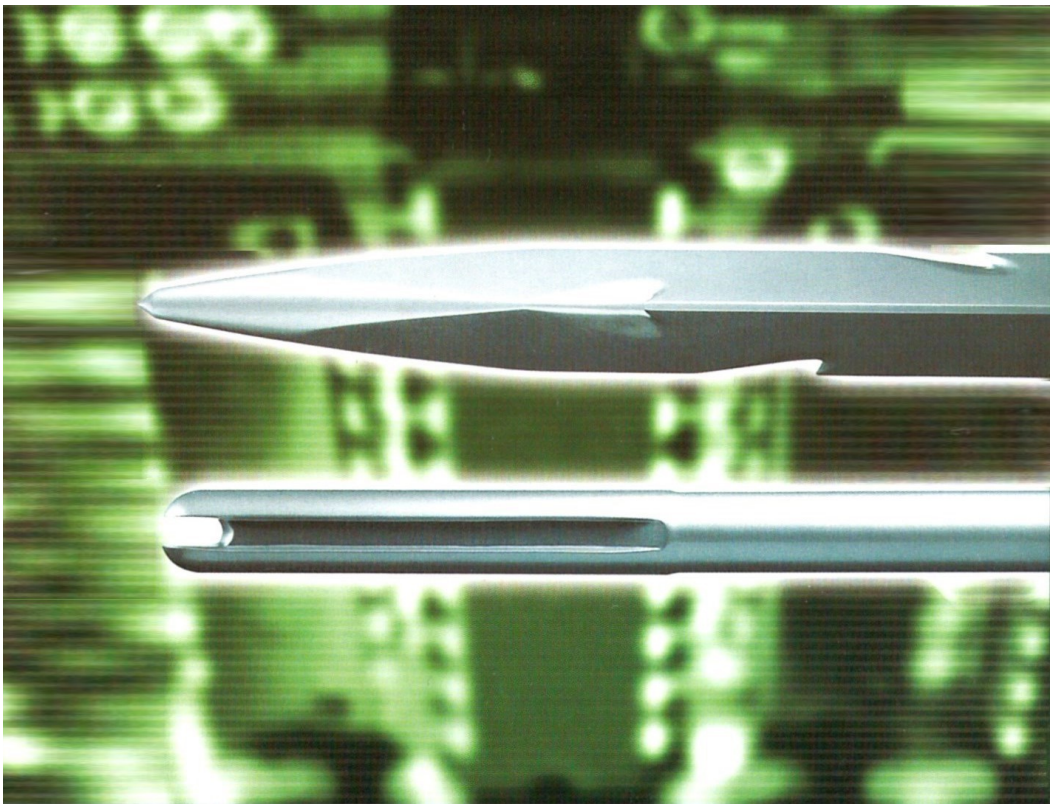
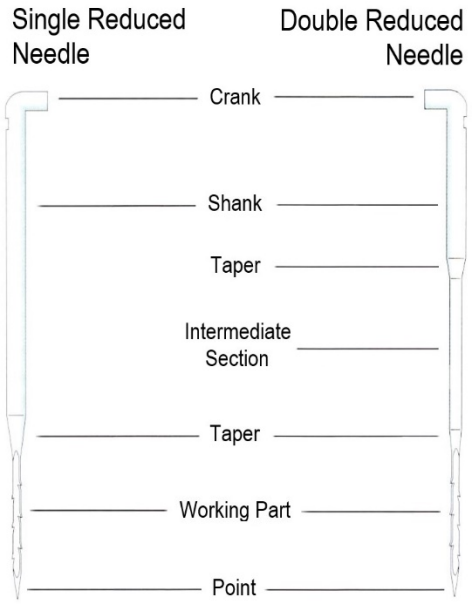


