

FRICK - HANDSTRUCTURE

This hand structure device is specially designed for professional racing. The gearbox makes it possible to apply a variety of structure patterns with only a few rollers. The function of the device is very simple, and the individual structure rollers are clearly graduated.

Due to the great possibilities of this structure device (12 rollers x 3 gear variations, plus overlapping the different structures), the skis can be perfectly adapted to different snow, temperature and humidity conditions. Hence, the individual possibilities of this device are extremely large.

Our recommendation: To create a good hand structure requires a certain amount of knowledge and understanding of ski preparation in general. Even with the most modern CNC ski grinding machines, it is still up to the right application to achieve good results. It, therefore, takes a test team just as it does with wax and ski selection to find the best rollers and roller combinations. Only this way the full potential of the structure unit can be exploited!

All structure rollers are perfectly tuned through countless tests and in intensive cooperation with the US Biathlon World Cup ski service team. They have successfully been using them at the World and IBU Cup level for 10 years now.



Classification of rollers in terms of snow grain characteristics

Fine grain	medium grain	coarse grain
R4.1	R6.1	L7.1
L5.1	R6 + L6	R7 + L7
R5 + L5		

The rolls **G5**, **G10** give a linear cutting pattern, these are mainly used in wet conditions, additionally above or below existing structures.

Classification of the cutting position in relation to snow moisture content

dry <15%	medium 15-25%	wet >25%
Switching position Gear I	Switching position Gear II	Switching position Gear III
"short pattern"	"decoupled: medium pattern"	"long pattern"

Grain size and snow moisture provide a guide for selecting the inclination to be tested from 4 - 7. Experience has shown that snow grain size and shape play a greater role than temperature. Thus, a coarse roller #7 may well be used with a fast Gear 1 in cold but coarse conditions, and vice versa.

Contact pressure

The contact pressure should not be too high; it does not yield any improvements, only unnecessary deformation of the ski base.

- **Gear 1 -> 12 - 18 kg.**
- **Gear 2 (rolling / embossing) -> 15 - 25 kg.**
- **Gear 3 -> 12 - 18 kg.**

In the following illustrations, a few common structure patterns are described.

Representation 1

Roller **R6.1 Gear 2**: Gear 2 is embossed and shows the original unwinding pattern of the interrupted roller. **Application**: medium grain, medium snow moisture.

By changing gears II to I and II to III, the drive shaft is engaged and the roller rotates against the direction of thrust; at the same time, the cutting pattern changes from right to left.

- **R6.1 Gear 1**: Application: medium grain size, dry snow moisture.

- R6.1 Gear 3**: Application: medium grain size, wet snow moisture.

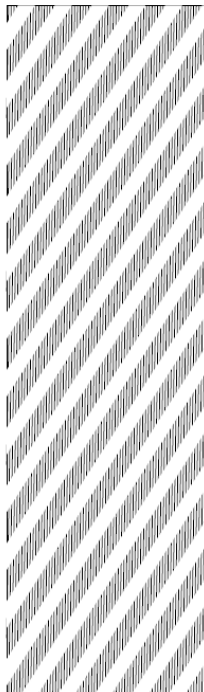
- **R6.1 Gear 2 + R6.1 Gear 1**: medium grain size, medium snow moisture, snowfall, compact trail.

- **R6.1 Gear 2 + R6.1 Gear 3**: medium grain size, wet snow moisture, snowfall, compact trail. To apply these structures, no changing of the roller is necessary.

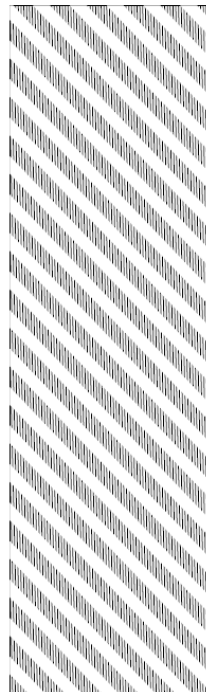
- Roller **R4.1** provides the same pattern only with smaller groove spacing for fine-grained snow

- Roller **L5.1** and **L7.1** the patterns are to be considered as mirrored as it is a left-hand thread

