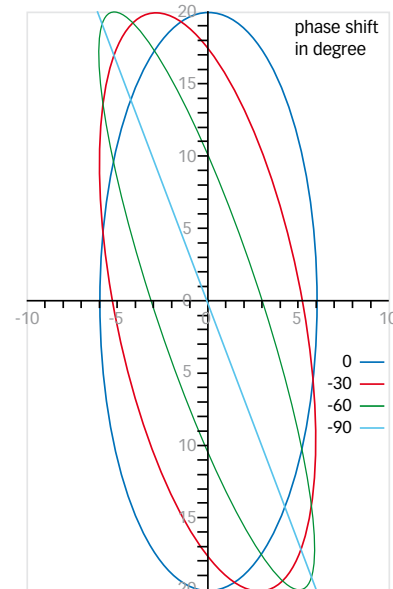
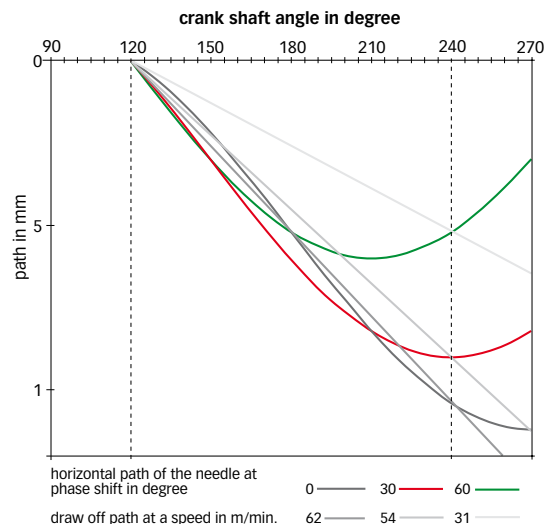


Hyperpunch elliptical needling has been introduced to provide high quality pre-needling and high speed finish needling. The elliptical needling kinematics defines a two-dimensional needle path by a vertical and horizontal stroke motion. The horizontal stroke makes the needle travel with the material while penetrating the fleece.

(dwell time). For many applications this reduced range is sufficient. The EPMC kinematics can also be used at high stroke frequencies while finish needling.



The result is low MD draft and low CD shrinkage in the batt. This needling method helps maintain the batt regularity due to the low dimensional changes. It allows high advances per stroke for high throughput speeds.

The new EPMC Hyperpunch is a universal and economic Hyperpunch solution for pre- and finish needling.

The needle loom model series DI-LOOM HV uses a sophisticated drive concept for an infinitely adjustable horizontal stroke range from zero up to the maximum (100 %) of the installed horizontal stroke.

The new **EPMC** (Elliptical Phase Motion Control) **Hyperpunch** is a kinematical solution which makes use of the phase adjustment between the horizontal drive shaft and the counter-rotating main shafts for the vertical stroke of the needle beam. The phase between main shafts and horizontal drive shaft is adjusted by a mechanical coupling, or electrically.

This phase adjustment controls the start of the horizontal needle beam movement relative to the needle dwell phase in the fleece. The horizontal needle beam movement may thus be varied up to ca. 50 % of its total, depending on the depth of penetration and stripper plate gap

