



Tecnoardeaengineering



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# Company Profile

**T.A.E. s.r.l.**

is a Technical-Engineering company.

Our activity is mainly addressed to the cereal and legumes processing sector for the achievement of finished products for the food industry such as cereal flakes, pre-cooked meals, baby foods, breakfast foods, parboiled rice, cous-cous, instant soups from cereals and legumes in addition to products for animal food industries.





# Introduction

Besides giving technical assistance we prepare project studies, we manufacture and install either single units or complete processing lines for cereals and legumes

## Reception and storage of cereals

### Processing lines, such as:

- Cleaning and grading
- Mechanical and pneumatic conveying systems
- Aspiration and filtering systems
- Milling and micronizing systems
- Mixing and proportioning with addition of liquid and solid additives
- Maize degerming lines with either dry or partially-wet systems for the production of gritz and hominy as well as relevant refining for special type meals
- Dehusking and peeling of wheat, barley, oats, sunflower seeds, soya beans, lentils, peas, etc.
- Cooking lines for cereals and legumes to be used for instant type soups
- Complete lines for pre-cooked meals for “polenta” “arepa” and “tortillas”
- Complete lines for baby foods
- Complete lines for corn-flakes, oat flakes, muesli, etc. for breakfast
- Complete lines for parboiled rice

### Process control systems:

- Weighing along production line
- Production data
- Drive and control by electronic systems



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## Processing of Cereals and Legumes



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REFERENCES

## Dehusking system for human consumption

### Durum wheat

- **CO.RI.AL. Consorzio Ricerche Alimetari** Foggia Italy: 24 ton/24h
- **Barilla G. & R. Fratelli** Parma Italy: 980 ton/24h
- **Barilla G. & R. Fratelli** Ferrara Italy: 360 ton/24h
- **Barilla G. & R. Fratelli** Castelpianio Italy: 360 ton/24h - 190 ton/24h
- **Barilla G. & R. Fratelli** Altamura Italy: 360 ton/24h
- **Barilla G. & R. Fratelli** Pedrignano Italy: 780 ton/24h
- **Barilla G. & R. Fratelli** Ames Iowa USA: 768 ton/24h
- **Barilla G. & R. Fratelli** Bolu Turkey: 330 ton/24h
- **Barilla G. & R. Fratelli** Volos Greece: 240 ton/24h
- **Molino Andreani Giuseppe s.p.a.** Ferrara Italy: n. 2 lines of 180 ton/24h each
- **Molino Andreani Giuseppe s.p.a.** Ferrara Italy: 144 ton/24h
- **Villa del Sole s.r.l.** S. Maria Nuova (AN) Italy: n. 2 lines of 144 ton/24h each
- **Podella Paste Alimentari s.r.l.** Crotone Italy: n. 3 lines of 144 ton/24h each
- **Società Molini Asti**, Asti Italy: 144 ton/24h
- **Molino F.lli Ferro Semolerie Molisane** Campobasso Italy: 650 ton/24h
- **Molino Devita** Foggia Italy: 500 ton/24h
- **Molino Tesa** Santa Maria Nuova (AN) Italy: 500 ton/24h
- **Molino del Po** Pontelagoscuro (FE) Italy: 300 ton/24h
- **Moderne Semolerie Italiane** Foggia Italy: 670 ton/24h
- **Molino Dakota** Growers Carrington Nord Dakota USA: 500 ton/24h
- **Italgrani Mill** St. Louis (MO) USA: 1.300 ton/24h
- **Italgrani Mill** St. Louis (MO) USA: 500 ton/24 h
- **Munsa Molinos**, S.A. DE C.V. Mexico: 350 ton/24h
- **Mutlu Mill** Turkey: n. 3 mills of 500 ton/24h each
- **Goymen Mill** Turkey: 500 ton/24h
- **Arbella Mill** Turkey: 320 ton/h
- **Molitoria Umbra srl** Bastia Umbra (PG) Italy: 430 ton/24h
- **Molino Poiatti** Casteldaccia (PA) Italy: 220 ton/24h
- **Santacroce Giovanni SPA** Ascoli Satriano (FG) Italy: 220 ton/24h
- **Miller Milling Company** Winchester (VA) USA: 400 ton/24h
- **Simec S.p.A.** Santa Giusta (OR) Italy: 170 ton/24h
- **Simec S.p.A.** Santa Giusta (OR) Italy: 360 ton/24h

### Soft wheat

- **Golfetto Sangati** Treviso Italy, dest. Fujeira United Arab Emirates: 96 ton/24h
- **Agugiaro & Figna** Collecchio (PR) Italy: 144 ton/24h
- **Molino Bigazzi** Castiglione della Valle (PG) Italy: 264 ton/24h

### Sunflower

- **MIG s.r.l.** Fornovo S. Giovanni (BG) Italy: 120 ton/24h
- **MIG s.r.l.** Fornovo S. Giovanni (BG) Italy: 240 ton/24h

### Oat

- **Molino Casablanca**, Casablanca Chile: 60 ton/24h
- **Lofrese SPA** Gravina In Puglia (BA) Italy: 24 ton/24h

### Barley

- **Golfetto Sangati Treviso Italy**, dest. Bosnia, Bosnia and Herzegovina: 96 ton/24h

### Buckwheat

- **Molino Filippini** Teglio (SO) Italy: 60 ton/24h

### Palm kernel

- **Carrera s.r.l.** Melzo (MI) Italy: 24 ton/24h

### Soy

- **Le Due Valli srl** Ostellato (FE) Italy: 50 ton/24h

### Legumes

- **Molino Peila SPA** Valperga (TO) Italy: 120 ton/24h

## Mixing and proportioning systems

- **Barilla G. & R. Fratelli** Altamura (BA) Italy
  - flour grading system 48 ton/24h
- **Barilla G. & R. Fratelli** Termoli (CB) Italy
  - flour grading system 36 ton/24h
  - flour grading system 12 ton/24h
- **Barilla G. & R. Fratelli** Castelplanio (AN) Italy
  - flour grading system 36 ton/24h
- **Barilla G. & R. Fratelli** Ascoli Piceno Italy
  - flour and sugar conveying system for Plumcake line
- **Barilla G. & R. Fratelli** Ascoli Piceno Italy
  - "Premix" plant 120 ton/24h
- **Barilla G. & R. Fratelli** Volos Grecia
  - mixing system for the production of whole wheat pasta 120 ton/24h
- **Diamalteria Italina s.p.a.** Darfo (BS) Italy
  - conveying and storage system for malt flour 72 ton/24h
  - mixing and bagging system for flour 360 ton/24h
- **Macor Truccazzano** (MI) Italy
  - flour mixing system complete with negative pressure pneumatic conveying system 120 ton/24h
  - aspiration system for dust on process units
  - pneumatic conveying system for flour 192 ton/24h
- **Naturalitalia** Casalmaggiore (CR) Italy
  - mixing, cleaning and grading of different types of seeds 96 ton/24h
- **Molino Anselmo Colombo** Paderno d'Adda (CO) Italy
  - storage and extraction system for shorts
- **Italcanditi** Pedrengo (BG) Italy
  - storage and proportioning system for sugar, glucose and isoglucose
- **Molino Volpato** Campodarsego (PD) Italy
  - storage, conveying and extraction system for baking flour storage capacity 500 ton
  - conveying and extraction capacity 720 ton/24h
- **Fratelli Pagani** Milano Italy
  - fine milling plant with mixing system for spices, such as pepper, curcuma, cinnamon, nutmeg, cloves, etc.
  - Milling capacity 12 ton/24h
- **Molino Filippini** Teglio (SO) Italy
  - mixing and proportioning system for buckwheat meal 60 ton/24h
- **Gruma** Mexico
  - "Premix" plant 120 ton/24h
- **Lofrese SPA** Gravina In Puglia (BA) Italy
  - Mixing plant for cereal and legume flours 48 ton/24h.

## Pre-cooked flour/meal systems

- **Molino Lameri** S. Bassano (CR) Italy
  - n. 2 drying-cooling sections for cereal flakes plus soya toasting system 96 ton/24h each
- **Molino Peila** Valperga (TO) Italy
  - aspiration and filtering system of the existing cleaning sections, general aspiration system and milling section for by-products
  - drying system for pre-cooked maize meals 120 ton/24h
  - plant for the production of pre-cooked maize meals 120 ton/24h
- **Molino Filippini** Teglio (SO) Italy
  - buckwheat processing plant for the production of raw and cooked meal complete with dehussing system 60 ton/24h
- **Ocrim** Cremona (CR) Italy
  - drying system for the production of pre-cooked meals for Arepa 180 ton/24h
  - N. 1 drying and cooling line for maize and barley flakes 240 ton/24h
  - N. 2 cooling lines for barley flakes 240 ton/24h
- **Agrex** Villafranca Padovana (PD) Italy
  - cooking, flaking, drying-cooling plant for the production of pre-cooked maize meals 72 ton/24h
- **Molino e Riseria** Martini Castelbelforte (MN) Italy
  - conditioning, cooking, flaking, drying-cooling plant for the production of pre-cooked maize meals 72 ton/24h
- **Codema Inc.** Minneapolis USA
  - n. 2 drying-cooling lines for oat 72 ton/24h each
- **Organización Solarte & Cia.** Bogotá Colombia
  - n. 2 maize cooking and flaking lines for the production of pre-cooked meal for Arepa
- **Golfetto Sangati** Treviso Italy, dest. Demaseca C. A. Venezuela
  - n. 2 maize cooking and flaking lines for the production of pre-cooked meal for Arepa 192 ton/24h each
  - maize cooking and flaking lines for the production of pre-cooked meal for Arepa 96 ton/24h
- **Nutricos** Acarigua Venezuela
  - cooking line of degermed broken maize 60 ton/24h
  - upgrading of existing maize flaking and drying-cooling system for the production of pre-cooked meal for Arepa 96 ton/24h each
- **La Blanda** Venezuela
  - plant for the production of cut and stabilized oat with the production of flakes and pre-cooked meal 120 ton/24h
- **Lofrese SPA** Gravina In Puglia (BA) Italy
  - oat and legume processing plant to obtain flakes and precooked flours 48 tons/24h
- **Molino Peila SPA** Valperga (TO) Italy
  - Mixing plant for cereal and legume flours 72 ton/24h.
- **Molino Poiatti** Casteldaccia (PA) Italy
  - Whole wheat plant, capacity 96 tons/24h of semolina and bran continuous mixing.

## Feed mills

- **Fioccatura Stella** Bricco di Cherasco (CN) Italy
  - flaking line for various cereals 72 ton/24h
  - flaking line for various cereals 120 ton/24h
  - pre-cleaning line for various cereals 1.440 ton/24h
  - pre-cleaning and flaking line for various cereals with soya beans toasting system (including soya cleaning section) 120 ton/24h
  - raw material automatic mixing plant for recipes formulation 192 ton/24h supported by PLC
- **Mangimificio dell'Aventino** Fossacesia (CH) Italy
  - Complete plant including:
    - raw material storage silos 840 ton;
    - cleaning and flaking of various cereals 120 ton/24h referred to maize;
    - barley dehulling section 72 ton/24h;
    - soya toasting 108 ton/24h;
  - storage of finished products with automatic continuous mixing system of flaked products for different recipes formulation, supported by PLC.
- **Maropa** Ancona Italy
  - conditioning, cooking, flaking and drying of flakes obtained from various cereals 96 ton/24h
- **Cerealfiocco s.a.s.** di Caputo & C. Strongoli Scalo (KR) Italy
  - cleaning, conditioning, cooking, flaking and drying of flakes obtained from various cereals 84 ton/24h
- **Italfiocchi Monfort** Castelfranco Veneto (TV) Italy
  - complete flaking system for various cereals 96 ton/24h
  - complete flaking system for various cereals 72 ton/24h
- **Dacomo Pietro** Monticelli d'Alba (CN) Italy
  - complete flaking system for various cereals 72 ton/24h
- **Cerealfiocchi di Maero & C.** Villanova Solaro (CN) Italy
  - complete flaking system for various cereals 72 ton/24h
- **Esposito Salvatore & C.** Crotone Italy
  - complete flaking plant for various cereals, including:
    - reception and storage 1.440 ton/24h;
    - cleaning and conditioning 145-190 ton/24h;
    - cooking and flaking of various cereals 84 ton/24h (referred to maize);
    - continuous flakes mixing system 360 ton/24h;
    - flakes storage system 320 m<sup>3</sup>
- **Nuovo Molino di Assisi** Bastia Umbra (PG) Italy
  - cleaning and flaking line for various cereals with soya beans toasting system 96 ton/24h
- **Molino Rinero** Castelletto Stura (CN) Italy
  - complete plant for cooking, flaking and drying of flakes obtained from various cereals 72 ton/24h
- **Petrini Bastia Umbra** (PG) Italy
  - line for cooking, flaking and drying of flakes obtained from various cereals 84 ton/24h.
- **BB Farm SPA** Castenedolo (BS) Italy
  - Drying system for pellet feed, input capacity 4 ton/h.

## Wheat and maize mills

- **Molino Biologico Riavolo** Roddino (CN) Italy
  - installation for the production of biological flour from soft wheat, maize, barley, oat, sorghum, millet and soya beans 24 ton/24h
- **Molino Viazzi** Scaletta Uzzone (CN) Italy
  - new soft wheat milling section for an 8-pass mill
- **Molino Taramazzo** Pezzolo Valle Uzzone (CN) Italy
  - pneumatic conveying system for wheat from storage silos to cleaning section
  - wheat cleaning section
- **Molino Sima** Argenta (FE) Italy
  - complete stone milling system for soft and durum biological wheat for the production of biological whole flour for human consumption, complete with cleaning and bagging-off section. Supported by PLC system with synoptic panel
- **Molino Airoldi** Brivio (LC) Italy
  - dry degerming system for maize 48 ton/24h
- **Molino Nicoli Eugenio** Dovera (CR) Italy
  - maize degerming and refining system 36 ton/24h
- **Lofrese SPA** Gravina In Puglia (BA) Italy
  - multigrain mill 48 tons/24h
- **Molino e Riseria Martini** Castelbelforte (MN) Italy
  - Multigrain mill with a variable capacity from 48 to 96 tons / 24h in B1 according to the milled product and on the granulation of the final product.
- **Molino Peila SPA** Valperga (TO) Italy
  - Multigrain mill with a variable capacity from 48 to 96 tons / 24h in B1 according to the milled product and on the granulation of the final product.
- **Ocrim** Cremona (CR) Italy
  - Machines for drying meal for animal consumption coming from the maize degermination system (n. 5 lines) 170 ton/24h

## Special Systems

- **Barilla G. & R. Fratelli** Melfi (PZ) Italy
  - drying system of bread pieces for production of crumbs 12 ton/24h
- **Barilla G. & R. Fratelli** Rubbiano (PR) Italy
  - conveying, drying and storage of bread pieces 48 ton/24h
- **Barilla G. & R. Fratelli** Ascoli Piceno Italy
  - chopping and conveying system of fresh bread
  - drying system of fresh bread pieces for the production of crumbs 12 ton/24h
- **Barilla G. & R. Fratelli** Rubbiano (PR) Italy
  - chopping and recovery system of rusk pieces
  - variable capacity from 24 ton/24h to 40,8 ton/24h
- **Barilla G. & R. Fratelli** Galliate (NO) Italy
  - flour control system before packaging 720 ton/24h
- **Torrefazione Poli** Lallio (BG) Italy
  - conveying, mixing, sifting and proportioning system for coffee
- **Noccioltost** Zingonia (BG) Italy
  - cleaning, aspiration, filtering, conveying and storage of peanuts, pistachios and other similar products
- **Agricola S. Germano**, S. Germano V.se (VC) Italy
  - filtering system for cleaning system with dust recovery
  - aspiration and filtering system in rice processing plant
- **Oleificio Tocchetti** Olginate (CO) Italy
  - complete conveying system for oil cake
  - dust aspiration system for oil cake storage silos
- **Penta** Ferrara Italy
  - cleaning system for coffee 60 ton/24h
- **Riso Scotti** Pavia Italy
  - parboiled rice production plant 108 ton/24h
  - reception and storage raw material 1.200 ton/24h
  - rice plant 192 ton/24h
  - drying system for rice germ and rice bran 48 ton/24h
- **Miteco AG** Zofingen Switzerland
  - n. 5 proportioning and pneumatic conveying systems for sugar 720 ton/24h each
  - n. 2 proportioning and pneumatic conveying systems for sugar 600 ton/24h each
- **Nexus Engineering & Trading** Lugano Switzerland
  - pressing and flaking of dehusked cotton seeds 48 ton/24h
- **Molino Helizondo** Mexico City, Mexico
  - storage, conveying and extraction of baking flour
  - storage capacity 800 ton
  - conveying and extraction capacity 720 ton/24h
  - pneumatic conveying system for baking flour 600 ton/24h, 155 m length
- **Lofrese SPA** Gravina In Puglia (BA) Italy
  - Negative pressure pneumatic conveying system on n. 1 line for oat husk 28,8 ton/24h
  - Negative pressure pneumatic conveying system on n. 1 line for milled oat husk 28,8 ton/24h
- **Molino e Riseria Martini** Castelbelforte (MN) Italy
  - Centralized aspiration system for silos in "Trevira" fabric, big/bag unloading, packaging, mixing area and bulk loading.
- **Molino Poiatti** Casteldaccia (PA) Italy
  - Whole wheat plant, capacity 96 tons/24h of semolina and bran continuous mixing.

