

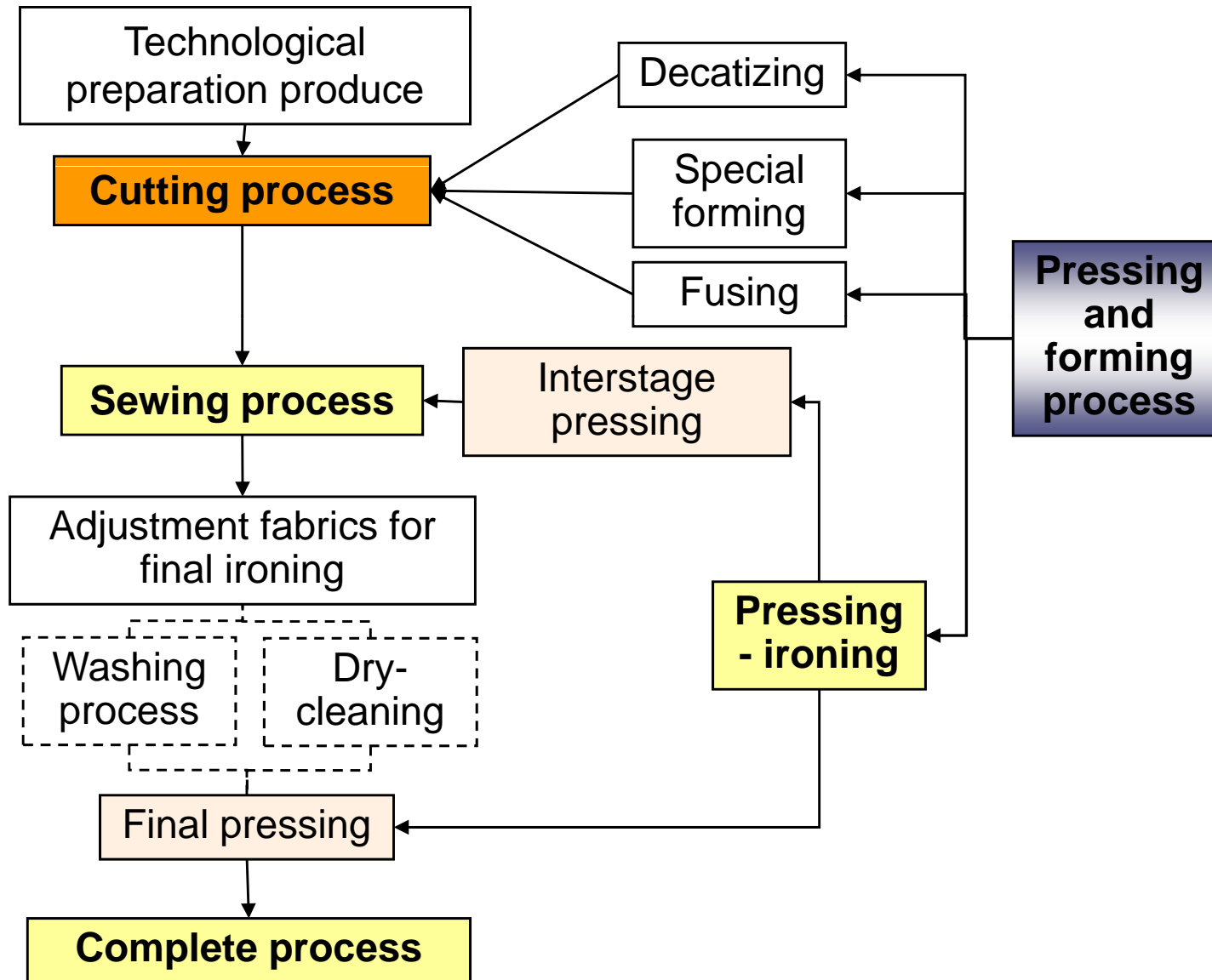
# *Cutting process*



A. Havelka

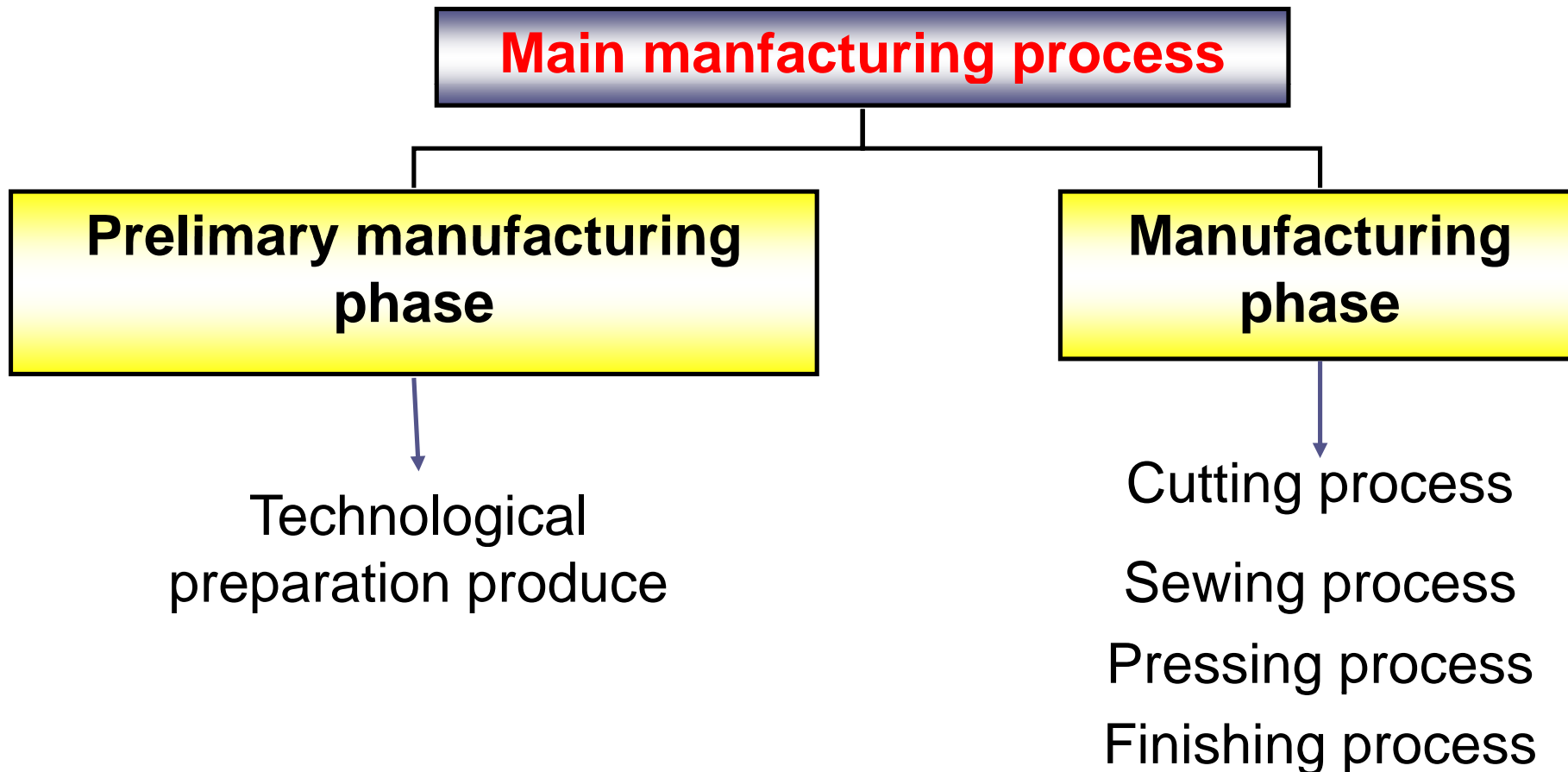


# Complex manufacturing process



# Main manufacturing process

- Whole system of operations changing the flat fabrics to the form final clothing

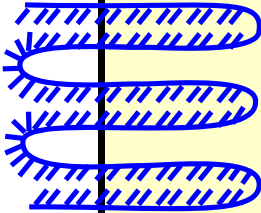
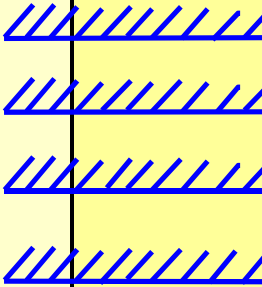
