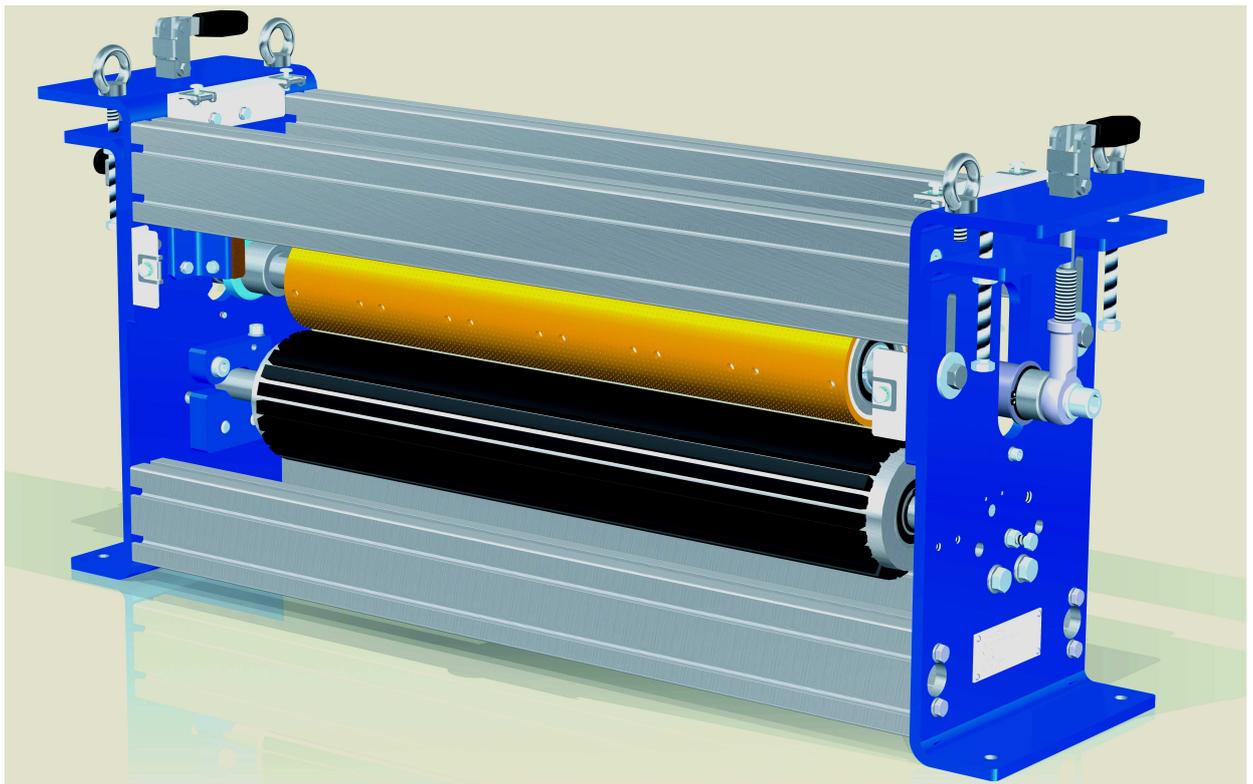


Perforation Devices



Examples of use:

- Perforation of:
 - Polyethylene foils
 - Paper webs
 - Plastic foams
 - Metal foils
- Ventilation at lamination processes
- Micro perforation

Advantages:

- Easy integration into an existing production line
- High web speed
- Easy way of use
- Multi-purpose
- Optional roller arrangement
- High precision due to state-of-the-art CNC machines
- Made in Germany

Description:

- The device is basically intended for the cold perforation process.
- The correct penetration depth is adjusted via adjusting screws.
- After the adjustment of the correct penetration depth by the adjusting screws, the top roller is actuated either manually, pneumatically with hand lever valve or electro-pneumatically with remote control.
- The device does not include any maintenance unit, as the pressure air can be normally taken from the system.
- The support shafts can be exchanged according to the material guiding (see 2.1).
- Mounting brackets for the fitting at the machine are available.
- The device will be adjusted accordingly if the fastening points are specified.

