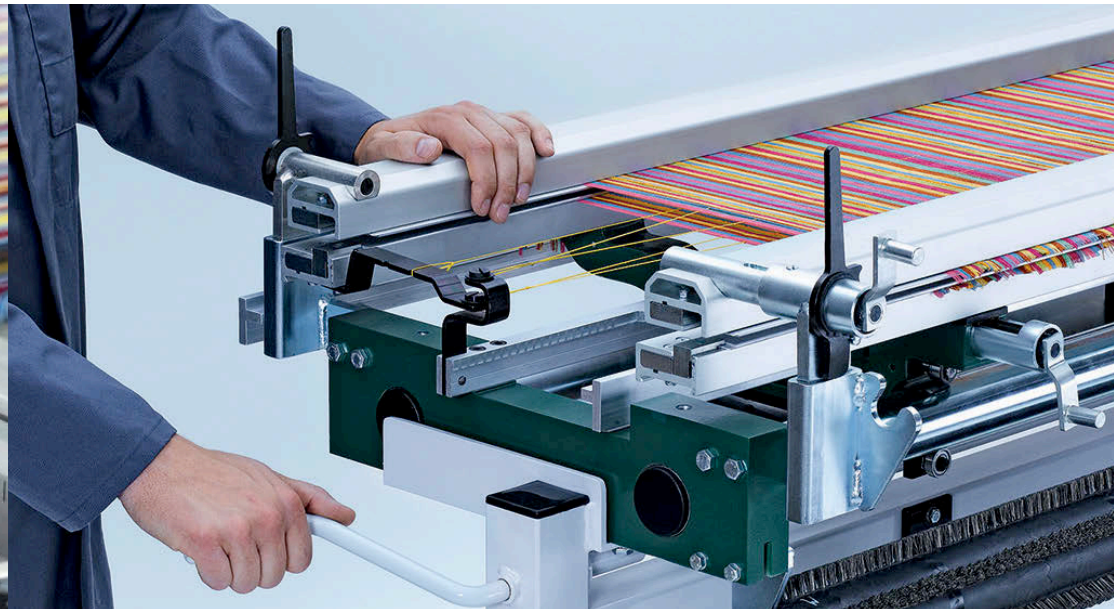
GROZ-BECKERT®

Weaving

Machines and frames for the tying process

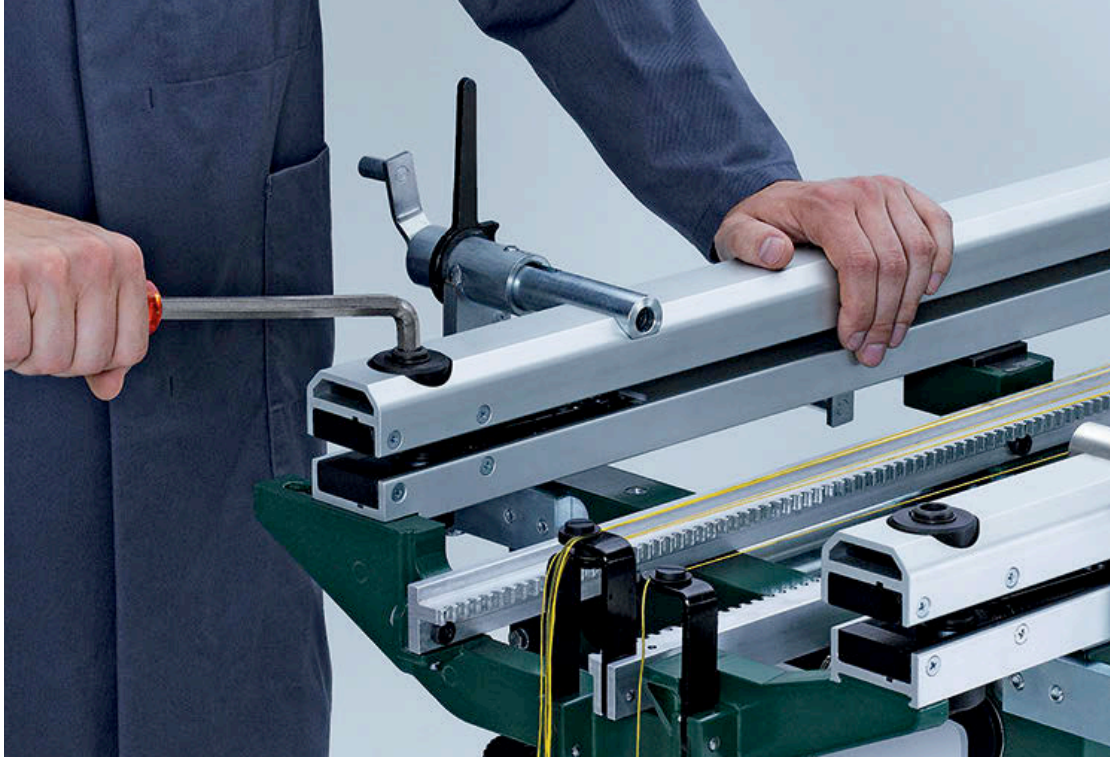


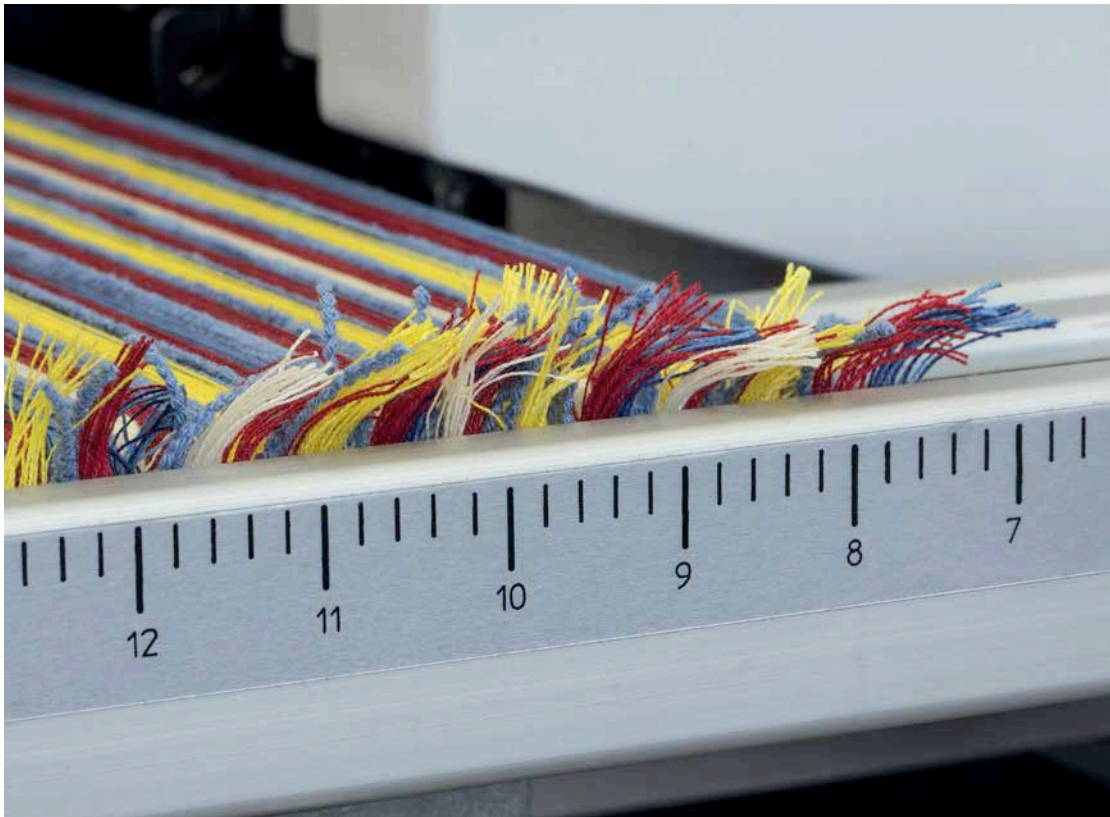
Machines and frames from Groz-Beckert for the tying process in weaving mills

With high-performance knotting machines and tying frames, Groz-Beckert is supplementing its extensive product range for drawing in, weaving and cleaning with the tying operation capability.

