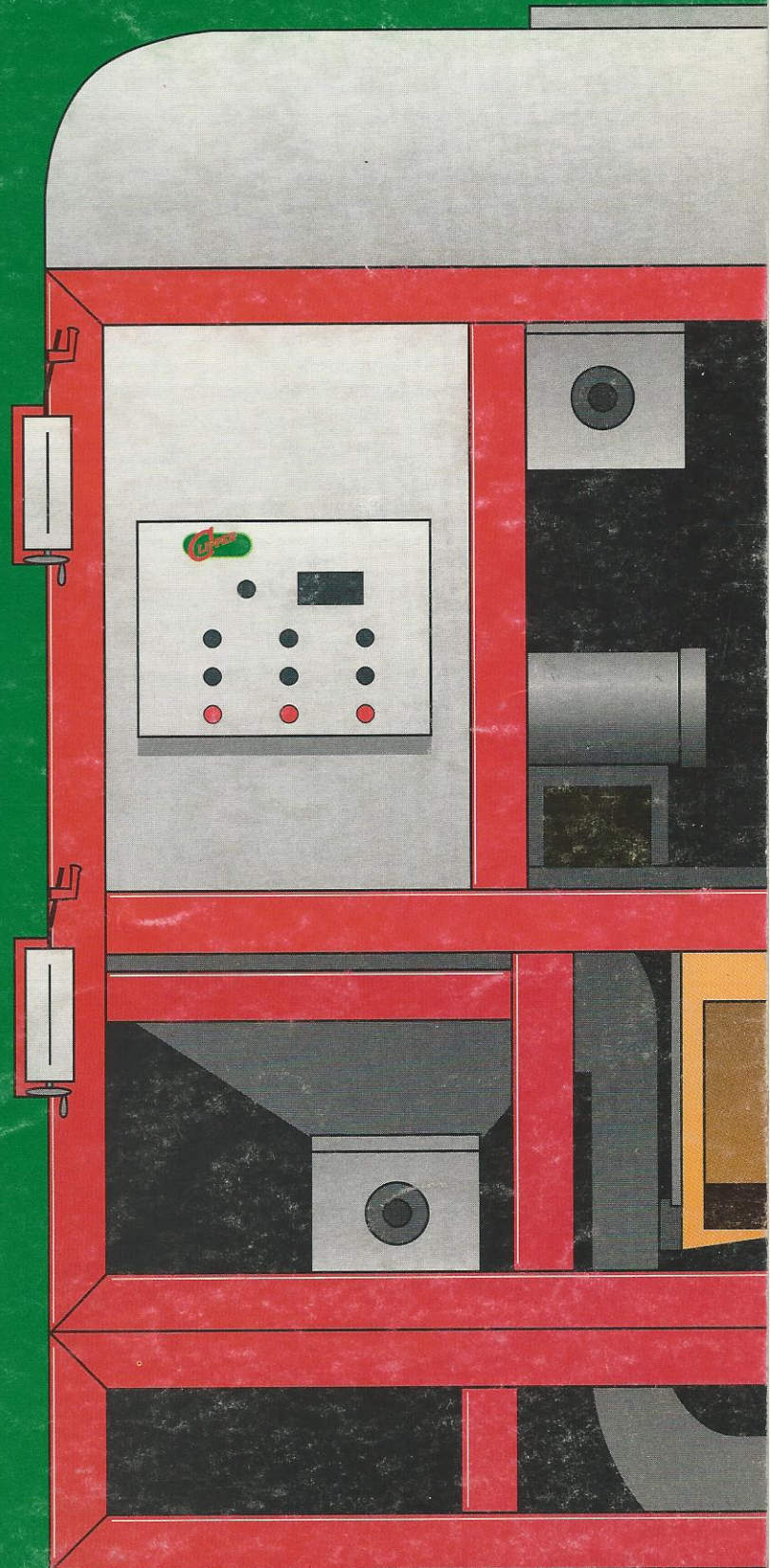


**PRECISION
AIR-SCREEN SEED
CLEANERS**



NEW GENERATION SERIES



Introducing the New Generation series from Clipper!

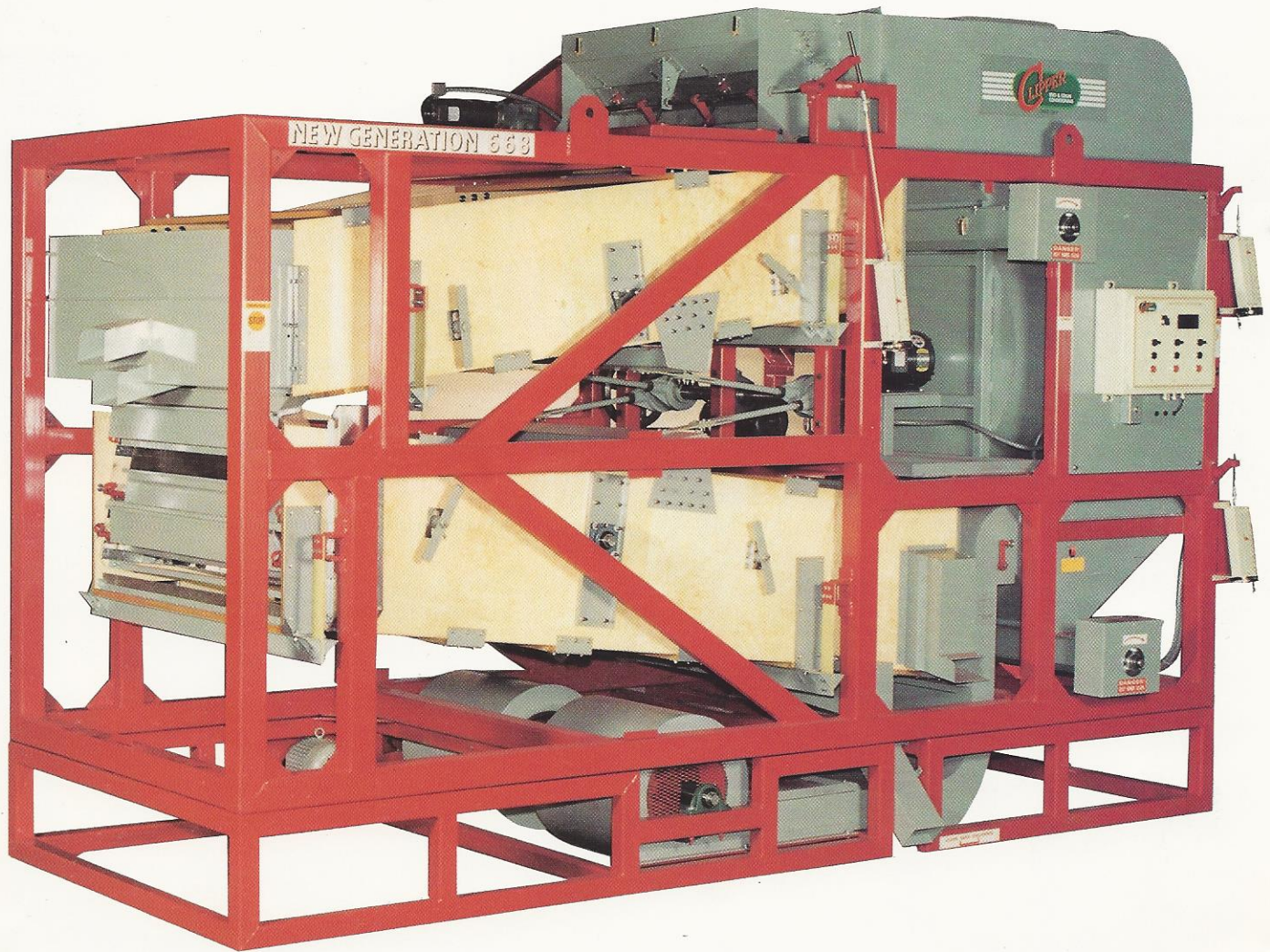
This brochure is about some of the most popular models of Clipper air-screen cleaners. Our New Generation series was developed for mid to large sized commercial precision seed conditioning plants to clean and grade most seed, grain, legumes, dry flowable grass seed and vegetable seed. They are also installed in foundation, registered and

certified seed conditioning plants, as well as higher capacity popcorn and market grain facilities.