Questionnaire:

We will gladly make you an offer for our perforation device. Please mark the desired version with a cross and fill in the form completely. If there are any questions concerning the special options or a special design of the device, as good as the desired spiked or counter rollers, please feel free to contact us under info@tambula.de or call us on 06622/919035. You can also send us a sample of your material for testing purposes.

1. Purpose of use

Material to be processed: _____ (z.B.: HDPE)

Material thickness: _____ (μm , mm)

Working width of material: _____ (mm)

Product speed: _____ (m/min)

Type of machine: _____

2. Perforation device

2.1 Material guiding:

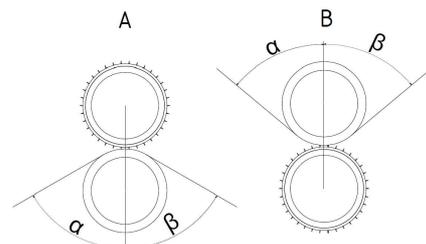
(The material to be perforated should always be guided over the counter roller)

Spiked roller up (sketch A)

α : _____, β : _____

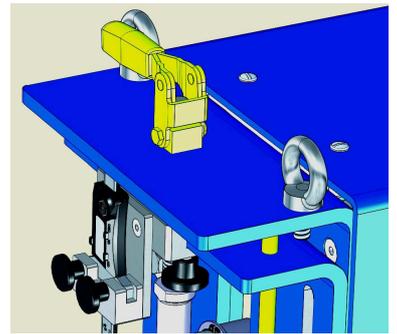
Counter roller up (sketch B)

α : _____, β : _____



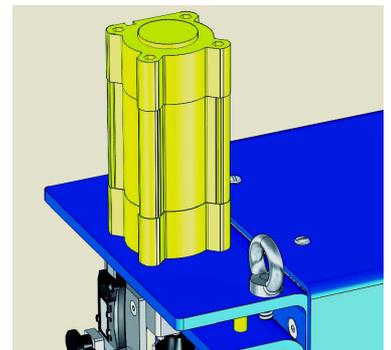
2.2 Lowering of the roller:

- Manually
 - Push rod clamping device for lowering the roller manually
 - Fine adjustment with adjusting screws



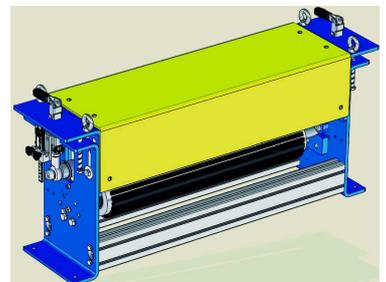
- Remote controlled
 - Pneumatically actuated cylinders
 - Fine adjustment by adjusting screws

 - Control by:
 - Hand lever valve
 - Solenoid valve (please specify the voltage)



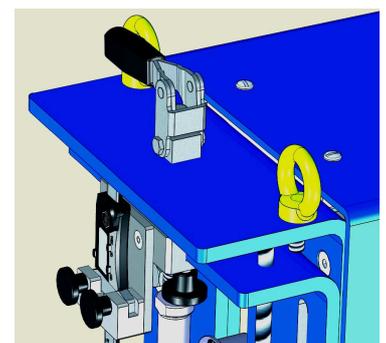
2.3 Shock-proof protection:

- Cover plates or hood
 - Protects from unintentional contact with the spiked rollers
 - You must comply with the valid safety instructions when using the device
 - Please fill in under (2.1) web guiding and angle
 - **NEW:** Fast release through quick access fastener



