



Das modulare CPM-Programm
zur Gelenkmobilisation

OPERATING MANUAL

ARTROMOT-S Shoulder Joint

ARTROMOT-RE Rotation/Elevation of the Shoulder Joint (optional)

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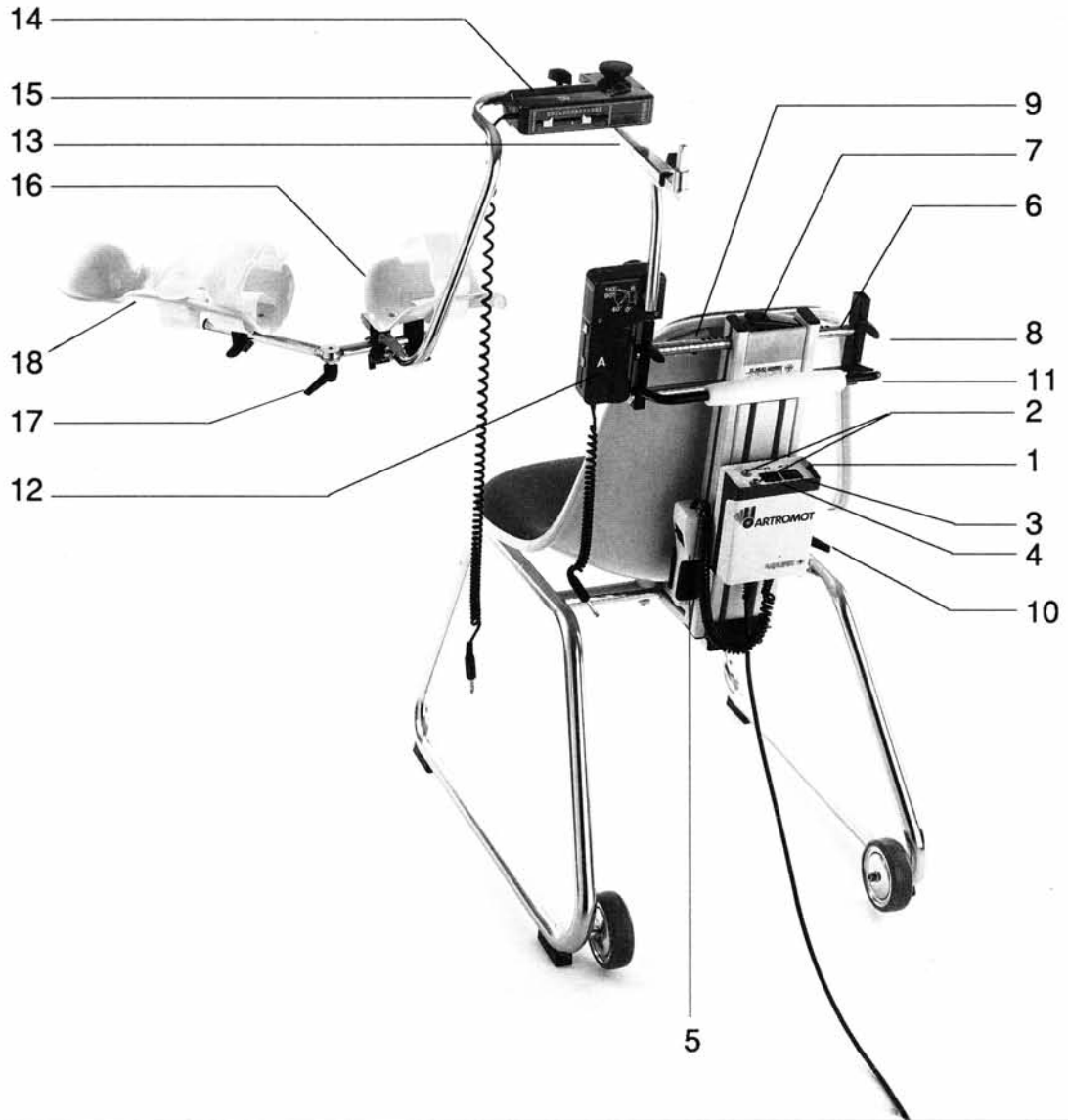
ARTROMOT-S

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ARTROMOT-S



1. General information for ARTROMOT-S

ARTROMOT-S is a motorized unit for continuous passive motion (CPM) of the shoulder joint.

The unit is mounted on a cushioned chair and consists of a holding frame with connecting bar, two electric motors, and an arm support.

ARTROMOT-S can be used for both the right and left shoulder joints.

The holder and arm supports can be easily adapted to the physical dimensions of the patient.

