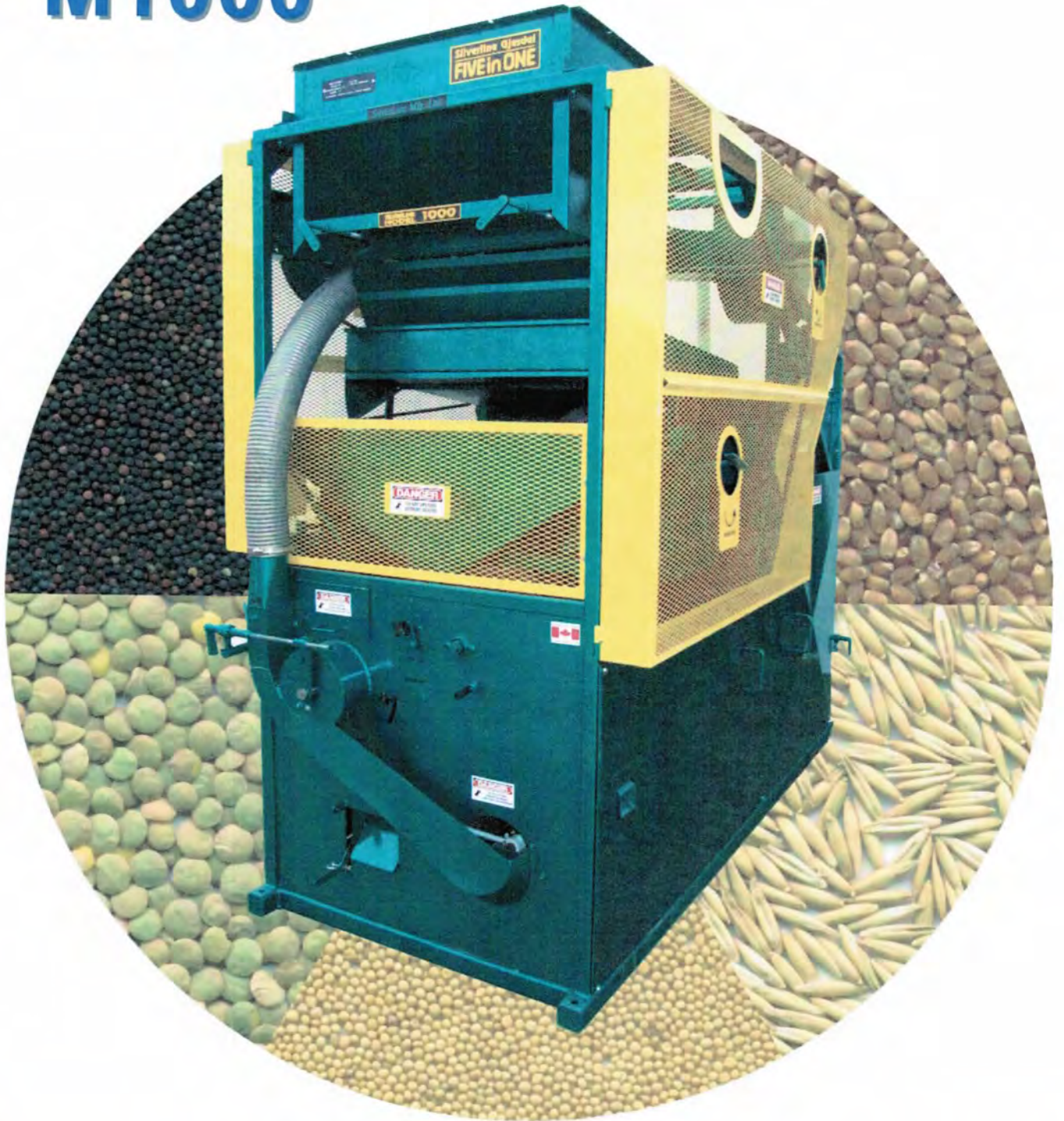


Gjesdal **FIVE in ONE** GRAIN CLEANERS

Simplifying the World of Grain Processing

M1000



A SEED CLEANING PLANT ALL IN ONE MACHINE*



NOTICE TO BUYERS

Thank you for your purchase of one of the finest grain cleaners on the market. A working partnership relationship is what we strive to achieve with each and every customer.

Flaman Sales Ltd. shall limit the warrant of items sold to the amount of the purchase price. Flaman Sales Ltd., our employees or representatives, make no other warranties; guarantees or conditions; expressed or implied with respect to this machine or its performance.

By acceptance of this machine the original Purchaser acknowledges that this warranty and disclaimer herein before described are conditions of sale and that they constitute the entire agreement between the Vendor; Flaman Sales Ltd. and the original Purchaser regarding warranty and/or any other liability or conditions.

The original Purchaser shall have 10 days after the purchase date to accept this machine or advise Flaman Sales Ltd., in writing, of any disagreement. No warranty will cover misuse or damage in any way and any machine may not be accepted for return which is not returned in factory original condition.

ATTENTION

All warranties expressed or implied will be null and void if any other than Flaman Sales Ltd. parts, components or accessories are used in Gjesdal or Flaman Sales Ltd. grain cleaning units. Flaman Sales Ltd. genuine parts, components and accessories are available by order, please call 1-306-726-4403.

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INTRODUCTION

- This Model 1000 Gjesdal Cleaner is a compact on farm machine capable of processing grain to a high quality standard.
- This machine has a unique Sieve system which will allow you to separate small seed such as Canola from larger grains and while doing so you can keep this valuable seed separate from the screenings.
- The belts, bearings, pulleys, etc., are of a machinery standard and can be purchased locally from almost any supplier. This will prevent 'down time' waiting for repairs.
- A wide variety of Sieves and Sieve material is available from the manufacture for processing various crops. The Grader Shells and Indent Drums are an industry standard and are available on order.
- There is a built in system that can be used when 'scalping' grain or cleaning fragile crops such as Peas. This system allows the operator to use the upper half of the cleaning process and bypass the Indent portion of the machine thus allowing greater capacity or prevent seed damage.

INSTALLATION DATA

Your Gjesdal M 1000 Seed Cleaner is designed to work as a Scalper, Aspirator and Grader. A wide variety of sieves and Grader Shells are available. The two Indent drums which come with the machine will process a wide variety of seeds.

The machine should be set level and secured to a solid ridged mounting plate ie; cement or steel floor. All moving parts must operate freely. Allow enough room for the operator to move around the machine. You will require 12 feet of space at the rear of the machine to facilitate the removal of the Indent Drums and Grader Shells.

A pipe the same dimension or larger than the 90 degree air discharge elbow will be required to carry dust out of the cleaning area. This pipe should be as short as feasible and should discharge into a dust bin with a large air outlet or through a cyclone system.

This precision machine should not be stored outside. A combination of moisture, rust and wet dust will seriously affect the Cleaners operation as well as it's appearance and long term value. All warranties will become null and void.

Any modifications to the unit by a non-qualified technician may void all warranty claims.

The following are samples of the Danger Labels that are on the unit. Please take the time to locate all Danger areas and labels that are on the unit before use. Do not run or have power supplied to the unit without guards in place from the factory. Do not wear loose clothing around machinery and keep children and all other non authorized personnel out of the work area. **Always disconnect power supply to the unit before working on moving components.**



The picture above shows the two product flow adjustment levers for the slide gate discharge system which meters the flow of product onto the sieve deck. Turning the product flow adjustment levers will regulate the flow of grain entering onto the sieve deck. Be sure this gate is in its' closed position before opening the shut off gate.



The following picture shows the Hopper product flow shut off gate on the backside of the hopper above the screen deck. By turning the control lever clockwise from the closed position, you will introduce grain into the metering chamber. By turning the control lever counterclockwise from the open position you will shut off the flow of grain to the metering chamber. The metering chamber is the lower portion of the hopper.

The lower portion of the above picture is the pre-air (aspiration) . The aspiration suction is connected to an air chamber located under the metering chamber. The grain coming out of the metering chamber passes through the air chamber and the lighter foreign material in the raw product should be lifted out of the grain flow and discharged out of the fan.



As seen in the above picture the aspiration fan is mounted on the upper portion of the unit on the right hand side above the grader shell housing. The primary aspiration adjustment control lever for controlling the air suction to the air chamber is located just in front of the fan on the right hand side of the unit from the hopper end. The suction required at the air chamber located under the hopper is controlled by this lever from the hopper end.

There is an adjustable manual speed pulley located on the fan drive shaft. By adjusting the diameter of the pulley you will increase or decrease the fan speed and to be used in conjunction with the primary aspiration adjustment control. This setting is to be used only if the primary adjustment control is not in the aspiration spectrum that is required.

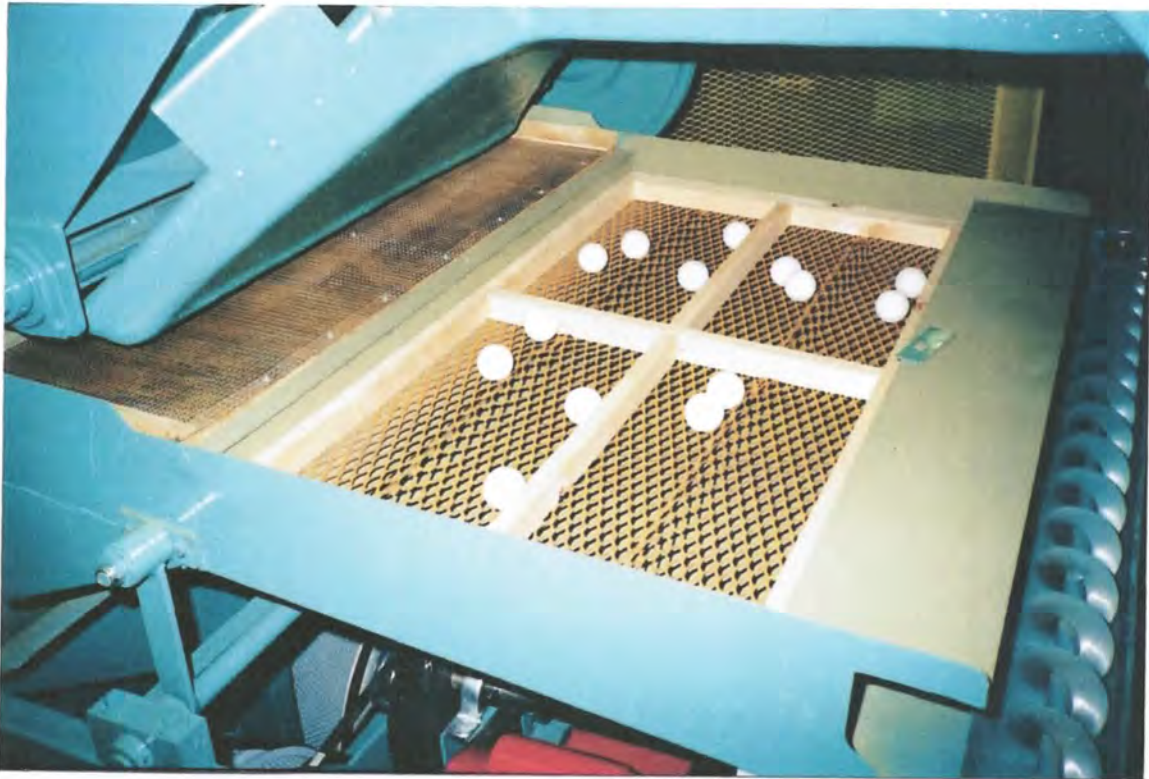




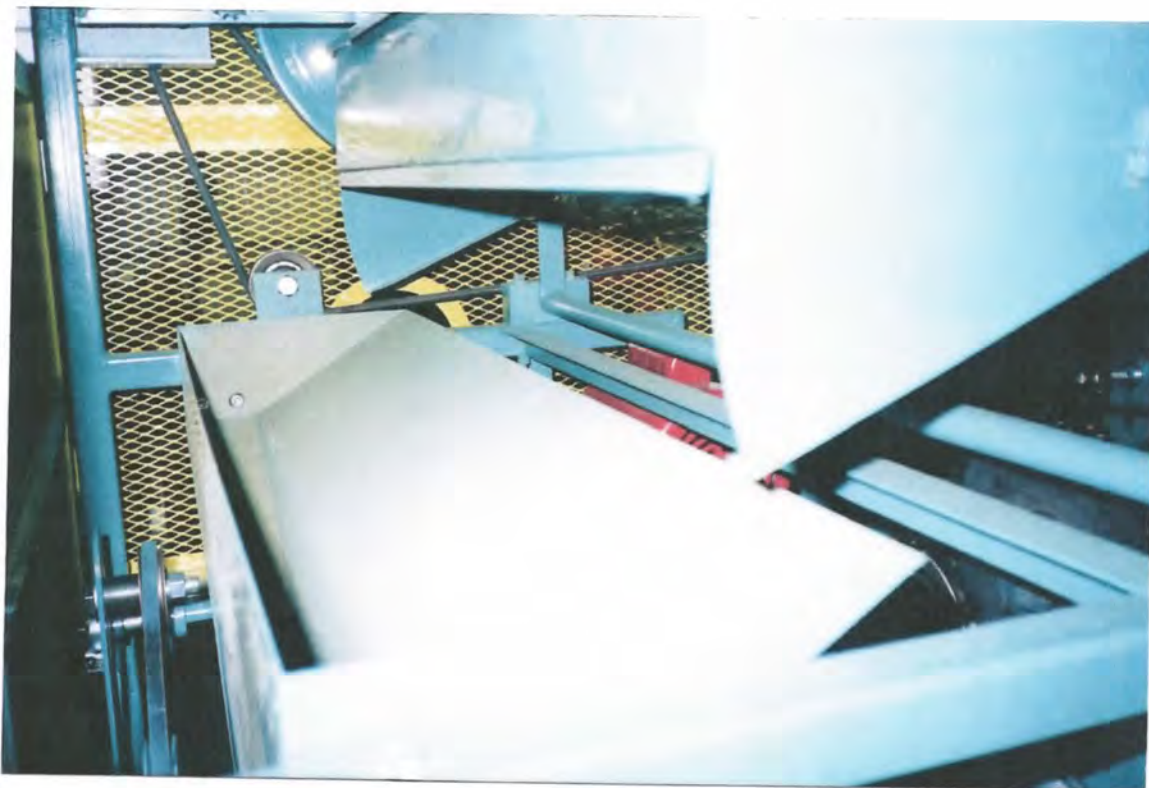
Shown here is a clear view of the Sieve Deck with the front Sieve under the Hopper. Many sizes of Sieve material are available to suit various grains and conditions. You will find that it is advantageous to keep a variety on hand for all conditions.

