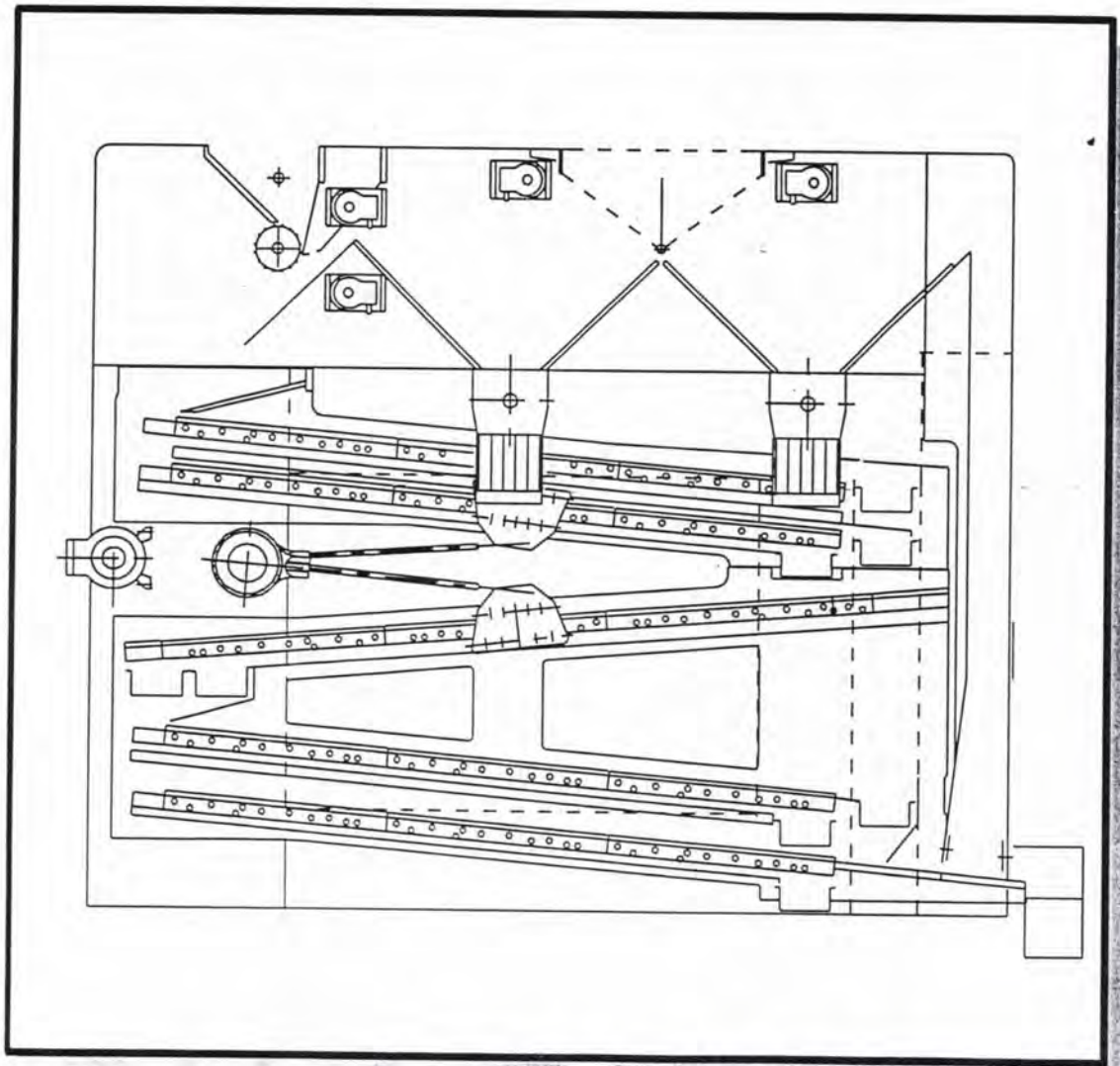


*ASPER* MACH. NO. 216095  
MACHINE NO. 148011

# CIMBRIA MANUFACTURING A/S CLEANER Type 116 MANUAL



# Table of Content

<b>Declaration of Incorporation</b> .....	<b>3</b>
Personal protection .....	4
Explosion Protection .....	5
Foreword .....	6
Type label .....	7
Application of Cimbria cleaners .....	9
Operating Instructions .....	10
Inlet unit with feedroller .....	11
Inlet unit with vibrator .....	13
Pre Suction System .....	15
Fans/cyclofans .....	19
Screen System .....	21
After Suction System .....	24
Mounting and replacing screens .....	28
Fitting outlet trays .....	30
Maintenance .....	32
Maintenance of clamps .....	33
Adjustment for screen shoes .....	35
Grundfos frequency control .....	36
V Belt tensioning on screw conveyors .....	37
Chain tensioning of feed stirrer and feed roller .....	38
How to Assemble Power twist V Belt .....	39
Assembly and maintenance of the Fenner belt gear .....	42
Installation and maintenance of drive chain .....	46
Technical specifications .....	49
Machine general dimensions & specification .....	50
Typical capacities .....	51
Assembly Instructions .....	52
Assembling the machine .....	53
Reception, unpacking and handling .....	53
Space around the machine .....	54
Assembling the base section .....	55
Diagrams .....	57



## Declaration of Incorporation

(Ban on putting into service)

### Machine Directive Annex II. B

Manufacturer: Cimbria Manufacturing A/S

*name of company*

Faartoftvej 22 7700 Thisted Denmark

*address*

tel: 45 96 17 90 00

**hereby declare, that**

Machine component: Cimbria Delta Cleaner      2001

*name of machine*

*year*

Type: 116

no.: 216095

- is intended for incorporation in machines or assembly in conjunction with other machine components for installation in machines covered by the Council Directive of June 22<sup>nd</sup> 1998 (98/37/EF with subsequent amendments)
  - and therefore does not conform to this directive in all respects
  - does conform to the following:
    - A. manufactured in compliance with the following harmonised standards (The Directives art. 5, para. 2):  
DS/EN 292-1, DS/EN 292-2, DS/EN 414, DS/EN 418, DS/EN 294,
    - B manufactured in conformity with the following non-harmonised standards or other technical normative documents:  
prEN 953, prEN1050 DS/Inf 22/37 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.1.
- It is forbidden to put the machine into service until the machinery or system into which it is incorporated has as an integral whole been declared in conformity with all relevant provisions of Machine Directive 98/37/EF and relevant national regulations.

Head of Production

*Title*

Jan B. Nielsen

*Name*

Cimbria Manufacturing A/S. Faartoftvej 22. 7700 Thisted Denmark

*Company*

*Signature*

12-07-01

*Date*



# Personal protection

## Safety precautions for accident prevention



### 1. The machines of Cimbria A/S

- are provided at the manufacturing works with safety devices in accordance with today's standards of engineering, and in compliance with the generally valid regulations for the prevention of accidents, consideration having been given to the application for which the machine was designed.
2. The operator of the machine is expected to observe the regulations stated below with a view to achieving maximum safety of the operators working at the machines.
  3. Belt and chain guards must **always** be installed and closed. Open or removed guards are extremely frequent causes of very serious injuries (bruising and shearing).
  4. Safety limit switches, interlock cylinders, speed monitors, and solenoid valves or locking magnets for the interlock of doors, must always be maintained in good working condition. Safety limit switches must never be bridged or put out of action.
  5. Grates, bars or safety grids are usually permanently fixed to the machines. They can only be removed by means of tools. Machines provided with such devices may only be operated with these safety features fixed.
  6. By satisfactory maintenance, the employer must take appropriate measures to ensure that the machine and its constructions are kept at a safe level for as long as it is in use.
  7. When carrying out overhaul, setup, inspection and maintenance work, always **put the drive motor out of action by completely separating all phases** (electrical conductors). This is done by means of a switch which isolates all the poles and can be locked, and which is installed next to the machine or in the control desk or control panel of the plant.

