

Operations manual

Oliver™

Innovate. Build. Repeat.



Hi-Cap Series

Destoner

Version 1.0 | 1/5/23

SAFETY PRECAUTIONS FOR GRAVITY SEPARATORS

Read operator's manual before using machine.

Always shut off the lock out power when performing maintenance or service.

Never operate machine with air filters removed.

Never operate with deck removed.

Never operate with missing or worn parts.

Never operate with air chest boot removed.

Never operate with worn or damaged decks.

Never use deck as table or workstation.

Never stand on machine.

Always wear face and eye protection when inspecting or adjusting machine.

Always insure machine and components are electrically grounded.

Keep machine clean and properly adjusted.

Inspect for wear and correct operation frequently.

If you have questions call the factory.

**Make Safety First
And
Make It Last**

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I. INTRODUCTION

Congratulations! You have just purchased a well built machine that can earn substantial profits for you, if you take time right now to understand the Oliver Stoner and how it works. The Operating Instructions Manual contains new, valuable information that both experienced and inexperienced gravity operators will want to read. Please take a few minutes to read the instructions to help eliminate many of the problems frequently encountered.

Keep in mind at all times that the stoner is not a "cure all" for the processor's problems. The stoner is a specialized piece of machinery designed to do one job very well. **THE STONER SEPARATES PARTICLES OF A SIMILAR SIZE THAT DIFFER IN WEIGHT, ELIMINATING HEAVY TRASH AND STONES. THE STONER SHOULD NOT BE USED AS A CLEANING MACHINE TO REMOVE DUST, DIRT, STICKS AND OTHER REFUSE FREQUENTLY FOUND IN HARVESTED CROPS.** In all processing situations, the best results are obtained from the stoner when the product has been thoroughly pre-cleaned and sized, using the proper equipment for these purposes. Under these conditions, the stoner is then able to show what it can really do!

II. INSTALLING YOUR OLIVER STONER

All Oliver Stoners are operated on test blocks at the factory for a minimum of two hours. During and after operation, the drive train and controls are checked to insure that they will operate satisfactorily when you set them up and punch the switch.

UNCRATING YOUR OLIVER

Although your Oliver is built to give years of service, it can be damaged while being uncrated. First the top of the crate should be carefully removed. Then take off the sides. After the top and sides are withdrawn, the Oliver Stoner can be disengaged from the bottom of the crate by removing the four 3/8" bolts located on the mounting flanges of the stoner. While removing the crate, do not put anything on the separating deck. If the deck is damaged, good separations are impossible. Also, be careful not to puncture the filter screens located on the sides of the machine. If the filter screens are damaged, dirt may be sucked into the machine and may plug the deck.

Immediately after uncrating your Oliver Stoner, inspect for carrier damage. If the machine is impaired in any way, it was caused in transit and a claim should be filed with the carrier.

The feed hopper, mounting brackets and discharge hoppers are attached to the inside of the crate or the inside of the stoner. All items securely fastened inside the stoner may be removed by opening the filter screens and cutting the tie wires.

FOUNDATION REQUIREMENTS

A solid foundation is required for your Oliver Stoner. False vibrations from flooring can ruin the separation quality of the machine. A six inch concrete slab makes an ideal platform but is not essential. Many customers operate Oliver Stoners on wooden floors with no problems. If you feel that your floor is insecure, please contact the factory for recommendations.

When locating your stoner, be sure that you leave adequate clearance to operate the controls and to remove the deck for changing or cleaning. To operate the controls and provide normal maintenance, we recommend a minimum of 30 inches clearance. A space approximately equal to the dimensions of the deck is adequate for deck removal from the heavy end. Please refer to our layout print at the end of these instructions for dimensional information.

ELECTRICAL CONNECTION

After your stoner is mounted on a secure foundation, you are ready to install the motor and make the connections. If you ordered your stoner with a motor, it will be installed at the factory; and you will only be required to make the necessary electrical connections. Factory-installed motors will be wired for 60 cycle, 220 volt, 3-phase power unless otherwise specified. If your power supply is different and you order a motor, please inform the factory well in advance of the shipping date, so the motor can be correctly installed. If you supply your own motor, be sure that it is large enough to carry the load as specified in our literature.

The motor is mounted directly to the motor mounting board installed for this purpose. Since motors differ in their mounting requirements, it will be necessary for you to drill holes in the motor mounting board and attach the motor with the size of bolts recommended by the motor manufacturers. The machine interior is accessible by removing the filter panels. Be sure that the motor pulley is directly in line with the fan shaft pulley and that the motor shaft and the fan shaft are parallel. After the motor is mounted, adjust the belts to the proper tension. When belts are too tight, excessive strain is placed on the bearings and will shorten bearing and belt life. When belts are too loose, they will slip. This will cause the belts and pulleys to overheat and shorten their life.

To check for proper belt tension, first turn the machine off. Then apply pressure to the side of the belt midway between the pulleys. The belts should deflect approximately 1/2 inch. After the machine has operated for 8 to 10 hours, check the belts again. It is normal for new belts to stretch slightly, so the belt tension may have to be adjusted.

When your electrician wires the motor, be sure that he connects it so that it will run in the proper direction. All shafts, motor shaft, fan shaft and eccentric shaft, should run counterclockwise when viewed from the side of the machine where the motor is installed. Proper fan rotation is very important and at least half of the problems with new stoners can be traced back to incorrect rotation.

CLEAN AIR SOURCE

Some customers need to bring in clean outside air rather than to draw dusty plant air through the filters installed on the machine. For this purpose we supply an air nipple which can be used to bring air into the machine. It can be installed by merely removing a filter screen and replacing the screen with an air nipple. Connect your duct work to the air nipple that came with your machine. We recommend that you keep the duct work shorter than 20 feet or use a booster fan. The clean air source should have a filter area not less than the area of the deck surface.

After the stoner is installed and the motor wired so the fans rotate in the proper direction, familiarize yourself with the theory behind stoner operation and the proper usage of the controls before attempting to make a separation.

III. HOW DOES A STONER WORK?

All gravity separators and stoners utilize the same principles to effect a separation. Once these principles are understood, it is usually a simple step to adjust a stoner to produce an optimum separation. About 250 B.C., Archimedes discovered the law of specific gravity, which is "ALL BODIES FLOATING IN OR SUBMERGED IN A LIQUID ARE BUOYED UP BY A FORCE EXACTLY EQUAL TO THE WEIGHT OF THE LIQUID THEY DIS-PLACE." The specific gravity of a particle is the ratio of its density to some standard substance, the standard usually being water with a unit of 1. Particles having a specific gravity of less than 1 will float and particles with a specific gravity greater than 1 will sink.

Oliver stoners use air as a standard rather than water. Since air is lighter than water, the relative difference between particles of differing weights is widened. For this reason, the stoner is a very, sensitive machine and, when operated correctly, can produce a very precise separation.

THE PROCESS OF STRATIFICATION

Air is used as the separating medium for the process of stratification. Stratification occurs by forcing air through the particle mixture so that the particles rise or fall by their relative weight to the air. Figure 1 below represents a cross section of the stoner directly over a fan. A particle mixture has been introduced on top of the screen deck with the fans off.

In Figure 2 the fan has been turned on so that the heaviest particles rest on the surface of the deck and the lightest particles are completely free of the surface of the deck. Proper regulation of the air flow at this time is critical or all particles will be blended and lifted free from the separating surface by excess air (Figure 3).