Motor A produces abduction and adduction motions between 40° and 110°.

Motor B produces horizontal adduction and horizontal abduction motions between 110° - 0° - 30°.

Motors A and B can be moved at the same time, in which case they produce a combination of the motions.

The movement sectors are preset with a slide switch located on the motors.

The rate of motion is set at two speeds from a flip switch.

Rate of motion		
Adduction/ Abduction	40° - 110°	speed 1: ~60 sec. speed 2: ~40 sec.
Horizontal Adduction/ Horizontal Abduction	100°-0°-30°	speed 1: ~1 minute 50 sec. speed 2: ~1 minute 20 sec.

2. Indications

ARTROMOT-S is indicated for the treatment of shoulder joints that tend to lose mobility as a result of injury, surgery, or disease such as:

- joint distortion and contusion
- fractures and displacements with reconstructive surgery of the clavicle, scapula, AC-joint, and glenohumeral joint
- exercise-withstanding osteosynthesis
- synovectomies
- rupture of the rotator cuff
- calcifying tendonitis
- acromioplasty
- soft tissue surgery in the axilla and area of the shoulder girdle

Should any irritation occur such as pain, hyperthermia, and swelling, treatment should be temporarily discontinued. In such cases, cold compresses and analgesics are recommended.

ARTROMOT-S is contraindicated in cases of acute joint arthrosis.

3. Description of ARTROMOT-S

1. Control panel
2. Connections for motor A and B connectors
3. Power switch
4. Flip switch for motion speed:
"FAST (II)/SLOW (I)"
5. Patient switch
6. Holding frame for motor
7. Push button for lateral movement for shoulder support frame
8. Screws to secure the motor frame
9. Loops for arm straps
10. Tensioning lever for height adjustment
11. Transportation handle
12. Motor A with slide switch
13. Motor connecting bar with locking screw
14. Motor B with slide switch
15. Connecting bar for arm support
 - a) "left"
 - b) "right"
16. Upper arm support
17. Elbow joint support frame with tensioning lever
18. Lower arm support

4. Instructions for installing ARTROMOT-S

ARTROMOT-S can be used for both the left and the right shoulder joints. The steps described are for installing the unit for the **left** arm.

1. Insert motor A (12) into left black bracket of holding frame (6). Tighten the locking screw.
2. Remove round locking screw on motor A/ motor B connecting bar (13). Insert connecting bar (note: connecting bar has "A" stamped on one end) into motor A from behind chair. Retighten round locking screw so it is pointing toward front of chair.
3. Remove round locking screw on other end of motor A/motor B connecting bar. Insert motor B (14), onto the square socket of motor A/motor B connecting bar (13) (note: connecting bar has "B" stamped on this end). Be certain the slide switch is facing towards the back of the chair, and the cable is exiting away from the chair. Retighten round locking screw.
4. Insert right ("L") connecting bar for arm support (15) onto square socket of motor B; secure with locking screw. Note: "L" marking on connecting bar (15) must be positioned to accept arm support unit.
5. Insert arm support (17) onto connecting bar (15) so that the "L" marking on the arm support aligns with the "L" marking on the connecting bar; secure with locking screw.
6. The unit is ready for operation (refer to Operating instructions).

5. Operating instructions

Prior to positioning the patient in the device:

1. Move the slide switches on the two motors (12 and 14) to the end position.
2. Connect power cord, turn on power switch (3).
3. Operating motor A (12):
 - 3.1. Plug motor A cord into connection (2).
 - 3.2. Press patient switch (5) until the arm support is in an abduction position of $\sim 60^\circ$ (observe the scale on motor A).
 - 3.3. Turn off patient switch (5).
4. Operating motor B (14):
 - 4.1. Pull motor A cord out of connection (2).
 - 4.2. Plug motor B cord into connection (2).
 - 4.3. Press patient switch (5) until the arm support is in $\sim 35^\circ$ of horizontal adduction (observe the scale on motor B).
 - 4.4. Turn off patient switch (5).

After positioning the patient in device:

5. Have the patient sit upright, but relaxed in the chair. Place the affected extremity on the arm support.
6. Adjust the elbow joint so that it is aligned with the pivot point of the arm support.
7. Loosen the screw of the lower arm support (18). After adjusting the arm support (the patient's hand should lie on the hand rest), tighten the screw.
8. Loosen the screw of the upper arm support (16). After adjusting the patient's upper arm, retighten the screw.
9. Adjusting the height:
 - 9.1. Hold transportation handle (11), loosen the tensioning lever (10), raise or lower the carrying handle until the distance between shoulder height and motor B is about the width of 2 to 3 fingers.
 - 9.2. Tighten tensioning lever (10).
10. Aligning the rotational axes of the motors with the pivot of the shoulder:
 - 10.1. Press button (7), move holding frame (6) in horizontal direction until rotational axis motor A is at the level of the shoulder axis.