Under each Sieve on the Sieve Deck is located a removable ball rack system. The bouncing balls strike the underside of the sieve material keeping grain material from sticking to the Sieve. Each compartment should have 2 - 4 balls. More or less can be used as required.

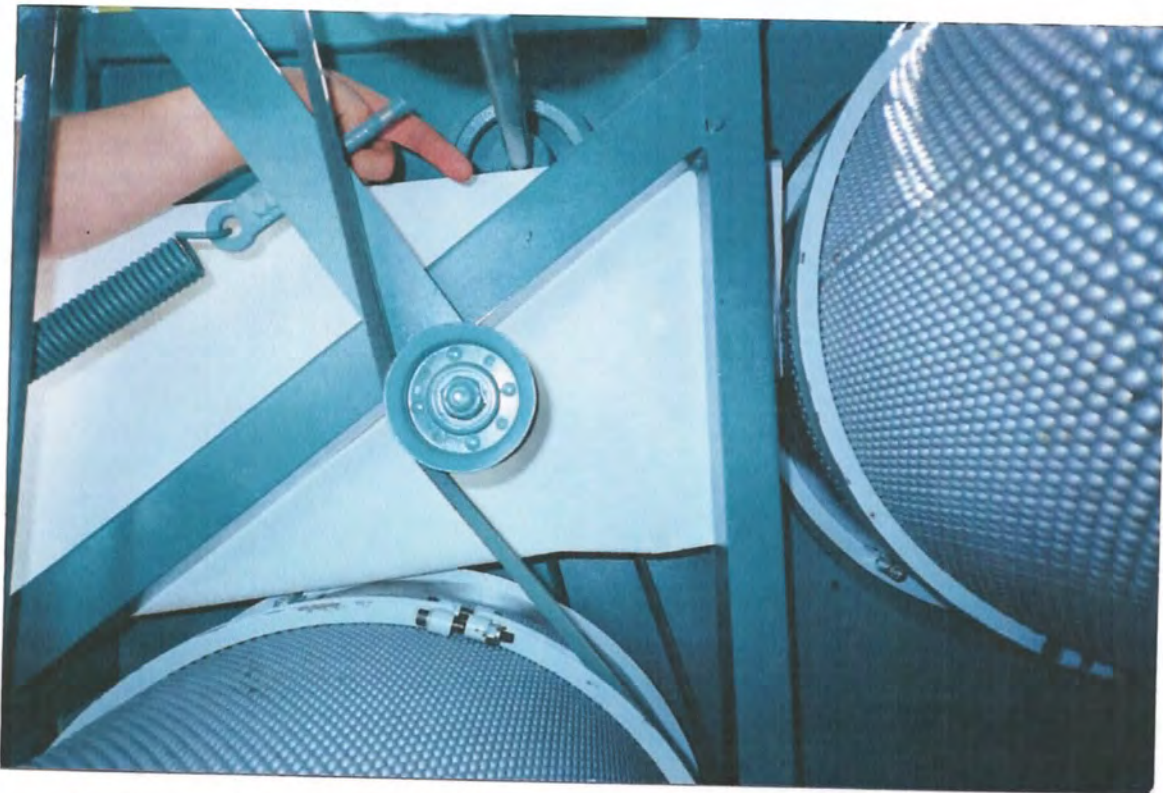
Also shown at the extreme right is the auger to convey coarse screenings from over the Sieve. The green tab at the rear of the deck is the hold down for the Sieve.



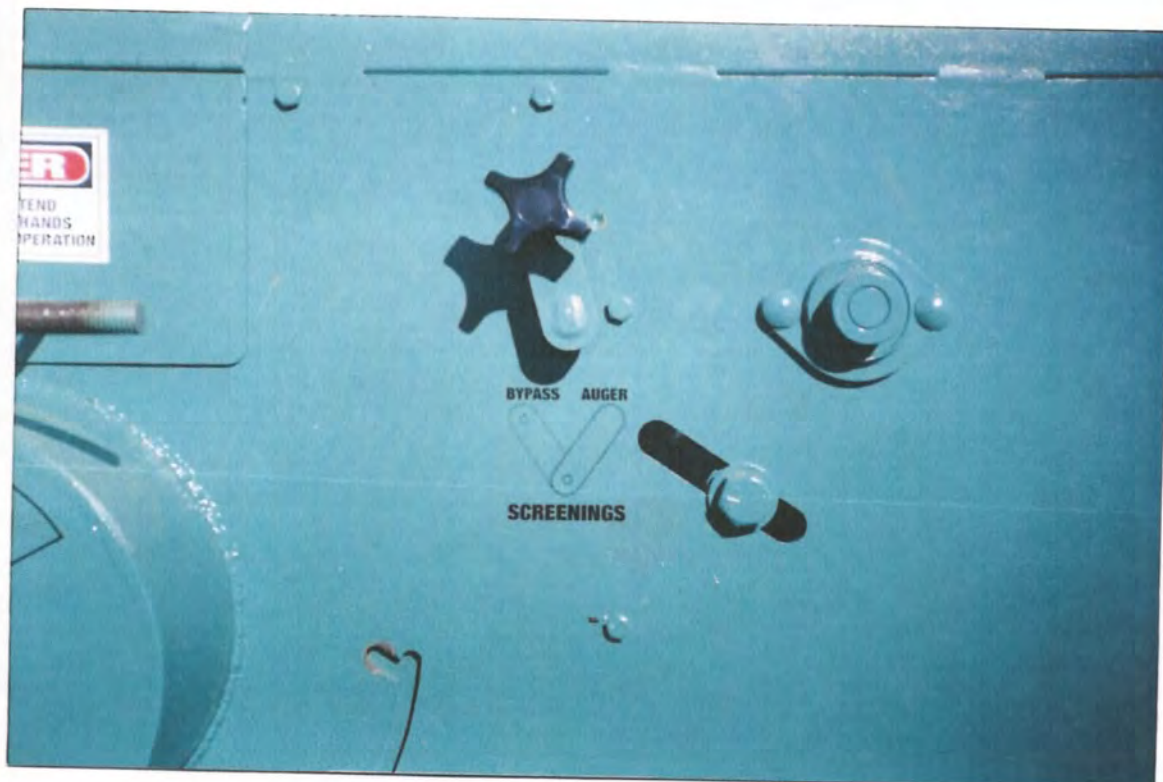
Seeds that pass through the small dimension first Sieve can be directed two ways. The photo shows the pan on the front 'under side' of the deck in an 'up' position. This will include the fallen through material to be included with the material going through the second Sieve. When the pan is set 'down by removal of the underside screws this material will be discharged into the catch hopper shown. This will be the normal seed cleaning position.



The first picture shows you the spouting for changing the direction of the screenings from having your front sieve pan in the down position. This will allow you the capability to have the product flow (screenings) discharged into the screenings auger or out the side by-pass spout for salvaging a secondary crop.



In the second picture we show the lever for changing the direction of the flow that is location on the hopper end of the unit.





Seed passing through the second Sieve will be spouted into one of the three Grader Shells shown above. Here thin small material is removed into the screenings hopper. No adjustment of size can be made here unless the Grader Shell are replaced by another size. You may find that you will need more than one size of Grader Shell as seed size will differ from year to year. Many Grader Shell sizes and types are available to clean a wide range of crops.

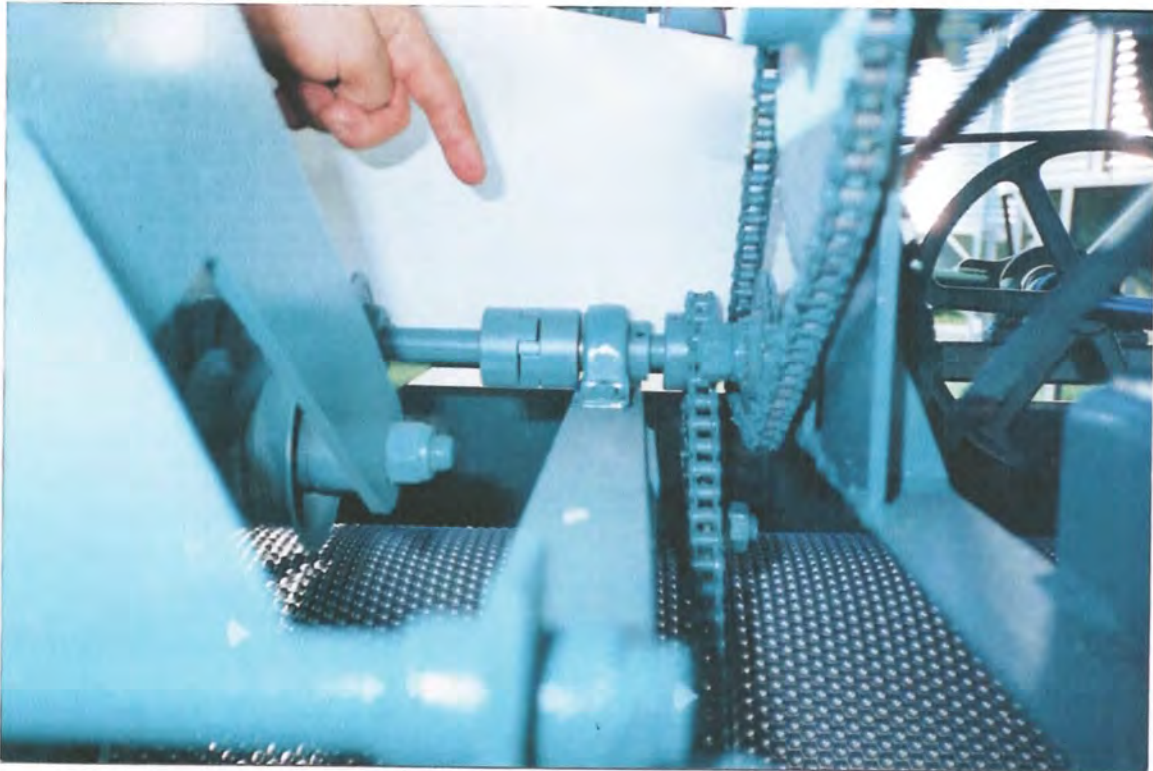
From the grader Shells the grain will go to the Large Pocket Indent or to the Pea chute as shown in the following picture. (See Indent Cylinder). The Pea chute is designed to bolt on where the intake chute of the large pocket indent is. By using the pea chute you will be able to by-pass the Indent Drums. This process can be used for a number of applications ie; Cleaning Peas, Scalping grains or for Dockage removal. The Pea chute has a final air suction built into it for lifting lighter foreign material.



The following picture shows where to connect the 4 inch air suction hose that is supplied with the unit. Remove the cap on the 4 inch outlet on the air intake to the fan. With the hose that is supplied with the pea chute, attach one end to the Pea chute 4 inch air outlet and the other end to the air inlet on the air intake to the fan. Once connected ensure that the air flow damper on the Larger pocket indent grain outlet at the hopper end of the unit is in the closed position. Place pea inlet cap in a safe location as it will have to be placed back on, to use your Indent final air system in the future.



