



**SKIN TRANSPLANTATION**  
We care

**Innovative products** in the field of burn surgery

MEEK Micrografting

Dermatomes and blades

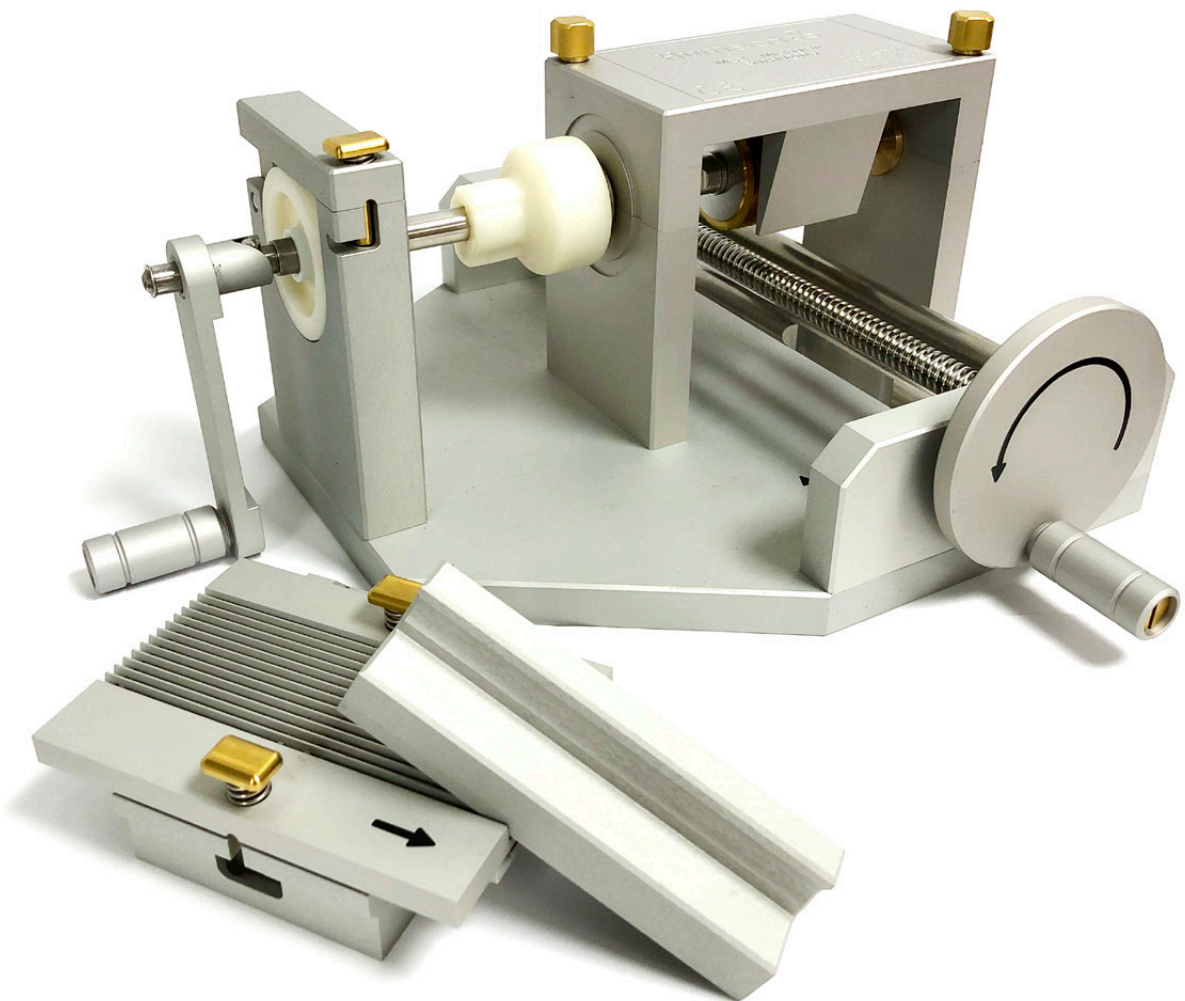
Meshers and V-carriers

Humeca Knives and blades



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# Humeca

*our company at a glance*

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**We are an ISO 13485 certified medical technology company operating in over 70 countries globally. Our focus lies within the field of burns and skin grafting. We design and manufacture surgical tools necessary for medical experts to treat burn wounds at different stages in the operating theatre, i.e. from harvesting, to processing and eventually transplantation of skin grafts.**

**All of this is made possible by close collaborations with distributors in each country as well as direct contact with surgical teams in operating theatres and trade-fairs. We continuously gather clinical feedback, which enables our team to provide the level of support and service our customers – and your patients – deserve. We strive to help every burn victim in the world, together.**

## **Our vision**

To bring back quality of life for burn victims by placing the best possible toolset in the hands of skilled medical experts.

## **Our ambition**

We have the ambition to help every burn victim in the world, together with our network of medical experts and distributors.