FIGURE 1

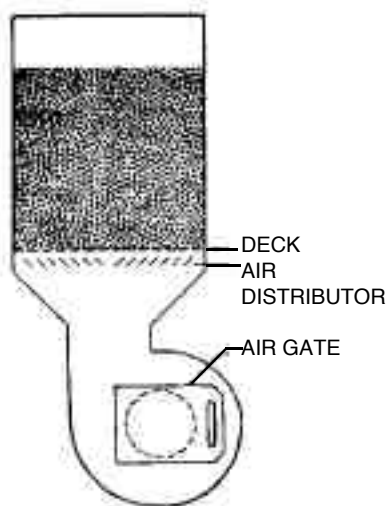


FIGURE 2

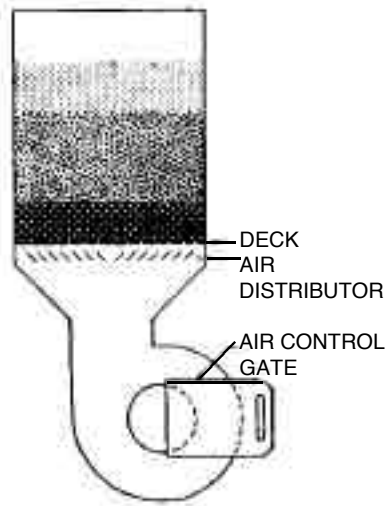
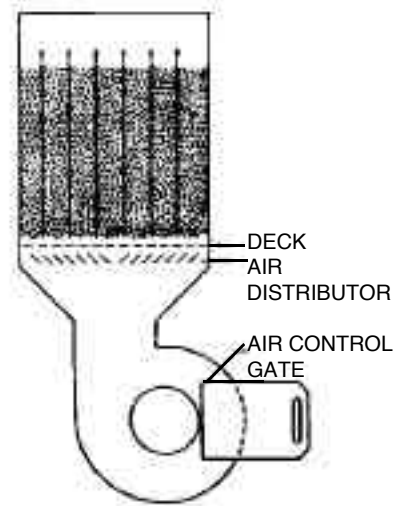
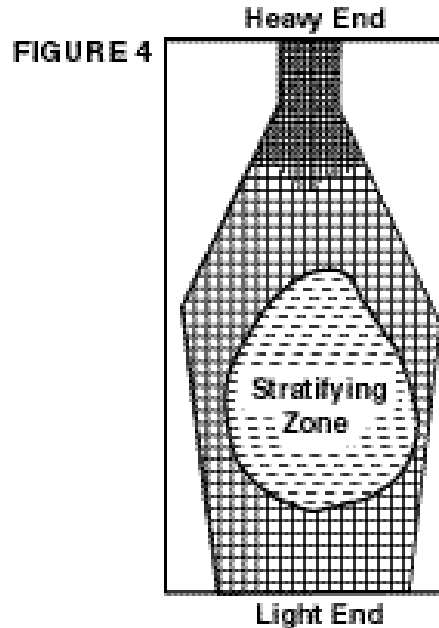


FIGURE 3



THE THEORY IN PRACTICE

Figure 4 represents a top view of the ideal situation in the operation of a stoner



The seed mixture, similar to Figure 1, falls from the feeder onto the deck. The area immediately under the feeder is called the stratification zone. In this area, the vibration of the deck and the lifting action of the air combine to stratify the material into layers with heavier layers on the bottom and lighter layers on the top as shown by Figure 2. Separation cannot occur until the material becomes stratified. The size of the stratification area will depend on the difficulty of the separation and on the capacity at which you are processing. At no time should it exceed 1/3 of the deck surface.

The more difficult the separation, the greater is the area that is required to obtain proper stratification. For example, the stratification area is large when separating mud clods from saleable beans, because there is relatively little difference in weight. However, the stratification area is small when removing rocks or stones from beans, because there is a large difference in weight. Higher capacities likewise require greater areas for stratification.

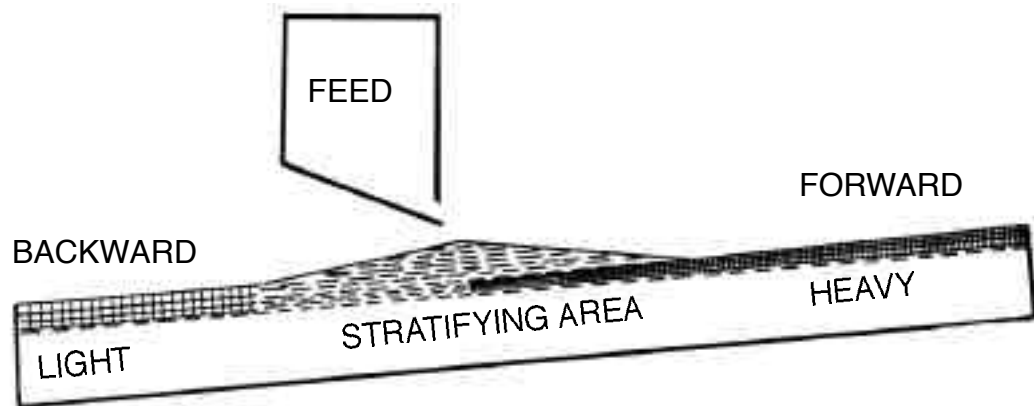
Once the material is stratified, the vibrating deck begins pushing the heavier layers in contact with the deck uphill toward the stone discharge. At the same time, the upper lighter layers, which do not contact the deck, begin to float downhill toward the clean product discharge.

It should be noted that, since the stratification process is not instantaneous, some of the heavier materials will be carried down the deck toward the discharge end before they can sink to the bottom of the fluidized bed. This is normal and acceptable as long as the heavy trash does not flow off the deck with the cleaned product. When you are not making a proper separation, it is an indication of one of the following problems:

1. Feed rate too high - stratification area too large.
2. Machine improperly adjusted -- improper stratification.
3. Material not suitable for separation on a stoner.

Each of the above is a distinct problem and will be discussed fully in this manual.

FIGURE 5

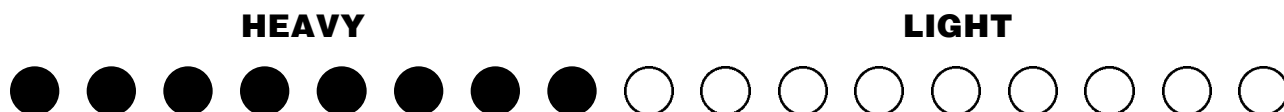


This sketch is a sectional diagram of what occurs on a stoner deck. Compressed air forced through the mesh of the deck cover lifts the lighter particles upward, while heavier particles sink against the air currents and come to rest on the deck surface, providing the air is properly adjusted. The heavier particles are forced to travel uphill by mechanical action, while the lighter particles float downhill on a film of air.

While stoners have greater capacities than gravity separators, based on square feet of relative deck area, there is a limit as to the amount of feed flowing to the deck. As the feed is increased, the stratifying area is also increased. The stratifying area should not occupy more than 1/3 of the entire deck area.

We have already stressed the need for earlier processing of products before they are introduced onto the stoner. (See p. 1.). This pre-sorting enables separations that are otherwise impossible. There are three guidelines developed by the late Oliver W. Steele that state what can be separated and what cannot be separated on a gravity separator or stoner.

