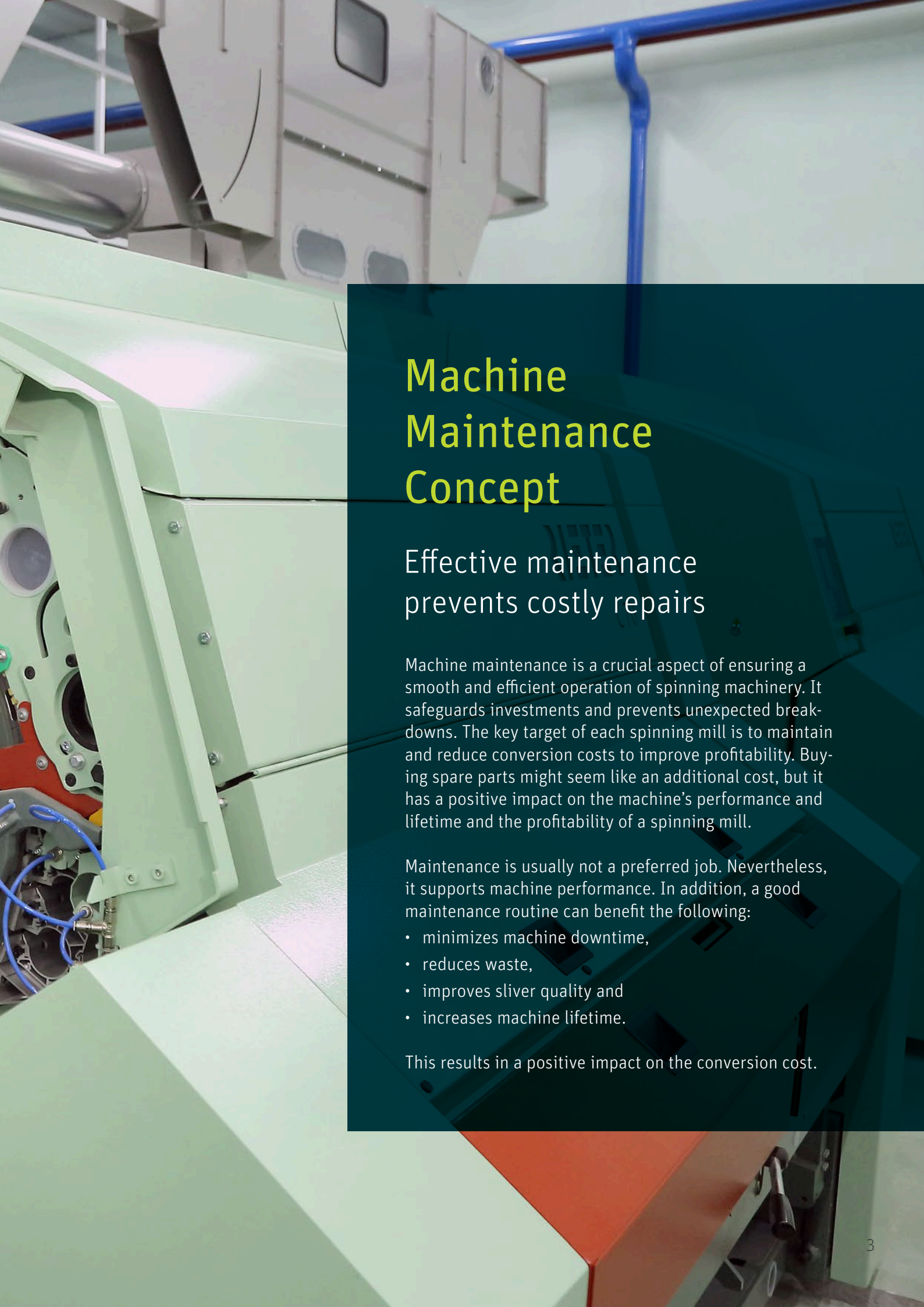
RIETER

Card Maintenance Kits

Maintenance is crucial for high machine performance

Restoring original machine performance with maintenance kits



Machine Maintenance Concept

Effective maintenance prevents costly repairs

Machine maintenance is a crucial aspect of ensuring a smooth and efficient operation of spinning machinery. It safeguards investments and prevents unexpected breakdowns. The key target of each spinning mill is to maintain and reduce conversion costs to improve profitability. Buying spare parts might seem like an additional cost, but it has a positive impact on the machine's performance and lifetime and the profitability of a spinning mill.

Maintenance is usually not a preferred job. Nevertheless, it supports machine performance. In addition, a good maintenance routine can benefit the following:

- minimizes machine downtime,
- reduces waste,
- improves sliver quality and
- increases machine lifetime.