10.2. Release locking screw at the square socket of the motor connecting bar (13), move the square rod until the rotational axis of motor B is above the shoulder axis.

11. If necessary for comfort and safety, apply the seat belt. The patient's back should be up against the back of the chair.

Setting the exercise program:

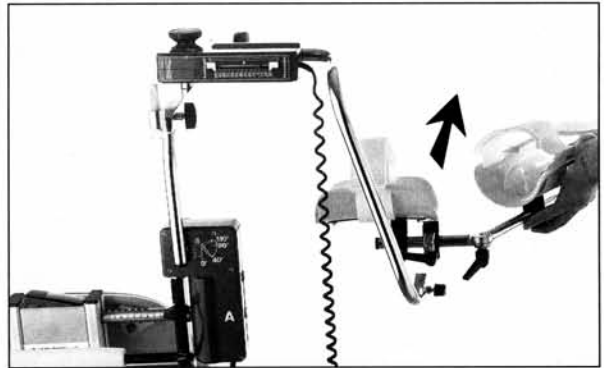
12. Adduction and abduction exercises:
 - 12.1. Set the movement sector for switches on motor A (begin with small sectors).
 - 12.2. Pull motor B cord out of connection (2).
 - 12.3. Plug motor A cord into connection (2).
13. **Horizontal** adduction and horizontal abduction exercises:
 - 13.1. Set movement sectors for horizontal adduction and horizontal abduction with slide switches on motor B (begin with small sectors).
 - 13.2. Pull motor A cord out of connection (2).
 - 13.3. Plug motor B cord into connection (2).
14. The motions of motors A and B can be combined by plugging **both** cords into the connections.
15. Adjust motion speed with flip switch (4).
16. Turn on patient switch (5).
17. Wait for the first motions to begin. After you have made sure the patient is comfortable, give him or her the patient switch (4).

6. Instructions for changing sides

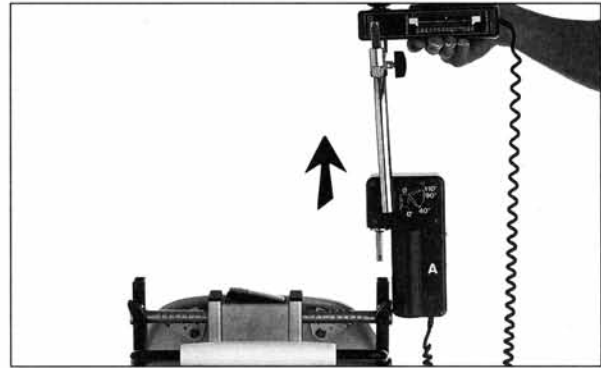
ARTROMOT-S can be used for both the left and the right shoulder joints.

The unit can be easily changed from side to side. The steps described are for changing from **right to left**.

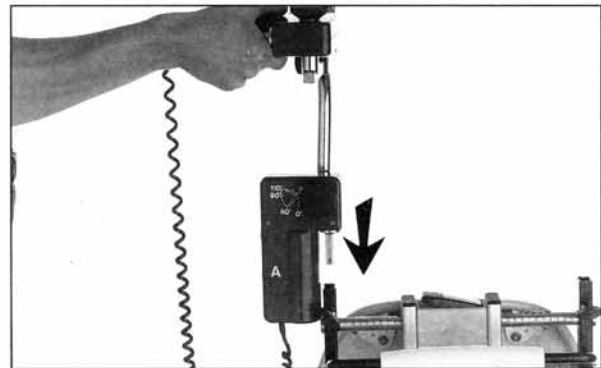
1. Turn power switch (3) to "on".
2. Plug motor A (12) into connection (2).
3. Move slide switch of motor A to end position (maximum movement sector).
4. Start motor A with patient switch (5) and let run until the metal tongue of the scale of the motor is at 90°.
5. Disconnect motor A.
6. Plug motor B (14) into connection (2).
7. Move slide switch of motor B into end position (maximum movement sector).
8. Set motor B in operation with patient switch (5) and let run until metal tongue on scale on the motor is at position 0°.
9. Disconnect motor B.
10. Loosen screw at lower end of connecting bar for arm support (15) and pull arm support out of the connecting bar.
11. Loosen screw of connecting bar at motor B; remove connecting bar.