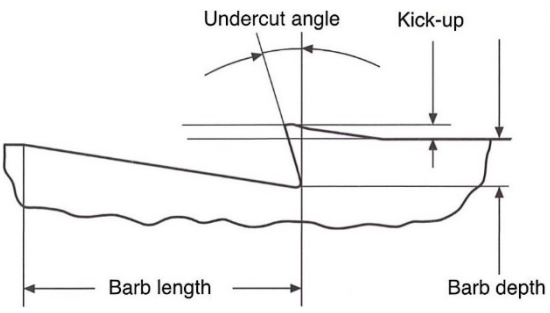
YOUR PARTNER FOR NEEDLE PUNCHING TECHNOLOGY

Tobias Grüll-Pillwein

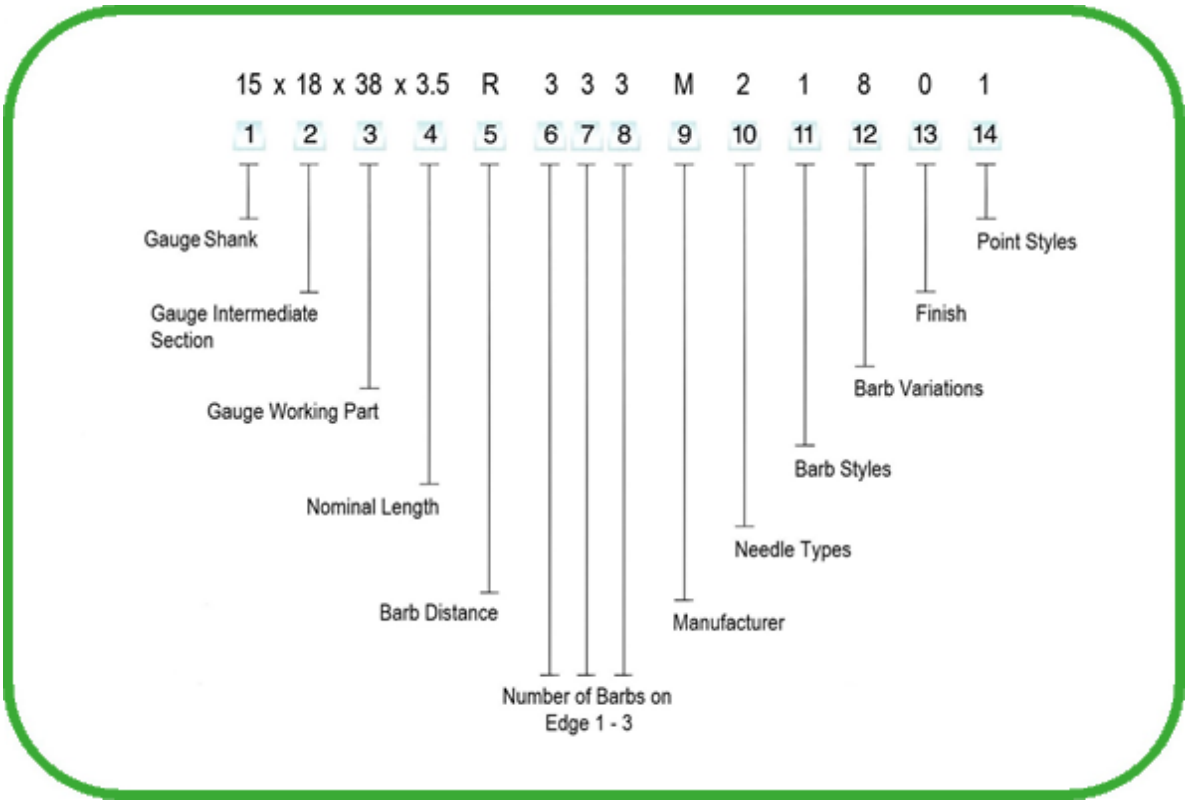
AUSTRIAN TEXTILE ENGINEERING



In this section you will find all the specifications and codes, needed to name your needle.



