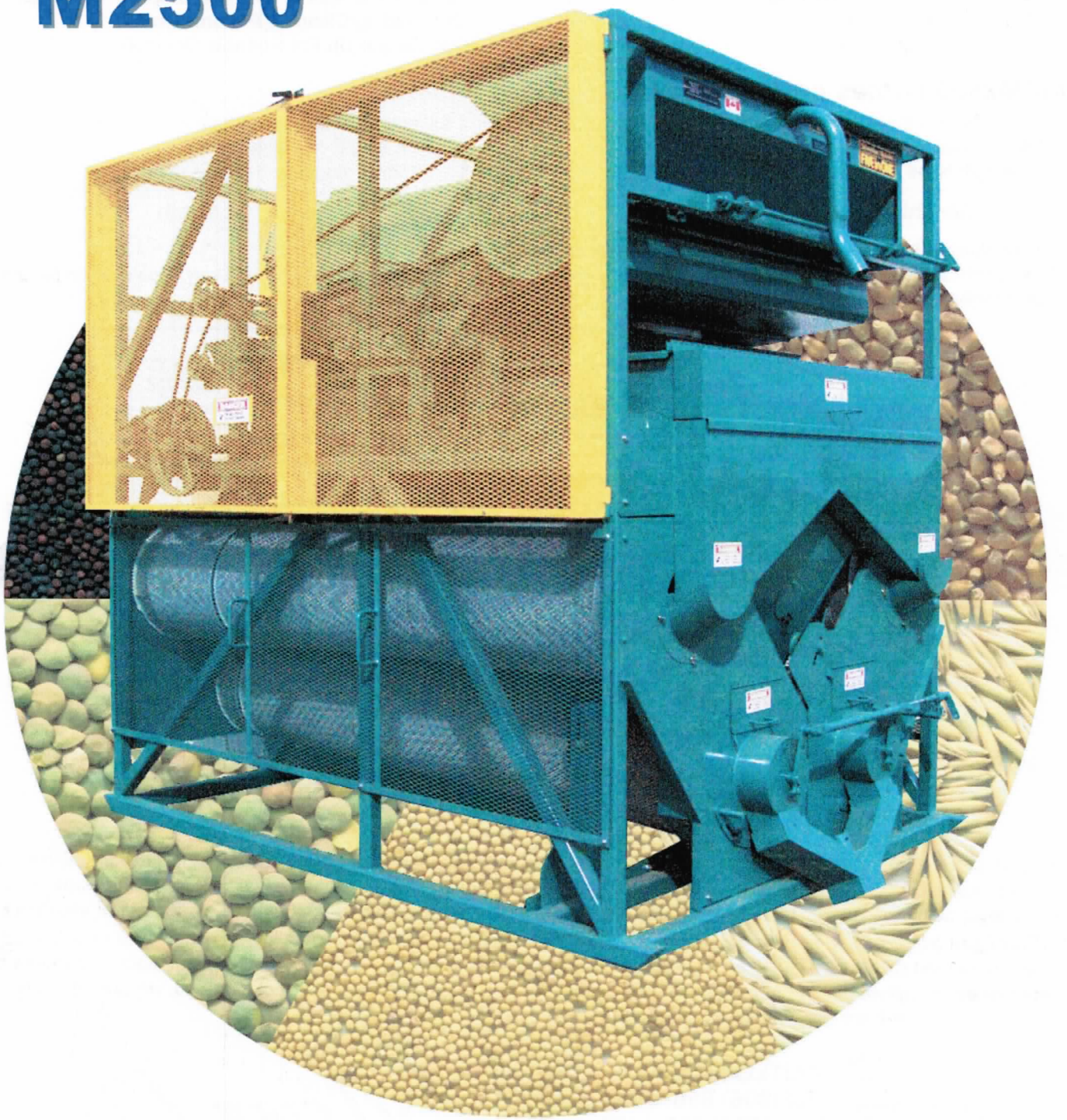
Gjesdal

FIVE in ONE
GRAIN CLEANERS
Simplifying the World of Grain Processing

M2500



A SEED CLEANING PLANT ALL IN ONE MACHINE*

INTRODUCTION

This Model 2500 machine is the largest in our series of 5 in 1 cleaners. It is designed to do high volume high quality processing either as a stationary or a mobile unit.

This Gjesdal model has a unique sieve system which will allow you to separate small seeds such as canola from larger grains and while doing to can keep this valuable crop separate from the screenings.

All the sieves are of the same dimension and therefore can be used at any location on the deck. This will save the need to keep a great number of 'extra' sieves.

The belts, bearings, pulleys, etc. are of a machinery standard and can be purchased locally from any supplier. This will prevent 'down time' waiting for repairs.