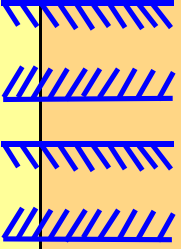
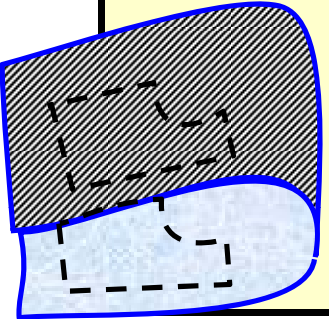

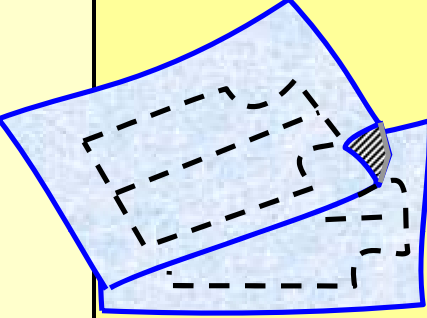

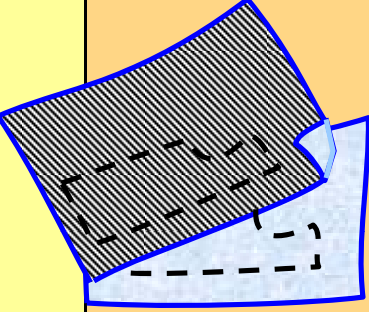



# Cutting process

- inspecton and separation basic material-fabrics
- **spreading material**
- **cutting material**
- storage cut out parts for sewing process



