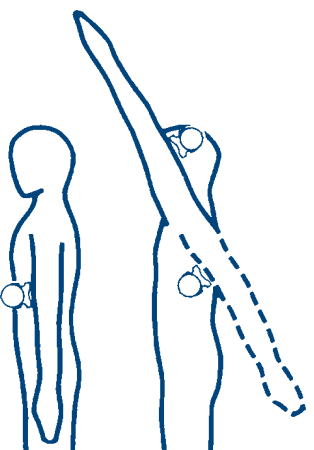
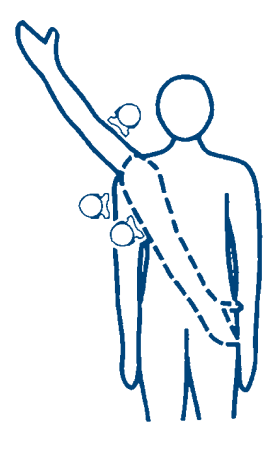


SHOULDER



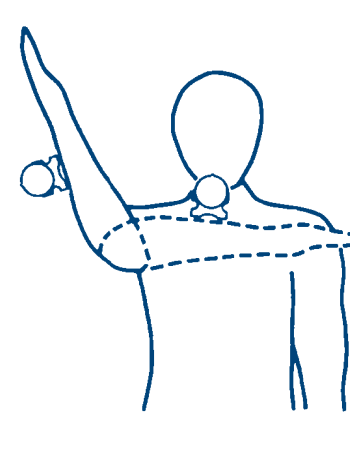
- Put shoulder into neutral position
 - Place goniometer on upper arm, set zero
 - Flex or extend shoulder
 - Read result
- Note: Do not allow the subject's body to twist

Flexion & Extension



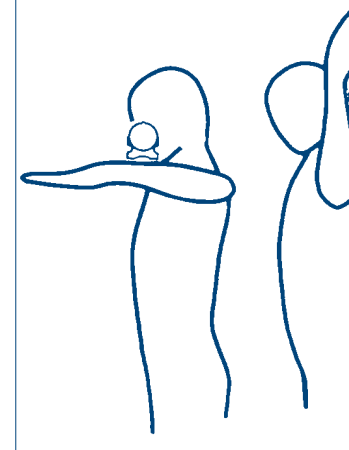
- Put shoulder into neutral position
 - Place goniometer on upper arm, set zero
 - Abduct or adduct shoulder
 - Read result
- Note: Keep the subject's body to twist

Abduction & Adduction



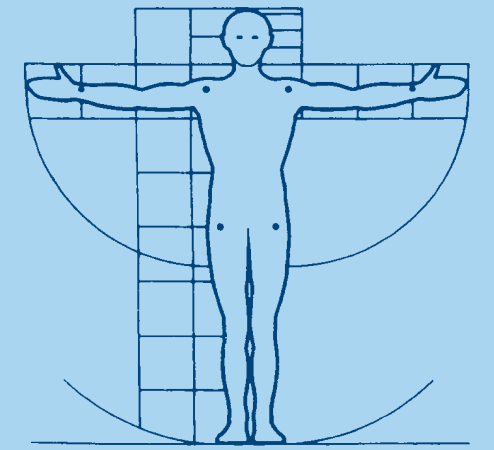
- Put shoulder at 90° flexion, elbow at 90° flexion, forearm and upper arm horizontal
 - Place goniometer on forearm, set zero
 - Internally or externally rotate shoulder
 - Read result from inner or outer dial
- Note: Keep the subject's arm horizontal

Rotation of the Flexed Shoulder

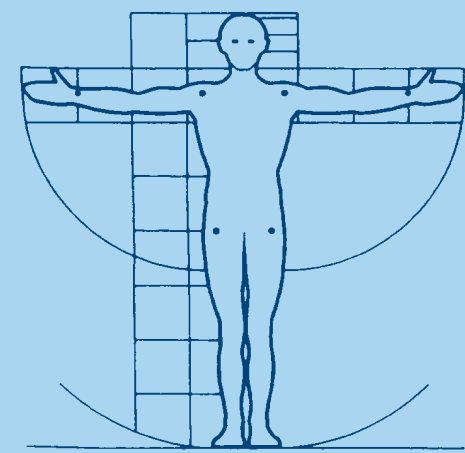


- Put shoulder at 90° abduction, elbow at 90° flexion, forearm and upper arm horizontal
 - Place goniometer on forearm, set zero
 - Internally or externally rotate shoulder
 - Read result from inner or outer dial
- Note: Keep the subject's arm horizontal