This results in a positive impact on the conversion cost.

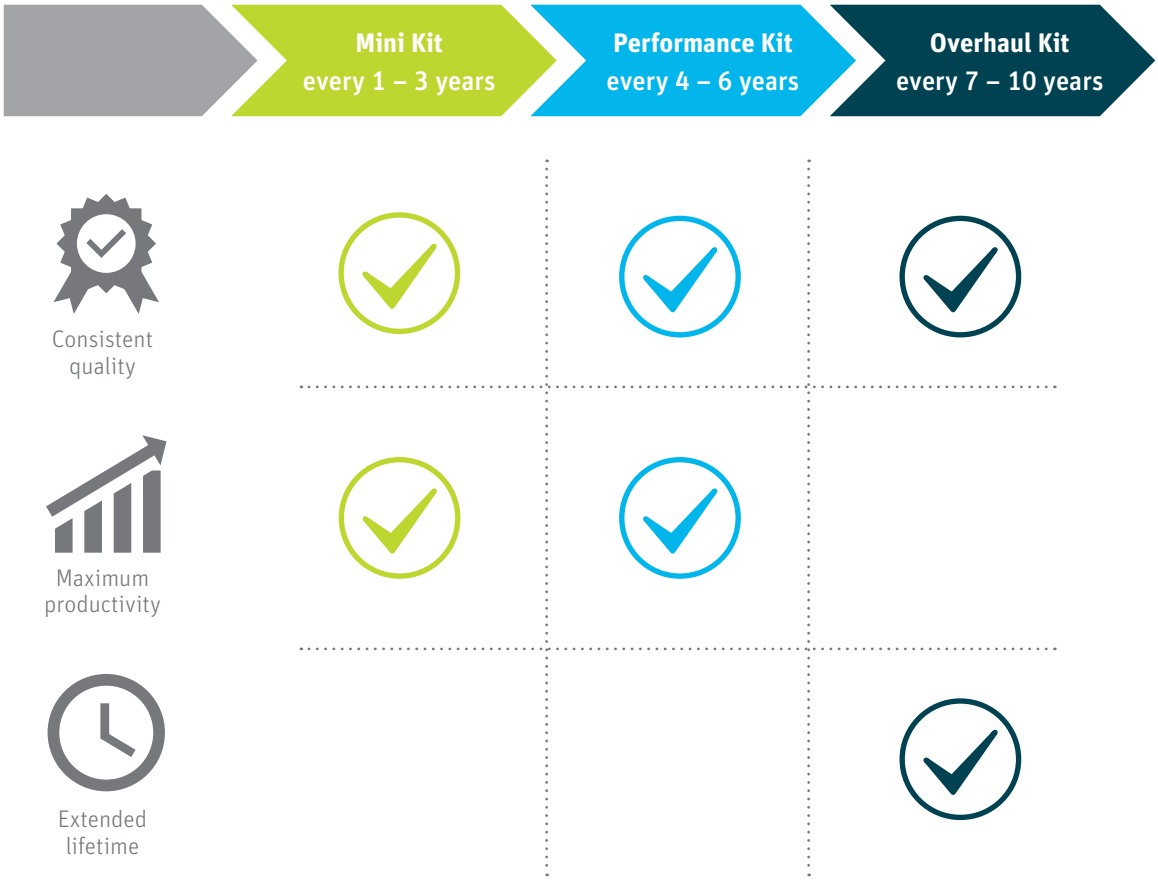
Maintenance Kits

A structured and simple approach

Maintenance budgets are tight and machine downtimes are costly. Rieter's modular maintenance concept enables spinning mills to follow a structured and simple maintenance approach throughout the product lifecycle. It helps plan the maintenance budget and prevents machine downtime. The maintenance kits consist of key spare parts with a high impact on machine performance and a similar lifetime. Replacing those parts at the same time does not only improve machine performance but also reduces the overall conversion cost. Regular maintenance of each kit ensures the key functionality of each machine and prevents costly repairs in the long term. The maintenance kits comprise:

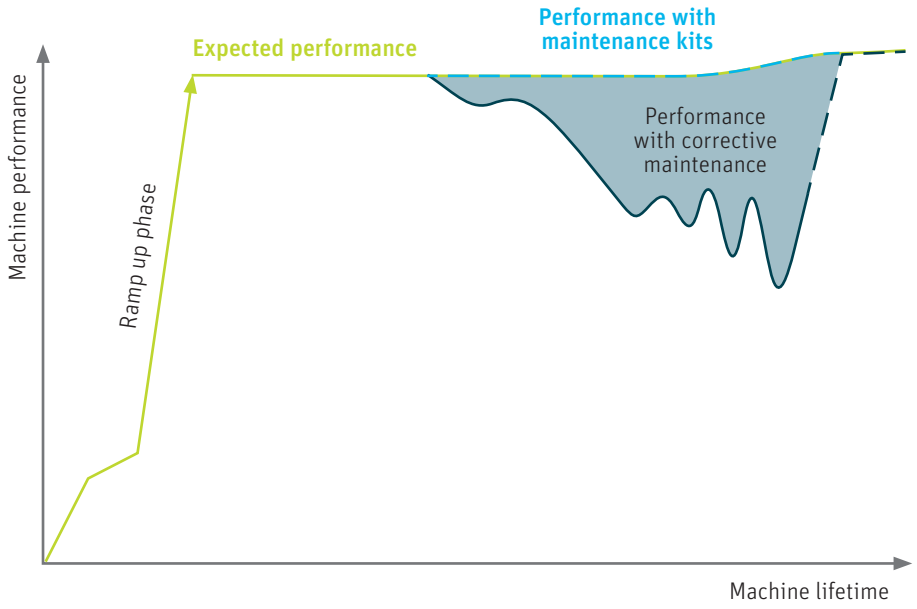
- Mini Kit
- Performance Kit
- Overhaul Kit

Overview of the maintenance concept and its benefits



Maintenance is key to success

After a new machine is installed and working for several years, there will be some performance drop due to wearing of parts. Corrective maintenance can keep the machine running, but not to the expected or original level. Apart from reduced quality, the amount of sliver and yarn breaks increases, resulting in more manual labor and therefore overhead.



Expected performance
- The newly installed machine operates at full efficiency

Performance with corrective maintenance
- Production loss due to wearing / breaking parts and increased machine downtime
- Quality loss
- Money loss until expensive machine overhaul brings performance back on track

Performance with maintenance kits
- Constant productivity and quality
- Plannable maintenance = minimum downtime