# Methods spreading of materials

zig-zag	face-up-one-way (face-to-back )	face-to-face- nap-one-way
universal material, material without a nap and a pattern	materials with a nap, unidirectional patterned, lustrous	materials with a nap and a pattern
 <p><i>direction</i>      <i>step</i></p> <p>← 6. working → 5. working ← 4. working → 3. working ← 2. working → 1. working</p>	 <p><i>direction</i>      <i>step</i></p> <p>→      ← - - - →      ← - - - →      ← - - - →      ← - - - →      ← - - - →      ← - - -</p> <p>5. working, cut 4. idle 3. working, cut 2. idle 1. working, cut</p>	 <p><i>direction</i>      <i>step</i></p> <p>→      ← - - - →      ← - - - →      ← - - - →      ← - - -</p> <p>4. idle 3. working, cut, turn round 2. idle 1. working, cut, turn ound</p>
 	 	 

# Machines for spreading of materials

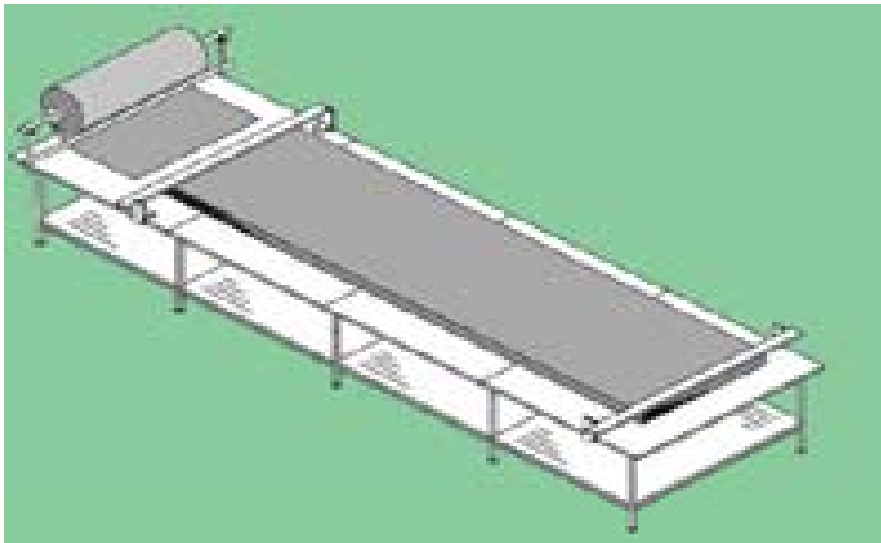
- **Hand spreading of materials**
  - on classical spreading tables
- **Hand operated a mechanical spreading materials**
  - by the help of a spreading material truck
- **Electrically operated spreading**
  - semiautomatic spreading machines
  - automatic spreading machines



# 1. Hand spreading of materials

## Smooth surface of spreading tables

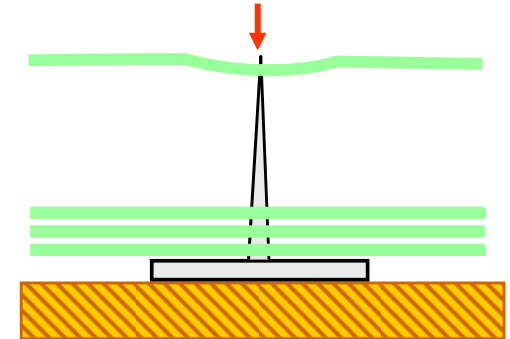
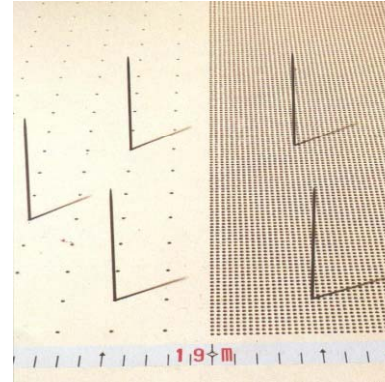
- table with smooth finish, without notch, with line scale
- interstage to removal ends material, then cutting