Shown below is an example of how a needle might be specified:
Each designation consists of 14 parts and can be found on the bottom of the label of any needle box.



1 Gauge Shank

2 Gauge Intermediate Section

3 Gauge Working Part

4 Nominal Length

5 Barb Distance

6 Number of Barbs on Edge 1

7 Number of Barbs on Edge 2

8 Number of Barbs on Edge 3

9 Manufacturer

10 Needle Types

11 Barb Styles

12 Barb Variations

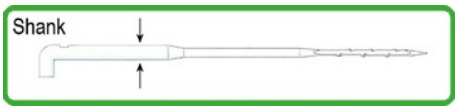
13 Finish

14 Point Styles

1 Gauge Shank

To pick an available gauge number for the **intermediate section** of your needle, please use the chart on the right side.

The diameters of the various parts of a felting needle are specified in **gauge** (gg).
The bigger the gauge number, the smaller the diameter of the part it refers to.



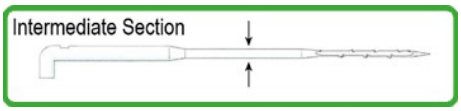
You can measure the gauge with a calliper at the spot indicated by the arrows above.

Gauge	Diameter in mm/inch
9	3.56 /.140
11	2.79 /.110
12	2.67 /.105
13	2.35 /.093
14	2.02 /.080
15	1.82 /.072
16	1.63 /.064
17	
18	
19	
20	
22	
23	
25	
30	
32	
34	
36	
38	
40	
42	
43	
46	

2 Gauge Intermediate Section

To pick an available gauge number for the **intermediate section** of your needle, please use the chart on the right side.

The diameters of the various parts of a felting needle are specified in **gauge** (gg).
The bigger the gauge number, the smaller the diameter of the part it refers to.



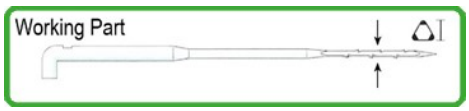
You can measure the gauge with a calliper at the spot indicated by the arrows above.

Gauge	Diameter in mm/inch
9	
11	2.80 /.110
12	2.60 /.102
13	2.35 /.093
14	1.95 /.076
15	1.75 /.068
16	1.55 /.061
17	1.35 /.053
18	1.20 /.047
19	
20	
22	
23	
25	0.85 /.033
30	
32	0.65 /.026
34	
36	0.55 /.022
38	
40	
42	
43	
46	

3 Gauge Working Part

To pick an available gauge number for the **working part** of your needle, please use the chart on the right side.

The diameters of the various parts of a felting needle are specified in **gauge** (gg).
The bigger the gauge number, the smaller the diameter of the part it refers to.

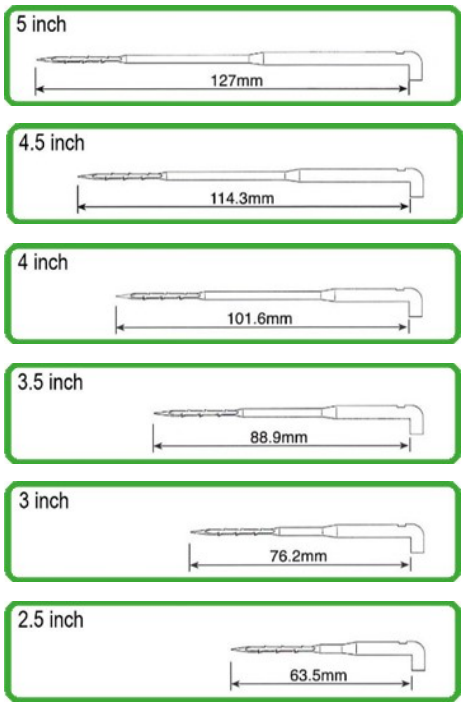


You can measure the gauge with a calliper at the spot indicated by the arrows above.
The gauge for the **working part** measures the height of the triangular blade.

