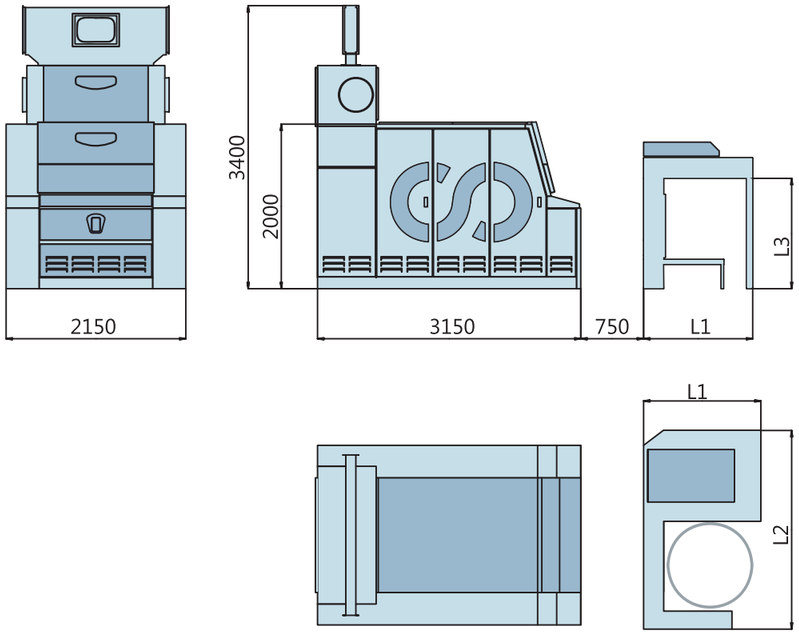

Coiler Can Diameter	L1	L2	L3
600mm (24″)	1,005mm	1,755mm	1,170mm to 1,320mm
900mm (36″)	1,345mm	2,330mm	1,170mm to 1,450mm
1000mm (40″)	1,405mm	2,380mm	1,170mm to 1,620mm

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RIFA - Crosrol

CARDING MACHINERY
MK8

Technical Innovation, Cost Effective Solutions, together with a strong emphasis on providing real practical benefits to the Spinning Industry

Since the company's inception in 1946, the core values of the Company have been to provide real technical and commercial benefits to the textile industry facilitated by innovative engineering to achieve high quality productivity at the lowest possible purchase and owning/operating costs. In today's ever more challenging environment this methodology becomes ever more important and critical for ensuring the ultimate profitability of the Spinning Mill.

Low investment costs although vitally important are not the only factor in achieving the“Lowest cost solution”, with ever increasing power costs and environmental pressures the central focus of a Spinning Unit now has to be on reducing consumed Electrical power.

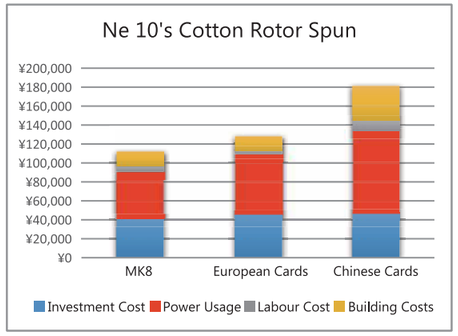
Crosrol for many years has been at the forefront in regard to this subject and with our unique and innovative carding philosophy we are able to provide the lowest operating costs per Kilogram of Sliver per Kilowatt hour of any carding machine on the market today.

