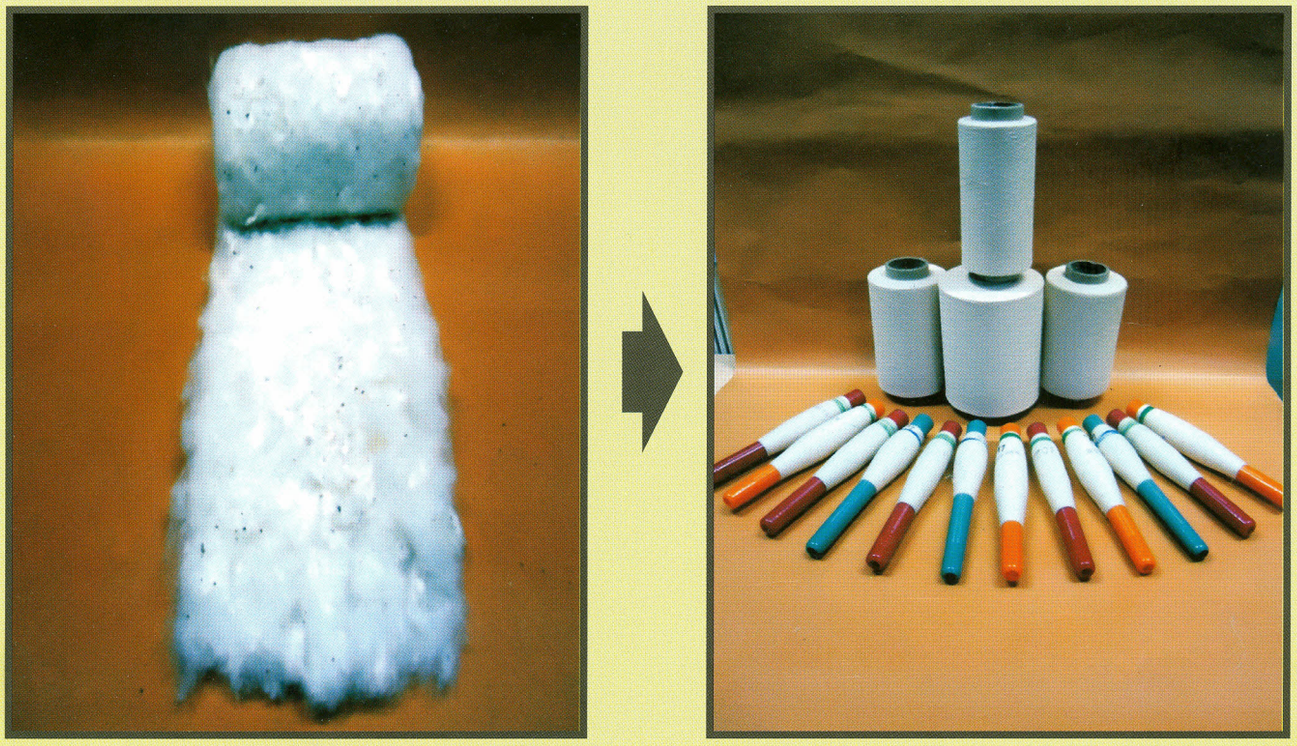
CIRCOT Leaflet No. 81

COTTON PROCESSING TECHNOLOGY

DEVELOPED BY CIRCOT



Zonal Technology Management and Business Planning and Development Unit (ZTM-BPD Unit)
Central institute for Research on Cotton Technology (CIRCOT),
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Introduction

Spinability of cotton is the most important fibre parameter related to textiles. CIRCOT has developed a Miniature Spinning System to spin yarn at laboratory level using Single Plant samples, Research samples, Projects and Trial samples etc. Agricultural/Textile Research Centre, Universities and Colleges, Traders and farmers need miniature spinning machinery. They can prepare the yarn for testing and processing of cotton using the system. It consists of chain of machines, i.e., CIRCOT Lab Model Ginning machine, Lap Making Machine (village level), Miniature Carding Machine, Miniature Draw frame, Miniature Sliver to Yarn Spinner, Miniature Rotor (OE) Machine and Miniature Computerized Ring frame.