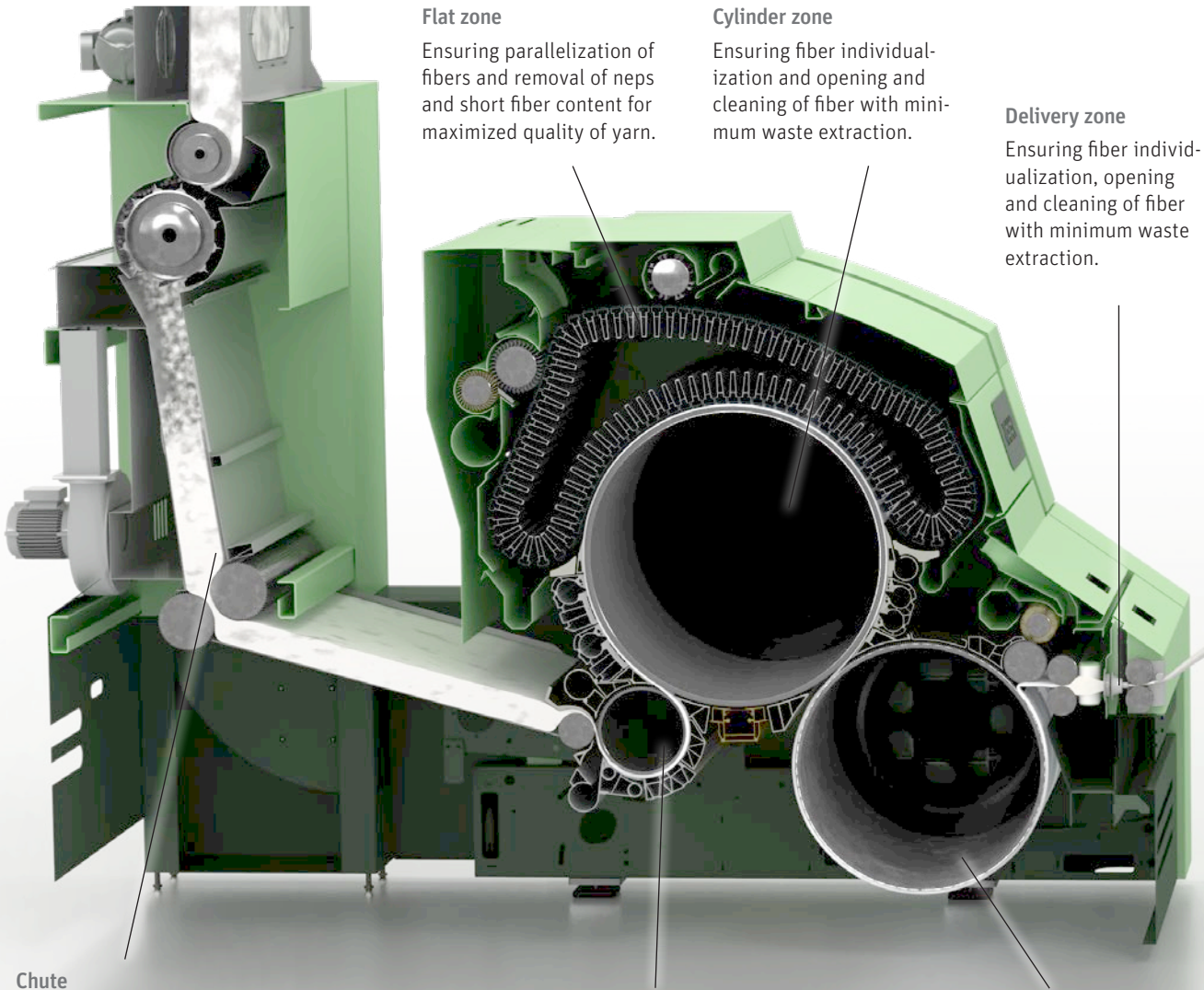
Overview of Card Maintenance Kits

Restoring original machine performance with maintenance kits

Consistent sliver quality and improved machine utilization

The card plays a vital role in every spinning mill as it determines the quality of the yarn. Maintaining the card is of utmost importance to ensure consistently high sliver and yarn quality, as well as high machine productivity. Machines should run constantly at maximum efficiency and secure availability while requiring minimal maintenance.

Replacing individual parts can be expensive and time-consuming. Moreover, every stoppage for condition-based part replacement adds to the overall machine downtime.



Flat zone
Ensuring parallelization of fibers and removal of neps and short fiber content for maximized quality of yarn.

Cylinder zone
Ensuring fiber individualization and opening and cleaning of fiber with minimum waste extraction.

Delivery zone
Ensuring fiber individualization, opening and cleaning of fiber with minimum waste extraction.

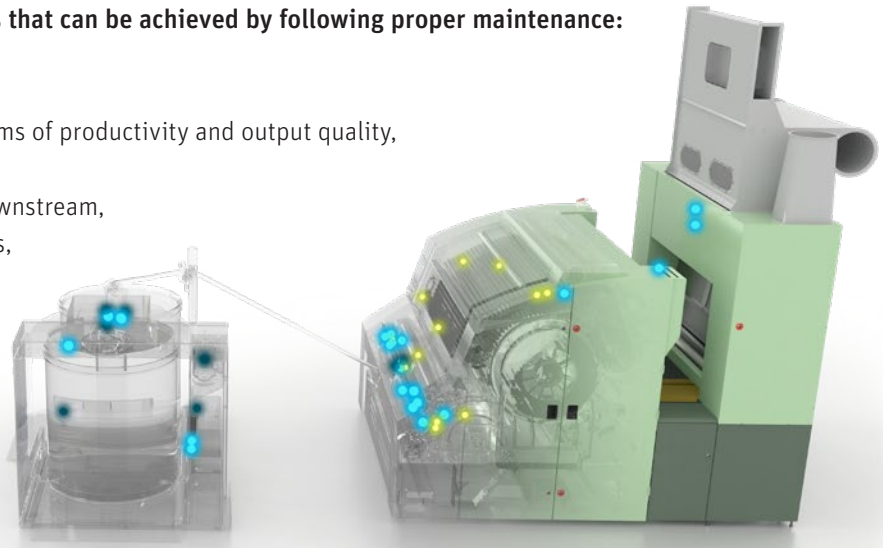
Chute
Ensuring parallelization of fibers and removal of neps and short fiber content for maximized quality of yarn.

Licker-in zone
Ensuring opening and cleaning of fibers with minimum fiber rupture.

Doffing zone
Ensuring proper forming of sliver out of fleece with highest productivity.

These are the most important benefits that can be achieved by following proper maintenance:

- extended lifetime of the machine,
- enhanced machine performance in terms of productivity and output quality,
- reduced machine downtime,
- less issues and higher productivity downstream,
- improved reliability of the components,
- energy-saving and
- enhanced safety.



Sliver coiling section CBA

Ensuring proper forming of sliver out of fleece with highest productivity.

Card Mini Kit

Supports proper machine functioning

Daily maintenance	**Mini Kit every 1 – 3 years**	Performance Kit every 4 – 6 years	Overhaul Kit every 7 – 10 years

A mini kit consists mostly of technological and consumable parts that have a lifetime of one to three years, depending on the machine group, raw material, operating parameters and general maintenance schedule. Hence, Rieter recommends replacing the mini kit at least every three years or 2 000 tons production.

The Card Mini Kit is designed to leverage the potential of the new wire and extend its benefits as much and as long as possible. While the doffing cylinder and its wire play a key role in achieving peak quality, many additional items around it are required to support its function.