How do you know what Clipper model will meet your needs?

Many different Clipper models are available for a wide range of applications and your Clipper representative will be pleased to assist you by providing both information and experience.

To select the Clipper best suited for your application and to be in a position to compare some of Clipper's unique features, it is important for you to understand how an air-screen cleaner works, the various accessories and controls that are available but most important, the manner and rate at which the commodity being cleaned flows through the machine.



NEW GENERATION SERIES

Evolutionary change... not revolutionary!

The original Clipper machines were designed over 120 years ago. The reason a Clipper works so well is because it has been continually and carefully improved upon, year after year since 1869. Who else can make such a claim?

Craftsmanship you will be proud to own!

A Clipper is truly a beautiful piece of equipment. The craftsmanship is usually admired because most people just don't see it any more.

Of course, you don't buy a Clipper because of its beauty - you buy it because of its performance.

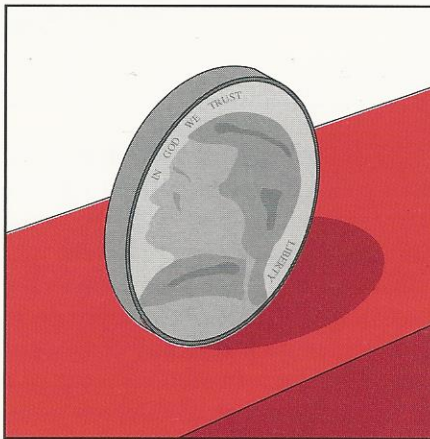
Fifty years old and they run like new!

Throughout the years, Clipper cleaners have earned an enviable reputation for durability. We receive parts requests and ship parts daily for forty and fifty year old Clippers that are still operating. Many customers are still using their original machines but have updated them by adding new features such as ball trays. The New Generation of Clipper cleaners live up to those same high standards synonymous with the Clipper name. The heavy duty 4" tubular steel frame is designed to withstand vibration and to last just as its predecessors. The new open frame design offers much greater accessibility for maintenance and product observation.

The nickel test!

Stand in front of a Clipper while it is operating and you won't believe a machine of this size can be so free of vibration. The secret is heavy-duty construction and counterbalancing!

Counterbalancing is crucial to the smooth, vibration-free operation of the cleaner. Clipper counterbalances all air-screen machines because we recognize the potential effects of vibration on the seed plant structure. Many machines are installed in older buildings on upper floors where vibration may be amplified and can, therefore, prove detrimental to the structure.



All Clipper cleaners are factory tested and held to very strict tolerances. No cleaner leaves our plant until our quality control manager and our machine tester are satisfied that the Clipper standards have been met.

Although we use a vibration meter to test the side-to-side and the front-to-back vibrations, another good comparison is that of balancing a nickel on edge, on the machine frame while it is running at full operating speed.

Designed to shake the screens... not the cleaner!

Although Clipper cleaners are designed and built with counterbalanced shoes, it is possible for some vibration to occur. Excess vibration indicates an imbalance in a machine due to either inadequate maintenance or possibly a broken part.

Thousands of satisfied users

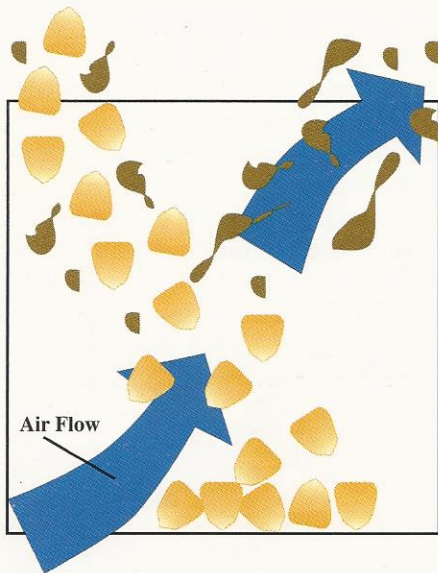
Reliable products that have evolved from many years of experience are why Clipper seed and grain cleaners are the most widely used machines of this type in the world.

To make it easier to understand the many different features available on Clipper machines, we have provided a brief description of how a Clipper air-screen cleaner works along with an explanation of the important features.

Here's how a Clipper works!

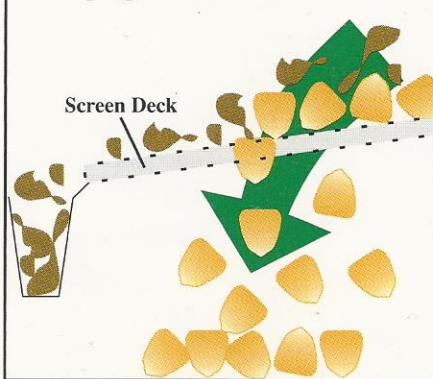
Clipper machines do separations based on the differences in the width and thickness as well as the weight of the seeds. This is accomplished by combining aspiration, which lifts and removes the light material from the seed mass as it flows through a column of air,

Aspiration

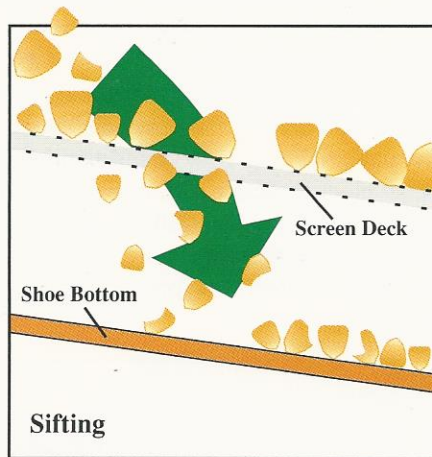


with scalping, a process whereby good seed drops through the openings of a perforated metal screen, while the trash continues its flow over the screen to a discharge spout,

Scalping



and sifting or grading where the smaller particles of good crop seed, weed seeds, sand, etc. fall through the openings of the screen, while the larger crop seed flow over the screen.



By following the flow of material through the diagram, you will see how the seed or grain, flows by gravity out of the hopper mounted on top of the machine into the sifting or grading where the smaller particles of good crop seed, weed seeds, sand, etc. fall through the openings of the screen, while the larger crop seed flow over the screen.

A screen deck typically consists of one to three screen sections made of a perforated metal or wire screen material, mounted on steel clad wooden frames, lying end to end in the same plane.

The screens are mounted horizontally, in variable pitch rockers which pivot within a large box called a shoe. The shoe itself is made of high-grade Finnish plywood and reciprocates at a high frequency causing the product to flow through the machine.

Clipper precision air-screen seed cleaners typically have two shoes with one to three screen decks mounted in each shoe. The screen decks are numbered from the top so, in a five screen cleaner for example, screen decks 1 and 2 would be mounted in the top shoe and screen decks 3, 4 and 5 would be mounted in the bottom shoe as shown on the next page.