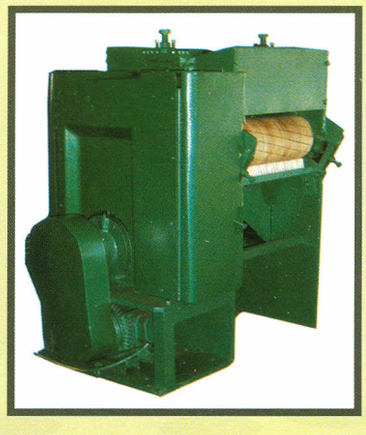
The raw cotton (kapas) is processed for ginning, cleaning & opening of cotton lap to convert it into a sliver form. Further, the sliver as well as the roving are converted into yarn. The sequence of machine developed by CIRCOT is suitable for small scale industries.

1 CIRCOT Lab Ginning Model (Hipro-Gin)

Salient Technical Features

- It requires single phase power supply
- It is a Double roller Ginning system having roller diameter of 250 mm and length of 12 inch
- The Ginning roller speed is about 100 rpm
- It is easy to operate
- It can be operated by farmers also.

Description



The machine developed by CIRCOT is useful to breeders, farmers, cotton growers to gin required samples to process in the village level and small cotton processing unit. A chrome leather roller, fixed knife, moving knife and seed grid are the main components that accomplish separation of fibres from the seed. Power requirement is 2.23 kw (single phase). Repeated laboratory tests have shown that the pristine quality of the fibre is preserved and

no cut seeds are found in the ginned lint. The machine is provided with safety guards for operator's safety.

Capacity : 50 kg seed cotton/h

Cost : Rs.55,000 /-

2 CIRCOT Lap Preparation Machine

Salient Technical Features

- To clean and open the cotton fibre.
- To extract trash impurities
- Breakage of fibre is minimal
- Machine is designed ergonomically and provided with safety devices.

Description

Traditionally fibres are opened by 'pinjari' by using catgut and laps are made manually. But this process is laborious, time consuming and accuracy is not maintained as per the requirement. CIRCOT lap preparation machine consists of moving apron, flutted feed roller, mote knife, liker-in cylinder and lapping cylinder. The prime drive is operated by a one hp single phase electric motor, and the total system is monitored by PLC system. Required quantity (60-100 g) of fibres are placed on the moving apron end and gradually passed through the flutted roller and licker-in, where proper opening and cleaning of fibres occurred and fibres are transferred to another pair of cylinder for formation of lap. The laps are then fed to the carding machine and ring frame for making the yarn. It is used to reduce drudgery of operation. It helps in producing more number of samples with less labour. Cotton sample quality analysis through micro spinning will become easier and economical.

CIRCOT Lap Preparation Machine

Output of Cotton lap

Capacity (Lap weight) : 60-200 g

Output : 5 laps/h

Cost : Rs.2.5 lakh

3 CIRCOT Mini Card (Village Level)

Salient Technical Features

- Easy to operate and maintain at farmers level
- It extracts trash and impurities and converts it into sliver
- The machine is suitable for processing short and medium fibres.

Description

Individualization and cleaning of fibres are achieved by feeding cotton uniformly to the cylinder and combing it with wire points. Further, less neppy and uniform web is converted into sliver through calendar rollers and trumpet. The machine is suitable for making sliver as well as to collect the clean web of cotton for further use. One person (semi-skilled) is required to run this machine.

CIRCOT Mini Card (Village Level) Sliver Making Machine

The produced sliver may be processed to make yarn on Amber or other charkhas. Independency of yarn making at cotton production site i.e., fibre to fabric can be achieved. Additional income avenue for the farmers by production of sliver, web and yarn. The clean web can be used for surgical cotton and equivalent use.