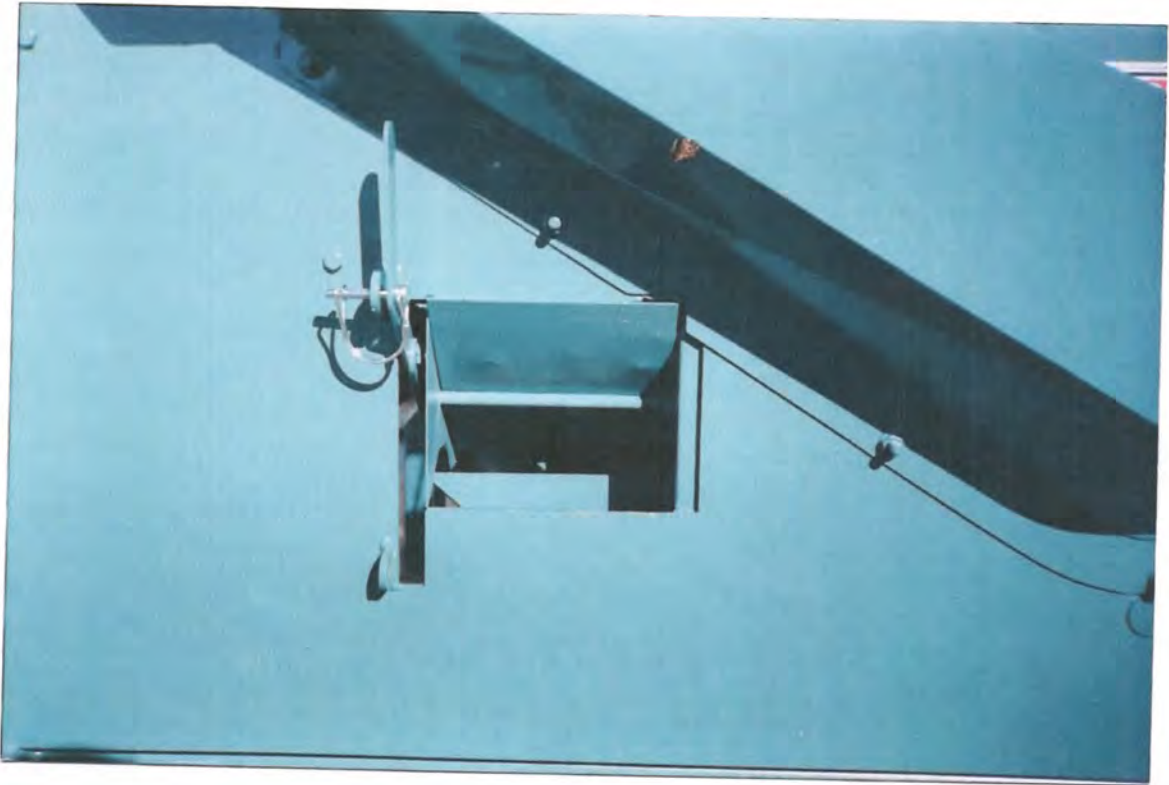
The following picture shows a Jaw Coupler that when disconnected will prevent the indent from rotating. This Jaw Coupler will only be disconnected when using the Pea chute to bypass the indents. In full running mode you will have the Jaw Coupler together to run your indents. **DANGER “Disconnect all power supply and ensure that all moving parts are stopped before performing this operation.”**



In the following picture the accept product (the grain) has been lifted into the receiving trough of the Large Pocket Indent. To adjust the speed of the Large pocket indent, on the left hand side of the unit from the hopper end is a lever that is labeled (INCREASE SPEED). This lever controls the speed of the Large Pocket Indent and can be adjusted on the go. Once the product is dropped out the out-feed end of the Large pocket Indent (the hopper end of the unit) to a chute that moves the grain to the Small pocket Indent. As the grain is being dropped out of the Large pocket Indent the grain passes by a final air suction. By having the damper lever in the most open position the unit will be achieving maximum air suction. **“DANGER- Do not extend anything into the operating area of the indent accept outlet.”**



In the following picture it shows a door (location on the hopper end) that can be in the up position (directs larger material to the screenings auger) as shown or be in the down position to allow the larger material that is flowing on the bottom of the Large Pocket Indent to come out and by-pass the screenings auger. This door is primary used to check what the Large pocket Indent is removing from the accept product that is being lifted into the receiving trough. The door is also to be used when cleaning oats and the operator does not want to use an indent shell that lifts the oats up into the receiving trough. The clean oats will come out this door when it is in the down position. Remember when cleaning oats in this mode to raise your flow retarder to the up position.



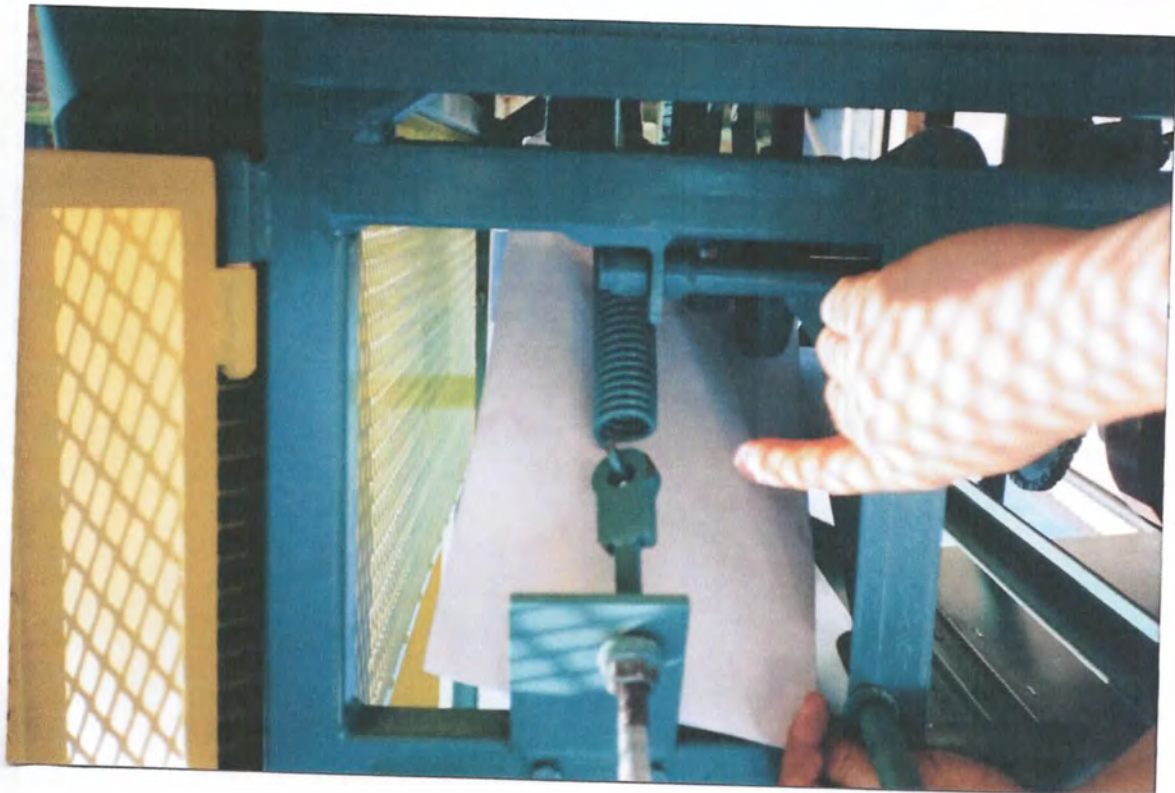
Shown in the picture below is the discharge of the Small Pocket Indent and the discharge of the screenings auger. Both discharges are at the rear of the unit or opposite end of the hopper. The accept product discharges underneath the unit just behind the end plate under the Small pocket Indent. The spout that is shown in the picture directs the Smaller product (chips & splits) that is lifted up into the receiving trough towards the screenings auger discharge. This spout can be put on in three different directions. Also notice that we have incorporated a location for a flow retarder in the Small Pocket Indent. In most cases you will have the flow retarder in the up position as shown. If for some reason ie;(cleaning Canola with the #13 indent) and you wish to lift the accept product up into the receiving trough of the small pocket indent you will want to use the flow retarder for this operation.



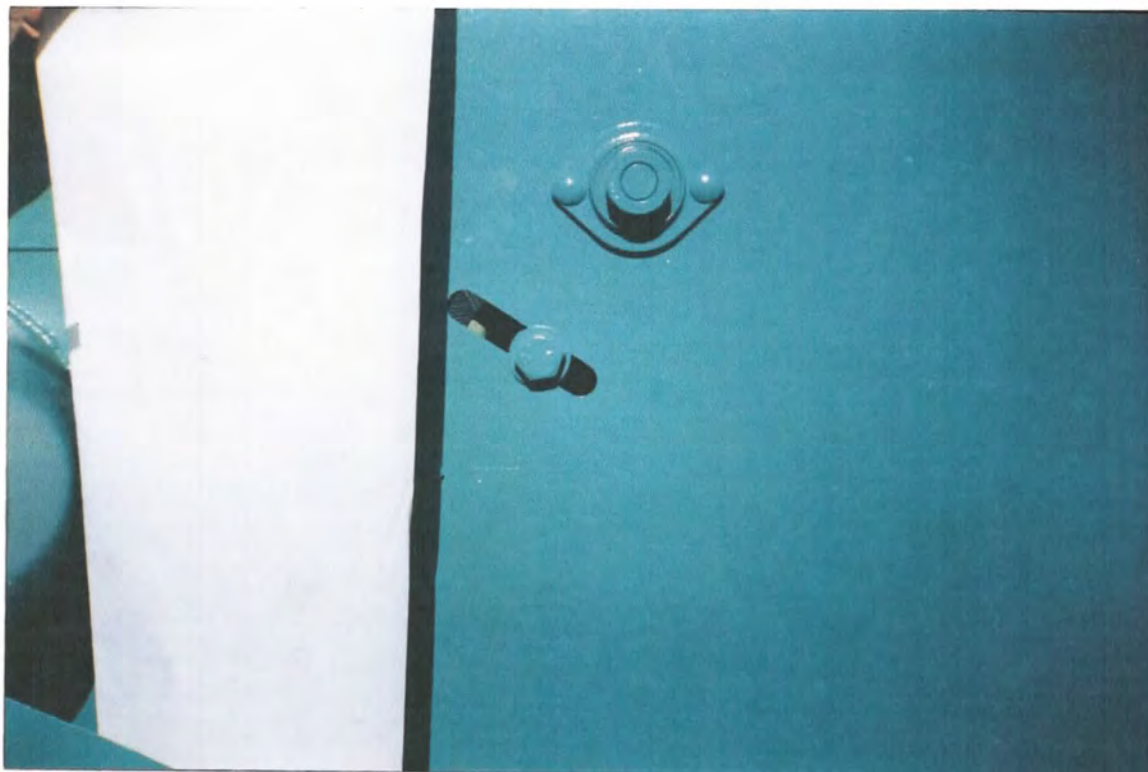
On the drive system of your small indent there is a manual adjustable pulley. To change the speed of the indent you have to release the belt tension on the right hand side with the lever marked (TIGHTEN). Flip the belt off of the adjustable pulley and loosen the set screw. To increase the speed of the indent to lift the product higher into the trough, turn the pulley together to enlarge the diameter. To decrease the speed of the indent to drop the product lower, turn the pulley out to decrease the diameter. Tighten up the set screw on the flat side of the hub. Tighten up your belt and try your speed. One turn will lift or lower your product in the indent by approximately 1 to 1-1/2 inches. **For this operation DANGER “Disconnect all power supply and ensure that all moving parts are stopped before performing this operation.”**



The following pictures show the Indent drive spring loaded tighteners. These tighteners should only have to be adjusted after removing the Indents or if a belt needs replacing.



The following picture shows the belt tighener for the screening drive belt. This adjustment is located at the hopper end of the unit on the end plate between the two Indents above the grain chute running between the Indents.



The following picture shows us an adjustable shoe stroke adjuster. With the bolts in the upper most position as shown in the picture the shoe (sieve deck) will achieve approx. 20% less stroke than in the most lower bolting position. The upper bolt position will be the normal running mode. Always have three bolts connecting the shoe pivot arm and the pitman assemble arm. This adjustment is located behind the left hand guard from the hopper end of the unit.



The following picture shows a gate that will direct the scalping from the sieve deck scalplings auger to the screening or out the side of the unit. Always remember to loosen the wind nut in the gate lever before adjusting. This feature is used to divert ie; larger grains (secondary crops) out of the primary crop to salvage for a higher cash value then screenings. This Scalplings diverter gate is located on the left hand side of the unit from the hopper end behind the left hand side guard.