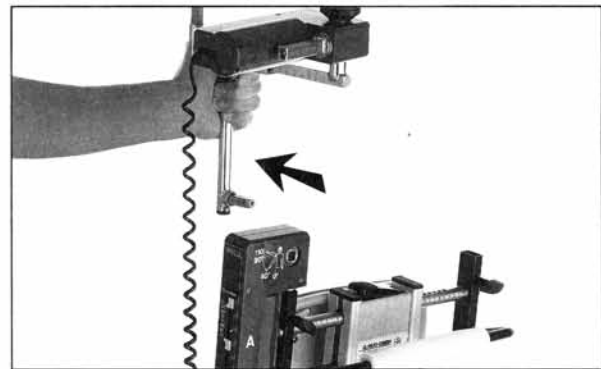
12. Loosen screw on holding bar (6) under motor A, lift the two motors with connecting bar from the holder,



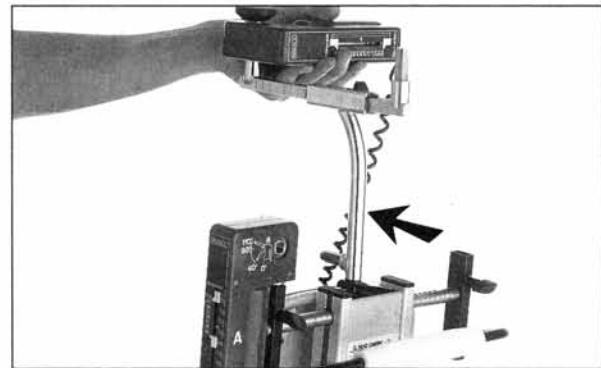
and place them in the holder on the left side. Tighten the locking screw.



13. Remove round locking screw on motor A; pull motor connecting bar (13) with motor B forward out of motor A,



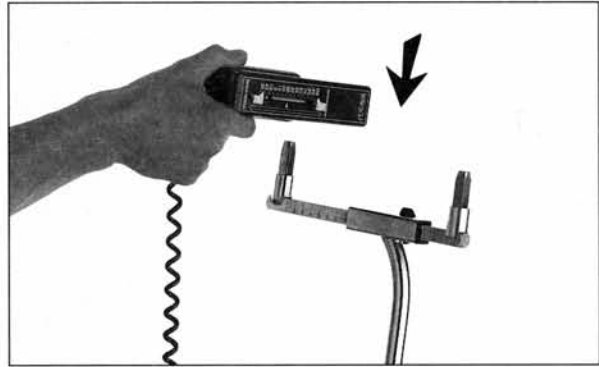
and insert from behind into motor A; secure with locking screw.



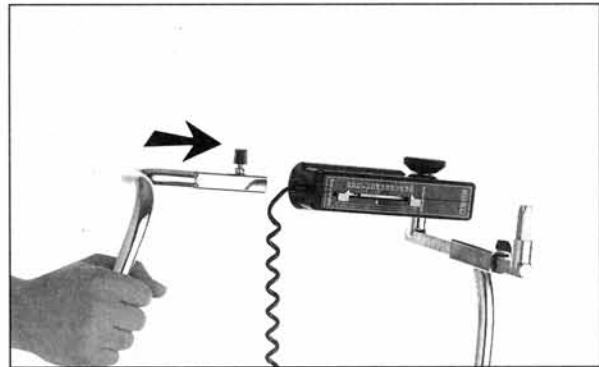
14. Remove round locking screw on motor B, lift motor B out of the square socket of the motor connecting bar (13). Turn 180°. The scale of the motor will be pointing backwards, the cable will be on the left.



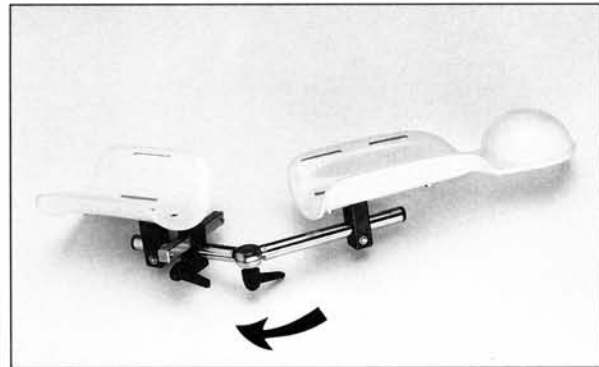
15. Insert motor B in the square socket of the motor connecting bar (13); secure with locking screw.