### The mere removal of the fuses is not enough!

8. If the machine relies on other sources of power for its operation, e.g. pneumatic or hydraulic power, steam or hot water, these supply lines must also be shut off; in addition the internal system of power lines on the machine must be made **pressureless**.
9. Heated or cooled machine parts must be approached with special care, considering the risk of getting burned.
10. If a machine is put out of action by actuating the emergency stop switch, it must not restart when the switch is reset. The machine must not restart before the master switch is turned on again.
11. Special care must be exercised in connection with machines provided with **partial cutout devices**, e.g. machine tools, die casting machine and similar equipment. Strictly observe the instructions supplied with the machine. In operating machinery with partial cutout

devices, always be prepared for the buildup of pressures or vacuums, temperature rises, etc. after certain time intervals.

12. If employees of a plant are unable to read or write, the owner of the plant must explicitly draw their attention to any existing hazards and must give them special instructions.
  13. Cleaning, greasing and oiling of machines or machine sections must **only** be carried out **when the machine is at a standstill**. If, for this purpose, it is necessary to climb onto the machine or if the machine has to be entered, it is absolutely imperative, without exception, to cut off all the poles of the drive motors and to lock the switch with which this is done !.
  14. In the case of machines from which material samples are drawn, care must be taken that this can be done without risk. It often proves possible to draw samples from a pipe or spout downstream of the machine instead of from the machine itself.
  15. Always remove dust, dirt and material deposits. Clean machines and installations increase the dependability and safety and the degree of cleanliness of a plant. This helps prevent dust explosions. Safety respirators **must** be worn in dusty environments.
  16. If a machine is losing oil or grease, it must immediately be removed and the leak must be stopped. Grease and oil on the floor increases the danger of accident considerably for the operators.
  17. Safety devices must always be kept in working order and must never be removed, made ineffective or put out of action.
  18. If Cimbria machines are incorporated in, or combined as, a new machine, all national regulations must be complied with.
  19. Furthermore, we refer to the special instruction concerning accident prevention in our operating manuals.
  20. Cimbria machines and apparatus must be operated exclusively by trained, specialised personnel.
  21. Noise level at the workplace can exceed 85 dB (A); in this case operators shall protect themselves with ear defenders.
  22. At the final putting out of operation of the machine, observe in the interest of the environment and for purposes recycling: Drain off into special containers, such fluids as motor oil and gear oil, brake fluid and cooling liquids, and sent them to processing facilities. Dispose of toxic refuse (e.g. batteries) according to regulations. Separate plastic materials and provide them for recycling. Separate metal parts according to type for scrapping or for the shredder.
- NB:** Remember to inform **clearly** all persons who work in the area before inspection, maintenance or repair!!! Cimbria cannot accept any responsibility if the aforementioned precautions are ignored.



# Explosion Protection



## Measures to be taken against dust fires and dust explosions.

### 1. General rules for tidiness and cleanliness.

- 1.1. A major condition for safety is that areas in which combustible dust is processed are kept as clean as possible.
- 1.2. Avoid the storing of goods either in bags or loose around the machines.
- 1.3. In order to reduce emission of dust into the environment, all transporting units, cyclones and filters are to be kept in good order, i.e. any leaks from pipes and covers are to be avoided as much as possible.
- 1.4. In order to reduce the danger for explosion, everything is to be cleaned from dust most thoroughly.
- 1.5. Dust should not be allowed to collect on motors.

### 2. Routine checks and maintenance.

- 2.1. To prevent belt and V belt slipping drives from running hot due to slipping, these are to be checked regularly, at least once a week.
- 2.2. Speed monitors and similar safety devices are to be routine tested at least once a week.
- 2.3. All magnetic separators, dry destoners and sieves are to be routine tested and cleaned at least once a week.
- 2.4. To avoid shafts and bearings running hot, these are to be routine checked at least once a week and lubricated regularly.

### 3. Electrical installations.

- 3.1. Electrical installations and appliances must be checked and tested regularly. It is to be noted in particular that:
  - portable lamps and lamp fittings without covering or protective glass may not be used, extension cables and electrical heaters are not allowed.
  - faulty installations and appliances must be repaired or replaced immediately.
  - the fastening of loose cables on the floor is not permitted.
  - outside working hours the electrical circuit of the installation must be switched off as extensively as possible from a central point.
  - at least once a year the entire electrical installation is to be checked by an authorised electrician for faulty insulation, according to the rules for power circuits

### 4. Smoking and welding.

#### 4.1. Smoking must not be allowed.

This does not only apply to the personnel of the company, but also to guests, customers, foreign craftsmen, drivers, etc.

#### 4.2. Repairs and erection work that require the use of welders, blow torches, etc. must be done in a separate, specially equipped workshop whenever possible.

#### 4.3. In case welding or the use of an open flame cannot be avoided within the production or store areas, a written consent must be attained from the responsible manager. Such work must not be done before special safety measures are taken, moistened tarpaulins have been spread out to cover the direct vicinity and fire extinguishers have been placed near the working area.

The area and the environment at which the welding work was done, must be kept under supervision for at least 10 hours after work has been finished. The spray of liquid hot metal drops from flame cutting (welding beads) are extremely dangerous since one does not see where they go.

These can travel through narrow slits, openings in walls, etc. to adjacent or lower rooms, covering distances of more than 10 meters. If such hot welding beads land in a layer of dust, there is potential danger for a smoulder fire.

#### 4.4. Under no condition may welding work be done on transport systems that are in operation.

Such work may be carried out only after the systems have been switched off, thoroughly cleaned out and blocked off on both sides for example with mineral wool, so that there is no connection with other transport elements, silos and containers, etc. When working on spouting and conveying pipes, these are to be dismantled and the lower end turned away or blocked, so that no glowing parts can get into conveying lines or silos.

### 5. Electrostatic charges.

- 5.1. In order to make sure of electric conduction, i.e. to prevent an explosion occurring due to spark discharge, **remove any layer of paint** from electrical contact surfaces.



# Foreword

## **Congratulations on your new CIMBRIA cleaner type 116.**

You have chosen a high quality cleaner built by one of Scandinavia's biggest manufacturers of post harvest technology.

The cleaner has been manufactured and tested according to the most modern principles and techniques.

The cleaner is moreover fitted with well tried products from acknowledged manufacturers.

The high quality notwithstanding, we are constantly trying to be at the forefront of development. All machines and principles are tested on our full scale training and experimental plant.



This is your guarantee for an up to date product. We hope that you get maximum returns from your CIMBRIA cleaner by reading thoroughly the following instructions.

You are very welcome to address any questions or comments to us by telephone, (45) 96 17 90 00, telefax, (45) 96 17 90 99, or telex, 66684.  
E mail= [cimbria@cimbria.dk](mailto:cimbria@cimbria.dk).

With our best wishes  
**A/S CIMBRIA**

## Type label

### Type label

CIMBRIA UNIGRAIN A/S			
	DK 7700 Thisted Denmark Telex no 66684		
Type <input type="text"/>	No. <input type="text"/>	Anno <input type="text"/>	
1	2	3	