OLIVER STEELE'S GUIDELINES FOR USE OF GRAVITY SEPARATORS AND STONER



Rule 1. PARTICLES OF THE SAME SIZE BUT DIFFERING SLIGHTLY IN SPECIFIC GRAVITIES CAN BE SEPARATED.

A common example of this would be the separation of similar size stones from seed where the stones are heavier than the seed.



RULE 2. PARTICLES OF THE SAME SPECIFIC GRAVITIES BUT DIFFERING IN THE SIZE WILL BE GRADED ACCORDING TO THE SIZE OF THE PARTICLES.

Unlike the gravity separator, a stoner produces a two way separation rather than a continuous grade at discharge. Due to this two way separation, sizing is not done on a stoner, because the accuracy of separation is poor.

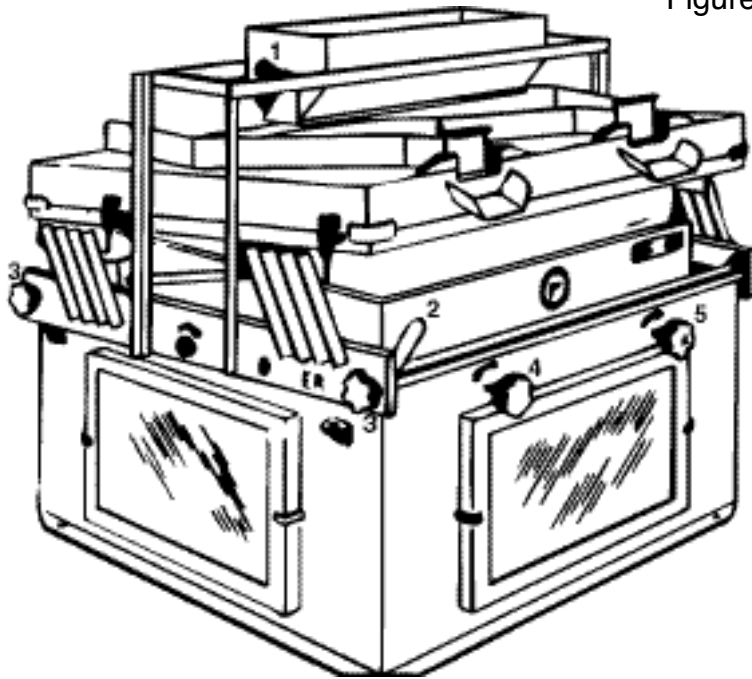


RULE 3. PARTICLES DIFFERING IN SPECIFIC GRAVITIES AND ALSO DIFFERING IN SIZE CANNOT BE EFFICIENTLY SEPARATED.

An example of this would be the separation of adobe from pinto beans where the particles are nearly the same size and the weight as well. In cases such as this, the stoner must be operated at a lower capacity; and one should expect a lower quality separation.

IV. CONTROLS OF THE OLIVER STONER

Figure 8



1. Feed Rate Control
2. Tilt Adjustment Handle
3. Tilt Clamping Knobs
4. "More Speed" Control Knob
5. "More Air" Control Knob

Before starting to operate the machine, it is necessary to have a thorough understanding of the controls and their location on the Oliver Stoner. **PROPER REGULATION OF CONTROLS IS THE KEY TO SUCCESSFUL STONER SEPARATION, AND THE PROPER USE OF THESE CONTROLS SHOULD BE UNDERSTOOD PRIOR TO ATTEMPTING AN ACTUAL SEPARATION.**

THE DECK

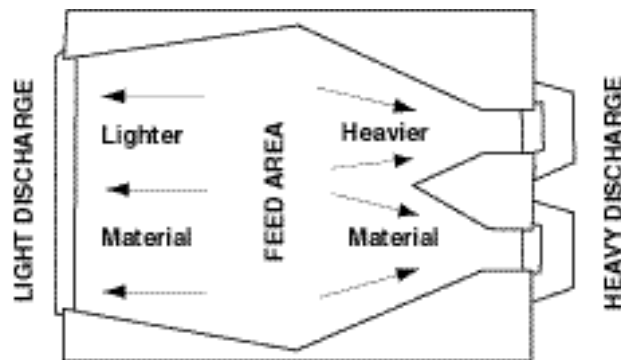


FIGURE 7

The most important part of the stoner is the deck, because it is the main separating surface. It consists of a carefully constructed wooden frame to counteract false vibrations with a screen or cloth overcover that is the surface on which the separation takes place.

The highest or uphill end of the deck is the stone discharge and the lower or downhill portion of the deck is the clean product discharge.

Oliver Stoners have one, two or three stone discharge traps depending on the model. The Oliver Model 2448 Stoner has one stone trap. The Model 3648 Stoner has two stone traps, and the Model 4848 Stoner and the Model 6048 each have three stone traps.

The features of the deck will be discussed further in these instructions, but knowledge of their location is important as well as understanding the controls that affect the four variable adjustments in the Oliver Stoner.

THE FOUR ADJUSTMENTS

All Stoners have four variable adjustments that must be properly adjusted and balanced to obtain optimum separations. These are Feed Rate, Tilt, Eccentric Speed and Air Control. We will discuss the controls for each of these variables in turn. (Please refer to Figure 6.)

FEED RATE

The feed rate control is located on the feeder and controls the amount fed onto the separating deck. Whether you use standard Oliver feeders or supply your own feeder, you must have a means of controlling the feed. The feed rate, whether fast or slow, should be uniform and free of surges. Surges in the incoming feed will show up in the discharge of the machine as a poor quality separation. We suggest the use of surge bins above the feeder, if processing will be interrupted.

Generally, the average feed rate is determined by the average capacity of the processing line of equipment. For optimum separation on your stoner, your feed rate should be as low as possible without falling below the minimum feed rate at which the deck can be fed and still obtain the necessary separation. When starting your stoner, always start at the minimum feed rate; obtain your required separation, then increase the feed rate to the desired capacity.

TILT

Tilt is the difference in the elevation between the high end of the deck and the low end of the deck. Increasing tilt will cause the material to shift toward the low end of the deck. Decreasing tilt will cause the material to shift toward the high end of the deck. Normally, the best separations are obtained when the tilt is set at or near the maximum steepness. However, care should be taken not to set the tilt too steep. The tilt is too steep when material cannot be made to flow toward the high end of the deck by increasing the eccentric speed. Too little tilt is shown when all the material moves toward the heavy side of the deck despite a slow eccentric speed. The tilt is adjusted by loosening the two clamping knobs (3) and moving the tilt adjustment handle (2) in toward the machine for more tilt and away from the machine for less tilt.

ECCENTRIC SPEED

Eccentric speed and tilt are closely related. Increasing eccentric speed will cause material to be shifted towards the high side of the deck. Decreasing eccentric speed will cause material to be shifted toward the low side of the deck. Generally, by increasing eccentric speed (which shifts material toward the high side) and increasing tilt (which shifts light material back toward the low side) a more precise separation can be obtained. Too much eccentric speed can be observed when all the material shifts toward the high end of the deck despite maximum tilt being used. Eccentric speed is adjusted by turning the "More Speed" control knob (4) located on the side of the machine. Turning the knob counterclockwise increases the speed and turning the knob clockwise decreases the speed.

