PRE-PROCESS

AFTER PROCESS

LABORATORY MODEL GIN WITHOUT MOTOR

ROTOVAC®

TAWDE ENGINEERING WORKS, established in 1964, is an ISO 9001:2015 certified company which manufactures vacuum & pressure pumps, allied equipment and components needed for textile, petroleum, chemical, food and other industries. We are pleased to introduce ourselves as one of the pioneers in manufacturing of Rotary Vane Vacuum & Pressure Pumps in India. For nearly 6 decades, we have had consistent quality and efficiency delivered to our customers for a finer manufacturing experience with **ROTOVAC®** as our brand name.

We have our manufacturing facility and sales office centrally located in Mumbai city, which is convenient for all our customers and to us as we have continuous power supply, good infrastructure, transportation facility, and ease of procuring raw material, tools and equipment. We manufacture Dry type and Oil lubricated **ROTOVAC®** Rotary Vanes Vacuum & Pressure pumps ranging from 20 LPM to 5000 LPM capacity, Laboratory Gin Machine, Textile lab Testing machines, Cold-press oil Machines & home oil extruders. **ROTOVAC®** Rotary Vane Vacuum and Pressure pumps are a reliable source for supplies of compressed air and vacuum for our customers who are from various industries like Nuclear power plants, Environment Protection Agency (EPA) for air sampling and testing, packaging, blister packaging, printing, forming, hospital equipment's, laboratory equipment's, pharmaceutical & chemical industries, sugar & fertilizer industries, petroleum industries, food industries, paper manufacturing and many more. We also supply to consultants and OEM's for research and analysis projects.

We have skilled and experienced manpower for the manufacturing of **ROTOVAC®** Rotary Vane Vacuum & Pressure pumps. We guarantee raw material of graded quality and genuine spare parts. After manufacturing, each **ROTOVAC®** Rotary Vane Vacuum & Pressure pump is individually tested for 1 to 24 hours depending upon the model and customers requirement. Hence Tawde Engineering Works and our **ROTOVAC®** pumps are serving our customers for nearly 6 decades with consistent performance.

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LABORATORY GIN

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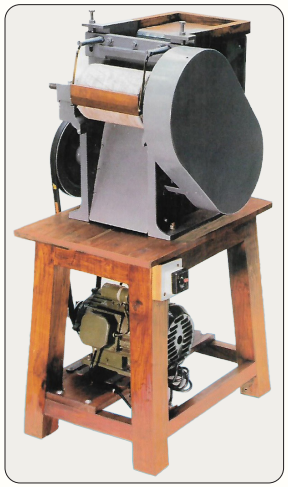
Introduction

One of the Chief criteria of a cotton breeder in selecting a new strain for further propagation is its ginning percentage. He has to ascertain this value for hundreds of varieties of small samples of seed cotton every year as accurately as possible in a short time. Next the cotton grower could assess the monetary return from the cotton raised by him by knowing its ginning percentage, besides its yield per acre or hectare. Further more in cotton markets where transactions are done, on the seed cotton (Kapas), the lint content of the kapas is estimated by the broker by the usual hand and eye judgement, which is open to large personal errors. In all these cases the need for a small gin which could effectively gin a small sample of Kapas rapidly is emphasised. In order to meet these demands a small gin of the Macarthy type has been designed at the Cotton Technological Research Laboratory in which several improvements have been incorporated. This gin is simple and efficient and robust in construction and is easily worked by hand or electricity. It has already attracted the attention of the three categories of persons mentioned above. A large number of these gins have been supplied to cotton experimental stations, seed- cotton marketing committees, ginning factories and cotton merchants.



Description of the Gin

A diagrammatic sketch of the gin is shown in PLATE 1 & PLATE 2 The former being a sectional view and the latter indicating the driving mechanisum. The notations are used as follows:

R	- Roller
K1	- Fixed knife (sharp edge)
B	- Stripping bar
J	- Adjustment base for Grid
X	- Seed collecting tray
L	- Ball bearing
N	- Chain
I	- Idle pulley
W1	- Fly wheel with handle
W2	- Belt pulley
G1 & G2	- Chain grears
F	- Feeder board
F1	- Feeder platform wooden
F2	- Feeder connector
F3	- Feeder actuater rod
K2	- Moving knife (blunt edge)
G	- Grid (3 sizes)
H	- Chute (seed convayer)
C	- Crank shaft
E	- Eccentric