# CLEANING SEPARATOR

Suitable for the cleaning process of different types of cereals by size grading.

According to the cereals to be cleaned the separator will be equipped with different types of perforated metal screens.

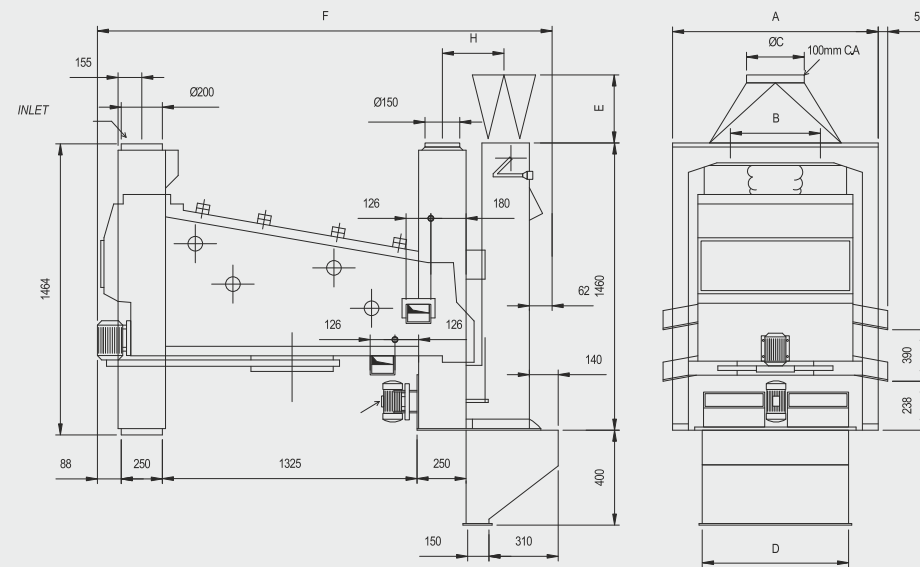
The cereal is selected through a set of grading passages and a vibration system will speed up the product flow on the metal screens.

The unit is complete with inspection and maintenance doors and equipped with quick type hooks for sieves removal.

The suspension system consists in rubber shock absorbers.

The vibrators are completely closed and protected.

Completely metal structure.



## CLEANING

INLETS	UNDO	A	B	ØC	D	E	AIR m/1	WEIGHT Kg	Kw	F	H	SIEVES DIMENS.	CAPACITY
1	60	900	/	280	620	300	45	/	/	2338	303	600X1500	35
1	80	1100	/	330	820	450	60	930	/	"	"	800X1500	48
1	100	1300	/	380	1020	600	80	990	/	"	"	1000X1500	60
2	120	1500	600	410	1220	750	95	1090	/	"	"	1200X1500	72
2	150	1800	750	460	1520	1000	120	1231	2.2	"	"	1500X1500	90

## PRECLEANING

INLETS	UNDO	A	B	ØC	D	E	AIR m/1	WEIGHT Kg	Kw	F	H	SIEVES DIMENS.	CAPACITY
1	60A	900	/	230	620	350	30	/	/	2288	278	600X1500	5
1	80A	1100	/	260	820	500	40	885	/	"	"	800X1500	6.5
1	100A	1300	/	300	1020	650	50	980	/	"	"	1000X1500	8
2	120A	1500	600	330	1220	800	60	1080	/	"	"	1200X1500	10
2	150A	1800	750	380	1520	1100	80	1230	2.2	"	"	1500X1500	12.5

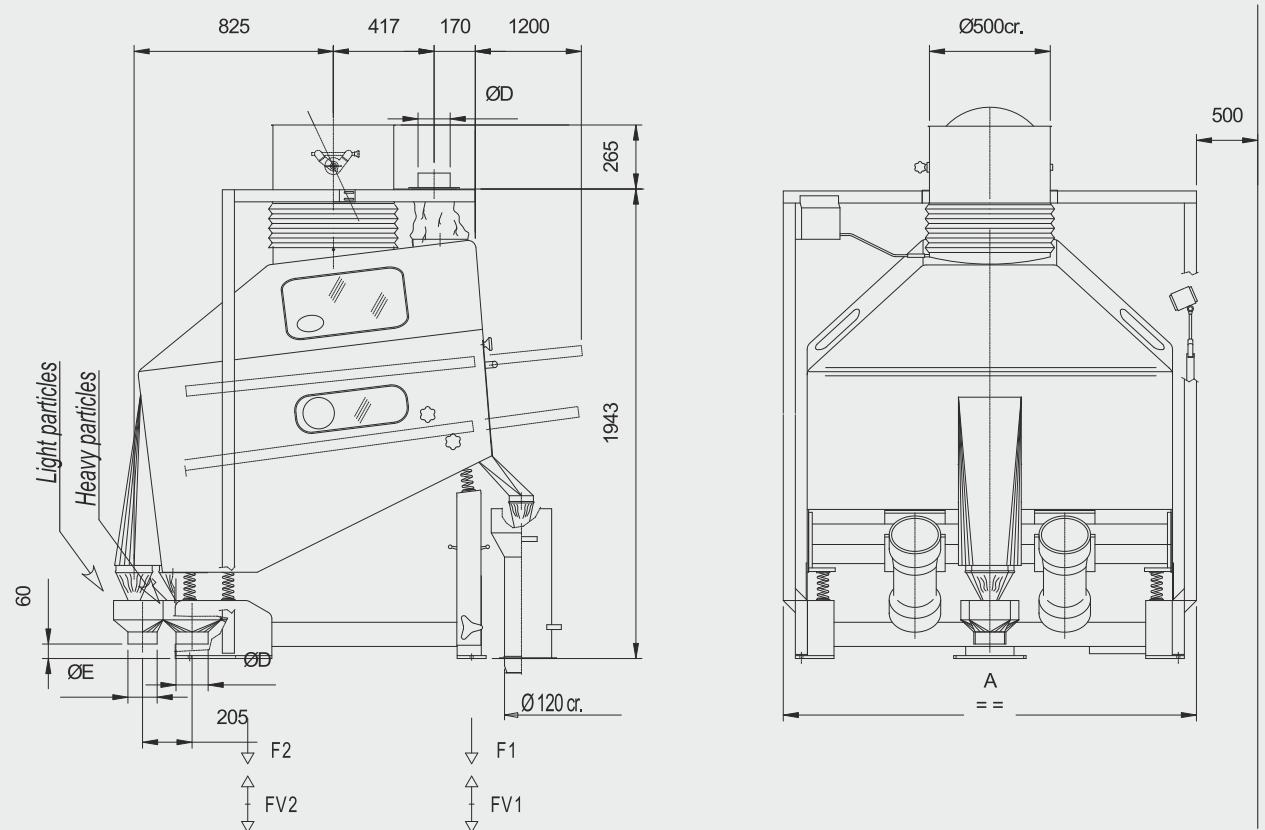


# DRY STONER

The separating system of the unit is based on an aspiration process which allows the cereal to float while the foreign bodies, which are heavier than the cereal, will make a layer underneath it. The ejection of the heavier bodies is obtained by the vibrations of the working deck on which they lay and by the special shape of the net that helps them go upwards towards the discharge spout placed opposite the cereal outlet.

Totally metal construction.

Adjustment and control: large inspection windows, side doors for quick action, air adjustment system, regulation devices for working deck inclination and for vibrating system plus adjustment of eccentric masses.



TYPE	PRODUCTION t/h	AIR m <sup>3</sup> /1'	mmH <sub>2</sub> O	MOTOVIBRATOR		Volume m <sup>3</sup>	Weight kg	A	B	C	D	E
				KW - 50 HZ	KW - 60 HZ							
SAL100	8 / 14	110	80	2 x 0,68	2 x 0,45	4.5	700	1210	435	1060	121 133	121
SAL150	15 / 24	140				6	830	1710	685	1560	133 168	





# GRAVITY SEPARATOR

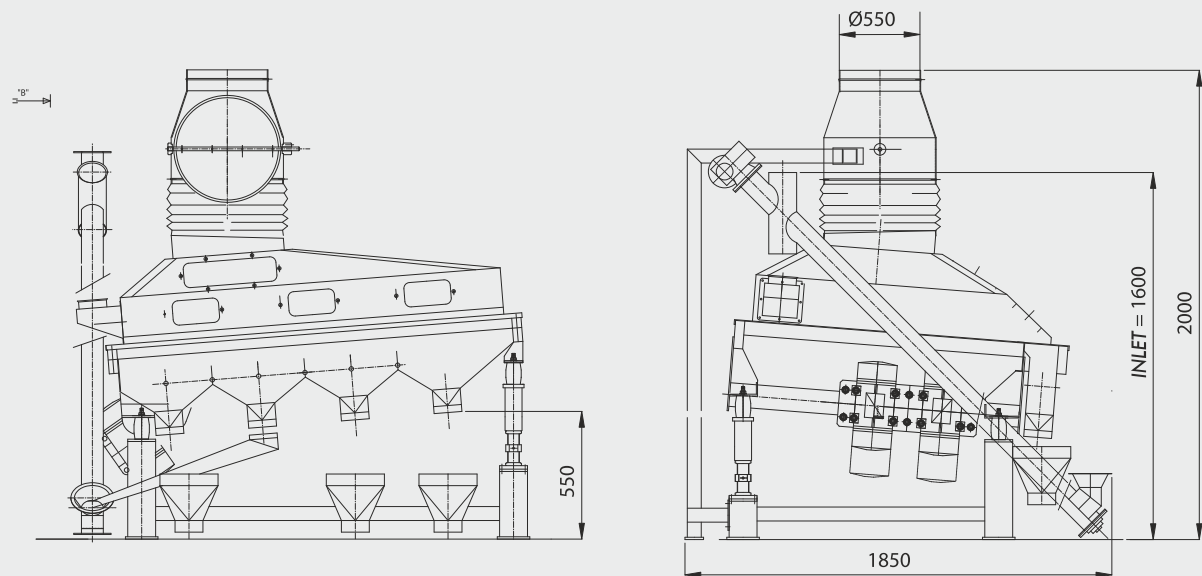
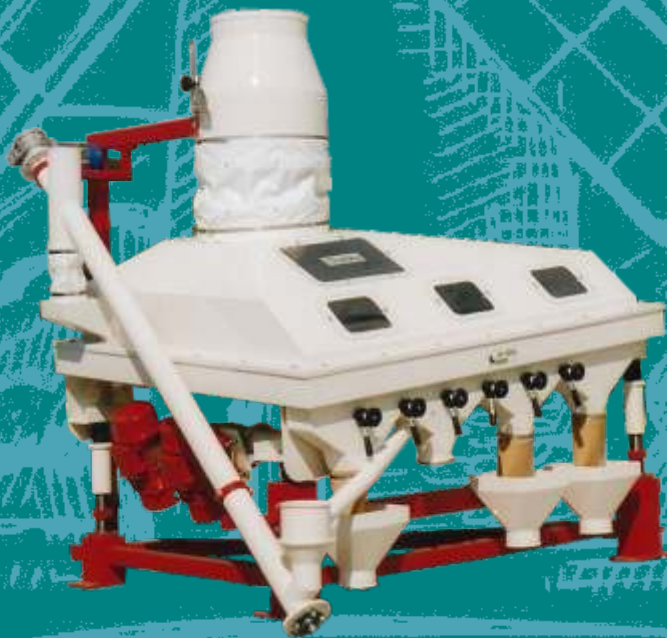
For the selection of products of same dimensions but different specific weight: broken maize from germs. The inclination of the working deck is adjustable either in transversal or longitudinal way so as to grant an accurate selection according to the products to be processed.

The knobs placed on the front side of the machine will move the hoppers that receive the selected products to be discharged. The hood placed over the working deck allows an even and constant aspiration work.

Special rubber shock absorbers to avoid floor vibrations.

Drive by means of eccentric mass vibrating motor.

Finishing with rust proof and industrial enamel.