## **Our history**

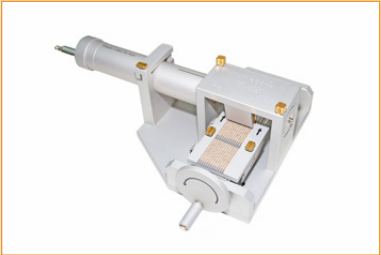
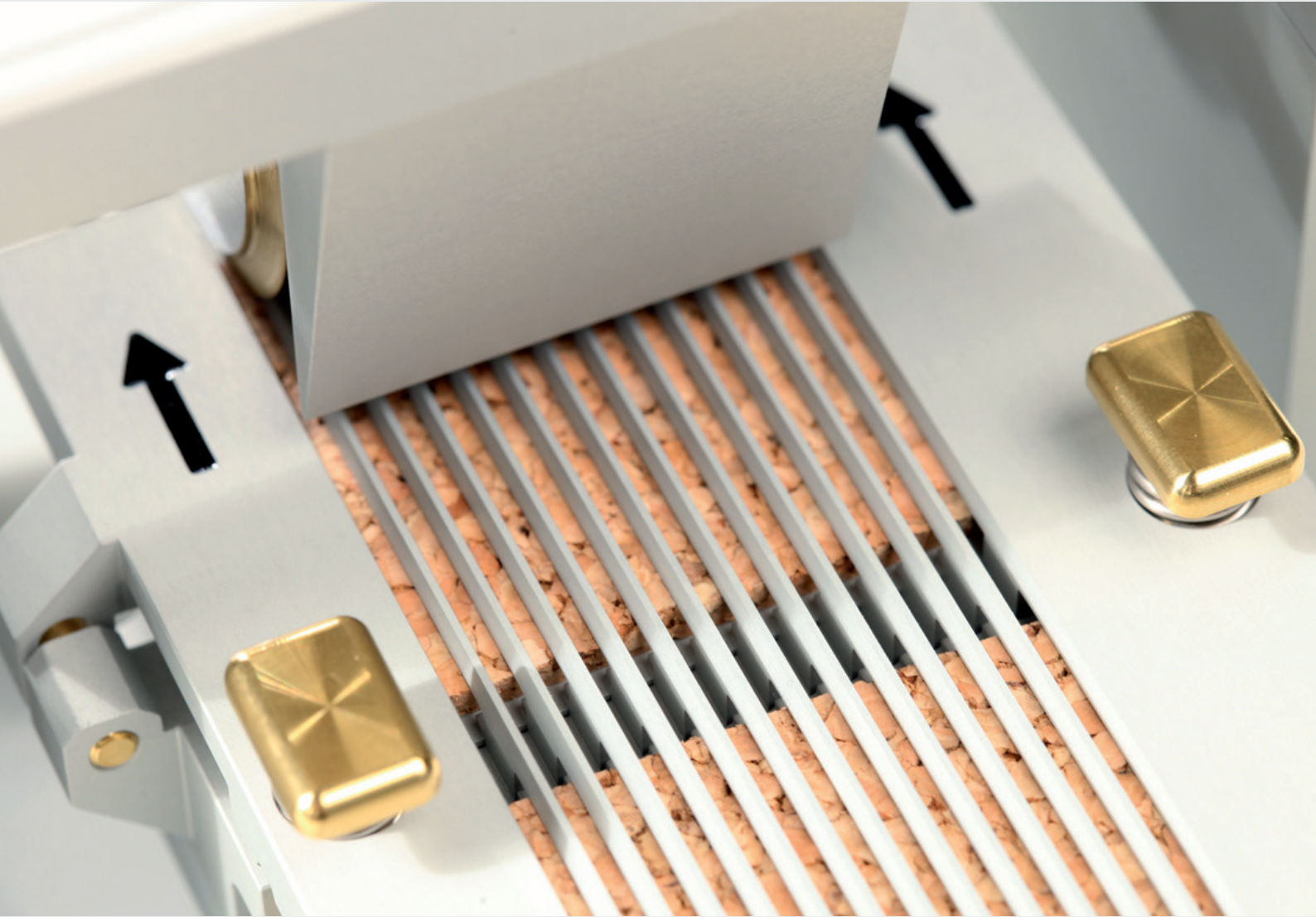
Humeca was established in 1981 and initially served as a mechanical engineering firm. This quickly changed when Humeca was approached by medical staff of a burn center in the Netherlands. The medical experts had been pondering on reviving a skin grafting technique long lost. The technique in question was the Meek-Wall technique, originally developed by dr. Meek in 1954 with the purpose of using as little donor skin as possible to cover an as large as possible burn wound. Back then, the technique involved many manual steps in order to cut skin in equally sized islands, individually glue them onto one gauze and then transplant them onto the wound. Despite positive results, the Meek-Wall technique was shelved when mesh grafting, a more convenient method of skin grafting at the time, was on the rise in 1964.