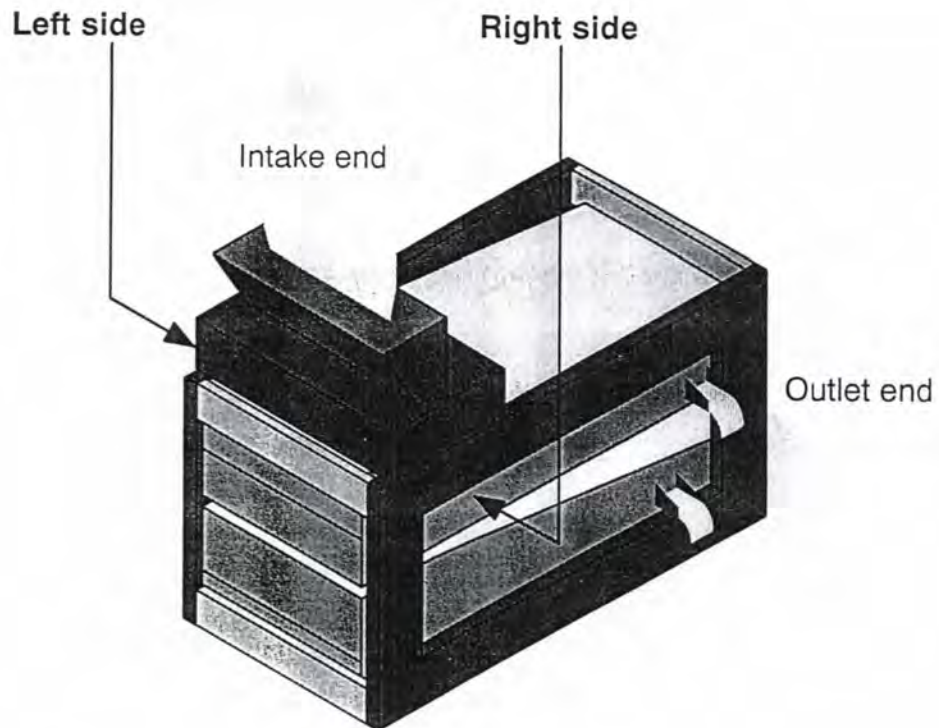
On cleaners are two type labels, one on the front, and one on the rear of the machine. The following information is shown on these labels.

1. Machine type number
2. The machine's serial number
3. The year of manufacture.

Any contact with CIMBRIA concerning the machine, or ordering spare parts, should be accompanied by this data.

## Positioning the machine

Sketches and drawings in this manual are based on a machine with the outlet on the right hand side. For machines with the outlet on the left hand side these sketches and drawings will be mirror images.





## Application of Cimbria cleaners

The Cimbria cleaner type 116 is a combined screen and air cleaner, specially constructed for fine cleaning all types of grain, malting barley, seed grain, and all types of seed, e.g. grass, clover, garden seeds, and pulses.

The machine's distinct flexibility is based in part on the interchangeable screen outlets, which results in easy change to many different cleaning programs.

The fine cleaner has a screen area, which, depending on the cleaning program, can be used as scalping, sorting or sifting screens.

The screens' cleaning effect comes from Cimbria's highly effective pre and after suction system, which extracts lighter impurities, both at the input and the cleaned product outlet.

These impurities are first led to two separate expansion chambers, and thence via screw conveyors to outlets, which are equipped with a multi flap airlock system to prevent back draughts.

The expansion chambers can be connected to a separate ventilator, or central dust extraction system.



---

# Operating Instructions

## **Inlet unit with feedroller.**

### **1. Inlet.**

The inlet takes up the entire width of the machine and should always be completely filled with grain, or at least filled so that the grain will be equally dispersed over the entire width of the machine. This is essential as it influences both the cleaning capacity and efficiency. Adjustment of the distributor plate may be necessary.

### **2. Feed Stirrer.**

The stirrer, fitted in the inlet, keeps the grain free and in constant motion, thereby permitting a continuous feed.

### **3. Feed Roller.**

The feed roller ensures a uniform and even feed and simultaneously reduces the velocity of descent of the grains which is beneficial for the presuction system.

### **4. Frequency Controlled Feed Roller.**

The machine can be equipped with fixed speed from the excentrikshaft, separate frequency controlled motor or Motorvario on the feed roller. This means that this machine can treat all products equal regardless specific weight and capacity.

### **5. Feed Valve.**

The feed valve is hinged, and adjusted to a specific distance from the feed roller depending on the required capacity, and the nature of the product.

The feed valve is spring loaded, to allow larger impurities to pass through, the shutter returning to its proper position.

### **6. Mechanical Regulator for the Feed Valve.**

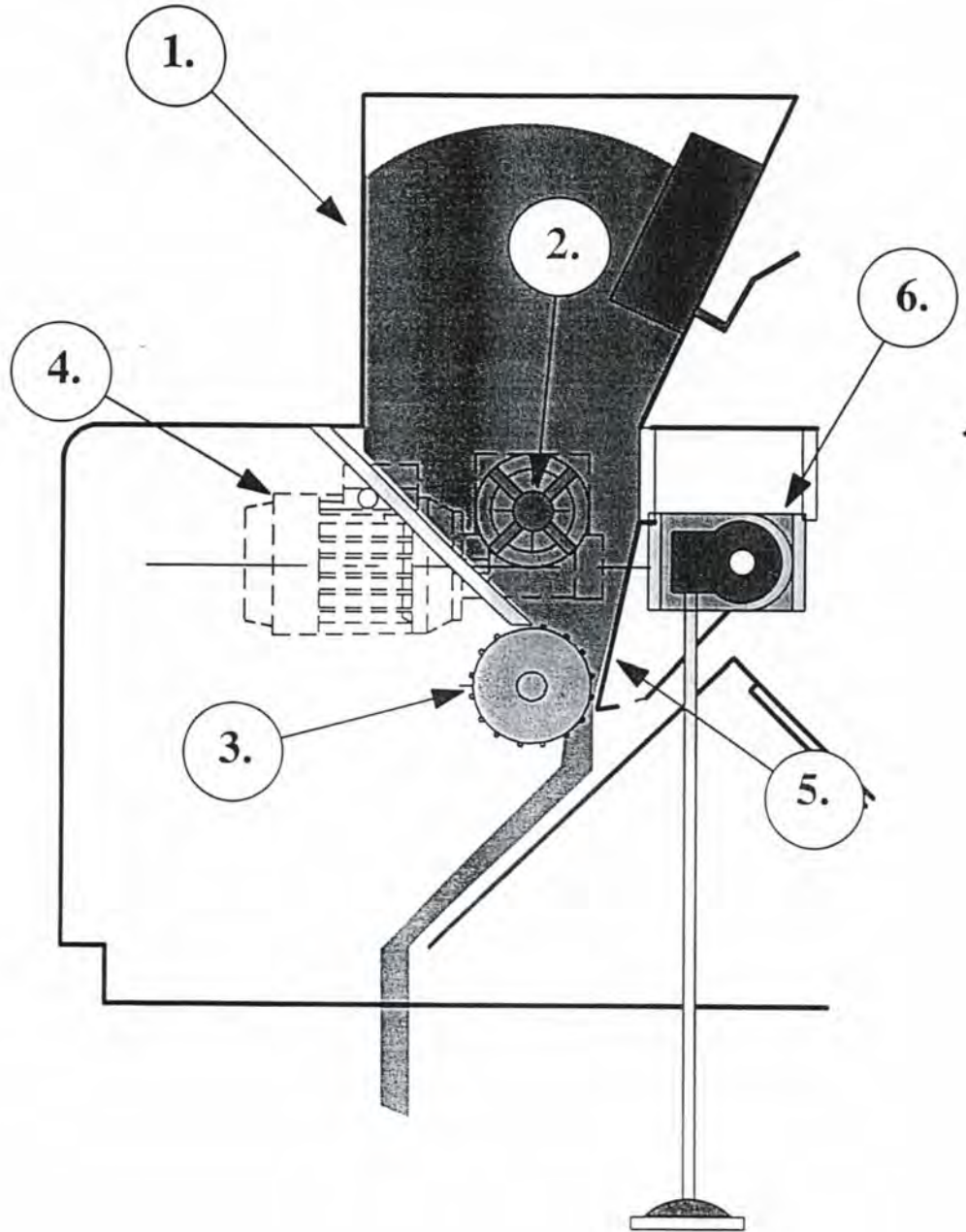
The feed valve is regulated by a handle, which is situated at an easy working height.

(In some cases, the regulator handle is situated at a specific height.)

### **7. Electric regulation of feed roller r.p.m.**

A control panel is mounted on the machine for the purpose of regulating the rotational speed of the feed roller. The panel is fitted with a start and stop switch, and a potentiometer for adjusting the feed roller speed. This makes it possible to control the amount of material fed to the machine, and achieve optimal capacity.

