Compact Spinning
Compact-Spinning Machine K 42

K 42
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Fully compacted yarns produced with high efficiency
Comparison measurements show that the central suction duct with a large cross-section combined with the air guide element significantly reduces the energy consumption.
Saves up to 17% Energy
Excellent Yarn Quality
The unique suction drum system and the new suction inserts ensure high and sustained consistent yarn quality.
High Profitability
Low investment costs due to the mechanical drafting system gear drives make the K 42 an attractive proposition.
OUTSTANDING FEATURES

Cost-Optimized Spinning
High average machine speeds, lower energy consumption

Efficient Doffer
Fast doffing and high reliability

Energy-Saving Drive
Rieter 4-spindle tape drive

Production and Quality Monitoring
Individual spindle monitoring* (ISM) allows high spindle allocation

Unique Compacting System
Solid suction drum with new components ensures high quality level

Economy
Mechanical drafting system drive for low investment costs

* Option
Easy Machine Setting
Fast and easy on the display

Process Advantages
High strength and low hairiness improve the running behaviour

Low Maintenance – High Availability
Low-maintenance suction drum system reduces machine downtimes

Energy-Saving Compacting
Up to 63% less energy for compacting
Highest Quality and Reliability
Unique compacting system

Proven suction drum system

The solid suction drum remains the basis for long-term, consistent quality in compact spinning. The low-wear surface ensures a good and especially uniform yarn quality over long operating periods.

The suction drum system is the only compacting system that offers high machine efficiency without extensive maintenance and cleaning.

Reliability and flexibility

By means of the optimal and constant air flow with the suction insert “Bright”, the fibers are optimally integrated in the fiber package. The improved air flow prevents deposits of dust and fiber particles. This results in a fully compacted yarn at all times.

The new suction insert “Bright” makes the machine more flexible. By means of the improved air flow practically all yarns can be spun with this insert.
Quality Monitoring

Air guide element “Detect” secures and monitors the quality

Quality through specific air flow

The air guide element “Detect” ensures precise air flow.

In combination with the suction drum and the suction insert, this achieves the optimal compacting result. The lateral inflow of the air captures all fibers and binds them reliably into the yarn strand. Yarns with highest strength and lowest hairiness are the result.

Quality monitoring through air guide element “Detect”

The new air guide element “Detect” monitors the air current to the individual spinning positions. If the vacuum reaches a threshold value, the red pin of the air guide element indicates that the compacting unit must be cleaned.

That provides additional safety, as thus all spinning positions are equipped with quality monitoring and yarn which is not compacted is immediately detected.
Energy-Saving Compacting
Up to 63% less energy for compacting

Low energy consumption due to one-duct system and air guide element

The Rieter compacting system has the lowest energy consumption of all compact systems. The central suction duct reduces the energy consumption needed to generate the vacuum. By means of the large cross-section the air resistance is reduced and consequently the energy input.

The compacting zone is covered by the air guide element. The optimally guided air flow reduces the air volume required for compacting to a minimum. In combination with the large suction duct this ensures the low energy consumption rate.

Lower energy consumption even with long machines

With long machines, a suction unit operates at both the foot and the head of the machine. The flow speed is reduced and the vacuum level along the machine becomes more uniform. Also on long machines, the required vacuum level can be guaranteed with a low energy consumption rate.

![Energy saving with double-sided suction](image1)

<table>
<thead>
<tr>
<th>Head</th>
<th>Middle</th>
<th>Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>8</td>
<td>12.9</td>
</tr>
</tbody>
</table>

![Reduced energy consumption](image2)

<table>
<thead>
<tr>
<th>Head</th>
<th>Middle</th>
<th>Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>12</td>
<td>8.0</td>
</tr>
</tbody>
</table>

Energy consumption of the compacting unit with 1,632 spindles
Energy-Saving Drive

Rieter 4-spindle tape drive uses minimal energy

The Rieter 4-spindle tape drive is energy saving and easy to handle. With the 90° enthacement on the spindle, a good drive of the spindle can be secured with a low contact pressure. This contact pressure ensures minimal force on the spindle bearings and thus secures the lowest possible energy consumption.

The large main motor offers the best efficiency and therefore the lowest energy consumption of all drive systems.

The large speed range with optimal efficiency secures the necessary flexibility, as a wide yarn count range can be operated with low power consumption. With major changes in the speed, the optimal speed range can be adjusted by means of a central exchange of the drive pulley.
Economic Machine Concept
Mechanical drafting system drive reduces investment costs

Cost-efficient production

For constant production with infrequent changes in the yarn count, the mechanical drafting system drive is a good solution. In yarn production, in addition to the ongoing energy and personnel costs the investment costs are of great importance. A machine with mechanical drives is the ideal solution to keep these costs low.