AIR ADJUSTMENT

Air regulation is one of the most important adjustments to be made on a stoner. The most common mistake in air regulation is the use of too much air. Separation is not made by "blowing" the light material from the heavy but by using a controlled air flow to create the stratified layers, which are then separated by the vibrating action of the deck. Too much air will cause a boiling or bubbling action lifting the heavier particles from the deck and mixing them with the lighter top layers. Too little air will cause the material to appear sluggish and pile up on the high end of the deck.

With proper air regulation, the bed of material will be almost fluid in appearance. With the exception of the stratifying zone under the feeder, the material on the surface should be agitated and free flowing. Bubbling should be kept to a minimum, allowing the vibrating deck to make the separation. All the controls on the stoner serve a purpose and must be balanced with the other controls to obtain optimum separation. With this understanding, we are now able to advance to making an actual separation.

V. START UP AND OPERATION

INITIAL STARTING PROCEDURES

An experienced Oliver operator should have little trouble starting the stoner and obtaining good results. However, for many of us, the confusion that results when the machine is initially turned on defies description. Many of the initial adjustments must be made soon after material is fed onto the deck. Therefore, it is a good idea to operate the machine empty for a few minutes prior to attempting to make a separation. During this period, one should listen to the machine to become familiar with the way it sounds during operation. Also, observe the oscillating action of the deck. Change the speed control to make the deck oscillate faster and slower.

Locate the tilt control handle. Loosen the clamps and operate the tilt control to increase and decrease the tilt of the deck. Remember that tilt and eccentric speed must be balanced against each other to create a smooth uniform bed of material across the deck.

Check the feeding mechanism to insure that you can control the feed rate.

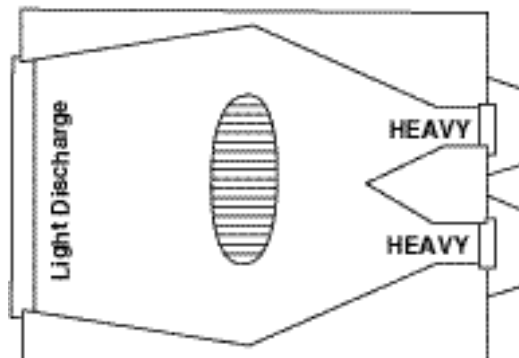
Finally, open and close the air gates. Although this does not produce a visible effect on an empty deck, changes in air volume may be noted by holding your hand over the deck as the air gate controls are operated. The air control settings are the most important part of successful stoner operation.

Before turning the machine off, make one final check to insure that the fan shaft is turning in the right direction. When viewed from the main drive belt side (the belt from the motor to the fan shaft) all shafts should rotate counterclockwise.

STONER STARTING PROCEDURES

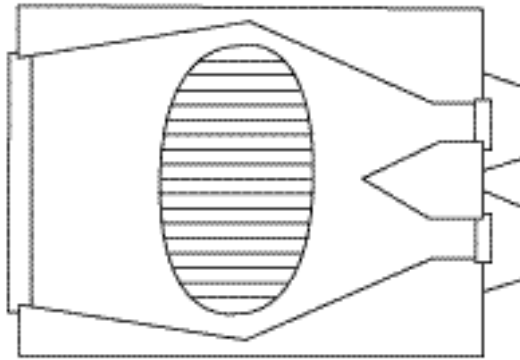
1. Set the eccentric speed and tilt to approximately 3/4 of their maximum setting. Close the air gates completely for small material and open partially for material larger than 1/8". Open the feed gate slightly and adjust the eccentric speed so that the material spreads uphill slightly faster than downhill.

FIGURE 8



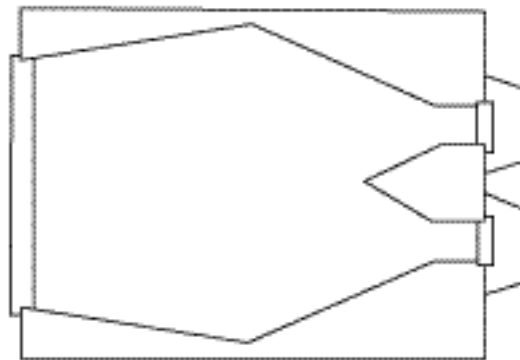
2. When 1/3 of the deck is covered, begin opening the air gate controls. As the deck continues to fill, open the air gates only enough to maintain a minimum fluidization.

FIGURE 9



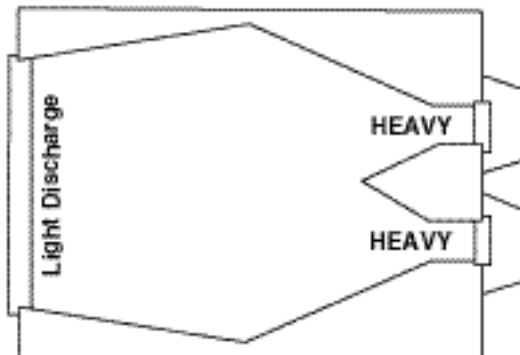
3. On many products a zone of light material will form at the lower edge of the bed as the deck fills. This is normal and indicates that sufficient air is present. If the percentage of heavy material is high, you may note the beginnings of a heavy separation in the heavy discharge area.

FIGURE 10



4. When the deck fills completely, the zone of lighter material at the lower edge of the bed will disappear. While maintaining a continuous feed and keeping the heavy discharge closed, adjust the eccentric speed, tilt and air so that the bed is approximately twice as deep on the heavy end as it is on the light end. Always use the minimum amount of air that will give proper stratification. As the heavy discharge area fills with heavy material, adjust the outlet(s) to maintain a bed of heavy material that extends from 8 to 12 inches from the heavy end of the deck.

FIGURE 11



INCREASING CAPACITY

The above discussion gives the general procedure for starting and operating an Oliver Stoner. After obtaining satisfactory results at low capacity, increasing capacity is a relatively simple operation. Only after satisfactory results are achieved should this be tried.

1. Increasing tilt and eccentric speed.

Begin by increasing the tilt. This will cause the material to shift toward the clean product discharge. To correct this, increase the eccentric speed until the material is shifted back to the proper pattern. Continue increasing tilt and eccentric speed alternately until you have the tilt at the maximum amount where you can still maintain the correct bed depth by adjusting the eccentric control.

2. Increasing the feed rate.

Next open the feed gate slightly. This increases the feed rate and the bed depth will increase. Wait a couple of minutes to observe the change in the material on deck. As the bed depth increases over the deck, it may be necessary to increase the air setting slightly to compensate for the thicker bed. Continue increasing the feed rate until you reach the maximum feed rate where you still obtain the desired separation.

VI. IN CASE OF DIFFICULTY - TROUBLE-SHOOTING

Most stoner operators can get acceptable separations after working with the machine for a few minutes. However, in some cases, even experienced operators run into problems that they cannot solve. If your stoner is not giving satisfactory results, or even if it is, but you would like to see better results, we suggest you read the following paragraphs.

Many operators expect results too soon on their stoner. When an adjustment is made, you should wait at least two minutes before deciding whether the adjustment has made any improvement. The reason for this is that, because of the volume of material on the deck, a certain amount of time is required for the deck surface to adjust to the new conditions.

Do not attempt to operate the machine without an understanding of why it works. The more one understands any situation, the better he is able to cope with it. Your stoner makes a separation based on a particle's weight and its resistance to air flow. Proper adjustment of all the controls is necessary to obtain the best separation. As we have mentioned, your Oliver Stoner has four adjustments - Feed Rate, Tilt, Eccentric Speed and Air Control.