If the control panel is placed near the discharges for waste and cleaned product, it will be quickly seen what effect an increase in capacity has on





---

## **Inlet unit with vibrator.**

### **8. Inlet.**

The inlet takes up the entire width of the machine and should always be completely filled with grain, or at least filled so that the grain will be equally dispersed over the entire width of the machine. This is essential as it influences both the cleaning capacity and efficiency. Adjustment of the distributor plate may be necessary.

### **9. Adjustable shutter**

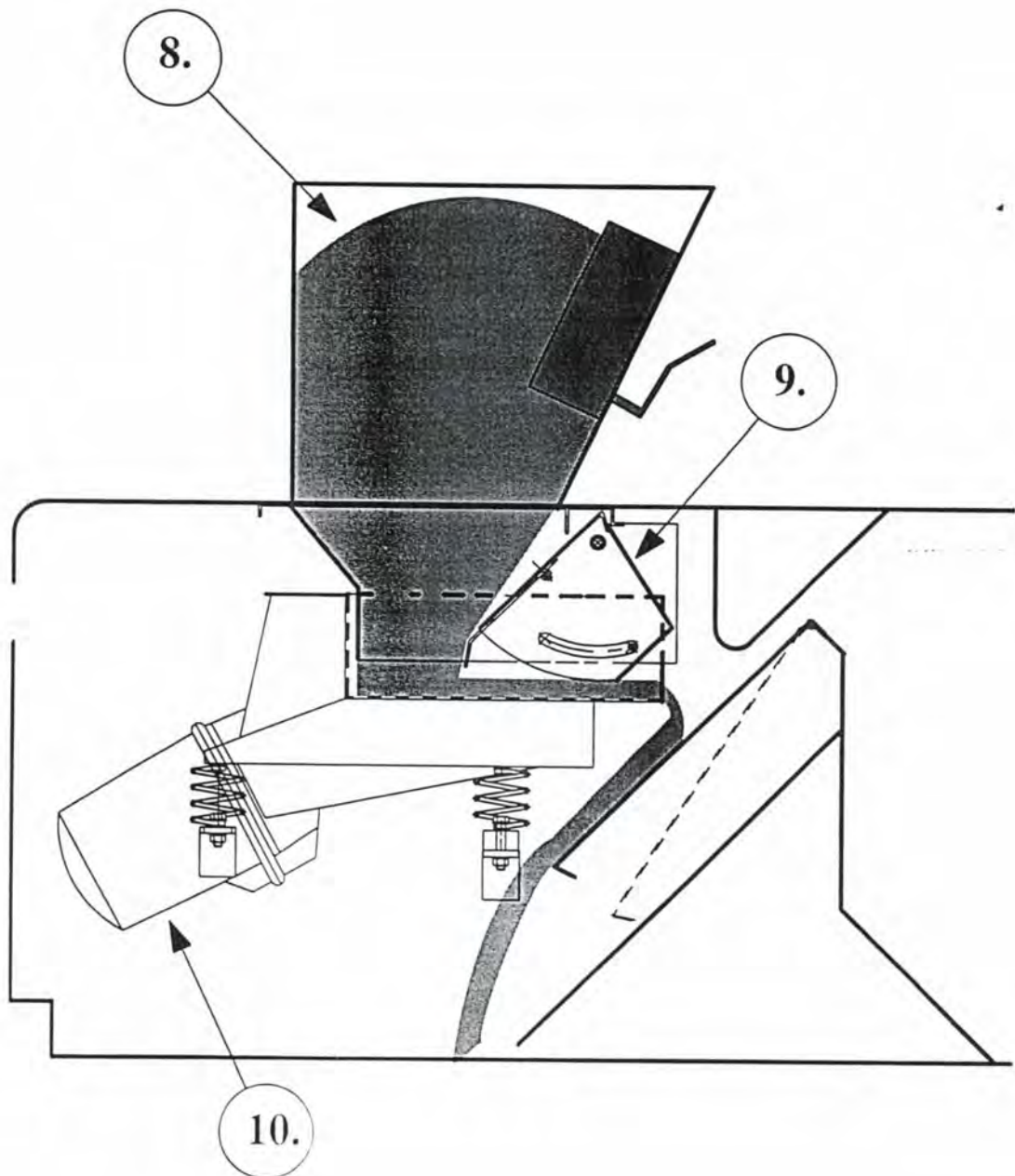
The shutter is adjustable from 5 to 120 mm making it applicable to all forms of product. Adjustment is possible backwards and forwards, and up and down by means of the adjustable plate.

### **10. Vibrator**

Electromagnetic vibrator with vibrator tray

### **11. Electrical control of the vibrator**

The vibrator is controlled from the supplied control panel



## **Pre Suction System.**

### **12. Pre suction Channel.**

The pre suction system with its suction opening placed under the feed roller, is very efficient with a particularly good separation ability, in that the product is affected by the airflow at a time when the grain fall is limited. The aspiration opening on the pre suction channel is adjustable, thereby achieving a variable air velocity.

### **13. Regulation of the Air speed in Pre suction Channel.**

Adjustment of the suction opening is achieved with a handle.  
Scale number 0 = minimum suction effect

**Note** If the suction effect is too great it will suck heavy grains up into the screw conveyor (16). Regulation is made by finger flaps or in the waste tubes. (In some cases by handles placed at a given height)

### **14. False Air Valve.**

A false air valve is situated on the top of the expansion chamber and controls the air quantity in the pre suction system. In the closed position a maximum air quantity can be obtained in the pre suction system. In order to achieve the best results there must be a balance between item 11 and item 13.

For instance it is possible to operate with a small opening in the pre suction channel (11) obtaining maximum suction effect which can be used for peas, maize etc. In the opposite example, in which the suction opening (11) is wide and the false air valve completely open (scale number 0), the suction effect is almost neutralized.

### **15. Regulating the false air valve.**

The false air flap is adjusted by means of a handle. Scale number 0 = minimum suction.

( N.B. In some circumstances equipped with a handle at a given height.)



---

## 16. Expansion Chamber.

The separation of the heavy products from the dust laden air from pre suction in the expansion chamber is undertaken in such a way that the heavy products settle as a result of air velocity passing into the expansion chamber being so low that only dust will continue with the air to the fan or filter.

## 17. Screw Conveyor.

The screw conveyor is located at the bottom of the expansion chamber and conveys the separated products to the sacking off spout or similar.

## 18. Fingerflaps.

The fingerflaps are mounted in the outlet of the screw conveyor so that false air is not drawn into the pre suction system, thereby reducing efficiency. The waste product from pre suction can be inspected at the outlet of the fingerflaps.

**Warning** Never attempt to put fingers behind the fingerflaps !!.

It is important to check the fingerflaps regularly, these should move freely. Adjustment is made by loosening the nuts on each side until free movement is obtained.

## 19. Air Valve for Airspeed in Pre suction Channel.

The airspeed plate, positioned under the feed roller, is for adjusting air velocity in the pre suction channel, and thereby also extraction of lighter products such as dust, chaff and husks.

On adjustment, there will be interplay with the back draught valve to ensure that the amount of air is always in accordance with the airspeed plate's attitude, where zero on the scale corresponds to minimum airspeed in the the pre suction channel.