Intermediate drive ensures flexibility and quality

Long machines use an additional drive unit for the middle bottom roller, positioned in the middle of the machine. The torsion forces on the bottom roller decrease and the uniform running of the bottom rollers guarantees consistent quality along the machine. The machine is suitable for almost all materials and is therefore flexibly usable. After doffing, the drafting unit performs a uniform start-up on all spinning positions; delays caused by the torsion and thus start-up breakages are reliably prevented.
Easy Machine Setting
Important functions are set centrally on the display

Easy entering of the spinning data

Important machine functions are centrally entered. The various menus of the machine control simplify the entry process. The operator is guided step by step through the menu. As important lot data such as yarn count, twist and speed curve are centrally set, the time required for a lot change is reduced.

Reliable machine setting

If in large plants many machines produce with the same yarn count, it is important that the quality on all machines is the same. Uniform setting of all machines offers the greatest security for consistent quality within the plant.

By means of the USB interface, the data is quickly and easily transferred to other machines. If the optimal spinning curve for a yarn on one machine is determined, then other machines can be easily adjusted. This facilitates optimization of the spinning mill.
Efficient Doffing
High productivity through fast and reliable doffing

Doffing without unterwinding

With the SERVOgrip, no yarn residues occur that need to be removed from the wharve. As well as saving yarn, it helps to keep the machine clean. Ends down caused by flying yarn remnants are avoided. Rieter is the only manufacturer to offer an exactly controlled clamping crown. The controlled opening and closing of the clamping crown by the ring rail fixes the yarn exactly and ensures a low number of ends down after doffing. In addition, the risk that fiber fly enters the spinning process and leads to yarn faults is prevented.

Self-monitoring gripper

The system monitors itself by means of the special profile of the doffer beam and the releasable gripper. In the event of failures, the doffing process is stopped by the pressure monitor. This ensures that all full cops are taken off and an empty tube is put onto each spindle.

Working principle SERVOgrip – Control by means of the ring rail
Reliable cops transport through SERVOdisc

The SERVOdisc system works with peg trays that are clipped into a conveyor belt. This achieves a high level of precision in positioning. During doffing, the full cops and the empty tubes can thus be precisely taken over and removed. High dependability and short doffing times guarantee high machine efficiency over a long period.

The SERVOdisc system is an open system and is thus practically self-cleaning in all circumstances. It is driven by two diagonally offset 70 watt motors and comes with 10% of the energy consumption of pneumatic solutions.

Flexible automation

With the SERVOdisc system, the machine can be directly linked with a winder or with the tube loader ROBOload. According to the customer’s requirements, various automation solutions can thereby be realised. The interface for ROBOload and link are identical. Thereby a ROBOload machine can also be docked onto a winder at a later stage.
High Spinning Efficiency
The low-maintenance suction drum system reduces the downtimes

Low-maintenance suction drum system
The solid metal drum does not need to be replaced after several months – in contrast to apron compacting systems. The reduced level of maintenance results in high efficiency rates and simplified planning.

No ends-down with a power failure
In the event of a power failure, the rotation energy of the spindles is used to supply the machine controls with electricity. To achieve this, the main motor switches to generator mode. With a power failure up to 2 seconds, the machine automatically accelerates back up to the operating speed. With longer interruptions, the machine is decelerated in a controlled manner, thereby avoiding additional ends down.
Cost-Optimized Spinning
High efficiency rates and low energy consumption reduce the costs

More production through high speeds and high efficiency rates

The unique spinning geometry of the K 42 facilitates high spindle speeds. It is also the reason why the machine can be more quickly ramped up to the main spindle speed after doffing. The machine runs longer at the maximal speed and therefore produces more yarn per spindle. In connection with the rapid and dependable doffer, higher productivity of the machine by up to 10% can be realized.

Lower energy requirements and spare part outlay reduce the spinning costs

If the spinning costs are considered, these are very low with the K 42. The low energy consumption per kilogram of produced yarn can be further reduced by the new double-sided suction system. In addition, with the K 42, the cost-intensive replacement of aprons for the compacting unit becomes unnecessary. A further contribution to keep spinning costs low.

![Saving energy consumption per kilogram of yarn](image)

- **Ne 40, Warp twist, 20 800 rpm, Ring 36 mm, Tube 180 mm**
Process Advantages

Best running behavior due to high strength and low hairiness

Better efficiency of the weaving machine

Important factors for good running behavior on the weaving machine are high strength and low hairiness. Exactly these properties are provided by the Com4® compact yarns produced on the K 42. The high strength improves the load capacity of the warp threads, the low hairiness reduces the clinging tendency during shed formation. The results are high efficiency levels and low costs due to reduced machine downtimes.