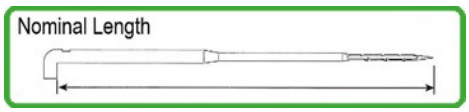
Gauge	Blade Height in mm/inch
9	
11	
12	
13	2.45 /.096
14	2.15 /.084
15	1.85 /.072
16	1.60 /.062
17	1.40 /.055
18	1.25 /.049
19	1.10 /.043
20	1.00 /.039
22	0.95 /.037
23	0.90 /.035
25	0.85 /.033
30	0.73 /.028
32	0.68 /.026
34	0.63 /.024
36	0.58 /.022
38	0.53 /.020
40	0.48 /.018
42	0.43 /.016
43	0.38 /.014
46	0.33 /.012

4 Nominal Length

Needles are available with a **nominal length** ranging from 2.5 to 5 inch.



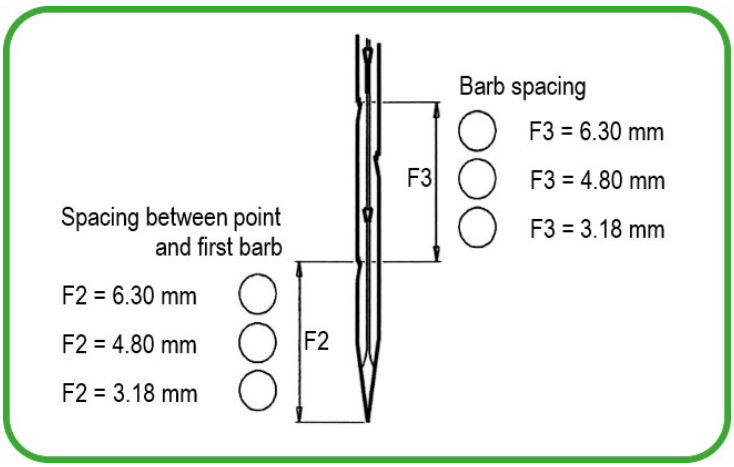
The **nominal length** of a felting needle is Expressed in inches and is measured from the **point** to the inside of the **crank**.



You can measure the length with a calliper at the spots indicated by the arrows above.

5 Barb Distance

This section shows the **spacing between point and first barb, penetration depth** and **barb spacing**.



The spacing between the point and the first barb is normally corresponding to the spacing between the barbs and is indicated by the following letters:

S = Single spacing

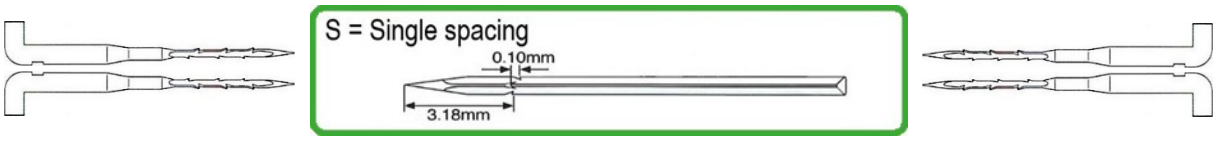
R = Regular spacing

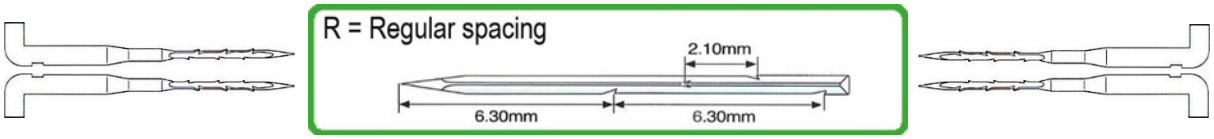
M = Medium spacing

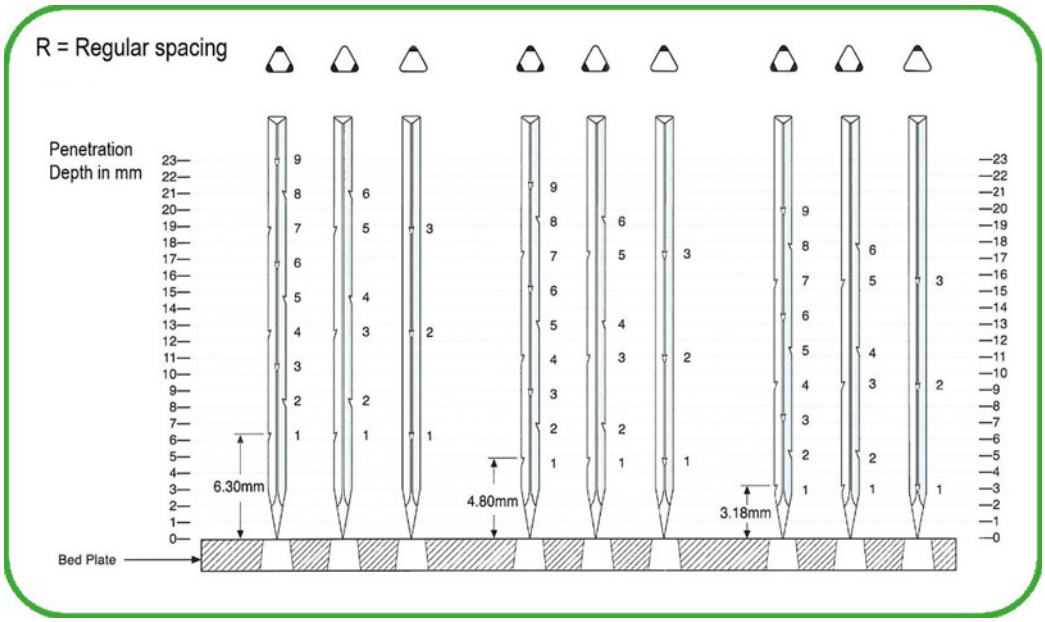
C = Close spacing

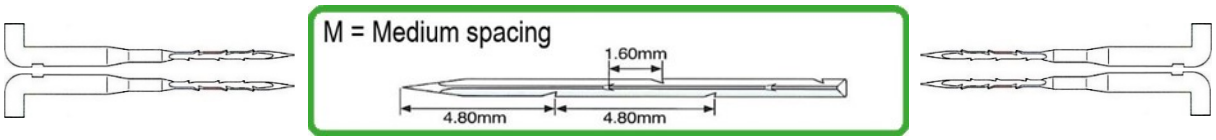
F = Frequent spacing

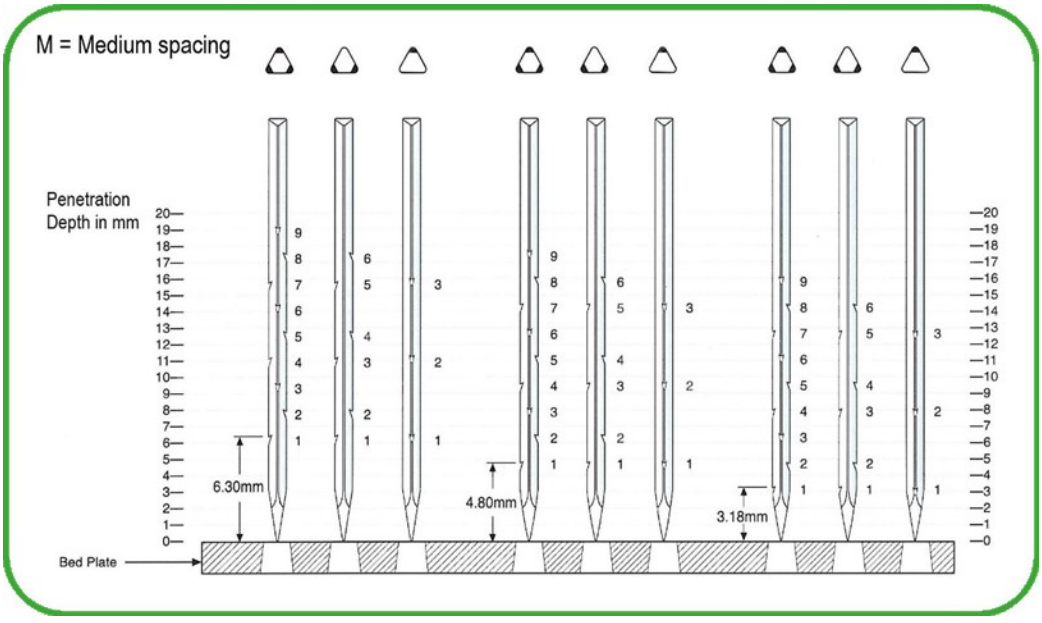
Different barb spacings can begin at a different distance from the point. This spacing defines the penetration depth. Illustrated below is the penetration depth for different barb spacings, number of barbs and distance from the point.

