To prevent accidental changes of the parameter settings
ARTROMOT-K1 Standard	- Additional features
Timer	1 - 59 minutes / 1 - 24 hours / continuous operation
Pauses (extension and/or flexion)	0 - 59 seconds / 1 - 59 minutes
Reverse on load in steps	1 - 25 / patient safety feature
Warm up protocol	Gradual progression to the maximum range of motion
Total therapy time	Added sum of the therapy sessions
New patient	Activates the default settings for new patients
Transport setting	Moves the carriage to the transport position
Service menu	
ARTROMOT-K1 Comfort -	Additional features
EROM repeat (extension or flexion)	Exercises are performed at a higher rate in the end range of motion
Stretching (extension or flexion)	For gradual and smooth increase of the range of motion
Therapy documentation	Graphic representation of the overall treatment cycle
EMS control	For an optimal combination of CPM treatment and electrotherapy
Workout protocol	Combines various functions of the comfort model in one protocol
Comfort protocol	Warm up in the EROM of extension and flexion
ARTROMOT-K1 with Chip	Card - Additional features
Patient chip card	Stores patient-specific therapy parameters
Dimensions	
	11 kg (24.4 lb)
Dimensions	97 x 36 x 23 cm
	(38.1 x 14.1 x 9.0 in)
Suitable for patient height	Approx. 120 – 205 cm
max. permanent load on carriage	25 kg
	Approx. 230 kg

ORDERING INFORMATION

Part Number	Description
80.00.023	ARTROMOT-S3
80.00.024	ARTROMOT-S3 Comfort
0.0034.048	ARTROMOT chip card

ARTROMOT®-S3

FOR THE SHOULDER JOINT

The best choice for Shoulder Rehab!

Combining tested features, such as the patient chip card, the easy swift conversion, the anatomically correct motion, with a streamlined design, the **ARTROMOT-S3** is one of the most ergonomically designed CPM devices for the shoulder.

It also features a **handheld programming unit with LCD graphic display**, which has a wide screen with large self-explanatory symbols and an intuitive menu navigation for ease of use.

INDICATIONS

- Arthrotomy and arthroscopy procedures in combination with synovectomy, arthrolysis
- Treatment following mobilization of joints in anesthetized patients
- Surgical treatment of fractures and pseudoarthrosis
- Exercise-stable osteosynthesis
- Endoprosthetic implants
- Surgical treatment of impingement syndrome
- Acromioplasty
- Decompression surgery
- Rotator cuff reconstruction



Handheld programming unit



Patient chip card for storage of therapy data







INTERNAL / EXTERNAL ROTATION



Range of Motion	
Adduction/abduction	0°/30°/175°
Internal/external rotation	90°/0°/90°
Elevation	0°/30°/175°
Horizontal adduction abduction (manual)	0°/0°/120°
ARTROMOT-S3 - Features	
Timer	1 - 300 min. / continuous operation
Pauses	0 - 30 seconds
Speed (ABD/ADD)	1 % - 100 %
Reverse on load in Steps (motor A and B separately)	1 - 25 / patient safety feature
Motor control	ON/OFF for isolated motion, ab-/adduction or internal-/ external rotation
Synchronized motors	ON = PNF-like motion pattern OFF = Randomised, asynchronised motion
Total therapy time	Added sum of the therapy sessions
New patient	Activates the default settings for new patients
Transport setting	Moves the motors into the transport position
Patient chip card	Stores patient-specific therapy parameters
Key lock function	Prevents accidental changes of the parameter settings
Service menu	
ARTROMOT-S3 Comfort - A	Additional features
Head rest	For comfortable, optimal patient positioning
Shoulder positioning	Prevents evading movements
Oscillation	Higher rate of motion in the EROM
Stretching (ABD or I-ROT or E-ROT)	Careful and smooth increase of the ROM
ISO ABD ROT protocol	For separate exercising in both directions
Warm-up protocol	Gradual progression to the maximum ROM
Therapy documentation	Graphic presentation of the overall treatment cycle
Dimensions	
Weight	25 kg (55.1 lb)
Dimensions	87.5 x 57.5 x 58 cm (34.4 x 22.6 x 22.8 in)
Transport dimensions	37 x 57.5 x 58 cm (14.5 x 22.6 x 22.8 in)
Suitable for patient height	Approx. 120 – 210 cm
max. permanent load on	12 kg
arm carriage	

ORDERING INFORMATION

Part Number	Description
80.00.031	ARTROMOT-E2 (chair model)
80.00.033	ARTROMOT-E2 compact (pole-mount model)
0.0034.048	ARTROMOT chin card

TECHNICAL SPECIFICATIONS

Range of Motion	
Extension/flexion	-5° / 0° / 140°
Pronation/supination	90°/0°/90°
ATROMOT-E2 - Features	
Motor control	ON/OFF for isolated motion extension/flexion or pronation/ supination
Synchronized motors	ON = PNF-like motion pattern OFF = Randomised, asynchronised motion

 Speed
 1% - 100%

 Timer
 1 - 59 min/1 - 24h/continuous operation

 Pauses
 1 - 59 s/1 - 59 min

Reverse on load in steps (motor A and B separately)

