

SPEED FRAME LF4280 Series



Flexible

LF4280 Series

LMW Speed frame LF4280 series the longest speed frame with 280 spindles is incorporated with cutting edge technologies for high production and with automation of auto doffer and provision for roving transport system.



Highly Efficient



Specific Features

Smart Speed Frame with Complete Electronic Drives

- Four segment drive system
- Servo drive for drafting
- No change gears for draft & twist



Longest Speed frame

- Speed frame with 280 spindle
- Dual drive arrangement for consistent quality
- Efficient handling of torsion load

LF4280

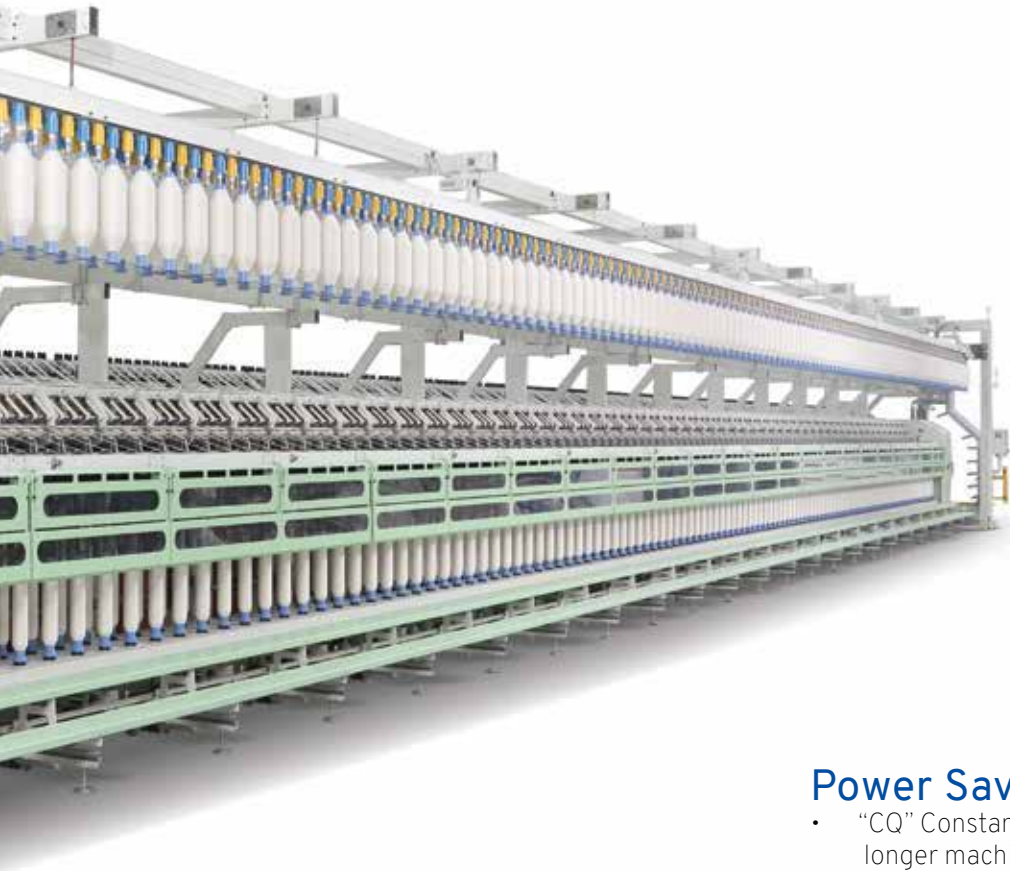


Consistent Quality

- Automatic roving tension controller (ATC)
- Minimum roving stretch
- Equal exhaust of sliver in cans

User Friendliness

- Bobbin tilting arrangement
- Detachable flyer arrangement
- Option of 5/6/8 row creel arrangement
- Provision to run a section of 40 spindles



Power Saving

- “CQ” Constant Air discharge DUCT for longer machine performance

Automation

- Provision for roving transportation system (RTS)
- 50% Manpower saving
- Enhanced roving quality due to elimination of manual handling of bobbins.