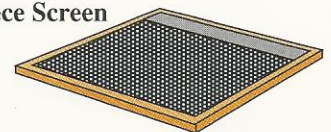
As the seed flows from the hopper, it passes through a duct or air leg connected to the back mounted suction fan. A stream of air passes through the seed to remove dust and light foreign material. Larger foreign material is scalped off over the top or 1st screen deck to a catch-all spout.

Good seed flows through the top or 1st screen deck to the 2nd screen deck in the upper shoe sifting out small trash and weed seeds.

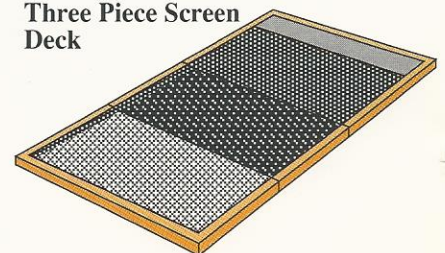
The good seed flows from the top shoe into a three-way splitter where the product flow is divided into three equal segments. Each segment is directed to one of the three screen decks (3, 4 or 5) for very precise sifting separation such as removing broken, withered or immature seeds or removing splits from beans.

The good seed flowing over screen decks 3, 4 and 5 is recombined and flows into the vertical air column for a final, precise air separation. The bottom blast fan, synchronized and balanced with the back mounted fan lifts the remaining light foreign matter, weed seeds and immature, insect damaged, poor quality seeds from the good seed. The trash is removed from the air flow in the expansion (settling) chamber. The dust and very light material is carried with the air to the dust house, collector or dust filter system. The cleaned commodity discharges from the cleaner through a slotted opening which extends across the full width at the bottom of the machine.

One Piece Screen Deck



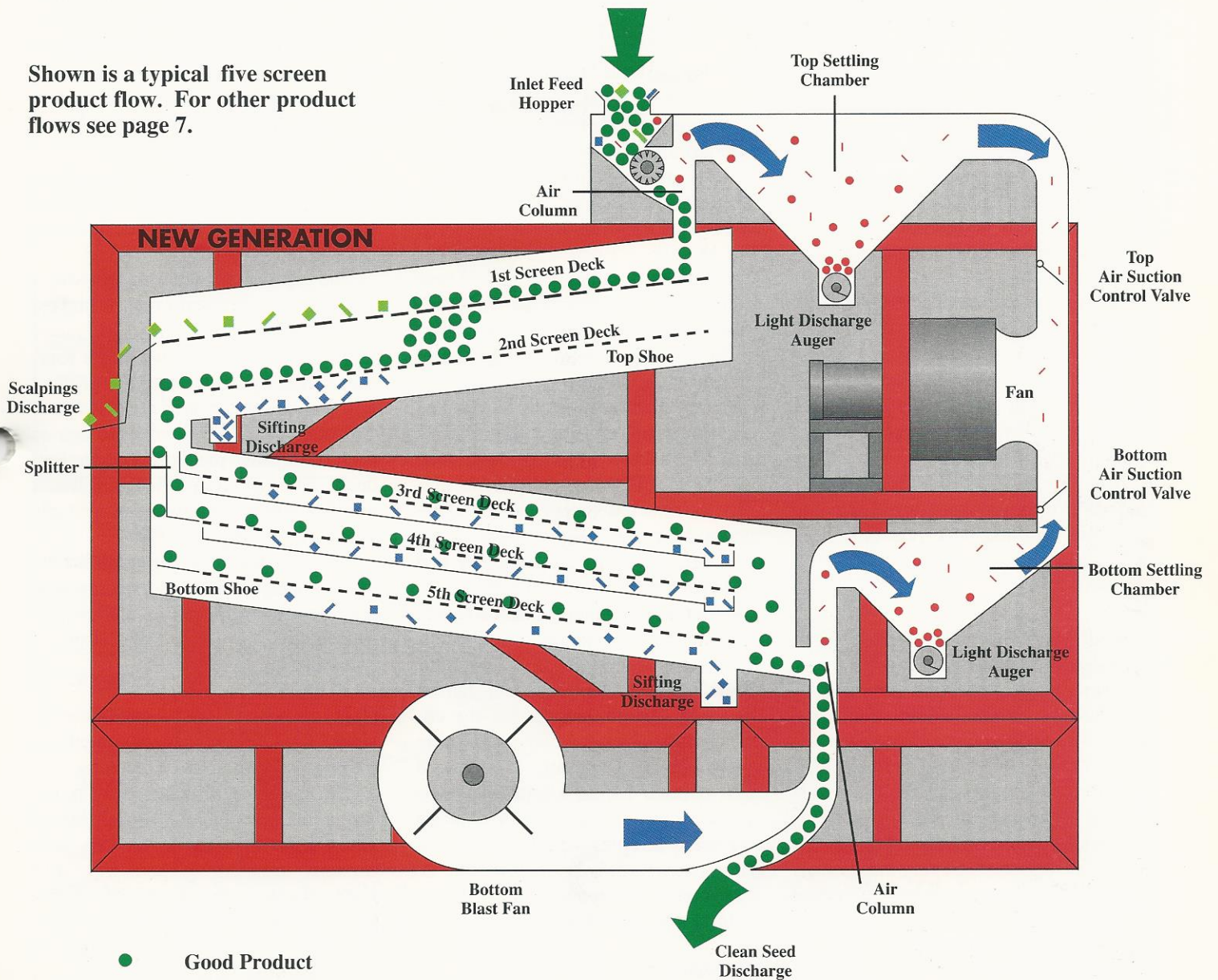
Three Piece Screen Deck



NEW GENERATION SERIES

The Clipper New Generation Series: Major Components and Product Flow

Shown is a typical five screen product flow. For other product flows see page 7.



- Good Product
- Airliftings (Dust or Light Foreign Material)
- ◆ Undersized Material / Fines
- Oversized Material
- ➔ Air Flow

Note: The bottom blast fan is available for all New Generation models with the exception of the NG 368-1-2 and NG 368-2-1.



Optional Product Flows

NG 368-2-1 and NG 368-1-2

These three screen machines are designed as pre-cleaners or market grain cleaners for medium to high capacities, but not specifically as precision seed cleaners.

The NG 368 has a back-mounted, backward inclined radial fan as do all New Generation cleaners. The air on this model, however is only drawn from the top of the machine as the product flows from the feed hopper to the top screen. There is no bottom air separation as the clean seed is discharged from the cleaner.

All screens on the NG 368 cleaners measure 54" x 86".

The two screen top shoe of the NG 368-2-1 is arranged with a scalp/sift or a two-way split scalp product flow for highest capacity. The bottom shoe has a single sifting screen.

The NG 368-1-2 has a single scalping screen in the top shoe and two screens in the bottom shoe, which can be set for a two-way split sift or a scalp/sift flow pattern.

NG 409-2-2, NG 408-2-2 and NG 468-2-2

These models are four screen machines used for precision cleaning. In most cases the capacity and precision of a machine are determined by the ability of the cleaner to separate the fines and smaller contaminants from the good seed mass. These models are designed so that the operator can vary the flow as required by changing certain components.

The top shoe is arranged with a scalp/sift flow pattern or it can be changed to a scalp/scalp or a two-way split scalp arrangement. The good seed is then directed to a splitter in the bottom shoe which evenly divides the flow with half going to each of the two screen decks for split-flow sifting. This allows greater precision and capacity because the

product bed depth is much shallower allowing for more exposure to the screen deck. If additional scalping is required the flow can be changed on the bottom shoe to a scalp/sift arrangement.