This is the reason the Card Mini Kit scope is spread across all machine zones (from licker-in to doffing zone). It ensures proper flats movement, a clean doffing performance, efficient forming of the sliver and a clean split between good fiber and waste.

Card Mini Kit key parts:

- drive belts,
- transport belt,
- grinding stone,
- slide shoe,
- brush roller, cleaning brush, wiper and
- cross apron.

All parts included in the kit have a similar lifetime that depends on the raw material production, the use of the machine and the general maintenance schedule.

The parts are chosen to minimize the maintenance work required. This is why the change of parts is recommended to take place during the change of the cylinder wire and flats wire mounting. This minimizes machine downtime and maximizes productivity.

Customer benefits

Productivity
- Reduced amount of sliver breaks
- Reduced creel stoppage at draw frame

Quality
- Reduced IPI and classimat faults
- Frequent splicing due to high cuts in winder

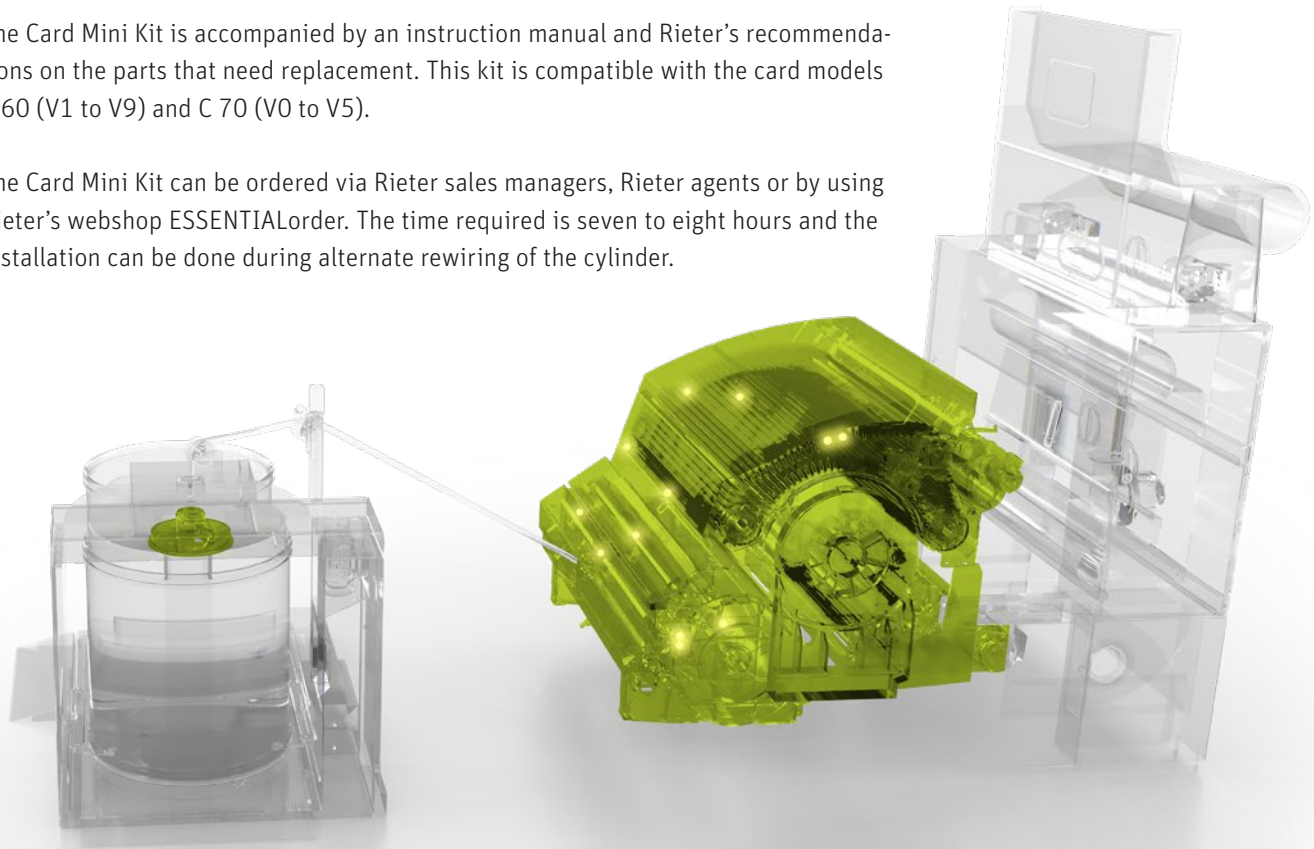
Sustainability
- Reduced energy loss and pressurized air consumption
- Lower energy consumption
- Reduced waste

Lifetime
- Extended machine and parts lifetime

Compatibility and installation

The Card Mini Kit is accompanied by an instruction manual and Rieter's recommendations on the parts that need replacement. This kit is compatible with the card models C 60 (V1 to V9) and C 70 (V0 to V5).