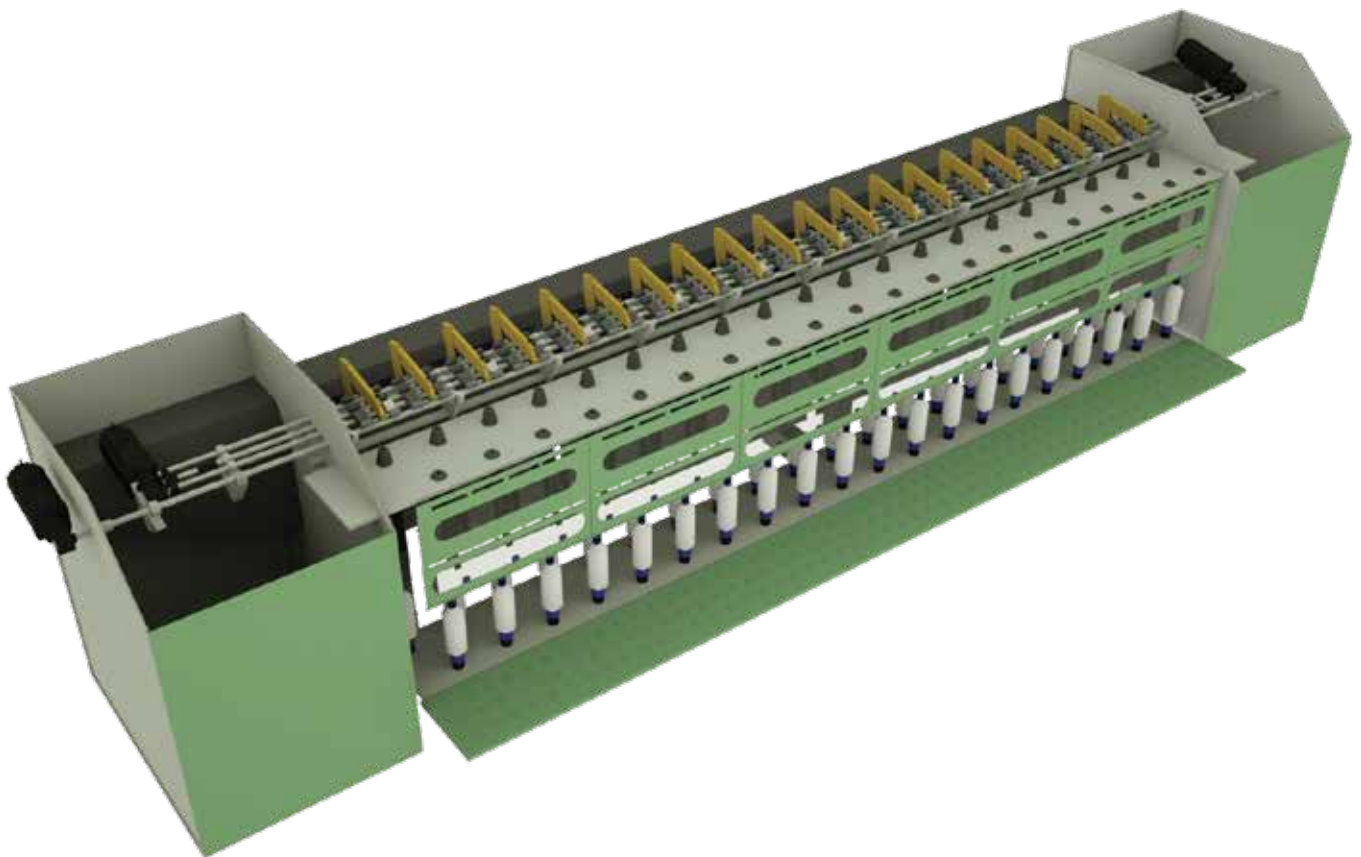
280 Spindles with dual drive mechanism

A unique dual-drive mechanism with split drive setup in middle of the machine enables all the 280 spindles to maintain uniform and consistent quality by eliminating the torsional effect on drafting rollers.

280 spindles eliminate the requirement of more number of machines in the mills, which reduces the capital investment on machines and H-Plant. Thus the operation cost will be competitively lower.

48mm dia bobbin and unique 224mm pitch helps in achieving more bobbin content which extends the bobbin exhaust frequency.