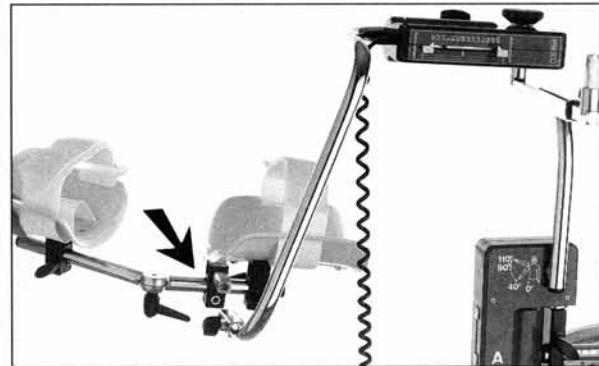
16. Insert left connecting bar for arm support (15) (observe "left" marking) in square socket of motor B, secure with locking screw.



17. Loosen tensioning lever on elbow joint of the arm support, swivel lower arm support clockwise around the joint to the desired position. Tighten tensioning lever.



18. Insert arm support into the connecting bar and secure.



19. Reconnect cable.

20. The unit is ready for operation (refer to operating instructions).



7. Technical description

Motorized unit for Continuous Passive Motion (CPM) treatment of shoulder joints (horizontal adduction/horizontal abduction 100° - 0° - 30°; and abduction/adduction 40° - 110°).

Attractive, white plastic seats with blue cushion, and stainless steel frame on two wheels. Plastic housing with integrated control panel; control voltage (24 volts); patient switch.

Two motors on stainless steel frame. White plastic upper and lower adjustable arm supports with velcro holding straps.

	<i>type 1</i>	<i>type 2</i>
Electrical Connection (watch type plate):	110 V, 60 Hz	220 Hz, 50 Hz
Length:	min. 28 in. max. 38 in.	min. 70 cm. max. 95 cm
Width:	min. 26 in. max. 49 in.	min. 65 cm max. 125 cm
Height:	min. 45 in. max. 53 in.	min. 115 cm max. 135 cm

Technical data are subject to change.

The manufacturer considers itself responsible for the effects on safety, reliability, and performance of the equipment only:

1. if assembly operations, extensions, re-adjustments, modifications or repairs are carried out by persons authorized by G. HUG GMBH
2. if the electrical installations of the relevant room complies with the applicable national requirements, and
3. if the instrument is used in accordance with the instructions for use.

Manufacturer: G. HUG GMBH
D-7801 Freiburg-Umkirch
Federal Republic of Germany

8. Maintenance and cleaning

The unit can be used for both intermittent and continuous operation. Protective maintenance is not required.

Moveable parts should not be oiled.

The housing and the detachable supports can be cleaned with any standard household cleaner and disinfectant.

If you have any questions, please contact our Technical Service Department:

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D- 7801 Freiburg-Umkirch
Tel. (0 76 65) 5 03-259

ARTROMOT-RE

1. General information for ARTROMOT-RE

ARTROMOT-S can be equipped with the supplementary module ARTROMOT-RE (optional) for passive mobilization of the shoulder joint. ARTROMOT-RE performs the motions of internal/external rotation, or elevation.

The supplementary module consists of a powerful 24 volt gear motor with two arm supports for internal and external rotation 80° - 0° - 80° , and elevation in preset motion sectors between 10° and 160° .

Rate of motion:

Rotation/Elevation: stage 1: ~1 min. and 50 sec.

stage 2: ~1 min. and 20 sec.

10. Indications

ARTROMOT-RE is indicated for the treatment of shoulder joints that tend to lose mobility as a result of injury, surgery or disease (see Indications for ARTROMOT-S).

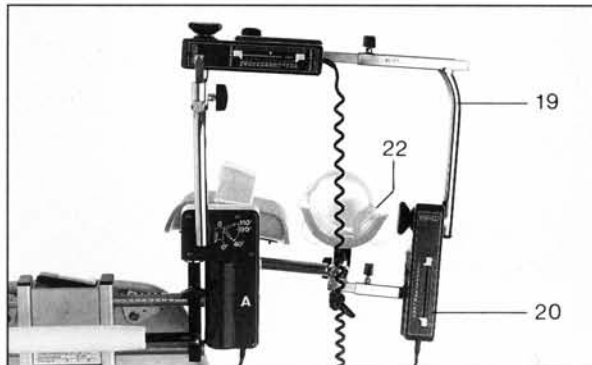
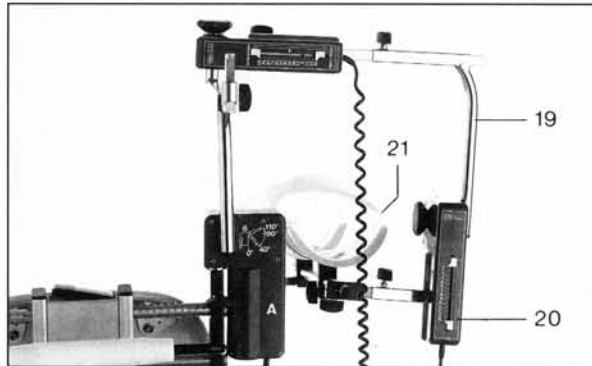
11. Description of ARTROMOT-RE