NG 508-2-3 and NG 568-2-3

Many of the products being cleaned require a great deal of close sifting which is the deciding factor when considering capacity and precision. The NG 508-2-3 and NG 568-2-3 are five screen machines used for precision seed cleaning. The NG 568-2-3 can also be used for high capacity market cleaning. These models come equipped with two screen top shoes and three screen bottom shoes.

The top shoe functions in the same manner as in the four screen cleaners. The good seed flows from the top shoe to a three-way splitter in the bottom shoe where the product flow is divided into three equal segments. Each segment is directed to one of the three screen decks for sifting. A three-way split sift allows for a shallower bed depth for greater exposure of the product to screen openings for the full length of the screen. This improves the precision of the separation. If the operator should choose, the bed depth can be increased, thereby increasing the capacity of the cleaner while maintaining a very precise separation. This flow is most popular for high capacity precision cleaning. If the operator requires additional scalping or if sizing is required, the NG 508-2-3 and NG 568-2-3 bottom shoe can be arranged with a scalp/scalp/sift flow.

NG 668-3-3

Because of the wide variety of seeds being cleaned and the requirements of many operators for higher capacities while maintaining or improving precision, Clipper has developed the NG 668-3-3 cleaner. This six screen cleaner has two shoes each containing three screen decks.

The top shoe can be arranged with a scalp/scalp/sift flow, a scalp/scalp/scalp flow or a permanent three-way split scalp flow which is not interchangeable.

The bottom shoe is like the NG 568-2-3, a three-way split sift or scalp/scalp/sift.

NG 668-2-4

When high capacity precision cleaning or market grain cleaning is required, the NG 668-2-4 is ideally designed to fulfill the need.

The top shoe can be set up with a scalp/sift, a scalp/scalp or, for highest capacity, a two-way split scalp.

The product then flows into a four-way splitter which divides the product into four equal segments so that 25% of the total product is directed to one of each of the four parallel sifting screen decks. This is a fixed flow arrangement and the screen pitch is fixed at 7 degrees.

The four-way split flow allows for very high capacities while maintaining the precision achieved on the smaller models.

NG 768-3-4

This seven screen machine is designed for very high capacity precision cleaning or market grain cleaning.

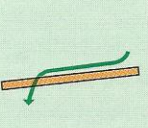
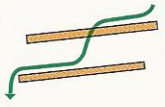
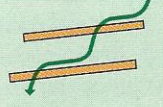
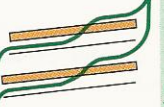
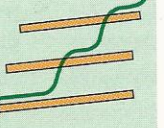
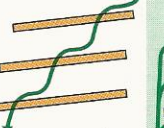
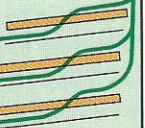

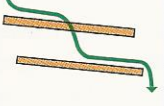


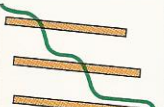

The top shoe is arranged as is described for the NG 668-3-3: scalp/scalp/sift, scalp/scalp/scalp or, for very high capacity scalping, a three-way split scalp. The three-way split scalp is ideal for many grass seed operations or most operations where a high percentage of oversized trash must be removed.

The bottom shoe is arranged like the NG 668-2-4, a four-way split sift.

The combination of the three-way split scalp and the four-way split sift will achieve the greatest capacity.

NEW GENERATION SERIES

Optional Product Flows

Bottom Shoe Options	Top Shoe Options						
	 Scalp	 Scalp/Sift	 Scalp/Scalp	 2-way Split Scalp	 Scalp/Scalp/Sift	 Scalp/Scalp/Scalp	 3-way Split Scalp
 Sift	-	368-2-1	368-2-1	368-2-1	-	-	-
 Scalp/Sift	368-1-2	409-2-2 408-2-2 468-2-2	409-2-2 408-2-2 468-2-2	409-2-2 408-2-2 468-2-2	-	-	-
 2-way Split Sift	368-1-2	409-2-2 408-2-2 468-2-2	409-2-2 408-2-2 468-2-2	409-2-2 408-2-2 468-2-2	-	-	-
 3-way Split Sift	-	508-2-3 568-2-3	508-2-3 568-2-3	508-2-3 568-2-3	668-3-3	668-3-3	668-3-3
 Scalp/Scalp/Sift	-	508-2-3 568-2-3	508-2-3 568-2-3	508-2-3 568-2-3	668-3-3	668-3-3	668-3-3
 4-way Split Sift	-	668-2-4	668-2-4	668-2-4	768-3-4	768-3-4	768-3-4

Important features

Now that you have an idea about how material flows through the machine, we will discuss a variety of features common to all Clipper New Generation machines which assure proper cleaning for highest quality seed or grain and greater efficiency.

Inlet feed hoppers

The evenness and the rate of product flow into the air-screen cleaner are the first steps in achieving precise separations. Both are important for the first air separation as the seed discharges from the hopper and for proper product bed depth across the full width of the screen. For these reasons, Clipper has developed several styles of inlet feed hoppers; one of which is best suited for your needs. The hopper you use will depend upon the commodity to be cleaned and the contaminants to be removed from the seed mass.

New vibratory-feed hopper

The vibratory-feed hopper is the newest and most innovative of the hoppers designed for Clipper cleaners. This hopper is designed for a wide range of seed varieties which do not contain large percentages of oversized trash.

The vibratory feeder evenly distributes the seed across the full width of the screen while maintaining an "air lock" to prevent air from being drawn through the hopper rather than through the seed column as it should.

When the vibratory feeder is turned off, the product stops flowing. There is no shut-off gate required as on the roll-type hoppers.

Roll-feed hopper

This hopper is designed for cleaning fine seed containing little trash. It consists of a hopper to receive the seed, a rotating shaft with flighting to spread the seed across the width of the hopper as it is received and a slowly revolving fluted roll in the bottom of the hopper. This roll feeds the seed in a steady, even flow across the full width of the top screen deck while maintaining an air lock to direct the air through the seed column and preventing air loss from the hopper.

