

Rieter BT 923 Rotor Spinning Machine



Machines from Rieter are well-known for economical production, flexibility in use and high reliability. The semi-automated rotor spinning machine BT 923 produces high quality rotor yarns with a top price-performance ratio.

The BT 923 is the most productive semi-automated machine, the longest machine, extremely operator friendly and very flexible and produces an unsurpassed yarn quality thanks to the integrated AMIspin® and Qtop® piecing systems.

The completely new machine concept focuses on three areas of innovation:

- solutions for increased productivity
- ergonomic and operator-friendly design
- systems for improving and monitoring yarn quality

The BT 923 project was implemented under financial support from national funds provided through the Ministry of Industry and Trade of the Czech Republic.

BT 923 ECONOMICAL PRODUCTION

With 400 spinning positions per machine and rotor speeds up to 110 000 rpm, the productivity of the BT 923 has significantly increased. The improved winding system allows delivery speeds up to 200 m/min. The increased pitch of 230 mm enables the use of cans up to 18".230 mm enables the use of cans up to 18".

FLEXIBLE IN USE

The wide yarn count range from Ne 2 - 40 allows a flexible reaction to market demands. Flexible production is guaranteed with two separate drives and belts on each side of the machine. Easy setting of the external suction and the automatic vacuum levelling AUTOvac for stable spinning conditions ease the technological settings for new materials. The integrated slub yarn device for structured rotor yarns is available as an option.

RELIABLE QUALITY PRODUCTION

Top yarn quality values are achieved with the new C 120 spin box with external suction and rotors without ventilating holes. The AMIspin® and Qtop® system guarantee semi-automated piecing with perfect quality. The optical IQplus® yarn clearer from Rieter offers enhanced functionality and the automatic lifting of the bobbin after a yarn break leads to perfect bobbin quality.



Increased productivity with the BT 923

YEARS OF EXPERIENCE IN A NEW DESIGN

As the BT 923 has been completely redesigned, new technical principles are implemented and thus the progress in productivity is remarkable. Convincing new concepts have been realized instead of implementing small adaptations to existing solutions.

SOLUTIONS FOR HIGHEST SPEEDS

With 110 000 rpm practical rotor speed and 200 m/min delivery speed, the yarn production of the BT 923 has been significantly increased. The machine can be extended up to 400 units to maximize the productivity. Compared to other machines productivity goes up by about 10-15%, depending on the type of rotor yarn. Thanks to this productivity increase the payback time of a BT 923 is reduced in comparison with other machines.

THE NEW C 120 SPIN BOX CONCEPT

The new C 120 spin box is based on a principle with rotors without holes and with a central suction system for technological air, transporting the fibres to the rotor groove. The flexibility of the BT 923 is increased by easy setting of the technological air, according to the fibre material and properties. The new design of the ceramic rotor bearings results in improved mechanical resistance, thermal endurance and higher resonant frequency. The reduced temperature load on rotor bearings extends the service life.

PERFECT BOBBIN WINDING

The winding speed of up to 200 m/min is available for cylindrical as well as conical bobbins. Winding mechanism is designed so as to completely eliminate ribbon winding on the bobbin. Uniform bobbin density is secured by hydraulic shock absorbers, which are available in 2 different versions: for standard materials or for synthetic materials with higher delivery speeds. Automatic arm lifting after the yarn break protects the quality of the wound package.

ERGONOMIC SECTION DESIGN

Since the semiautomatic piecing process is done by an operator, the key factor is access to the spinning position.

The user-friendly design of the new section layout with a pitch of 230 mm easily accommodates large cans. At the same time the working height resp. position of the spin boxes is lower even with 42" (1 070 mm) inch high cans. Thus the operator even with 42" (1 070 mm) inch high cans. Thus the operator can approach the machine directly without extra handling steps.

Thanks to the wider pitch the BT 923 easily accommodates 18" cans under the section. A switch from 17" to 18" cans or 16" to 18" cans is cutting the operator workload. Fewer can changes reduce the number of yarn connections and thus enhance yarn quality.



SPIN BOX C 120

The vast know-how of Rieter in terms of textile technology development and machine manufacturing is also represented in the newest rotor spinning machine BT 923 and the new C 120 spin box.

OPTIMISED CONCEPT FROM FIBRE FEEDING TO YARN DELIVERY Two types of sliver feeding condensers, according to the sliver count are available for the C 120 spin box. The condensers are available for 2 pressure levels to guarantee perfect feeding for different sliver thicknesses. The sliver clamping point and its position towards the opening zone is optimized to open the sliver with maximum efficiency and the lowest fibre damaging. The design of sliver feeding condensers is simplified for easy replacement. The channel for impurity separation is designed to achieve an optimum ratio between the airflow for impurity separation and the airflow for fibre transport. Thanks to improved impurity separation, optimized channel and fibre flow to the rotor wall, the yarn on BT 923 shows better CV, IPI, strength and less impurities in the yarn.