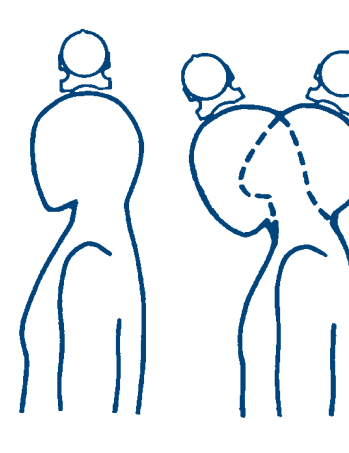
Rotation of the Abducted Shoulder



SPINE

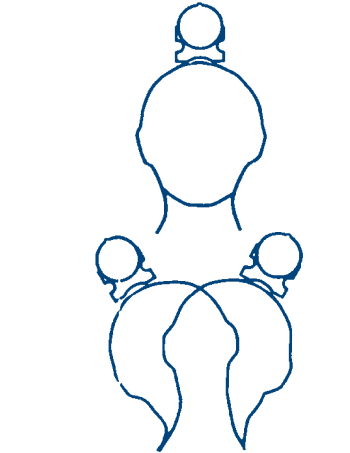


NECK



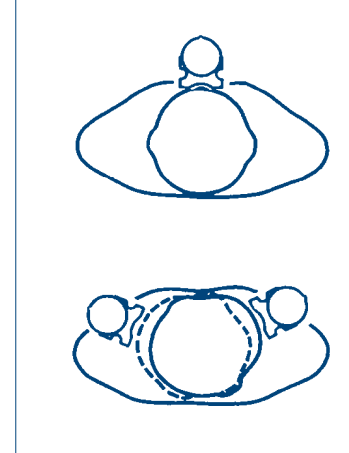
- Put head in neutral position
 - Place goniometer on top of head, set zero
 - Flex or extend neck
 - Read result
- Note: Be careful of the goniometer slipping on hair

Flexion & Extension



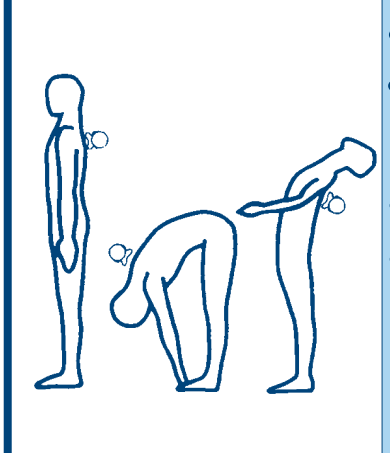
- Put head in neutral position
 - Place goniometer on top of head, set zero
 - Abduct neck
 - Read result
- Note: Be careful of the goniometer slipping on hair

Lateral Movement



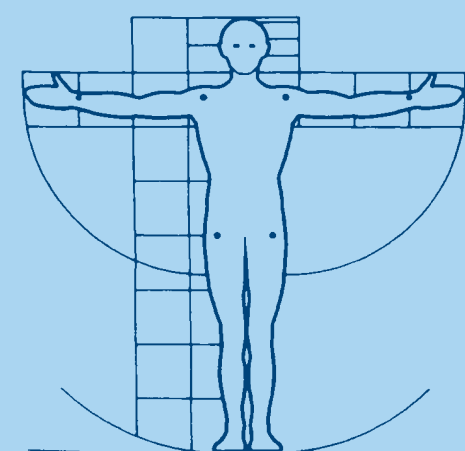
- Lay subject supine, with head in neutral position
 - Place goniometer on forehead, set zero
 - Rotate neck
 - Read result
- Note: Ensure both shoulders are in contact with the bed

Rotation

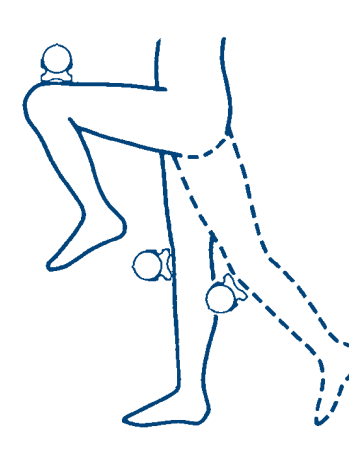


- Stand subject upright
 - Place goniometer on region of spine to be tested, set zero
 - Flex or extend spine
 - Read result
- Note: If the subject is clothed, the goniometer may slip during flexion