Roll-feed brush hopper

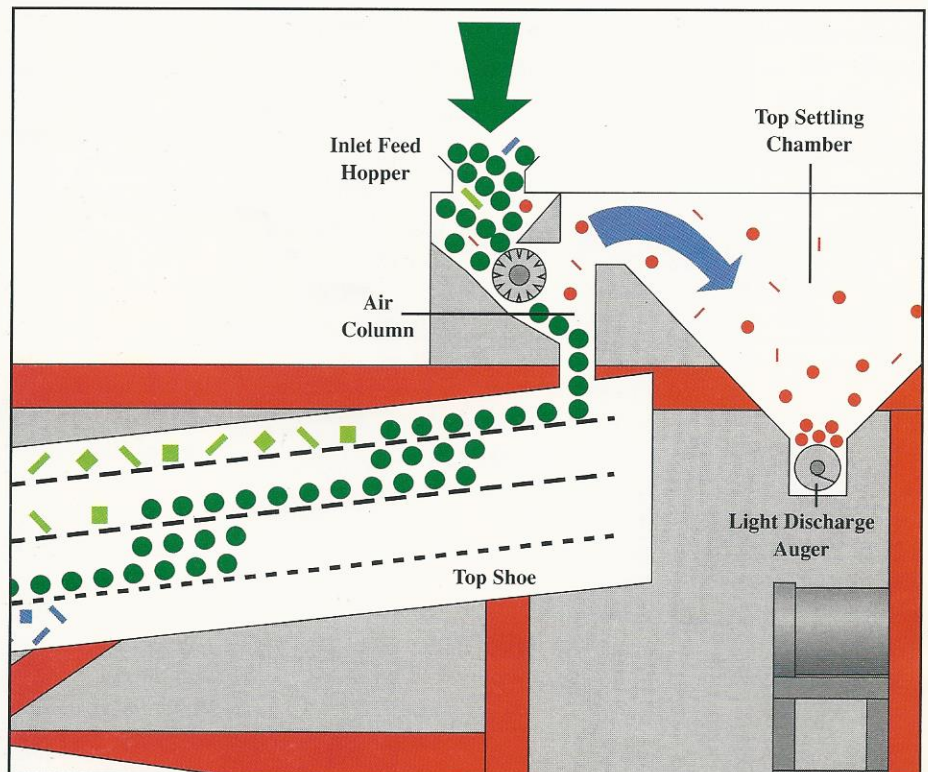
This hopper is designed for air-screen seed cleaners to handle trashy but flowable commodities and for the handling of delicate products. It consists of a hopper to receive the seed, a revolving spiked shaft that pulls trashy material down to a slowly revolving fluted roll which force feeds the commodity between the roll and a special fibre bristle brush. In doing so, the seed is fed in a steady even flow with a minimum of

clogging across the full width of the top screen deck. The special fibre brush is used instead of a steel gate to prevent damage to products such as edible beans.

Chek-flo metering hopper

The chek-flo metering hopper is Clipper's biggest selling hopper, designed to accurately and continuously feed all varieties and sizes of seed from the smallest clover and grass seed to the largest type of beans. It will successfully handle products containing considerable trash. It is used extensively for small seed and seed which is cleaned in smaller volumes and at low capacities because the hopper gate is designed to prevent leakage even when the hopper is not in operation.

The chek-flo metering hopper uses specially bent fingers to break up bridged trash or seed. The slowly revolving roll has staves which are much deeper than those used on other hoppers to maintain a steady even flow of seed to the full width of the top screen deck.



NEW GENERATION SERIES

Variable speed hopper drive

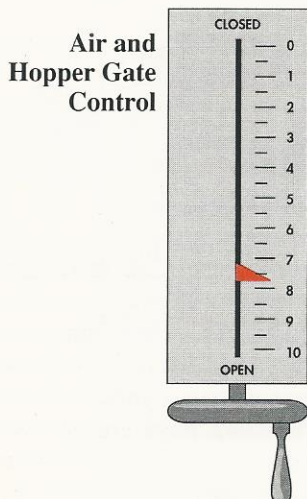
All of the hoppers described above have variable flow rates controlled electronically on the main control panel.

The roll-type hoppers have a discharge gate which is adjusted with a calibrated hand wheel control. The vibratory-feed hopper does not require a gate.

The control of these variables allows operators to achieve capacities and precision requirements because seed column volume can be maintained at the optimum flow rates.

Back suction fan

A backward inclined radial fan is mounted on the back of the machine which makes the initial negative air separation of light material from the seed mass as it is discharged from the feed hopper. A second negative air separation is made as the seed is discharged from the bottom shoe after the final screening. Different drive speeds for the back suction fans are available to run at low or high speeds: low speed for grasses, small legume seeds and light-weight seeds and high speed for seed grains and larger seeds and beans. This fan is designed to operate at high static pressure for discharge into a dust filtration system.



The air column has two air gates which are controlled manually to regulate the velocity of the air through the seed for the top and bottom air separations.

The single fan discharge is to the side of the New Generation cleaners.

Easily connected to a filtration system

The back-mounted fans on all New Generation cleaners are high static, backward inclined radial fans which enable these cleaners to be used with a dust filtration system. These fans are capable of developing up to 5 inches of static pressure at the air discharge outlet of the cleaner.

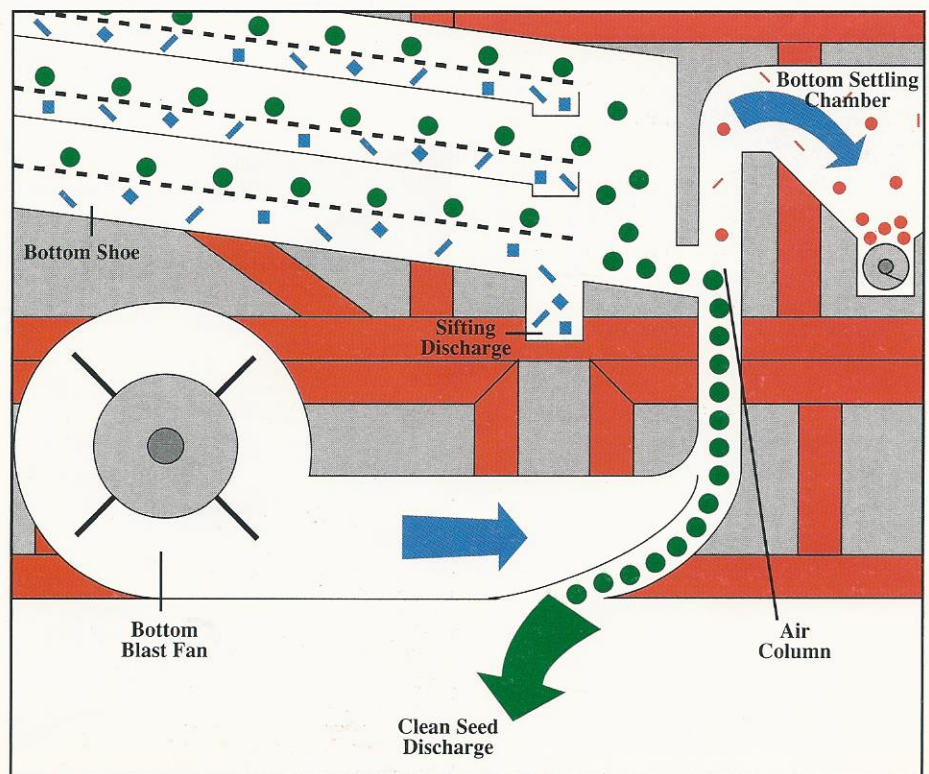
The static pressure is adequate to handle a well designed cyclone dust collector system, dust house or fabric dust collector system.

Variable speed bottom blast fan

The optional bottom blast fan performs the final cleaning function by creating a positive air flow through the seed column as the seed discharges from the bottom shoe. This fan is synchronized with the back mounted main fan for a balanced and stable air flow. The bottom air is directed in a controlled fashion from the fan, through an engineered air duct and passes through the seed column diagonally.

The bottom blast fan is a dual drum design so that air is drawn in at four ports: two at the center and one on either side. This design allows for a more uniform air intake which more evenly distributes the air across the full width of the air leg.

Because the air column is a closed system, the air can be controlled more precisely than a simple negative air system and therefore, closer separations can be made on most commodities. The bottom blast fan has a wide speed range which is controlled electronically.





Variable speed is essential in achieving proper separation of lighter material from the good seed because most seed varieties and their contaminants vary considerably in density or surface-to-weight ratio. Because of this fact, each seed lot will have an optimum bottom fan setting.

The bottom blast fan is quickly and easily adjusted while the cleaner is in operation and so effective that the slightest change in the air adjustment will make a noticeable effect in the degree of final air separation.