19. Connecting bar - motors B and C

20. Motor C with slide switch

21. Elevation arm support frame with rests for upper and lower arm.

22. Rotation arm support frame with rests for upper and lower arm.

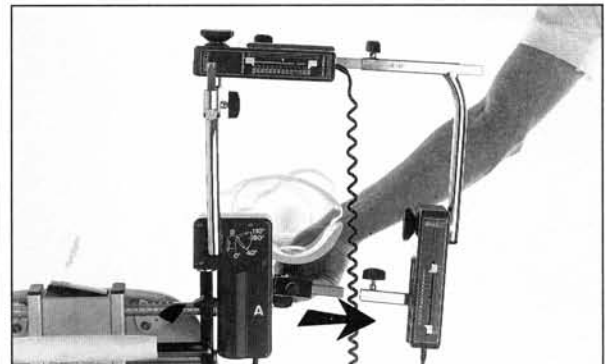
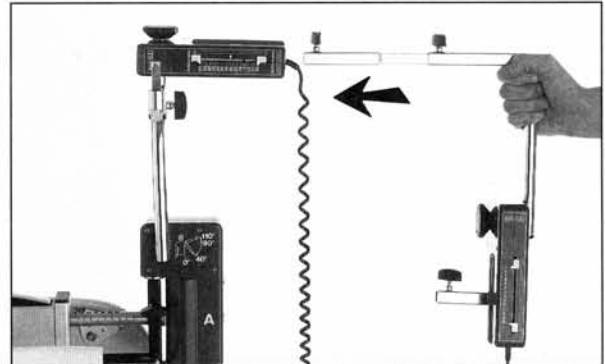
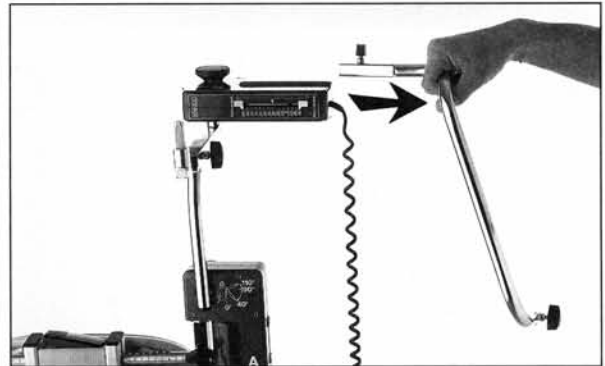
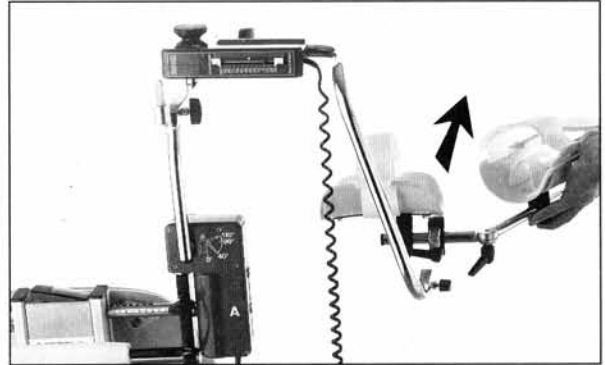


12. Instructions for installing ARTROMOT-RE

In conjunction with the supplementary module ARTROMOT-RE, ARTROMOT-S can also be used to provide internal/external rotation and elevation movements.

The steps described are for attaching ARTROMOT-RE to ARTROMOT-S on the right side.

1. Remove the right arm support frame for a duction/adduction, and horizontal adduction/horizontal abduction.
2. Operating motor A:
 - 2.1 Plug motor A into one of the connections.
 - 2.2 Move slide switch to the end position.
 - 2.3 Let motor run until the metal tongue on the scale of the motor is at 90° .
 - 2.4 Disconnect motor A.
3. Operating motor B:
 - 3.1 Plug motor B into one of the connections.
 - 3.2 Move slide switch to the end position.
 - 3.3 Let motor run until the metal tongue on the scale of the motor is at 0° .
 - 3.4 Disconnect motor B.
4. Open the locking screw on the connecting bar of the arm support frame (15), and remove the connecting bar.
5. Insert connecting bar with motor C into the square socket of motor B, and tighten the locking screw.
6. Depending on which exercise is intended, tighten the "rotation" or "elevation" arm support frame on the square socket of motor C.



