

CIRCOT Leaflet No. 30

VARIABLE SPEED DOUBLE ROLLER GIN



Central Institute for Research on Cotton Technology
(Indian Council of Agricultural Research)
Adenwala Road, Matunga,
Mumbai 400 019

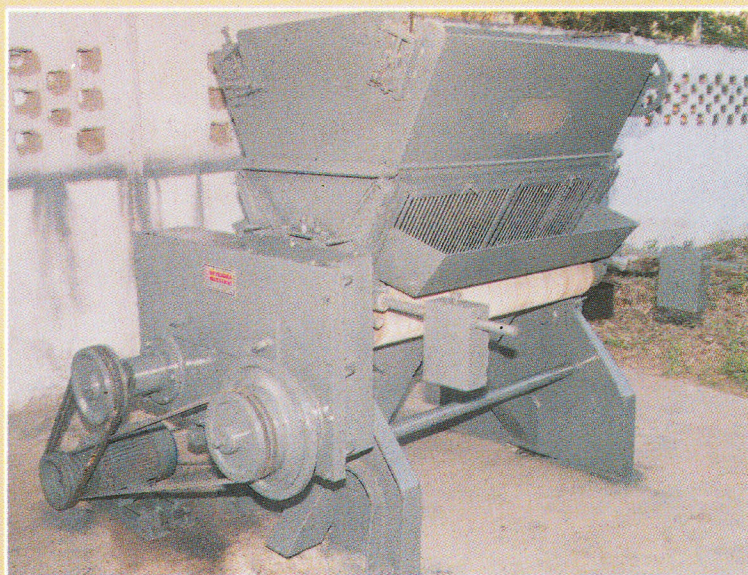
Introduction

Double Roller gins are being extensively used in India to gin cotton. The amount of lint produced per hour per gin can be termed as Lint Out Turn (LOT) and at present varies between 30 to 45kg for normal length of roller depending on the cotton. Apart from roller length, the two most important machine parameters that influence LOT are the speed of the roller and oscillation frequency of the beater. Almost all commercial Double roller Gins in industry employ a fixed roller speed of 90/100 rpm while the beater itself oscillates with a frequency of 1000 rpm, thereby generally maintaining the speed ratio as 1 : 10.

It is well known that the operational efficiency of gin is dependent on the adjustment of speeds based on the staple length with longer cottons requiring relatively higher speeds for rollers. The existing arrangement in gins does not permit alteration in the speed ratio as any increase in roller speed correspondingly affects the frequency of oscillation of the beater affecting both the quality and quantity of lint delivered during ginning.

Variable Speed Double Roller Gin

To overcome this problem, CIRCOT has come up with a novel solution in the form of a **Variable Speed Double Roller Gin** (V.S. Gin) that leaves ample room for adjusting the roller and beater motions to the desired speed ratio appropriate to the staple length of cotton under process. This single improvement has brought in remarkable increase in productivity of the gin to the extent of 60 to 80% without affecting the quality of lint. The production of lint per inch of roller in V.S. Gin is



Commercial Model of Extra-Long VS Gin

between 1.5 to 2kg/h compared to the existing rate of less than 1kg/h.

The gearbox of the DR Gin that controls the speeds of both the beater and rollers is modified and driven with the aid of independent mechanisms. In order to obtain higher lint out-turn for longer staple cottons, it is desirable to operate at higher roller speeds of up to 150-160 rpm and for medium staple cotton a roller speed of 125 rpm can be used, keeping the beater frequency steady at 1000 rpm in both the cases. The short staple cottons are best processed with roller speed between 100 to 125 rpm, keeping the beater frequency of 750 rpm. For very short staple and coarse cottons like RG-8 which are normally difficult to gin, beater frequency of 750 cycle per minute coupled with roller speed of 100 rpm is found most suitable to get higher productivity. It is hoped that, V.S. Gin will fulfill the long felt need of ginning factory owners, to improve the performance of present day gins.

CIRCOT has transferred this gin-specific technology to M/S U. D. Patel and Company, Mumbai for commercial exploitation. The company has so far successfully installed nearly 100 such units during the season in number of factories in Gujarat, Rajasthan and M.P. and is ready to execute several orders in near future. The response from ginnerers has been quite encouraging.

High lights of V.S. Gin

- Choice of different speeds for roller and beater
- Lint out turn varies from 55 kg/h to 72 kg/h
- Fibre parameters are preserved
- No additional demand on power



For further information contact :

The Director,
Central Institute for Research on Cotton Technology
(Indian Council of Agricultural Research)
Adenwala Road, Matunga, Mumbai 400 019

Telephone : 2412 7273, 2412 7276, 2415 7238, 2415 7239,
2418 4274, 2418 4275

Fax : 022-2413 0835

E-mail : circot@vsnl.com or circot@bom.nic.in