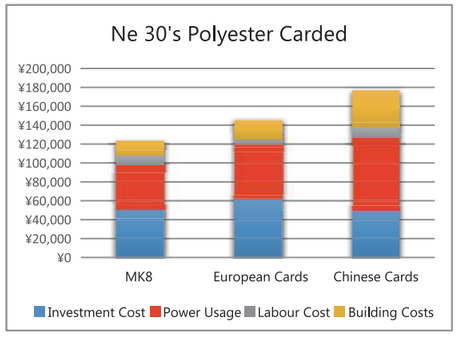
With the introduction of the MK8 carding machine, key carding elements have undergone extensive re-engineering in order cope with the extreme forces associated with the greater working width, the new 1.25M width cylinder is a perfect balance between the needs of high production whilst retaining carding stability, we once again ensure the world standard of superior technology at the most economical price that has been, and continues to be, the Crosrol tradition and hallmark.

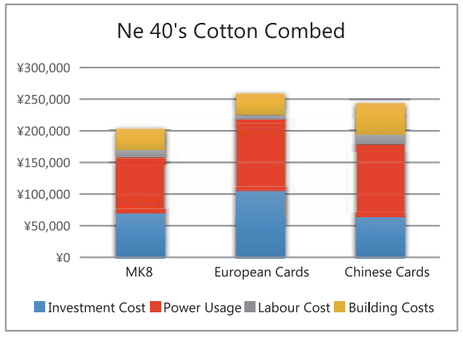
Evaluating the “Total Ownership Cost” is the key influence on sustainable profitability when evaluating machinery selection

To analyse the total cost for the Carding process, the four quantifiable costs are namely:

· Capital (Machinery) Investment
· Power Consumption per Kilo of sliver produced
· Direct labour requirement
· Building operation costs





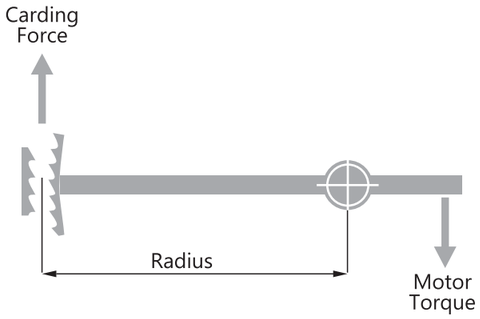


These are the fundamental factors for the design process of all Crosrol cards, The MK8 Card not only achieves high marks in all four individual categories but as a total solution offers the lowest cost per kilo of Sliver produced of any machine available today.

This concept of low “Total Ownership Cost” drives sustainable profitability throughout the Spinning mill.

During the last 20 years the reduction of labour in the spinning mill is well documented and now the labour cost of the production unit is generally considered as a small part of the total cost to produce yarn. With the ever-demanding requirement to reduce costs further the focus now switches to Consumed electrical power.

Crosrol Cards have always been known for as using the lowest amount of Electricity per Kilo of Sliver produced, the use of the very latest European specification of energy efficient Drive Motors together with the cleaver use of simple Deep Groove Bearings rather than Roller Bearings clearly have an influence on the low power consumption of Crosrol Cards, But the reason for such power efficient Carding machines is much more fundamental.



27%↓

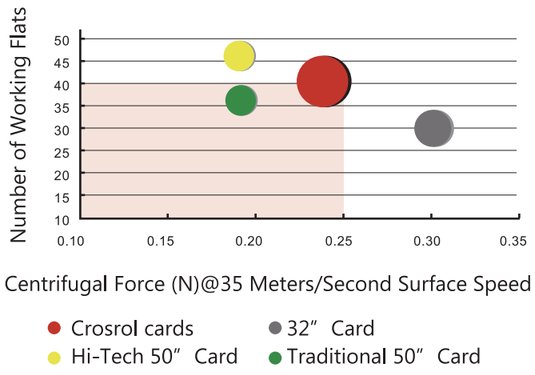
For the same given Carding force a Crosrol cylinder utlizes 27% less Power than a conventional carding machine.