A wide variety of sieves and sieve material is available from the manufacturer for processing various crops. The Grader Shells and the Indent Drums are an Industry standard and are available on order.

There is also a built in system which can be used when 'scalping' grain or cleaning fragile crops such as peas or beans. 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 preventing seed damage.

FIVEinONE

Gjesdal M - 2500 Grain Cleaner

On farm seed cleaning has never been easier or more cost efficient. With the Model 2500 you can be cleaning 250 bushels per hour to seed standards. * In difficult seed separations, additional specialized equipment will be required.

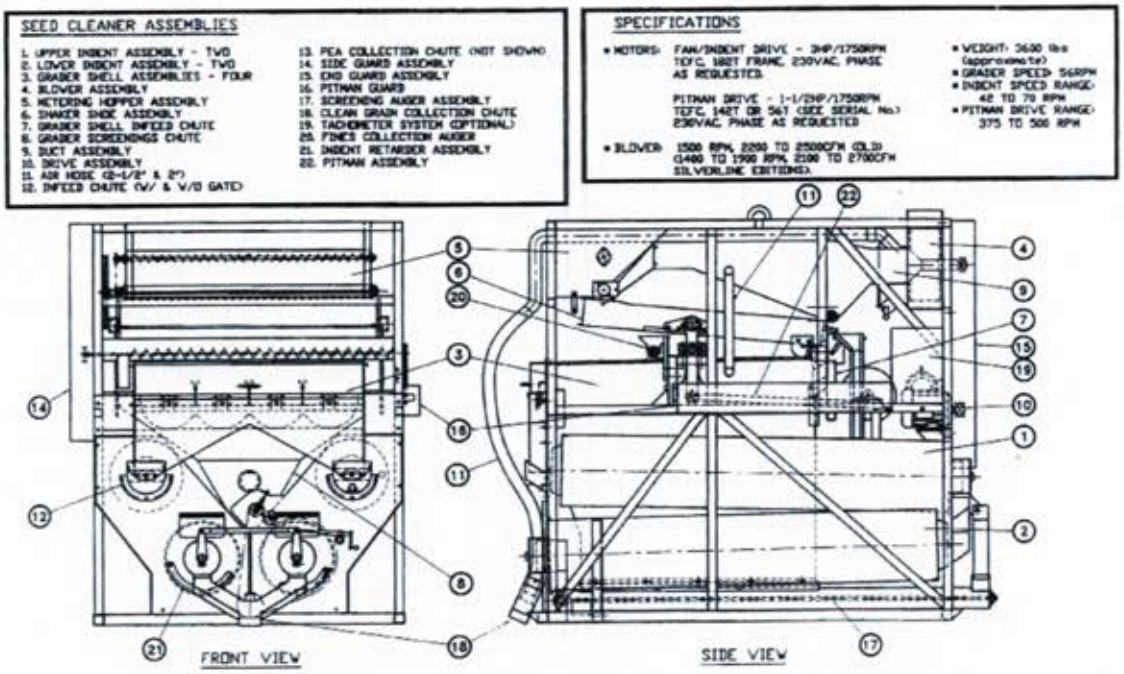
- Industry Standard Grader Shells and Indent Cylinders
- Low Maintenance
- Standard Belts, Pulleys and Bearings
- Low Power Requirements
- No Waiting for Custom Cleaning
- Reduced Trucking Costs
- Eliminate Dockage Fines
- Clean to Seed Quality
- No New Weeds Introduced
- Virtually Dust Free
- Can Be Set Up to Run Unattended
- Reduce The Risk of Off Type Crops in Your Fields
- Outstanding Cleaning Performance
- Can Be Set Up For Portable Operation

The M2500 comes complete with:

- 3 - 18" x 60" scalping sieve and ball rack system
- 4 - 62" grader shells
- 2 full length large pocket indent
- 2 full length small pocket indent
- 1 - 5HP. single or 3 phase motor
- 1 - 1-1/2HP. single or 3 phase motor

Weight - 4400 lbs. Height - 104" Width - 84" Length - 116"

Dimensions subject to change. May not be exactly as illustrated.
Note: BPH - 250 - Based on cereal grains with properly sized processing components. Volumes will vary depending on percentage of dockage and foreign material.



Parts and accessories are only a phone call away. We carry, in stock, most parts required for your unit with few having to be ordered. Most, if not all, drive parts can be purchased at any agriculture machine dealership which include bearings, pulleys, belts and gears. This prevents you having unnecessary downtime which means money out of your pocket. At ***SilverLine Mfg. Ltd.*** we take pride in our workmanship. The grain cleaners are built and assembled on site near Outlook, in central Saskatchewan. Every unit goes through line testing and a run test to ensure that each unit meets our quality standards before leaving our shop. It's our reputation on the line and if you are not satisfied, we are not satisfied. Parts and accessories are only a phone call away.