TYPE	PRODUCTION T/H			CONSUMPTION			WEIGHT
	GRITS	WHEAT	BROKENS WHEAT	AIR MC/1	mmH <sub>2</sub> O	KW	KG
100	1.0-1.2	1.0-1.3	0.25	80	90	0.75	415
150	2.2-2.5	2.5-3	0.40	110	90	0.75	650

TYPE	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q
100	1500	1700	1600	650	550	350	1500	710	980	620	400	390	200	200	600
150	1680	2040	1750	740	630	480	1720	880	1100	650	500	300	320	220	800



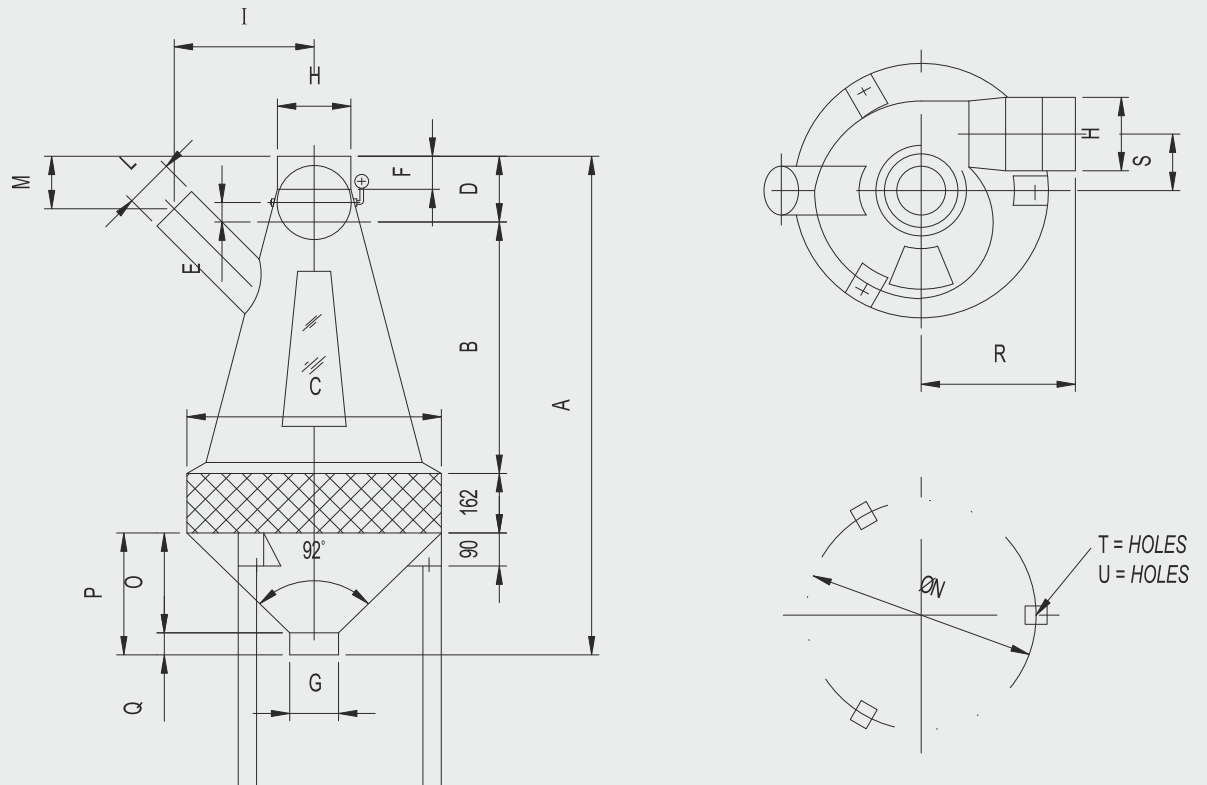
# ASPIRATOR SEPARATOR

To be used when high quality separation of light particles contained in the product is needed.

The working principle is based on a stream of air that goes through the heavy products, gets hold of the light particles and carries them away.

Vertical cone shaped structure with paddle type rotor fitted inside the lower part of the unit and moved by an external aspiration system.

Completely metal construction, with large inspection windows.



TYPE	PRODUCTION (T/H)		AIR(m <sup>3</sup> /1) P(mm120)	DIMENSIONS																		
	CLEANING	PRECLEAN.		A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S	T	U
450	4	12	15	1196	550	543	250	76	90	120	160	357	102	195	474	204	234	30	393	162	1X3	12
600	6	17	25	1358	685	693	179	93	90	133	200	381	133	143	626	272	332	60	420	154	1X3	12
800	9	28	37	1644	817	893	253	133	90	168	290	488	168	230	828	352	412	60	517	206	1X3	12
1000	14	42	55	2139	1039	1093	256	183.5	150	250	400	537	192	255	992	—	682	200	570	210	2X3	13
1200	20	60	80	2555	1210	1293	405	197	150	318	430	600	250	480	1188	—	778	200	625	244	2X3	13

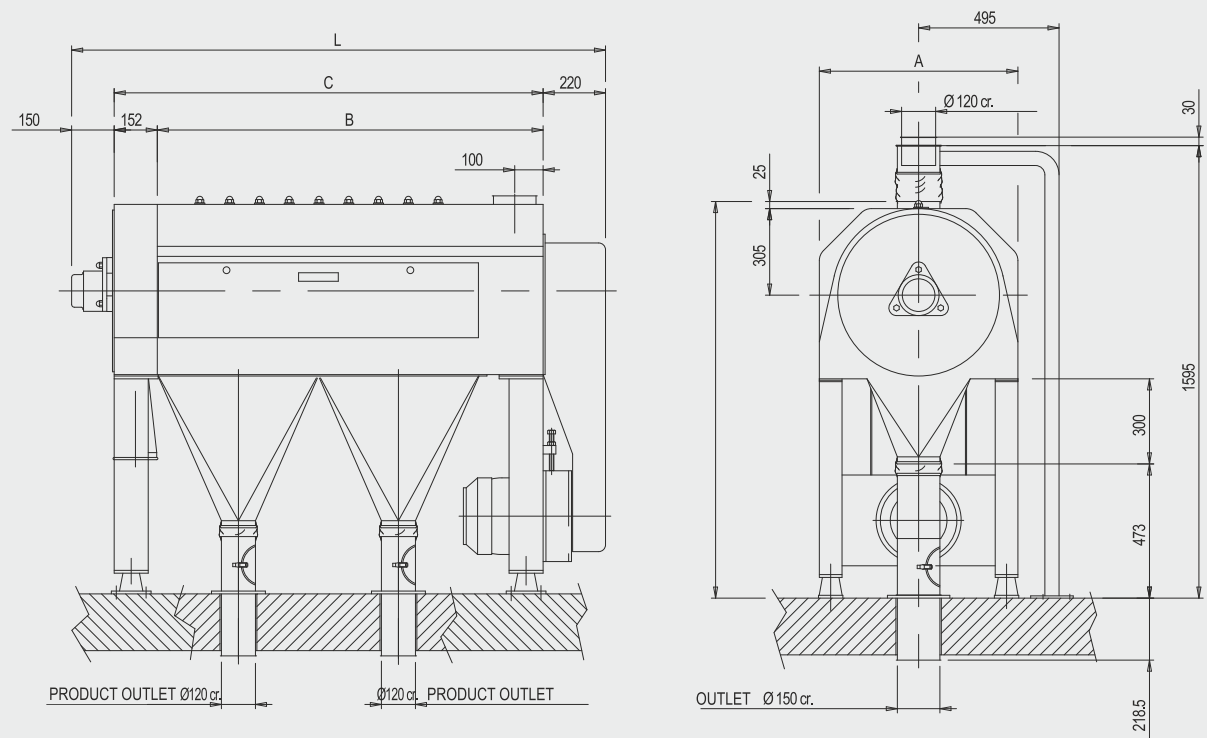


# BRUSHING UNIT

Completely closed processing chamber. Inside jacket made of special steel net fitted onto a rotating shaft with special shaped spokes that will revolve the product. The rotation movement will produce a rubbing action against the walls of the jacket and between the grains themselves and consequently will take the bran off the grains.

Drive by means of belts and pulleys. Shaft supported by roller bearings fitted on the external part.

Product discharge hopper at one end of the machine and dust discharge hopper placed underneath the center of the unit.



TYPE	CAPACITY T/H	MOTOR KW	SURFACE	RPM	WEIGHT Kg	SEAWORTHY PACKAGING	A	B	C	F	G	H	I	L
5012	1	5.5	1.1	1100	430	2.3	700	1360	1512	363	564	1392	620	1882



# PADDY SEPARATOR

It separates dehusked kernels from those that need final dehusking.

Metal working deck formed by small triangular compartments of special dimensions through which the kernels are separated by the alternate movement and the particular inclination of the working deck.

Drive and transmission group fitted inside the base structure complete with a metal platform that houses a large pulley connected to the working deck by means of a pivot system that generates the alternate movement.

Enclosed type working deck with large inspection windows that allow to check the separation process.







# HORIZONTAL MAIZE DEGERMINTOR

The main parts of the unit are:

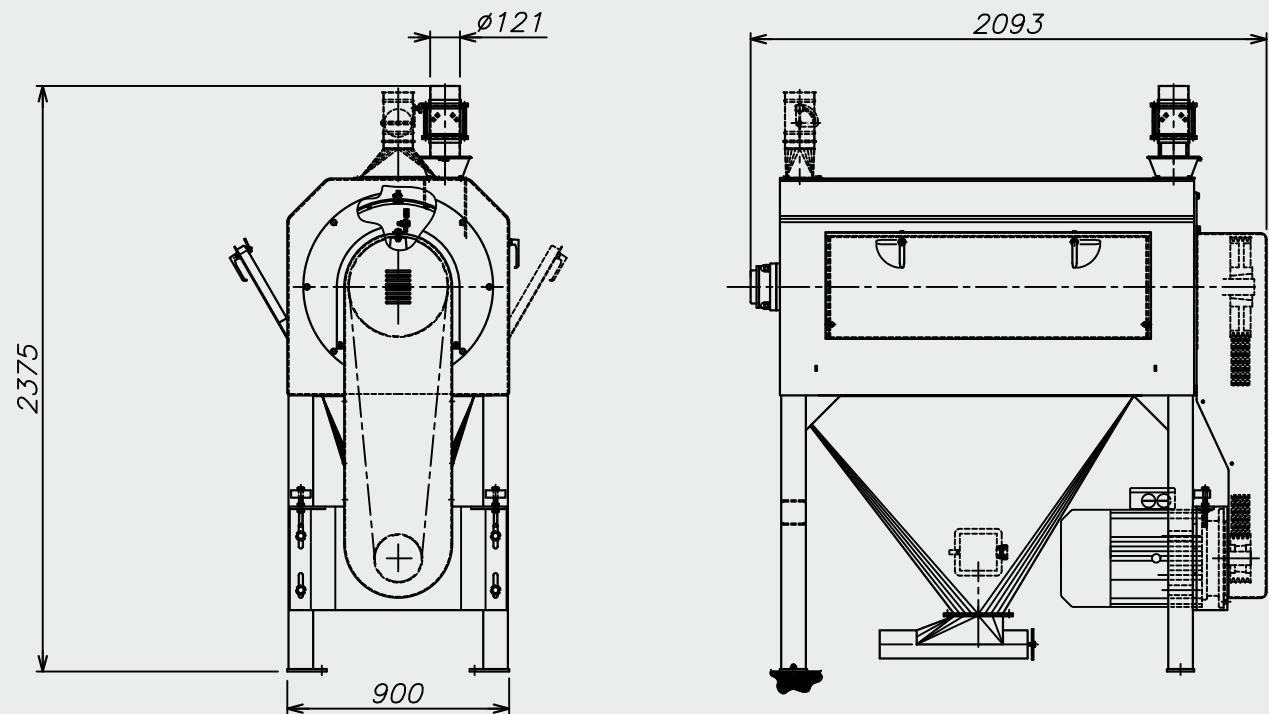
- Rotor with degerming elements
- Stiff type inside sieve
- External body including hoppers

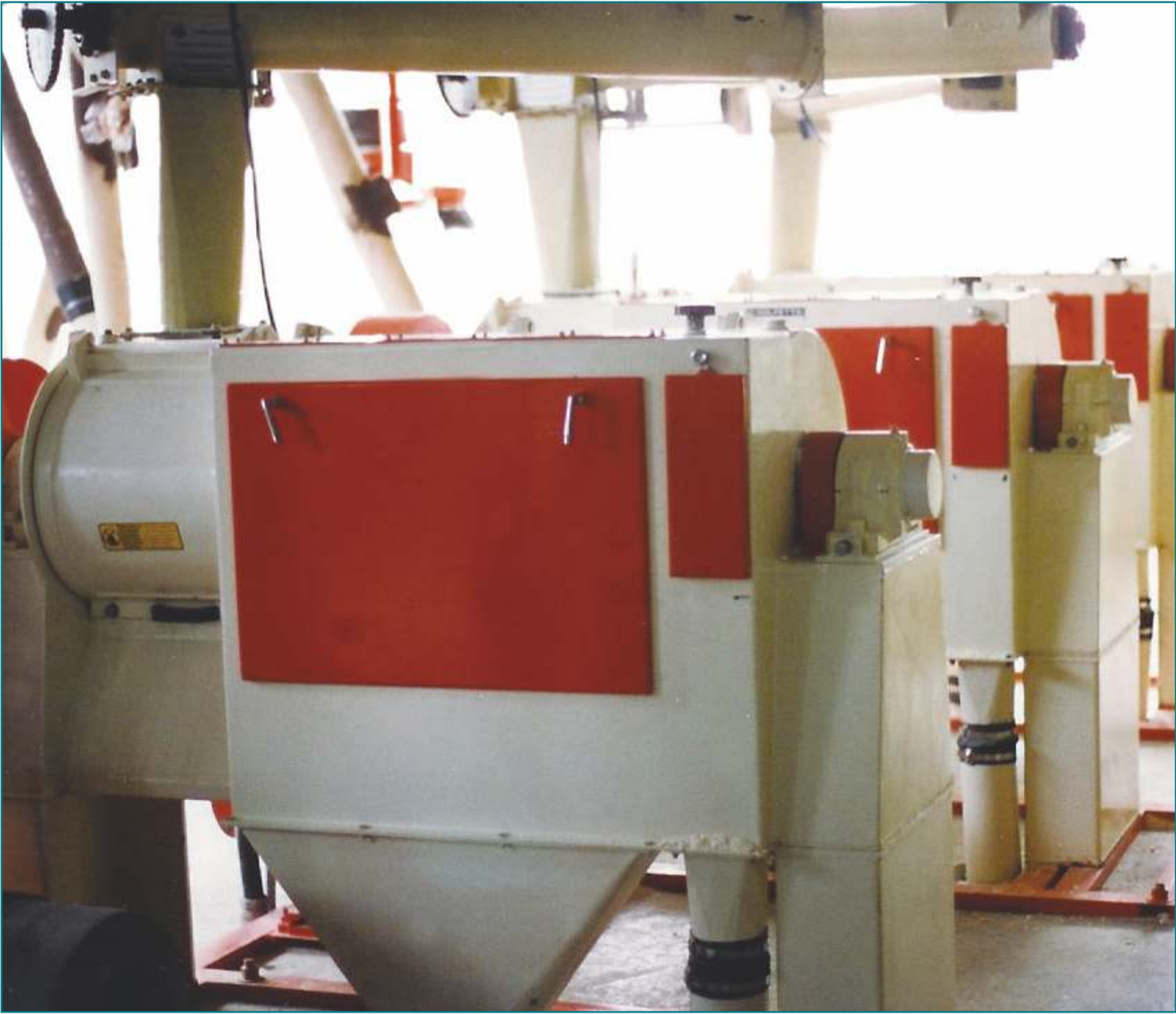
The rotor consists of a shaft holding a set of spokes with section-irons duly machined and shaped to ensure a uniform size reduction of the kernel thus keeping the germ in a whole piece.

The centrifugal force pushes the fine particles (animal meal) obtained during the degerming process through the separation sieve fitted around the degerming area.

Two concentric but separate hoppers are placed in the lower part of the machine; the outer one will receive the fine particles from the sieve while the broken kernels that don't pass through it will fall towards the center into the inner hopper.

External casing in welded steel sheet duly reinforced with section irons and complete with inspection doors.





# VERTICAL MAIZE DEGERMINATOR

It effects a combined peeling and degerming operation of maize grains thus allowing the removal of both hull and germ.

Peeling and degerming operations are carried out inside a chamber of vertical cone shape.

The product is loaded into the side of the machine by a feed screw.

Fixed type conical chamber (stator) and shaft (rotor) which rotates on external supporting elements.

