



THE BENEFITS OF OPTIMUM LATCH GUIDANCE IN KNITTING



High durability and reliability are important requirements that a needle has to fulfil in modern knitwear production. High machine speeds and feed densities, which involve up to 120 latch openings and closings per second, increase the force applied on the latch. Also, abrasive particles from the

yarns can penetrate into the latch bearing and accelerate needle wear. Precise guidance and bearing of the latch are therefore essential prerequisites for a long needle life, a troublefree production process and achievement of the maximum possible machine speed.

DEFINITION OF LATCH PLAY

How is latch play defined?

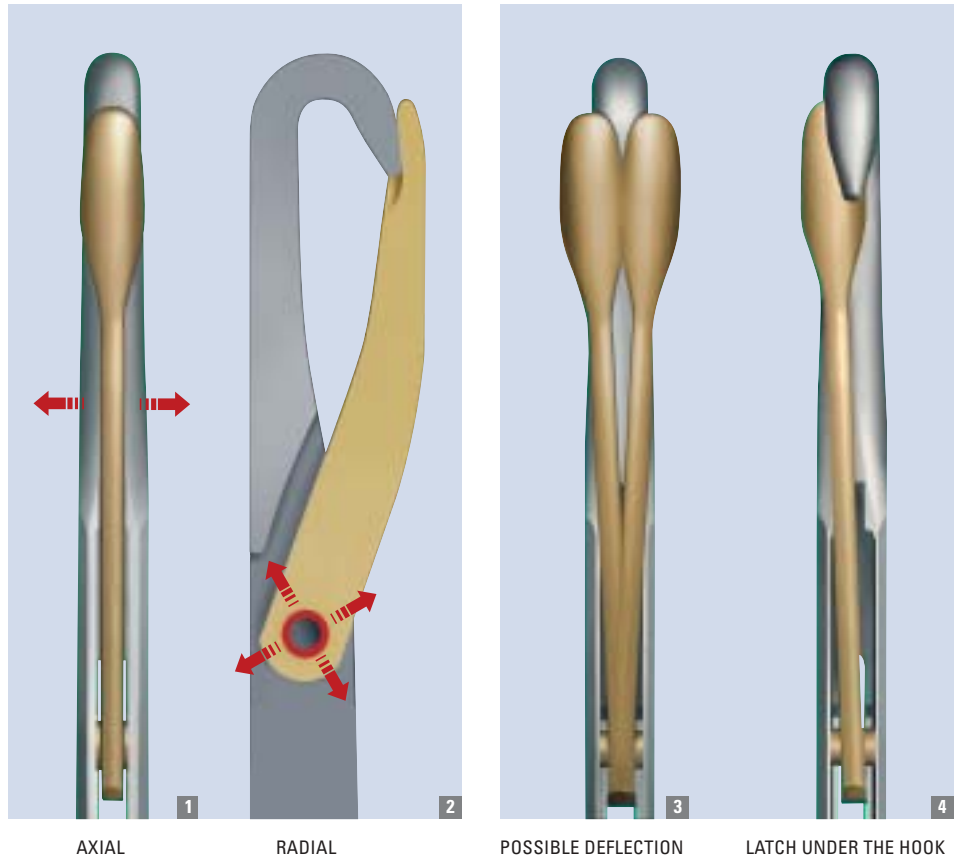
The latch play is defined by 2 components: the axial latch play (Fig. 1) and the radial latch play (Fig. 2). For minimum axial latch play, the least possible play between latch shank and needle slot is needed. A minimum radial latch play can only be achieved with an optimum execution of the latch bearing.

Why is efficient latch guidance so important?

The more the axial and radial latch play increases, the more the latch will strike the hook off center (Fig. 3). This increases wear on the hook, the latch spoon and latch shank and on the inside of the cheek walls, resulting in an increase in latch play.

If the needle is replaced too late, the latch can slide under the hook (Fig. 4), which can lead to knitting defects and machine downtime. For this reason, optimum latch guidance, which Groz-Beckert needles have, is essential for a long needle life.

In addition, excessive axial latch play can allow the latch to be deflected sideways to such an extent that the latch head is subject to wear from the sinker (Fig. 6). Sharp edges develop that cut or damage the yarn and cause defects in the knitted fabric.