MODEL 2500 GJESDAL

Approximate Specifications

SPECIFICATIONS

MOTORS:

FAN/INDENT DRIVE - 5HP/1750RPM TEFC, 182T FRAME, 230VAC, PHASE AS REQUESTED.

PITMAN DRIVE - 1-1/2HP / 1750RPM TEFC, 142T OR 56T (SEE SERIAL No.) 230vac, phase as requested

BLOWER:

1500 RPM, 2200 TO 2500CFM (OLD) (1400 TO 1900 RPM, 2100 TO 2700CFM SILVERLINE EDITIONS).

WEIGHT, 4100 LBS (approximate)

GRADER SPEED: 56RPM

INDENT SPEED RANGE: 42 TO 70 RPM

PITMAN DRIVE RANGE: 375 TO 500 RPM

Capacity

250 bushels per hour

Weight	4100 lbs
Height	104 inches
Width	84 inches
Length	116 inches

Equipment

3 - 18" x60" Sieves
4 - 62" Grader Shells
2 - Small pocket Indent Drums
2 - Large pocket Indent Drums

SHOE SPEED SETTINGS

The following chart is a RPM reference for the speed of the eccentric drive shaft that creates the stroke movement for the shoe. **Never exceed the maximum or the factory pre-set speed, as it could cause structural damage to the components.** If product flow does not seem to be fast enough at slower rpm speeds, remove some balls from the ball chambers in the ball racks and increase shoe speed to get good product flow. If you feel that you require better sieve cleaning action at the maximum speed, add more balls. ie; 2 more for total of 5 balls per chamber.

The following chart is a reference only. Daily conditions and grain characteristics will greatly affect product flows and separations.

RPM	# of turns on motor variable from factory preset (Picture 1)	Product
480	0 this is preset factory position	Cereal grains, Desi chick peas, Flax
470	1/2 turn open from preset	Cereal grains, Kabuli chick peas
460	1 turn open from preset	Canola, Mustard, Peas

INSTALLATION DATA

Your Gjesdal 2500 Seed Cleaner is designed to work as a Scalper, Asperator and Grader. A wide variety of Sieves and Grader Shells are available. The four Indent Drums which come with the machine will process a wide variety of seeds.

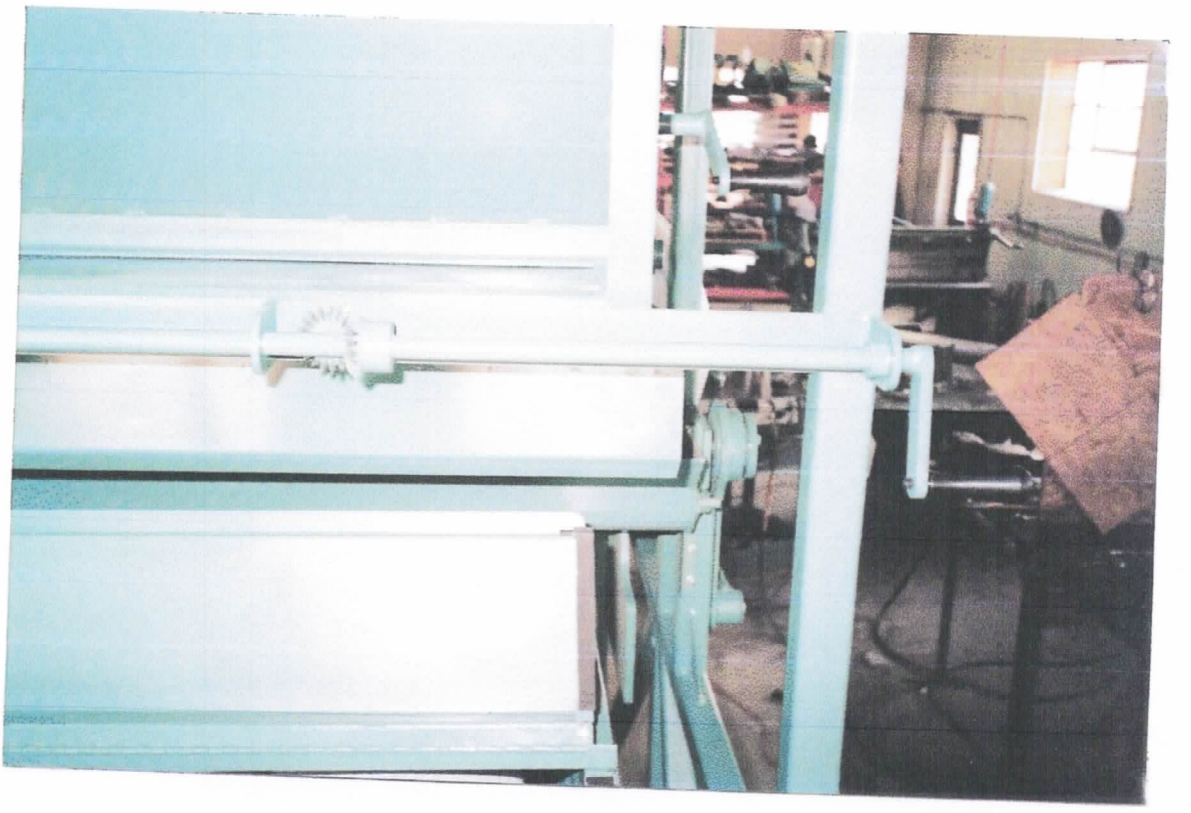
The machine should be set level and all moving parts must operate freely. Allow enough room for the operator to move around the machine. You will need 9 feet of space at the rear of the machine to facilitate the removal of the Indent Drums and Grader Shells.