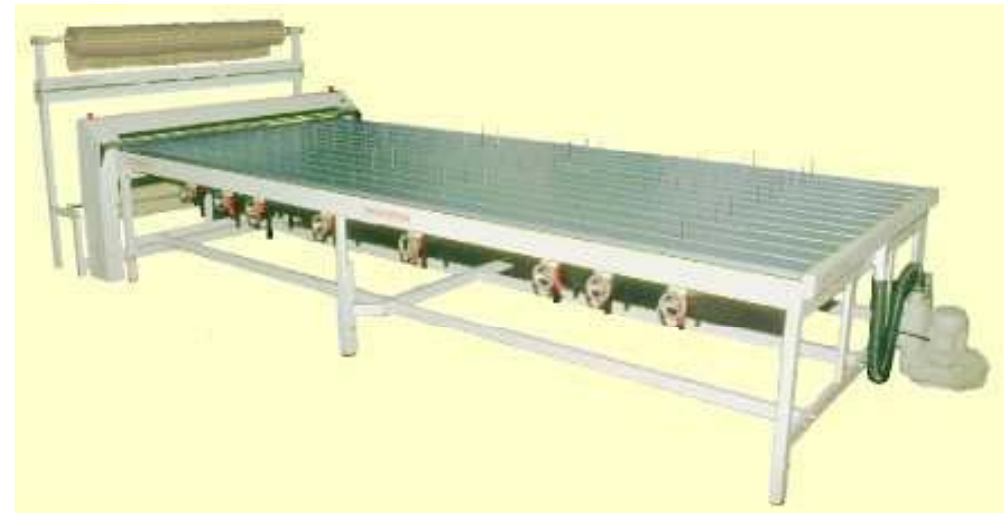
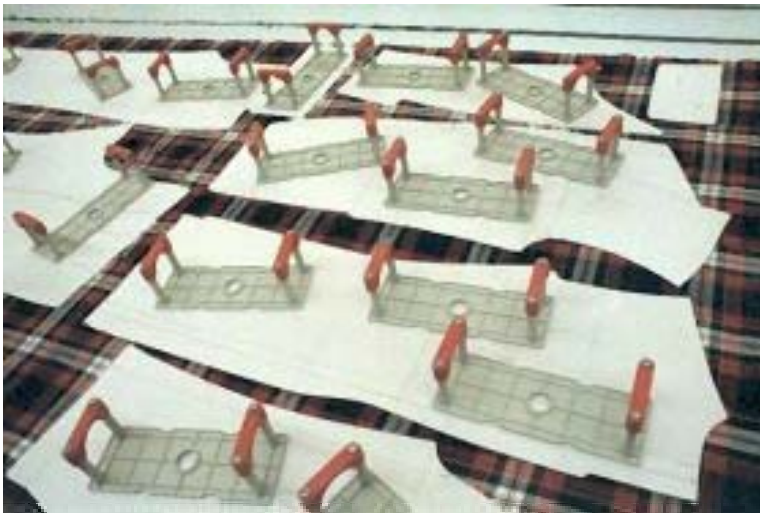
# 1. Hand spreading of materials