This set-up of up to 280 Spindles helps in less manpower, lower maintenance time and also helps in bringing down the operating costs considerably.



Split drive

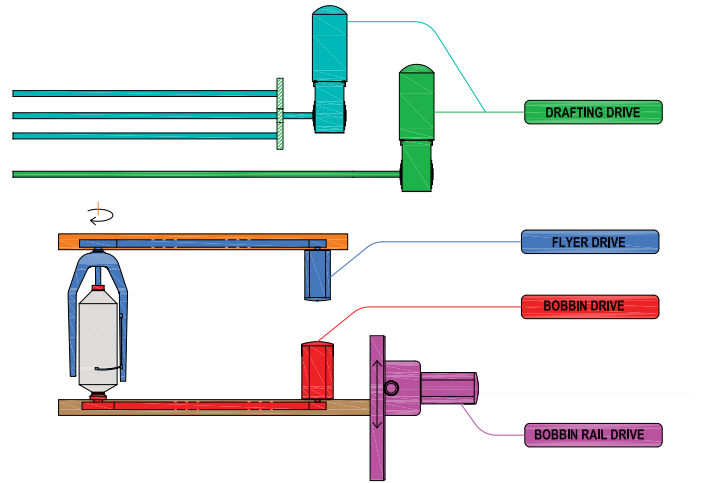
Fibre	Cotton, Polyester & PC	High tenacity fibres like Viscose, Modal, PV
Max Spindles	280	280
Dual drive with split drive system	>200 spindles	>140 spindles

Premium Quality Roving Delivered Consistently



Four Segment Drive System

- Drafting is driven by servo motors
- Bobbin, bobbin rail and flyer are driven by Inverter controlled Induction motors
- All the drives of bobbin, bobbin rail, flyer and drafting are well synchronized to enhance machine functionality.
- Each section has 40 spindles and option of stopping sections from end on need basis to save power.
- All the bobbin drive motors have common drive and the same system is engineered in case of flyer drive motors also, this helps in less maintenance and lower inventory.



Flyer Drive

- Driven by inverter controlled motor
- A set of 40 flyers are driven by one motor through timing belt
- Precise control of speed throughout the bobbin build through adjustable speed curve
- Easy adjustment of timing belt tension – Maintenance Free
- Option available to switch off the last section in power saving mode
- Fully sealed top covers to prevent fluff entry

Bobbin Drive

- Driven by inverter controlled motor
- A set of 40 bobbins are driven by one motor through timing belt
- Precise adjustment of speed with respect to bobbin building
- Simple drive with less number of components
- Easy adjustment of timing belt tension – Maintenance Free
- Totally enclosed drive system



LF4280/A

LF4280/SX



Bobbin Rail Drive

- The bobbin rail is driven by an inverter controlled motor with gear box through a rack and pinion arrangement
- Precise winding of bobbin ensures better package
- Smooth motion is ensured by guided bearing
- Adjustment of all bobbin building parameters through display – Bobbin angle, lift, coils per inch, etc.,



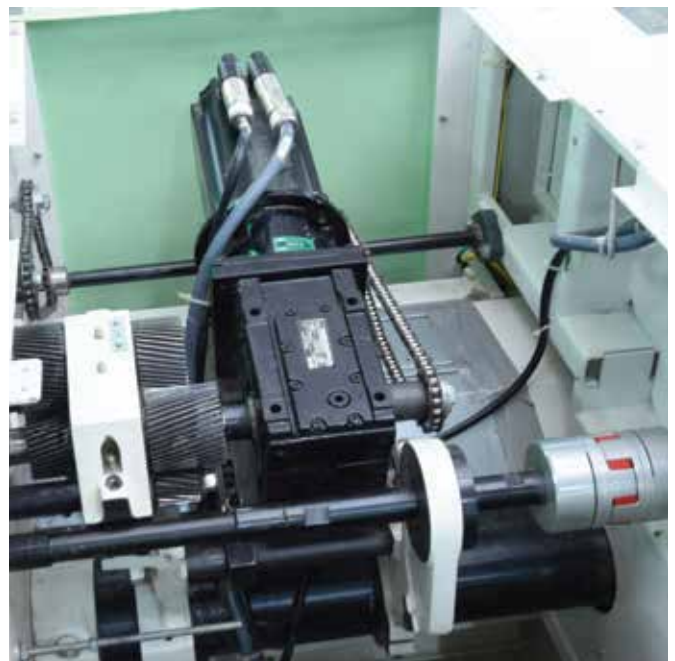
Drafting Drive

Well established and proven 3 over 3 or 4 over 4 double apron drafting system with servo drive ensures reliable drafting.