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.

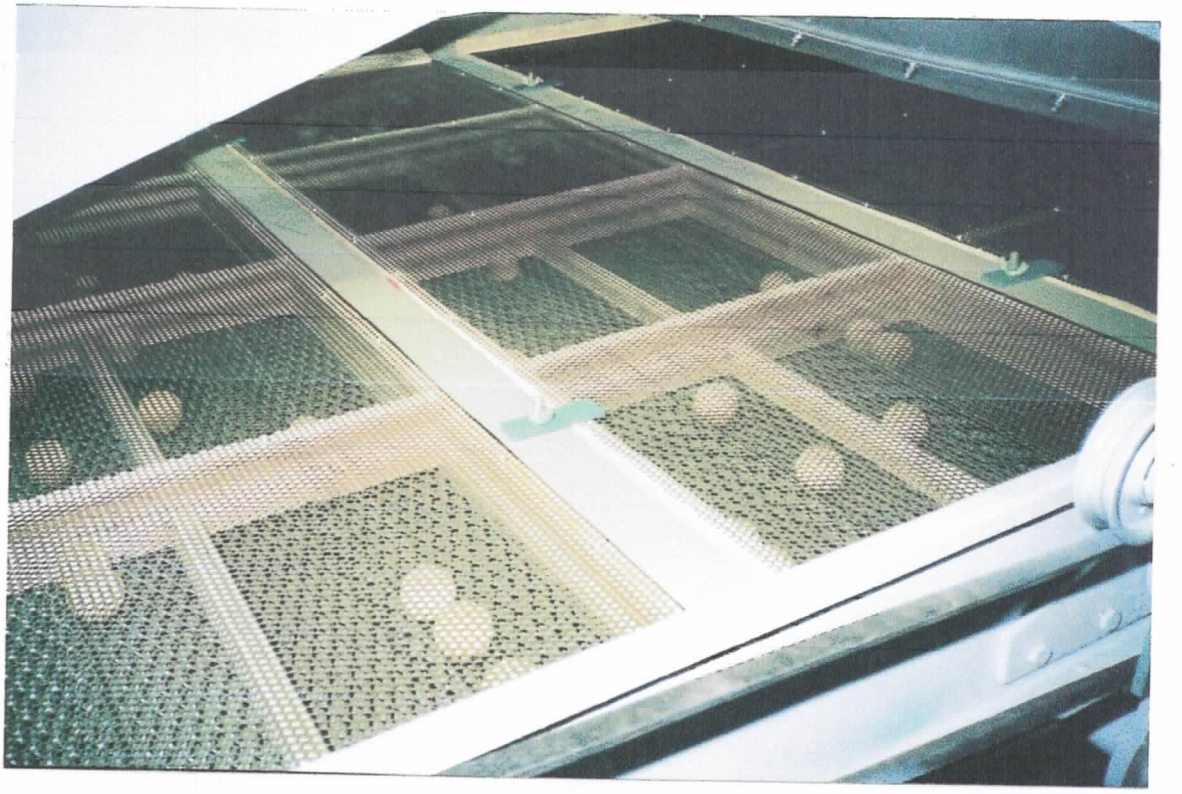
This precision machine should not be stored outside. A combination of moisture, rust and wet dust will seriously affect the Cleaners operation as well as its appearance and long term value.

The hopper at the top and front of the machine holds about 12 bushels of grain. A continuous supply is required into this hopper. Shown is a built in mixing auger in the hopper to prevent a build up of coarse material such as pods, straw or grain heads.