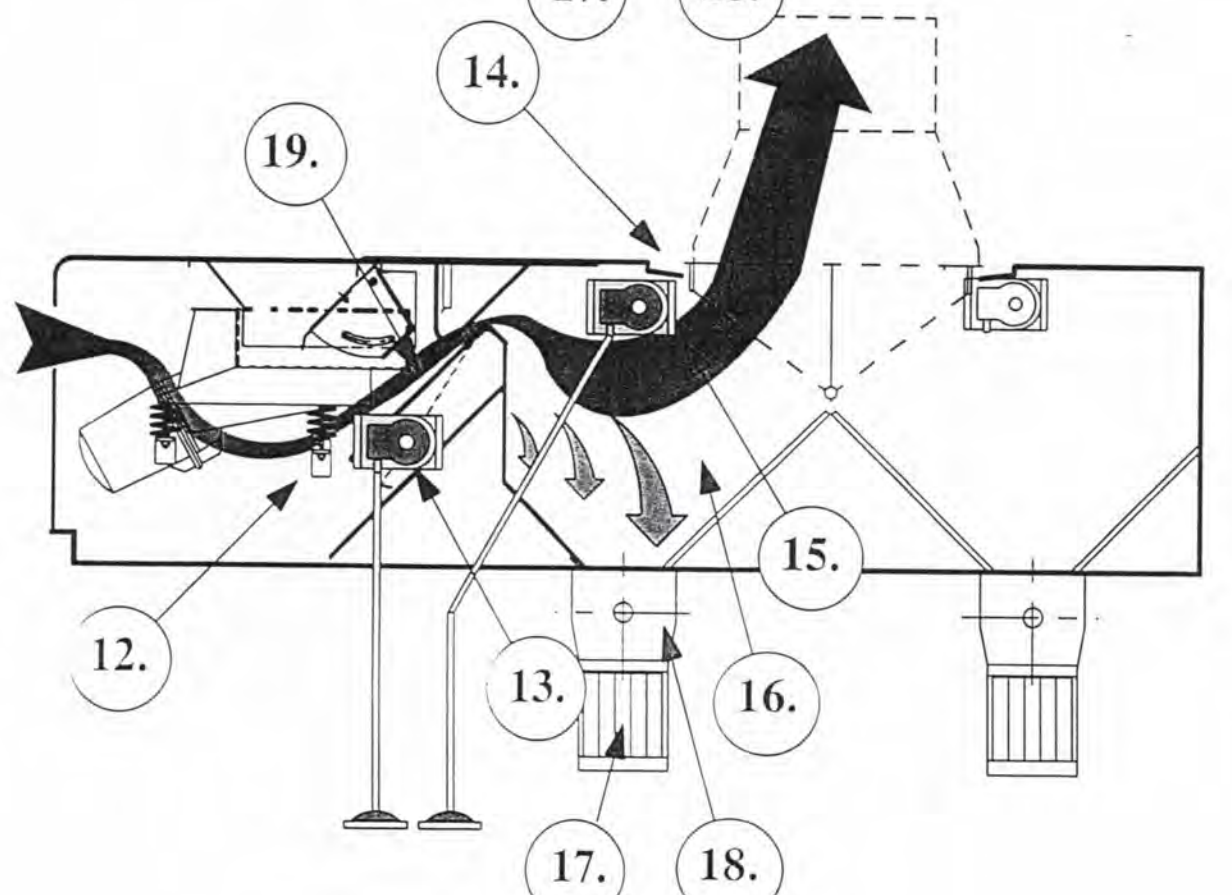
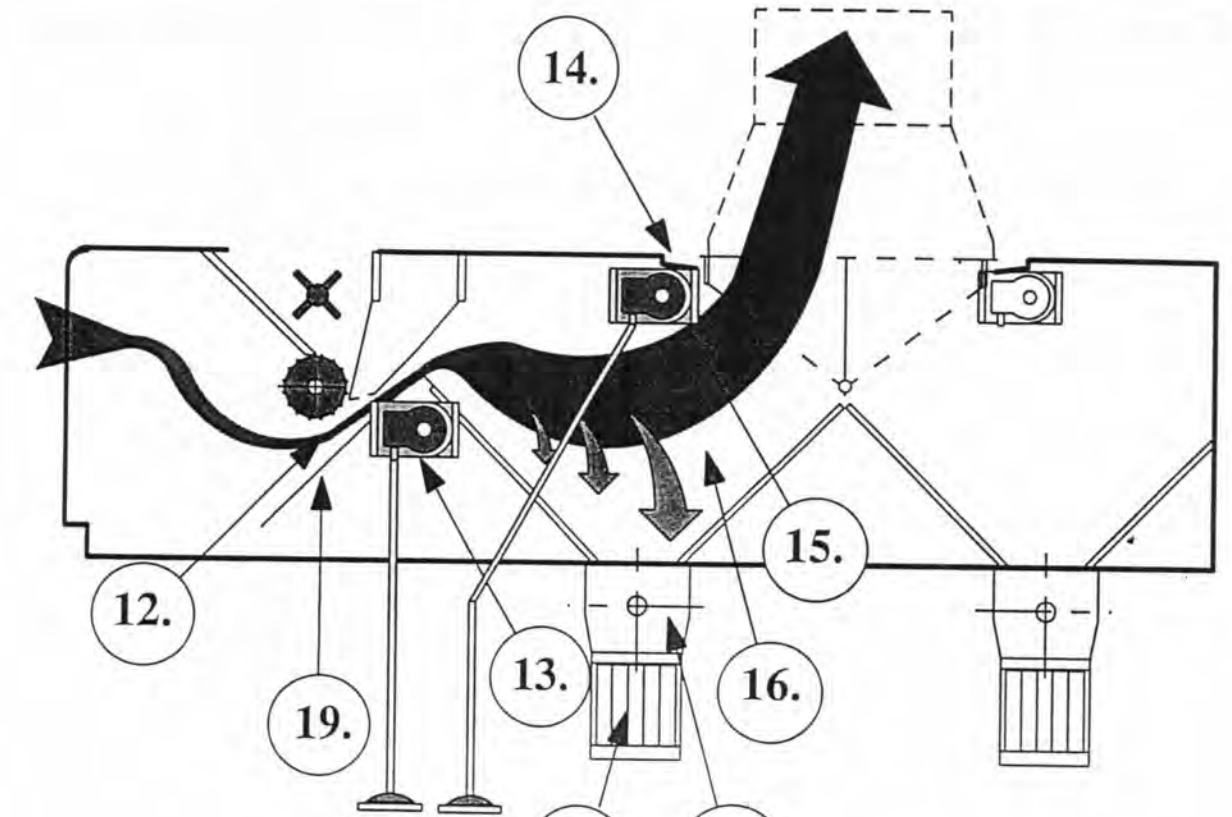
---

## Examples

**Minimum pre suction** (e.g. light grass seed) Achieved with minimum air speed ( largest suction opening = scale zero) and minimum air quantity (back draught valve, 100% open = scale zero). (Observe the screw conveyor and finished product outlets)

**Medium pre suction** (e.g. grain) Best achieved with minimum air speed, after which the air quantity is adjusted from zero towards 10, until the required result is obtained. (Observe the screw conveyor and finished product outlets)

**Maximum pre suction** e.g. peas, beans) Best achieved with maximum air quantity (back draught valve closed = scale 10), after which the air velocity is adjusted from zero towards 10, until the required result is obtained. (Observe the screw conveyor and finished product outlets)



## Fans/cyclofans.

### 20. Connection to Fan or Cyclofan.

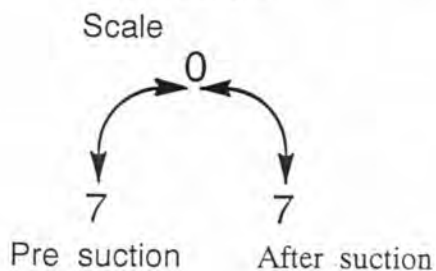
The machine is designed for connection to a Cimbria Cyclofan, separate fan with cyclone, or a filter system.