Humeca did its homework and started development of a machine which could simplify many steps of the Meek-Wall technique. The year 1993 marked the release of the modified MEEK technique. Not only was a machine designed to precisely cut skin grafts into identical individual skin islands but were gauzes pre-folded to fully control the distance between those skin islands. This technique enables us to precisely determine the expansion ratio and results in a uniform distribution of the skin islands on the wound bed.

After entering the field of burns, other products followed, such as cordless electric dermatomes and disposable blades in 2002 as well as meshers and disposable V-carriers in 2007.



# MEEK Micrografting



The MEEK micrografting devices are made to easily apply the MEEK technique. The MEEK machine allows the user to easily and controllably cut skin grafts of 42 mm × 42 mm (1.65" × 1.65") into smaller pieces of skin of 3 mm × 3 mm in size. These skin islands are then transferred to specially folded gauzes. Upon expansion of the gauzes, the distance between the individual islands is increased. The way the gauzes have been folded determines the expansion ratio.

Originally postulated to treat burns by dr. Meek in 1958, the then called MEEK-Wall technique required tremendous skill for it to be applied successfully. Despite positive results, the technique was shelved when mesh grafting was introduced in 1964. Decades later new technology bred new possibilities and the MEEK-Wall technique was modified by Humeca in cooperation with surgeons of the burn center of the Red Cross Hospital at Beverwijk, The Netherlands.

After years of research and development, a newly designed machine was introduced onto the market in 1993. The MEEK machine and prefolded gauzes ironed out many steps of the original procedure. Since its release, the modified MEEK technique has been sold to burn centers worldwide and is used every day.

Most techniques are limited in the size of burn wounds they can treat. However, the MEEK technique is suitable for small and large TBSA burns. Gauzes with expansion ratios of 1:2, 1:3, 1:4, 1:6 and 1:9 are available. The expansion ratio of the gauzes is mathematically supported, which makes the need for donor site availability smaller when compared to the donor site needed for other skin grafting techniques.

Additionally, clinical outcome and success rate of MEEK micrografting have shown to be increased when compared to other skin grafting methods. This is partly related to faster epithelialization and wound closure.