Before the actual woven fabric is produced, the weaving process chain includes the knotting operation. Application-oriented procedures and systems simplify the required processes significantly and make them more efficient.

Knotting machines and tying frames from Groz-Beckert increase customer profitability through quicker warp changes and reduced machine down times. Thanks to impressive technology and simple operation, customers benefit from quick warp changes and reduced waiting times.





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Groz-Beckert KnotMaster – overview

Groz-Beckert knotting machines are based on a unique modular system under the trade name KnotMaster. These open a wide range of options – from single and double knots with short knot ends for four tying methods to thread breakage monitoring. Notwithstanding this wide range of functions, KnotMaster knotting machines set the standard in both service and maintenance friendliness.

More information
in the data sheet "KnotMaster"

Areas of application

Impressive technology and easy operation for a wide range of applications – capabilities totally inherent to high-performance KnotMaster knotting machines. In addition to models for universal use, Groz-Beckert also has special knotting machines in its product range for the secure joining of various yarns, fibres, filaments, wires and ribbons.

Your benefits:

- Modular system: user- and maintenance-friendly modular system
- Efficiency: high knotting speeds
- Space saving: compact dimensions and weight-optimised design
- Handling: Transparency and safety through KnotControl computer guidance
- Functionality: Thread clamps, automatic repeats and much more

Knotting

Modular system: user- and maintenance-friendly design.

All functions are logically structured and positioned. Operation is intuitive and easy to learn. Every component – whether for checking or replacing – can also be accessed quickly and easily. KnotMaster simplifies and improves the tying process in weaving mills in every respect.

Cover:
Loosen and remove two knurled screws – done

Tying unit:
Turn the lever and remove – done

KnotMaster:
Knotting machines with a modular design

Housing:
Easily accessible after removing the drive

Drive:
Loosen and remove the screws – done

Crank case:
Loosen and remove two screws – done

Groz-Beckert KnotMaster – processes and technologies

Efficiency: high knotting speeds

With up to 600 knots per minute, machine downtimes are minimized reducing total warp change times. Overall, the reduced machine down times make the entire weaving preparation much more efficient. At least as important as the knotting speed is the efficiency and accuracy of the knotting process. Here too, the KnotMaster models impress across the board.

Space saving: compact dimensions and weight-optimised design

The innovative modular principle of the KnotMaster knotting machines makes them an integral component in the weaving preparation process. With a weight of approximately 14 kg, they are among the lightest knotting machines in their class.

Handling: Transparency and safety through KnotControl computer guidance.

Thanks to the high-performance and user-friendly computer guidance of KnotControl, operators always have all applications and monitoring functions at hand. Dialog-controlled operator guidance takes place via self-explanatory pictograms. Around 2,000 programmable repeats, a USB-interface, a diagnosis program and a needle and board table are included. The comprehensive process data recording monitors double threads in the upper and lower warp sheets, repeats, thread breaks and defective knots.

The scope of supply:

- Device trolley with machine case
- Removable cable spool with 25 m cable
- Tool and spare parts range
- Separating needles and boards
- Container for maintenance
- Comprehensive operating instruction manual

Groz-Beckert KnotMaster – functionality

Technology: helpful features as standard

Thread clamps, automatic repeat and thread break monitoring: The intelligent technical features of the KnotMaster knotting machines increase both process reliability and reproducibility

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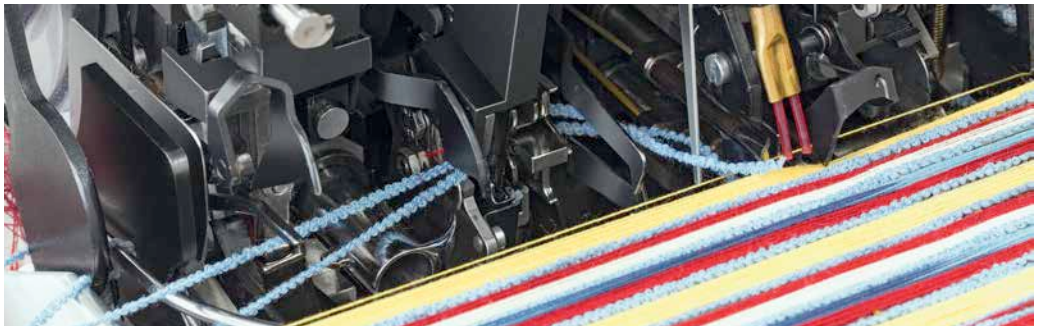


Thread clamps

The thread clamps of the KnotMaster knotting machines operate independently, meaning yarns of different thicknesses can be processed without problem. Differences in thickness are automatically compensated.