### 21. Air Distributer Shutter for Pre and Aftersuction.

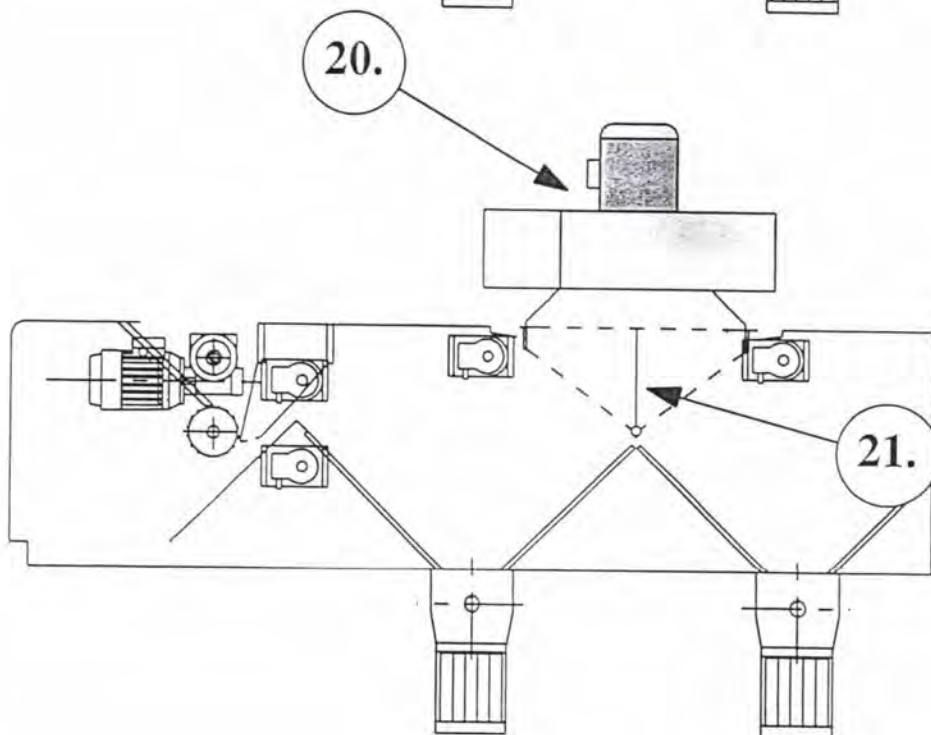
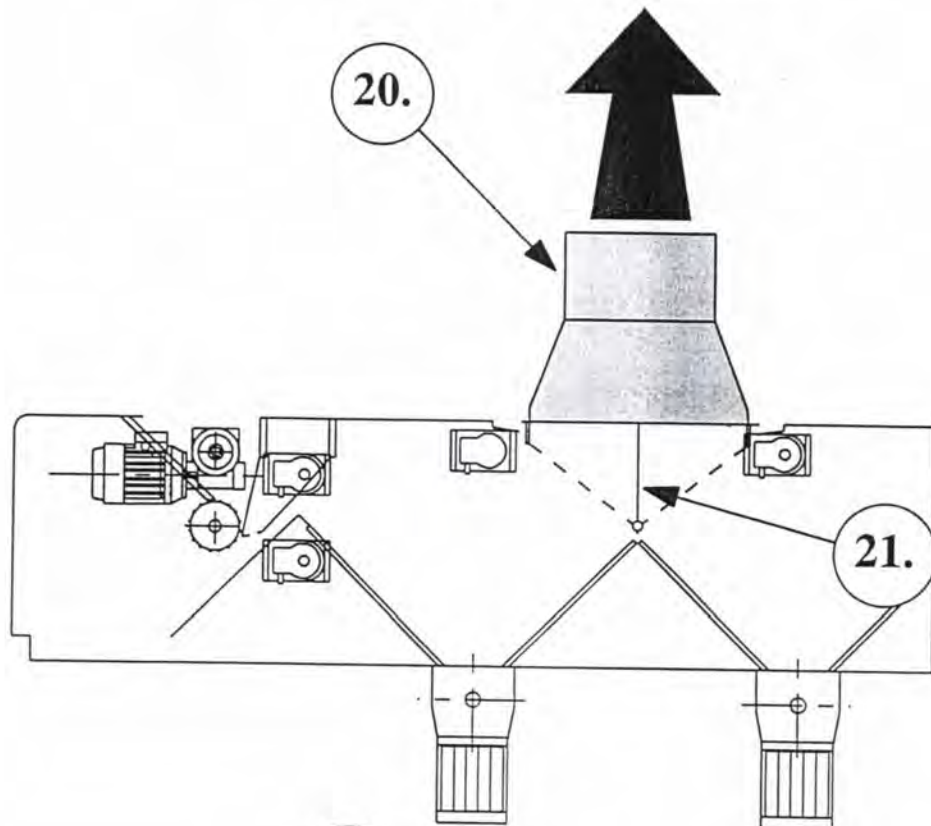
The distribution of the air quantity for both pre and aftersuction is adjusted by the air divider shutter during trial runs.

### 22. Adjusting the air distributor valve

Typically, 35-50% of the air will be used in pre suction, the remainder going to after suction.



To central aspiration system



## **Screen System.**

### **23. Lead Plates.**

Lead plates are mounted in order to bring goods to the underlying screen in such a way that the screen is utilized in the best possible way and the grain is distributed evenly over the entire width of the machine.

### **24. Material Distribution Plates.**

The distribution plates are used in several machines to divide the material flow 33% or 50% onto two or three parallel screens.

The material distributor can be open, closed or reversible.

### **25. Screen & rejects spout.**

Screens are used either for scalping or sorting or grading. Change is made according to choice of perforation, placement of outlet spouts and choice of material distribution unit.

### **26. Blank Screen.**

Removable screen used for parallel running between two screen layers.

### **27. Scalping Screen & rejects spout.**

This screen is only used for removal of coarse impurities, the good product passing through the screen for further treatment. The rejects outlet is situated at the end of the screen.

## **28. Grading screen & rejects spout.**

The second grading screen is used only for removing fine impurities and small seed, the good product flowing off the screen for further treatment. The fine impurities passes through the screen onto the underlying bottom plate and to the rejects outlet which is situated at the end of the screen.

## **29. Return, Bottom & Intermediate Plates.**

Plates used to convey the material, for example from the upper screen box to the lower screen box, or where several screen layers run parallel. In the later case return plates are fitted between the layers allowing the entire length of the grading screen to be used.

## **30. Cleaned Product.**

Outlet for the finished cleaned product.

## **31. Screenbox Motor**

## **32. Eccentric Shaft.**

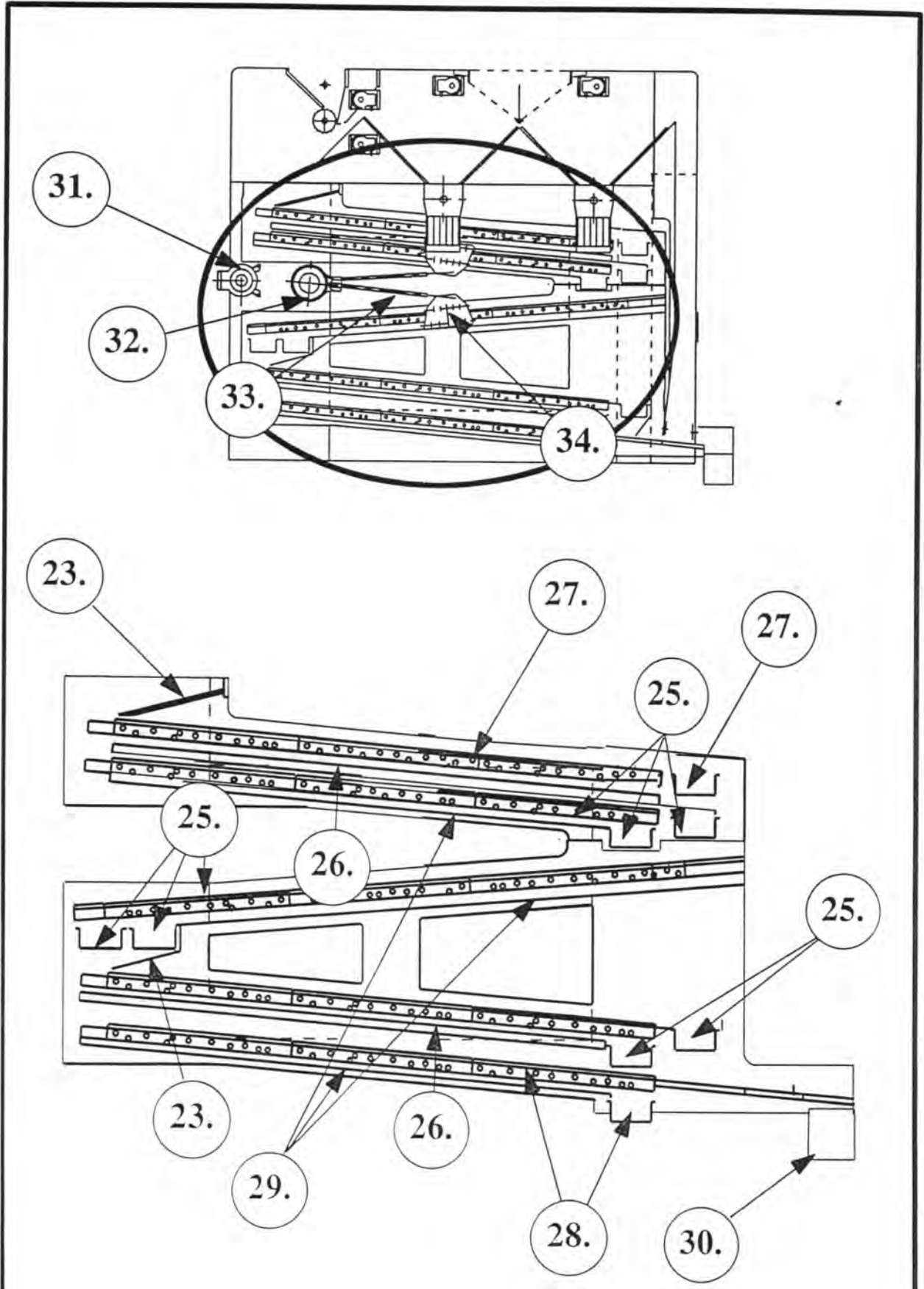
The eccentric shaft is provided with two strong eccentric bearings per screen box unit. Machines with one screen box are moreover fitted with two balance discs calibrated to the weight of the screen box to ensure vibration free running.