## Pin table

- for chequered material
- hand spreading of materials on pin table



## Needle-plates

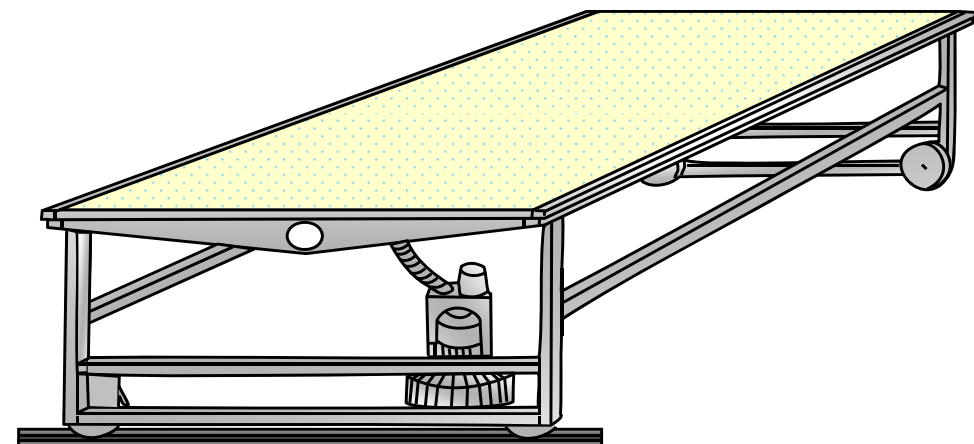
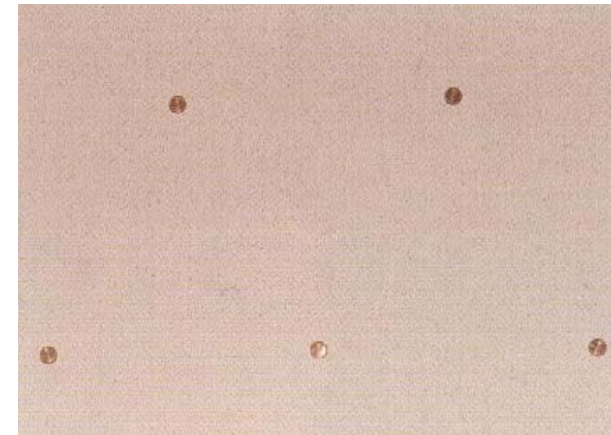
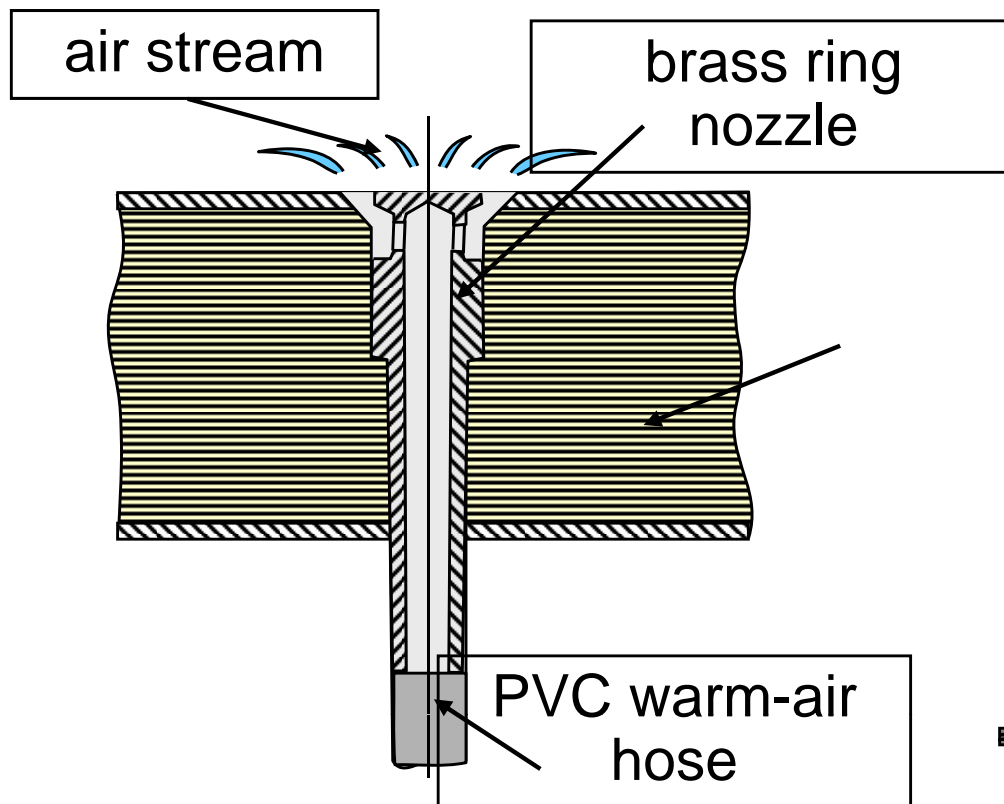




# 1. Hand spreading of materials

## Spreading tables with air-cushion

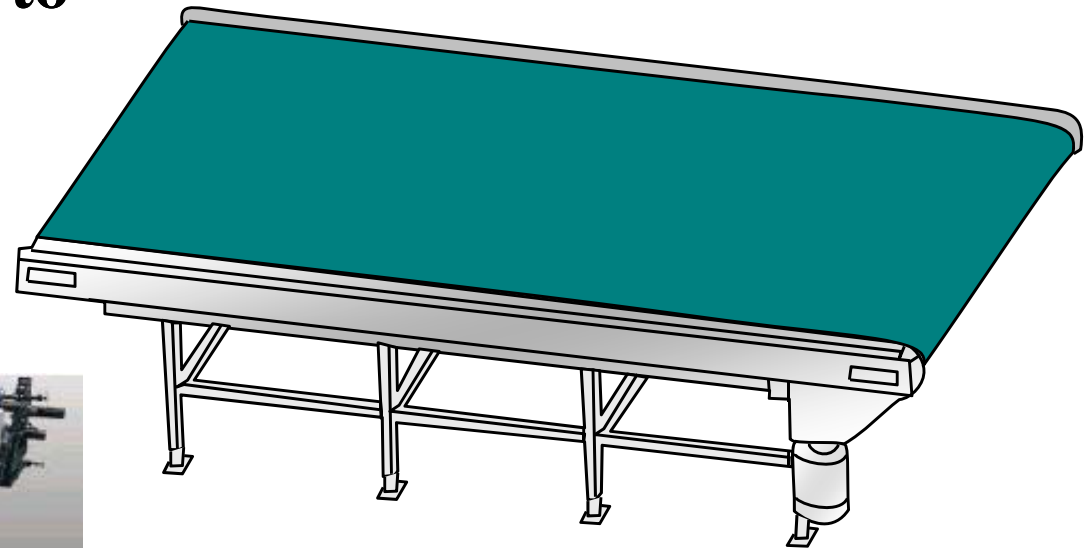
➤ for easier transport layers of fabrics