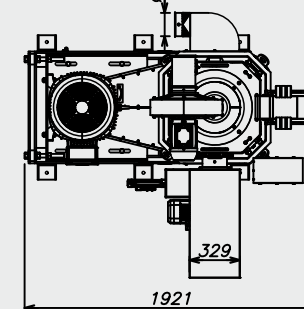
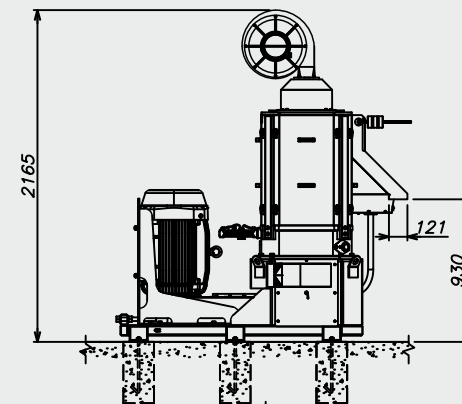
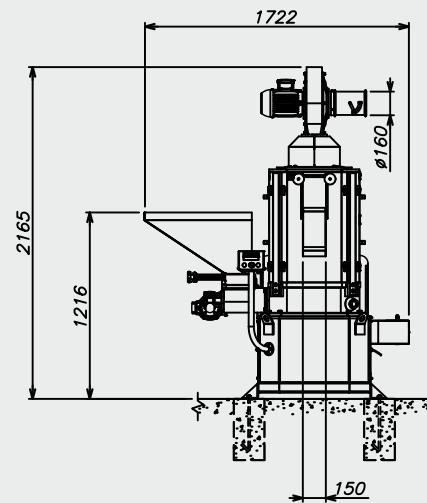
Thanks to the special shape of stator and rotor surfaces the grains will receive a friction action between the rotor and the stator besides a rubbing effect between themselves. This will allow the removal of both hull and germ.

The gap between stator and rotor can be adjusted, this will allow to change the inside volume of the working chamber and consequently the production yields for both quality and quantity.

The regular operation of the machine takes place when the working area (between rotor and stator) is fully occupied: this is possible thanks to a device placed at the discharge which allows the machine to download only the excess material maintaining the working area full.

The products separated during process (hull and germ) will pass through perforated screen sheets fitted on the stator. In order to have better results in product separation the external part of the stator is closed and aspirated.

Easy inspection and maintenance operations of both rotor and stator.







# VERTICAL COOKER

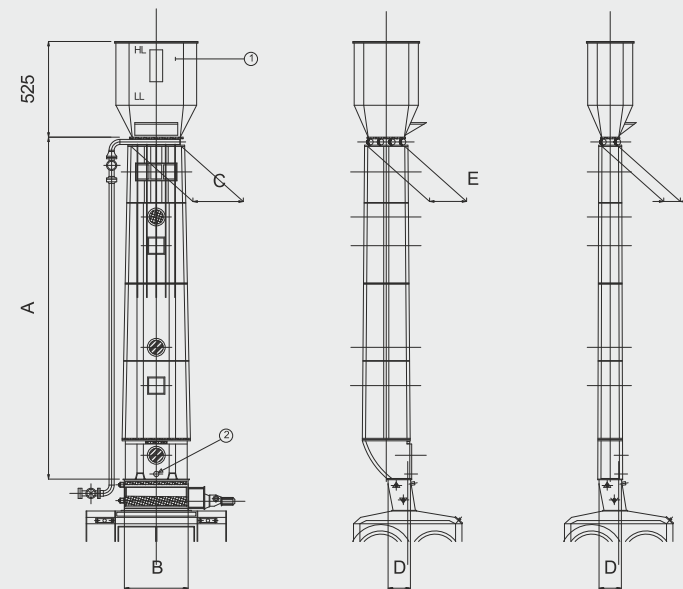
The vertical Cooker Olla offers a cereal cooking process that allows to obtain many results for different final uses. Its favorable time-temperature relationship guarantees a high transformation degree of starches contained in cereals and legumes.

Vertical structure trapezium shaped: this particular shape allows to compensate the natural expansion that the product will have during the cooking process. Inspection doors and sight glasses at different heights will allow quick control operation.

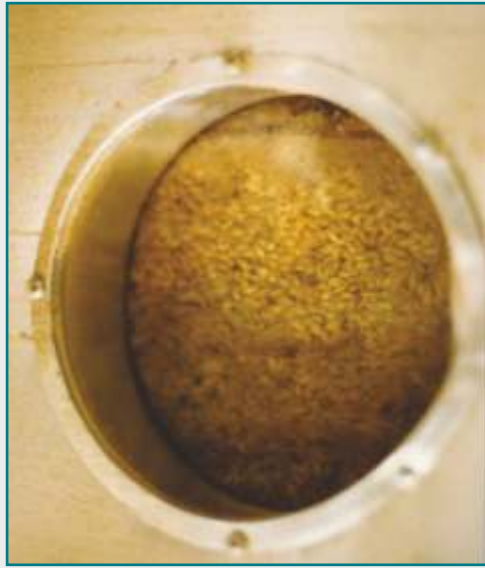
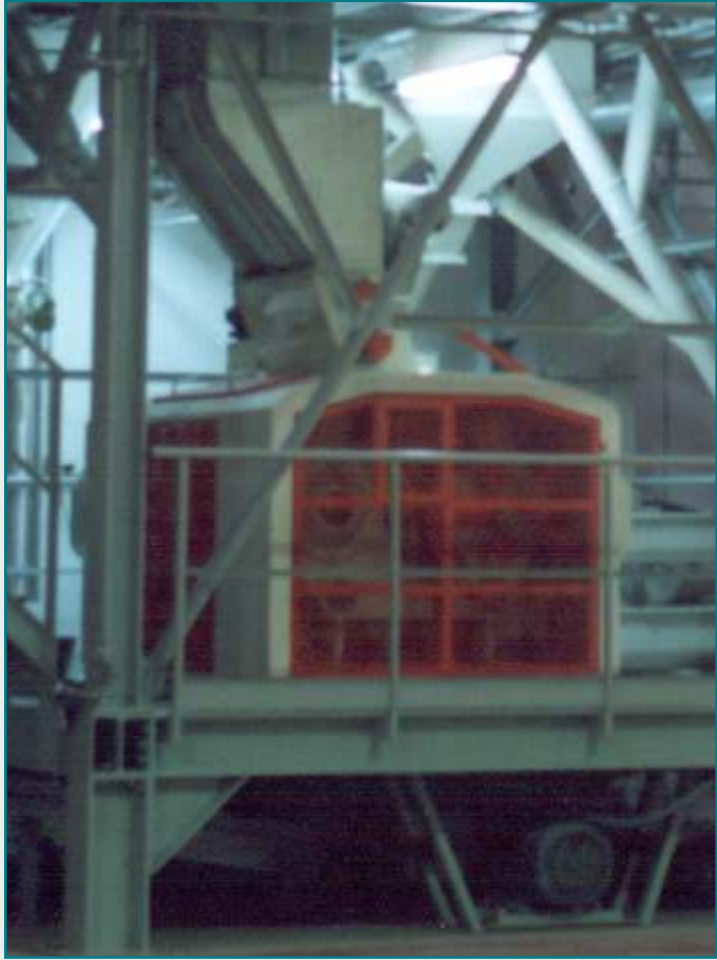
Cooking is effected by a set of steam injectors that are completely immersed in the cereal mass.

The steam circuit consists in a steam pipe with manual regulation valve that will deliver steam into the injectors.

Electronic temperature control device.



TECHNICAL NOTES								
	FLAKING ROLLER MILL	TYPE	INSIDE VOLUME MC.	A	B	C	D	E
1) THE LOADING SYSTEMS CAN VARY ACCORDING TO RAW MATERIAL AND INSTALLATION REQUIREMENTS	F 610	OLLA 20	1.45	5500	970	690	350	260
		OLLA 40	2.80	5500	970	690	350	580
	F 808	OLLA 20	1.18	5500	770	490	350	260
		OLLA 40	2.20	5500	770	490	350	580
2) AUTOMATIC CONTROL WITH LOW TEMPERATURE ALARM	F 810	OLLA 40	2.80	5500	970	690	350	580
	F 812	OLLA 40	3.41	5500	1170	830	350	580
	F 1010	OLLA 60	4.85	6000	970	790	450	780





# TOASTING UNIT

The toasting unit is partly in aluminum, stainless steel Aisi 304 and carbon steel.

It mainly consists in:

- Four superimposed heating chambers with steam heated radiators fitted inside in an alternate manner.
- One cooling chamber

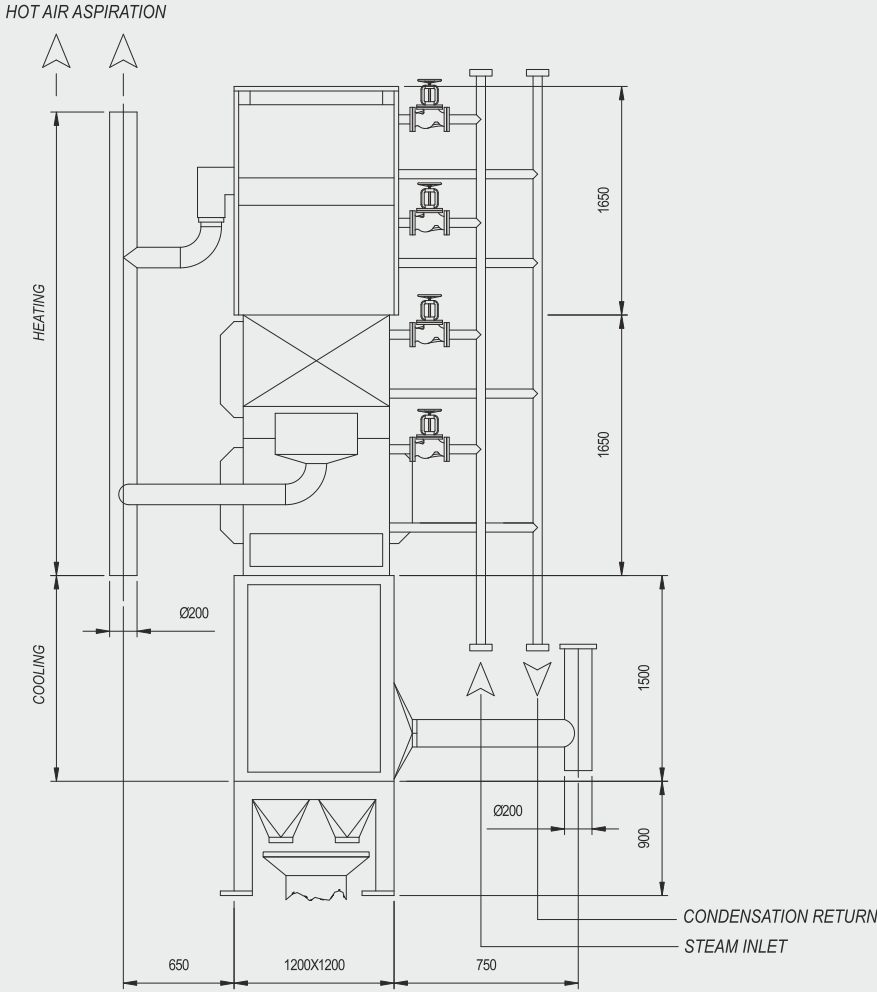
The product passes through the chambers by gravity and during this stage it heats up to 180° in an even and progressive manner. The cooling chamber will then provide to take the product back to the right temperature needed for the subsequent process.

The heating chambers are duly insulated and connected to the steam circuit by means of flexible pipes and are complete with relevant adjustment systems.

Once cooled the product will go into a discharge hopper with 4 outlets.

The aspiration system of the heating and cooling chambers is complete with:

- 2 cyclone dust collectors
- 2 fans







# FLAKING ROLLER MILL

It consists in a pair of special chilled cast iron rolls, with a surface hardness of 500-530 Brinell. The rolls diameter varies from 400 mm. to 1.000 mm with a variable length from 500 mm. to 1.200 mm.

Forged hubs duly hardened and machined fitted on strong supporting elements with self-aligning roller bearings capable to ensure high resistance to hard duties.

Sturdy structure, with thermal treatment for relaxation of tensions stretching caused by welding, duly machined in single piece.

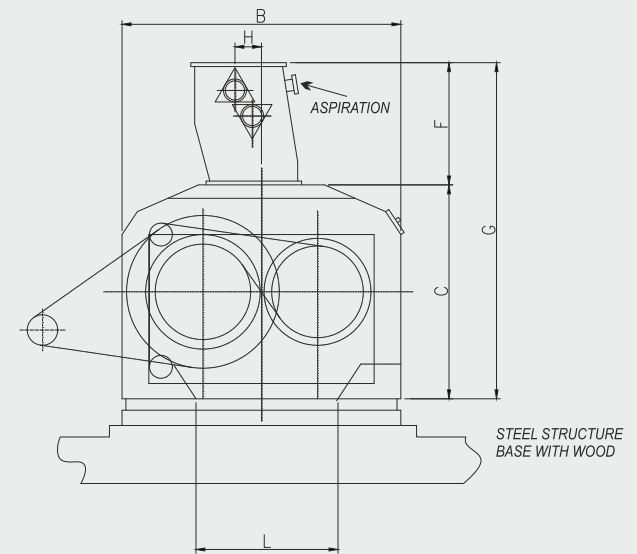
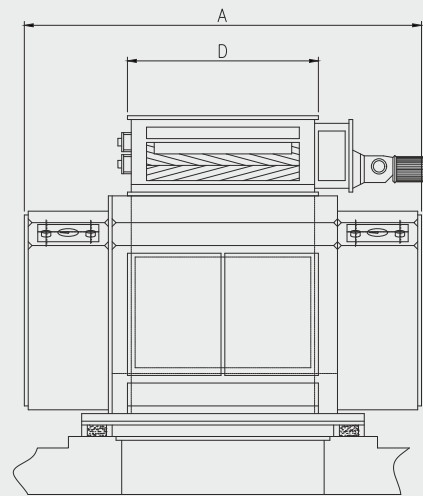
Control and adjustment of rolls pressure by means of oleo dynamic cylinders and oleo dynamic station. These high capacity cylinders allow to work with low pressures and therefore ensure higher flexibility in the flaking process.

Oleo dynamic pistons also for the adjustment of the scrapers working pressure.

The shock absorbing system with compressed gas tanks will dampen the stiff thrust of the oleo dynamic cylinders and therefore protect the rolls and scrapers.

The product will be fed onto the flaking rolls by a feed roll with diagonal corrugations driven by a speed variator.

The main adjustment of product input is effected by a slide gate that will allow to regulate the thickness of the product flow to be proportioned by the feed roll.