## **33. Connecting Rod.**

Connecting rods join the eccentric shaft to the screen box.

## **34. Drawbridge.**

The drawbridge is fastened to the screen box and, through the connecting rods, to the eccentric shaft, which imparts the oscillations to the screen box.



## **After Suction System**

### **35. Air Screen.**

The air screen is mounted in the screen box and follows its movements, it is removable and covered with wire mesh, thus permitting the air stream from the aftersuction system, to pass through it. The stream of grain passes steadily from the grading screen to the lifting air screen where the lighter products are effectively separated.

As standard equipment for type SUPER cleaners three air screens are supplied, a coarse no.14 (1.25 mm mesh, 0.63 mm thread diameter), a medium no.20 (0.8 mm mesh, 0.32 mm thread diameter), and a fine no.36 (0.5 mm mesh, 0.22 mm thread diameter).

All other machines are supplied with a no.14 and a no.20 screen.

### **36. Adjustable plate over Air Screen.**

The plates should be adjusted so that the material has just enough room to pass through without risk of obstructing the material flow (approx. 10-20mm above). This ensures the best results.

### **37. Adjustable Air Valve in the Aftersuction Channel.**

The adjustable air valve mounted in the aftersuction channel and above the air screen is used in collaboration with the air quantity regulator (pos 43.). By adjusting the shutter the velocity of air through the screen is altered. The lowest number on the scale indicates the lowest air velocity.

### **38. After Suction Channel.**

The product separated from the cleaned grains on the air screen is conveyed through the after suction channel to the expansion chamber and then out by means of the screw conveyor.



### **39. Expansion Chamber.**

The separation of the heavy products from the dust laden air from after suction in the expansion chamber is undertaken in such a way that the heavy products settle as a result of air velocity passing into the expansion chamber being so low that only dust will continue with the air to the fan or filter.

### **40. Screw Conveyor.**

The screw conveyor on the bottom of the expansion chamber collects and conveys the product out of the chamber to a sacking off spout or conveyor.

### **41. Finger Flaps.**

The finger flaps mounted on the outlet of the screw conveyor prevent any air leaks into the expansion chamber which may reduce the efficiency of the after suction system. The output from the fingerflaps is where refuse products from presuction are checked.

**Warning** Never attempt to put fingers behind the fingerflaps !!.

The fingerflaps must be inspected regularly, they must be able to move freely and are adjusted by loosening the nuts on each side until free movement is attained.

### **42. Inspection Glass Window.**

A glass inspection window is fitted in the after suction channel making it possible to control the effect of adjusting the shutter and plate above the air screen, and the false air shutter.

### **43. False Air Intake in after suction Channel.**

The back draught valve placed in the top of the expansion chamber is used to control the air quantity in after suction. With the valve closed, maximum air quantity is achieved in after suction. Interplay of adjustment between the air speed plate and the back draught valve will achieve the best results for after suction.

The false air valve placed in the top of the expansion chamber is used to control the necessary air quantity for use in the after suction system. When adjusting the aftersuction effect there is an interplay between the adjustable air valve and the false air flap. Both adjustments are able to change air velocity through the air screen.

### **44. Regulating the False Air in After suction Channel.**

Adjustment of the false air is achieved by means of the false air flap handle. On the handle scale zero indicates minimum suction effect.

( N.B. In some circumstances equipped with a handle at a given height. !! )



---

## Examples:

### **Minimum after suction:**

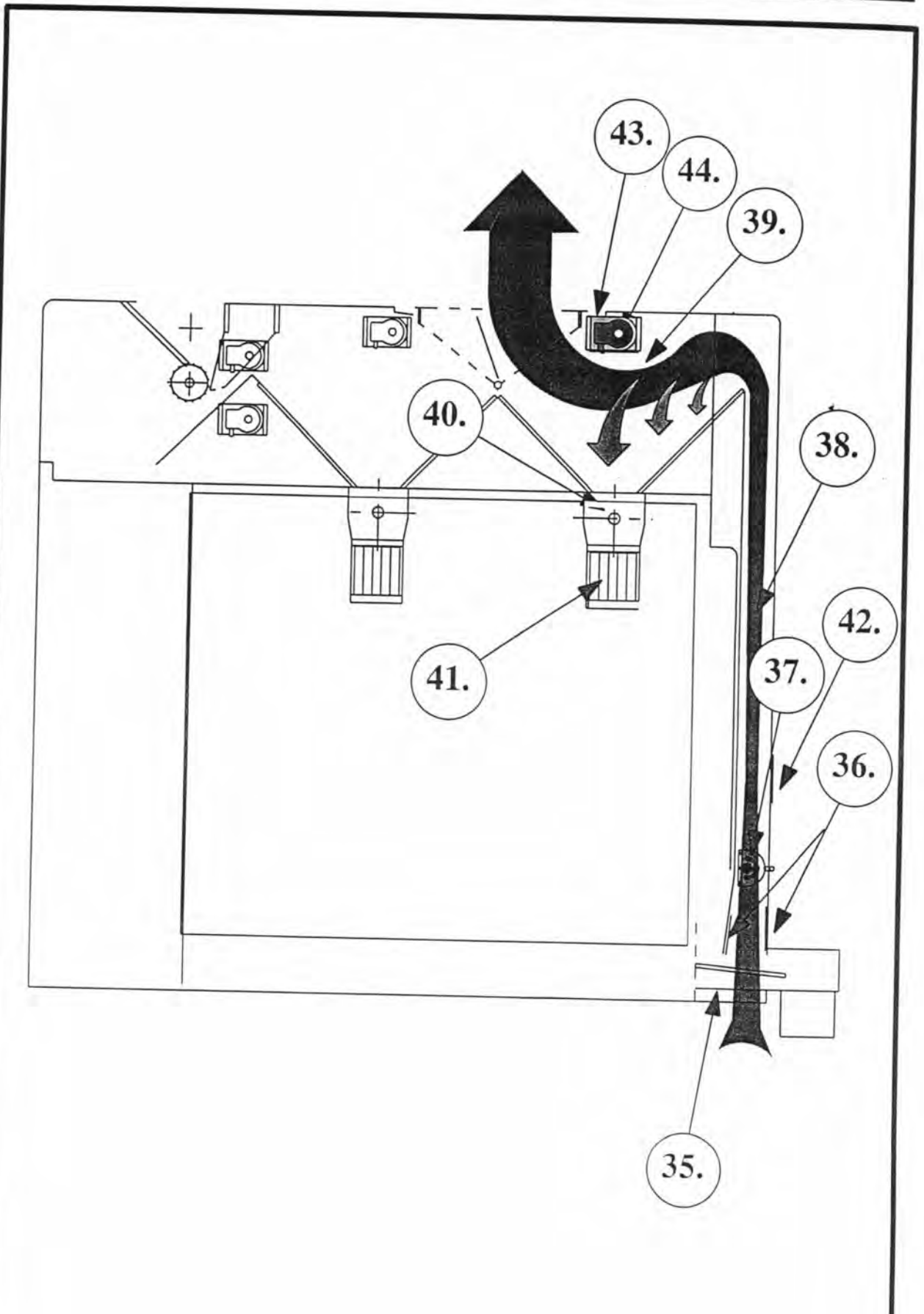
(e.g. light grass seed) Achieved with minimum air speed ( largest suction opening = scale zero) and minimum air quantity (back draught valve, 100% open = scale zero).