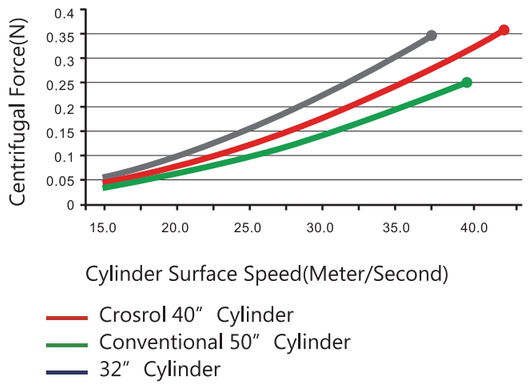
At the heart of the Crosrol card is the pioneering small 40” (1020mm) diameter Cylinder, this major part of the Card is the key to its energy saving properties, when directly compared to the Industry standard 50” (1270mm) cylinder commonly used by other machinery manufactures a massive 27% saving in power can be achieved on a like-for-like basis. This crucial factor is the Key reason for the low total cost solution only achievable from Crosrol Carding.

Technical Features of the Crosrol MK8 Carding Machine

For over 70 years, Crosrol, the 'Carding Specialists' have been responsible for almost every major development of Carding, From the legendary 'Crossed Rollers', to the world's most successful card, the MK4, Crosrol continues to lead the world in Carding technology.

Carding Flexibility Becomes a Reality





The power of a Carding machine is obtained by optimizing the three key influential factors for the Carding process:

· Carding Area

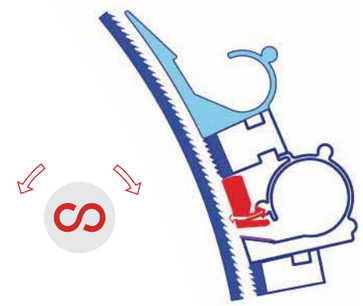
· Carding Speed

· Centrifugal Force

With the innovative design of the Crosrol MK8 card, ultimate Carding power is further enhanced, the delicate yet complex relationship between the Carding area, Carding speedand Centrifugal force generated by the Cylinder.

This together with Crosrol' s renowned precision and stability of the critical Carding elements ensures that the MK8 card is the perfect solution for today' s high efficiency spinning units.

In today's world of smaller more flexible batch sizes and changing requirements from the fashion industry, flexibility becomes the key to been able to react to your customers demands; Spinning units find that the requirements for yarn types and qualities are changing on an almost daily basis.



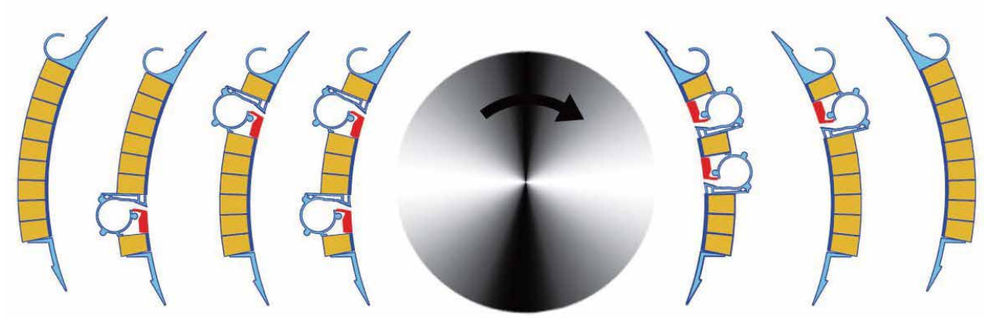
Due to the very nature of a Carding machine making changes to the machine set-up has been both labor-intensive and time consuming, therefore most spinning units opt for 'universal' settings rather than material specific settings which facilitate maximum fiber yield and optimum quality.