Variable controls

New Generation machines have electro-mechanical controls mounted on the side of the machine for easy access during start-up and operation. The control panel contains a start and stop button and a rheostat control for each of the three variable speed functions. It also includes a three-way selector switch to enable the operator to monitor each of the three functions independently on the digital read-out tachometer.

All models are equipped with cali-

brated hand-wheel adjustments for top and bottom air velocity controls and hopper gate controls.

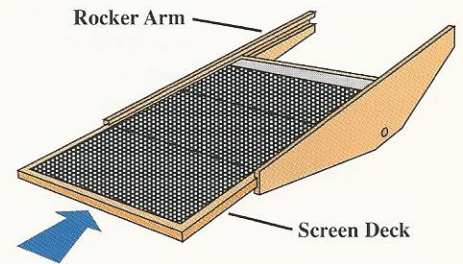
These variable control features allow quick and accurate adjustments for the best results possible while reducing start-up time, all of which saves money and increases profits.

Beside the speed in set-up between seed lots, down time is diminished because the operator can accurately repeat the setting from a previous run of the same variety.

You will note that the electronic controls on our New Generation machines are mounted on the machine frame. This is testimony to our confidence in the design and quality of Clipper cleaners. If excess vibration were present in the Clipper design, the control panel would have to be mounted remotely because the vibration could be detrimental to the electronic components within the panel.

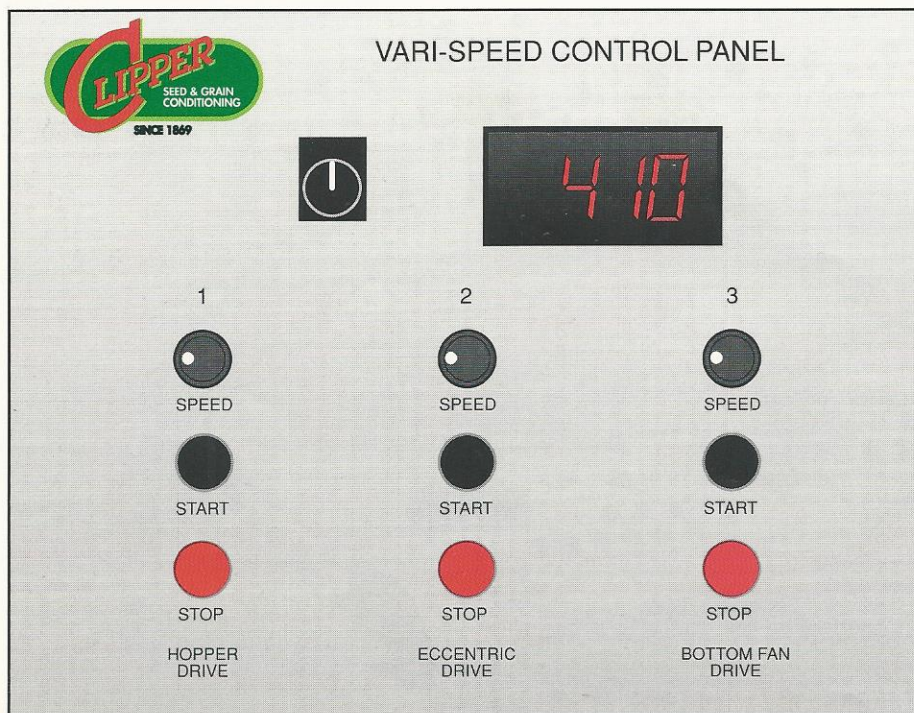
Screens

Clipper offers a wide variety of screen types and screen sizes- nearly 200 in all. Each screen is mounted on a

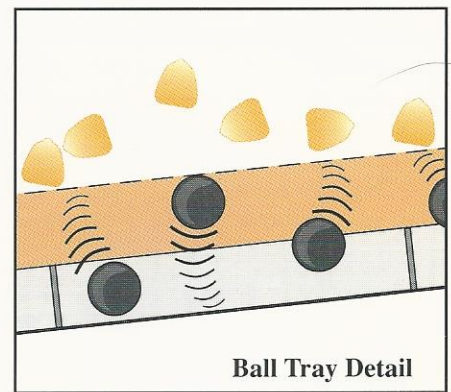


wooden frame which allows the screen to slide easily into metal-lined grooves in the rocker arms. The rocker arms are attached to the shoe sides allowing the pitch of the screen deck to be varied. Expert construction assures every screen frame will fit without commodity leakage and will engage and disengage from the shoe without binding.

Openings in the perforated metal screens may be round, oblong or triangular. Openings in the woven wire screens are square or rectangular. Every new Clipper machine includes one complete dressing of the screens of your choice. A Clipper representative will be happy to recommend the appropriate screen hole sizes and shapes for the commodities you want to clean.



New Generation Electronic Control Panel



Ball tray screen cleaning

Clipper cleaners are equipped with ball trays mounted under each screen deck. The ball trays are divided into multiple sections, each of which contains three rubber balls which bounce against the bottom of the screen as the shoe shakes.

NEW GENERATION SERIES

The impact of the balls against the bottom of each screen cleans the screen by loosening material which may be lodged in the screen openings. On a Clipper machine, the trays remain in the machine when screens are changed, minimizing down time between seed lots. The ball trays are, however, easily removed when necessary by simply releasing the quick-release hooks on each deck and sliding them out as you would a screen.

Drive controls and spout discharges

Since no two seed plants are alike, Clipper offers all air-screen cleaners with a choice of which side the trash discharges and where drive controls are located so the machine will fit within your existing facility or in a new plant to best meet your operating, clean-out and maintenance needs.

Drive guards and side enclosure panels

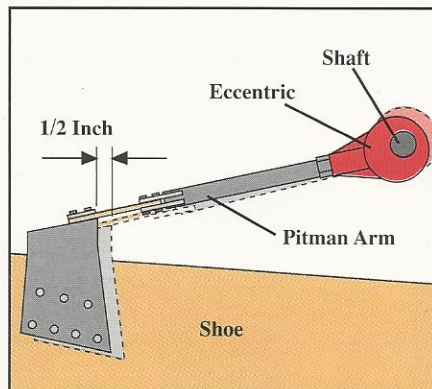
New Generation cleaners are fitted with individual drive guards to cover all chain and belt drives.

Removable side enclosure panels can be ordered as options to reduce some operational sounds and lateral dust flow which may be generated by the screen action.

Variable shoe (screen) shake

The shoes of the machine, into which the screens are mounted, are connected by a pitman arm to the eccentric shaft. On a Clipper, the throw of the eccentric is 1/2 inch. This is important because the effect of the throw combined with the effect of the eccentric's speed gives the seed or the contaminant more opportunity to change its angle of exposure and to come in contact with the screen openings.

The speed of the eccentric shaft determines the frequency at which the shoe and the screens will shake. On a Clipper, the speed of the shaft is varied electronically at the main control panel.



This standard feature is important because the rate of product flow or capacity is directly related to the frequency at which the shoe and screen shakes. In addition, the precision of the separation achieved by the screens will vary as the shoe shake is varied.

Variable shoe shake controls the action of the commodity as it travels down the screen by providing an optimum range of screen movement from 380 to 420 revolutions per minute. This is also the range for optimum ball action for the best screen cleaning. This too is important because each seed variety will have an optimum rate of flow for the most efficient screening action.

Many cleaning jobs require more or less action. For instance, faster shake is needed to make grass seed flow over wire screens whereas slower speeds may assure best sifting of weed seeds from evenly shaped, smooth flowing seeds and grains.