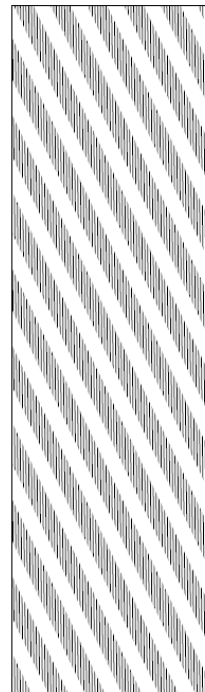
R6.1 Gear 2



R6.1 Gear 1



R6.1 Gear 3



R6.1 Gear 2 +
R6.1 Gear 1

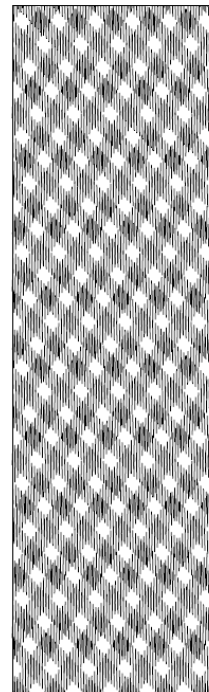
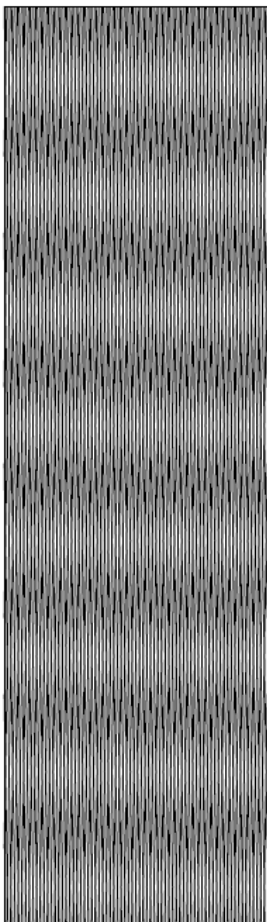


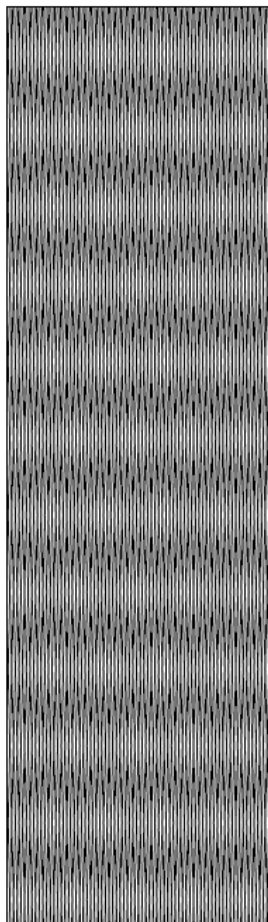
Illustration 2

- Rollers **R5+L5**, **R6+L6**, **R7+L7** should always be used in a right-left combination; they provide the classic diamond pattern.
 - **R6 + L6 Gear 2**: Gear 2 is embossed and shows the original rolling pattern of the right and left screw. Use: Medium grain, medium snow moisture.
 - **R6 + L6 Gear 1**: Use: medium grain size, dry snow.
 - **R6 + L6 Gear 3**: Use: medium grain size, wet snow.
- For these patterns it is necessary to change the rollers from left to right (or vice-versa)

R6 + L6 Gear 2



R6 + L6 Gear 1



R6 + L6 Gear 3

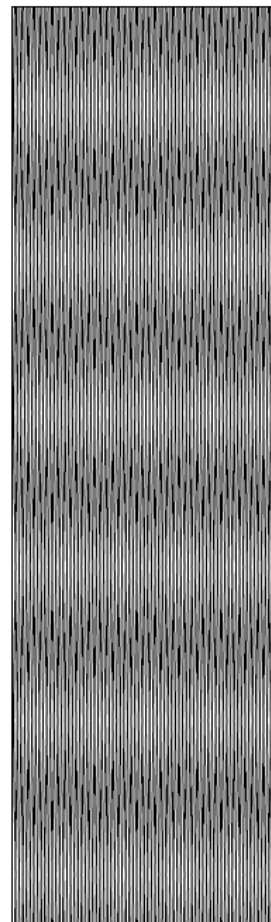


Illustration 3

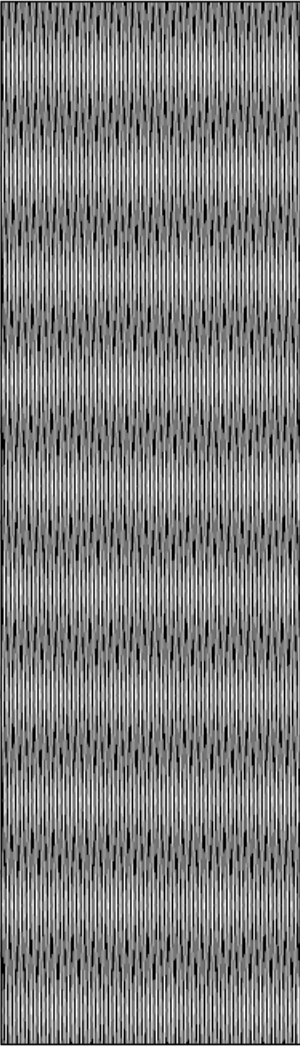
Shows the possibility to create a diamond pattern even without role swapping.