FLEXIBLE APPLICATION OF THE C 120 SPIN BOX WITH A WIDE RANGE OF TECHNOLOGICAL PARTS

A new system of inserts with exchangeable caps offers potential for savings in case of changing the spinning specification. Three different caps can be replaced and fitted to a single type of insert body. The rotors are optimized for achieving highest yarn quality. The new rotor coatings are reducing the blocking of rotor groove.

Newly developed ceramic rotor bearings show higher resistance, thermal endurance and a higher resonant frequency and increased lifetime.

The new, simplified design of the delivery tube contains inserted segments to extend its service lifetime.

3 types of segments are available for different twist insertion levels and yarn surfaces.

NEW USER FRIENDLY SPIN BOX CONCEPT

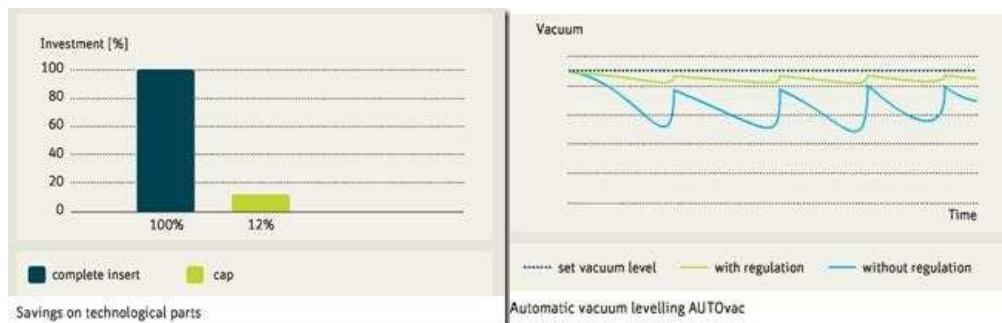
To increase the flexibility of the machine the C 120 spin box is as easy to assemble respectively to dismantle as possible. The majority of procedures is performed without tools and jigs.

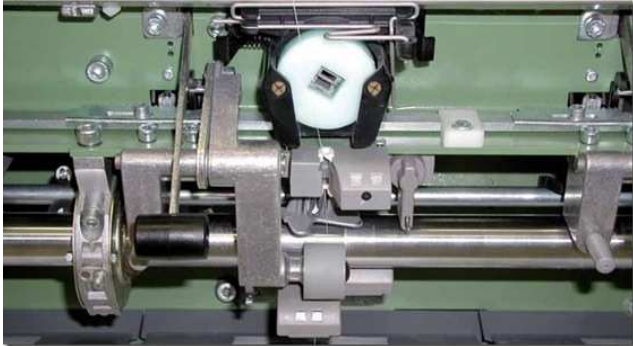
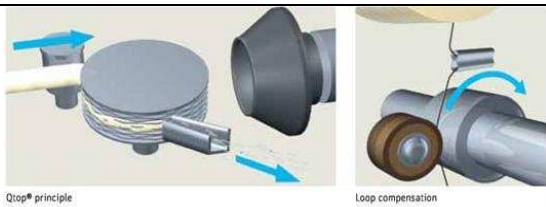
CENTRAL SUCTION FOR TECHNOLOGICAL AIR

BT 923 is equipped with a central suction system for the technological air, which is transporting the fibres into the rotor groove. The design of the technology air channel is completely new. Its dimensions and cross-section make sure that the vacuum conditions are the same all over the machine, even for the length of 400 units.

AUTOvac FOR STABLE YARN QUALITY

AUTOvac is an automatic system ensuring stable vacuum conditions throughout the running time. With the automatic system for vacuum leveling the pressure levels are adjusted automatically according to the setting of the operator, done on the machine panel. The system prevents variations in the vacuum, mainly caused by a full impurity filter. Such vacuum losses are automatically compensated for a necessary time. As a result, the vacuum can be set at a lower optimum level, thus saving energy.





The best semi-automated piecing system worldwide

SEMI-AUTOMATIC PIECING SYSTEM AMIspin®

The BT 923 uses the leading principle of electronically controlled piecing AMIspin®. In combination with Qtop® the uniformity and stability of piecers as well as a fast startup of the machine is guaranteed.

The successful principle has been proven with the former BT 903 models and there has not been any other semi-automated concept that would beat it in terms of piecer quality as well as in facility in operation. Its uniqueness lies in simplicity and reliability. After preparing the yarn end and cleaning the rotor, the piecing process is launched automatically after the box is closed.

WORKING PRINCIPLE OF AMIspin®

AMIspin® exactly defines the start of sliver feeding and the start of yarn supply by the delivery roller. The execution of piecing with these two defined positions guarantees that the piecing parameters exactly follow the setting, which can be adjusted according to the spun material. AMIspin® replaces a manual piecer with a robot-like quality and makes sure that piecers maintain the same quality on the whole bobbin and on all spinning positions. The piecer quality is independent from the operator as well.

LOOP COMPENSATOR

In order to guarantee top yarn and piecer quality even at maximum speeds of 200 m/min, the BT 923 is equipped with a loop pressure compensator. During the acceleration phase of the bobbin after start up, a yarn surplus is delivered from the rotor. Thanks to the loop compensator, which is aspirating any yarn surplus delivery, the yarn is wound without the risk of loops or damages.