FEED RATE determines the capacity of the machine. The minimum feed rate is the lowest rate of feed at which you can maintain an adequate cover over the entire deck. The maximum rate is the highest rate at which you still obtain an acceptable separation. Between these limits the quality of the separation generally goes down as the capacity is increased and up as the capacity is decreased.

TILT is the difference between the high and low ends of the deck. Normally, tilt should be set at the maximum where you can still maintain an acceptable pattern across the deck. Too much tilt is present when material cannot be made to climb to the high end of the deck. Too little tilt is present when you cannot float material to the low end of the deck.

ECCENTRIC SPEED is the rate of oscillation of the table. Eccentric action provides the agitation so that the material can be stratified and the reciprocating motion separates the heavier lower layers from the lighter upper layers of material. Eccentric motion and tilt must be balanced to get the best separating action. Too much eccentric speed will cause material to flow to the high side of the deck. Insufficient eccentric speed will not agitate the material enough for proper stratification. Usually, with too little eccentric speed, material will lay on the table without moving and the table will quickly become overloaded .

AIR is used as the stratifying agent. Unless material is properly stratified initially, a good separation cannot be obtained. Too much air will cause a bubbling, boiling action that remixes the material as fast as it is stratified. Too little air will not stratify the material properly.

10 MOST FREQUENT PROBLEMS

From conversations with processors over a period of years, we have compiled a list of the ten problems most generally encountered when setting up a new machine. We list these problems below along with some suggested solutions.

1. Fans running backwards. At least half of the problems with new machines can be traced to backwards rotation of the fans. If it seems that you have a problem with insufficient air, we suggest you check this, as silly as it seems. When viewed from the side where the motor is located, the fans and shafts should run counter-clockwise.

2. Blinded decks. If you think you have insufficient air and the fans are running correctly, remove the deck and clean it. The deck can be cleaned best by blowing the dirt and chaff out from the top down.

3. Dirty air filters. The air filters on the side of the machine are designed to screen dirt out of the air before it enters the machine. If they become plugged, the fans cannot pull enough air through them to provide a proper separation. They can be cleaned by removing them from the machine and gently tapping them on the floor. A more effective cleaning may be obtained by removing the filters and using compressed air to blow the dirt out.

4. Inadequate foundations. Although Oliver Stoners are counterbalanced, they must be attached to a secure foundation. A six inch concrete slab is best but is not absolutely essential. Many processors run Oliver Stoners on wooden floors with no problems. If you can feel any vibration in the floor while the machine is running, you probably have too weak a foundation. Weak foundations lower the quality of separation, because the foundation absorbs some of the oscillating action intended for separation.

5. Operating at too much capacity. Often merely lowering the operating capacity slightly will greatly improve the separation. Capacity is usually dependent on the standards to be met and the quality of the material being fed onto the stoner. Quality and capacity are inversely related, that is, increasing capacity usually lowers quality and decreasing capacity usually improves quality.

6. Loose clamps. Loose clamps are not a common problem but they occur more often than people realize. Loose clamps usually occur when an operator makes an adjustment and fails to tighten the clamps sufficiently. The result of loose clamps is false vibrations. False vibrations absorb much of the oscillatory action of the deck and produce results similar to weak foundations.

7. Using the wrong deck cover. Deck covers are the portion of the machine that actually makes the separation. Without friction between the deck cover and the material to be separated, no separation will result. Therefore, a cover must be selected that will perform well with a specific product. Using the wrong cover will result in poor separation, very low capacity and will sometimes cause sufficient damage to the deck that it must be rebuilt. Generally, the cover should have a rough surface texture and the openings should be as large as possible without allowing material to fall through. We make four types of standard decks: cloth for small grasses and materials smaller than 1/16"; 30 mesh wire for seeds the size of alfalfa (between 1/16" and 1/8" in size); 16 mesh for materials between 1/8" and 1/4" (cereal grains); and 10 mesh wire for materials larger than 1/4" (beans, for example). We can also supply a variety of special decks to meet your particular needs.

8. Belts slipping. This is a common occurrence with new machinery. New belts have a tendency to stretch slightly and should be checked frequently during the first couple weeks of operation. To check a belt, turn the machine off. Then apply pressure to the back of the belt midway between the two pulleys. The belt should deflect approximately 1/2 inch.

9. Attempting to separate commodities unsuitable for separation. This is a very rare problem, as normally a stoner will make some improvement in any seed lot. However, a stoner is a specialized machine designed to separate particles of varying density and similar sizes. If material does not fall into that classification, then it probably cannot be separated on a stoner.

10. Wrong adjustment. This is most commonly a problem with new, inexperienced operators. The solution to this problem is usually more experience. Do not be afraid to make adjustments on the machine. Make an adjustment. Wait a couple of minutes to determine the effect. Then decide if it is good or bad. If the effect is good, then try something else for further improvement. If the effect is bad, return to the original setting. Allow a couple of minutes and then try another adjustment. Finally, remember to make all adjustments in small increments. It is better to approach the final setting through several small steps than to make one adjustment that may be too large.

The final pattern on the deck may vary depending on the seed you are processing. However, for most commodities, the overall pattern will generally be similar. We suggest an average depth of material of from 1 to 2 inches for material larger than 1/4 inch; from 1/2 to 1 inch for material ranging from 1/8 to 1/4 inch in diameter; from 1/4 to 1/2 inch for material from 1/16 to 1/8 inch in diameter and less than 1/4 inch for material smaller than 1/16 inch in size. As a general rule, the bed depth at the high end of the machine should be from 1 to 2 times the depth across the low end of the machine. The average depth under the feeder will normally be about the same or slightly greater than the depth at the stone discharge. These patterns will not be correct for all commodities. However, if you can approximate these conditions on the deck surface, you should see a definite separation. From this point you can make the necessary adjustments to obtain an optimum separation.

As an additional aid in setting your stoner, we have provided some examples of situations that can occur and have listed adjustments which help correct the pattern. (See Figures 12-13-14.)

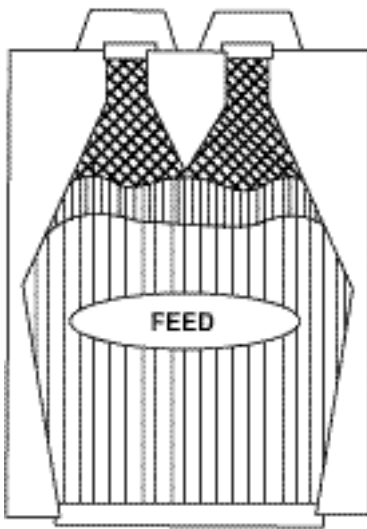


FIGURE 12
Correct Adjustment

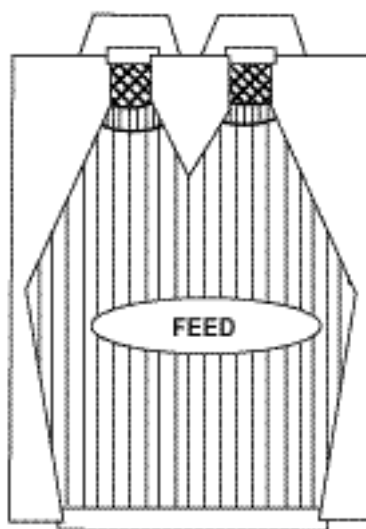


FIGURE 13
1. Insufficient Tilt.
2. Too much Eccentric Speed.
3. Too little air.