The drafting system is designed to process various types of fibres like cotton, mmf, blends, linen cotton blends, modal, lyocell, acrylic etc., And ensures uniform nipping and better sliver guidance. Cradles are short, medium and long available to suit different fibre lengths.

The drive to drafting is totally electronic with

- One servo driving the front roller
- Second servo driving the rest of the fluted rollers, creel and positive cleaning device.



Main draft and twist change through display no change gears except break draft.

Bobbin / Flyer Safety System

The sensor senses the bobbin. If a bobbin lifts from its original position while running, the machine will be stopped. This prevents damage to spindles and flyers





Creel Arrangement

The machine is equipped with lightweight aluminium hexagonal rollers which will assist in gentle handling of sliver

- Optimal creel height and sliver path
- No sliver stretch and sliver wastage
- Optimal can layout with two creel sensors for improved operator efficiency due to lesser creel breakage attending time
- Easy creeling
- Improved machine efficiency
- Versatile creel options - 5/6/8 creel rollers



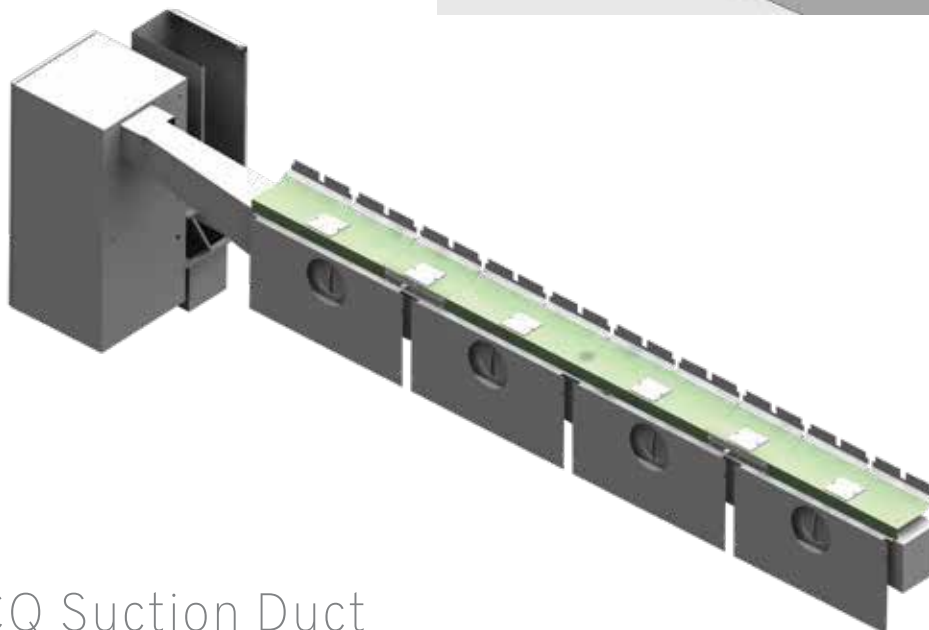
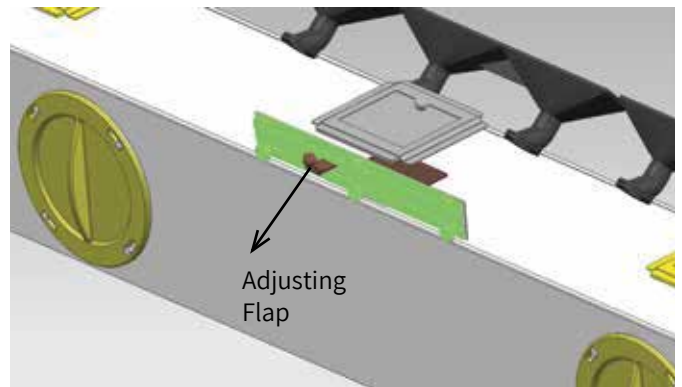
Benefits

- Easy removal and fixing of cans makes ease of operation for operators
- Sliver travelling distance is lesser which ensures gentle handling of slivers
- Sliver slagging or stretching are lesser which further reduces the generation of thin materials and enhances the betterment of fabric appearance after dyeing.