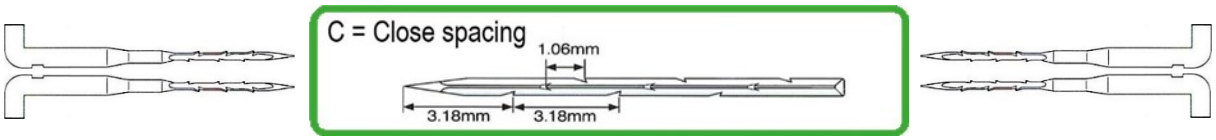


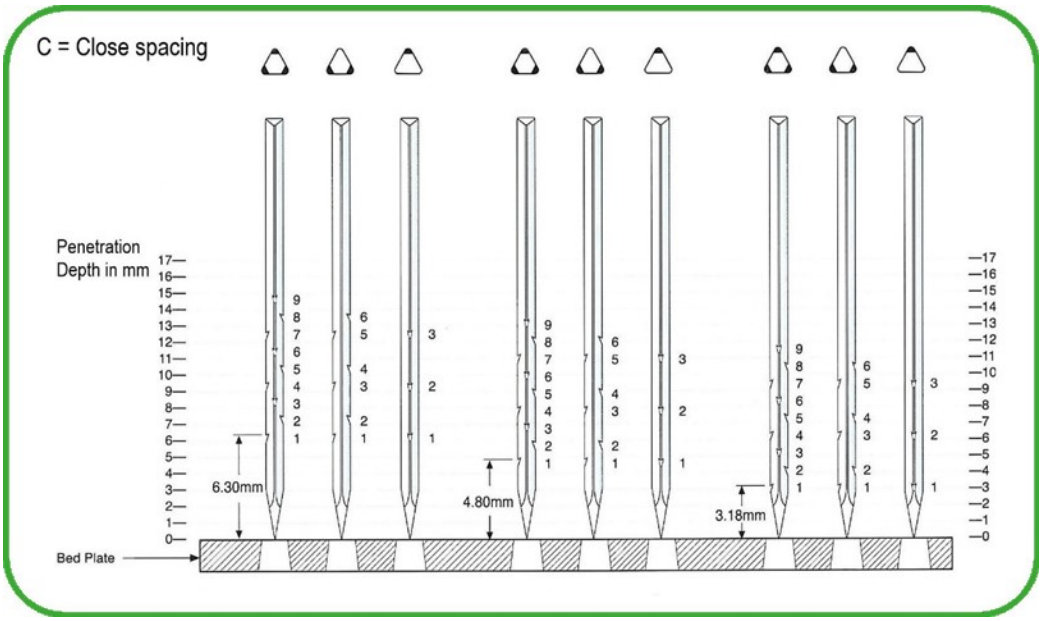

R = Regular spacing
2.10mm
6.30mm
6.30mm

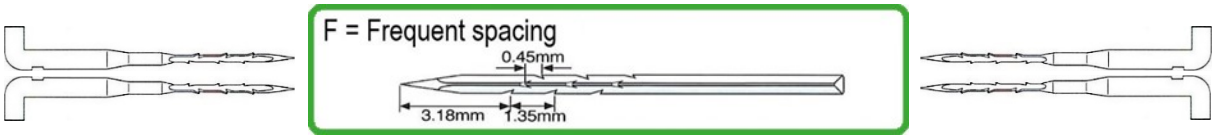

R = Regular spacing
Penetration
Depth in mm
6.30mm
4.80mm
3.18mm
Bed Plate

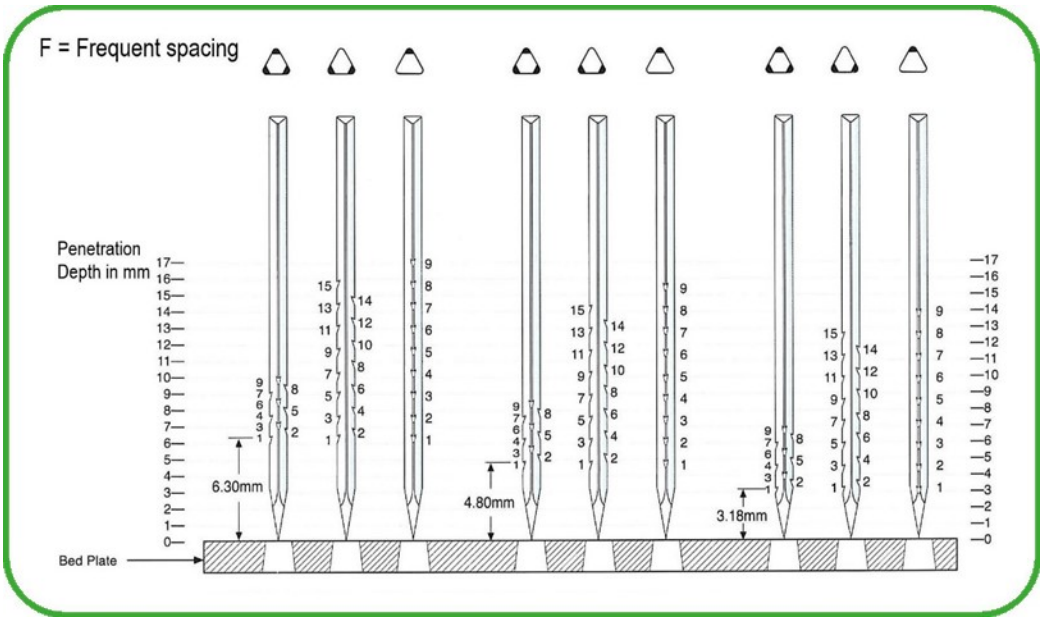

M = Medium spacing
1.60mm
4.80mm
4.80mm


M = Medium spacing
Penetration
Depth in mm
6.30mm
4.80mm
3.18mm
Bed Plate


C = Close spacing
1.06mm
3.18mm
3.18mm


C = Close spacing
Penetration
Depth in mm
6.30mm
4.80mm
3.18mm
Bed Plate


F = Frequent spacing
0.45mm
3.18mm
1.35mm


F = Frequent spacing
Penetration
Depth in mm
6.30mm
4.80mm
3.18mm
Bed Plate

6 Number of Barbs on Edge 1

R X00 

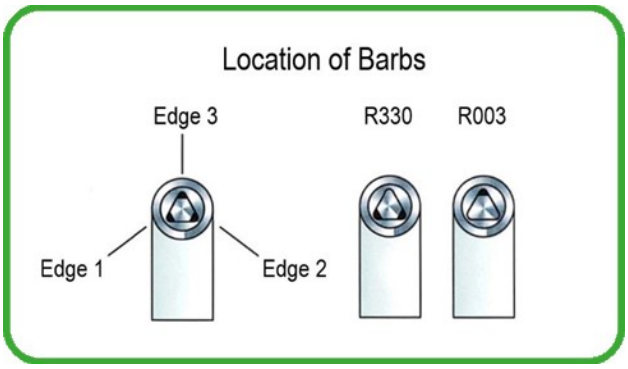
7 Number of Barbs on Edge 2

R 0X0 

8 Number of Barbs on Edge 3

R 00X 

The **number of barbs** on each edge of the triangular blade is always listed in the same order.



10 Needle Types

Please use the chart on the right side to pick the number for an available **needle type**.