The Card Mini Kit can be ordered via Rieter sales managers, Rieter agents or by using Rieter's webshop ESSENTIALorder. The time required is seven to eight hours and the installation can be done during alternate rewiring of the cylinder.



Card Performance Kit

Ensures smooth operation

Daily maintenance	Mini Kit every 1 – 3 years	**Performance Kit every 4 – 6 years**	Overhaul Kit every 7 – 10 years

The performance kit is designed to ensure trouble-free performance of the machine over the next four to six years. This kit consists of bearings, seals, springs, brushes and many more to ensure the proper functioning of the drive elements. Changing the parts of the performance kit can be planned alongside the regular machine maintenance schedule and is recommended at least every six years or after 4 000 tons of production.

Changing the parts of the Card Performance Kit is recommended during the change of the cylinder wire. This minimizes machine downtime and maximizes productivity.

Card Performance Kit key parts:

- bearings,
- seal kit,
- tape complete,
- felt seal,
- pneumatic cylinder,
- brush roller and
- pressure tubing.

Customer benefits

Productivity
- Less sliver breaks at the card

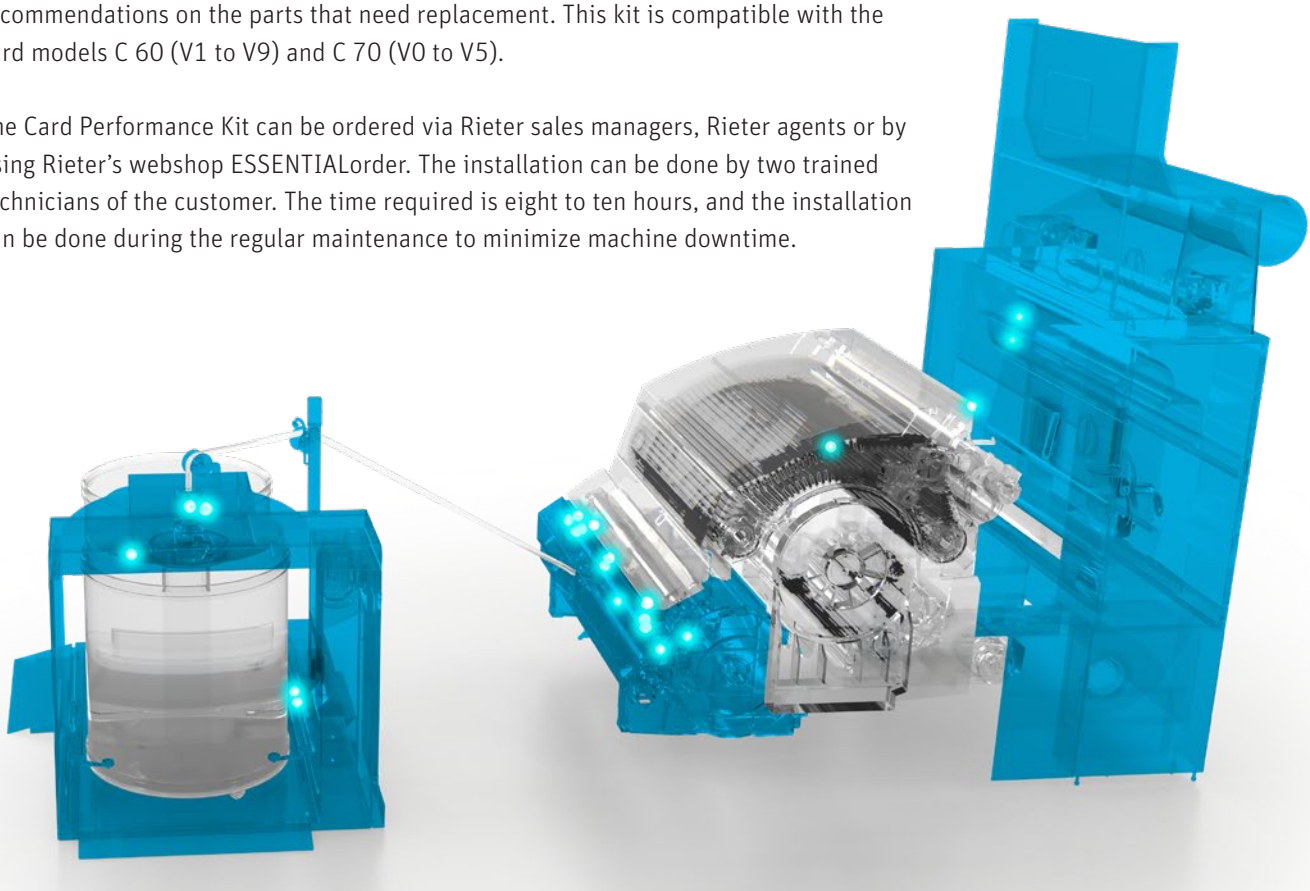
Quality
- Consistent sliver and yarn quality (consistency in IPI, neps, cuts, etc.)