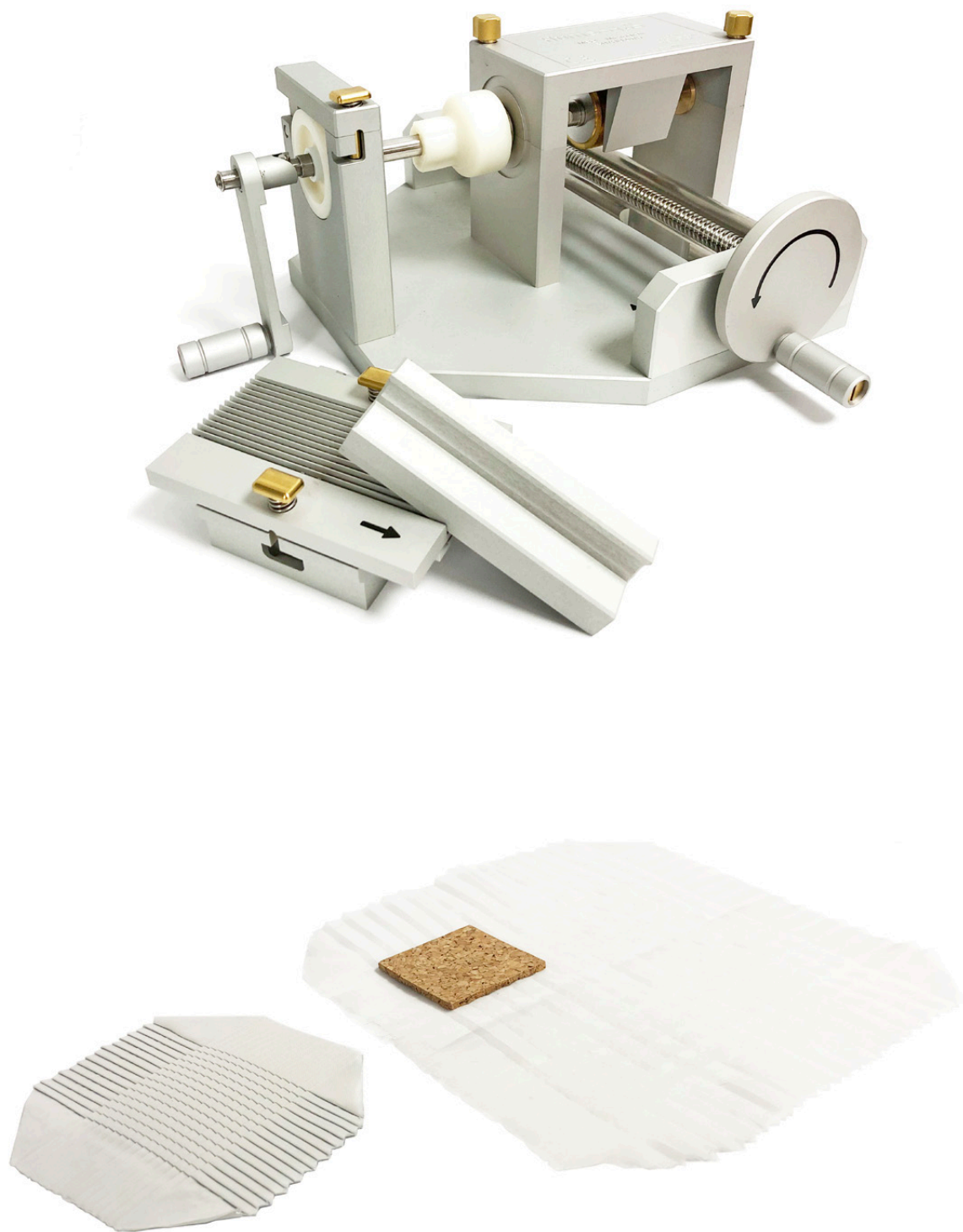
## Features

- Superior results compared to mesh grafting.<sup>1,2,3,4</sup>
- Suitable for complex cases with unfavorable wound conditions.<sup>5</sup>
- Uniform epithelialization due to homogenous distribution of skin islands, of which the dermal sides are in full contact with the wound bed.<sup>6,7,8,9</sup>
- Faster full epithelialization compared to mesh grafting, which is caused by a larger total margin and a shorter distance between skin margins.<sup>6,7,8,9</sup>
- The epithelialization time for a 1:6 expansion using MEEK is 3 – 4 weeks.<sup>6,7,8,9</sup>
- The risk of infection is lower compared to mesh grafting due to, among others faster epithelialization.<sup>1,10</sup>
- Suitable for small and large percentages TBSA.<sup>1,6,7,8,10,11,12,13,14,15,16,17,18</sup>
- True expansion ratio resulting in a required smaller donor site size or the ability to treat a larger percentage TBSA using the same donor site size compared to mesh grafting.<sup>1,6,7,8,10,11,12,13,14,15,16,17,18</sup>
- Suitable for a combined treatment with primary or cultured skin cell therapies.<sup>19</sup>

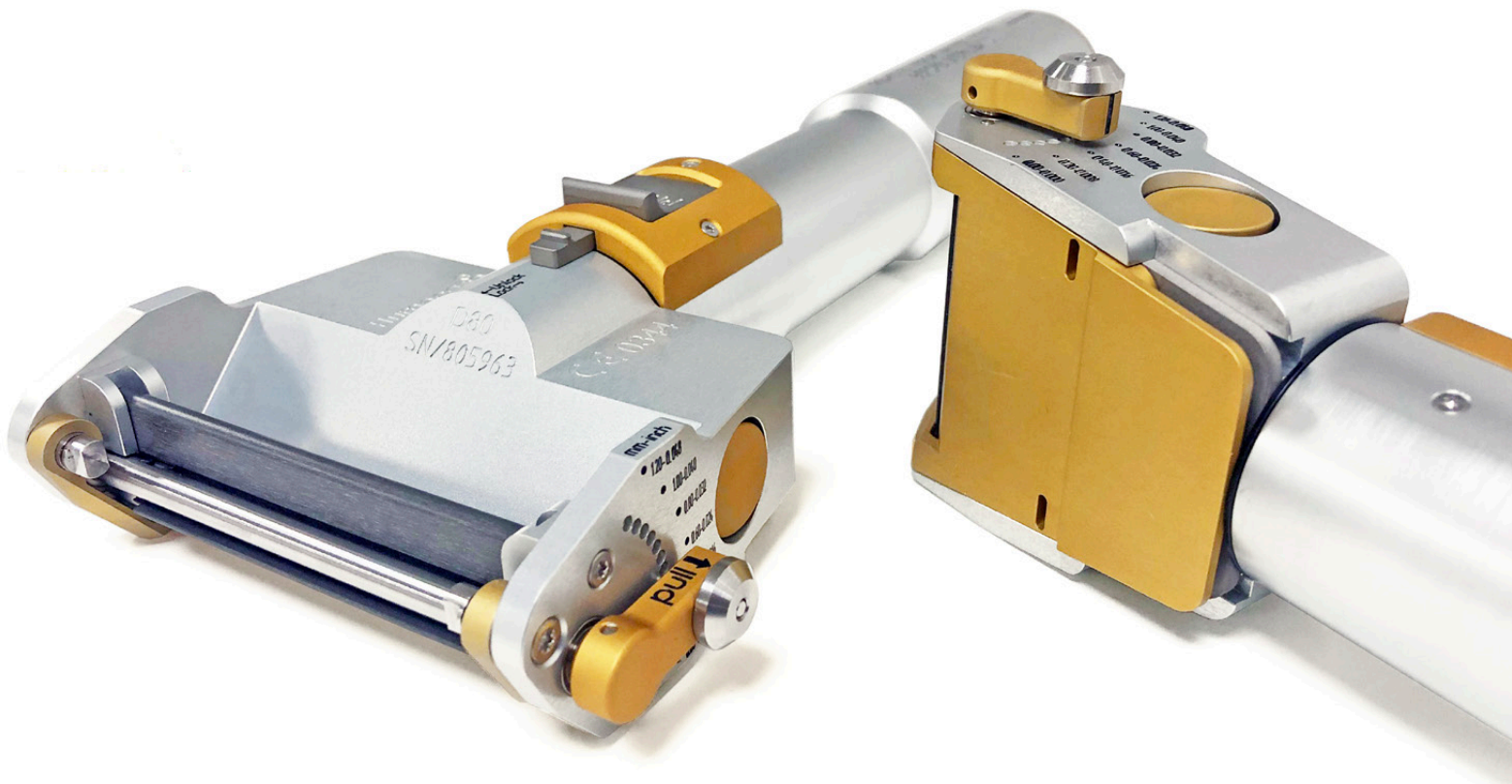
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# Dermatomes and blades