Intelligent automatic repeat

The automatic repeat guarantees an automatic knotting process – including with difficult yarns. If the separating body can not remove a thread at the first attempt, the control repeats the attempt a pre-defined number of times. This takes place at full operating speed. If unsuccessful, the speed is reduced to a minimum and the control repeats the separation process a pre-defined number of times. If this is also unsuccessful, the machine switches off and shows the relevant error message on the display. If the separation process is successfully completed through repetition, the knotting process is returned to full speed.

Reliable thread breakage monitoring

Thread breakage monitoring is a comprehensive monitoring system for correct knot formation. It reliably detects errors in the knotting process and shuts the machine down immediately if required. For warps with a lease, a lease error check is also carried out.
The thread breakage monitoring therefore makes an important contribution to ensuring that warp sheets are tied correctly. For warps without a lease, the KnotMaster basic model AS/3 can also be equipped with an electronic double thread detection capability.

Knotting

Flexibility: application-oriented tying methods

Standard applications can be effectively completed with all KnotMaster models including special knotting technique requirements. The spectrum ranges from single and double knots with short knot ends to four combined tying methods based on quattro technology.

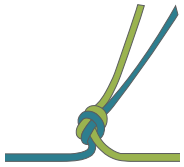
Single and double knots with short knot ends

The individual models of the KnotMaster series are available with single or double knots, or a combination of both. The function is selected with a simple action. Short knot ends optimize the capability of passing the knots through the weaving harness, i.e. drop wires and healds. Experiences in everyday operation have shown that double knots created with the KnotMaster are the preferred choice in glass weaving mills, for example. In addition to standard knot end lengths, shorter knot ends with a length of approximately 4 mm are normally achievable.

Four tying methods thanks to quattro technology

Through the integration of each of the four tying methods in separate individual, removable tying groups, the KnotMaster models with quattro technology deliver unlimited value added. This capability significantly increases the flexibility of a weaving operation that tie warps both with and without lease.

Short knot ends



Standard knot ends

Knotting existing warps and new warps without lease

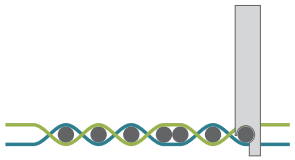
Knotting existing warps without lease and new warps with lease

Knotting existing warps with lease and new warps without lease

Knotting existing warps and new warps with lease

Double thread detection

For warps with a lease, a lease error check is carried out. If a double thread is detected, the machine stops immediately and shows the warp sheet location of the error. The correct function of this double thread detection is also insured in the case of elastic yarns. Depending on the version, double threads can also be detected on warps without a lease. This is guaranteed by high-precision pressure sensors which measure the yarn tension up to 10 times per second during the knotting process. Here too, the machine stops automatically for immediate troubleshooting. On models with electronic lease detection, optimal double thread monitoring for the relevant application is started automatically.