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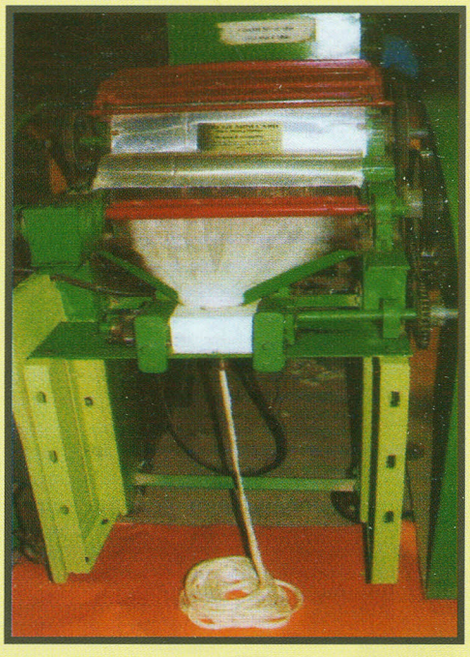


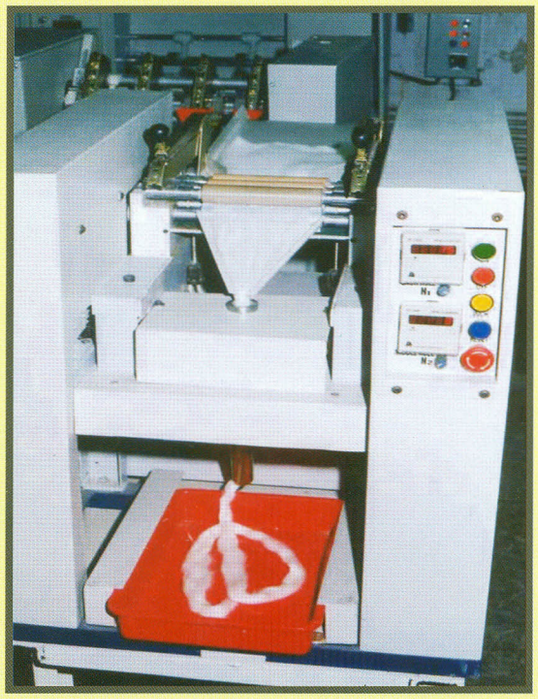
Output of Cotton Sliver

4 CIRCOT Miniature Spinning Machine

CIRCOT Miniature Spinning System has been developed for assessment of spinning quality of small cotton fibre samples and for the preparation of fibre sliver and yarn samples.

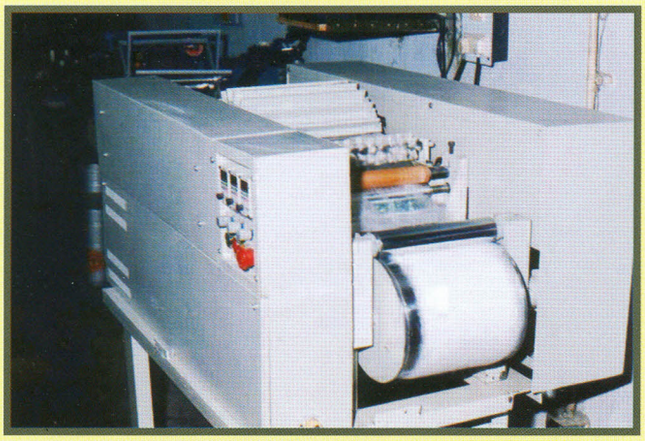
Description

CIRCOT spinning systems use inverter drive systems for easy setting of process parameters. All rotating parts are supported with bearings for smooth operation. Special mechanisms are used to control fibre movement for speedy production of quality yarns. The System consists of four table model microprocessor controlled machines. Pneumatic suction systems have been incorporated in the ring frame, rotor spinner and carding machine and in licker-in zone for collection of broken ends. Tongue and groove type chrome plated calendar rollers with provision for changing the trumpet bore size have been used in the draw frame. Fibre samples and their blends weighing as low as 40 g can be processed easily to produce sufficient quantity of yarn for quality evaluation. It is highly suitable for optimising different spinning as well as yarn parameters in bulk spinning process. Eminently suitable for trade, textile mills, research laboratory, educational institutions, training centres and agricultural research stations for assessing spinning quality and potential of small fibre samples. This system is an import substitution. It saves valuable foreign exchange, yet provides an ultra-modern system for quality evaluation in terms of its spinning potential.