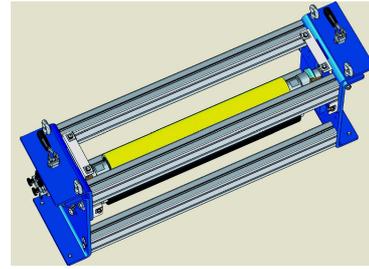
2.4 Possibilities of transport:

- Ring nuts (ISO 582 M10)
 - Not essential
 - Facilitates the application of transport material



2.5 Support shaft material:

- Steel
 - Cheaper option
 - Heavy construction
- Aluminium
 - Optional: Light construction



2.6 Surface structure of the counter roller:

- Brushes
 - According to the material suited for coarser till fine pins (pitch „T“ > 5mm)
 - By choosing a balanced brush counter roller there is always a steel shaft installed



- Felt
 - Suited for fine pins



- Grooved aluminum / steel
 - The grooves have been directly worked into the steel or aluminum counter roller
 - The pins run in the grooves
 - Suited e. g. for the perforation of a harder material
 - Possible from pitch $T > 5$ mm (in rows), or from $T > 10$ mm (staggered)



- PU-coated
 - Necessary for micro perforation
 - Suited for very fine pins or for very small hole diameters



2.7 Balancing of rollers:

Balancing of support shafts

- From the following web speeds and working widths (AB) balancing is advisable:

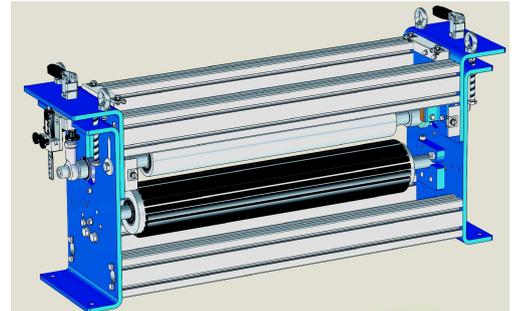
AB: 500mm-1500mm **95m/min** (300 U/min)

AB: 1600mm-2000mm **120m/min** (300 U/min)

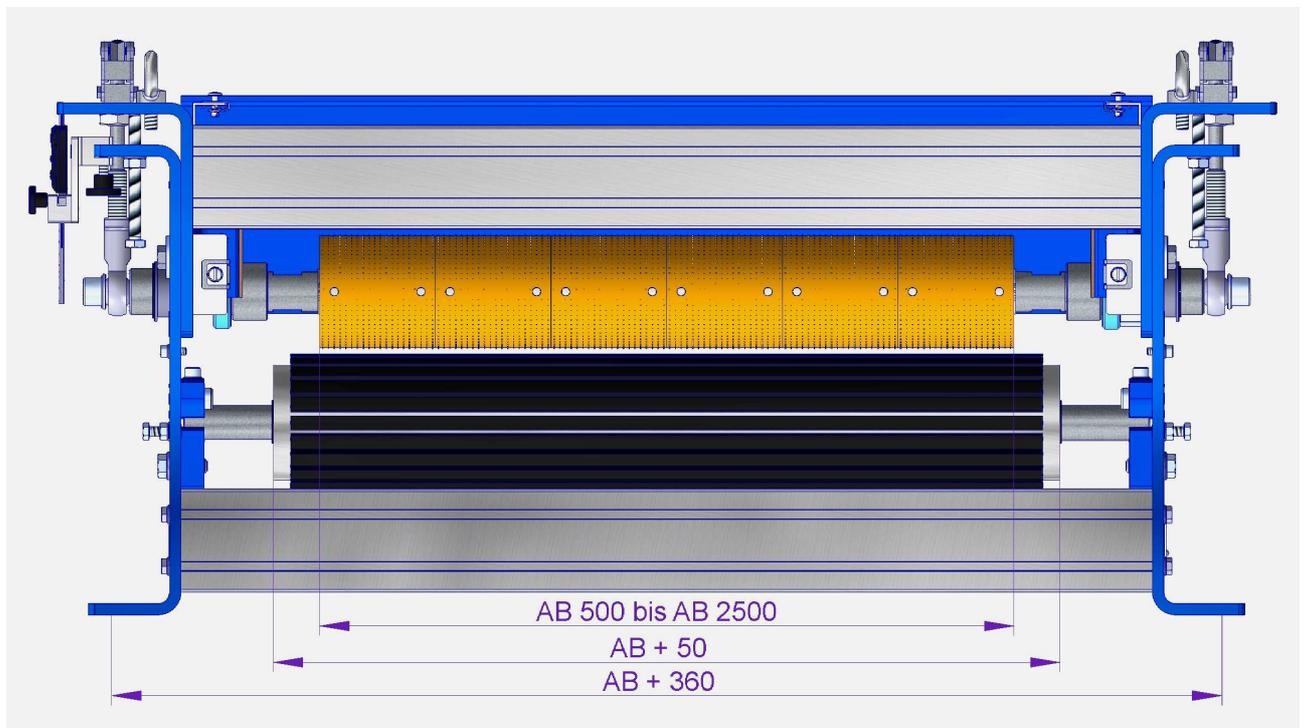
2.8 Color of the device:

Standard color: Blue (RAL 5010)

Special color as required:



2.9 Working width (AB) and standard mounting dimensions:

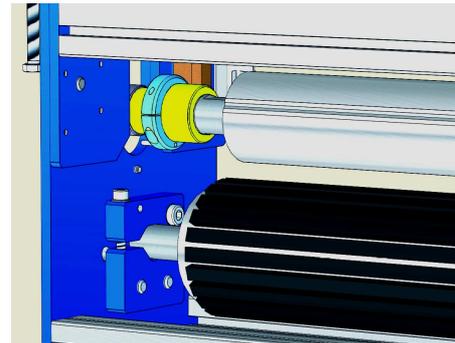


2.10 Special equipment:

Fast change system, upper roller

Advantages:

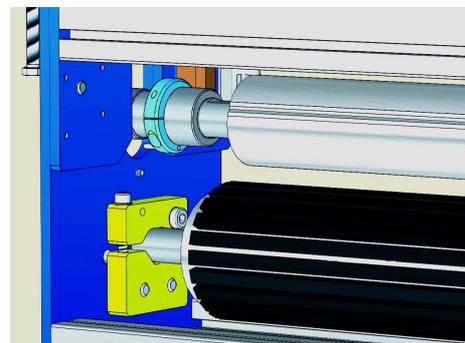
- Changing of the upper support shaft without the disassembling of the lowering systems
- The perforation depth setting is kept untouched



Fast change system, counter roller

Advantages:

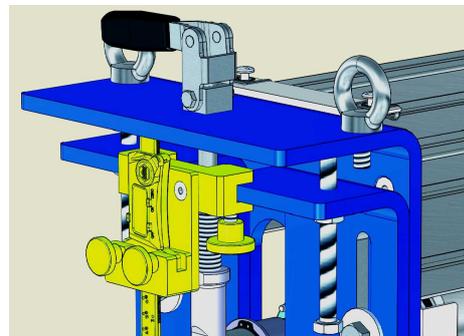
- Changing of the counter roller by means of releasing just two screws.
- No disassembled parts.



Perforations depth measuring system

Advantage:

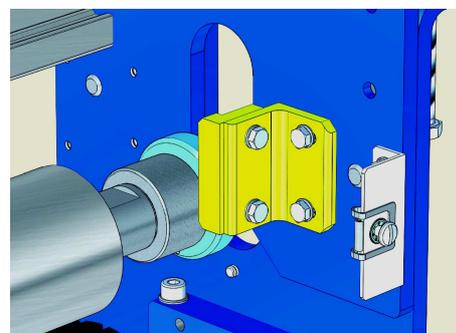
- exactly measuring of the perforation depth setting, on each side, through a digital caliper.