“CQ” Constant Air Discharge DUCT

This innovative duct is for maintaining uniform and effective suction throughout the machine.

Intermediate flaps between bottom and top duct to adjust the required suction - to ensure uniform suction for nearest and farthest spindle



Patented CQ Suction Duct System for Power Saving



Automatic Roving Tension Controller (ATC)

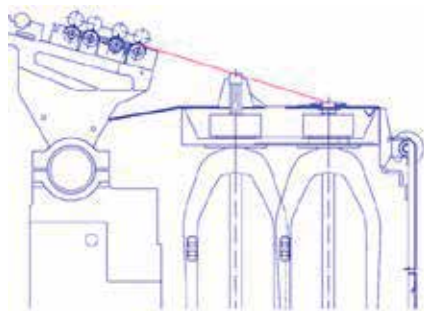
Roving tension is maintained at an optimal level by means of automatic roving tension controllers operated on CCD principle and through the individual inverter controlled motors.



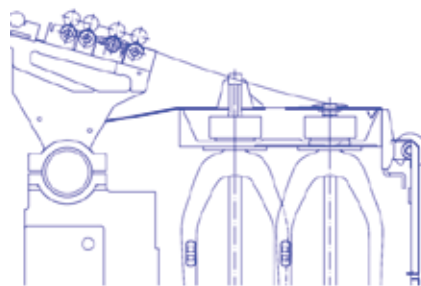
CCD Principle

Whenever the roving tension changes from set tension, the sensor senses and corrects the roving tension.

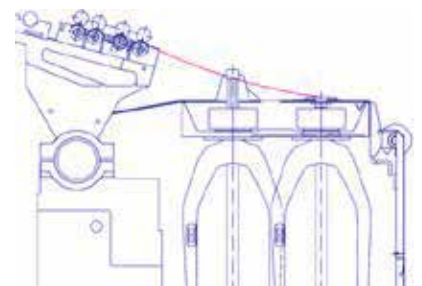
- Constant roving tension
- Length of roving in each bobbin between doffs is uniform (Less roving waste in ring frame)
- Equal exhaust of sliver in cans (Less sliver waste)
- Roving stretch 0.3 to 0.5 % (Better fabric appearance)



Tight tension



Set tension



Loose tension

Power Saving Suction System

The suction motor can be run in two modes:

- Continuous running mode
- Power saving mode

This helps the user to run suction motor continuously only when there is a requirement, i.e. while running carded material or any coarse count process the fly generation will be more where as while running combed finer counts or synthetic materials, there will be lesser fibre generations. In such cases we can run power saving mode by fixing regular interval timings for ON/OFF of the suction motor.



Saving of approx. 4 to 5%



Semi Automatic Doffing System - Bobbin Tilting Mechanism

The machine is equipped with a simple individual bobbin tilting mechanism. When the rail moves down after doffing, a lifting mechanism makes individual bobbins to tilt forward. This tilting enables operator to take out the full bobbins easily.



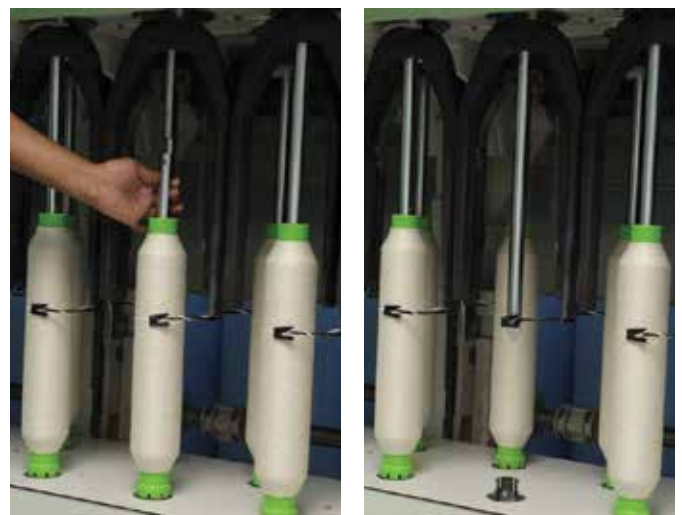
Simple mechanism for easy doffing and provision of empty bobbin storage leads to lesser downtime during manual doffing