STEEL STRUCTURE  
BASE WITH WOOD

TYPE	A	B	C	D	E	F	G	H	I	L	M	AIR M/1'	DOSIFIER (Kw)	OLEODYNAMIC STATION (Kw)	ROLLS POWER (Kw)	WEIGHT (Kg)
F610	2200	1300	1300	1000	350	500	1750	180	1100	600	600	30	1.5	3	1x30 2x22	7100
F808	2000	1700	1425	800	"	"	1925	"	900	800	500	40	"	"	1x60 2x37	9800
F810	2200	1700	1425	1000	"	"	1925	"	1100	800	600	40	"	"	1x75 2x36	11300
F812	2400	1700	1425	1200	"	"	1925	"	1300	800	800	40	"	"	1x90 2x45	12100
F612	2400	1300	1300	1200	"	"	1725	"	1300	600	700	40	"	"	1x60 2x80	9600





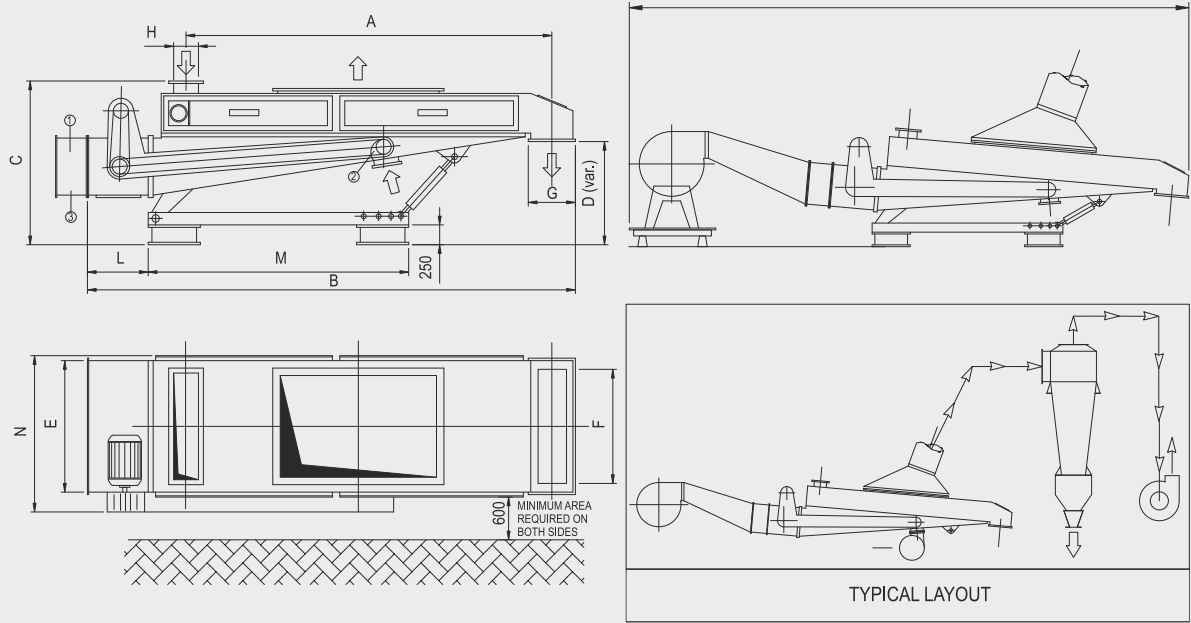
# FLUID BED DRIER-COOLER

It dries and cools fragile products such as cereal flakes that can't be mechanically processed. Completely metal construction with an adjustable inclination towards the discharge hopper.

It includes four basic parts:

1. Central body with working deck:  
Entirely closed structure with large side windows that can be easily opened for maintenance and cleaning operations as well as for frames removal.
2. Thrust valves:  
The valves are driven by means of a geared motor with fixed revolutions and the relevant transmission is effected by mean of chain.
3. Discharge head:  
Complete with adjustment gate for product output, that can be regulated through a quick type opening door on the front part of the head.
4. Air conveying and aspiration system by means of fans and cyclone dust collectors.

STANDARD DIMENSIONS (APPROX.)



TYPE	A	B	C	D	E	F	G	H	I	L	M	N	STD	DECK m	POWER (Kw)	WEIGHT Kg
150	1840	3020	1650	840	705	685	300	200	730	450	1100	990	4300	1.5	A T	400
300	2920	4108	1850	995	1050	1030	396	250	980	660	1900	1330	6600	3	A T	780
500	3578	4766	1850	995	1420	1415	396	250	1380	660	2500	1700	7600	5	A 0.75 T 1.1	1250



# BELT DRYER-COOLER

It will dry and cool flakes.

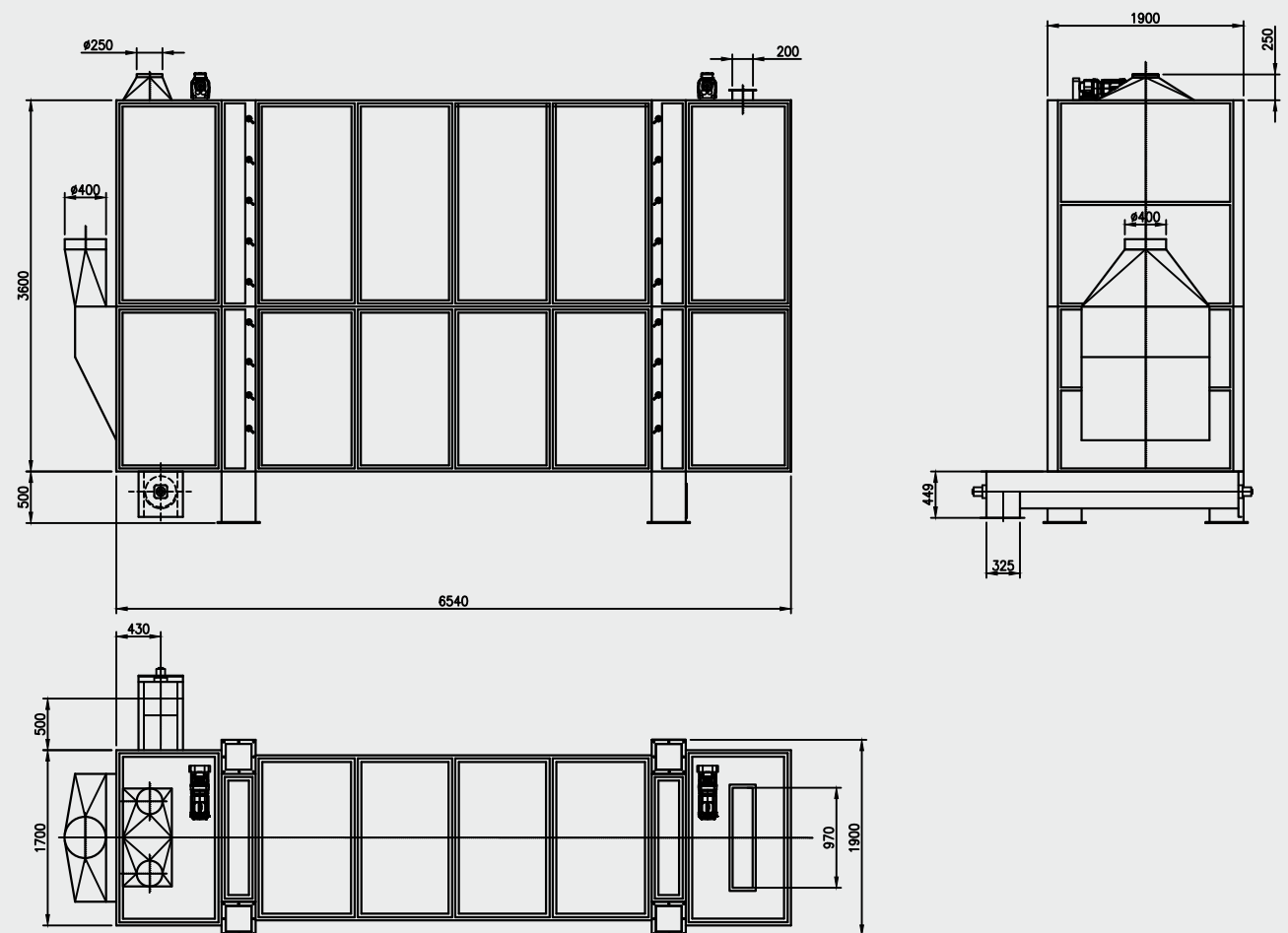
Sturdy metal construction made of iron pipes on which panels are fixed with bolts and plates. Panels are made of pipes and sheets insulated by rock wool to avoid an excessive heat dispersion.

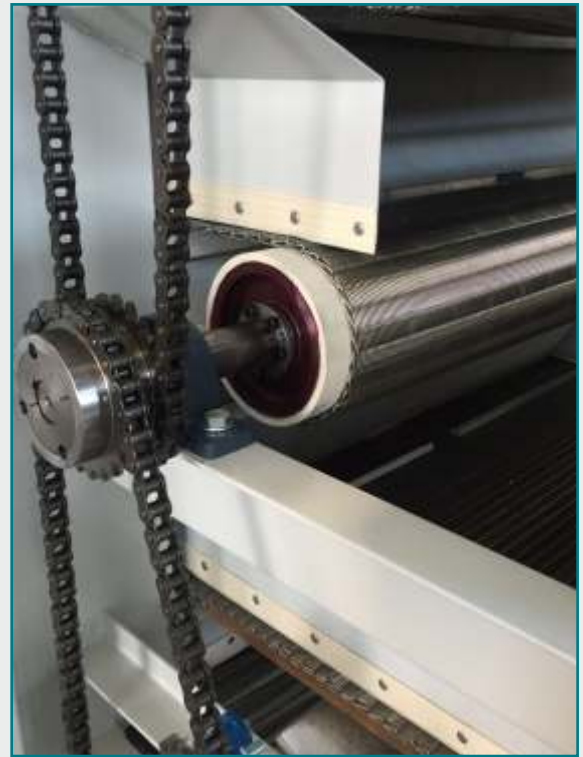
Inside of the unit there are some belts made of a special stainless-steel net for the drying and cooling of the product.

Belts are dragged by drums made of thick pipes which are rubberized to avoid the possible creep of the belt during drying operation.

Under each belt there is a rotating brush which will remove any possible residual flake assuring constant cleaning and efficiency.

A carbon steel screw extractor with "U" trough discharges dried flakes. In order to avoid the breaking of flakes, the screw rotates slowly.





# DEHUSKING UNIT FOR CEREALS AND LEGUMES

For the dehusking of: durum wheat, soft wheat, barley, millet, sorghum, red lentils, peas, chickpeas, lupin.

The dehusking process is based on the principle of abrasion by means of grinding stones.

This machine consists of 3 basic parts:

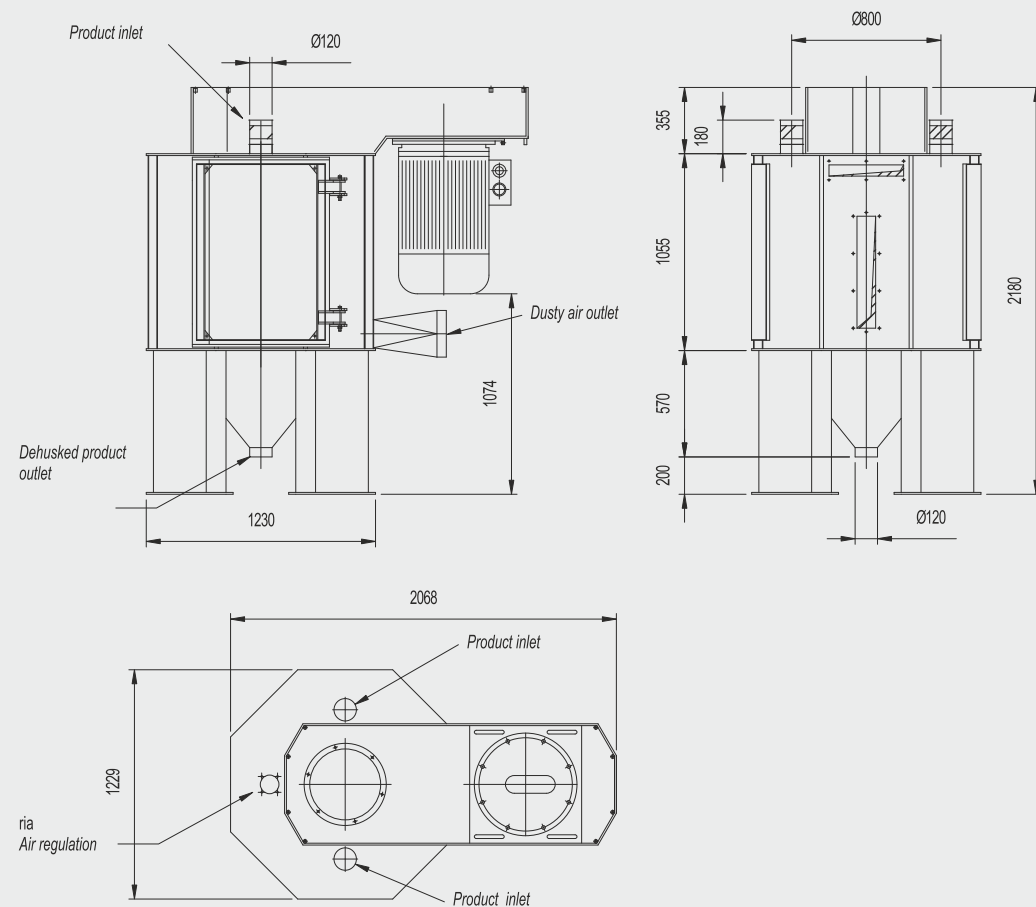
- Drive;
- Main body, including the dehusking and separation chamber;
- Discharge hopper with adjustment device for product discharge.

The motor is fixed on a mobile plate and transmission is effected by means of belts and pulleys.

The main body consists of a sturdy steel sheet structure welded onto a metal supporting frame, complete with large inspection and maintenance doors with handles for quick and easy opening.

The processing chamber is inside the main body and it encloses a shaft holding the whole dehusking system. The discharge hopper is fitted underneath the dehusking chamber and its distance from the processing chamber can be adjusted.

All dust and glumes obtained during the dehusking process are discharged by the aspiration system created by an external fan: they will then be recovered by normal dust collectors or filters







# OATS DEHUSKER

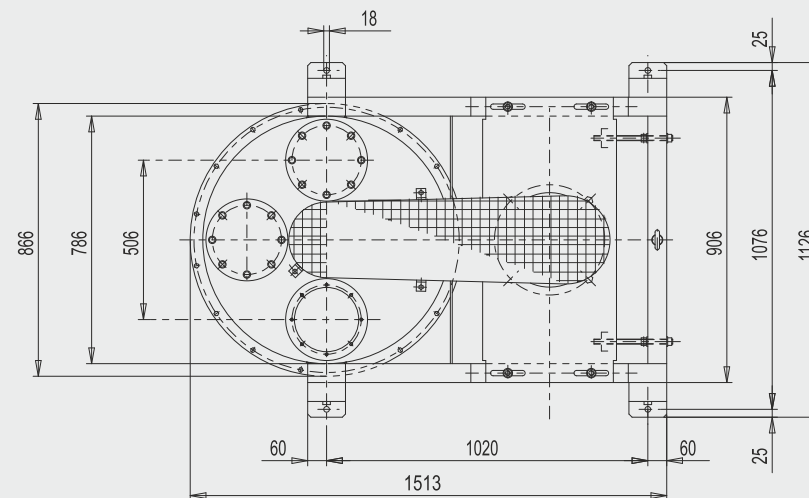
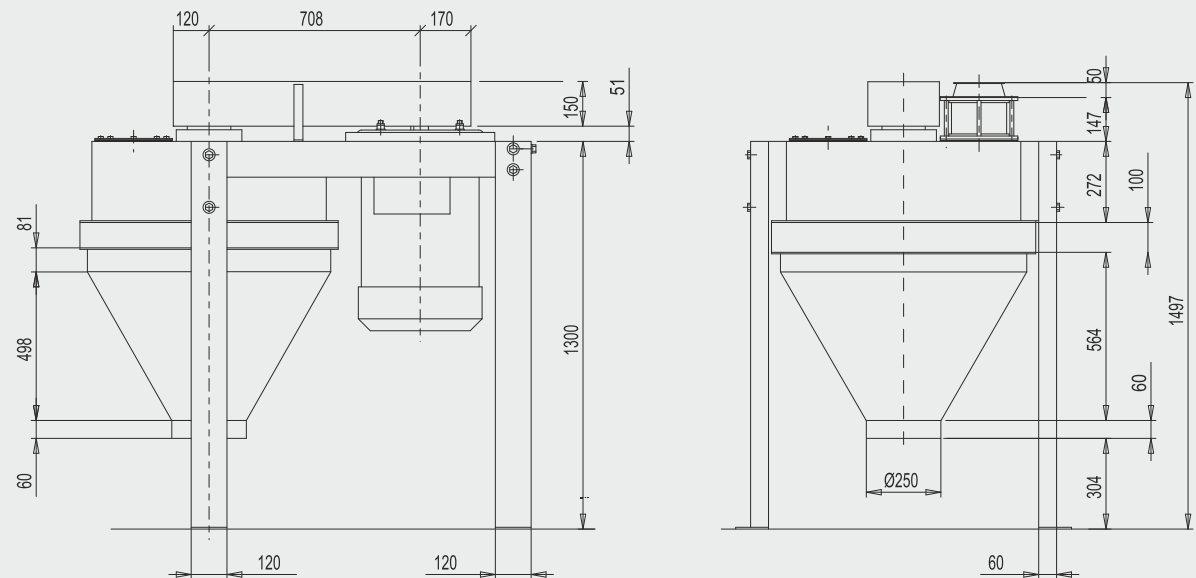
Sturdy structure in cast iron and steel.