Guiding, upper roller

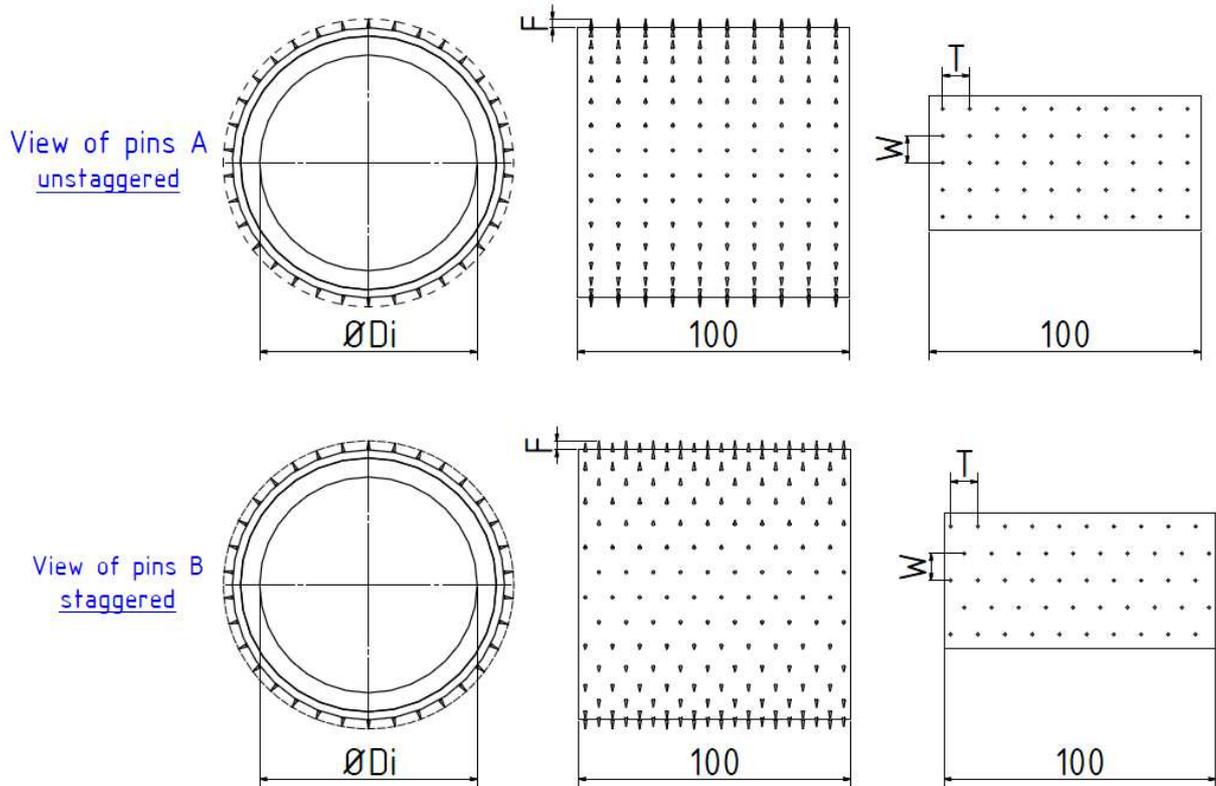
Advantage:

- The upper roller keeps the set axial position
- Important for e.g. perforation with a grooved counter roller



3. Pin Segments, standard

3.1 Dimensions of the standard pin segments:



(Dimensions in mm)