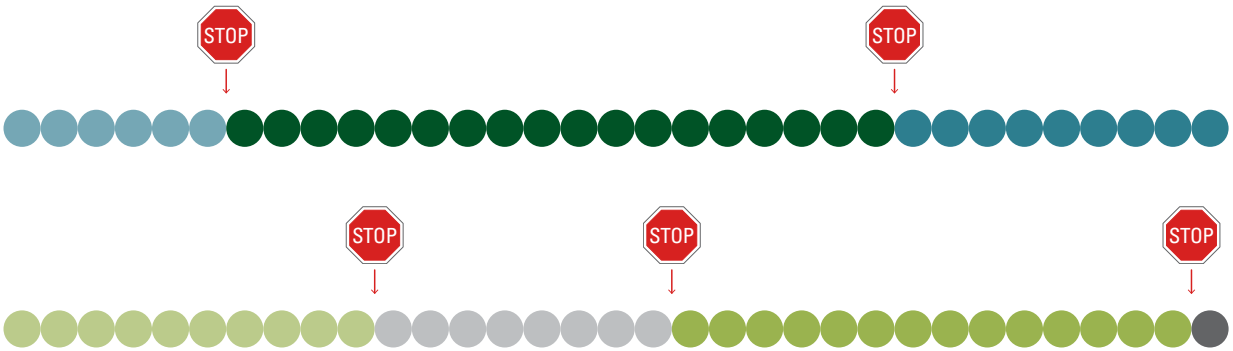


Double thread detection for warps with lease

Double thread detection for sized warps without lease

Programming example for repeat monitoring

By simply entering the repeats for the existing warps and the new warps, KnotControl calculates and carries out all monitoring stops.



Knotting

The KnotMaster models in detail

■ standard ○ optional

Designation	AS/3	TS/3	XS/3Q
Material	Natural and synthetic yarns, mono- and multi-filaments, textured yarns, stretch yarns, steel wires	Natural and synthetic yarns, mono- and multi-filaments, textured yarns, stretch yarns, steel wires, PP- and PE-ribbon	Natural and synthetic yarns, mono- and multi-filaments, effect yarns (bouclé, flame yarn, chenille yarn)
Knotting area	Nm 1,250–Nm 2 7 den–4,500 den 8 dtex–5,000 dtex	Nm 1,250–Nm 2 7 den–4,500 den 8 dtex–5,000 dtex	Nm 200–Nm 0.5 45 den–18,000 den 50 dtex–20,000 dtex
Single knots	■	■	■
Double knots	–	–	–
Automatic repeat	■	■	■
Knotting types	4	4 optional	4
Double thread detection (with lease)	■	■	■
Double thread detection (without lease)	○	–	–
Thread breakage monitoring	■	■	■
KnotControl	■	■	■
Knot counter	■	■	■

RS/3	RSD/3	ZS/3	TS/3 TapeMaster
Natural and synthetic yarns, mono- and multi-filaments, stretch yarns, steel wires, glass fiber	Natural and synthetic yarns, mono- and multi-filaments, stretch yarns, steel wires	Natural and synthetic yarns, mono- and multi-filaments, Kevlar, glass fiber, carbon fiber	Natural and synthetic yarns, mono- and multi-filaments, specifically for 3–7 mm ribbons and for extremely volatile chains
Nm 450–Nm 5 20 den–1,800 den 22 dtex–2,000 dtex	Nm 250–Nm 3.5 36 den–2,600 den 40 dtex–2,900 dtex	Nm 70–Nm 0.7 130 den–1,300 den 145 dtex–1,400 dtex	Nm 130–Nm 2 70 den–4,500 den 76 dtex–5,000 dtex
–	■	–	■
■	■	■	–
■	■	■	■
4 optional	3 optional	4 optional	2 (lease/clip optional)
■	■	■	–
–	–	–	–
■	■	■	–
■	■	■	■
■	■	■	■

Tying frames from Groz-Beckert

Extremely stable frame construction and CAD-optimized design of the clamping profiles for maximum stability and outstanding ergonomics are the key characteristics of the Groz-Beckert tying frames, available in widths of 70 to 560 cm.

Application areas

Groz-Beckert tying frames are characterized by their wide range of application: They are suitable for the entire range of Groz-Beckert KnotMaster knotting machines – and for every weaving machine. Adjustable longitudinal rails and asymmetrically arranged frame upper components provide maximum flexibility.

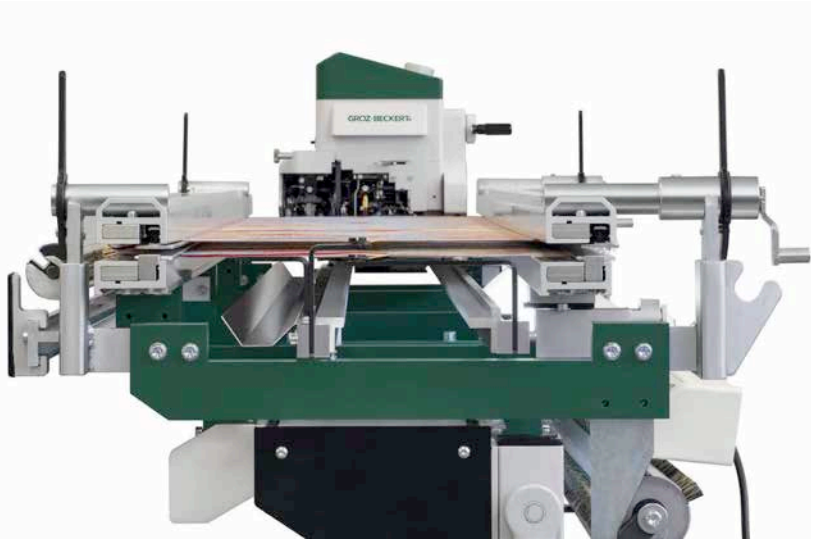
Design Characteristics:

- Central elevation adjustment
- Integrated tape measure
- Guide rollers for braking
- Holder for accessories
- Brushes with application-dependent bristle alternatives
- Optional: folding footboard, additional accessories for carpet weavers, removable upper components

Knotting

The clamping rail tension system

The reliable tension system that is gentle on yarns of all qualities and sizes in combination with an extremely impressive space-saving design. The clamping areas for yarns in the existing warp and yarns in the new warp are positioned to facilitate easy alignment. The ergonomic design permits direct operator access to the warp sheets. A continuous adjustment to the yarn thickness is achieved through a tensioning principle incorporating aluminium clamping members. This guarantees a reliable clamping of all warp qualities.



Benefits and advantages:

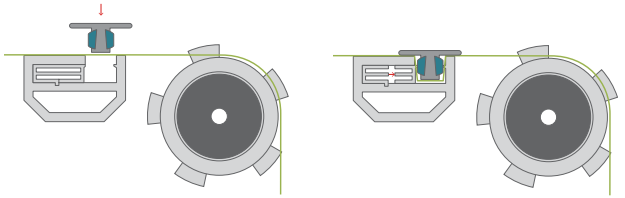
- Reduced risk of breakage of delicate yarns
- Time saving dismantling capability as there is no need to remove the complete clamping system
- Better access to the warp sheet in the weaving machine thanks to a slim frame depth

Properties and options:

- Central elevation adjustment
- Adjustable spreader/spacer
- Brushes in five application-dependent bristle qualities
- Linkable version
- Horizontal adjustability (optional)
- Removable frame section (optional)
- Additional accessories for carpet weavers (optional)

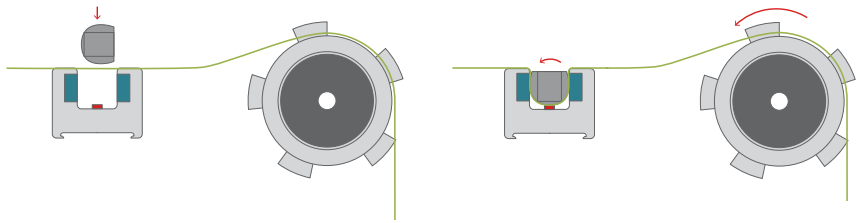
Applications:

- Traditional cotton, synthetic, filament and wool weavers
- Upholstery fabric, decorative fabric, curtain and terry weavers
- Fabric for technical textiles
- Carpet weavers
- Companies with tricot and raschel warp knitting machines



Function of the clamping rail–tension system

Knotting



Function of the clamping rod tension system

The clamping rod tension system

The cost effective, universal tension system enables quick and easy tensioning and dismantling of both warp sheets through brushes and tensioning rails arranged one behind the other. This enables tensioning up to a width of 560 cm with all materials.

Benefits and advantages:

- Quick and easy tensioning and dismantling of both warp sheets
- Reduced clamping times thanks to simple operation
- Minimized maintenance and spare parts costs based on a robust design technology

Properties and options:

- Central elevation adjustment
- Adjustable width/distance holder
- Brushes in five application-dependent bristle qualities
- Removable frame section (optional)
- Additional accessories for carpet weavers (optional)

Applications:

- Traditional cotton, synthetic, filament and wool weavers
- Upholstery fabrics, decorative fabrics, window treatments and terry fabrics
- Fabric for technical textiles
- Carpet weavers
- Companies with tricot and raschel warp knitting machines

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