It consists of a closed chamber with a special shaped rotor that speeds up the product and throws it against the semi-circular walls which are in anti-wear material.

The impact speed will separate the seed coat and the product obtained will then be discharged by the hopper underneath the dehusking chamber.

Completely closed and reinforced unit with three supporting legs.

Drive by means of electric motor and transmission by belts and variable type pulleys.





# SUNFLOWERS SEEDS DEHUSKER

It consists of three main parts:

- Dehusking chamber
- Separating chamber
- Transmission system with possibility to vary rotor revolutions

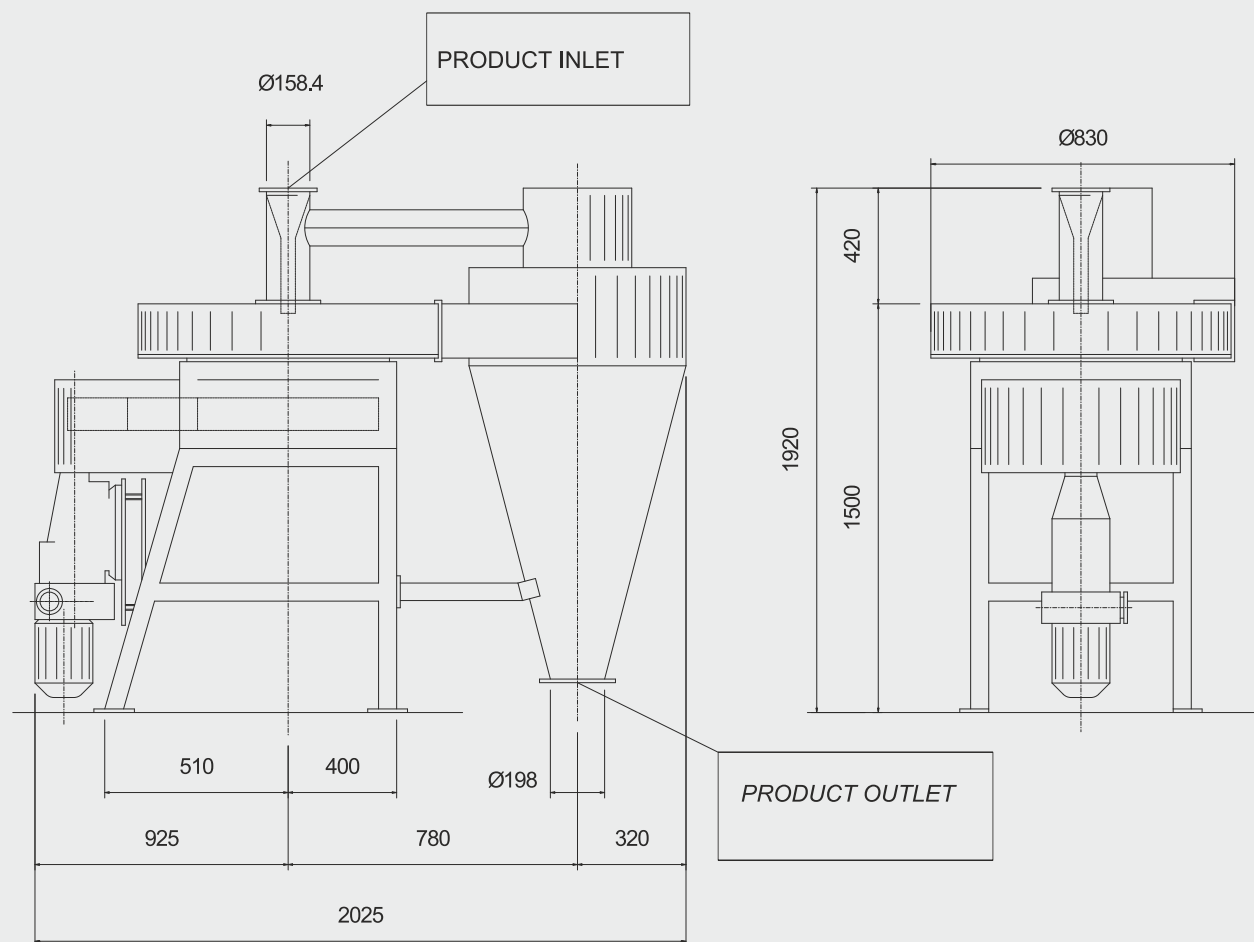
Circular shaped dehusking chamber with disc type rotor complete with special devices that speed up the product.

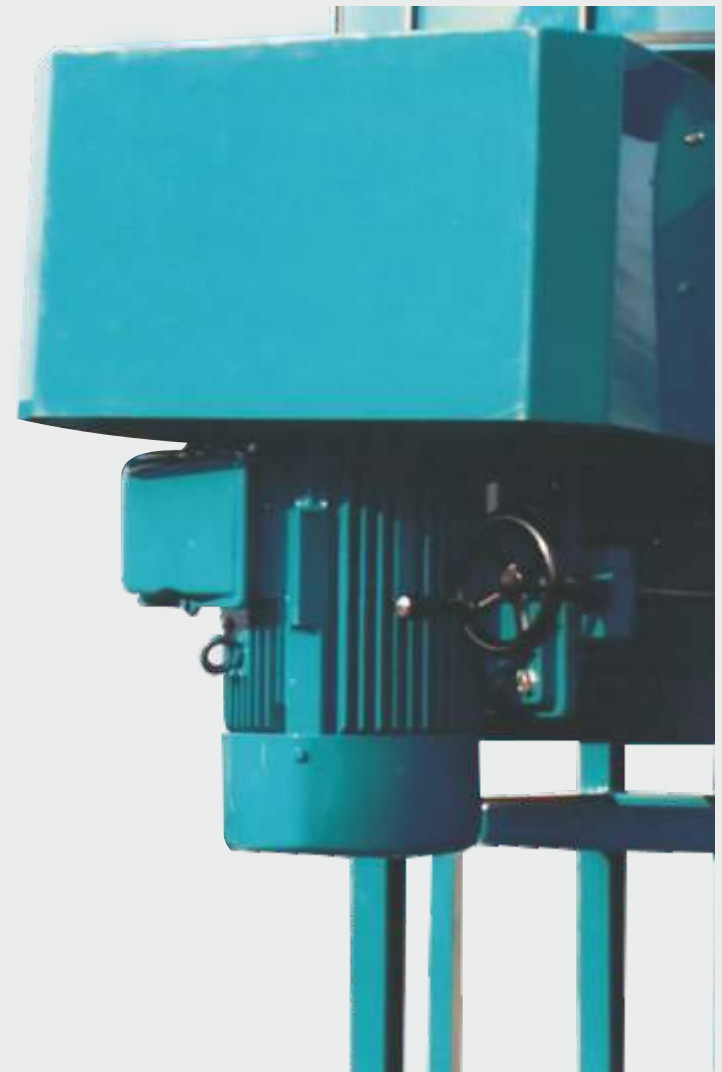
The sunflower seeds are launched against the inside walls of the chamber in a semicircular curve and the impact produced will split the seeds apart.

The separation chamber will slow down the product flow thus allowing a regular discharge operation with no need of particular reception systems.

Drive by means of a speed variator in order to adjust the rotor speed according to the different working conditions called for.

Section-iron supporting structure duly welded and screwed up.



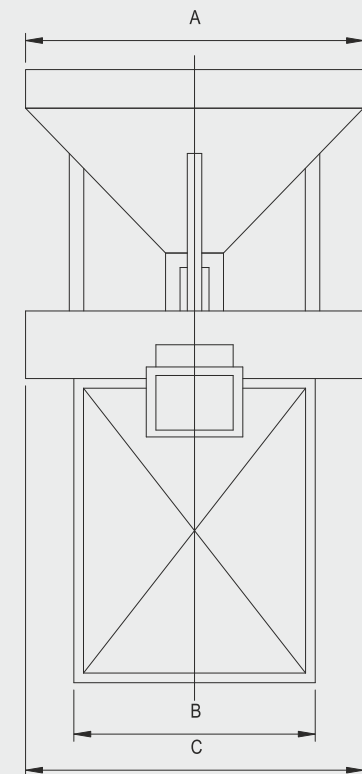
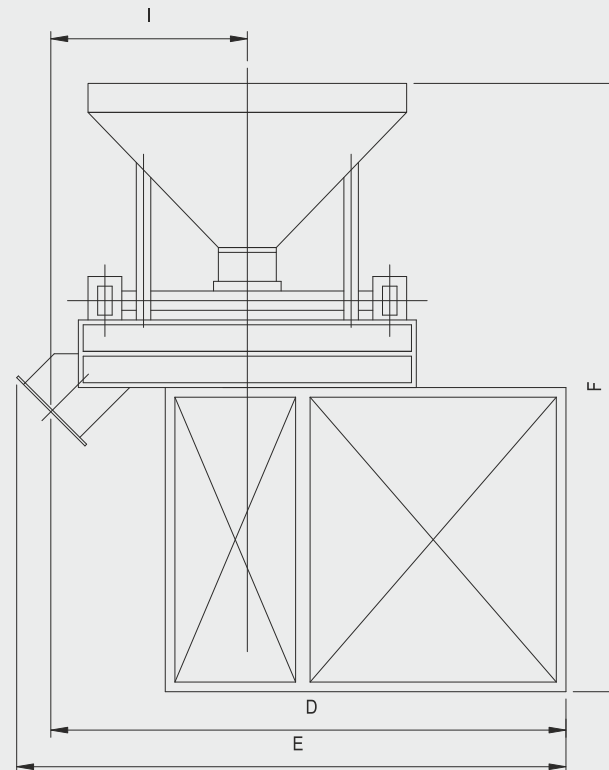
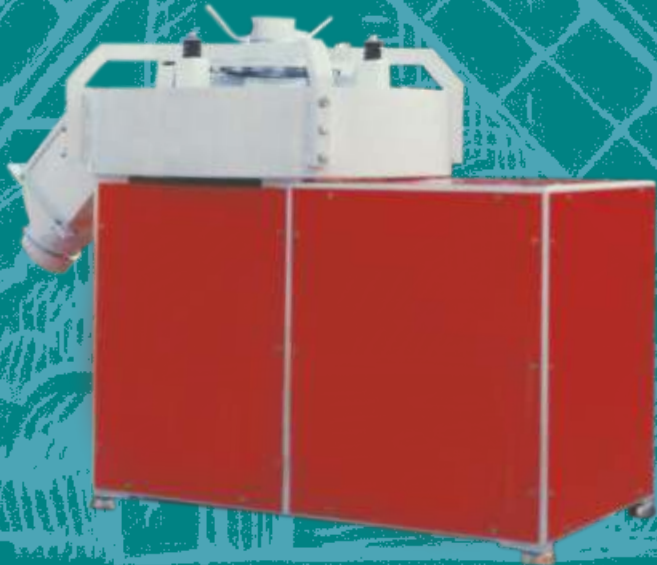


# STONE MILL

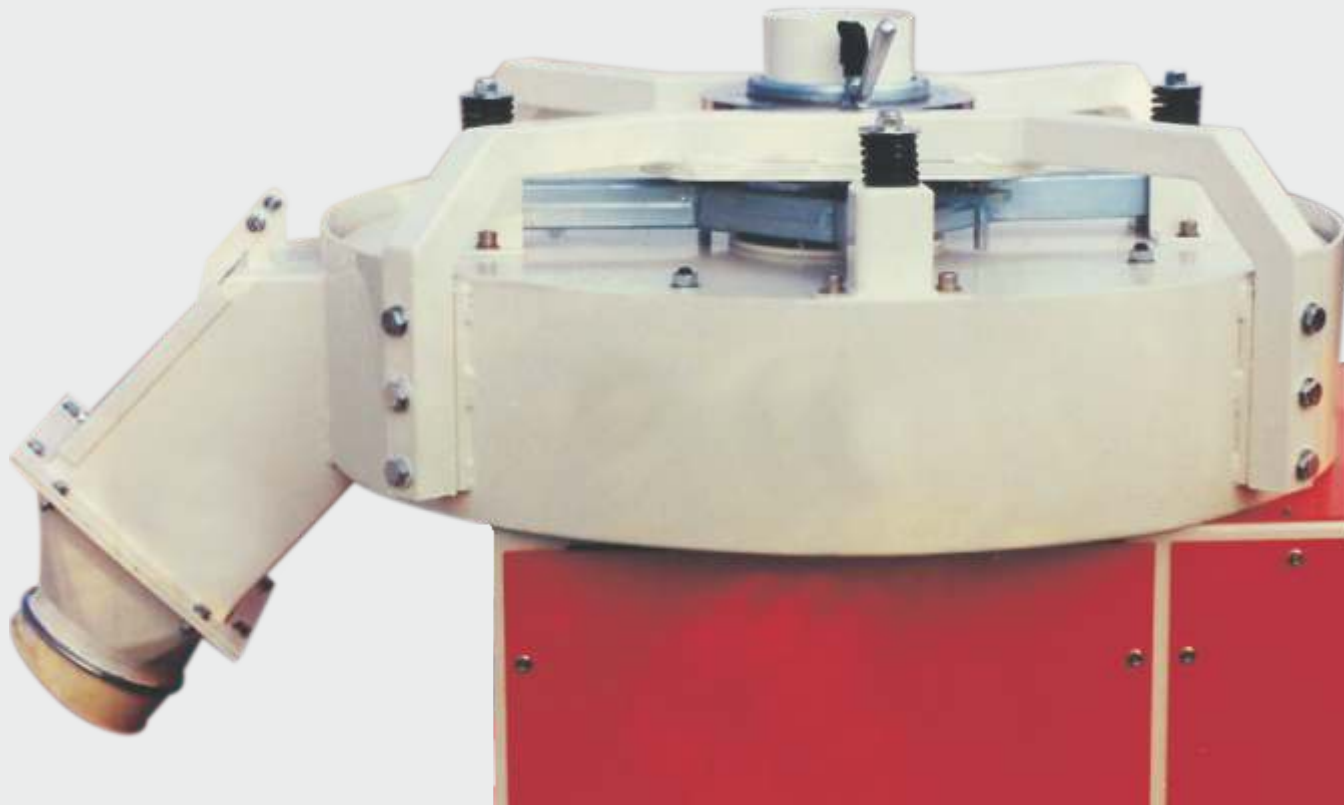
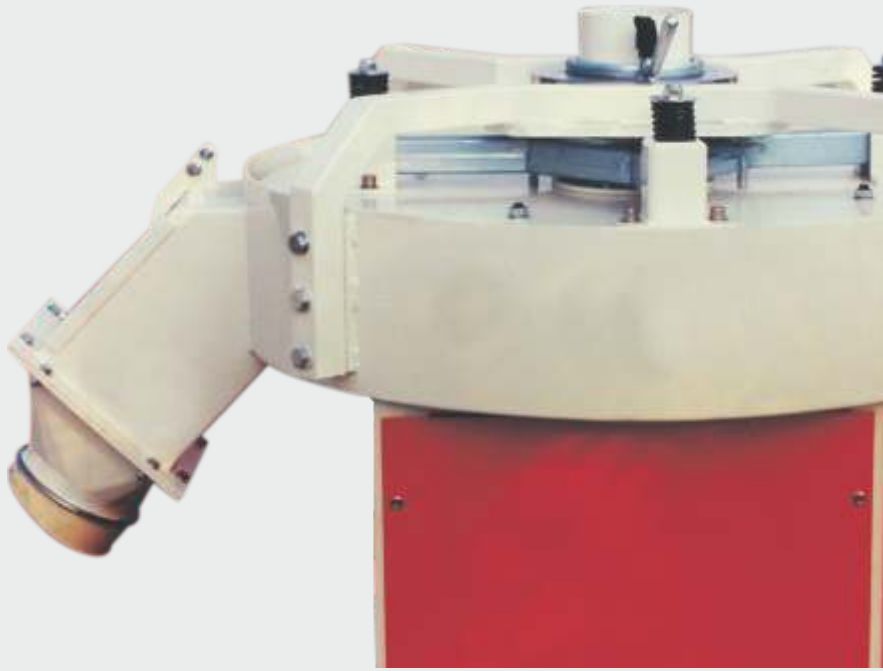
Thanks to the dry grinding process on which it is based, this unit allows to preserve the natural qualities of cereals such as mineral salts, vitamins, germ, etc.