13. Operating instructions

Prior to positioning the patient in the device:

1. Position the device in the following positions:
 - 1.1 Motor A at 90°
 - 1.2 Motor B for internal/external rotation exercise at 0°. Motor B for elevation exercise at 0.
 - 1.3 Motor C at #7 on scale.

After positioning the patient in the device:

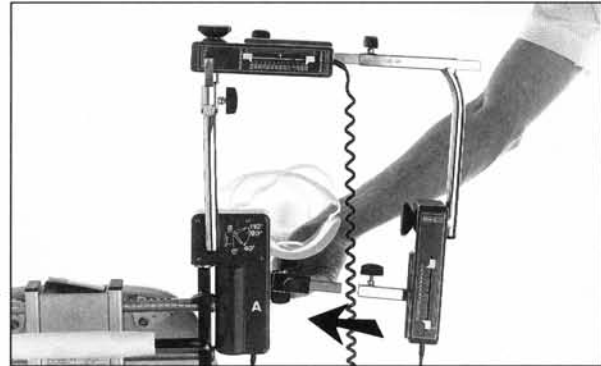
2. Have the patient sit in an upright, but relaxed position in the chair. Place the affected extremity on the arm support.
3. **For internal/external rotation exercise**, align the elbow joint with the pivot point of the arm support (22).
4. Loosen the locking screw of the lower arm support; tighten again after it has been adjusted (patient's hand should lie on the hand rest).
5. To adjust the height, hold the transportation handle (11) firmly, and loosen the tensioning lever (10). Raise or lower the handle until the distance between the shoulder, and motor B, is about the **width of 2-3 fingers**. Tighten the tensioning lever.

For further adjustments, see point 4 of the operating instructions for ARTROMOT-S.

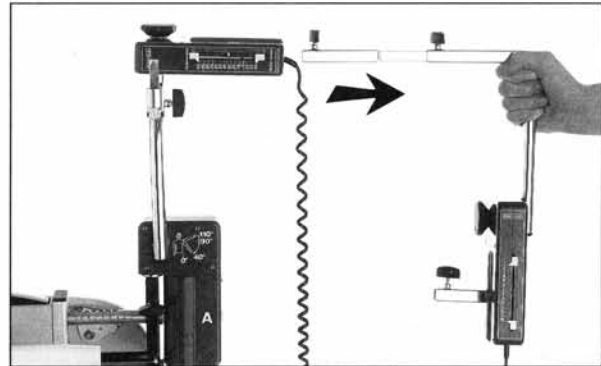
14. Instructions for changing sides

The supplementary module ARTROMOT-RE can be used for both the **right and left** shoulder joints. It is easy to change sides. The steps described are for changing from right to left:

1. Set motors in starting position (motor A - 90°, motor B - 0°, motor C - #7 on scale)
2. Disconnect motors.
3. Loosen the screw on the holder of the arm support frame, and remove the arm support frame.



4. Loosen the screw on the connecting bar between motor B and motor C, and remove the connecting bar with motor C.



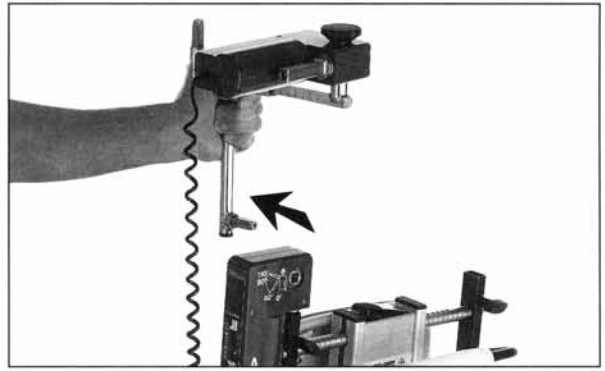
5. Loosen the locking screw on the frame holding the motors under motor A. Lift the two motors with connecting bar out of the holding frame,



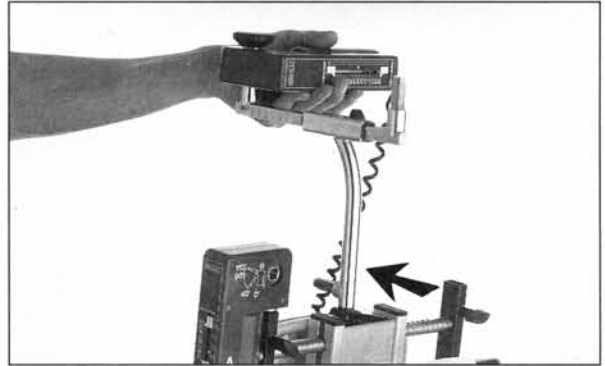
and insert in the appropriate holder on the left side; tighten the locking screw.