Qtop® FOR TOP PIECER STRENGTH AND APPEARANCE Qtop® makes sure that the piecer quality is maintained, even for very fine yarn counts. The Qtop® function pneumatically

removes damaged fibres from the sliver in the opening section. For an exactly defined time the fibres are guided out of the opening section.

Thus the piecer body is formed only from newly fed fibres with full fibre length.

As a result, there is no need to increase the number of fibres in the cross-section to maintain piecer strength. The mass increase is also reduced to a minimum, which ensures a perfect yarn appearance. Due to the high surface speed of the opening roller, the same effect cannot be reached with any other mechanical solution, which is always too slow to avoid the damaging of the first fibres.



Integrated quality check on the BT 923

THE NEW GENERATION YARN CLEARER IQplus®

IQplus® is the newest optical yarn clearer from Rieter. It integrates a new chip technology offering a number of advantages and is based on the experience of the IQclean® yarn clearer.

HIGH-SPEED MEASUREMENT TO GUARANTEE QUALITY WITH 20 000 VALUES PER SECOND

IQplus® allows a high precision measurement. The measurement zone is extended from 2,5 to 6 mm so that the scanning quality is not influenced by the position of the passing yarn. The linear sensor contains 1 024 light sensitive pixels with a pitch of 7 microns. These technical parameters allow absolutely exact measurement of any particular yarn diameter. The increased measurement speed enables to measure the yarn 20 000 times per second.

EXTREMELY RESISTANT TO SURROUNDING LIGHT

The sensor shows a high resistance to the surrounding light. At first due to a new mechanical construction, where the opening to the measurement zone is from the side of the clearer, which reduces the access of the surrounding light. Second, the electronic solution uses the principle of intensive light exposure of the receiving chip, which means that the effect of the surrounding light is further decreased.

12 MEASUREMENT CHANNELS

The list of functions has been extended as well as the setting for individual channels. Ten channels for thick places, 2 channels for thin places, channels controlling moiré, sliver and yarn count variation and piecer quality guarantee an excellent interpretation of the measured data and precise setting of the yarn clearer limits.

EASY SETTING OF IQplus®

The IQplus® setting is made on the machine control panel and the sensors are calibrated automatically according to the set yarn count. Data interpretation takes place directly in the sensor, which contains the processor. All identified faults are classified and a quality matrix clearly shows the category of the identified faults and which yarn faults are cut off from the yarn. This matrix simplifies the settings of the yarn clearer for different materials and allows finding an optimized setting and clearing rate.

IMPROVEMENT OF YARN QUALITY

With IQplus® there is always 100% quality check on the yarns of the BT 923. If the yarn clearer measurement does not take place, the LED light indicates the failure and the spinning on that position is automatically stopped. IQplus® is available as an option.



BT 923 features expanding customer possibilities

FLEXIBLE PRODUCTION WITH THE BT 923

The BT 923 machine offers supreme flexibility with independent drives and improves efficiency in production planning when processing small and medium lots, especially with medium and coarse counts.

INDEPENDENT DRIVES ON THE BT 923

Due to completely independent machine drives it is possible to spin two different yarns on one machine at the same time. The setting of

parameters is done independently as well as the maintenance. In case of frequent lot changing thus a big potential for a reduction in running costs is opened up.

INDEPENDENT BOBBIN TRANSPORT BELTS

The independence of two machine sides is further extended also to the transport of full bobbins. The machine is equipped with two transport belts. This immensely decreases the load on operators. Such a setup makes sure that the packages are not mixed in case of spinning two different types of yarn on each machine. Since there is no risk of doffing of two opposite bobbins at the same time to one belt, the belt can serve as a temporary stock, which allows the operators to be flexible in their work organization.

SLUB YARN DEVICE

The demand for rotor yarns with a special structure is increasing. Rieter has created an own slub yarn device for the production of structured rotor yarns, which are used mainly for structured denim or other fabrics, like curtain material or tablecloths. The working principle of the slub yarn device is based on a variable, motor driven feed of sliver into the rotor and constant yarn delivery to the bobbin. The slub yarn device is fully integrated into the existing machine electronics. The system does not require any space for extra control units. The machine parameters as well as the slub system settings can be entered on the machine control panel.

SLUB PROGRAMMING

The slub programming software and SLUB Link memory card for data transfer from PC to the rotor spinning machine are included in the standard equipment. The slubs can be programmed at regular or irregular length, even the spacing between the slubs can be programmed at regular or irregular distances.

The programming system makes sure that the slub effects are 100% reproducible. 8 different slub programs are already included in the software. Optionally the customer can create individual slub programmes. New programs are easily transferred to the machine through the SLUBLink memory card.

SLUB YARN PARAMETERS

The slub yarn production on the BT 923 can be performed on maximum 300 positions. The switch between slub and standard yarn production is not mechanical, it is easily controlled by electronics from the machine panel. The slubs can be created for yarns from Ne 6 to Ne 30 with sliver feeding of 7 m/min and delivery reaching maximum 200 m/min. The mass increase can go up to 320% for a slub length of min. 10 cm.