The unit is complete with:

- Easy removable sturdy section iron structure, with protection guard;
- 600 or 800 mm. diameter stones fitted horizontally one on top of the other, with matching corrugations for the milling process that will also allow a fast discharging operation to avoid overheating of flour;
- Central feeding device with micrometric adjustment screw;
- Stones protection casing (dust proof), duly shaped in two halves for an easy maintenance or removal operations of the stones;
- Hand wheel adjustment device, for the regulation of distance between the stones;
- Drive group and transmission by means of pulleys and belts.



TYPE	A	B	C	D	E	F	G	H	I
600	800	450	700	1100	1250	1400	220	700	450
800	900	780	950	1400	1630	1600	220	800	630



# SQUARE SIFTER

Available from a single channel type unit with 10 sieves up to 8 channels with 30 sieves and with sifting surfaces from 6.5 m<sup>2</sup> up to 65 m<sup>2</sup>.

The Square Sifter is formed by channels and each channel is complete with stacks of sieves that are prepared and fitted according to the specific sifting diagram.

The dimensions of the sieves vary from a minimum of 640 x 640 mm with interchangeable sieve of 560 x 485 mm to a maximum of 1.200 x 1.200 mm with interchangeable sieves of 980 x 980 mm.

Sturdy supporting structure in section irons duly welded and screwed up.

The drive group is fitted at the center of the structure and it holds a rotating shaft with an adjustable eccentric weight on roller bearings.

The sieve frames and the interchangeable sieves are made with first quality wood and can be equipped with stainless steel and nylon clothing while the trays are in smooth material with PVC cleaners.







# MIXER

The mixer is used for intensive mixing process.

The particular shape of the rotor gives the product high fluidity and therefore the mixing process is similar to that of liquids.

The unit mainly consists of:

- Supporting structure;
- mixing chamber;
- inside rotor with relevant seals and supporting elements.

The supporting structure has large legs and two thick head plates duly bended and welded. The semicircular mixing chamber is complete with lid, product inlet and outlet and inspection door.

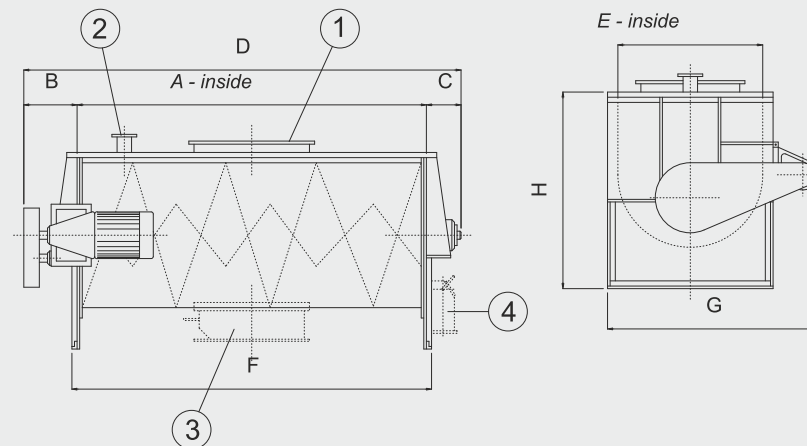
The discharge outlet is “double-door” type and is placed along the entire length of the mixer; it allows a quick discharge operation of the mixed product and consequently avoids internal accumulations.

Single shaft rotor with two double type and opposed mixing belts duly welded on it.

Shaft supporting elements in cast iron structure with roller bearing, fitted outside the mixer.

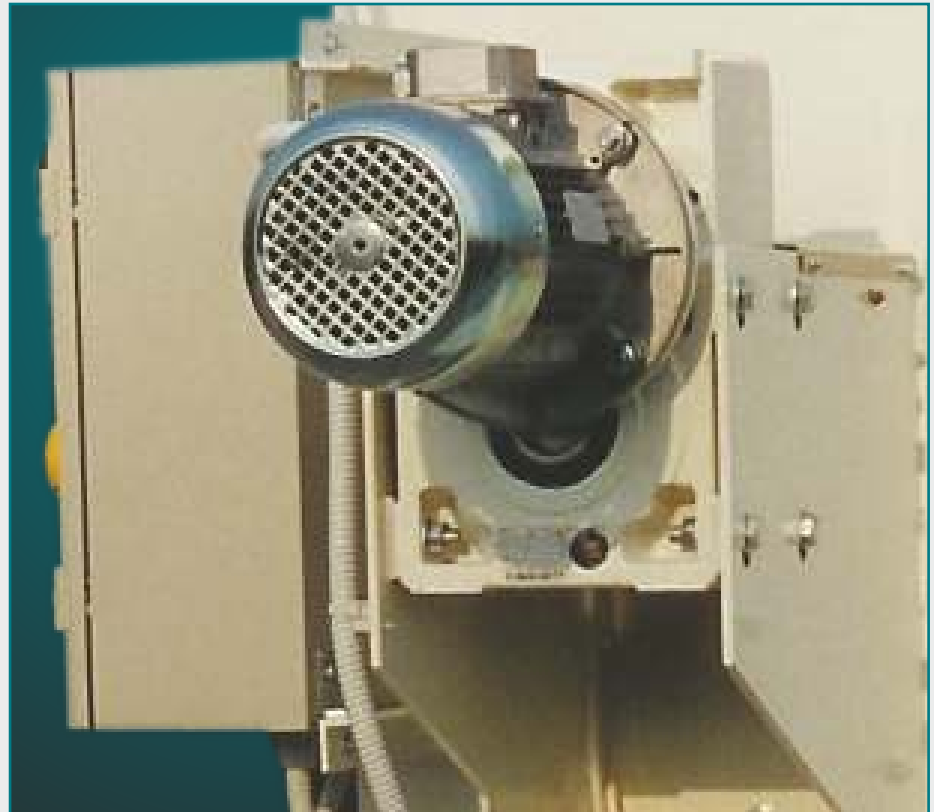
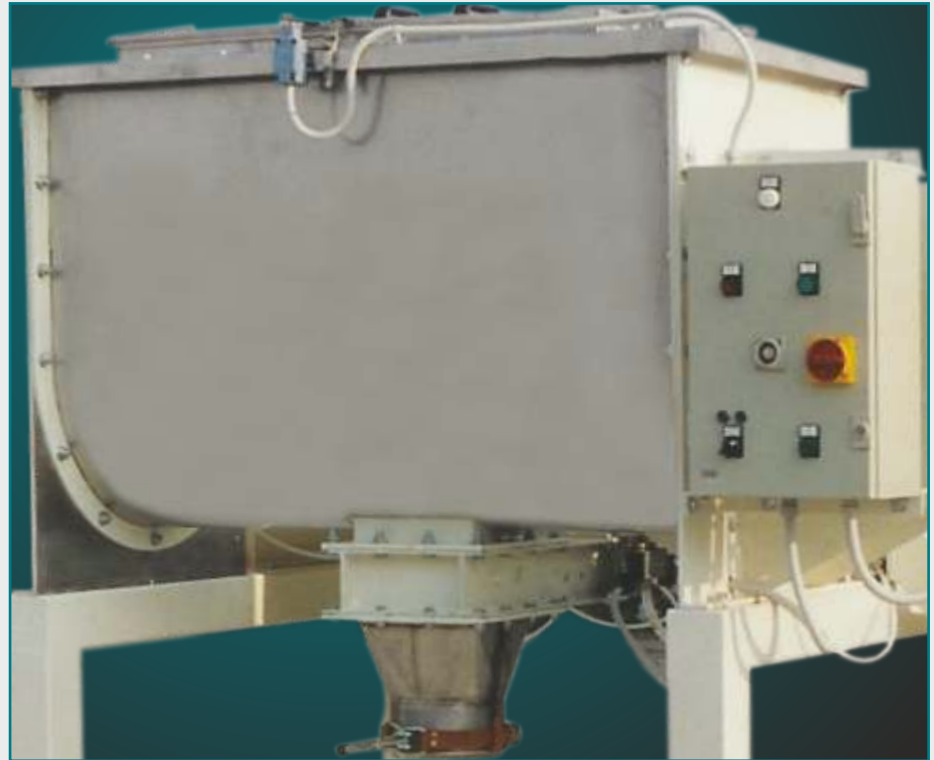
Adjustable pressing type packing with dehumidified air flow system.

Drive by means of motor and speed reducer. Transmission by belts and pulleys.



TYPE	A	B	C	D	E	F	G	H
100	750	185	85	1020	450	840	563	675
175	900	195	85	1180	500	990	638	750
250	1200	360	200	1760	600	1312	743	900
500	1400	370	250	2020	800	1512	943	1100
1000	1800	395	255	2450	900	1936	1053	1200
1500	2000	455	315	2770	1000	2136	1204	1400
2000	2300	470	320	3090	1100	2436	1304	1500
3000	2700	470	320	3490	1200	2836	1404	1600
4000	3000	515	335	3850	1300	3176	1554	1800
5000	3200	515	335	4050	1400	3376	1665	1900

1	INSPECTION COVER
2	AIR OUTLET
3	CENTRAL OUTLET
4	SIDE OUTLET



# VIBRATING DISCHARGER

Completely metal construction in two separate parts connected by means of oscillating levers fitted onto rubber vibration dampeners.

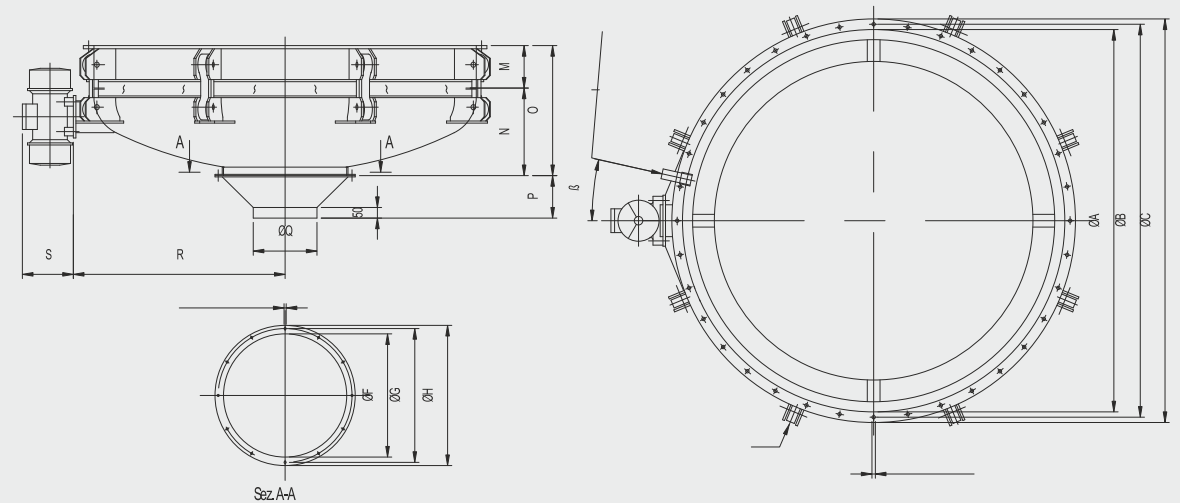
Complete with inner crowned bottom with outlet reducer.

The vibrating movement is given by a vibrator installed in the lower part of the structure.

The two parts of the unit are held together by means of an elastic belt.

Complete with counter flange to be connected to the silos discharge hoppers.

A manual type slide gate is fitted on the discharge outlet, for emergency purposes.



Type	Dimensions																			Kw		Fc (N)			
	ØA	ØB	ØC	ØD	E	ØF	ØG	ØH	ØK	L	M	N	O	P	ØQ	R	S	T	β	Weight Kg	Vol. m3	50Hz	60Hz	50Hz	60Hz
075 S	750	800	850	14	18	500	550	580	10	8	200	170	370	180	250	435	210	4	25°	220	0.25	0.53	0.66	7200	7600
100 S	1000	1050	1100	14	24	500	550	580	10	8	200	243	443	180	250	600	210	4	15°	260	0.47	0.53	0.66	7200	7600
125 S	1250	1300	1350	14	24	500	550	580	10	8	200	290	490	180	250	725	250	4	15°	300	0.75	1.10	1.20	7200	7600
150 S	1500	1550	1600	14	30	580	630	660	10	12	200	347	547	220	250	852	250	6	18°	480	1.15	1.10	1.20	17600	17450
180 S	1800	1850	1900	14	36	580	630	660	10	12	200	412	612	200	300	997	250	6	12°	610	1.75	1.10	1.20	17600	17450
210 S	2100	2160	2220	18	36	700	750	780	10	12	200	456	656	255	300	1170	270	8	14°	905	2.50	1.60	1.70	24100	24360
240 S	2400	2460	2520	18	48	700	750	780	10	12	200	520	720	255	300	1330	270	8	15°	1090	2.90	1.60	1.70	24100	24360



# ROTARY AIR LOCK

It is generally installed on the outlet spout of cyclone dust collectors or filters so as to discharge dust and powders that have been separated.

Sturdy construction either in stainless steel or cast iron.