Lifetime
- Extended machine and parts lifetime – e.g. gearbox, pneumatic cylinders, gearbox, etc.
- Proper functioning of various parts

Compatibility and installation

The Card Performance Kit is being delivered with an instruction manual and Rieter's recommendations on the parts that need replacement. This kit is compatible with the card models C 60 (V1 to V9) and C 70 (V0 to V5).

The Card Performance Kit can be ordered via Rieter sales managers, Rieter agents or by using Rieter's webshop ESSENTIALorder. The installation can be done by two trained technicians of the customer. The time required is eight to ten hours, and the installation can be done during the regular maintenance to minimize machine downtime.



Card Overhaul Kit

Prepares the machine for the next decade

Daily maintenance	Mini Kit every 1 – 3 years	Performance Kit every 4 – 6 years	**Overhaul Kit every 7 – 10 years**

Even the most robust and sturdy equipment will wear out at some point of time. In the case of carding machine the fibers are processed in a narrow gap between two rotating components. It is essential to maintain a high precision to the critical dimension parts like flexible bend, flat rods and sliver measuring unit. Therefore, after seven to ten years or 6 000 tons of production, an overhaul of the machine is required, in which major metal-wearing components are exchanged.

The Card Overhaul Kit includes key components that contribute to quality and production. It further ensures that the machine is ready for the next decade of operation.

The Card Overhaul Kit extends the machine's lifetime to several years while maintaining its original performance. It comes with two optional packages, which allow customers to customize the kit based on their requirements.

Card Overhaul Kit key parts:

- flexible bend,
- electromagnet,
- funnel,
- disc roller,
- gearbox,
- auto-leveller,
- coupling, shaft and
- timing belt pulley

Customer benefits

Productivity
- Less sliver breaks at the card
- Less creel breaks at the draw frame

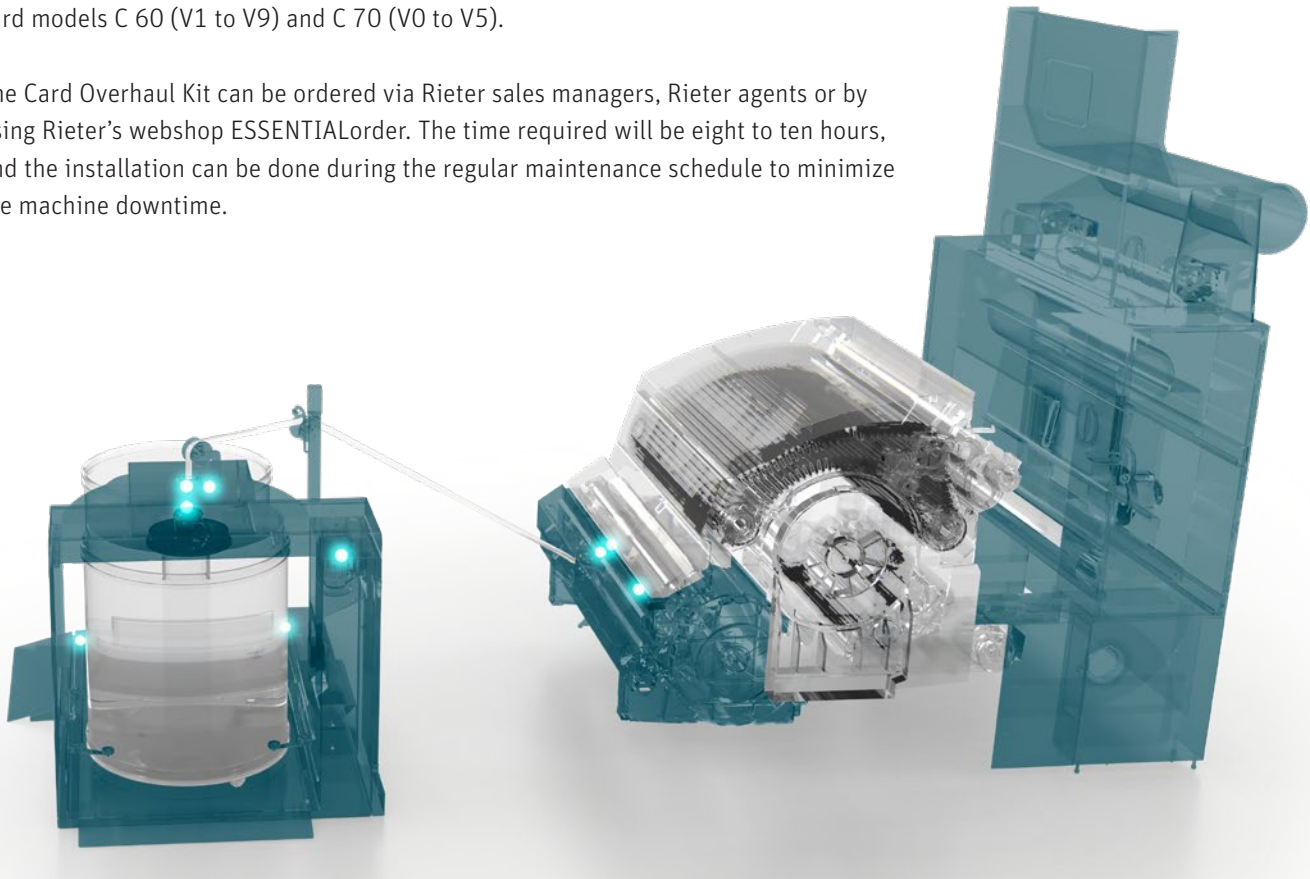
Quality
- Lower U%
- Lower sliver variation
- Less feed variation in draw frame