Unstaggered pins (A)						Staggered pins (B)					
	<i>Density</i>	<i>T</i>	<i>W</i>	<i>F</i>	<i>PinsØ</i>		<i>Density</i>	<i>T</i>	<i>W</i>	<i>F</i>	<i>PinsØ</i>
<input type="checkbox"/>	16 pins/cm ²	2,5	2,5	3,85	0,99	<input type="checkbox"/>	16 pins/cm ²	2,5	2,5	3,85	0,99
<input type="checkbox"/>	4 pins/cm ²	5	5	3,85	0,99	<input type="checkbox"/>	4 pins/cm ²	5	5	3,85	0,99
<input type="checkbox"/>	1 pins/cm ²	10	10	5,5	1,63	<input type="checkbox"/>	1 pins/cm ²	10	10	5,5	1,63
<input type="checkbox"/>	0,25 pins/cm ²	20	20	10	2,62	<input type="checkbox"/>	0,25 pins/cm ²	20	20	10	2,62

(pinlØ = max. maximum diameter at the pin shank)

Customer request

- We will be pleased to offer upon request any individual pin arrangements of the segments according to your specification.
- In this case please fill in our “**Questionnaire Spiked Rollers**” or send us a drawing.
- Please note that the outer diameters of the support shafts at the following working widths (AB) are as follows:

AB: (500mm-1500mm)

AB: (1600mm-2000mm)

Di=Ø80mm

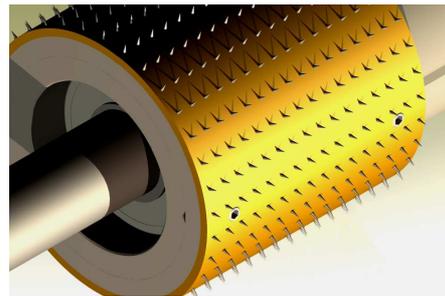
Di=Ø110mm

3.2 Core material of the standard segments:

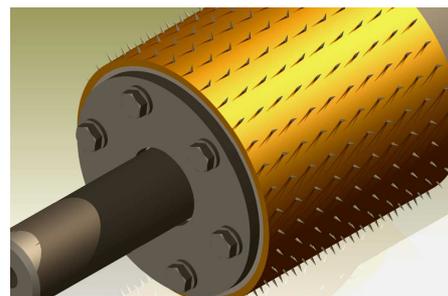
- Without core
 - The roundness is not as accurate as with core
 - Low-cost version from AB 1600 or coarse pins (0.25 pin/cm²)
 - Attachment between clamping disks
- Steel core
 - Cheaper than aluminum core
 - Heavy construction
- Aluminum core
 - Light construction
 - Also suited for high product speeds
- Plastic core
 - Ultra light construction
 - Very good chemical resistance (e.g. acid resistance of Murylat till PH2)
 - Proper for the food industry
 - Also suited for high product speeds

3.3 Attachment of the standard pin segments:

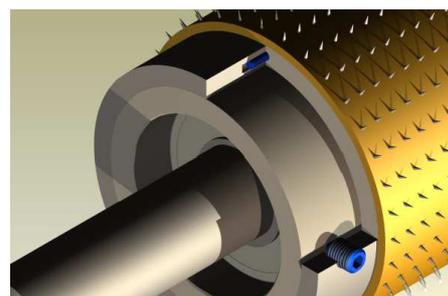
- Setscrews
 - Standard version
 - Any roller is attached separately at the support shaft
 - Serves as axial (displace) and radial (turn) fixing
 - In connection with a notched support shaft, a correct pin arrangement can be reached
 - Only up to a pitch of $T > 10$ mm (0.25 N/cm², 1 N/cm²). At a smaller pitch the pins are omitted at the screw connection.
 - Is necessary for movable single segments at partial perforation



- Tensed between clamping disks
 - Manual alignment of the pin segments
 - The segments are tensed by clamping disks which are attached at the front of the support shafts. In this way the segments are protected from axial and radial displacement
 - Only necessary for fine pins (16 pins/cm²) and segments without core



- Front studs
 - Special equipment
 - The spiked rollers are put together and they are correctly aligned by the studs.
 - For the axial fixing 2 additional edge segments are necessary. These segments are attached by clamping screws at the support shaft.