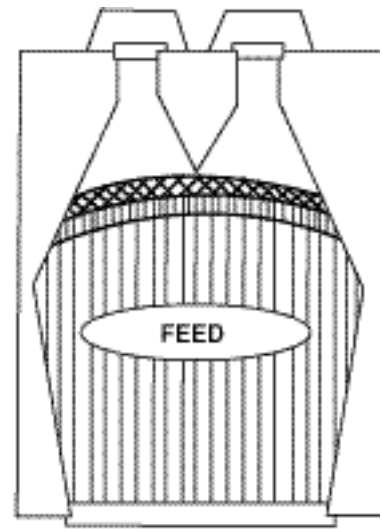


FIGURE 14
1. Excessive Tilt.
2. Too little eccentric speed.
3. Too much air.

Finally, if you can't get the separation you want, please call the factory (303) 254-6371. Our staff will be glad to give you the approximate settings to separate your product on your machine. If you have specific problems or questions, let us know. We will be glad to share our thoughts on the subject with you.

For the convenience of our customers, we maintain a laboratory service where we can process your samples. There is no charge and all samples will be returned if requested. If you have a sample you would like tested, just call us. Then we can discuss your problem and determine how much of a sample is needed for testing. If you like, we can set the test dates so that you can be present during the test.

VII. MAINTENANCE

Your Oliver Stoner is designed to give years of trouble-free service. However, as with all machinery, periodic maintenance is required to keep it in top condition. Included below is a list of some areas that can be problems, if not periodically checked.

DECKS

The deck of your Oliver is that portion of the machine that actually contacts the material and makes a separation. To maintain optimum separation, the deck should be checked frequently and cleaned or repaired as needed. Even in very clean atmospheres, dust and dirt will build up on the underside of the deck. This causes a restriction of air flow through the deck and will eventually plug the deck completely. When the deck becomes plugged, it is necessary to remove the deck from the machine and clean it. The best method of cleaning the deck is to use compressed air blowing from the top down. Thoroughly clean the entire deck. A deck that is only partially cleaned will only become plugged sooner. To check if the deck is clean, place a light on a drop cord under it. If the deck is cleaned, you should be able to see light through every opening of the deck cover. Dirty areas will show up as dark spots and should be cleaned more thoroughly.

Because decks are in direct contact with the material being separated, they are subjected to abrasive wear. Inspect your decks frequently for wear. As a deck wears out, the surface becomes smoother and it becomes more and more difficult to move the heavier seeds out from under the lighter layers. Normally, when the wires of the deck overcover are worn halfway through, it is time to repair the deck. If the deck cover is worn completely through, there is danger of ruining the undercover which develops the air pattern. All Oliver decks with wire overcovers are built with a perforated metal undercover which develops the air pattern and a woven wire overcover which actually makes the separation. As long as the undercover is not damaged, it is not necessary to replace it.

When rebuilding a deck, always inspect the deck thoroughly. Look at the underside of the deck and inspect each rib for cracks. If the ribs are cracked, it will be necessary to tear the deck down completely to replace it. If the ribs are all right, inspect the undercover. As long as it is not damaged, there is no need to replace it. When removing the overcover, be careful not to damage the undercover. When installing the overcover or undercover, it is best to place the deck on two sawhorses with a light underneath. By looking through the screen towards the light you will easily be able to locate the ribs for nailing purposes. Always stretch the screen tightly. Tight screens give better separation results than loose ones. Finally, inspect the deck trim, aprons, rails and ruffles; and replace what is needed.

DRIVES

There are three sets of belts and sheaves in your Oliver Stoner. These are the main drive belts or fanbelts; the idler belt from the fanshaft to the vari-speed unit, and the eccentric belt from the vari-speed to the eccentric shaft. New machines should be checked very frequently for the first few weeks, because new belts tend to stretch as they are broken in. To check belt tension, turn off the machine. Then apply pressure to the outside of the belt midway between the two sheaves. The belt should deflect approximately 1/2 inch.

The eccentric belt, from the vari-speed to the eccentric shaft, has a shaft running through it. The shaft must be removed to install a new belt. For this reason, a spare belt is installed around the shaft on all new machines. When the original belt wears out, merely remove the spare belt from its mountings and slip it in place of the original. If the second belt wears out and you lack the time required to install a new belt, you can replace it with a link belt. However, this is a temporary measure; and we recommend the link belt be replaced with standard V belts as soon as it is convenient. Proper tension is maintained on the eccentric belt by the spring action in the vari-speed unit. There is no manual adjustment. If the eccentric belt slips, it is an indication that the vari-speed unit is defective.

VARI-SPEED ASSEMBLY

The vari-speed unit changes the ratio between the driveR and driveN pulleys so you can change the eccentric speed. It is normal for vari-speed units to wear and it should be expected. Most customers get two or three seasons of hard use before it is necessary to replace the vari-speed, depending on the usage. The life of the vari-speed can be extended, if it is operated through its entire range at least once daily. To do this, simply cut off the feed while the machine is running. Turn the speed control knob so the eccentric slows down all the way. Then turn the knob so the machine speeds up all the way. Open the feeder and reset the eccentric speed to the proper level.

Replacement of the vari-speed is relatively simple. With the machine running, turn the vari-speed adjustment towards the fastest eccentric speed. SHUT THE MACHINE OFF. Remove the eccentric belt from the pulleys. Loosen the set screws and slip the vari-speed pulley off the shaft. Slip the new vari-speed pulley onto the shaft and tighten the set screws. Install the eccentric belt. Turn the machine on and set to the required speed.

BEARINGS

Your Oliver has several bearings to support the shafts. These bearings are all standard sizes and can be purchased at any bearing supply house, or we can supply new bearings. Normally, a bad bearing will first be detected by hearing an unusual rumbling noise in the machine. If you feel you have a bad bearing, it may be checked by the following method. Allow the machine to operate at least 30 minutes. Then TURN OFF THE MACHINE. Touch the bearing surface. If the bearing is excessively hot, it is probably bad and must be replaced.

Most Oliver Stoners operate for many years without bearing problems. To prolong bearing life, we suggest that each bearing be given 1 to 2 shots of grease at the start of each season. Sealed bearings are installed at the factory and they give much better service, if they are not overgreased.

The set screws in all bearings should be checked and tightened periodically. As temperature changes cause the bearings and shafts to expand and shrink, these set screws will sometimes work loose allowing the bearing races to slip along the shaft.

Periodically check the bearing support brackets to insure that they are tight. If their brackets become loose, the result will be false vibration, which may cause poor separation, bearing failure or a number of related problems.

SETTING BALANCE SPRINGS

The coil springs located in the springboards serve the purpose of counterbalancing the weight of the deck. When properly adjusted, these springs absorb much of the thrust load during the oscillations of the deck and prolong the life of the eccentric bearings. If it is necessary to set the balance springs, use these steps:

1. Turn off the machine.
2. Set the deck to a neutral position. That is, set the tilt of the deck exactly halfway. This may most easily be measured by measuring the distance between the bottom of the springboards and the top of the lifting brackets. When the measurement is equal on both ends of the machine, the deck is in the neutral position.
3. Turn the machine by hand until the keyway in the eccentric shaft is in the topmost position.
4. Adjust the jam nuts until the spring is compressed to a distance of 1 3/4 inches.
5. Tighten the jam nuts.