Needles with a **triangular** working part are most commonly used. **Taper** shaped needles offer better resistance against deflection and breaking. **Diamond** needles have barbs on only one edge and are used for the production of technical felts. **Spiral** needles, apart from a longer life time, can also penetrate a larger amount of fibres.

0 Taper Needle

1 Triangular Needle

3 Diamond Needle

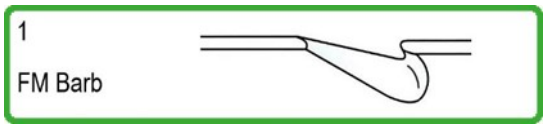
6 Spiral Needle

7 Crown Needle

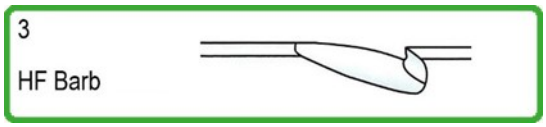
10 Inverted Barb Needle

11 Barb Styles

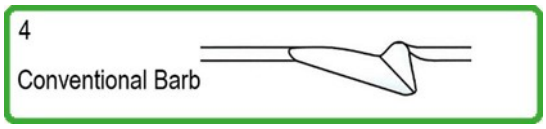
FM barbs minimize the damage caused to the fibre by the barbs. They consist of several rounded edges.



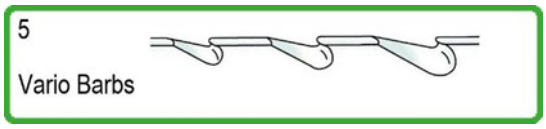
HF barbs are similar to FM barbs, but have a flat bottom surface.



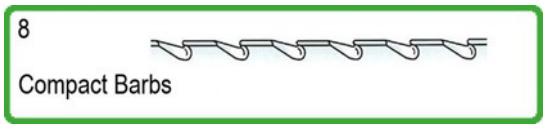
Conventional barbs are easier to produce than FM and HF barbs but have sharper edges that can damage fibres.



Vario barbs get smaller towards the point of the needle and thereby cause less needle deflection, while ensuring penetration efficiency for every barb.

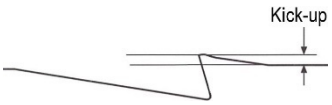


Compact barbs are closely spaced together and mostly have FM-shape. They normally have barbs on only one or two edges and are used for papermaker felts.



12 Barb Variations

The following **kick-up** types are available:



0 Standard Type high kick-up

3 Standard Type standard kick-up

8 Standard Type no kick-up

13 Finish

Different **coatings** can protect the needle from corrosion and mechanical wearing.

0 Standard

1 Nickel-plated

2 Chrome-plated

3 Smoothed

14 Point Styles

To pick a **point style** for your needle please use the chart on the right side.

Different **point styles** are adopted to the various kinds of working parts and are used to penetrate a variety of materials. Bigger fibres often need **ball points** to protect them from breaking during the needling process, while **scissor points** are often used to produce papermaker felts.