4. Aluminium Pin Rollers, standard:

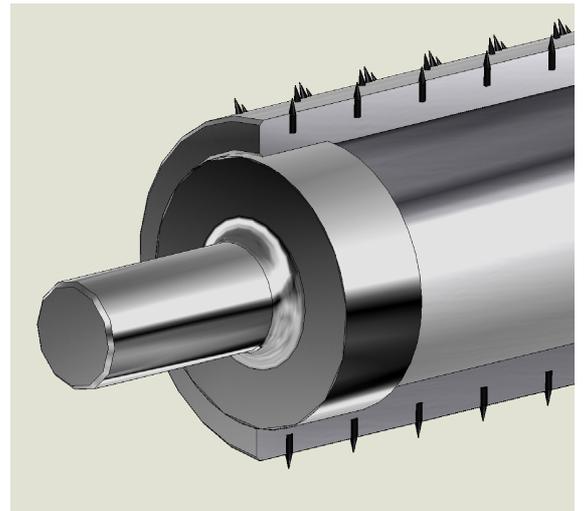
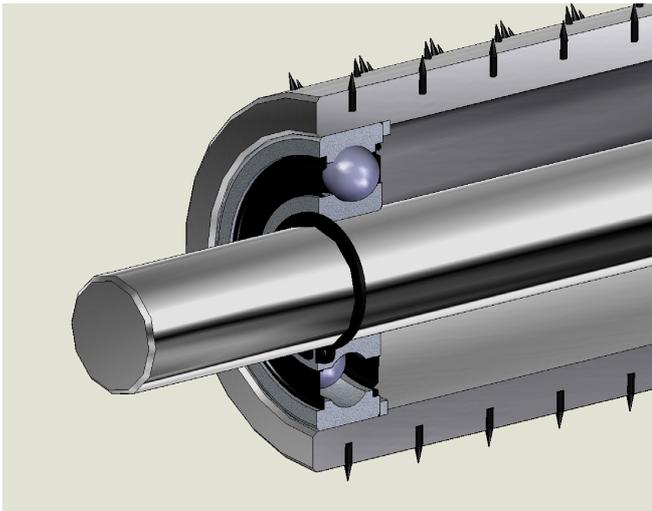
- Inexpensive and light construction
- Suited for perforations with a lower radial load
- The pin roller is balanced
- Dimensions: Diameters Ø80mm - Ø120mm, Lengths 300mm - 2000mm (by demand other dimensions too)
- Pin pattern: $T \geq 10\text{mm}$; $W \geq 10\text{mm}$
- Pin diameter $\geq 1\text{mm}$

(Dimensions in mm)

Unstaggered pins (A)						Staggered pins (B)					
	<i>Density</i>	<i>T</i>	<i>W</i>	<i>F</i>	<i>PinsØ</i>		<i>Density</i>	<i>T</i>	<i>W</i>	<i>F</i>	<i>PinsØ</i>
<input type="checkbox"/>	1 pins/cm ²	10	10	3,85	1	<input type="checkbox"/>	1 pins/cm ²	10	10	3,85	1
<input type="checkbox"/>	0,45 pins/cm ²	15	15	5,5	1,63	<input type="checkbox"/>	0,45 pins/cm ²	15	15	5	1,63
<input type="checkbox"/>	0,25 pins/cm ²	20	20	7	2	<input type="checkbox"/>	0,25 pins/cm ²	20	20	7	2

Inside bearing

With plugs



Customer request

- We will be pleased to offer upon request any individual pin arrangements of the rollers according to your specification.
- In this case please fill in our “**Questionnaire Aluminium Spiked Rollers**” or send us a drawing.
- Please note that the outer diameters of the rollers at the following working widths (AB) are as follows:

AB: (300mm-1000mm)

AB: (1000mm-1500mm)

AB: (1500mm-2000mm)

Di=Ø80mm

Di=Ø100mm

Di=Ø120mm

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