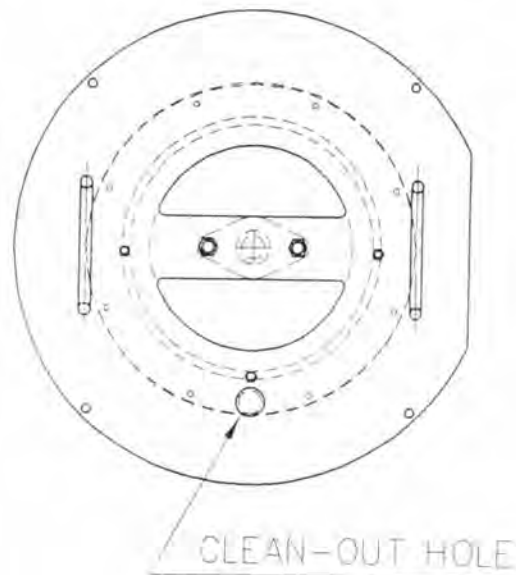
Changing Indents on Model 1000

- Ensure the power to cleaner is shut off and locked out.
- Remove plastic pipes from between grader shells.
- Remove the two nuts from either side of Grader collection chute and pull the chute off.
- Release the tension on the spring loaded Indent drive belt tighteners.
- On the Indent trough adjusting arms remove the quick pin to release the adjusting arms cranks from their working position. Then remove the adjusting arms from the Indent center shaft by loosening the pinch bolts on the adjusting arms.
- Remove the two bolts from each bearing support block on the inlet end of the indents.
- Remove the four bolts from each indent plate to the unit and pull straight out to remove.
- The entire Indent assembly can now be removed from the unit and set on the floor to disassemble.
- *Note - when removing the Indent be careful not to bend the Indent Drum.
- Carefully pull the indent and trough assembly out of the unit. Watch that the drive belt for the Indents comes off and remains with the unit.
- Once the Indent assembly is out of the unit, loosen the set screws of the bearings on the inlet end of the Indent (*Mark on the center shaft the position of the bearing*). Remove this Indent Hub. Remove the Indent bolts from the hub at the opposite end. You can leave this Hub on the center shaft assembly. Pull the Indent Drum off of the trough assembly.
- Measure the distance from the end of each Indent to the drive rings.
- Transfer each drive ring to the Indent that you will be putting back into the unit, making sure each drive ring is in the same position as it was on the Indent that you removed. Do not fully tighten drive rings until Indent assembly are fully reinstalled as they must be aligned with the drive pulley.
- Slide trough and the hub that you removed from the center shaft into replacement Indent drum, install hubs and the three bolts and nuts on each hub. Put bearing back onto the center shaft to mark that you placed on the center shaft during disassembly. *Note-ensure that you replace the same trough and hubs back into the same Indent position in the unit. Do not mix up the Indent hubs or the troughs as they rotate in different directions.*
- To complete reassembly simply reverse the order of the previous directions.
- As you reinstall each Indent be sure to put the drive belt around the Indent as you slide it into place.
- Once reassembly is completed check alignment of the drive ring and belt to the drive pulley. Once aligned tighten drive ring in place.
- Roll Indents by hand to ensure that they are rotating smoothly. Adjust Indent drive belt tension, double check to be sure all nuts, bolts, etc. are in place and tight.

Changing Grader Shells on Model 1000

- Ensure the power to cleaner is shut off and locked out.
- Remove plastic pipes from between grader shells.

- Remove the two nuts from either side of Grader collection chute and pull the chute off.
- Pull chute straight out to remove.
- Loosen set screw on each outlet hub.
- Pull Grader Shell assembly off of shaft using **a twisting motion**.
- Transfer hubs and support rod to replacement Grader Shell.
- Reinstall onto shaft being sure to line set screw with machined flat spot on shaft and tighten set screw.
- Reinstall chute and pipes.



The above diagram shows a clean-out hole that is located on each Indent plate. Remove this plug for cleaning out the Indent seal plate when changing crop kinds or varieties. With the unit running, place a vacuum nozzle up against the clean out hole to remove any grain (s) that may be in the seal plate. Once cleaned out replace plug back into the clean out hole.

GJESDAL CLEANER SHELL RECOMMENDATIONS FOR VARIOUS CROPS

Crop	Scalper Sieve	Grader Shell	Small Indent Shell	Large Indent Shell
Wheat- Red Spring	10/64" x 3/4" slot	5-3/4 /64 x 3/4" slot	No. 13	No. 20
Durum Wheat	10/64" x 3/4" slot 11-64" x 3/4" slot	6/64" x 3/4" slot	No. 13	No. 20 - 22
Barley	10/64" x 3/4" slot 11-64" x 3/4" slot	6/64" x 3/4" slot	No. 13 No. 19	No. 20 No. 24
Oats	10-64" x 3/4" slot	5 1/2" x 3/4" slot 5/64" x 3/4" slot	No. 13	No. 20 No. 22
Rye	10/64" x 3/4" slot	5/64" x 3/4" slot	No.13	No. 20
Flax	4 - 5/64" X 3/4" Slot	5-1/2" Round hole	No. 13 No. 10	No.16 - 20 No.13
Canola - Argentine	6/64" Round hole 7/64" Round hole	3-1/2" slot	No. 5	No. 10
- Polish	5-1/2" Round hole	3/64" Slot	No. 5	No. 10
Lentils**	11/64" x 3/4" slot 20 Round	13 Round 5-1/2" slot	No. 13	No. 20
Peas	20-24/64 Round	10-13/64 x 3/4" slot	N/A	N/A
Canary seed	9/64 Round	4-41/2" Round	No. 10	No. 13 - 16
Alfalfa & Sweet clover	3/64 x 5/16" slot	1/20" Round	No. 4	No. 10
Mustard	Similar to Canola			
Sanfoin	16/64 Round	5-1/2 slot	No. 19	No. 22
Tame Buckwheat	15/64 Round	10/64 slot	No. 13	No. 20
Fababeans	24/64" Round hole	12-14/64" slot	N/A	N/A
Kabuli	26 - 32/64 Round hole	12 - 16/64 slot	N/A	N/A

* Specifications subject to change with crop varieties and without notices.

** Special grader shells are available to separate wheat and barley from lentils. They are a special ribbed shell with 12/64" Round hole and funnel shells.

START UP (this is a guide only to help in a start up)

- Make sure the all guards are in place and secured.
- Turn machine over by hand by turning drive belts from the motors and see that all moving parts are turning free and clear. **“ Make sure that your power supply is disconnected for this operation of start up”**.
- Once you see that all moving parts are rotating freely and the operator is free and clear of the unit connect your power supply, **“ be sure that your control start switches are off.”**
- Do a visual and vocal verification that all personnel and unauthorized personnel are clear of the unit.
- Start your unit. Listen for any unusual sounds. If the sounds persist shut down unit immediately and locate the problem.
- Once unit is running preset your large pocket indent to approximately 53 to 56 RPM with the receiving trough at 20 towards the lift on the dial indicator.
- Check that your small pocket Indent is running around 40 RPM and the indent's receiving trough is set at 20 away from the direction of the product lift on the dial indicator. Both Indent speeds may have to be adjusted once product is introduced to the unit.
- Make sure that you Hopper shut off gate is closed.
- Open your metering gate (approx. 1/4 inch on cereals) to allow only a small volume of product through the metering gate. This will give you a chance to preset the unit without a large volume of grain passing through.
- Introduce product to the unit's product hopper.
- Open your shut off hopper gate a couple of inches.
- Product will begin to flow on to the screen deck of your unit.
- Set your air suction so that you can just start to hear grain being lifted through the fan and then back off one or two turns on the unit's air adjustment handle.
- If your pan is in the pan down position for the first screen deck see that the small foreign material passing through the sieve are being directed to the proper location on the selector dial ie; Screenings or By-Pass.

- The **accept product** should be dropping through the second “larger sieve” and the scalping should be running over the top into the scalping auger and being augered to the left hand side of the machine. If accept product is running over into the scalping auger you may require to get a larger sieve or try removing some of the cleaning balls thus reducing the amount of sieve vibration.

- The accept product that has fallen through the second sieve is then transported to the 3 - 45 inch grader shells. Open the inspection door to the graders at the back end of the unit. **“DANGER- Do not extend anything into the operating area of the grader shells.”** See that the grain is running through all three of the grader Shell and that the grader cleaning pipes are rolling freely.

- From the Graders the accept product will enter the Large pocket indent or the Peas chute (See Pea chute). Once accept product has entered the large pocket indent return to the hopper end of the unit. Here is an inspection door to see what is happening in the indent. **“DANGER- Do not extend anything into the operating area of the Indent inspection door.”** Using a flashlight the accept product should be lifting into the receiving trough. If accept product is being thrown over the receiving trough reduce the rotation speed of the indent. If accept product is not being lifted enough either increase indent’s rotational speed or move receiving trough in the direction of the lifting product Do not rotate trough past 30 on the dial indicator. At this point you must increase the rotational speed of the indent. The accept product should be dropping in the center of the receiving trough. Remember to set your flow retard once you achieve the units cleaning volume of product.

- From the Large pocket indent the accept product will pass by a final air suction and down to the Small pocket indent. Adjust the unit’s final air at this point. **“DANGER- Do not extend anything into the operating area of the indent accept outlet.”**

- The Small pocket indent is designed to lift small foreign material and small accept product up into the receiving trough. If too much accept product is being lifted into the receiving trough adjust the trough away from the lift of the product. Do not go past the maximum point of the dial indication. You maybe required to adjust the speed of the small pocket indent,

by decreasing its rotational speed. The unit must be shut down to perform this operation.

“Disconnect all power supply and ensure that all moving parts are stopped before performing this operation.”

- Once you are confident that the unit is close to being preset introduce more product through the metering gate by increasing the volume in small amounts each time ie; (cereals crops $\frac{1}{2}$ turn on the setting cranks of the metering gate) and repeat the above steps. ***GOOD LUCK.***

CLEANING VARIOUS CROPS

Peas

Peas do not process well when passed through an Indent Drum. The Model 1000 Gjesdal comes with a Grader Shell discharge hopper. Remove the catch hopper where the Grader Shells discharge into the small Indent. Replace the removed hopper with the Grader Shell hopper.

Oats

This cleaning machine is equipped with a Sieve, Grader Shells, and Indent Drums to process cereals. The main change required with this crop is that the large Indent will be pick up the desired seed into the trough. The desired Oat seed will be discharged out the Indent where Wheat screenings normally come. A valve and lever are located on the clean seed discharge end. This valve must be moved to direct the desired seed out the proper discharge spout.

Canola

Use a round hole in the Scalping Sieve just large enough to allow the desired seed to pass through. The slotted Grader Shells must be narrow enough to hold the desired Canola inside. The standard Indent Drums may finish the separation process or a smaller size pocket may be more advantageous.

Flax

Use a slotted Scalping Sieve with a slot perforation just wide enough to allow the Flax kernels to drop through on edge. This will be approximately a 4/64 width. The Grader Shell should be a round hole small enough to hold the Flax inside. The standard Indent Drums should finish the separation process or again you may wish to purchase a more advantageous sized pocket.

Canary Seed

This is an ideal machine to process Canary Seed. The Grader Shell dust control will remove a great deal of the fine dust which comes from this area of processing.

Sainfoin

This crop is easily processed by the Model 1000 Cleaner. A problem with this crop is the immature seed which is similar in size to mature seed, however they do not germinate. To do a total separation of this seed may require the use of a gravity machine.

Alfalfa and Clovers

These crop seeds are difficult to process if they contain other seeds difficult to remove. A good processing job is more easily obtained on all crops if you start with a good quality product.

THE INDENT CYLINDER

The Indent Cylinder is designed primarily to make a separation by length, as is the disc type indent unit. But you will see that there are other physical characteristics that enter into the separation made by the cylinder indent as well. In addition to the indent size, the cylinder utilizes the forces of gravity and centrifugal force. The particles to be removed from the mass are loaded into the indent by a combination of gravity and centrifugal force. After locating themselves in the pockets they are retained by the centrifugal force to a point of the rotation of the cylinder where gravitational forces overtake and the material discharges from the indent and is dropped or falls into a Receiving Trough where it is conveyed to a discharge spout. The smaller particles are placed in the Trough and longer particles are discharged as "throughs". These pass out the far end of the cylinder, opposite from the feed and without being lifted by the indents.

For a particle to be lifted, its center of gravity must fall within the indent itself, otherwise it will tumble out. For some seeds the center of gravity is at, or near, the geometric center, and at others it is placed greatly from this geometric point. Therefore, it will depend which way a seed orients itself in the indent as to whether or not it is lifted, and the seeds must have the opportunity to enter the indent properly before being discharged as a "through". No matter what cylinder machine is used, there are five main sections or functional areas of the machine and each perform a definite part of the separational process.

1. THE CYLINDER ITSELF--- and this of course is the main element, in that it is the actual divider of the machine and all other parts simply aid the cylinder in accomplishing its purpose. As stated earlier the cylinder's function is to lift the smaller particles out of the grain mass the correct distance to most accurately and evenly make the desired separation. The cylinder is simply a thin walled tube with indents formed from the inside to the shape approximating a hemisphere. The indent sizes are usually listed in 64's of an inch similar to screen sizes used in screen machines. There are no other figures or letters normally used to describe the indents, other than this diametrical number.