Reduced needle wear on the knitting machine

In the knitting mill, the less hairy yarn supports the smooth running of the knitting machine. Less fiber fly is generated and the smoother yarn reduces wear on the needles. Fewer machine downtimes lead to a better utilization capacity of the knitting machine.

High flexibility in finishing

The finishing of fabrics and knits places high demands on the used yarns. The popular iron-free finishing of shirts and blouses, for instance, reduces the strength of the used yarns by up to 50%. The high strength of the Com4® compact yarn provides the necessary reliability and flexibility for customer-friendly and high-quality finishing of the fabrics.
Production and Quality Monitoring
High efficiency through specific deployment of human resources

Effective ends down detection

The individual spindle monitoring ISM* with the 3-stage display concept guides the machine operator directly to the spindles with ends down by means of signal lamps. Unnecessary monitoring checks are eliminated. The spinner can work more efficiently and thus operate more spindles. This is achieved by different levels of the display. The first stage are signal lamps on the machine head end and machine foot end. They light up as soon as the defined limit for ends down is exceeded. Through LEDs in each section, the operator can recognise in which section along the machine ends down must be pieced. Every spindle additionally has an LED, so that the operator can directly identify the affected spindle.

* Option

Constant yarn twist through speed monitoring

The permanent speed monitoring of the individual spindles with the individual spindle monitoring ISM ensures the yarn quality. If a spindle runs outside the defined specifications, this is indicated by the LED blinking.
## Machine Data

**Compact-Spinning Machine K 42**

**Constant K:**

- One-sided suction: 5 130 mm
- Double-sided suction: 6 586 mm

**ROBOload (without bobbin trolley):**

- With Link Murata, Savio, Schlafhorst: 4 180 mm
- 6 536 mm

*600 mm (central drive) omitted with:

- Machines up to 1 248 spindles
- Cotton and blends with > 65% cotton up to 1 440 spindles

### Machine length L [mm]

<table>
<thead>
<tr>
<th>Spindles per machine</th>
<th>ROBOload</th>
<th>Link with Murata, Savio and Schlaufhorst</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Double-sided suction; Intermediate drive; ROBOload</td>
<td>Double-sided suction; Intermediate drive; link</td>
</tr>
<tr>
<td></td>
<td>70-mm gauge</td>
<td>70-mm gauge</td>
</tr>
<tr>
<td>1 200</td>
<td>25</td>
<td>47 730</td>
</tr>
<tr>
<td>1 248</td>
<td>26</td>
<td>48 810</td>
</tr>
<tr>
<td>1 296</td>
<td>27</td>
<td>50 490</td>
</tr>
<tr>
<td>1 344</td>
<td>28</td>
<td>52 170</td>
</tr>
<tr>
<td>1 392</td>
<td>29</td>
<td>53 850</td>
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<tr>
<td>1 440</td>
<td>30</td>
<td>55 530</td>
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<tr>
<td>1 488</td>
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<td>56 130</td>
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<td>33</td>
<td>60 170</td>
</tr>
<tr>
<td>1 632</td>
<td>34</td>
<td>62 850</td>
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<tr>
<td>1 680</td>
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<td>69 346</td>
</tr>
<tr>
<td>1 824</td>
<td>38</td>
<td>71 026</td>
</tr>
</tbody>
</table>
### Technical Data

#### Material
- Cotton
- Shiny viscose

<table>
<thead>
<tr>
<th>Yarn count</th>
<th>29.4 – 3.7 tex</th>
<th>19.7 – 7.4 tex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nm 36 – 270</td>
<td>Nm 50 – 135</td>
<td>Ne 20 – 160</td>
</tr>
</tbody>
</table>

#### Draft
- 500 – 2 500 T/m (12.6 – 63.5 T/m)

#### Ring-rail drive
- 1.75 kW

#### Mains connection – standard
- 400 – 420 V, 50/60 Hz

#### Suction motors
- One-sided suction (50/60 Hz):
  - 960 spindles: up to 6.5 kW
  - 1 200 spindles: up to 9.0 kW
  - 1 440 spindles: up to 12.6 kW

#### Drafting system drive
- 12 – 17 kW (total)

#### Machine data

<table>
<thead>
<tr>
<th>Number of spindles</th>
<th>1 824</th>
</tr>
</thead>
<tbody>
<tr>
<td>– max.</td>
<td></td>
</tr>
<tr>
<td>– min.</td>
<td>144, 288</td>
</tr>
<tr>
<td>– per section</td>
<td>48</td>
</tr>
</tbody>
</table>

| Spindle gauge       | 70 mm |
| Ring diameter       | 36, 38, 40, 42 mm |
| Tube length         | 180 – 210 mm |

| Machine width       | 660 mm |
| – over centre of spindle |       |
| – doffer retracted  | 1 062 mm |
| – doffer extended   | 1 380 mm |