Pitman arms and shoe hangers

In designing the New Generation seed cleaners, Clipper emphasized greater ease of operation, and reduced maintenance and down time. Two of the features which are now different from the older models are the pitman arms and the shoe hangers. They were either steel with needle bearings or hickory wood.

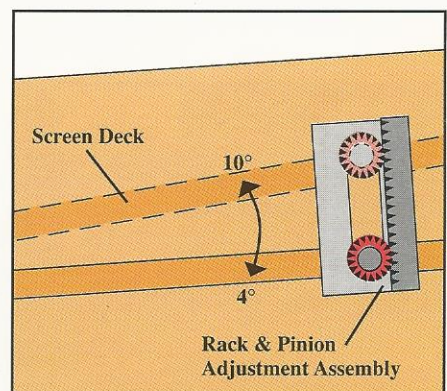
All New Generation cleaners are equipped with long lasting, durable, flexible fiber composite pitman arm attachments and shoe hangers. They have no moving parts or bearings.

Variable screen pitch

Screen pitch determines the speed at which commodity flows over the screens. Variable screen pitch gives you the ability to alter the angle of the screen deck. In the case of New Generation cleaners, that range is from 4 to 10 degrees (NG 408-2-2 and NG 409-2-2 vary from 2 to 10 degrees). In some special flow applications, the screen pitch is fixed.

Greater precision can be achieved by flattening the screen deck for longer exposure time or by steepening the screen pitch for increased capacity. This feature is especially important in very precise or difficult separations such as the removal of pin oats from wheat.

In most cases, variable screen pitch is important in achieving precision seed separation because seeds flow differently and at varying rates due to their size, shape and density as well as the percentage and type of contaminants.



Note: for NG 408-2-2 & NG 409-2-2, pitch adjustment ranges from 2 to 10 degrees

Variable screen pitch combined with variable shoe shake speeds are two important factors differentiating precision seed cleaning from market cleaning.

Although some plant operators claim not to need the variable pitch because they are conditioning only one commodity, there is an optimum screen pitch that is best for any specific variety.



Clipper New Generation Model	NG 368	NG 409	NG 408	NG 468	NG 508	NG 568	NG 668-3-3	NG 668-2-4	NG 768
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Specifications

# of Screens	3	4	4	4	5	5	6	6	7
Screen Size inches centimeters	54 x 86 137 x 218	42 x 60 107 x 152	54 x 60 137 x 152	54 x 86 137 x 218	54 x 60 137 x 152	54 x 86 137 x 218	54 x 86 137 x 218	54 x 86 137 x 218	54 x 86 137 x 218
Total Screen Area square feet square meters	97 9.0	70 6.5	90 8.4	129 12.0	112.5 10.5	161 15.0	194 18.0	194 18.0	226 21.0
Air Volume cubic feet/min. cubic meters/min.	3100 87.7	5150 145.8	5150 145.8	6400 181.1	5150 145.8	6400 181.1	6400 181.1	6400 181.1	6400 181.1
Shipping Weight less bottom fan & enclosures pounds kilograms	4800 2177	3800 1724	4200 1905	7400 3356	4400 1995	7650 3470	7850 3560	8000 3628	8250 3742
Shipping Weight of bottom blast fan pounds kilograms	not applicable	1400 635	1500 680	1800 816	1500 680	1800 816	1800 816	1800 816	1800 816
Shipping Weight of side enclosures pounds kilograms	500 227	500 227	525 238	650 295	525 238	650 295	650 295	650 295	650 295

Approximate Capacities

Small Seeds and Grass Seeds bushels/hour cubic meters/hour	100 - 200 3.5 - 7.0	65 - 100 2.3 - 3.5	85 - 125 3.0 - 4.4	130 - 200 4.6 - 7.0	100 - 175 3.5 - 6.2	150 - 300 5.3 - 10.6	150 - 350 5.3 - 12.4	200 - 400 7.0 - 14.0	250 - 425 8.8 - 15.0
Medium Seed bushels/hour cubic meters/hour	150 - 325 5.3 - 11.4	90 - 175 3.2 - 6.2	125 - 250 4.4 - 8.8	200 - 350 7.0 - 12.4	150 - 300 5.3 - 10.6	250 - 475 8.8 - 16.8	250 - 500 8.8 - 17.7	350 - 600 12.4 - 21.2	400 - 650 14.2 - 23.0
Large Seed & Beans bushels/hour cubic meters/hour	250 - 400 8.8 - 14.0	150 - 275 5.3 - 9.7	225 - 350 7.9 - 12.4	300 - 550 10.6 - 19.5	225 - 425 7.9 - 15.0	350 - 675 12.4 - 23.9	350 - 700 12.4 - 24.8	450 - 850 15.9 - 30.1	500 - 900 17.7 - 31.9
Market Cleaning bushels/hour cubic meters/hour	350 - 500 12.4 - 17.7	225 - 350 7.9 - 12.4	300 - 450 10.6 - 15.9	500 - 700 17.7 - 24.8	325 - 550 11.4 - 19.5	575 - 1000 20.4 - 35.4	575 - 1000 20.4 - 35.4	650 - 1200 23.0 - 42.5	800 - 1500 28.3 - 53.1

Note: capacities may vary depending on seed condition, moisture content, seed varieties, types and volumes of contaminants to be separated and the percentage of foreign material acceptable in the final product. Capacities also vary depending on product flow through the cleaner. Split flow arrangements increase capacities.

Horsepower Requirements for Cleaner less Bottom Blast Fan

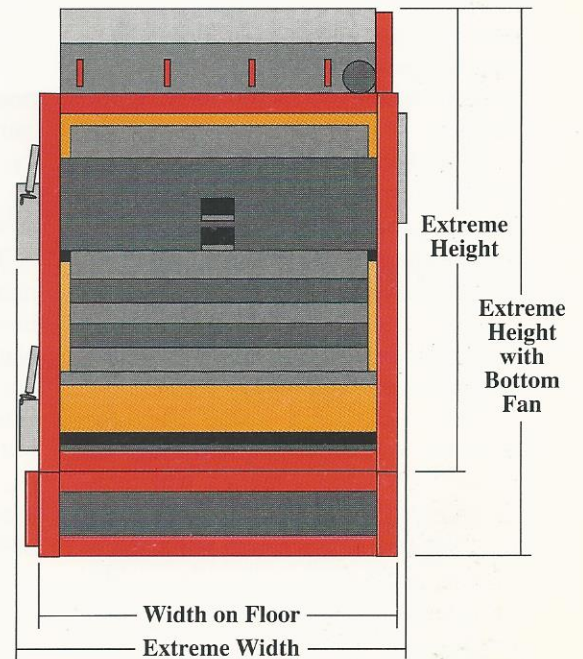
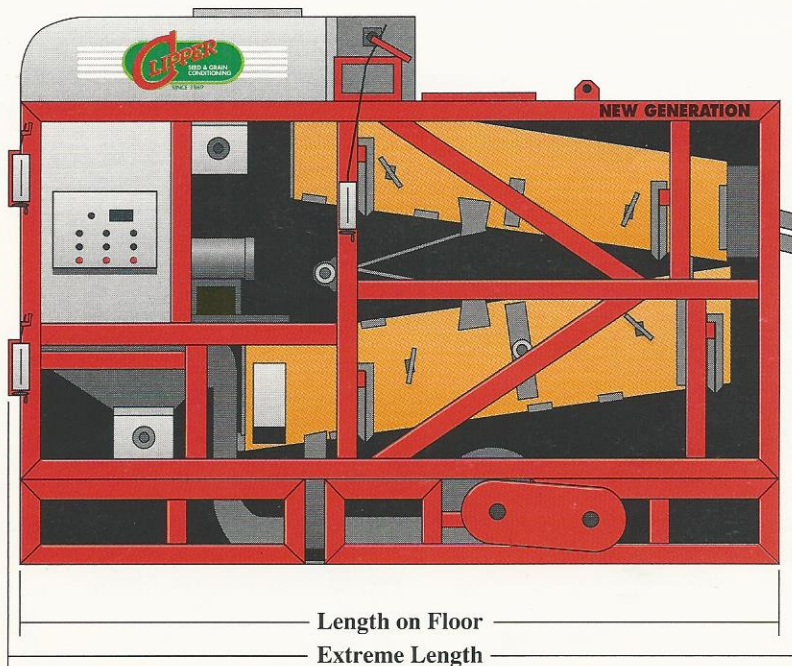
1200 RPM total horsepower total kilowatts	7.75 5.8	7.0 5.2	7.0 5.2	8.0 6.0	8.0 6.0	8.0 6.0	8.0 6.0	8.0 6.0	8.0 6.0
1750 RPM total horsepower total kilowatts	7.75 5.8	9.5 7.1	9.5 7.1	13.0 9.7	13.0 9.7	13.0 9.7	13.0 9.7	13.0 9.7	13.0 9.7
Bottom Blast Fan total horsepower total kilowatts	not applicable	3.0 2.2	3.0 2.2	3.0 2.2	3.0 2.2	3.0 2.2	3.0 2.2	3.0 2.2	3.0 2.2