It has been stated that the first cylinder was fashioned out of a hollow log by drilling from the inside a series of shallow holes. We feel that much progress has been made since this first attempt but the basic principle still remains.

The modern cylinder as we know it today utilizes a special steel which is precisely punched by large mechanical presses to the desired indent. This is usually done on the flat in small size sheets, as the pressure required for the formation of these indents is very great. These sheets are then handwelded together and rolled to form the tube and are then case hardened. It is this hardening of the cylinder that gives it its extremely long life. Were it not hardened its life expectancy would be very short.

2. THE RECEIVING TROUGH--- In different machines the shape of the Receiving Trough varies somewhat, but the purpose remains the same.-- To accumulate the lifted particles and convey them to a discharge spout. This Trough is adjustable in order to make the cut or separation at the exact point of particle size variation desired. This separation is usually made within an area of about 60 degrees to 45 degrees ahead of top dead center of the cylinder. By proper adjustment of this Trough very good flexibility of operation is possible, and we feel that it is the flexibility that gives the cylinder its definite advantage over competitive length separation equipment. Also this Receiving Trough is normally adjustable to the point that it can be dumped. This is extremely important when a unit of this type is used for seed cleaning and this allows the trough to be cleaned out.

3. THE RETARDER--- This is most easily described as a dam at the discharge end of the cylinder, and it should be of the adjustable type. In order to be most accurate the grain bank in a cylinder should be relatively uniform. Without the Retarder the grain mass would be less at the Discharge end of the cylinder due to the depletion of smaller particles and surging of the grain bank may result. By this we mean that the material will not roll as it should, but the entire mass will move or slide with the cylinder up to a point where friction will no longer support it, and then it all slides back in a single mass.

This will also occur in the cylinder if it is insufficiently loaded. By retarding the discharge of the cylinder, grain depth can be built up to the desired level and maintained at that point where best operation occurs. The adjustment of the Retarder will depend on the type of seed being processed. If the grain level is allowed to drop near the discharge end of the cylinder, inaccurate separation will result.

As the grain passes through the cylinder, we can readily see the following procedure taking place. The smallest particles are lifted out near the feed end of the machine. Sometimes with more than one particle located in a single Indent. As the grain progresses through the cylinder, the slightly longer particles are lifted into the Receiving Trough. The toughest division always takes place near the Discharge End after the small particles are depleted. If the cylinder is allowed to starve at that end, larger particles will be lifted if the grain bank is not maintained at a proper level. The Indent size cannot accurately perform a length separation unless sufficient depth of material is present. This same Retarder must also be designed so that it can be removed or displaced so that the Cylinder can be quickly and completely cleaned out. This, of course, is especially true where Cylinder Indents are cleaning seed.

4. FEEDER TO THE INDENT CYLINDER --- It is very important that the metering be constant if the separation to be accomplished is to be consistent. If the feed varies, all particles will not have the same length of time to be separated as did others. Also with an uneven feed your trough setting cannot be accurate due to the fact that for a heavier feed Trough settings should be lowered slightly and vice versa.

These five components are usually in a Housing consisting of an Intake Hopper or Spouting and also the Discharge Spouting from the Unit or to additional Cylinders. In this Housing are usually various visual inspection ports which allow the operator to actually view the internal operation of the unit, and assist in making necessary adjustments. This housing also incorporates the Trough Adjusting Mechanism and a Dial to indicate the Trough positioning. The Housing also usually includes the necessary drive for the cylinder itself -- whether singly or on multiple units.

We now come to the actual operation of the Cylinder Indent, and of course the first choice is the actual pocket size required. As mentioned previously the pockets are sized in 64's of an inch similar to screens and in the case of most units are available in pocket sizes from #4 to #36.

As you can see these would cover the majority of small seeds and cereal grains. Having chosen the pocket size required for the separation desired the actual cylinder speed is of next prime importance.

The average machine utilizes a cylinder of 23" diameter and according to quite a long formula the theoretical equilibrium SPEED for this cylinder is 55.5 RPM. At exactly this speed materials would cease to empty. However, several physical properties change our frictionless conditions by introducing friction of various amounts. This friction is dependent on the shape of seed, seed coat textures, size of seed and moisture content. Also the Specific Gravity of the seed has some effect on the separation. These frictional forces tend to cause particles to follow the circumferential travel further than calculated, so the speed must be reduced considerably below the theoretical 55.5 RPM. In actual operation cylinder speeds from 42 to 53 RPM are used; and as an example we have found that on wheat a top speed of 56 RPM is indicated.

Due to the fact that various seeds, moisture and surface conditions require a different speed for optimum separations, it is desirable to have each unit equipped with a Variable Speed Drive and this is now general practice in units that are being used for Seed Cleaning purposes. Whatever the motive power of the Cylinder Indent, it is of prime importance that the speed is constant. Any fluctuation in speed of the Cylinder will affect the the trough setting and separations radically.

After speed the most important operational setting is the actual Trough Adjustment. This, of course, is where the cylinder indent gets a great deal of flexibility. Naturally the lower your trough is set the larger the particles you pick-up and the reverse if it is raised.

Also, as mentioned previously the Trough Adjustment should be such that the Trough itself can be dumped into a clean-out position. This, of course, is a prime requisite if the unit is used for cleaning seed. The accuracy of the Trough setting is also dependent to some degree on the actual diameter of the cylinder. As you can see, the larger the diameter of the cylinder the more Trough movement you have available within the operating range.

The Capacity per cylinder unit is dependent on three basic factors

- (1) The number of pockets or indents per square foot area -- and this is governed by the indent size
- (2) The amount of cylinder surface that can be run under the grain bank in a given time -- and this is relative to the indent length of the cylinder. The cylinders are manufactured in various lengths
- (3) The third factor governing capacity is the percentage of seed mass that must be lifted into the Receiving Trough

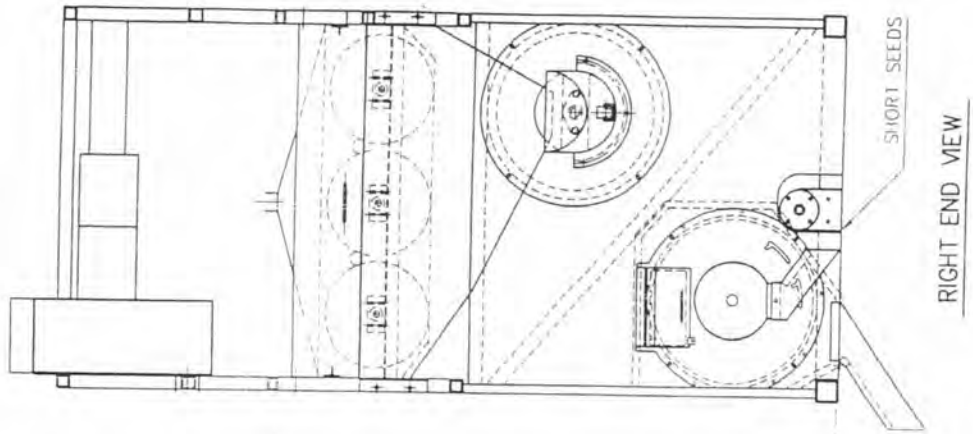
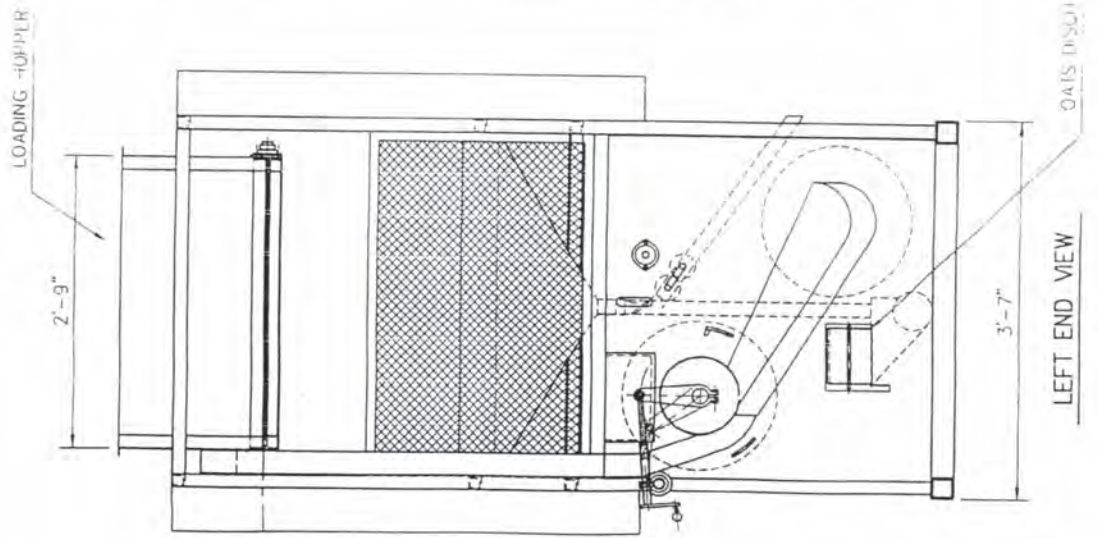
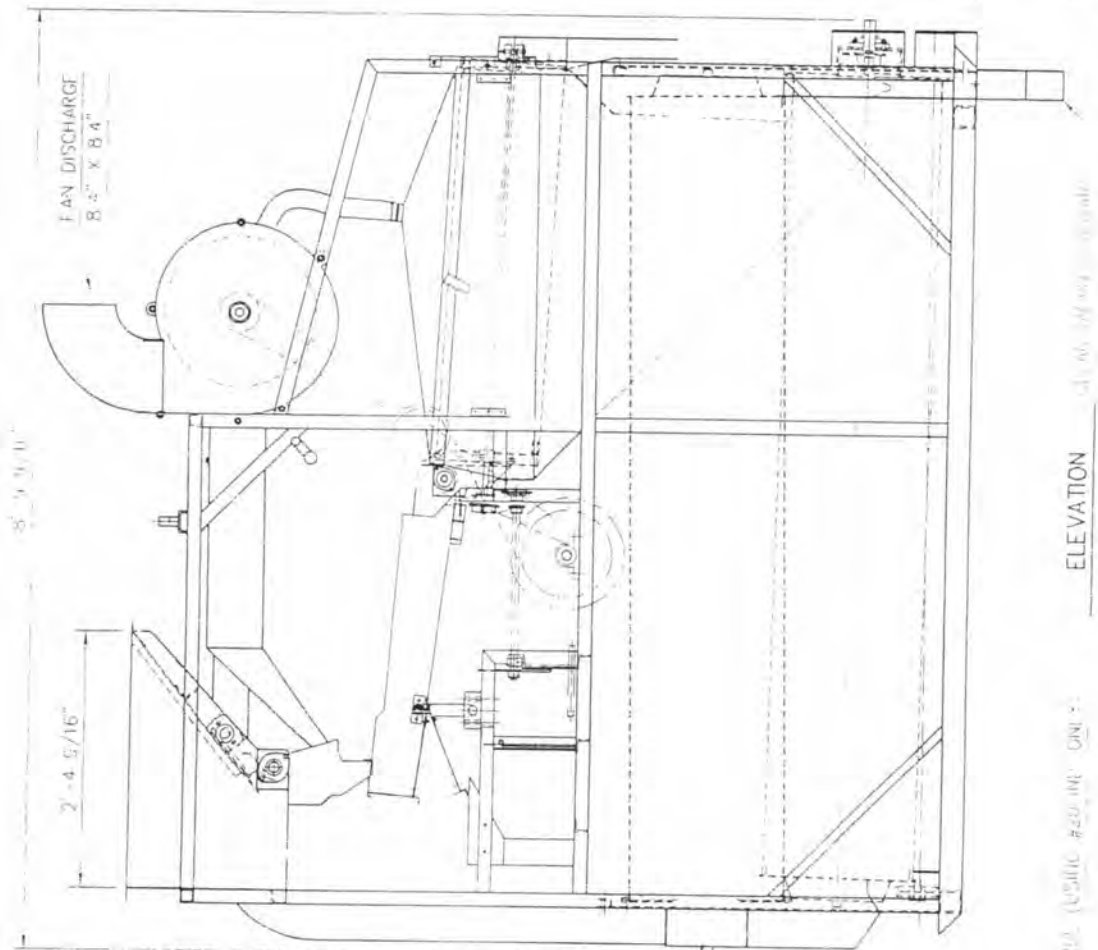
Due to the wide variety of seed separations that are made on the Cylinder Indent, it is very difficult to give any statement as regards to capacity

It should also be pointed out that when cylinders are replaced or a machine is brand new, that in some instances, it is desirable to run a coarse grain, like barley, through the cylinders to absorb the oil that is used as a rust preventative for shipping purposes -- or wash the cylinders in solvent. If a small dusty type seed is cleaned with the cylinders in this condition, it is quite possible that the indent pockets will become plugged. Also, when the unit is handling an oily material such as flax, the indents may have a tendency to fill up with dust imbedded in the oil. Thus the effective depth of the indent is lowered, and periodical scouring may be needed.