### **Medium after suction:**

(e.g. grain) Best achieved with minimum air speed, after which the air quantity is adjusted from zero towards 10, until the required result is obtained. (Observe the screw conveyor and finished product outlets)

### **Maximum after suction:**

e.g. peas, beans) Best achieved with maximum air quantity (back draught valve closed = scale 10), after which the air velocity is adjusted from zero towards 10, until the required result is obtained.



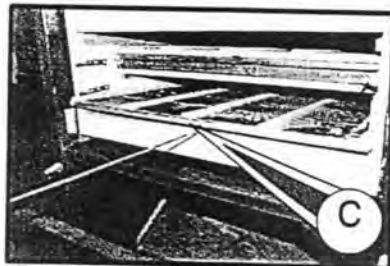
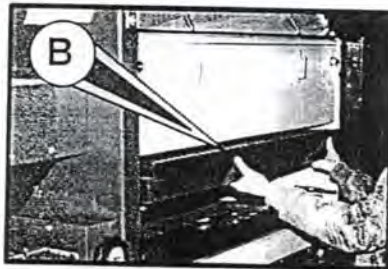
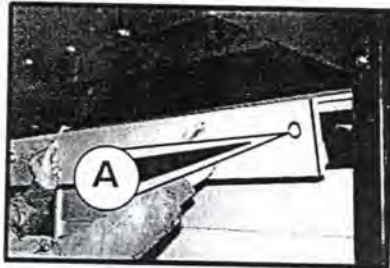
---

## Mounting and replacing screens

### Note!

The ball trays must be fitted before the screens.

1. Open the doors to each screen layer. (A)
2. Distributor/distance pieces is taken out. (B)
3. Push the screen extractor in under the screen, turn, and pull out screen. (C)
4. Push in the replacement screen.
5. Distributor/distance tray fitted.
6. Close the doors to each screen layer.



## Removing and fitting ball trays.

The screens are kept clean with the help of special rubber balls that keep their elasticity, even in sub zero temperatures.

As a unique detail on all Cimbria cleaners, it is possible to replace screens without having to remove the ball trays. Ball boxes is divided in 6 rooms with 20 balls in each room.

1. Points 1 3, "Mounting and replacing screens".

2. Loosen ball tray clamps (A).

3. Pull ball trays out (B) & (C).

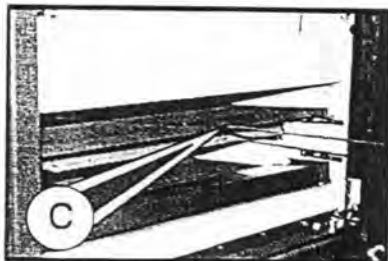
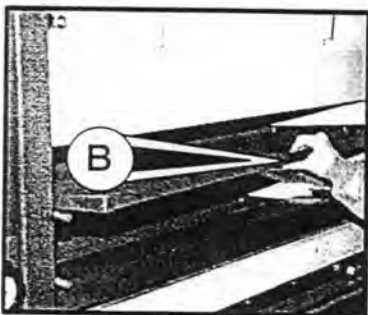
**CAUTION**

4. Push ball trays in.

The arrow marked on the ball box, indicates the flow direction

5. Tighten ball tray clamps.

6. Points 4 6, "Mounting and replacing screens".





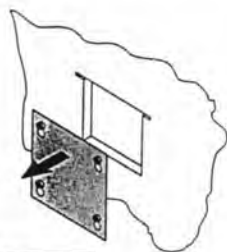
---

---

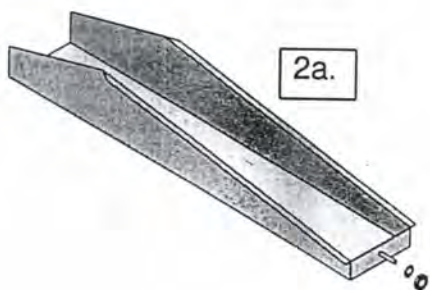
## Fitting outlet trays.

### Outlet tray

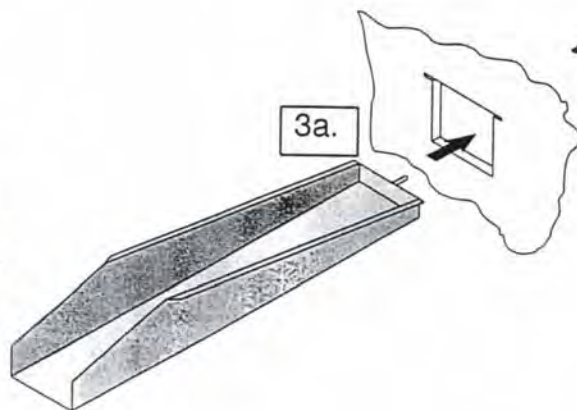
- 1a. Remove cover plate on screen box outlet side
- 2a. Remove wing nut and washer from end of chute
- 3a. Push chute in from outlet side.
- 4a. When the chute is fully home, put on washer and screw the wing nut tight.
- 5a. Press the sides of the chute outwards against the sides of the hole.



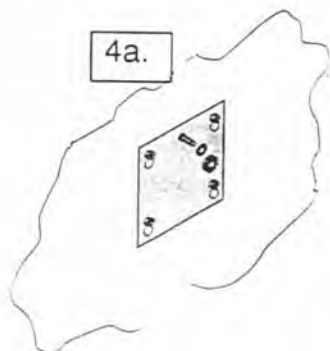
1a.



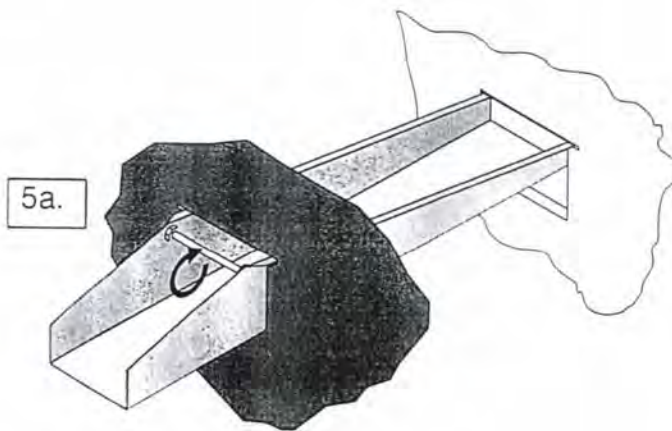
2a.



3a.



4a.



5a.



---

# Maintenance



## **Maintenance of clamps**

### **Tightening of clamps**

After the first 20 hours of operation, re tighten screen boxes and suspension.

Repeat after every 500 hours of operation, or at least once a year.

Tightening is carried out to the moments as shown on pages 34

All bolts that are in contact with moving parts are to be re tightened at the same time.

All pulley belts must be checked for wear, and re tightened.