The D80 and D42 dermatomes can harvest skin grafts with widths of 80 mm and 42 mm respectively. Both dermatomes are cordless, battery operated and come with enough power to smoothly harvest skin tissue. The larger D80 dermatome is a general-purpose dermatome and an excellent choice when large skin grafts need to be harvested. The D42 was made to be paired with the MEEK technique during which skin grafts of 42 mm × 42 mm (1.65" × 1.65") are needed. Incidentally due to its smaller size, the D42 dermatome can more easily harvest skin grafts from harder to reach donor sites. Disposable blades for both the D80 and D42 dermatomes ensure you'll never have to worry about dull blades.

Additionally, Humeca supplies dermatome blades compatible with the following dermatomes:

- Acculan® 3Ti dermatome
- Padgett® B, C and S dermatomes
- Zimmer® 8801 and 8821 dermatomes

## Features

### D80 and D42 dermatomes

- Powerful Li-ion batteries ensure no cords will get in your way during use.
- Smooth harvesting due to blade movement reaching 7000 strokes per minute (unloaded).
- Width reducing clamps to tailor the harvested width of the skin graft.
- Depth setting easily adjustable and securely locks in place.
- User-friendly design to safely and quickly swap disposable blades.

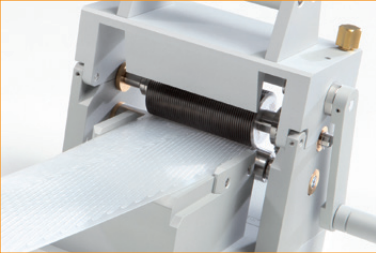
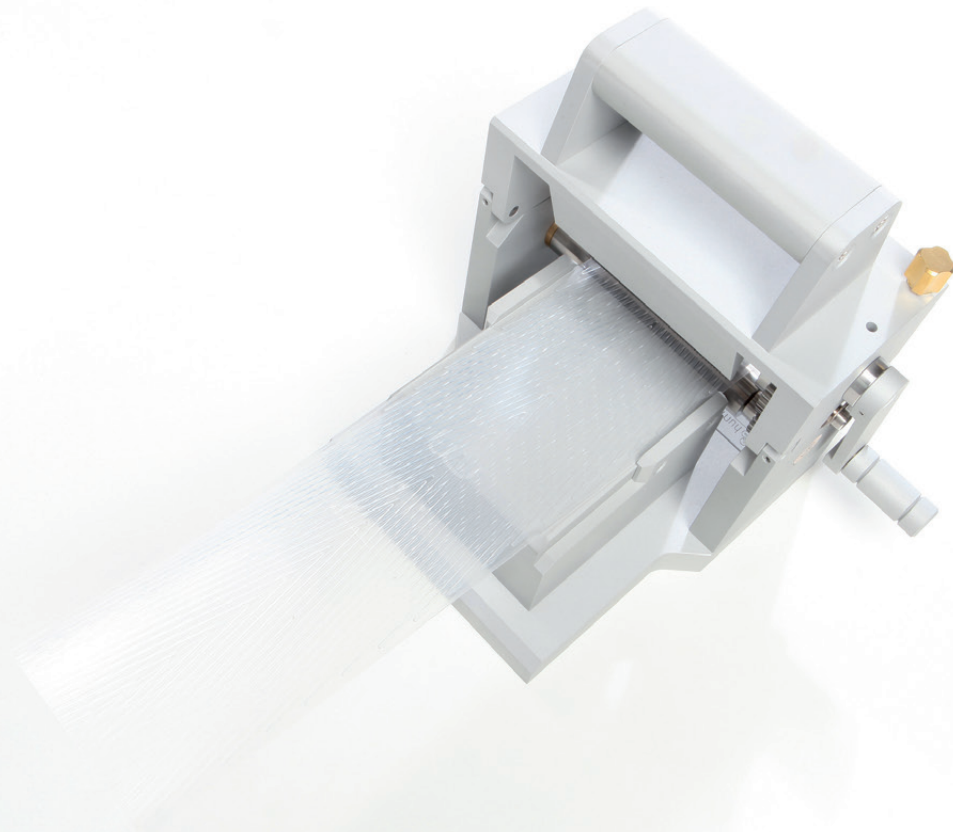
### Blades