Compared to other methods of length separation of grain, the Cylinder Indent utilizes the case-hardened punched indent, steel cylinder enjoys a relatively long life. As the cylinder indent wears, it will be necessary to lower the Trough slightly and/or increase the speed slightly; because as the pocket shoulder wears down the degree of friction in the Cylinder is less. Cylinders will quite often make reasonable separations even when worn to the point of being perforated on the shoulders. The amount of grain or seed that can be put through any given cylinder is a difficult thing to pin down, due to the various soil conditions the grain is grown in, moisture content and seed surface texture. The life of a cylinder on cereal grains will vary anywhere from one half million up to two or three million bushels. Where a unit is used first in the cleaning line-up, the cylinder life is less than it would be if it is further down the line due to the fact that all the sand, stones and abrasive material in the grain goes to the cylinder indent first.

The Indent Cylinder Unit is no better than the operator running it, and if you will take the time to understand the operation of your unit and allow a reasonable amount of time, after making adjustments, so that the machine can settle down to these adjustments; we are sure you will find that the Indent Cylinder -- regardless of make -- will do a job for you and will do this job with a minimum of attention and service for an extended period of time.

We trust this has given you a better understanding of the design and operation of one of your basic units.



M1000 PARTS LIST

ITEM	DESCRIPTION	PART NO.	MFG. PART NUMBER
A1	AUGER END CAP	B101A	
A2	HUB BEARING	B1234	NTN #UCF206-104D1
A3	O/F HUB NO.1	B123A	
A4	END CAP BEARING	B1047	NTN #UCFL205-100D1
A5	INDENT TROUGH	B007A	
A6	INDENT AUGER SHAFT	B100-1,2,3	
A7	INDENT AUGER FLIGHTING	B1005	5-3/8"ODX1.3ID, RT. HD.
A8	SMALL POCKET INDENT SHELL		No.3 UNIFLOW, #13 POCKET
A9	INDENT I/F HUB	B011A	
B1	N/A		
B2	N/A		
B3	INDENT TROUGH	B008A	
B4	INDENT AUGER FLIGHTING	B1004	5-3/8"ODX1.3ID, LEFT HD.
B5	LARGE POCKET INDENT SHELL		No.3 UNIFLOW, #20 POCKET
C1	GRADER I/F HUB	B017A	
C2	GRADER SHELL		12"DIA X 45"LG
C3	MIXING BAR	B0121	
C4	GRADER SHELL SHAFT	M003A	
C5	GRADER SHELL DRIVEN SPRKT	D05017	40B22 X 3/4"BKS
C6	GRADER SHELL BEARING - I/F	B018A	
C7	GRADER SHELL O/F HUB	B017B	
C8	GRADER SHELL BEARING - O/F	B018B	
D1	FAN BEARING	C03010	NTN #UCS205-100D1N (1")
D2	PULLEY	C00111B	1VP50 X 1"BKS
D3	SHAFT	M029F	
D4	BLOWER WHEEL	B019A	
D5	INTAKE HOUSING	C001-4,5&20	
E1	PULLEY	C028-9	AS22 X 5/8"BKS
E2	BEARING	C028-5	NTN #AELPFL202-010
E3	SHAFT	M004A	
E4	FLIGHTING, LEFT HAND	C028-4	2-5/8"ODX5/8"ID, LEFT HAND
E5	TROUGH	S005A	
E6	PULLEY	C028-8	AK59 X 5/8"BKS
FA	GATE SHAFT RETAINER PLATE	C04327	
FB	STD. SHAFT COLLAR		SC1"
FC	SHUT-OFF GATE LOCK	C02724	5/16X1-1/2" SET SCREW
F1	HOPPER SHEET METAL ASS'Y	S104A	
F2	METERING ROLL BEARING	C027-12	EN206-20SDDDR W/62MST
F3	REVOLVING HANDLE	B067A	
F4	METERING GATE ASSEMBLY	B075A	
F5	METERING GATE PLASTIC TIP	B0753	
F6	PULLEY	C02713	W1600 W/ H1-1/4"HUB

M1000 PARTS LIST

ITEM	DESCRIPTION	PART NO.	MFG. PART NUMBER
F7	METERING SHAFT	M004B	
F8	SHUT-OFF GATE SHAFT	M030D	
F9	SHUT-OFF GATE SPROCKETS	C02711	35T17F X 1"BKS
G1	SHOE WELDMENT	S016A	
G2	SIEVE "A" (10" X 36")		
G3	SIEVE HOLD DOWNS	C0364	
G4	TRAY BALLS	C03611	1-3/8"DIA. BALLS
G5	SIEVE "B" (18" X 36")		
G6	SLIDER BLOCK	C0055	
G7	BALL TRAY "A" (10" X 36")		
G8	BALL TRAY "B" (18" X 36")		
H1	SPLIT PIVOT BLOCK	C01310	
H2	PIVOT RUBBER BUSHING	C01312	
H3	SHOE MOUNT	C017-6,8	
H4	PIVOT WELDMENT	C017A	
H5	PIVOT BLOCK	C01311	
H6	SHAFT COLLAR		SC1"
I1	PULLEY	C01916	AK41 X 3/4"BKS
I2	BEARING	C01915	EN204-12SDDR W/ F204
I3	AUGER SHAFT ASSEMBLY	C019-17,18	
I4	FLIGHTING, RT HAND	C01919	3-1/2"ODX1-1/16"ID
L1	BEARING	D05535	NTN #AELPF204-012W3
L2	PITMAN WELDMENT	D055J	
L3	BUSHING HOUSING	M007B	
L4	BUSHING		SYMMCO #SS-3236-16
MA	V-BELT		A45
MB	V-BELT		B96
MC	V-BELT		A41
MD	V-BELT		B68
ME	V-BELT		A42
MF	V-BELT		A53
M1	PITMAN/BLOWER DR. ASS'Y	D055D	SEE T1 TO T5
M2	INDENT/GRADER DRIVE MOTOR		1HP, 1750RPM, TEFC, FARM DUTY, 56T FRAME
M3	DRIVE PULLEY	D05413	AS27 X 5/8"BKS
M4	SM. POCKET IND. JACK SHAFT	D055B	SEE R1 TO R4
M5	BELT TENSIONER (SM. POCKET)	B076-3,4,8	
M6	SPRING	B076-10	
M7	IDLER PULLEY, AETNA AG2362S		(CAPITAL #F2750-1500)
M8	AUGER DRIVE BELT	D05041	A71 TO A73
M9	SCREENINGS AUGER J.S.	D055G	SEE V1 TO V5
N1	VARIABLE PULLEY ASSEMBLY	D055A	SEE W1 TO W4

M1000 PARTS LIST

ITEM	DESCRIPTION	PART NO.	MFG. PART NUMBER
N2	BELT TENSIONER (LG. POCKET)	B076-1,2,8	
N3	LG. POCKET IND. JACKSHAFT	D055C	SEE Q1 TO Q4
N4	JAW COUPLER	D05441	JP3 W/JZ3N INSERT X 3/4" BK
N5	DRIVE PULLEY	D05414	AS30 X 5/8" BKS
N6	PITMAN/BLOWER DRIVE MOTOR		1HP, 1750RPM, TEFC, FARM DUTY, 56T FRAME
N7	COUPLING DRIVE SHAFT	D055H	SEE P1 TO P5
N8	IDLER SPROCKET		18T, 5/8" BORE
N9	#40 ROLLER CHAIN		
O1	GRADER JACKSHAFT	D055E	SEE U1 TO U2
O2	3/4" BEARING SHIM		14GA & 16GA
O3	N/A		
O4	METERING SHAFT DRIVE BELT	D05430	AA120
O5	IDLER PULLEY, AETNA AG2321		(CAPITAL #V3000-0750)
O6	BLOWER DRIVE BELT	D05428	B118 STD. (B116 TO B120)
O7	IDLER PULLEY		AETNA AG2613
O8	IDLER PULLEY, AETNA AG2352		(CAPITAL #F3000-0750)
O9	AUGER DRIVE BELT	D054-29	A46
P1	PULLEY		AK69 X 3/4" BKS
P2	BEARING		AELPP204-012 (3/4")
P3	SPROCKET		H40B10 X 3/4" BKS
P4	SPROCKET		H40B14 X 3/4" BKS
P5	SHAFT	M029E	
Q1	BEARING		AELPP204-012 (3/4")
Q2	PULLEY		AK69 X 3/4" BKS
Q3	PULLEY		BK36 X 3/4" BKS
Q4	SHAFT	M029C	
R1	PULLEY		AK69 X 3/4" BKS
R2	BEARING		AELPP204-012 (3/4")
R3	PULLEY		BK36 X 3/4" BKS
R4	SHAFT	M029B	
T1	ECCENTRIC	M028A	
T2	BEARING		UC205-16S C/W P205
T3	PULLEY		AK124 X 1" BKS
T4	SHAFT	M005D	
T5	PULLEY		BS28 X 1" BKS
T6	PULLEY		BK130 X 3/4" BKS
U1	BEARING		AELPFL204-012 (3/4")
U2	SHAFT	M005E	
U3	SPROCKET		H40B10 X 3/4" BKS
U4	BEARING		AELPP204-012 (3/4")
U5	SPROCKET		40X54 W/ X3/4" HUB

M1000 PARTS LIST

ITEM	DESCRIPTION	PART NO.	MFG. PART NUMBER
V1	SPROCKET		40B35 X 3/4"BKS
V2	BEARING		AELPP204-012 (3/4")
V3	SHAFT	M029D	
V4	PULLEY		BK47 X 3/4"BKS
V5	BEARING		AELPFL204-012 (3/4")
W1	SHAFT	M029A	
W2	MECH. VARIABLE PULLEY		1VL3/4 X 3/4"BKS
W3	BEARING		AELPP204-012 (3/4")
W4	VARIABLE PULLEY, SPRING, LDD		4SL X 3/4"BKS

SEED CLEANER ASSEMBLIES

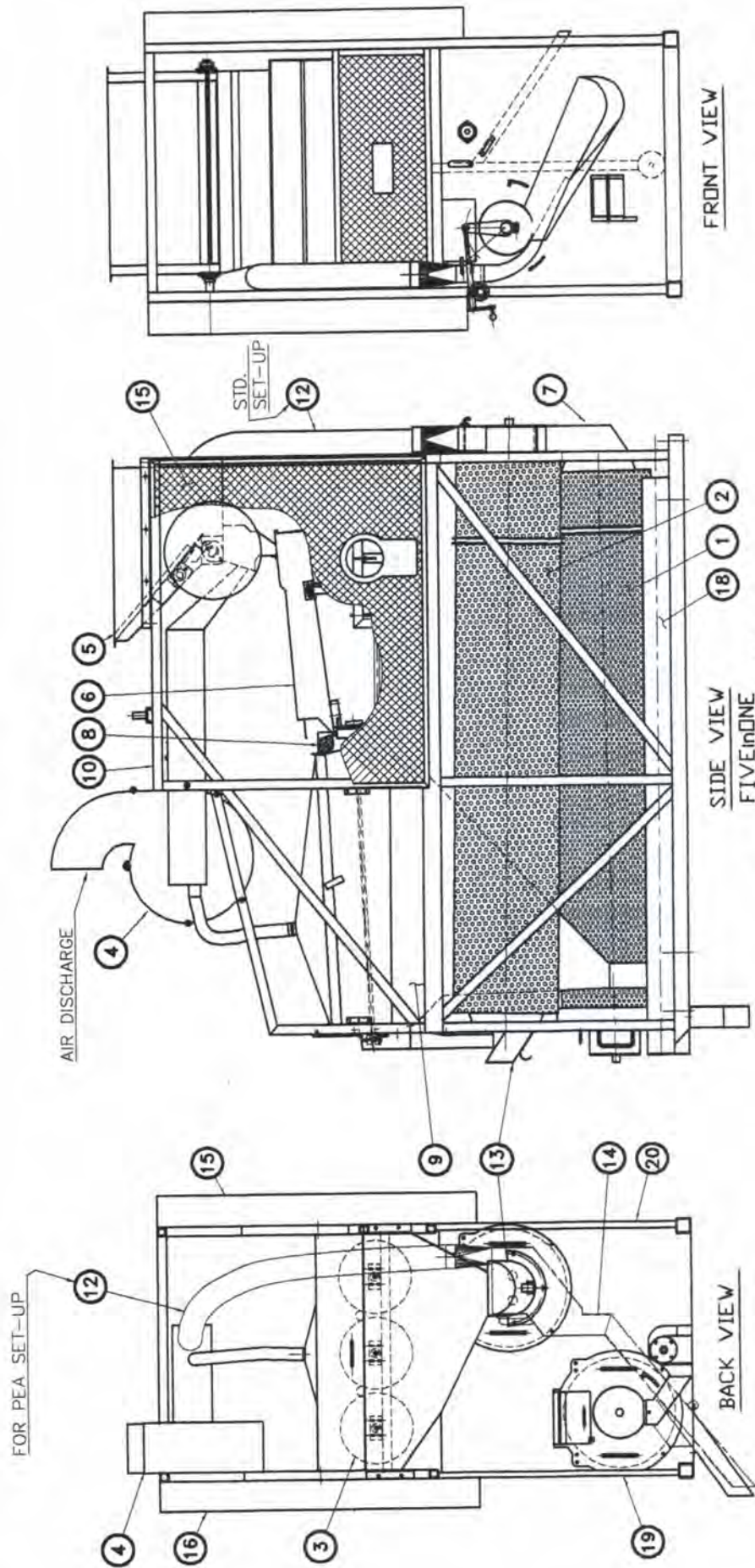
- 1. SMALL POCKET INDENT ASSEMBLY
- 2. LARGE POCKET INDENT ASSEMBLY
- 3. GRADER SHELL INDENT ASSEMBLY
- 4. BLOWER ASSEMBLY
- 5. METERING HOPPER ASSEMBLY
- 6. SHAKER SHOE ASSEMBLY
- 7. INDENT TRANSFER CHUTE No. S113A
- 8. GRADER SHELL INFEEED CHUTE
- 9. GRADER SHELL FINES CHUTE
- 10. DUCT ASSEMBLY No. S116A

