



Transhumeral Hand Casting

Version no. 2



Life Without Limitations

Socket design

The Iceross Upper-X can offer transhumeral amputees the option of a secure self-suspending prosthesis with increased range of movement at the shoulder joint. Additionally, the Iceross Upper-X can enhance comfort in the socket and provide protection of the residual limb. The selection and casting procedure outlined in these instructions is designed to aid in the manufacture of a socket to enhance the functions of the Iceross Upper-X.

Please read the following instructions carefully before starting the procedure.

Equipment

- 10cm Plaster of Paris Bandages (non elastic).
- Cling Film.
- Release Agent.
- Casting Sock or Stocking.
- Indelible Pencil.
- Tape Measure.
- Casting Lanyard.
- Scissors.

Note: In cases where the residual limb does not facilitate easy cast removal please use plastic tubing and a scalpel to remove the negative cast.



Preparation

Collect relevant prosthetic history.

If required, carry out full amputee assessment.

Visually inspect residual limb. Knowledge of anatomical landmarks, scarring, & sensitive areas will aid in socket fitting.

Decide on the location of trimlines of the hard socket.

Trimlines will vary depending on the length and tissue consistency of the residual limb.

- Long residual limb; rotational control enhanced by shaping socket around distal end of humerus.
Trimlines may be lowered.
- Mid-length or short residual limb; trimlines should extend anterior and posterior to shoulder to give rotational stability.

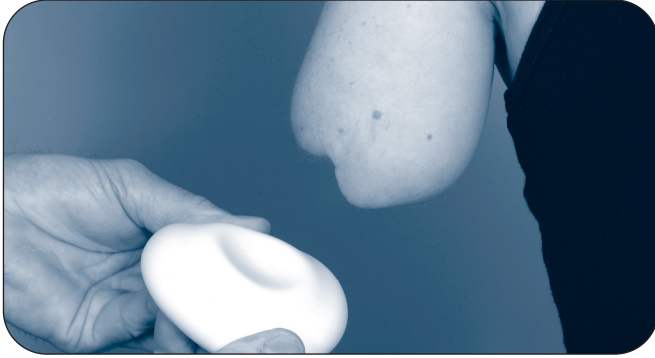


Iceross selection

Measure circumference of residual limb 4cm from distal end.

Select Iceross as measured, or the next below.





Invert Iceross liner, fully exposing distal end.



Rolling liner to form a donut shape may improve control when donning.

Place exposed distal end of liner centrally against residual limb and roll proximally.



Mark an initial trimline on the Iceross Upper-X, 1cm distal to the axilla.

Liner may be trimmed further later.



Trim Iceross to length. An angle of 45° is recommended when cutting the liner.

If electrodes are to be used identify sites, trim Iceross below sites or create holes for electrodes.

Note: Due to the size and construction of the Iceross Upper-X, sharp scissors are the best means of trimming. Ensure that the cut is smooth, jagged edges may cause premature wear of the liner.



Ensure user can don Iceross independently.

Note: Variations of the standard donning technique may be considered depending on the abilities of the user.

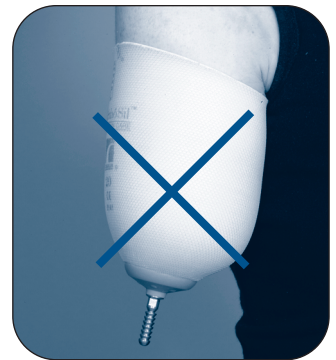
Ensure no air pockets are trapped during rolling; this could lead to skin or perspiration problems.

Leave the Iceross Upper-X on for a short time to ensure that it is comfortable.



Re-apply Iceross and attach test pin.

Ensure pin alignment is correct; following long axis of residual limb.



Test longitudinal stability. Attach Casting Lanyard and apply tension until distal shape stabilizes in elongated position. This will be recreated during casting.

If liner shape does not stabilize check for air trapped during rolling.



Rehearse hand position for casting.

Position humerus in neutral flexion/extension and neutral adduction/abduction.

Hand 1 - Flatten medial wall in axilla.

Hand 2 - Forming proximal control areas of socket.

Posterior: Below spine of scapula.

Anterior: Below clavicle.





Wrap Iceross with cling film.
Apply release agent to the axilla.



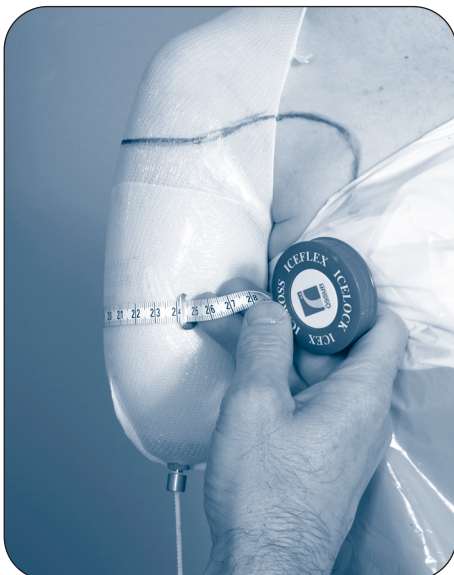
Apply thin casting sock or stocking.