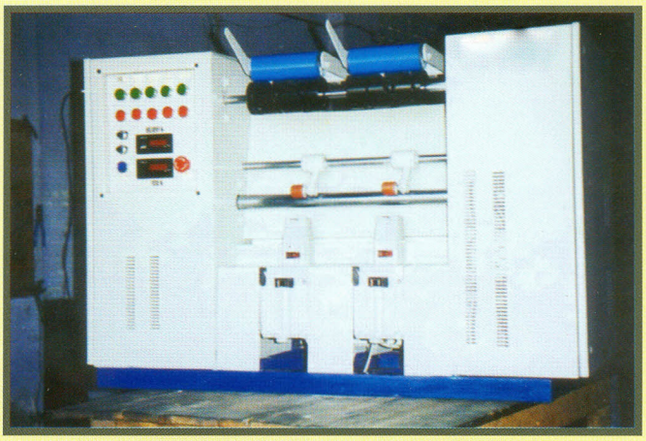


CIRCOT Miniature Draw Frame Machine

CIRCOT Sliver to Yarn Spinner Machine



CIRCOT Miniature Carding Machine



CIRCOT Rotor Spinning Machine

Salient Technical Features

Name	Function	Production/Capacity
CIRCOT Miniature Carding Machine	1. To extract trash impurities from fibre 2. To convert fibre into lap form	4 laps/h. Each lap 50 g
CIRCOT Miniature Draw Frame	1. To convert Carded lap or Sliver into drawing sliver 2. To make the parallelise fibres and uniform sliver before spinning	16 metre/minute.
CIRCOT Miniature sliver to Yarn Spinner (Ring Frame-Lab Model)	1. To convert direct sliver through creel feeding into yarn	20 to 60 Ne
CIRCOT Miniature Rotor Spinning Machine	1. To convert sliver into yarn	6 to 30 Ne

Cost: Licensee: M/s Trytex Machine works Ltd., Coimbatore.

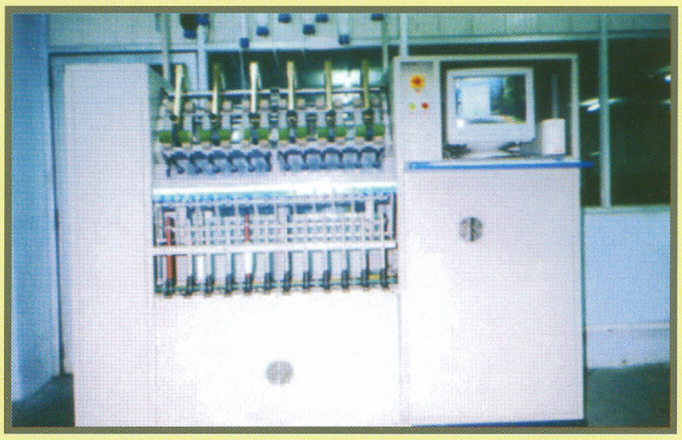
5 CIRCOT Computerised Ring Frame

Salient Technical Features

- To convert roving into yarn
- To feed the recipe and save the programme

Description

The machine consists of roving bobbin creel, drafting unit and yarn twisting and winding unit with waste /dust suction unit. All drives and mechanisms are controlled by programmable logic controller (PLC) through computer accuracy of parameter setting. The machine can be easily operated by the younger generation.



CIRCOT Computerised Ring Frame

Capacity : 10-160 Ne

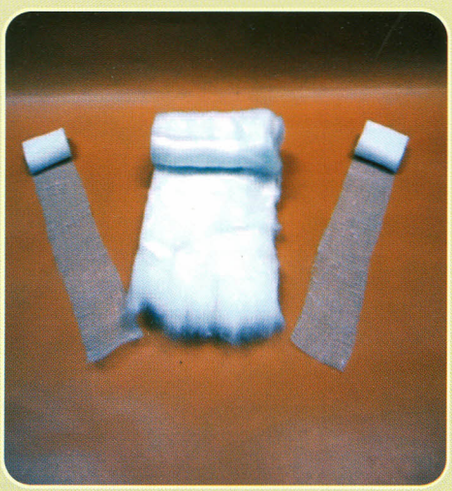
Cost (Licensee) : M/s Trytex Machine works Ltd., Coimbatore.

Products of Cotton Processing Technology developed by CIRCOT

Cotton Fabric

Cotton Sliver

Clean Cotton Fibre



Absorbent Cotton

FOR FURTHER DETAILS CONTACT

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