Flexion & Extension

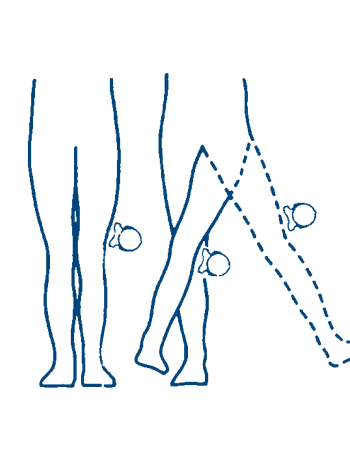


HIP



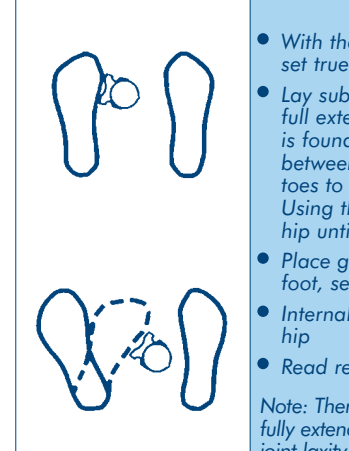
- Stand subject upright, preferably supported
 - Place goniometer on thigh, set zero
 - Flex or extend hip
 - Read result
- Note: A different result will be obtained with the knee in flexion due to pelvic tilt and lumbar flexion

Flexion & Extension



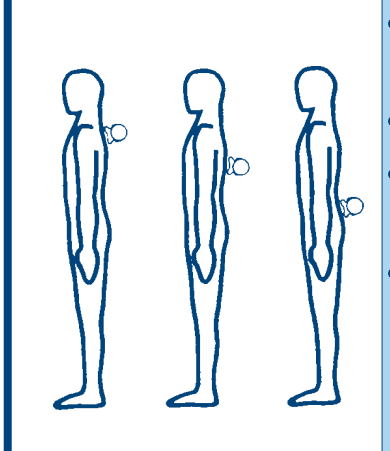
- Stand subject upright, feet apart (or lay them on their side)
 - Place goniometer on thigh, set zero
 - Abduct or adduct hip with the body stabilised
 - Read result
- Note: Pelvic tilt may occur

Abduction & Adduction



- With the goniometer on its side set true zero
 - Lay subject supine with knee in full extension. Neutral position is found by drawing a line from between the big and second toes to the centre of the heel. Using the goniometer rotate hip until zero
 - Place goniometer on side of foot, set zero
 - Internally or externally rotate hip
 - Read result
- Note: There is no rotation of the fully extended knee unless severe joint laxity is present

Rotation

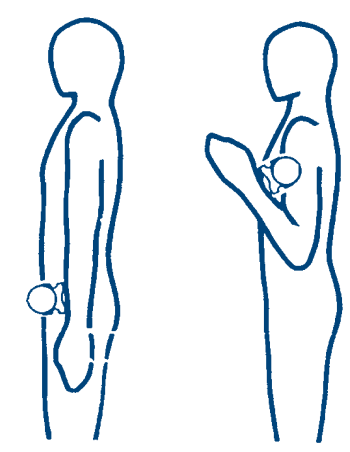


- With the goniometer on its side set true zero
 - Stand subject upright
 - Place the goniometer at different levels of the spine
 - Read result of each level
- Note: Kyphotic and Lordotic curvatures are shown as positive or negative values

Plotting Curvature

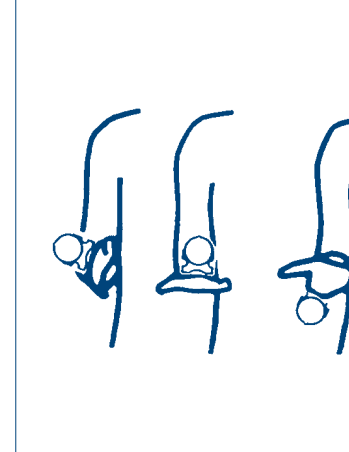


ELBOW



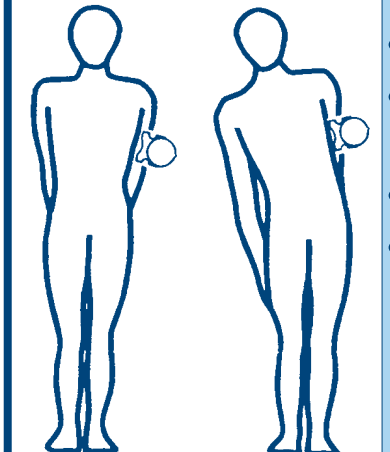
- Put elbow and shoulder at neutral position
 - Place goniometer on forearm, set zero
 - Flex elbow
 - Read result
- Note: Stabilise shoulder and upper arm to prevent error