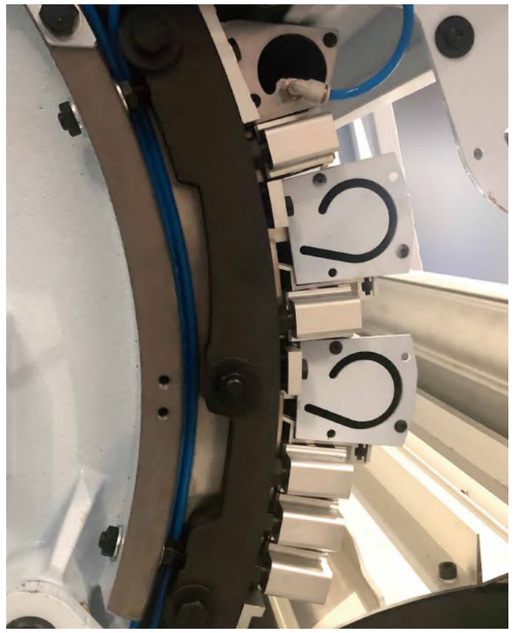
The MK8 Card makes this type of methodology redundant, with the unique Crosrol waste control systems, Dial-in operating speeds and modular Carding arrangements, all material dependent settings can be changed within minutes allowing for complete Card settings to be changed faster than the Bale lay-down of a Blowroom line.

This unique flexible concept ensures that the MK8 Card always operates using optimum settings for a given material delivering ultimate quality with maximum fiber yield time after time.

Unique Crosrol (∞) 'Dial-in' waste control settings fitted as standard to all cards give the ability to optimize settings quickly and easily without the need to halt Carding production.

Stationary Flats





The new Crosrol Stationary Flat systems incorporating the unique modular concept of interchangeable stationary flats with highly effective aerodynamic waste extraction units allowing for multiple processing arrangements to be quickly configured to suit all conceivable material applications.

In conjunction with the patented 'Dial-in' waste control system, the Crosrol Pre & Post carding arrngements make the significant contributions to better sliver quality with a significant increase in the operating life of Carding wires.

Crosrol patented 'Dial-in' waste control systems give precise control over the amounts of trash, short fibre and micro-dust extracted. These unique devices give the ability to optimize waste removal settings quickly and easily without the need to halt carding production.

Revolving Flats

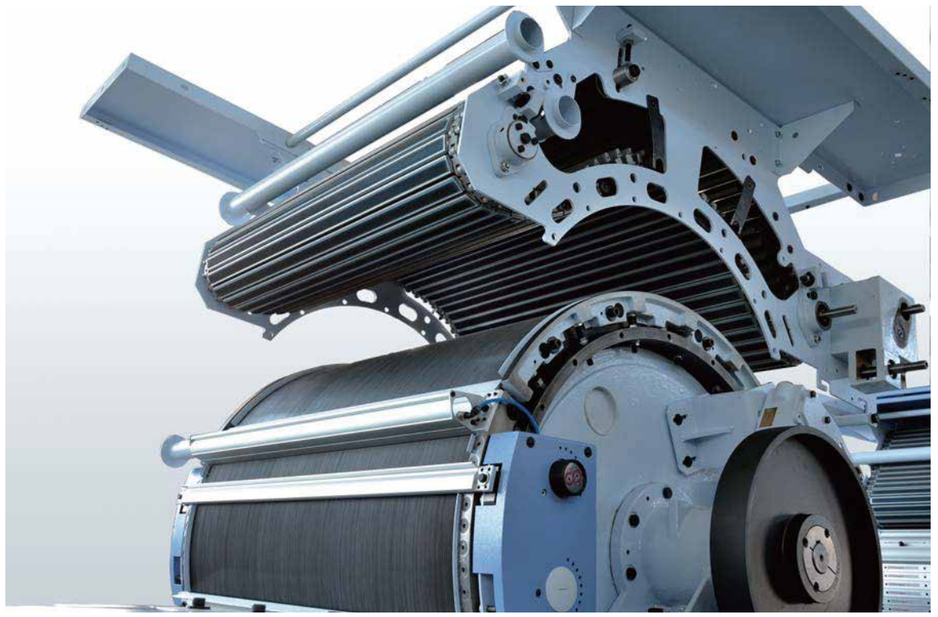
The Crosrol revolving flat bars are manufactured from high strength Aluminium Alloy extrusions with Die Cast Alloy ends securely adhered. The flat bar assemblies are precision machined using latest CNC machine tools together with multi-pint hydraulic component fixturing which enable each flat bar to be produced to an accuracy of less than 0.012mm (0.0005").