- **R6 Gear 2 + R6 Gear 1:** is between **R6 + L6 Gear 1:** and **R6 + L6 Gear 2.**

- **R6 Gear 2 + R6 Gear 3:** is between **R6 + L6 Gear 2:** and **R6 + L6 Gear 3.**

Range of use: medium grain size, medium snow moisture.

R6 Gear 2 +
R6 Gear 1



R6 Gear 2 +
R6 Gear 3

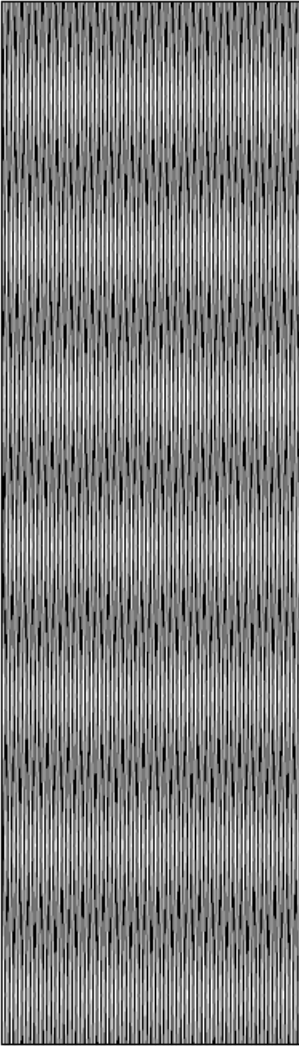
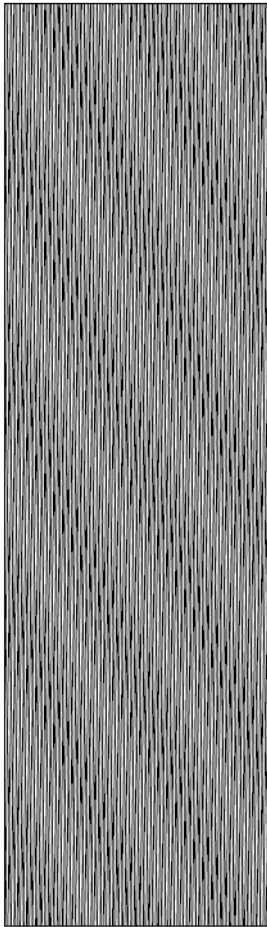


Illustration 4

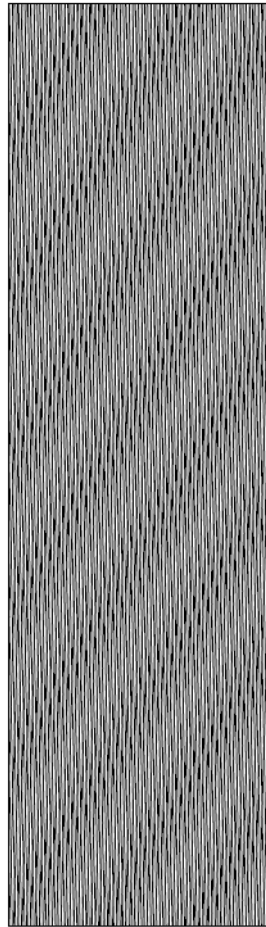
Roller combination

- **R5 Gear 2 + L7 Gear 2:** Application: fine and coarse grain, medium snow moisture.
- R5 Gear 1 + L7 Gear 1:** Application: fine and coarse grain, dry snow
- **R5 Gear 3 + L7 Gear 3:** Application: Fine and coarse grain, wet snow

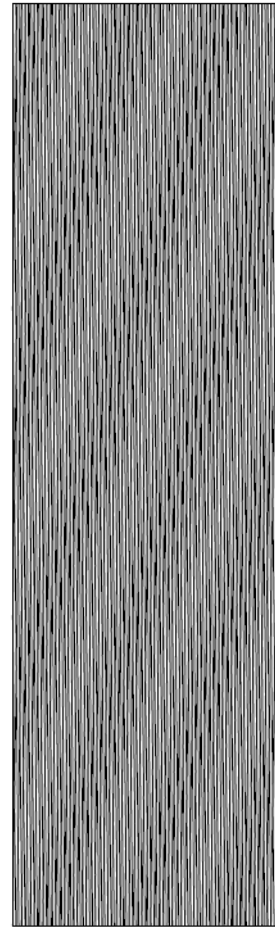
R5 Gear 2 +
L7 Gear 2



R5 Gear 1 +
L7 Gear 1



R5 Gear 3 +
L7 Gear 3



This is only a small excerpt from the countless possibilities of available structure combinations.