The backside of the hopper above the sieve deck has a shut off gate system. By turning the control lever clockwise from the closed position, you will introduce grain into the metering chamber. This gate by turning the control lever counterclockwise from the open position will shut off the flow of grain to the metering chamber. The metering chamber is the lower portion of the hopper.



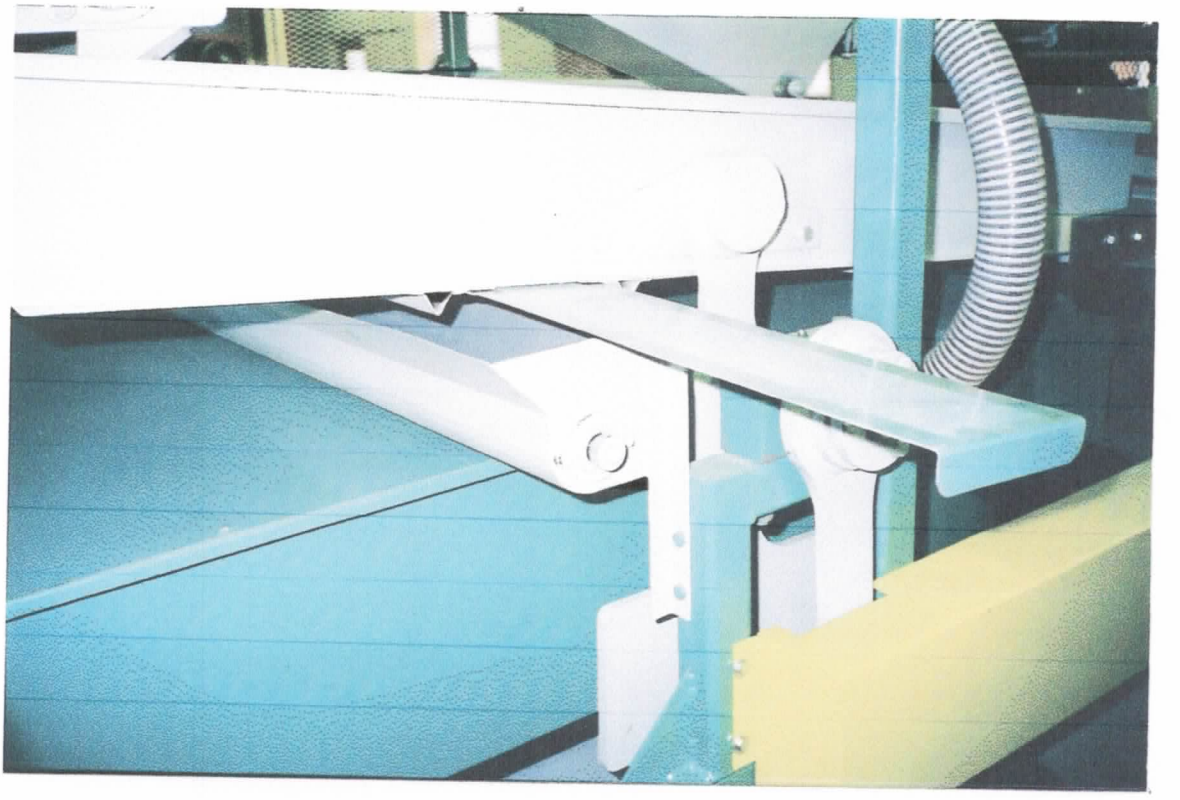
The hopper has a slide gate discharge system which meters the flow of grain onto the sieve deck. The lever control on the side of the unit is connected to two miter gears on a shaft across the front of the unit. Turning the control lever will regulate the flow of grain entering onto the sieve deck. Be sure this gate is in it's closed position before opening the shut off gate from page 6.