# 1. Hand spreading of materials

## Spreading tables with belt conveyor

➤ for approach cutting part to cutter, or from cutter

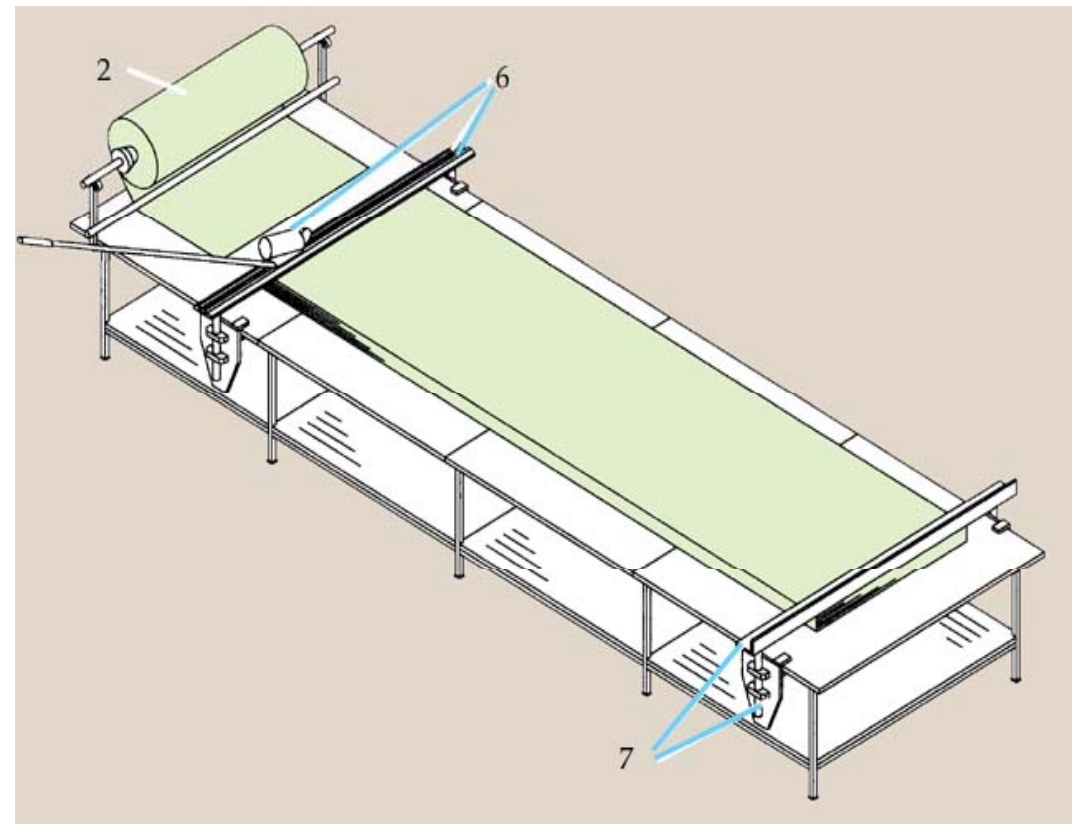


## 2. Hand operated a machanical spreading materials

- spreading truck and unwinding and holding equipment are parts of table



spreading truck



### 3. Electrically operated spreading

#### Semiautomatic spreading machines



#### Automatic spreading machines



- **totally automatic, spreading without strain**

## 3. Electrically operated spreading

- operator only control
- adjustment and longitude layers material and control of operation spreading, speed 100m/min