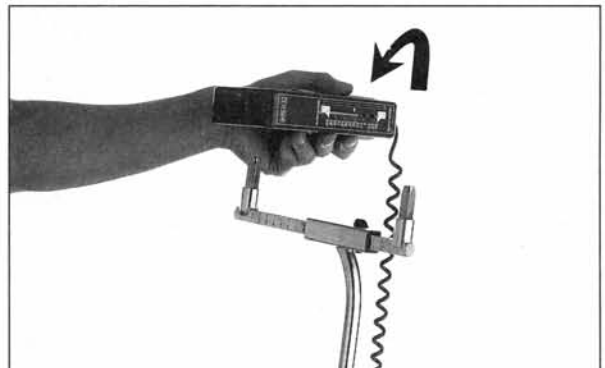
6. Loosen the round locking screw on motor A. Pull the motor connecting bar (13), with motor B, forward out of motor A,



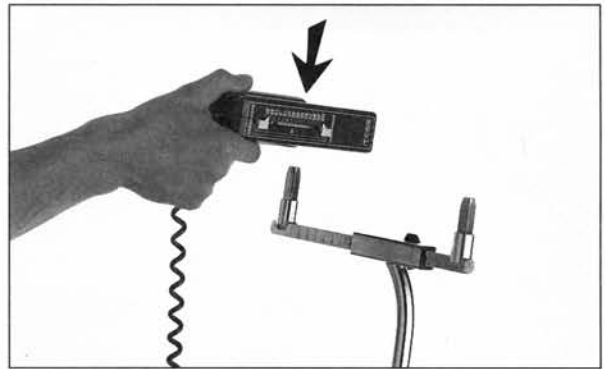
and reinsert it from behind, back into motor A. Secure with the round locking screw.



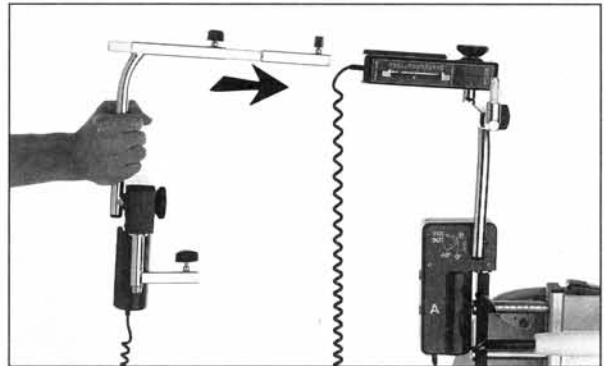
7. Loosen the round locking screw on motor B. Lift motor B out of the square socket of the motor connecting bar (13). Turn motor 180° to the left. The scale of the motor will point to the back, and the cable away from the chair.



8. Insert motor B onto the square socket of the motor connecting bar (13), and secure with the round locking screw.

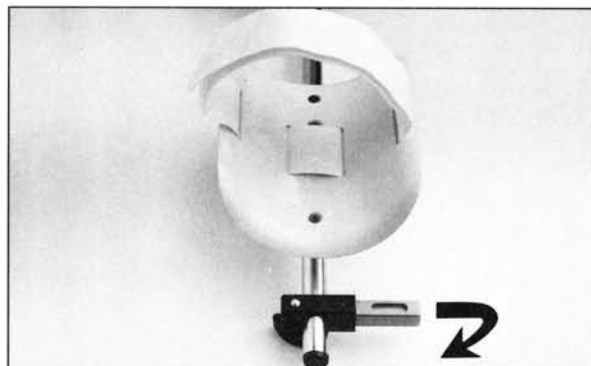


9. Place the connecting bar with motor C onto the square socket of motor B (scale of motor C points towards the back of chair); secure with locking screw.



10.1 **For rotation:** loosen the tensioning lever on the elbow joint of the arm support frame. Turn the under arm support clockwise around the joint until the desired position is reached; tighten the tensioning lever.

10.2 **For elevation:** loosen the black screw behind the upper arm support, and turn the square bar 180° around the chrome bar; tighten the screw.



11. Insert the square bar of the arm support into the connecting bar of motor C.
12. Reconnect motors.
13. The unit is ready for operation.

If you have any questions, please contact our Technical Service Department:

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