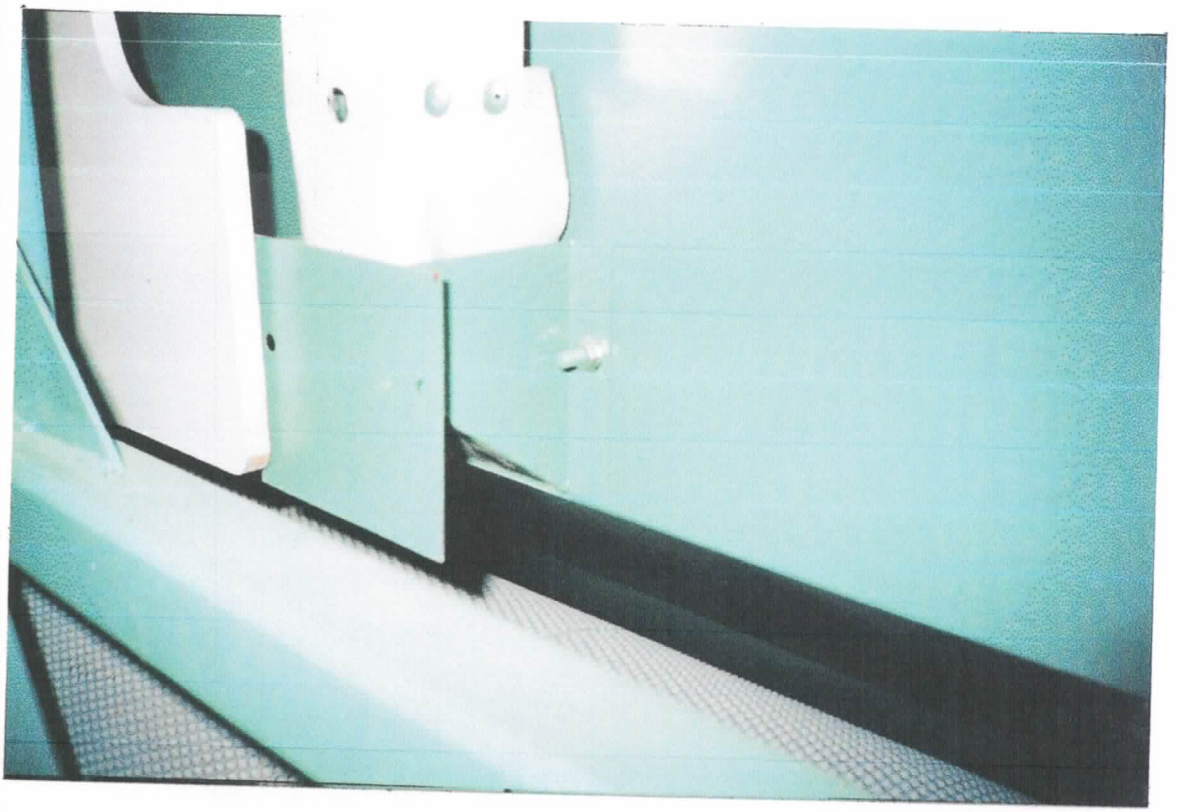
The first sieve at the front of the deck system can be used to separate small seeds out of larger sized seed, ie. Canola from Wheat. The slide out pan can be removed in order to keep the small seed separate. The cross conveyer will discharge the material to the right hand side of the machine and into a cup spout and on down into the screenings hopper. If you wish to keep the small seed separate from the screenings simply reverse the cup spout.

The second and third sieve of the deck system is to be used to separate the desired grain from the coarse material which is carried over the sieves to the discharge collection hopper into the screenings system.

The desired grain passes through the second and third sieve and is discharged into one of four Grader Shells.