ORDERING REPAIR PARTS

We maintain a complete card file on all machines that have been built by Oliver Manufacturing Company. All machines are serial numbered. To insure that you receive the correct parts, we must have the serial number of your machine. The serial number is located on a plate on the side of the air chest. (See Figure 6.) In addition, we need the model number of the machine.

When we receive orders for parts, we ship as soon as possible after receiving the order. Normally, we will ship by the fastest, cheapest method unless otherwise specified. Incomplete or incorrect information when ordering will cause unavoidable delays in shipping. If you have a special problem or cannot locate some of the required information, please contact us. We will work with you to provide what you need as quickly and as inexpensively as possible. A parts list is enclosed for your assistance.

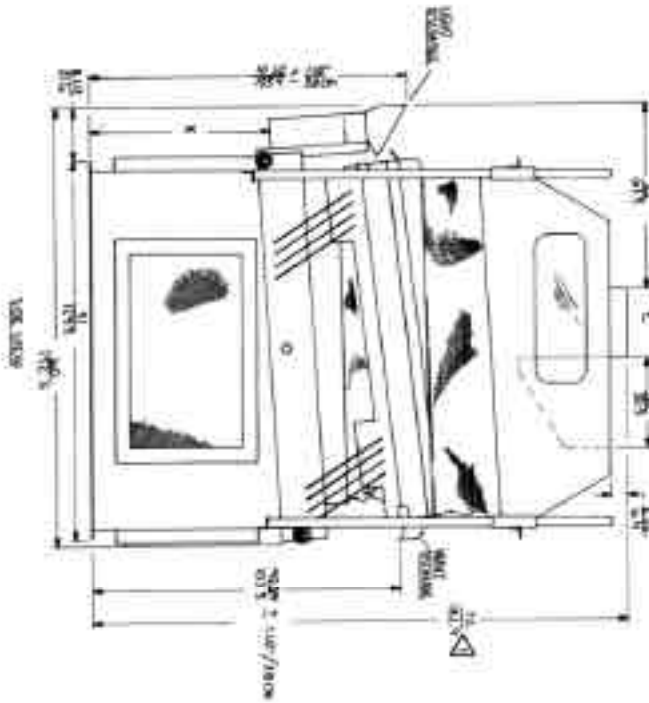
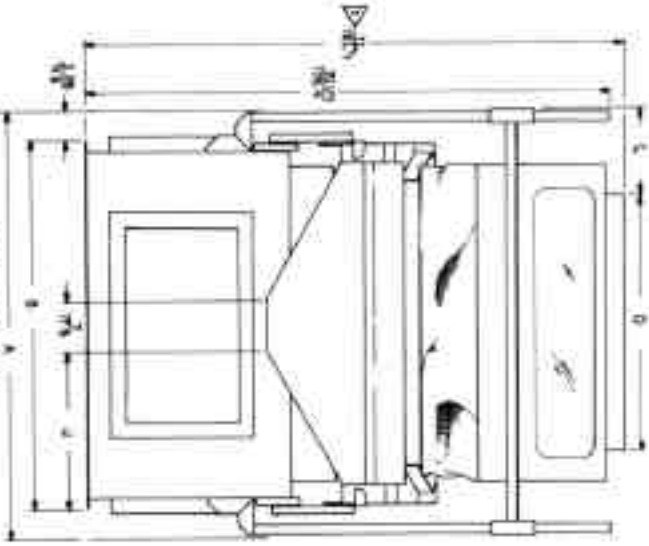
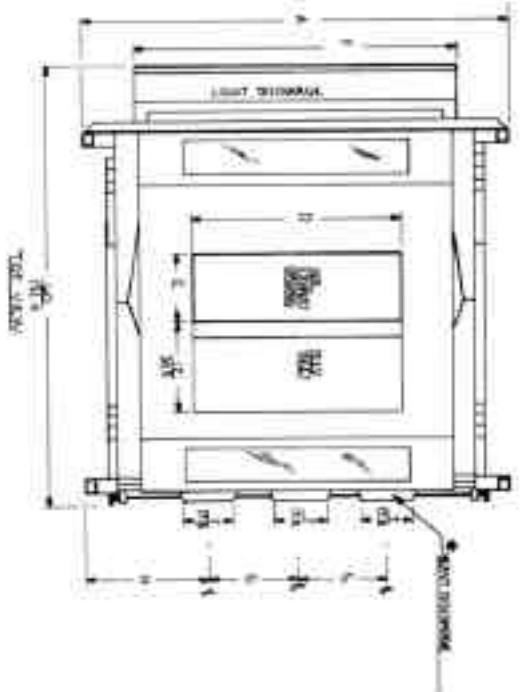
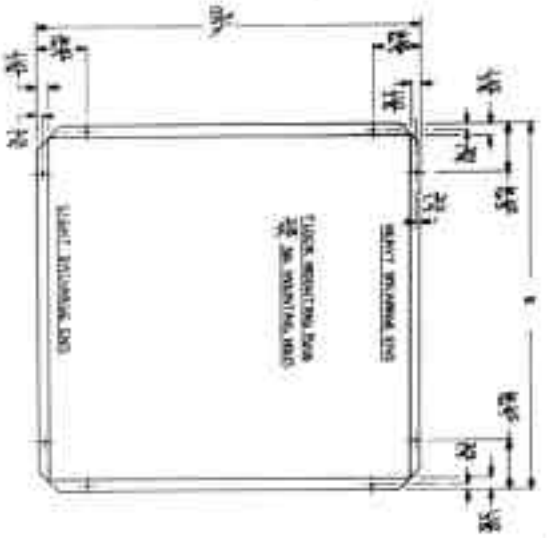
VIII. AUXILIARY EQUIPMENT

Although stoners do a very good job removing a small percentage of heavy material from a relatively large portion of light material, they will not normally do a good job in the alternate situation: removing a small fraction of light material from a relatively large fraction of heavy material. For this kind of a separation, we recommend a gravity separator. In many cases, the incoming feed contains both a small percentage of heavy trash and a small percentage of light trash along with a large percentage of good material. For this reason, we often install both stoners and gravity separators to produce a final, clean product free of both heavy and light trash. If you have problems with a small percentage of light trash, we suggest you contact us about the use of a gravity separator. We manufacture both stoners and gravity separators in a wide range of sizes and capacity ratings. We can supply a gravity separator that will be an approximate capacity match for your stoner.

DUST CONTROL ACCESSORIES

Remember, the stoner is not intended to be a cleaning machine. With some commodities, dust is still present on the particles when they are introduced onto the stoner. This can be both annoying and illegal. Oliver has two systems to combat dust and get it away from the machine. These are described in the enclosed brochure on our dust control methods. Please take time to read this, if excessive dust is a problem in your processing.