This gin is essentially of the Macarthy type. It consists of a cylindrical leather roller R of 7″ length. Against this roller seed-cotton is fed by means of the feeder board F. A bunch of fibres caught by the grooved surface of the leather roller is held between the roller and the fixed knife K1. This knife presses against the roller over its entire length. As the roller revolves the fibres are pulled forward while the seed which is prevented from moving with the fibres by the fixed knife is beaten upwards by the moving knife K2. This K2 has a blunt edge and is as long as the fixed knife K1 and moves parallel to its surface very close to it. Thus the lint is pulled out from the seed and is carried forward by the roller from which it is stripped by the stripping bar B. The delinted seed drops down through the grid G. Different sizes of the grid slots are used for ginning different sizes of seeds. Three such grids possessing different slot sizes are provided. Besides the distance between the front edge of the grid and the fixed knife can be varied by means of the adjustment J. The seeds dropping are conveyed through the chute H to the box X.

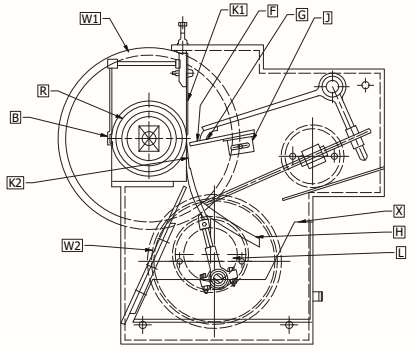


PLATE 1 Sectional view of the Laboratory Gin

The moving knife is actuated by the crank shaft C which is mounted on ball bearings L. These bearings are housed in the eccentric E. This provides easy adjustment of the overlap i.e. the maximum height of the moving knife edge over that of the fixed knife. It is to be adjusted according to the staple length of the cotton to be ginned. The feeder board F also operates by the reciprocating action of the moving knife. The roller and the crank shaft are connected to each other by means of the chain N and the gears G1 and G2 through the idle pulley. The gin could be worked either by an electric motor or by hand. For the former case the motor is connected to the crank shaft by means of the V-groove pulley W2 as will be seen from Plate 1 and for the latter this V- groove pulley is pushed nearer the gin frame and a large fly wheel with handle W1 is attached to the roller shaft, as shown in Plate 2. W2 helps smooth working of the gin when operated by hand.

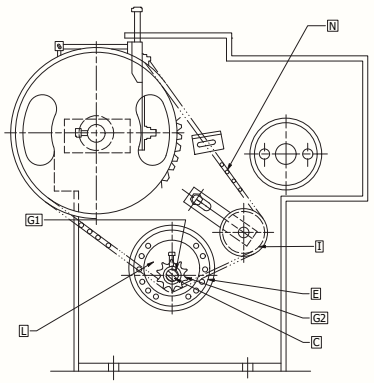


PLATE 2 View showing the driving mechanism of the Laboratory Gin

Summary

The ginning percentage remains practically the same whether the Laboratory Gin is worked by hand or by an electric motor. But there is a slight, yet significant, reduction in the ginning percentage when ginned in the commercial gin. The reason for this reduction may be ascribed to the following. In the commercial gin, the settings are made for average seed size and as a result a few small seeds which are completely unginned and a few others partically ginned are mixed with the completely ginned seeds. If any effort is made to eliminate the output is adversely effected. On the other hand, in the Laboratory Gin, there is better control of the ginning operations and very few seeds escape unginned. This may account for the small reduction in the ginning percentage obtained with the commercial gin. The Laboratory Gin works efficiently when small samples are ginned. It takes 2 to 3 minutes for ginning a small sample of a few ounces or grams of kapas. The cotton breeder, who has to compare the produce of several hundreds of plants in regard their ginning percentages and select from among this larger number the most suitable material for breeding purposes not only obtains a fairly accurate estimate of the ginning percentage of the new strains but saves considerable time and labour by employing the Laboratory Gin. Further, the cotton market committee or co-operative societies, which transact business in kapas can fix appropriate prices for the several lots tendered by different farmers on the basis of the lint percentage and thus put the transactions on a scientific basis. In the same manner the gin owner and the cotton merchant can profit by using this gin instead of employing the subjective methods on which the estimate of the ginning percentge is based at present. Further, the values of the ginning percentage and the lint quality obtained with the Laboratory Gin compare favourably with those obtained by the gin of the commercial size. Consequently, it could be employed safely both by the cotton breeder and the cotton merchant.