Different types of rotors can be used depending on the products involved in the process system. The rotor is fitted onto supporting elements with ball bearings with lip seals in synthetic rubber.

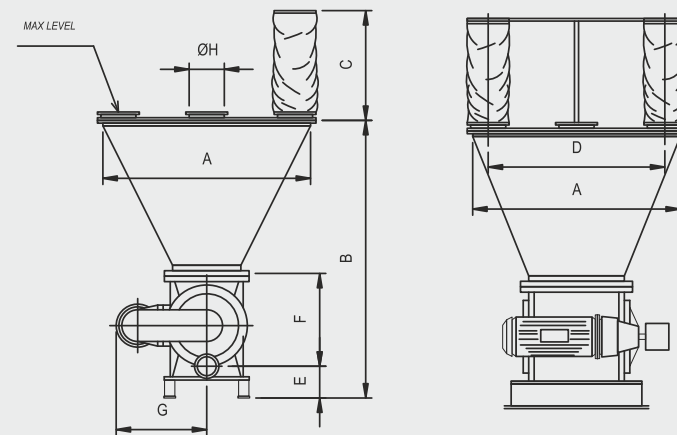
Drive system by geared motor directly coupled to the rotor shaft or by flexible coupling or chain transmission.

## ROTARY AIR LOCKS

TYPE	dm <sup>3</sup> /rev	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S
MO 2	2	150	185	145	122	210	180	/	240	214	/	11	387	50	28	180	120	160
MO 5	5	200	240	315	157	280	140	250	325	140	295	11	443	50	28	220	150	190
MO 10	10	250	280	390	195	360	150	300	360	170	334	13	530	60	35	260	180	220
MO 20	20	300	350	470	235	400	200	360	435	220	400	13	615	80	35	310	230	270

## BLOW THROUGH AIR LOCKS

TYPE	dm <sup>3</sup> /rev	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q
MO 5F	5	200	150	270	150	60	55	180	115	260	210	/	9	50	28	410
MO 10F	10	270	200	340	182	70	62	140	105	350	280	250	11	50	28	470
MO 19F	19	360	250	400	218	100	73	150	125	430	330	300	11	60	35	595
MO 40F	40	480	300	490	268	120	88	200	190	580	375	360	11	80	35	755



## FLUIDIZING GROUP

TYPE	dm <sup>3</sup> /rev	A	B	C	D	E	F	G	H
MO 5F	5	500	500	500	350	160	215	300	105
MO 10F	10	700	700	500	420	170	278	360	120
MO 19F	19	790	790	500	450	170	327	390	150
MO 40F	40	820	820	500	480	180	402	390	150



# FILTRATION

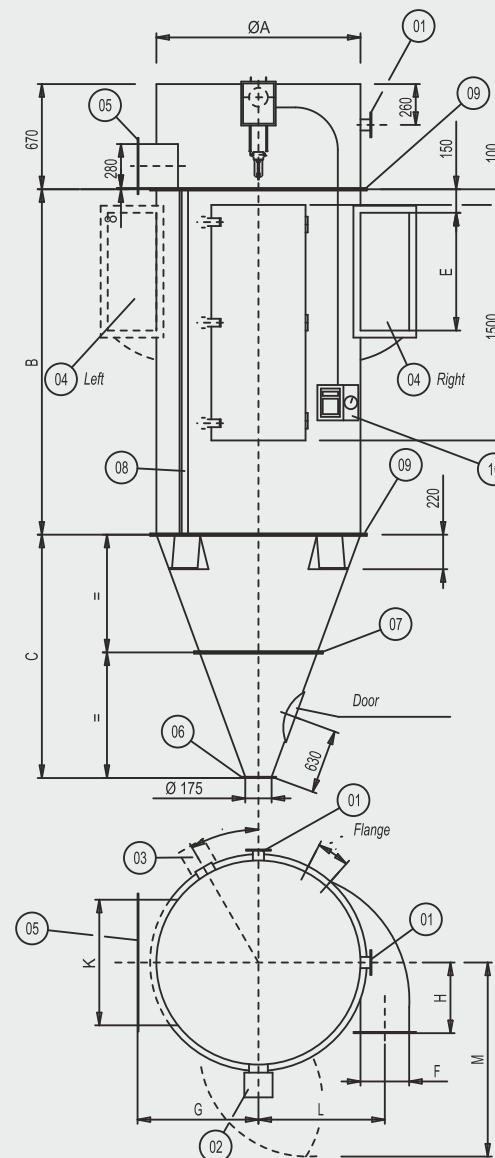
For dusty air filtering.

The dusty air passes through the filtering sleeves made of cotton fabric.

The sleeves will then be cleaned by a counter current air flow that will detach all the dust particles from the sleeves surface and deliver them into the discharge hopper.

The cleaning system uses compressed air and it is driven and controlled by an electronic switchboard that allows to set up the different sequences of the air blows

Complete with alarm system in case of occlusion or tearings in the filtering sleeves.



- 01 Air inlet for sleeve cleaning
- 02 Position of filtering air manifold
- 03 Position of filtering air manifold
- 04 Dusty air inlet (right or left)
- 05 Clean air outlet
- 06 Rotating flange for rotary air lock connection
- 07 Cone flange (only for some models)
- 08 Filter body division in 2 parts (only for some models)
- 09 Body and cone connection flange
- 10 Control board for filtering air manifold



FTD	UNIT DIMENSIONS													SLEEVES Ø120		WEIGHT
	Ø A	B	C	D	E	F	G	H	K	L	M	α	β	N°	L	kg
12/20	900	2200	1000	3870	390	200	570	320	280	550	910	35°	15°	12	2200	345
12/25		2700		4370											2500	490
12/30		3200		4870											3000	520
24/20	1100	2200	1270	4140	600	250	670	400	520	675	1040	30°	15°	24	2200	425
24/25		2700		4640											2500	730
24/30		3200		5140											3000	800
36/20	1300	2200	1550	4420	750	310	770	450	800	805	1250	30°	15°	36	2200	1110
36/25		2700		4920											2500	1195
36/30		3200		5420											3000	1390
56/20	1600	2200	1970	4840	850	400	920	550	1150	1000	1430	25°	10°	56	2200	1558
56/25		2700		5340											2500	1661
56/30		3200		5840											3000	1903
72/20	1750	2200	2160	5030	1000	450	1000	600	1450	1100	1515	20°	10°	72	2200	1687
72/25		2700		5530											2500	1825
72/30		3200		6030											3000	1963
96/20	2100	2200	2650	5520	1150	550	1120	700	1750	1325	1710	20°	9°	96	2200	2590
96/25		2700		6020											2500	2719
96/30		3200		6520											3000	2880
120/20	2250	2200	2850	5720	1390	550	1300	800	1980	1400	1770	20°	9°	120	2200	2334
120/25		2700		6220											2500	3484
120/30		3200		6720											3000	3783



FTD	SLEEVES Ø 120		FILTERING SURFACE m <sup>2</sup>	AIR FILTERING m <sup>3</sup> /min		CLEANING AIR m <sup>3</sup> /min	BECKER COMPRESSOR GROUP			
	N°	L		RATIO 1:3 m <sup>2</sup> — m <sup>3</sup> /min	RATIO 1:5 m <sup>2</sup> — m <sup>3</sup> /min		Type	Capacity m <sup>3</sup> /min	kW	MAX PRESSURE
12/20	12	2200	9.0	27.0	45.0	0.100 6.00 mc/h	DT 4.10	0.16 7 mc/h	0.37	0.1 MPa (1 Bar)
12/25		2500	11.3	33.9	56.5					
12/30		3000	13.5	40.5	67.5					
24/20	24	2200	18.0	54.0	90.0	0.200 12 mc/h	DT 4.16	0.26 13 mc/h	0.55	
24/25		2500	22.6	67.8	113.0					
24/30		3000	27.1	81.3	135.5					
36/20	36	2200	27.1	81.3	135.5	0.300 18 mc/h	DT 4.25	0.41 24 mc/h	1.1	
36/25		2500	33.9	101.7	169.5					
36/30		3000	40.7	122.1	203.5					
56/20	56	2200	42.2	126.6	211.0	0.470 28 mc/h	DT 4.40	0.66 35 mc/h	1.85	
56/25		2500	52.7	158.1	263.5					
56/30		3000	63.3	189.9	316.5					
72/20	72	2200	54.2	162.6	271.0	0.604 36 mc/h	KDT 3.60	0.9 48 mc/h	3	
72/25		2500	67.8	203.4	339.0					
72/30		3000	81.4	244.2	407.0					
96/20	96	2200	72.3	216.9	361.5	0.806 48 mc/h	KDT 3.80	1.13 62 mc/h	4	
96/25		2500	90.4	271.2	452.0					
96/30		3000	108.5	325.5	542.5					
120/20	120	2200	90.4	271.2	452.0	1.000 60 mc/h	KDT 3.80	1.13 62 mc/h	4	
120/25		2500	113.0	339.0	565.0					
120/30		3000	135.7	407.1	678.5					

*Baby food plants*









*Cereals and legumes Dehusking*





*Mixing and proportioning systems*



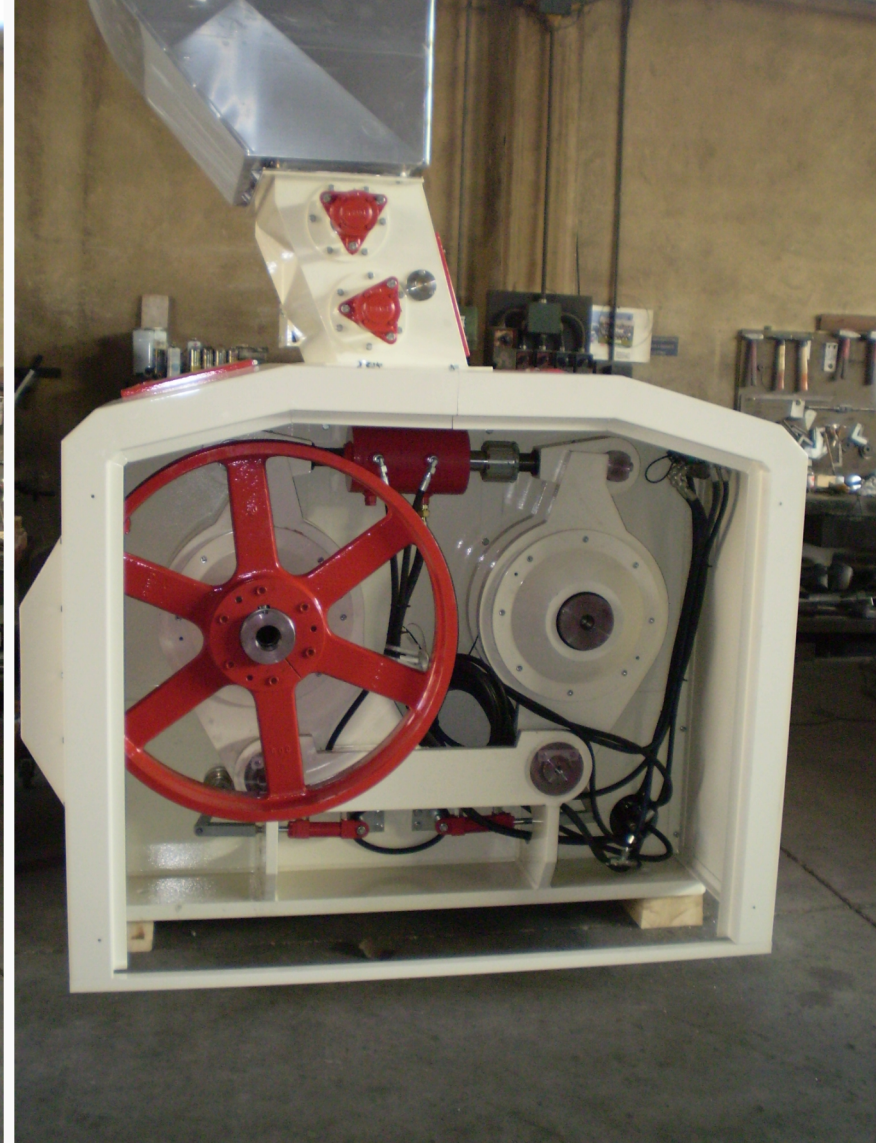
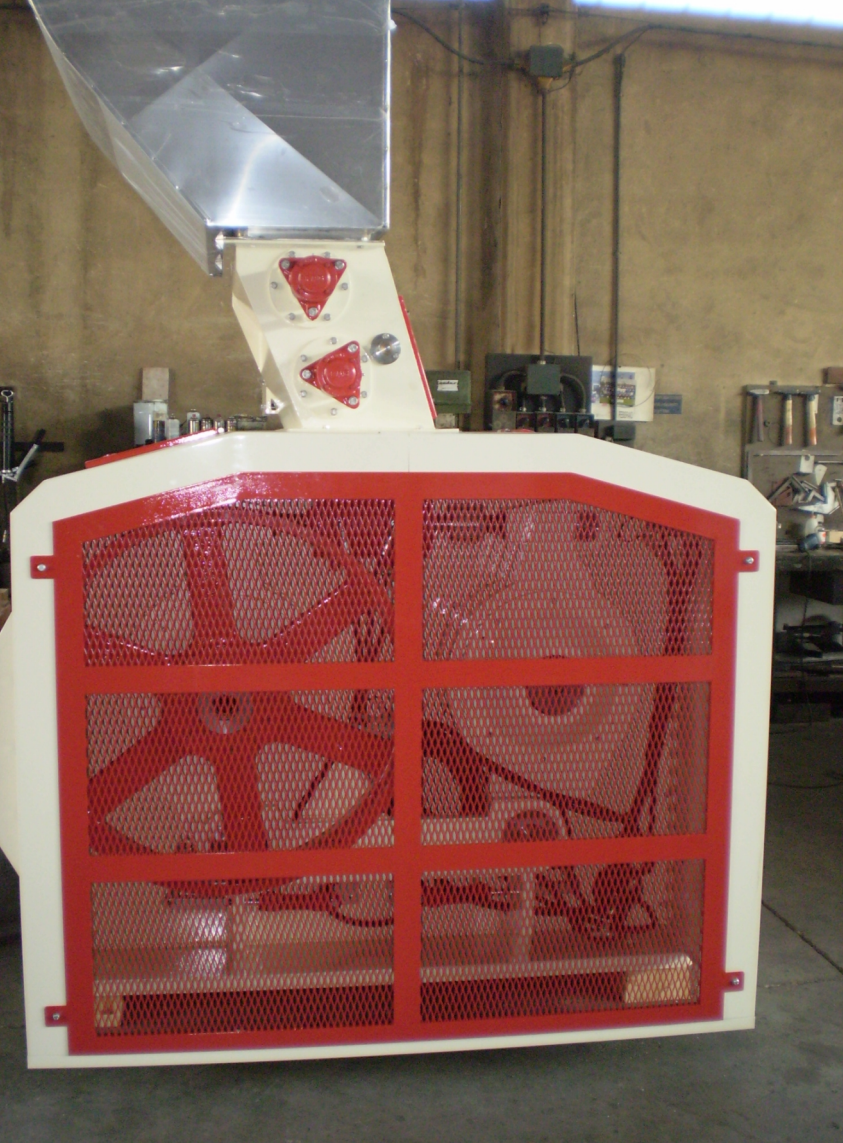






*Pre-cooked flour/meal plants*







## *Feed mills*











*Mills*







*Silos*