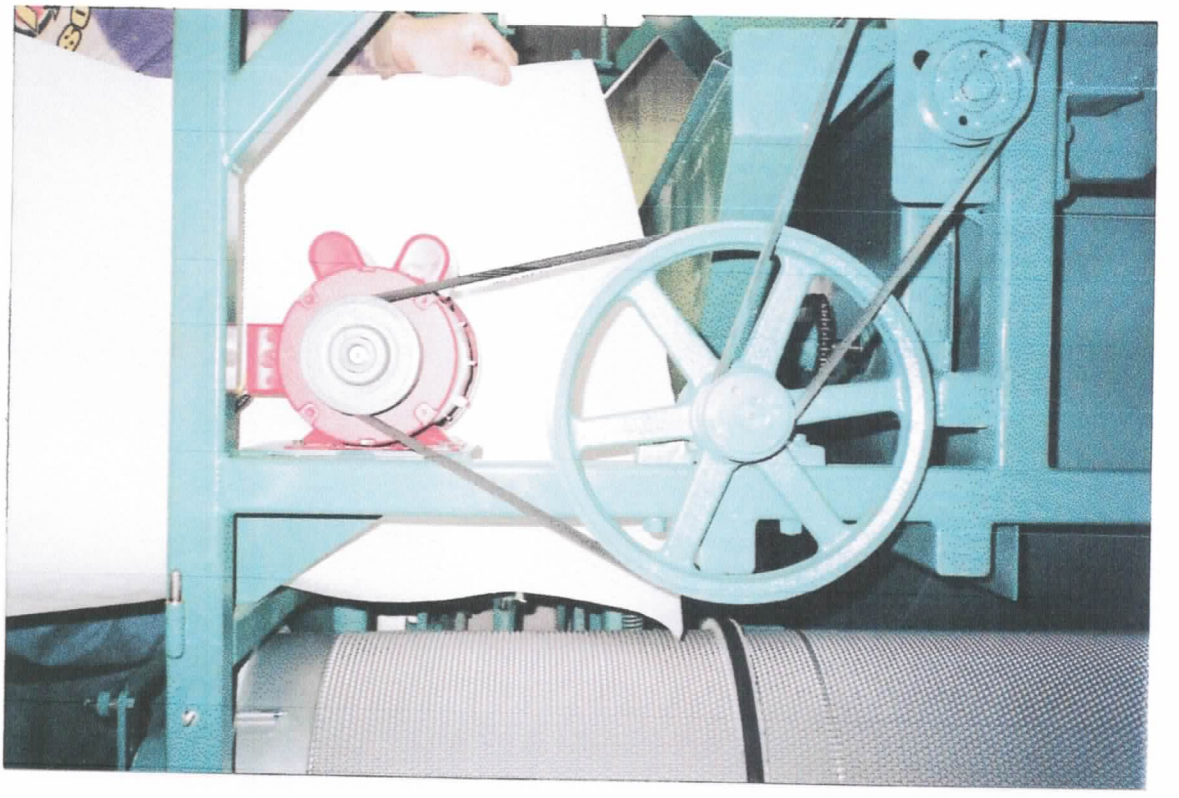


This view shows the slide pan partly removed from the underside of the sieve deck. When there are small seeds to be seperated from a larger size such as Canola or weed seeds from cereals it will be advantageous to remove the slide pan, drop the small seed through the first sieve and allow it to drop into the collection auger. When the pan is in place no seed will enter the auger but will continue down the deck bottom and enter the Grader Shells. The "pan in method" will seldom be used when cleaning seed but may be useful for higher volume scalping.

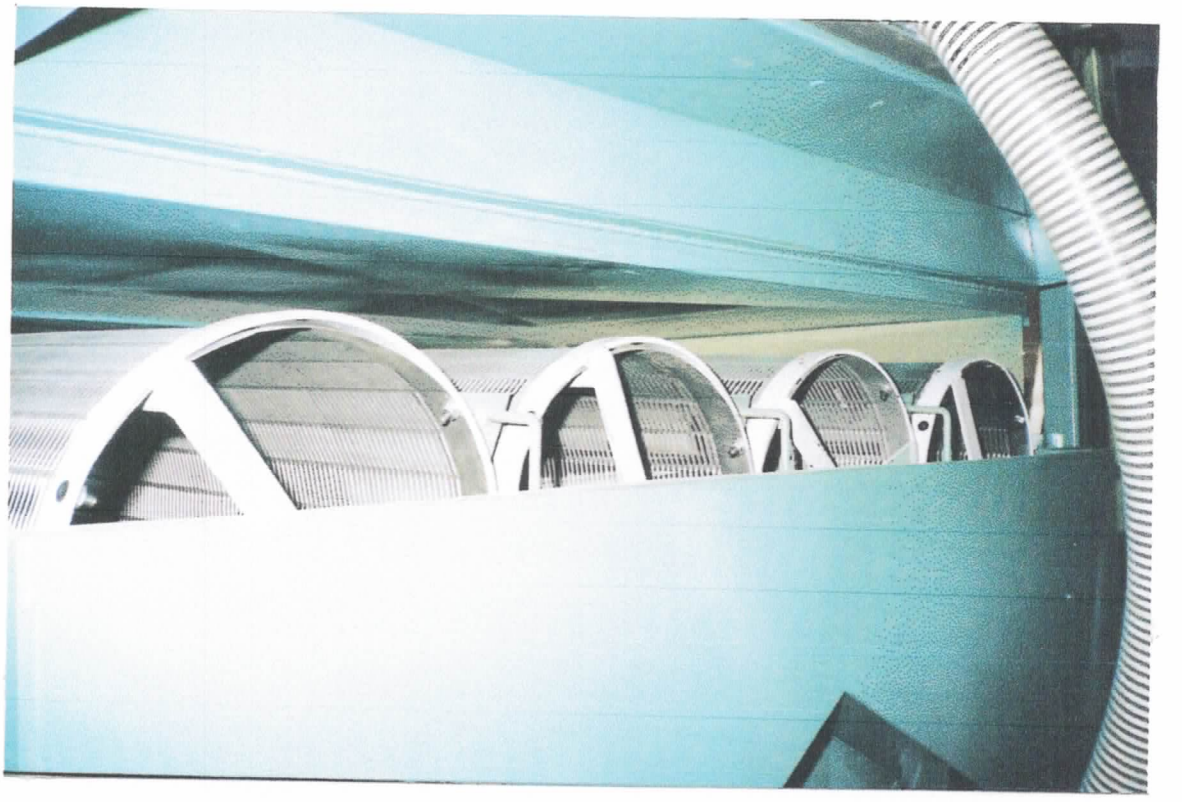


The first sieve auger under the deck will convey small size siftings to the right hand side of the machine. A reversible cup spout is here to direct this material into the screenings hopper. If however you wish to collect this material such as Flax or Canola and keep it out of the screenings simply remove the cup and reverse it to direct the flow to the side of the machine into your own collection system.