By utilizing Crosrol' s extensive expertise in this area of manufacturing, the complete set of revolving flat bars fitted to the Crosrol machine are kept to a uniformed height, resulting in the highest possible accuracy of the flat to cylinder setting for ensured and effective combing and cleaning of the fibres.

Unique Die-Cast Aluminium Alloy flat chains incorporating precision ball bearings running on hardened cylinder bends eliminates wear and the need for lubrication thus ensuring consistent settings and low maintenance during the life of the Card.

Flats strip removal is achieved by a pair of oscillating brushes. This simple but highly effective method ensures that the flat bars are kept in optimum condition for the re-entering of the carding process.

Setting of the revolving flats on a Card is a laborious highly skilled task. The new Crosrol' Flat Setting Control' device (supplied as standard) significantly reduces not only the time required for re-setting of the flats after wire maintenance but ensures consistent and accurate settings are always achieved.



Chute Feed Opening

· Fully integrated chute feed with dial-in settings from card controller ensures uniformed density for optimum batt regularity and much improved sliver variation.

· The new wire covered feed roll is interlinked to the Carding machines internal control system providing continuous feed (via inverter) from the upper (reserve) chamber. An adjustable spring loaded pivoting feed plate provides a constant grip pressure on the material thus presenting a fine fringe of material for final opening.

· A 12-row spirally pinned opening roller prepares the tufts for feeding to the card; the individually opened tufts then enter a controlled material flow to the lower (batt formation) chamber.

Electric Cabinet

· All Crosrol Cards utilize the latest generation of European PLC based control system from SCHNIEDER, the ultra-high processing capabilities together with inherent stability ensure rapid and consistent processing of machine data.

· Crosrol carding machines incorporate both closed-loop long term and mid term auto-levelling as part of standard equipment, with programmablecorrection limits to suite mill specific quality standards.

· Hard wired electrical control cabinet located at the side of the machine for ease of mainten ance. Specific cabinet layout ensuring heat generating components are remotely located from machine control systems together with in-built cooling devices for optimum operation under extreme conditions of temperature and humidity prevailing in spinning mills.

Card Specifications

Material Processing Specification	**MK8 Card**
Raw Material (Staple Length)	22 - 76mm
Feed Weight	425 - 1,150 g/m
Feed Stock Width	1,200mm
Sliver Weight	5.0 - 10.0 g/m
Production Rate	Up to 180Kg/Hr
Card Type	Chute Feed Only

Machine Specification	**MK8 Card**
Working Width	1,250 mm
Card Length (Without Coiler)	3,150 mm
Card Width (Without Coiler)	2,150 mm
Card Height (Inclusive of Chute Feed)	3,400 mm
Card Weight (Inclusive of Chute Feed, and Coiler)	5,500 Kg

Technical Specification	**MK8 Card**
Delivery Speed	Up to 400 m/min
Cylinder Diameter	1,018mm (40")
Doffer Diameter	660mm (26")
No. of Revolving Flats	29(working) - 84(total)
No. of Stationary Flats (Cotton)	14 maximum
No. of Stationary Flats (Synthetic)	18 maximum
Auto leveling Systems	Short, Medium & Long Term
Inverter-controlled Drives	6 sets (Main Rollers)
Coiler and Automatic Can Changer	Linear type
Installed Electrical Power	12.72 kw
Consumed Electrical Power	8.2 kw (@ 90 kg's / Hr)
Extraction Volume	4,200 m3/h
Extraction Pressure	750 Pa
Compressed Air Consumption	0.12 m3/h
Compressed Air Pressure	6 to 7 bar