- Dimensions:  
D42 [l×w×h]: 50 x 18.8 x 0.38 mm  
(1.97" x 0.74" x 0.015")  
D80 [l×w×h]: 90 x 18.8 x 0.38 mm  
(3.54" x 0.74" x 0.015")
- Stainless steel.
- Symmetric design, double facet grinded blades.
- Individually sterile packed in peel pouch.

### Blades for non-Humeca dermatomes

- Stainless steel.
- Individually sterile packed in peel pouch.
- Humeca dermatome blades for Aesculap® / Acculan® are compatible with the Acculan® 3Ti dermatome. Equivalent Aesculap® blade part number GB228R.
- Humeca dermatome blades for Padgett® are compatible with the Padgett® B, C and S dermatome. Equivalent Padgett® blade part number 3539252.
- Humeca dermatome blades for Zimmer® are compatible with the Zimmer® 8801 and 8821 dermatome. Equivalent Zimmer® blade part number 00-8800-000-10.
- Dimensions [l×w×h]:  
Aesculap® / Acculan®: 81 x 18.8 x 0.4 mm  
(3.19" x 0.74" x 0.016")  
Padgett®: 111 x 32.5 x 1.44 mm  
(4.37" x 1.28" x 0.06")  
Zimmer®: 106 x 32.2 x 1.9 mm  
(4.17" x 1.27" x 0.07")

# Meshes and V-carriers



The Humeca mesher uses a unique spring mechanism that prevents excessive pressure of the blades axle on the carrier during meshing, which increases the lifetime of the blades axle. The mesher can be ordered in two configurations: one to fit V10 carriers or Zimmer® carriers and one to fit V15 carriers or Aesculap® / B.Braun® carriers. During meshing, the carrier is guided both at the left and the right side to assure straight movement.

While most conventional meshers incorporate a ratchet to move skin carriers through the device, the Humeca mesher is operated by a rotatable handle. This ergonomic design ensures meshing is not only done in a continuous and fluid motion but will be swift and precise as well. Opening the bridge of the mesher allows easy access to the blades axle for cleaning and inspection.

### V-carriers

Humeca's skin graft carriers are called 'V-carriers'. The symmetric V-shaped groove pattern of these carriers prevents unwanted sideward movement during meshing. The standard length of these carriers is 28 cm and thus longer than the length of existing carriers and care has been taken to ensure that the groove pattern of the carriers connect to each other. This facilitates the ability to mesh long strips of skin grafts.

V10 carriers are available in expansion ratios 1:1, 1:1.5, 1:2, 1:3 and 1:6, while V15 carriers are available in expansion ratios 1:1, 1:1.5 and 1:3. V10 carriers are compatible with Zimmer® Meshgraft TM II, while V15 carriers are compatible with Aesculap® / B | Braun BA720R®.

The 1:1 carrier only perforates the graft without the intention of expanding it. This is to achieve enough drainage in full sheet grafts with hardly any graft pattern as a result.<sup>1,2,3</sup> This development work was supported by the Dutch Burns Research Institute and the Euro Skin Bank in Beverwijk, The Netherlands. The 1:1 perforation V-carrier was developed and clinically tested in close cooperation with the University Hospital Gent, Belgium.

### Features

#### Mesher

- Lightweight anodized aluminium.
- Integrated blades and axle.
- 50 parallel circular blades.
- Spring construction to ensure proper meshing.
- Two configurations available; V10 and V15.
- V10 compatible with Zimmer® Dermacarriers II.
- V15 compatible with Aesculap®/B. Braun® carriers.
- Continuous rotational drive.
- Cutting axle can easily be replaced.
- Sterilization case from stainless steel with silicone parts available designed for the Humeca Mesher for cleaning and sterilization.

#### V-carriers

- Available V-carrier ratios:  
V10: 1:1, 1:1.5, 1:2, 1:3 and 1:6  
V15: 1:1, 1:1.5 and 1:3
- V-pattern in all carriers (except 1:6). Groove pattern of V-carriers connect to each other.
- Flexible transparent polypropylene material, medical grade.
- Individually sterile packed in peel pouch.
- V10 carriers are compatible with Zimmer® Meshgraft TM II.
- V15 carriers are compatible with Aesculap® / B | Braun BA720R®.
- Dimensions (lxwxh):  
V10: 280 x 79 x 1.0 [mm]  
V15: 280 x 79 x 1.5 [mm]

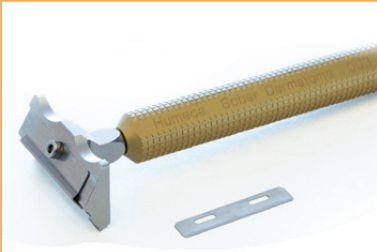
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# Humeca Knives and blades



By expanding the Humeca product portfolio with these devices, we can now offer products that cover manual free handed harvest of (split-thickness) skin grafts and debridement of wounds, retaining our one-stop shop image for burn surgeons.