#### Spindle speed
- up to 25 000 rpm (mechanical)

#### Installed power
- 55, 66, 80 kW
  (according to number of spindles and yarn count)

#### Drafting system drive
- without intermediate drive
- with intermediate drive

#### Ring-rail drive
- 1.75 kW

#### Double-sided suction (50/60 Hz):
- 2 x 4 kW
- 2 x 6.5 kW

#### Compressed air
- 7 bar
  - approx. 1.5 Nm³/h (up to 1 440 spindles)
  - approx. 1.75 Nm³/h (up to 1 632 spindles)
  - approx. 2 Nm³/h (up to 1 824 spindles)

#### Suction
- 13 800 m³/h (1 824 spindles)
- 50 – 200 Pa

#### Options
- ISM (Individual Spindle Monitoring)
- SPIDERweb (central data collection)
- VARIIdspin by Amsler
- Conv²twin (compacted spin-twist yarn)
- Rieter core yarn systems
- FLEXIstart
- DOFFlock

### Technological data

<table>
<thead>
<tr>
<th>Material</th>
<th>Cotton ≥ 27 mm (1 1/16”)</th>
<th>Shiny viscose up to 51 mm</th>
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</thead>
<tbody>
<tr>
<td>Yarn count</td>
<td>29.4 – 3.7 tex</td>
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<tr>
<td></td>
<td>Ne 20 – 160</td>
<td>Ne 30 – 80</td>
</tr>
<tr>
<td>Twist range</td>
<td>500 – 2 500 T/m (12.6 – 63.5 T/m)</td>
<td></td>
</tr>
<tr>
<td>Draft</td>
<td>20 – 80 fold</td>
<td></td>
</tr>
</tbody>
</table>
Com4® compact
Yarn of choice
The unique character of the Com4® compact yarn spun on the Rieter compact spinning machine lies in the almost perfect yarn structure. All fibers lie parallel and are completely integrated in the yarn bundle. Compared to standard compact yarns, it exhibits the highest compacting efficiency. This leads to excellent strength properties. The very low hairiness and the compact structure give both the yarn and the fabrics a high-quality, distinctive appearance. Optimal processing characteristics, high wearing comfort and a luxurious look are the advantages.

Yarn Characteristics
- Highest tenacity
- Uniform yarn structure
- Low hairiness
- High yarn density

Process Advantages
- High production speed
- Low yarn breaks during weaving
- High strength after finishing

Fabric Appearance
- High fabric tenacity
- Absolutely clear, defined contours
- Finest lustre

Typical End Products
- Business shirts
- High-quality knitwear
- Fine bed linen
- Fine socks
The Comfort of Competence

Put your confidence in Rieter’s competence and enjoy the comfort of partnership!

Rieter is the leading supplier of installations for manufacturing yarns from short staple fibers. As a competent partner, Rieter makes customers’ lives easier. It provides advice and support from the initial investment discussions to the successful operation of their spinning mills. Rieter’s comprehensive know-how from fiber through yarn to the finished textile is the basis for innovative machines and consistent yarn quality.

Settle back and relax thanks to Rieter.
Valuable Systems

Rieter is the only textile machine manufacturer to offer four spinning technologies and to advise customers competently, independently and with tailor-made solutions. Investments in Rieter machines are exceptionally attractive due to the outstanding price/performance ratio, the low conversion costs and the longevity of the products, which remain competitive by means of retrofits. Since the company was established in Switzerland in 1795 Rieter has developed high quality standards. All manufacturing facilities are ISO 9001 certified.

Convincing Technology

Rieter possesses comprehensive textile and technology expertise and covers the four spinning processes through to the textile end product. Alongside the most sophisticated machines and plants, Rieter offers extensive services in the field of textile technology. Customers profit from examinations and tests in Rieter’s spinning centers and laboratories and thus ensure the excellent quality of their yarns at high production capacity.

Supportive Partnership

Numerous sales and service centres support customers throughout the world. For decades, customers have enjoyed the advantages of one responsible contact partner for the entire spinning operation.

Rieter’s Services

- Investment planning
- Plant planning
- Project planning and realization
- Installation and maintenance
- Preventive inspection
- Wide range of wear-and-tear, technology and spare parts

• Spinning trials based on the four spinning systems
• Spinning mill analysis to optimize quality and productivity
• Textile laboratory services
• Professional textile technological publications

• Training for management and operating personnel
• Com4® yarn marketing (yarn licenses)
• Marketing support of reference customers
• Rieter Award to confer a distinction on the best students in the textile industry
• Support for universities
• Symposia and roadshows close to customers
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