1 - 25/patient safety feature

Total therapy time

Added sum of the therapy sessions

For gradual progression to the maximum range of motion

Patient chip card For storage of the therapy parameters

New patient

Activates the default settings for new patients

For separate exercising in

ISO Motion protocol both directions

EROM Repeat Higher rate of motion (EX/PRO – FLEX/SUP) in the EROM

Stretching Careful and smooth increase of (EX – FLEX – PRO – SUP) the range of motion

Therapy documentation Graphic presentation of the overall treatment cycle

Key lock function Prevents accidental changes of the parameter settings

Transport setting Moves the motors into the transport position

Service menu

ATROMOT-E2 Dimensions

Weight	28.7 kg (63.2 lb)
Dimensions	87.5 x 57.5 x 58 cm (34.4 x 22.6 x 22.8 in)
Suitable for patient height	ca. 120 – 210 cm
max. permanent load on arm carriage	9 kg
max. permanent load on chair	150 kg

ATROMOT-E2 Compact Dimensions

Weight	17 kg (37.4 lb)
Dimensions	87.5 x 57.5 x 29 cm (34.4 x 22.6 x 11.4 in)
Suitable for patient height	ca. 120 – 210 cm
max. permanent load on arm carriage	9 kg

ARTROMOT®-E2

FOR THE ELBOW JOINT

ARTROMOT®



Efficient CPM therapy for the Elbow!

Indicated in the post-op treatment and rehab process of various elbow and arm conditions, the **ATROMOT-E2** offers many useful features, such as the patient chip card, the easy swift conversion, the anatomically correct motion (PNF pattern), and the forearm placement on a carriage with automatic length adjustment and sandwich straps (to prevent muscle contractions).

With its streamlined design, and its handheld programming unit with LCD graphic display (with large self-explanatory symbols and an intuitive menu navigation), the device is highly ergonomic and easy to use.

INDICATIONS

- Arthrotomy and arthroscopy procedures in combination with synovectomy, arthrolysis
- Surgical treatment of fractures and pseudoarthrosis
- Exercise-stable osteosynthesis
- Endoprosthetic implants
- Treatment following mobilization of joints in anesthetized patients
- Reconstructive surgery of biceps tendons
- Operations on soft tissue in the joint area



ARTROMOT®-SP3

FOR THE ANKLE JOINT

ARTROMOT®



The new dimension in Ankle CPM therapy!

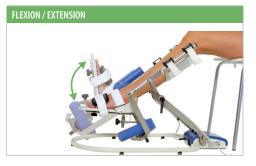
ARTROMOT-SP3 offers anatomically correct motions (PNF pattern).

Using the **ARTROMOT-SP3** is made easy by intuitive operation of the handheld programming unit with self-explanatory symbols.

ARTROMOT-SP3 optimizes ease-of-use through simple mechanical settings and offers easy to disinfect leg support and footrest.

INDICATIONS

- Arthrotomy and arthroscopy procedures in combination with synovectomy, arthrolysis
- Surgical treatment of fractures and pseudoarthrosis
- Exercise-stable osteosynthesis
- Operations on soft tissue in the joint area
- Reconstructive ligament and tendon surgery
- Operations on cartilage lesions
- Achilles tendon reconstruction





ORDERING INFORMATION **Part Number Description** 80.00.035 ARTROMOT-SP3 Standard 80.00.036 ARTROMOT-SP3 Standard Chip 80.00.037 ARTROMOT-SP3 Comfort 80.00.038 ARTROMOT-SP3 Comfort Chip 80.00.056 Transport trolley 80.00.066 Transport Trolley (modular) 0.0034.048 ARTROMOT chip card **TECHNICAL SPECIFICATIONS** Range of Motion Plantar flexion / 50°/0°/40° Dorsal extension Inversion / Eversion 40°/0°/20° **ARTROMOT-SP3 Standard - Features** 1 - 59 minutes / 1 - 24 hours / Timer continuous operation 0 - 59 seconds Pauses Speed 5 % - 100 % Reverse on load in Steps 1 - 25 / patient safety feature (motor A and B separately) ON/OFF for isolated motion of motor A and B, plantar flexion/ Motor control dorsal extension or inversion/eversion ON = PNF-like motion pattern Synchronized motors OFF = Randomised, asynchronised motion Added sum of the Total therapy time therapy sessions Activates the default settings for New patient new patients Moves the motors into the Transport setting transport position Patient chip card Stores patient-specific (Optional) therapy parameters Prevents accidental changes of Key lock function the parameter settings Service menu **ARTROMOT-SP3 Comfort - Additional features** For gradual and smooth increase Stretching modes of the range of motion Graphic presentation of the Therapy documentation overall treatment cycle Gradual progression to the Warm-up protocol maximum range of motion For separate exercising ISO protocol in both directions **Dimensions** Weight 11 Kg (24.4 lb) 78 x 42 x 39.5 cm Dimensions (30.7 x 16.5 x 15.5 in) Suitable for Approx. 120 - 210 cm (3'11"-6'7") patient height max. permanent load on 20 kg carriage max. patient weight Approx. 200 kg * Dimensions are listed as L x W x H

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Together in Motion...