



ROHINI

COLLEGE OF ENGINEERING AND TECHNOLOGY

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DEPARTMENT OF AGRICULTURAL ENGINEERING

AI3601 POST- HARVEST TECHNOLOGY

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UNIT III: CLEANING AND GRADING

CO3: To recognize the working principle of grain cleaning and grading devices and able to select suitable equipment for cereal grains, oilseeds and pulses.

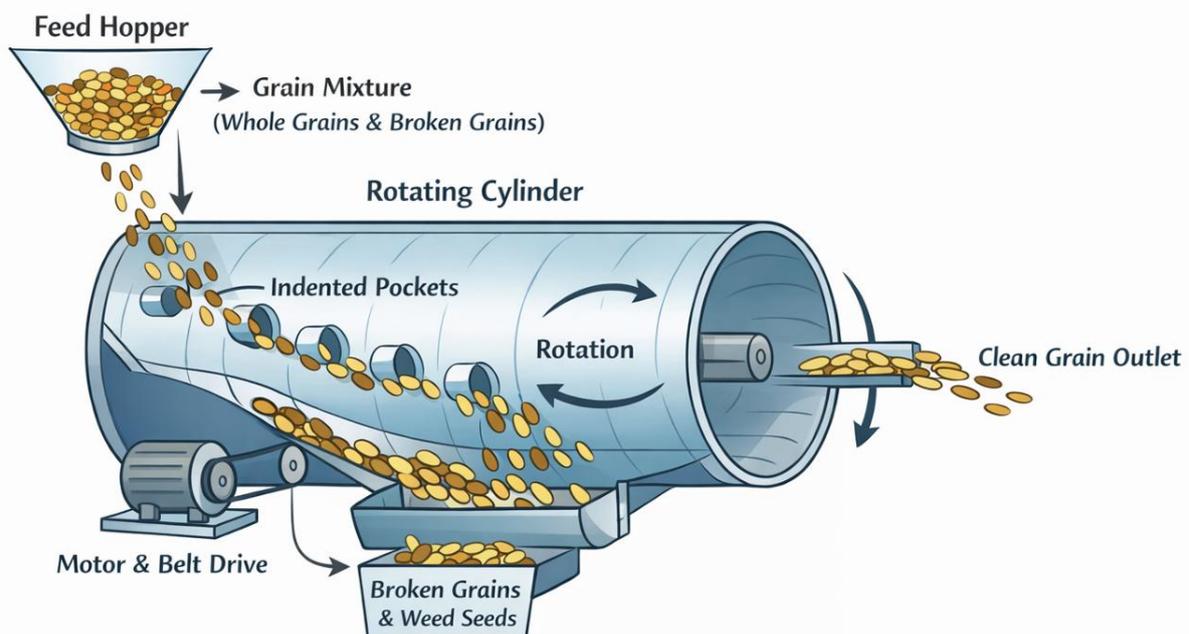
Cylinder Separator

A cylinder separator is a machine used to sort seeds or grains based on differences in their length. It works by using a rotating, indented drum that picks up and lifts shorter grains while allowing longer ones to roll out separately.

Characteristics:

- Consists of a rotating cylindrical drum with perforated walls or sieves.
- Separation depends on grain size and weight.
- Can be powered manually, electrically, or using small motors.
- Simple construction with easy maintenance.
- Capable of handling moderate capacities of grains continuously.

Working principle:



- ❖ Grains along with impurities are fed into the rotating cylindrical drum.
- ❖ The cylinder has perforations or sieves of specific sizes that allow clean grains to pass through.
- ❖ As the cylinder rotates, smaller particles like dust and broken grains fall through the holes.
- ❖ Larger impurities, like stones or husks, are carried to the end of the cylinder and separated.
- ❖ Cleaned grains are collected at the outlet, ready for storage or further processing.

Types of Cylinder separators:

- i) Double cylinder separator: Two cylinders improve separation efficiency for medium-scale cleaning.
- ii) Triple cylinder separator: Three cylinders for high-precision cleaning and large quantities.
- iii) Vibrating cylinder separator: Cylinder with vibration enhances separation and reduces clogging.
- iv) Air-assisted cylinder separator: Uses air flow with rotation to remove lighter impurities efficiently.

Advantages of Cylinder separator:

- Efficient removal of impurities and unwanted materials.
- Produces grains of uniform size for storage and processing.
- Reduces post-harvest losses and contamination.
- Can be operated continuously, saving time and labor.
- Simple design makes it cost-effective and easy to maintain.

Limitations of Cylinder separator:

- Not effective for very fine dust or sticky grains.
- Limited capacity compared to large industrial cleaners.
- Requires regular cleaning to prevent perforation clogging.
- Less suitable for very large-scale operations.
- May cause slight damage to delicate grains if not properly adjusted.

Applications of Cylinder separator:

- Cleaning cereals like wheat, rice, and maize.
- Removing impurities from pulses and oilseeds.
- Preparing seeds for sowing to ensure good germination.
- Pre-cleaning grains before milling or storage.
- Reducing foreign matter for quality grain production.