Flexion & Extension



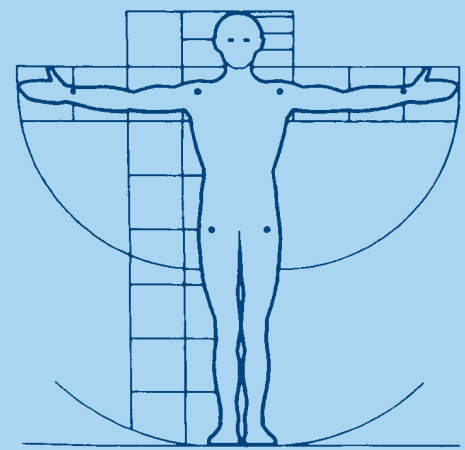
- Put shoulder at neutral position, elbow at 90° flexion, thumb uppermost
 - Place goniometer on the back of the hand, set zero
 - Pronate or supinate elbow
 - Read result from inner or outer dial
- Note: Twisting of the hand may indicate greater range of motion

Rotation

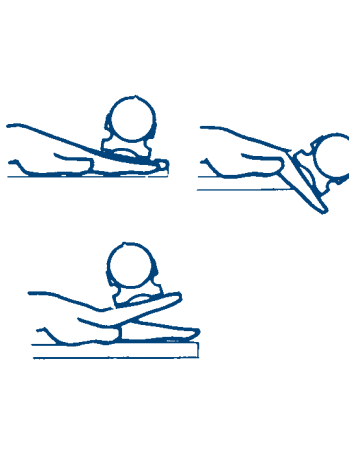


- Stand subject upright
 - Place goniometer on ribs under arm, set zero
 - Laterally flex the spine
 - Read result
- Note: The higher the goniometer is placed the greater will be the measured compound angle

Lateral Movement

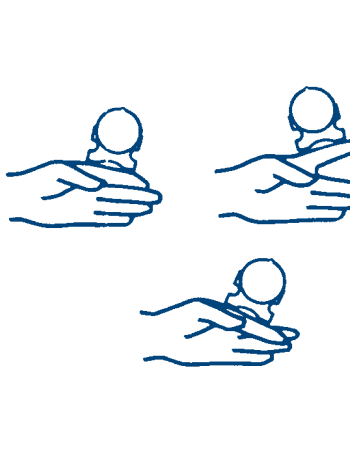


MCP JOINT



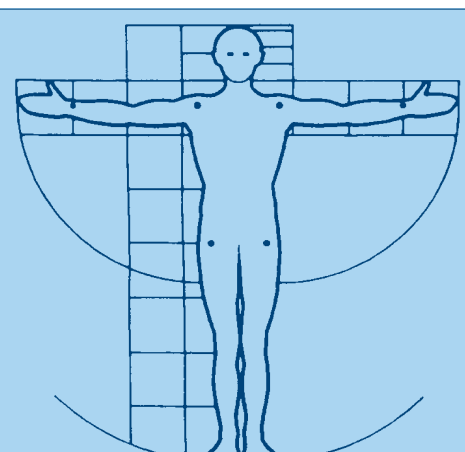
- Put hand prone on table, finger over the edge
 - Place goniometer on finger, set zero
 - Flex or extend MCP
 - Read result
- Note: Maintain full extension of the PIP joint. For small fingers a wooden spatula may be taped to the finger

Flexion & Extension

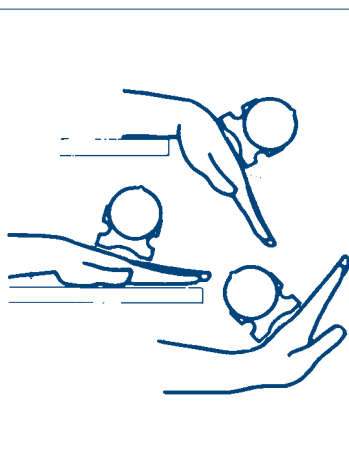


- Put side of hand, forearm and elbow on table
 - Place goniometer on finger, set zero
 - Abduct or adduct MCP
 - Read result
- Note: Ensure the little finger is always in contact with the table