These iconic devices are used in many hospitals around the world to treat burn patients. Although the devices might be common and familiar, they are made according to Humeca's standards. High quality stainless steel and aluminium materials are used, as well as a controlled manufacturing process to deliver high quality products fitting of Humeca's goals.

All knives have a front bar which moves across the skin right before it is cut. Between the different knives, the front bar has slight differences. The front bar can roll and oscillate to respectively reduce parallel and perpendicular friction in relation to the cutting direction against the skin. A grooved pattern can further reduce friction.

Additionally, in collaboration with the Dutch surgeon dr. Willem Nugteren, the Sober dermatome was developed. The Sober dermatome is a manual dermatome with a safety razor design. The Sober dermatome allows harvest of a 30 mm (1.25") wide and 0.25 mm (0.001") thick skin graft.

## Features

### Humeca Knives and blades

- Free handed harvest of (split-thickness) skin grafts and debridement of wounds.
- High quality stainless steel and aluminium materials.
- Quick blade replacement possible without tooling.
- Variety of different skin graft knives available, including left-handed versions.
- Several cutting widths available between the different types of knives.
- Ergonomic handle.
- Laser engraved with crucial information for traceability.

### Humeca Silver knife

Grooved, oscillating and rolling front bar  
Length: 190 mm  
Depth setting: 0.1 mm – 4.0 mm  
Weight: 70 g

### Humeca Humby knife

Grooved, oscillating and rolling front bar  
Length: 320 mm  
Depth setting: 0.1 mm – 1.5 mm  
Weight: 219 g

### Humeca Cobbett knife

Grooved and oscillating front bar  
Length: 320 mm  
Depth setting: 0.1 mm – 1.5 mm  
Weight: 219 g

### Humeca Watson knife

Smooth and fixed front bar  
Length: 300 mm  
Depth setting: 0.1 mm – 1.5 mm  
Weight: 216 g

### Humeca Humby long knife

Grooved, oscillating and rolling  
Length: 365 mm  
Depth setting: 0.1 mm – 5.0 mm  
Weight: 286 g

### Sober dermatome and blade

- Lightweight anodized aluminium.
- Integrated tool for blade replacement.
- Cutting width: 30 mm (1.25").
- Cutting thickness: 0.25 mm (0.010").
- Dimensions [l x w x h]: 142 x 46 x 24 mm (5.59" x 1.81" x 0.94").
- Weight: 105 g.
- Sober blade [l x w x h]: 38 x 8 x 0.254 mm (1.50" x 0.31" x 0.010").

# Our models

on the cover

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Margreth and Jayan, two burn victims. Please read their stories...





### Margreth

November 2001 is a month we will never forget. Our eldest daughter (just one year old at the time) was burned by a cup of tea. It happened in a split second and what went through our mind is impossible to describe.

With the help of the local supermarket's manager we ended up at the general physician, who directly sent us to the hospital. The hospital couldn't do anything for us and we were brought to the burn center in Rotterdam by ambulance. A medical team was waiting for us. Despite all emotions, sadness and pain, they took care of us in a fantastic way.

Margreth underwent surgery in order to accelerate the closing of the burns, where the doctors removed skin from her thigh and transplanted it to the wound. After three weeks we could finally take her back home.

We were glad to be home again, but unexpected challenges still laid ahead. She didn't want a bath. We think the bath reminded her of her time in the burn center. She slept poorly due to itching. Resuming daily activities was harder than expected, but the aftercare of the burn center was helpful. The wound recovered very well and follow-up checks at the hospital were not needed anymore after a few years.

Margreth did not experience her accident as traumatic, due to her young age at the time, though it was still an unpleasant period for her. She went back to school and started studying graphic design in Utrecht.

When she saw Humeca was looking for models she didn't hesitate. With the photoshoot, she wanted to show that even though you are scarred for life, you can enjoy and love life! Margreth is still a pearl in God's hands. She has become a wonderful daughter and sister, who is confident in life despite of her scars. Now, after 15 years, our grief and pain has faded but there are still some emotional moments.

### Jayan

Everything changed on December 8th, 2014. I was rushed to the burn center in Beverwijk with a trauma helicopter and was admitted to the ICU. A very worrying time followed. I turned out to be 68,5% burned of which 53% was third degree.