Lifetime
- Lifetime of the machine is extended

Compatibility and installation

The Card Overhaul Kit is being delivered with an instruction manual and Rieter's recommendations on the parts that need replacement. This kit is compatible with the card models C 60 (V1 to V9) and C 70 (V0 to V5).

The Card Overhaul Kit can be ordered via Rieter sales managers, Rieter agents or by using Rieter's webshop ESSENTIALorder. The time required will be eight to ten hours, and the installation can be done during the regular maintenance schedule to minimize the machine downtime.



Preventive Maintenance with Card Maintenance Kits

Rieter offers card maintenance kits to replace worn-out parts and prevent maintenance. These kits can be installed during regular maintenance schedules. The maintenance kits help minimize machine downtime and restore the machine's original performance. In addition, customers can avoid costly repairs and extend the lifetime of their machines. This enables the machines to operate at the desired speed while consistently maintaining sliver quality.

The chart below shows an overview of the key components of each maintenance kit.

Key parts per kit and their impact

	Mini Kit	Performance Kit	Overhaul Kit
Productivity	• Wiper • Cross apron • Transport belt	• Seal kit • Tape complete • Felt seal • Pneumatic cylinder	• Timing belt pulley • Funnel • Disc roller • Coiler cover
Quality	• Grinding stone • Flats cleaning brush • Sliding shoe	• Brush rollers • Pressure tubing	• Flexible bend • Electromagnet
Sustainability (incl. manpower)	• Flat belts • Timing belts	n/a	• Rubber seal
Lifetime	• Brush roller	• Bearings • Seal kit	• Couplings • Shaft • Gearbox

Regular maintenance is the key to success

A well-established machine maintenance is indispensable for the success and sustainability of modern businesses. By investing in regular and systematic machine maintenance, customers can enjoy the benefits of increased operational efficiency, reduced conversion cost and improved quality. It also contributes to a safer and more efficient working environment.

Impact parameters of each kit onto parts and process KPIs

	Mini Kit	Performance Kit	Overhaul Kit
Process indicators	• High sliver breaks at card • Increased IPI or classimat faults • Fluff and dust accumulation in card	• High sliver breaks at card • Higher IPI, neps, cuts • Noise from cylinders	• High sliver breaks at card • Improper function of auto-leveller (high CV% and U%)
Product indicators	• Crack formation in belts • Missing hairs at brush	• Bearing failures (abnormal noise) • Gas spring failure (improper holding) • Pneumatic cylinder failures (air leakage) • Oil leak in gearbox	• Gearbox failure (oil leak, jerky movement) • Funnel wear out (wear out marks, improper fit) • Stuck up in can changing • Inaccurate setting achieved (flexible bend)

Compatibility overview

C60 V1	■■■
C60 V2	■■■
C60 V3	■■■
C60 V4	■■■
C60 V5	■■■
C60 V6	■■■
C60 V7	■■■
C60 V8	■■■
C60 V9	■■■

C70 V1	■■■
C70 V2	■■■
C70 V3	■■■
C70 V4	■■■
C70 V5	■■■

■ Mini Kit
■ Performance Kit
■ Overhaul Kit

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