AXIAL

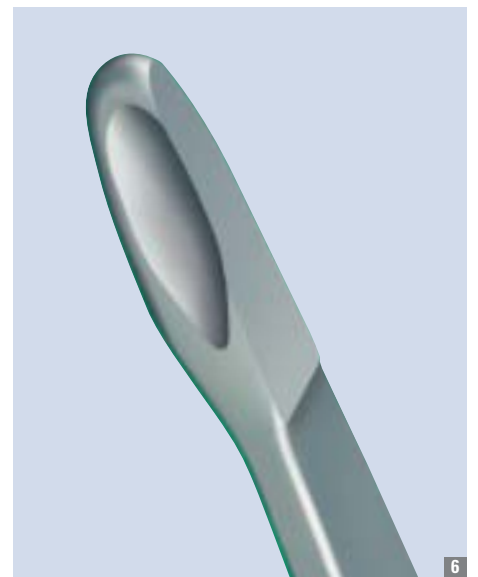
RADIAL

POSSIBLE DEFLECTION

LATCH UNDER THE HOOK



LATCH SPOON, NEW NEEDLE



LATCH SPOON, WORN NEEDLE

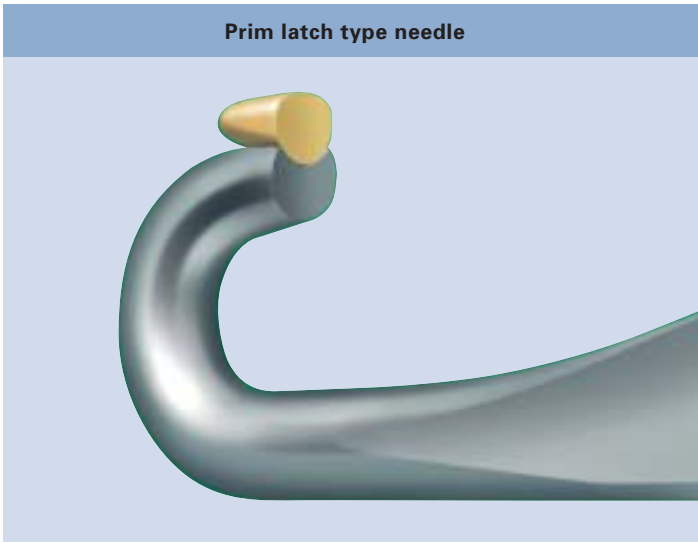
Groz-Beckert needles are long-lasting due to minimal initial play.

The more initial latch play a needle has, the more rapidly the needle wears, because the points of contact are subject to increasing degrees of friction, and also more dirt can get into the latch bearing.

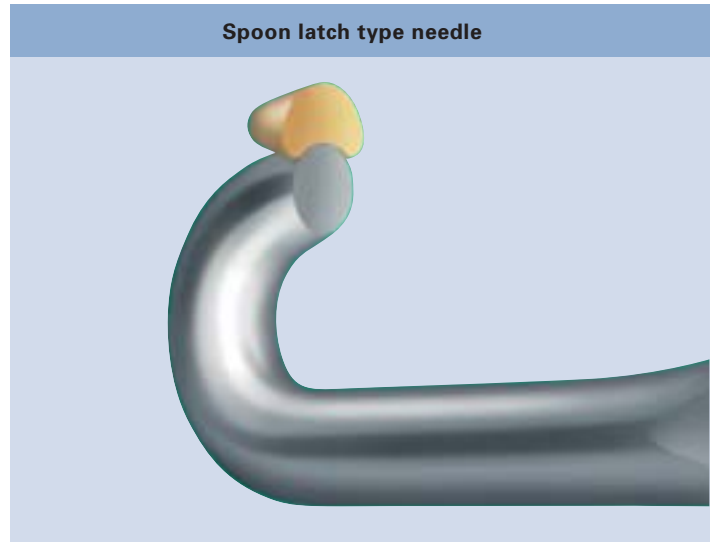
For this reason, even a slightly higher initial latch play can cause needles to have a significantly shorter life.

As a solution to this problem, Groz-Beckert needles have a minimum initial latch play.