**GERBERsreader™** Synchron 91 - 121

Automatic Cradle Feed Multi-Purpose Systems



Pionier Super Electronic TFS

Firms:  
Assyst/Bullmer  
Eastman  
Gerber technology  
Veit  
Kuris-wastema





# Classic method cutter of materials

## *Manual shears*



## Hand cutting



- for 1-2 measures cutting

## *Rotary shears*



Lightweight Powerful Shearing



Cordless Shearing of Lofted Material



Mini-Cutter electric Shears

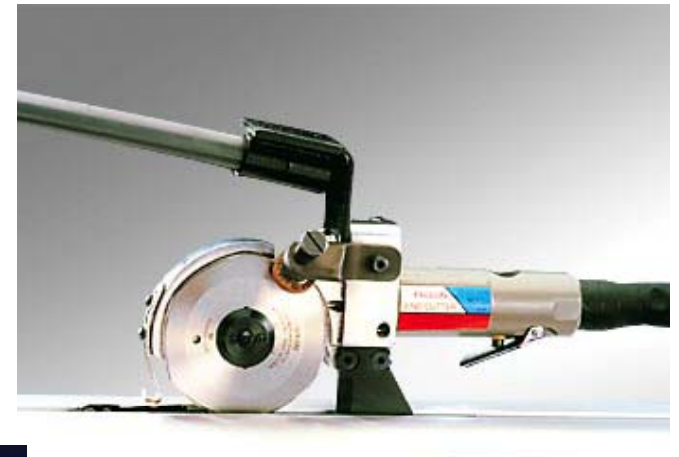


# Classic method cutter of materials

## End cutting after spreading



Standard end cutting



Pneumatically-  
powered end cutting

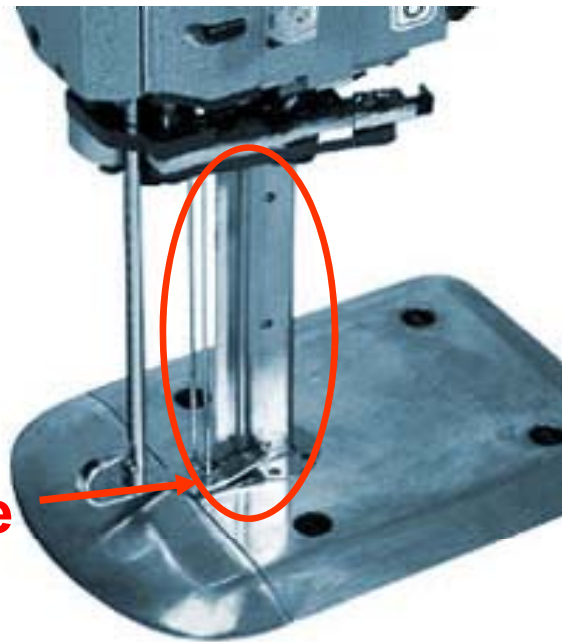


Labor saving automated end  
cutting

# Classic method cutter of materials

## Operated Cutting Mashines

### *Straight knife machine*



**Straight knife blade**

- knife do movement rectilinear reverse, cutting in acute angle
- grinding knives
- speed straight knife 2800-6000 rpm

### *Round knife mashine*



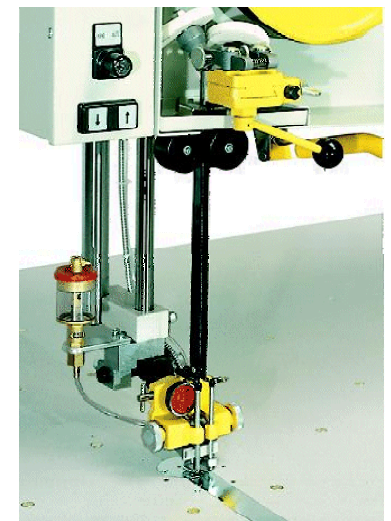
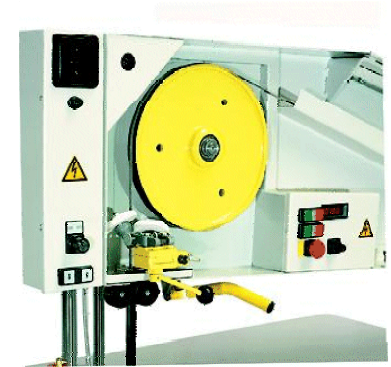
**Round knife blade**

- for rough cutting, long part
- grinding knives
- speed round knife 700-2800 rpm