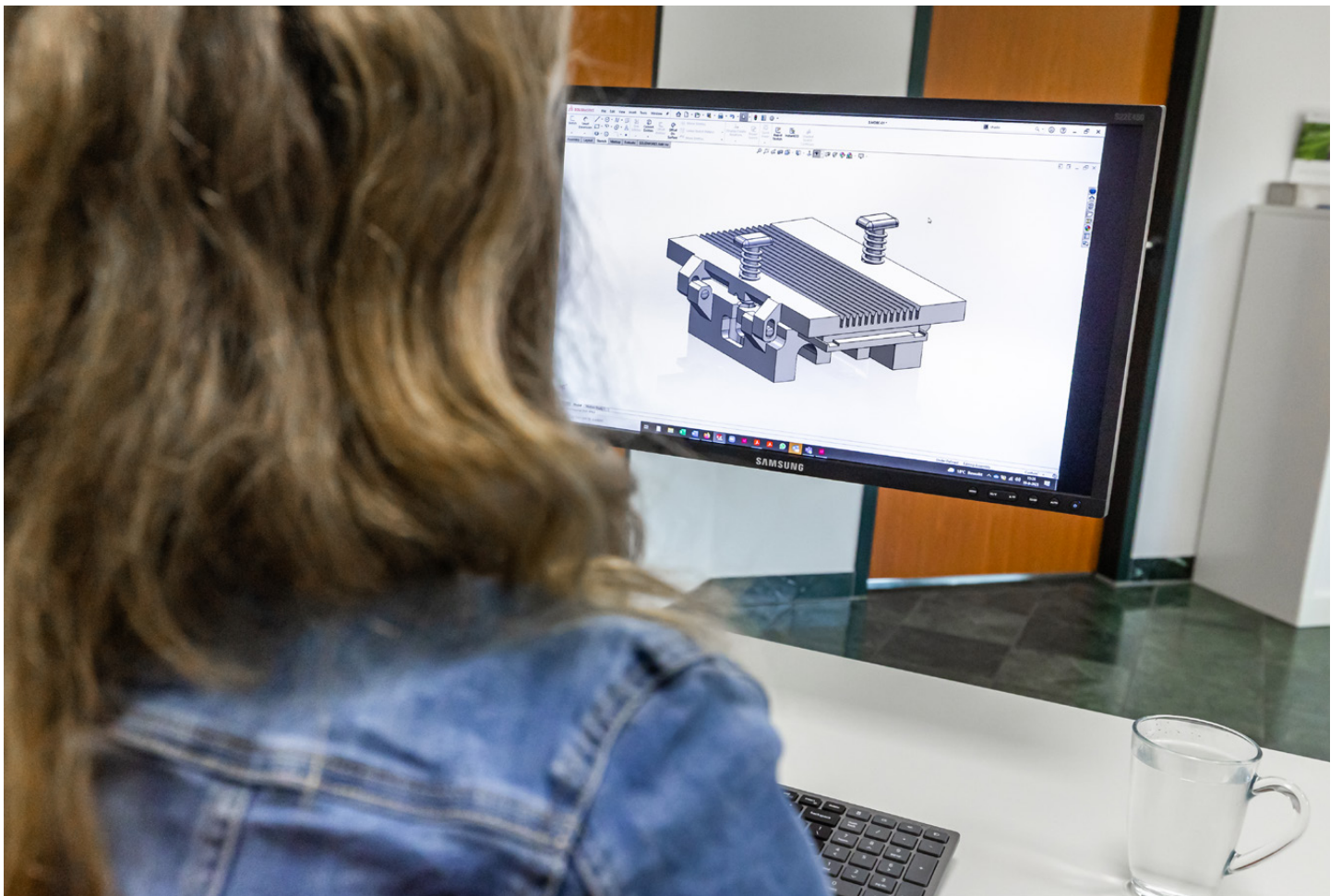
I woke up in the middle of February. Painful dressing changes, healing and relearning everything with the help of a physiotherapist, an occupational therapist and a speech therapist. By the end of March, I was moved from the ICU to a regular room and therapy sessions continued.

I left the burn center on April 16th and went to a rehabilitation center. Daily therapies continued to learn, to walk and speak again, but also to relearn activities like washing, dressing myself, cooking and other household chores. My recovery went much faster than expected. I was discharged from the rehabilitation center and I could go home after 3.5 months.

I received homecare for bandage changes and I had follow-up therapy sessions three times a week. The high compression garments and homecare were not needed anymore in December.

I've had 25 surgeries and there will undoubtedly be several surgeries to come. I still visit a skin and oedema therapist once a week who treats my scars and I also get physiotherapy and hand therapy. I picked up my life and started drumming and playing the clarinet again. In addition, I started some courses and I'm going to manage the townhouse in Zuilichem.

I am Jayan and despite all my scars I feel stronger than ever! Not everyone gets a second chance, but I tightly hold onto mine with both hands. I do not look back on what has been, but I completely focus on the future, enjoying the beautiful things in life and counting my blessings instead of my shortcomings. What does not kill you makes you stronger!







SKIN  
TRANSPLANTATION  
We care

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