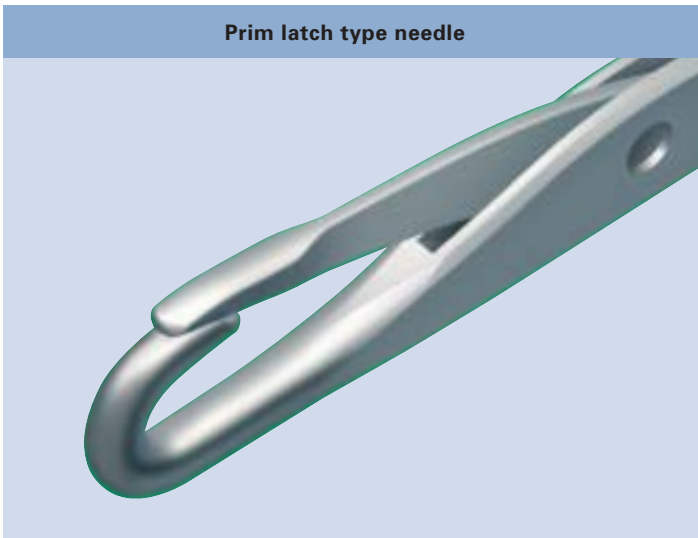
Prim latch type needle



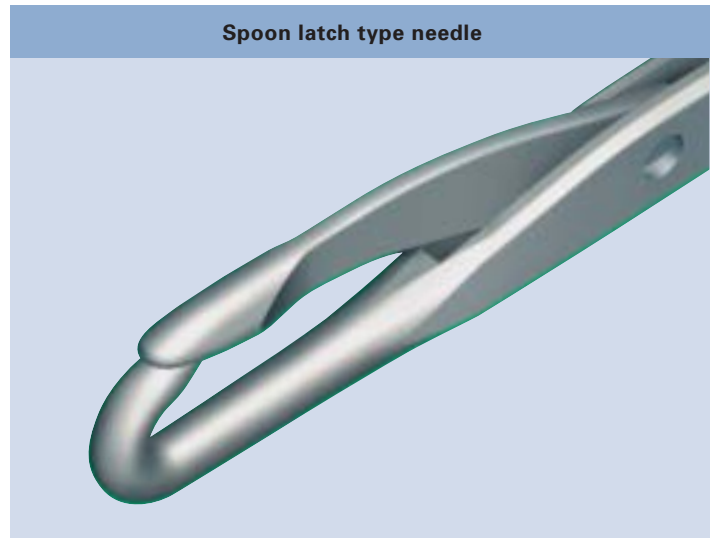
Spoon latch type needle



Prim latch type needle



Spoon latch type needle

**Precise latch/hook covering**

The action of the latch striking the hook at speeds of up to 200 km/h generates extreme impact force. In order to distribute this force over the largest possible area, Groz-Beckert needles

have precisely executed hook and latch shapes. Therefore the surface pressure and consequently the degree of wear is reduced. The essential prerequisite for the reduction of wear is an optimum initial latch play.

THE BENEFITS OF OPTIMUM LATCH GUIDANCE

With Groz-Beckert needles high machine speeds can be achieved.

The minimum initial latch play of a Groz-Beckert needle combined with other technical advantages like form impressed latch seat, double saw slot, conical hook and optimised shank design allow machine speeds to be maximised. The following calculation for a 30 inch single jersey machine shows how an increase in machine speed of 2 rpm affects the volume of fabric produced in a year.

The table below illustrates that a knitting manufacturer who increases machine speed by 2 rpm using Groz-Beckert needles can achieve an increase in output of more than 10 tons per annum and machine. In addition to this extra volume, Groz-Beckert needles also have other advantages such as a longer life, less machine downtime and less fabric rejects.



Effects with different machine speeds

Speed	34 rpm	36 rpm
Fabric volume per day	600 kg	635 kg
Fabric volume per annum	180,000 kg	190,500 kg
Extra production	-	10,500 kg

THE BENEFITS FOR KNITTING

- Longer needle life**
- Maximum machine speeds**
- Less machine downtime**
- Reduction in rejected fabric**
- Higher productivity**