NEW GENERATION SERIES

Clipper New Generation Model	NG 368	NG 409	NG 408	NG 468	NG 508	NG 568	NG 668-3-3	NG 668-2-4	NG 768
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Dimensions

Extreme Length inches centimeters	160 406	146 371	146 371	180 457	146 371	180 457	180 457	180 457	180 457
Extreme Width inches centimeters	78 198	69 175	81 206	86 218	81 206	86 218	86 218	86 218	86 218
Extreme Height without Bottom Fan inches centimeters	93 236	95 241	95 241	107 272	95 241	107 272	107 272	107 272	107 272
Extreme Height with Bottom Fan inches centimeters	not applicable	112 284	112 284	124 315	112 284	124 315	124 315	124 315	124 315
Length on Floor inches centimeters	155 394	140 356	140 356	174 442	140 356	174 442	174 442	174 442	174 442
Width on Floor inches centimeters	71.5 182	59.5 151	71.5 182	79.5 202	71.5 182	79.5 202	79.5 202	79.5 202	79.5 202





There are good reasons why Clipper has outsold all other makes of seed and grain cleaners!

Clipper has been around for a long time! Our company began in 1869, in Ohio, when Captain John E. Smith crafted in wood, the first hand operated Clipper Cleaner using the vertical air blast principle. In 1891, Smith sold the business to A.T. Ferrell who moved the company to Saginaw, Michigan.



By 1948, the A.T. Ferrell Company was believed to have the largest installed base of air-screen seed and grain cleaners in the world, having sold nearly 20,000 of these reliable wooden machines.

Today, Clipper is a division of Bluffton Agri/Industrial Corp., the successor corporation to the old A.T. Ferrell Company and is located in a modern 200,000 square foot facility, in Bluffton, Indiana.

In addition to seed and grain equipment for precision or market cleaning, Clipper provides a broad line of sizing, separating, grading, treating and handling equipment.

Capable dealers backed by experienced engineers

Our engineering group provides Clipper's sales representatives throughout North America with new equipment designs as well as application and service assistance, while internationally, this group specializes in the design and installation of complete seed conditioning plants.

Clipper builds machines that work very well!

The fact that Clipper machines have been used by quality conscious seed suppliers around the world for over 120 years suggests that Clipper must build a top quality machine.

Pride has a lot to do with it. Pride in the fact Clipper manufactures some of the most unique machines built in the world today with a heritage which can be traced back to 1869. These machines are still skilfully crafted by experienced craftsmen.

Many veterans of the seed equipment industry will readily admit that even after all these years, Clipper is still the one to beat. Clipper represents craftsmanship, good design and value. The people at Clipper believe with a passion that no other air-screen cleaners offer the durability and versatility for optimum cleaning.

Clipper provides technical assistance

The Clipper seed lab is available for your convenience to test for proper screen sizes for your air-screen cleaner. We will be happy to determine proper screen sizes, screen arrangements and approximate capabilities of air separations for you if you send in a small sample (up to one pound or 1/2 kilogram).

A word of caution!

There is an unfortunate practice in many industries of selling equipment based on exaggerated performance claims. We may be a little old fashioned, but we prefer to err on the conservative side.

In the seed equipment industry, most manufacturers publish a specification sheet stating the number of square feet of screen area which is an indicator for very general comparisons between models.

A more relevant factor to consider is the effective screen area or the amount of the screen area that is actually being utilized. In addition, you should examine the product flow pattern on the screens.

A machine with less screen area may clean more effectively at a higher capacity than a machine with greater actual screen area.

When analysing which machine will best suite your cleaning needs, please contact the Clipper representative in your area or feel free to contact us at the plant for assistance.

There is a hot-line to our President!

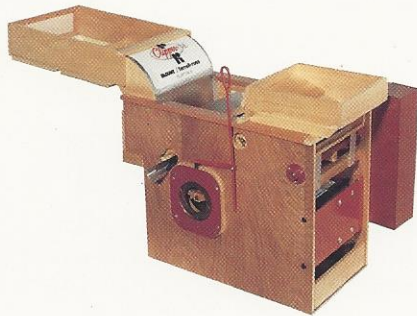
Clipper has thousands of satisfied customers because we try very hard to do a good job! If for any reason, we fail to meet your expectations, we encourage you to call our President, Eric Jarman, toll free at 1-800-265-5423 from anywhere in North America. From other geographic locations, call (519) 686-7881.

During evenings, on weekends and holidays, this number is answered by an answering machine which is monitored every few hours. If you have a problem, your local Clipper representative cannot solve, please feel free to call us. Be sure to include your area code when you leave your message. We will get back to you as quickly as we can.

We would appreciate your business!

There is a Clipper machine available for most applications. We would appreciate the opportunity to discuss your needs in detail. For applications information, please call your local Clipper representative or David Mrozinski, the Clipper product manager. For parts, service or the name of your nearest Clipper dealer, call Phil Teeple, toll free at 1-800-248-8318.

NEW GENERATION SERIES



Clipper Office Tester

Table top design is small, yet accurate. Used in seed plants for sampling large lots. Also popular with vegetable and flower growers and in seed stores for specialized cleaning, grading and sizing. Many laboratory uses. Compact, easily moved. Scalper and sifter screens with a bottom blast fan are standard.



Clipper Vibrating Conveyor

Clipper offers a wide variety of vibrating conveyors to gently transport seed from the clean seed discharge of the cleaner to an elevator or a secondary conditioning machine. Vibrating conveyors are recommended to help prevent mechanical damage to seeds and for total cleanout between lots. Sizes and capacities are available to accommodate all Clipper cleaner models.

Clipper New Generation with side enclosure panels

The New Generation air-screen cleaner can be ordered with removable side enclosure panels to reduce some operational sounds and lateral dust flow which may be generated by the screen action.

Some of the panels are mounted on hinges with quick-release latches to facilitate access for observation, variable pitch adjustment and screen removal.



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