Abduction & Adduction

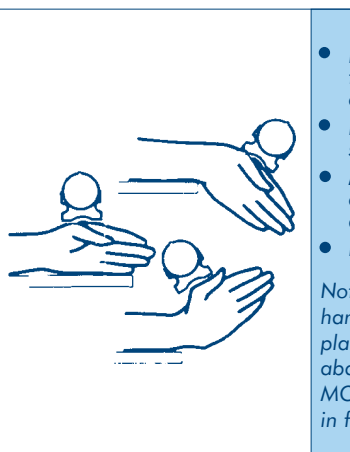


WRIST



- Put hand and forearm prone on table
 - Place goniometer behind MCP joints on back of hand, set zero
 - Move hand over edge of table, flex or extend wrist
 - Read result from inner or outer dial
- Note: Ensure forearm and elbow are always in contact with the table

Flexion & Extension

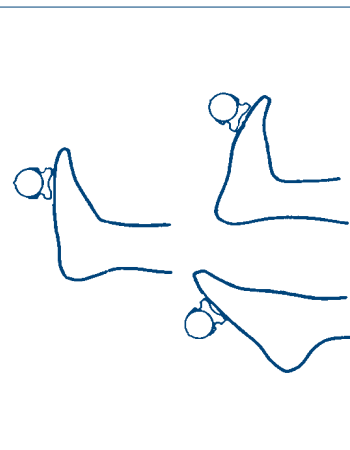


- Place side of hand, forearm and elbow on table
 - Place goniometer on side of hand, set zero
 - Move hand over edge of table, abduct or adduct wrist
 - Read result
- Note: Ensure back of the hand is always in vertical plane. To eliminate abduction/adduction of MCP joints put fingers in full flexion

Abduction & Adduction

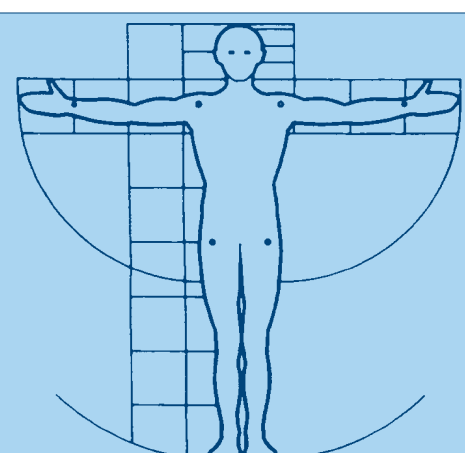


ANKLE

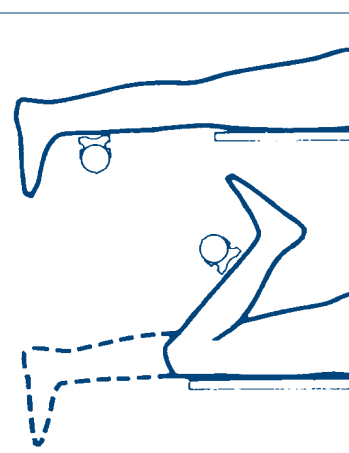


- Lay subject supine, with foot over edge of bed
 - Place goniometer on the sole of foot, set zero
 - Plantarflex or dorsiflex the ankle
 - Read result
- Note: More accurate readings can be obtained when the subject wears flat shoes to reduce the curvature of the foot

Dorsiflexion & Plantar Flexion

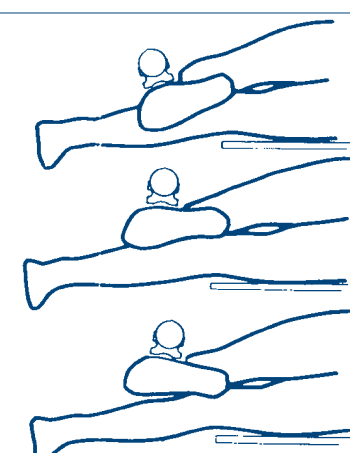


KNEE



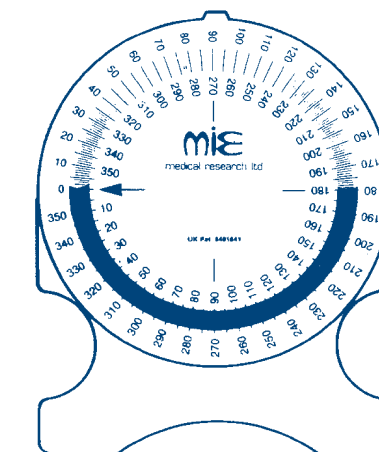
- Lay subject prone, knee over edge of the bed
 - Place goniometer on shin, set zero
 - Flex or hyperextend knee
 - Read result
- Note: Test can be performed with subject standing and hip stabilised