# Classic method cutter of materials

## Band knife machines

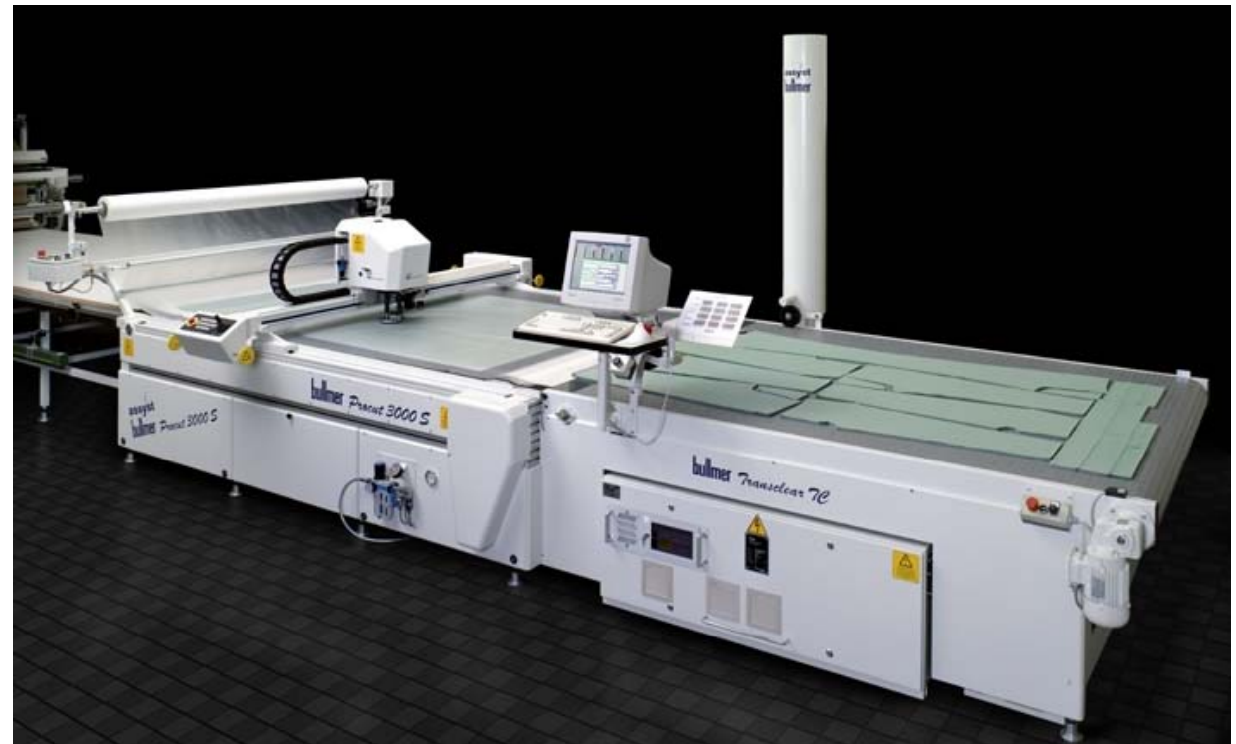
- operator leads layers of fabrics
- cutting in acute angle, for obtain precise cut
- special brass nozzles ensure that the air is blown flat across the surface of the table
- knife speed is infinitely from
- 7 to 25 m/s



# Classic method cutter of materials

## Cutter

- as cutting begins, material is vacuumed to the surface to ensure material hold-down for cutting accuracy
- the gantry passes over the material, cutting is providing with speed and accuracy
- speed of cutting is 45 - 100 m/min, „intelligence“ of knife





# Classic method cutter of materials

## Eagle™ Cutting Conveyor System



The user-interface touch-screen display is conveniently located on the cutting gantry.



The Eagle Conveyor provides peerless accuracy and optimal material usage.



The choice of head tools makes it possible customers specific needs.

# Classic method cutter of materials

## Cutter automatic for cutting leather

- cutting in one's sheet, check the defect(by hand),scanning,cutter

Taurus XM



4-instrumental cutter head



Vacual table with electric control



# Classic method cutter of materials

## Servo – Cutter automatic

- cutting height max. 20 cm
- new easy working provision
- between hand and fully automated cutting
- lower resistance at cutting
- used vacuum for hold or air on transport



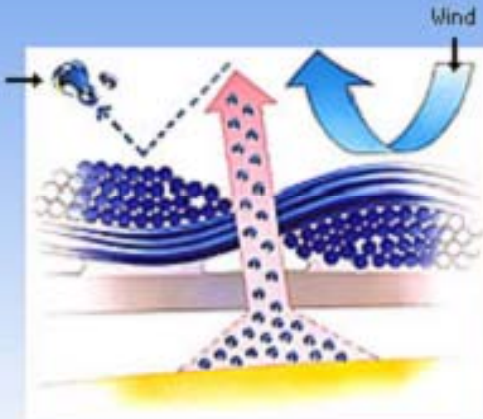
# Transfer of water vapour

## ➤ “breathing“ (openings)

Ultrathin permeable membrane transports water vapour by „breathing“ (opening the pores at a higher temperature and closing at a lower temperature). At a higher temperature molecules of polymer membrane move more fast and extend inter-molecular openings.

### Waterproof, moisture permeable mechanism

Drops of water (10,000–2,000,000 Å diameter) are too big to penetrate the membrane.

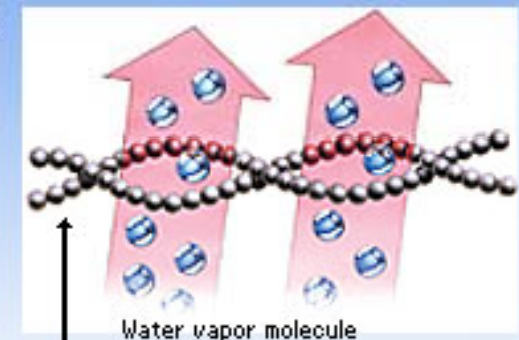


**Toray**  
**(Dermizax)**

Perspiration vapor passes through inter-molecular openings easily

### Water vapor permeating mechanism

As the microclimate temperature rises, the membrane's polymer molecules move more actively, expanding the inter-molecular openings to accelerate the fabric's moisture permeability.



**Toray**  
**(Dermizax)**

Membrane polymer molecule



**Thanks for your attention**