Detachable Flyer

To remove individual bobbins, either for sample testing or due to bobbin breakage

- The flyer center spindle can be removed individually
- After removing the bobbin the spindle can be refitted

Avoids fluff liberation, damage to bobbin or yarn faults





Autodoffer

- Doffing time ≤ 2.5 minutes (including bobbin preparation time)
- Restarting breaks $\leq 2\%$
- Savings in labour
- Enhanced yarn quality due to elimination of manual handling of bobbins.
- Top bunching of roving
- Automatic roving cutting for all materials
- No movement of heavy parts & Wear out
- Simple & compact doffing system with provision for RTS

LF4280/SX

Doffing Sequence

Step 1: Full bobbin reserve bunching

Reserve bunching prepared on the top of the full bobbins to overcome unwinding of roving while transporting bobbins especially through RTS



Step 2: Moving of rail and doffer beam to PICK position

Bobbin rail moving outward to PICK position simultaneously, doffer beam moving downward to the PICK position



Step 3: Picking-up of full bobbins

After full bobbins are picked up by the bobbin holders, doffer beam moves upward with full bobbins to the off-set position



Step 4: Inter-changing of bobbins

By off-setting the position of doffer conveyor by 112 mm, the full bobbins are moved away from their respective spindles and empty bobbins are positioned above the spindles.





Step 5: Placement of empty bobbins

Downward movement of doffer beam to PLACE the empty bobbin into the spindle.



Step 6: Parking of doffer beam

- Doffer beam moving upward to parking position
- Simultaneously bobbin rail moving inward to running position



Step 7: Upward movement of bobbin rail to velcro position & restarting



Roving Transportation System (RTS)

- Automatic movement of speed frame bobbins to ring frame through overhead rails enabling full and empty bobbin transfer without human interference
- Any speed frame bobbin can be transferred to any ring frame by a push of the button or trains can be assigned to specific ring frame
- The speed frame bobbin layers are removed automatically
- Manual handling of bobbins are eliminated
- Reduction in man power

Saves man power up to 50%”





Stripper Arrangement

- The remnant in bobbin from ring frame will be cleaned automatically
- Bobbins are checked for the presence of remnant roving using sensor
- Stripping is done for the bobbins with remnant roving
- Velcro is cleaned in all bobbins



Effective Cleaning

Exchanger Arrangement

- Accuracy in positioning of bobbin
- Compact design
- Dual exchanger option is also available for longer machines



Spin Connect

Digital Automation our Passion



Speed Frame LF4280 Series can be integrated with Spinconnect, a web based central monitoring and control application. The HMI details are transferred through Wi-Fi / LAN Connection

- Editing of process parameters from a central location for better process control and parameter changes across machines.
- Remote viewing of Machine PLC status from any location for trouble shooting and for software upgradation.
- User defined reports and charts for analysing the Speed Frame performance can be generated for further improvement.
- Predefined daily, weekly, monthly reports can be sent through mail.



LF4280

Technical Data	
Material	: Cotton, Man-made Fibres and Blends
Fibre length (mm)	: Short staple up to 60
No. of spindles	: 120, 140, 160, 180, 200, 220, 240, 260, 280
Cage	: Short / Medium / Long
Drafting	: 3/3 and 4/4 PK1500 (spring loaded)
Creel	: 5 / 6 / 8 row
Spindle Gauge (mm)	: 224
Packing size (mm)	: 400 X 152
Flyer speed (mech)	: 1,500 rpm (max)
Roving count range (ne)	: 0.5 – 3.0
Break draft	: 1.08 – 1.54
Total draft	: 3 – 40
Max. delivery rate (mpm)	: 50
Compressed air requirement	: 0.07 Nm ³ /doff @ 6 bar (280 spindles doffer)
Air exhaust from suction system	: 1.25m ³ /s



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Leadership through Excellence