- 11. DRIVE SYSTEM
- 12. AIR HOSE - 4" ID
- 13. INFEEED CHUTE No. S070A
- 14. PEA CHUTE No. S108A
- 15. LEFT SIDE GUARD No. B070A
- 16. RIGHT SIDE GUARD No. B069A
- 17. END GUARD No. B071A
- 18. SCREENINGS AUGER No. C019A
- 19. RIGHT INDENT GUARD No. B072A
- 20. LEFT INDENT GUARD No. B073A

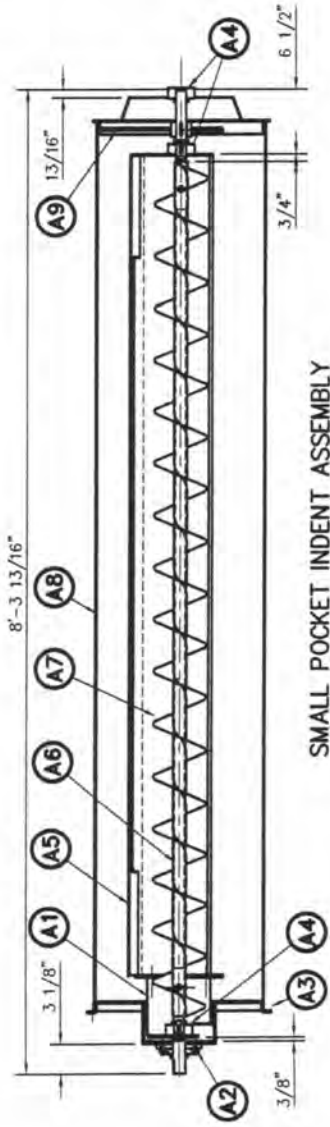
SPECIFICATIONS

- MOTORS: PITMAN/BLOWER DRIVE - 1HP/1750RPM TEFC, 56T FRAME, 120/220VAC, SINGLE PHASE.
- INDENT/GRADER DRIVE - 1HP/1750RPM TEFC, 56T FRAME, 120/220VAC, SINGLE PHASE.
- BLOWER: 1200 RPM, 1500 TO 1700CFM
- OVERALL DIMENSIONS (WXLXD) 56" X 110" X 93"

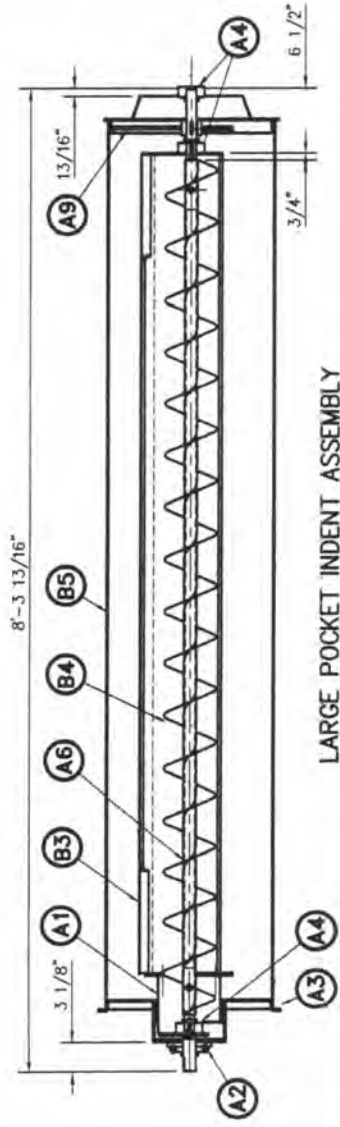
- WEIGHT: 2000 lbs (approximate)
- GRADER SPEED: 56RPM
- INDENT SPEED RANGE: 42 TO 70 RPM
- PITMAN SPEED: 400 RPM



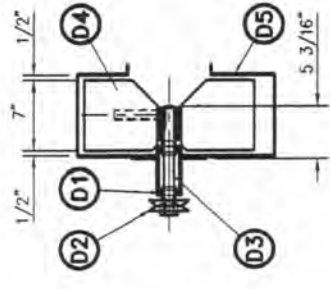
GJESDAL MODEL 1000
FIVE IN ONE
GRAIN CLEANER