THE OLIVER STONER W/ DUST HOOD



- FOR ROLLING MATERIAL
 - FOR MAXIMUM PRODUCTIVITY
 - BEST IN-THE-BUSINESS PERFORMANCE
- △ DIMENSIONS VARY AS MODELER USES DIFFERENT
AND IN EXISTING STOCKS

MODEL	2-1/2" B	3" B	3-1/2" B	4" B	4-1/2" B
A	21 1/2"	24 1/2"	27 1/2"	30 1/2"	33 1/2"
B	41 1/2"	44 1/2"	47 1/2"	50 1/2"	53 1/2"
C	10 1/2"	11 1/2"	12 1/2"	13 1/2"	14 1/2"
D	15 1/2"	16 1/2"	17 1/2"	18 1/2"	19 1/2"
E	10 1/2"	11 1/2"	12 1/2"	13 1/2"	14 1/2"
F	16 1/2"	17 1/2"	18 1/2"	19 1/2"	20 1/2"
G	—	11 1/2"	12 1/2"	13 1/2"	14 1/2"
H	10 1/2"	11 1/2"	12 1/2"	13 1/2"	14 1/2"
I	9 1/2"	10 1/2"	11 1/2"	12 1/2"	13 1/2"
J	18 1/2"	19 1/2"	20 1/2"	21 1/2"	22 1/2"
MINOR DIMENSIONS	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
MINOR DIMENSIONS	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"
MINOR DIMENSIONS	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"
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ROCKY FORD, COLORADO 81067

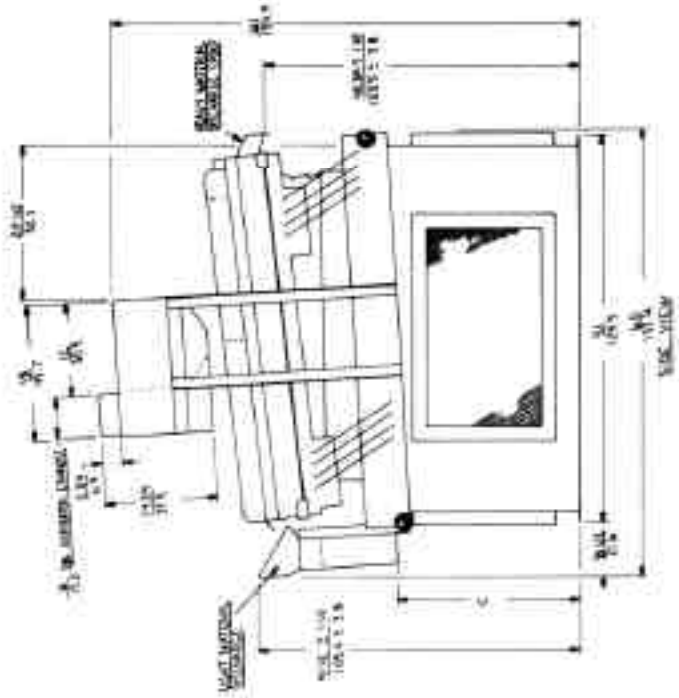
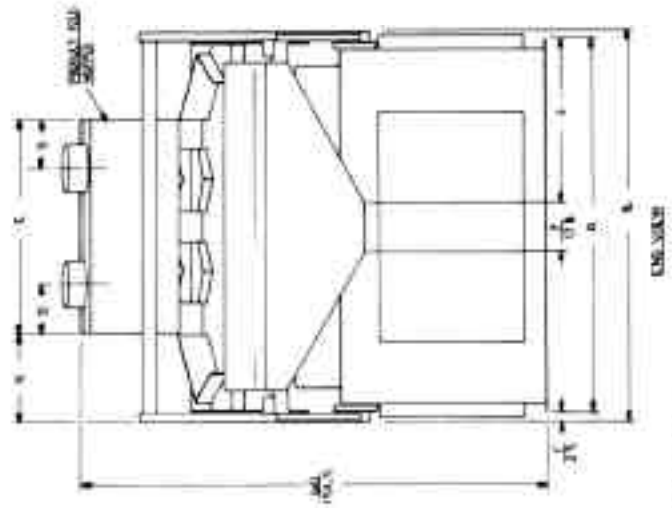
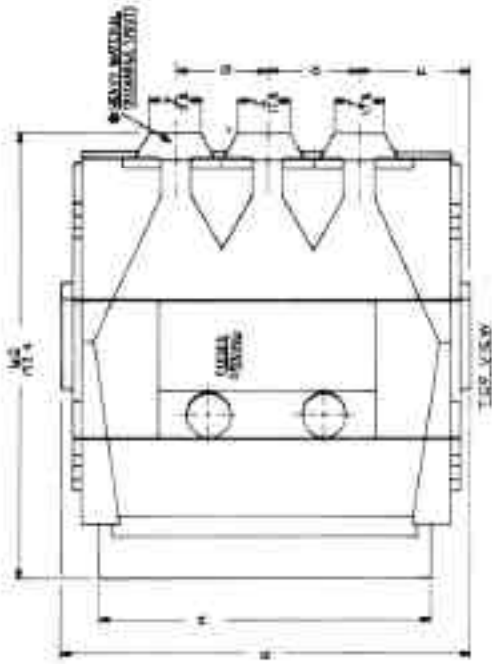
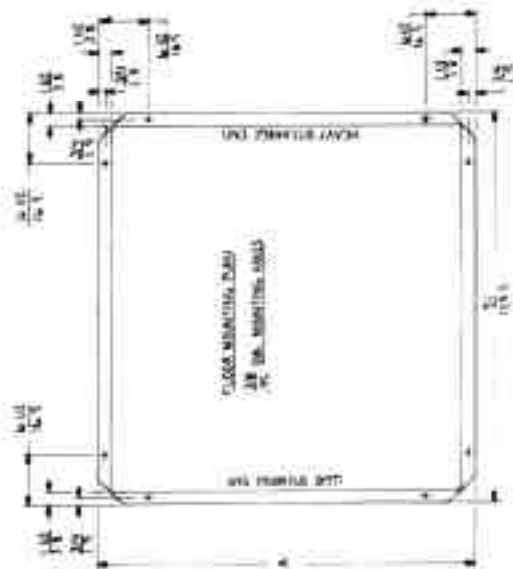
D.K. JUNE 1984

AMERICAN MODEL CORPORATION

The OLIVER STONER WITH ASPIRATING FEEDER

* SEE MODEL SERIALS LIST
 MODEL 24-18 441 184 179-1
 MODEL 24-18 441 184 179-2
 MODEL 24-18 441 184 179-3

DIMENSIONS INCHES
 CM



MODEL	24-18	24-18	24-18	44-18	44-18
A	23 58.5	27 69.0	33 84.0	53 134.5	56 141.9
B	62.05 157.6	61.02 155.3	61.02 155.3	71.15 180.8	61.15 155.3
C	24 61.0	24 61.0	24 61.0	25 63.5	26 66.0
D	8 20.3	10 25.4	10 25.4	10.5 26.7	10.5 26.7
E	16 40.6	20 50.8	20 50.8	20 50.8	20 50.8
F	13.24 33.6	13.24 33.6	13.24 33.6	13.24 33.6	13.24 33.6
G	—	—	15 38.1	15 38.1	16 40.6
H	15 38.1	15 38.1	15 38.1	15 38.1	15 38.1
I	15 38.1	15 38.1	15 38.1	15 38.1	15 38.1
J	7.34 18.7	7.34 18.7	7.34 18.7	7.34 18.7	7.34 18.7
K	3.8 9.6	3.8 9.6	3.8 9.6	3.8 9.6	3.8 9.6
MOVER W/3.0	3.8 9.6	3.8 9.6	3.8 9.6	3.8 9.6	3.8 9.6
MOVER WEIGHT	760	875	875	1050	1000



ROCKY FORD, COLORADO 81067

JUNE 1984

return to index

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