Mark trimlines:

- Anteriorly, below clavicle.
- Posteriorly, below spine of scapular.
- Lateral, below humeral head.

Mark bony areas and tendons with indelible pencil.

Define and mark electrode sites if necessary.



Apply tension to lanyard, record circumference measures
at 2cm intervals down length of residual limb.

Casting procedure

Prepare a 3-ply slab of bandage, trim to cover distal surface of Iceross.

Cut a small hole in center to allow lanyard to exit.

Wet, apply and smooth slab. Ensuring accurate definition of distal profile of Iceross.



Wrap remainder of residual limb, ensuring full coverage.

Prepare a 5-ply plaster slab and apply to cover control areas of socket.

Attach lanyard and apply the pre-determined elongation.

Ensure the lanyard follows the longitudinal axis of the residual limb.



Flatten medial wall in axilla with flat palm.

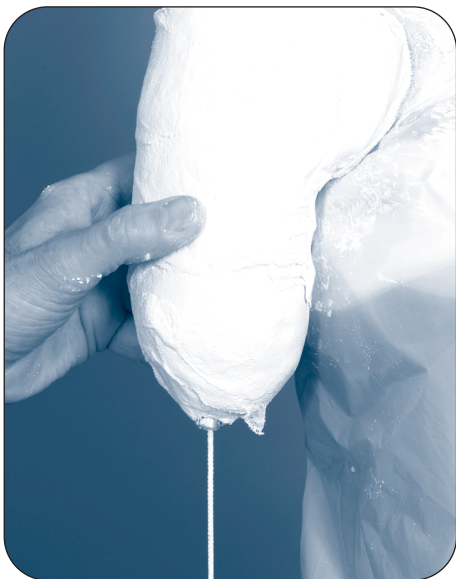
Mould anterior and posterior control areas, keeping A/P dimension as tight as possible.

Continue molding until the plaster has set.





Remove cast without distorting.



Cast may be trimmed and re-fit to assess:

- Range of motion.
- Resistance to rotation.
- Control and suspension.

Trimlines should be adjusted to give maximum range of motion.

Fill with plaster of Paris in preparation for modification.

Modification procedure

Compare circumferential measures to those taken prior to casting.

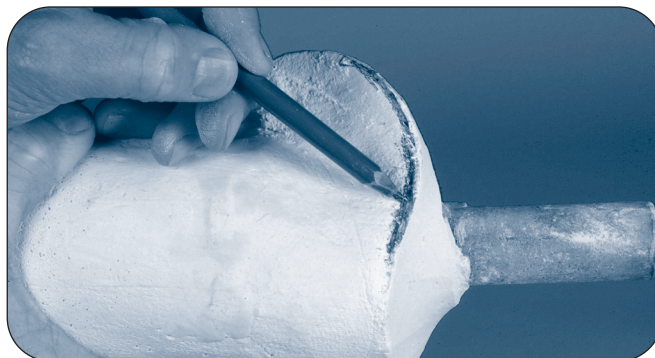


Reduce cast down to measures; remove plaster evenly over soft tissue areas.

Note: Reduction below measures will make the socket difficult to don.



Identify trimlines and remove waste plaster.



Locate position of anterior and posterior control areas, remove plaster in soft tissue areas to enhance rotational control.

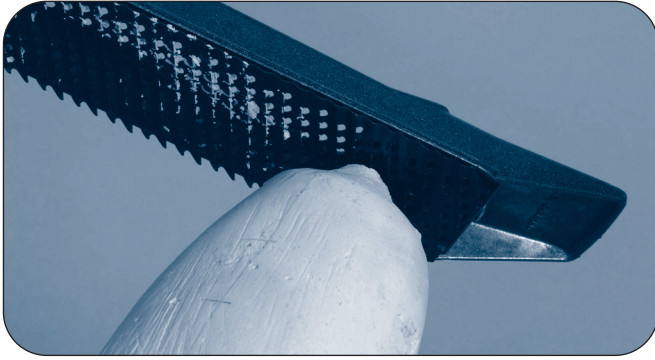
Flattening medial wall, accentuate flare into axilla.



Keep build-ups to a minimum.

Relieve pectoral tendon in anterior of axilla if prominent.





Smooth cast, do not deform distal shape of the Iceross.

Note: Maintaining the distal shape of the Iceross in the cast is of great importance for successful fitting. If the shape is modified, the Iceross may not locate fully in the bottom of the socket. This may result in fitting problems and lock noise or wear.

Flatten end of cast for steel guide from Icelock 700 Series fabrication kit (see Icelock instructions).

Check socket fitting

It is recommended that a check socket fitting is manufactured and used to assess:

- Trimlines.
- Volume of socket.
- Ease of donning.
- Joint range of motion.

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