Flexion & Extension



- Lay subject on their side, knee at 90° flexion rotationally neutral
 - Place goniometer on side of foot, set zero
 - Internally or externally rotate knee
 - Read result
- Note: It is very difficult to determine neutral position, so more useful to quote total range of motion

Rotation



PRINCIPLE OF OPERATION

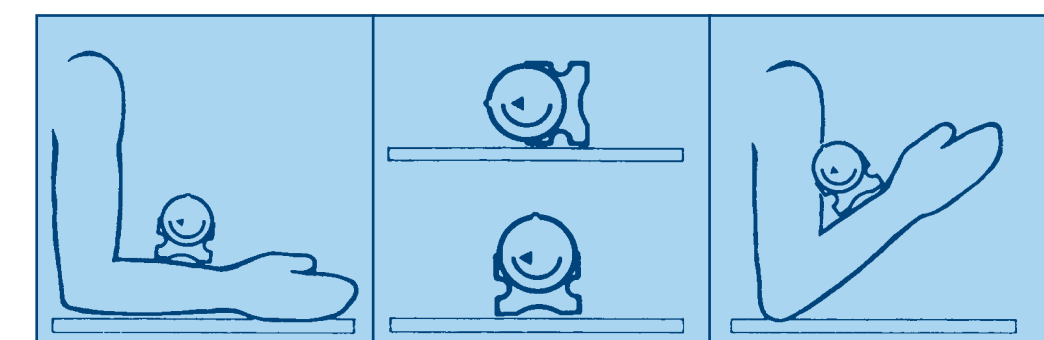
The key to effective use of the Clinical Goniometer is understanding how it works. It is analogous to a magnetic compass, the needle of which always points to the north. The rotating dial of the compass is turned so that it lines up with the needle. Bearings are then taken by pointing the compass at distant objects and reading the angle to which the needle is pointing. The clinical goniometer uses gravity as its reference rather than magnetic north and consequently is used vertically, whereas the compass is used horizontally. Instead of a needle there is a semi-circular column of coloured fluid, the two ends of which are always level with each other. The dial is turned so that the arrow points to the meniscus at the top of the fluid column. Angles relative to the horizontal can now be measured by reading the dial where the meniscus crosses it. This is true irrespective of the shape of the subject, or where on the limb the goniometer is placed.

GENERAL INSTRUCTIONS

Maximum accuracy is obtained by always:

- Holding the goniometer so that the dial is vertical
- Reading the dial from the bottom of the meniscus of the left side of the fluid column
- Allowing a short while for the fluid to settle before taking a reading
- Ensuring the goniometer does not move with respect to the limb which is being tested

clinical goniometer



TO SET ZERO

- With the joint in the neutral position, place goniometer on the measurement site
- Rotate dial until the arrow is pointing to bottom of the meniscus
- The goniometer is now calibrated for measuring the range of motion of the chosen joint

TO SET TRUE ZERO

- Stand goniometer on its side or end on a flat, horizontal surface
- Rotate dial until the arrow is pointing to bottom of the meniscus
- The goniometer is now calibrated for reading the true angle to the horizontal or vertical

METHOD FOR READING MEASURED ANGLE

- With the limb in the desired position, read the angle at the meniscus
- Use the outer scale for anti-clockwise movements
- Use the inner scale for clockwise movements

Accurate to ± 1 degree of arc.
 Manufactured by MIE Medical Research Ltd.
 6, Wortley Moor Road, Leeds, LS12 4JF, U.K.
 Tel: +44 (0)113 279 3710 Fax: +44 (0)113 231 0820
 E-mail: support@mie-uk.com

Not to be used in a sterile environment.
 Clean using warm water and soap or soak in a mild disinfectant.



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6, Wortley Moor Road, Leeds, LS12 4JF, U.K.
 Tel: +44 (0)113 279 3710 Fax: +44 (0)113 231 0820