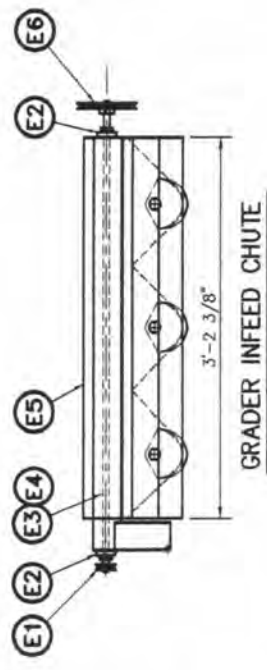
SMALL POCKET INDENT ASSEMBLY



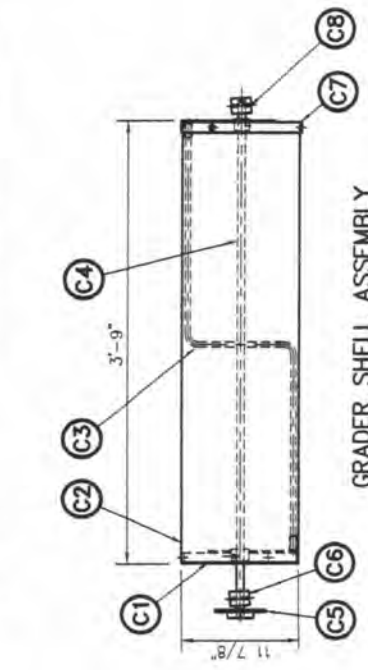
LARGE POCKET INDENT ASSEMBLY



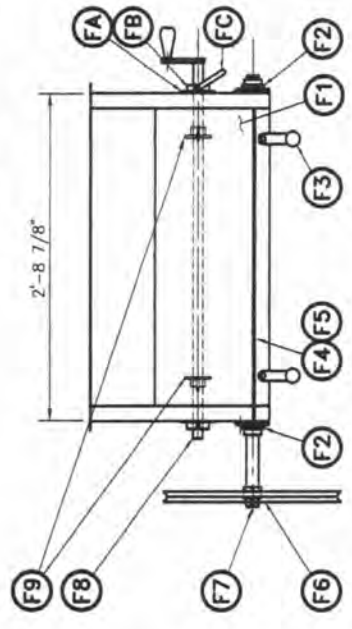
BLOWER ASSEMBLY



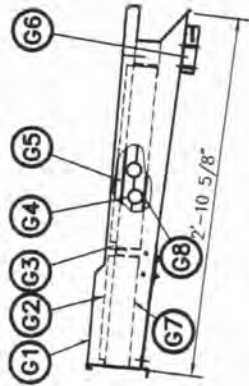
GRADER INFEED CHUTE



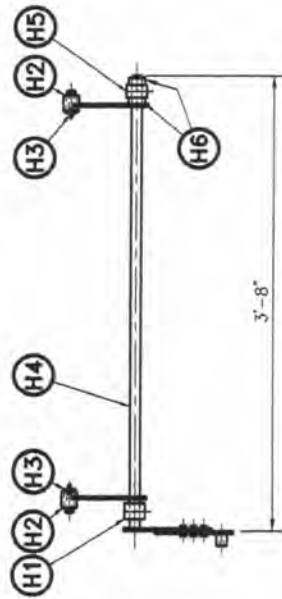
GRADER SHELL ASSEMBLY



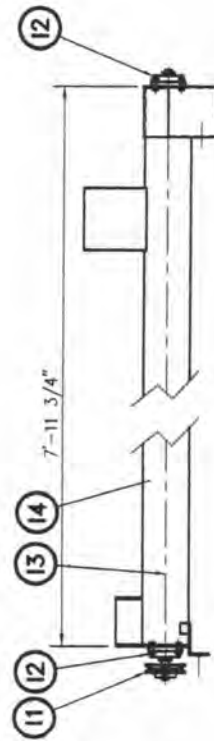
METERING HOPPER ASSEMBLY



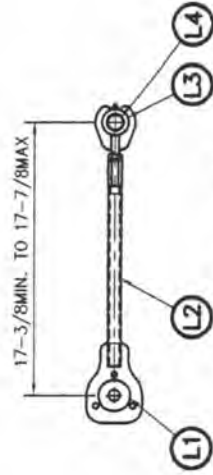
SHAKER SHOE ASSEMBLY



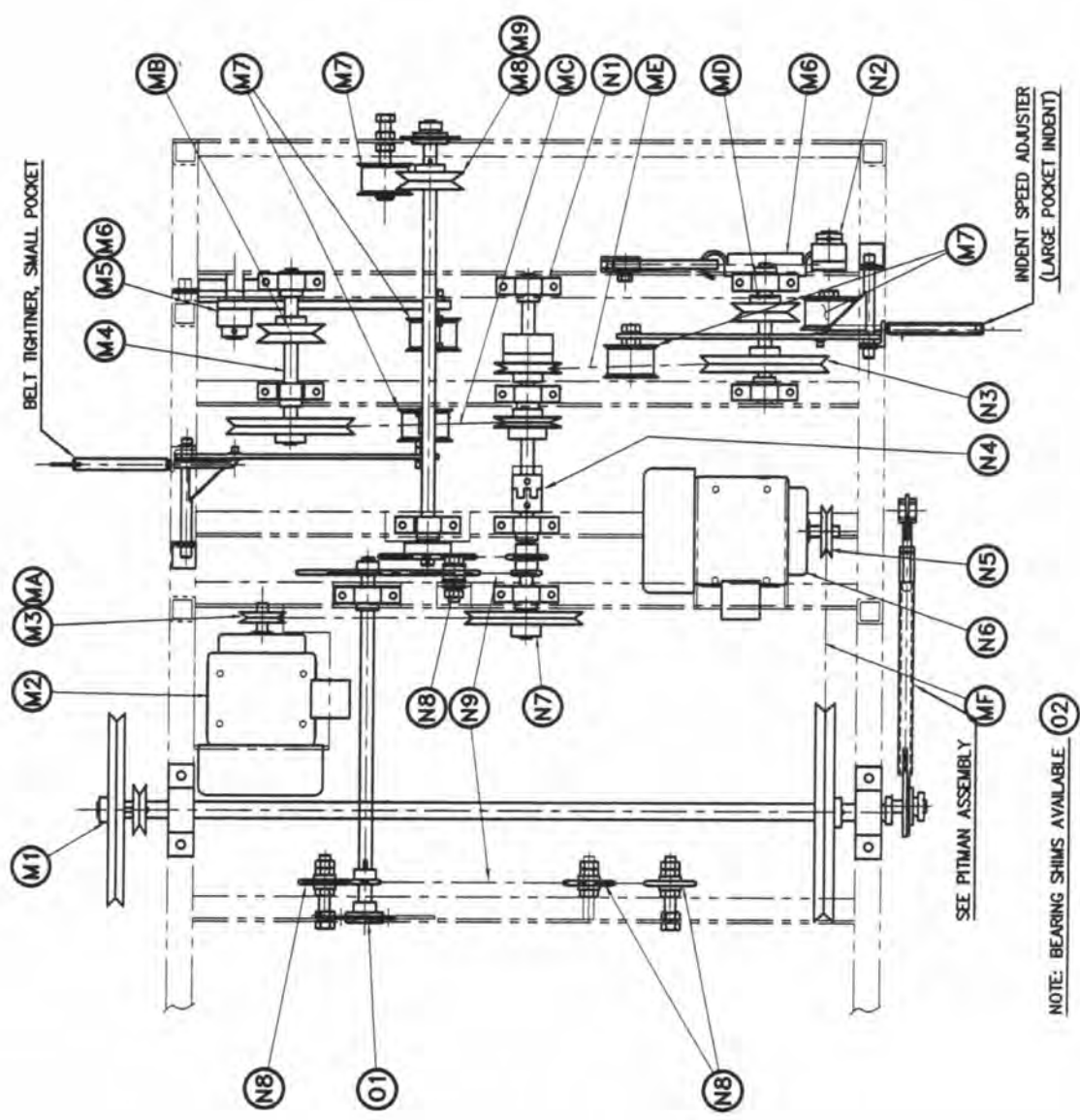
SHAKER PIVOT ASSEMBLY



SCREENINGS AUGER ASSEMBLY

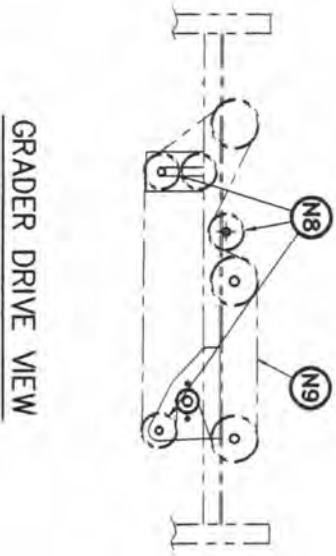


PITMAN ASSEMBLY

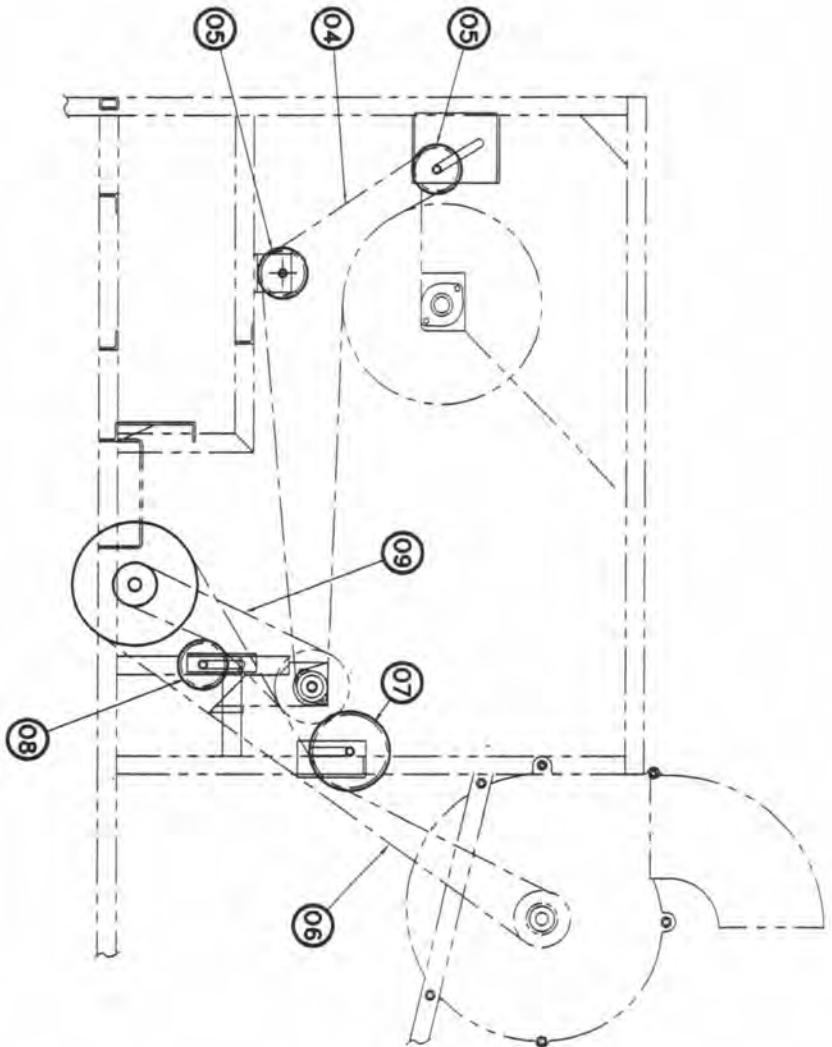


NOTE: BEARING SHIMS AVAILABLE 02

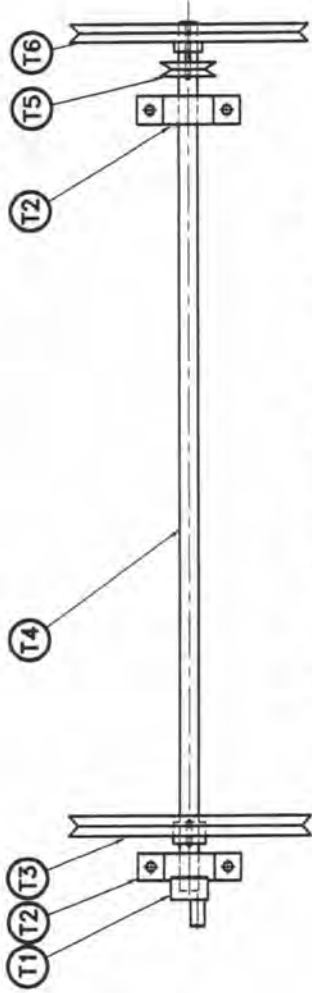
DRIVE SYSTEM - PLAN VIEW



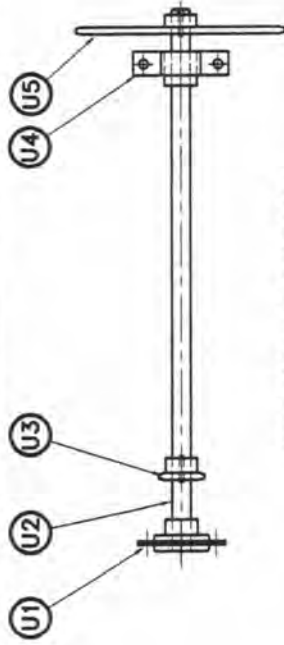
GRADER DRIVE VIEW



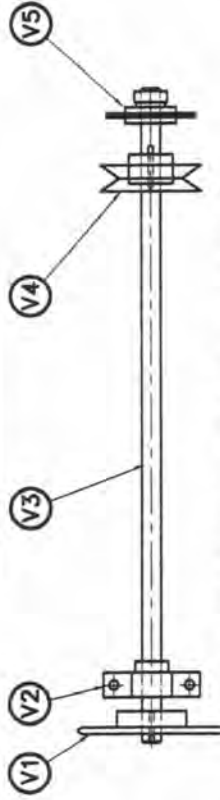
ELEVATION VIEW - MISCELLANEOUS IDLERS & BELTS



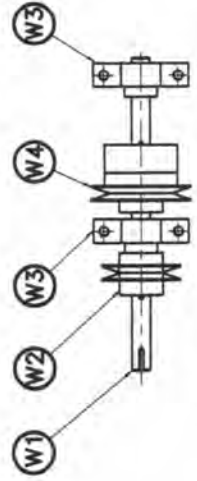
PITMAN/BLOWER DRIVE ASSEMBLY



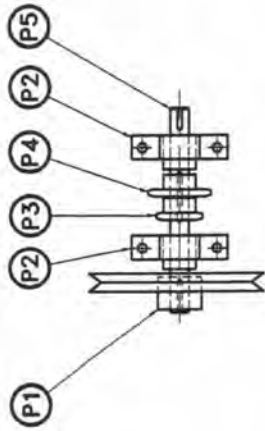
GRADER JACKSHAFT



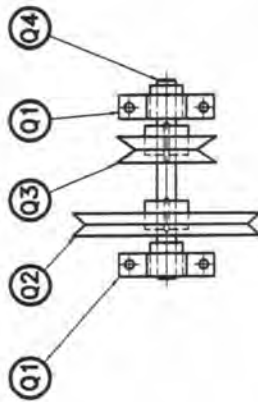
SCREENINGS AUGER JACKSHAFT



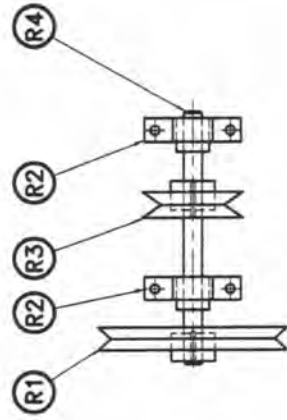
VARIABLE PULLEY ASSEMBLY



COUPLING DR. SHAFT

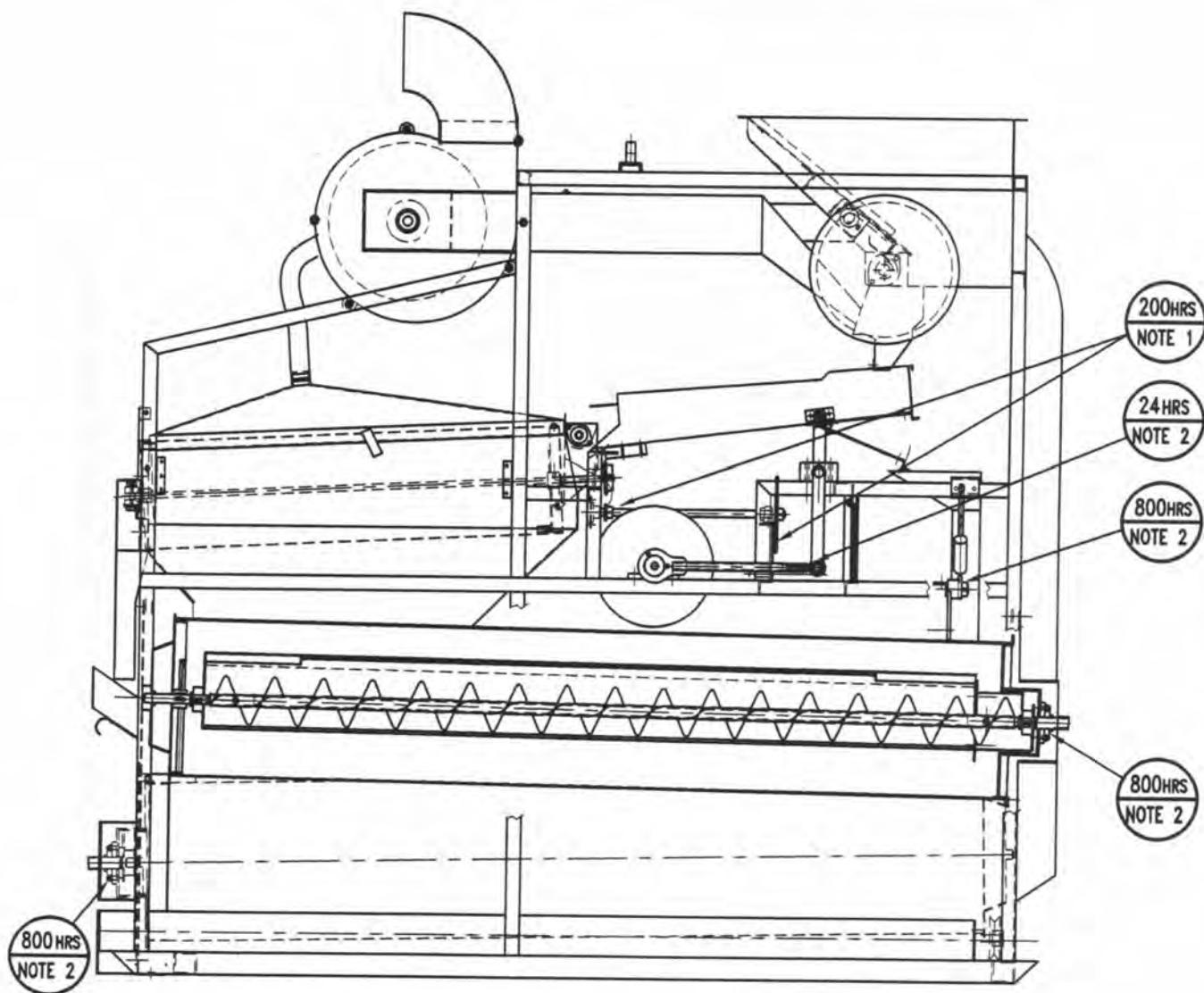


LARGE POCKET INDENT JACKSHAFT



SMALL POCKET INDENT JACKSHAFT

GJESDAL MODEL 1000 LUBRICATION DIAGRAM



NOTES:

1. LUBE CHAIN WITH SUITABLE CHAIN LUBRICANT
2. USE AGRICULTURAL GRADE GENERAL DUTY GREASE
3. ALL OTHER BEARINGS ARE SEALED UNITS. DO NOT GREASE.