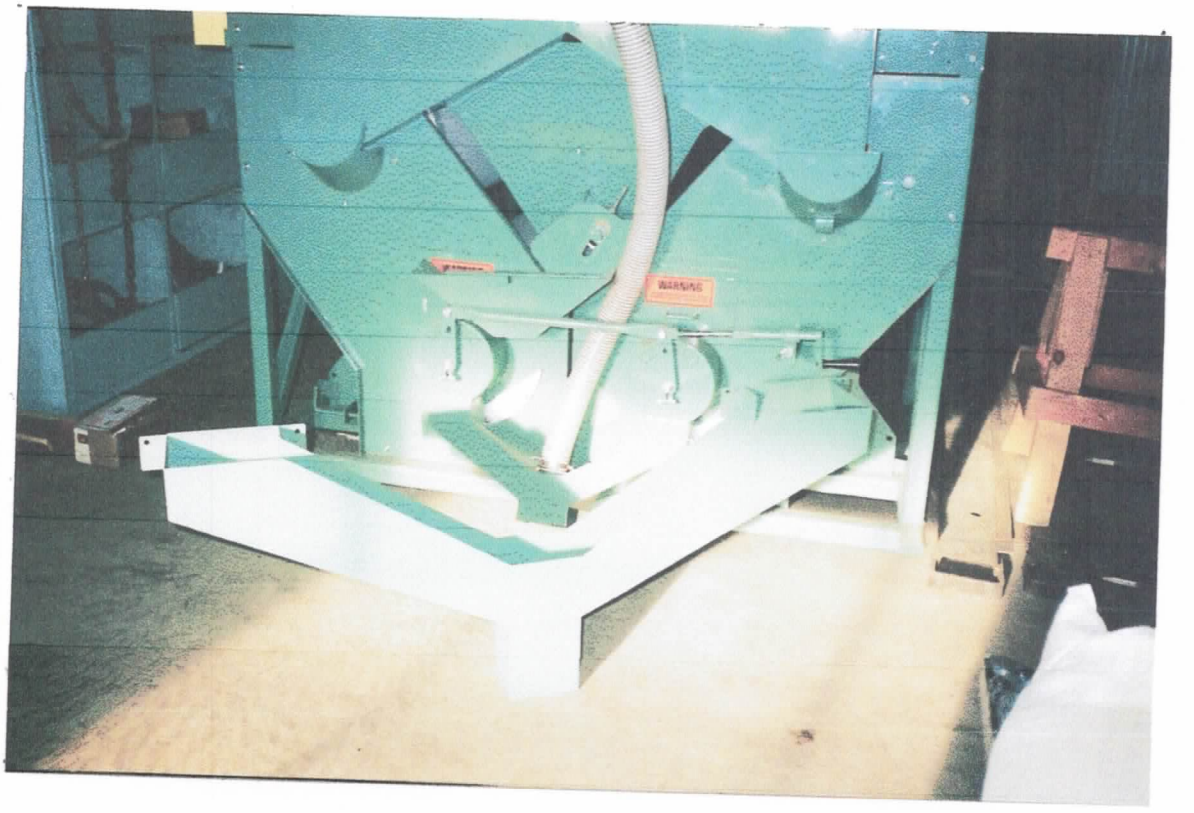
A ball rack system is part of the sieve deck. The bouncing balls strike the under side of each sieve and will prevent the build up of sticking material to the sieve. Each ball rack is removable for clean up. Each compartment should have 2 - 3 balls. More or less can be used as desired.



The 1-1/2 Hp motor that drives the shoe assembly, hopper metering roll, air dust auger and the pan down auger has a manual adjustable speed pulley. By increasing the diameter of the pulley you will increase the speed of the components listed above. By decreasing the size of the pulley you will decrease the speed of the components listed above.



In the rotating Grader Shells the thin seeds are removed. No adjustment of size can be made here unless the Grader Shells are replaced by another size. You may find that you will need more than one size, as grain size will differ from year to year. Many Grader Shell sizes and types are available to clean a wide range of crops.



When processing grains such as peas or beans you may wish to end the process at the point of Grader Shell discharge. This is simply done by removing the collection cups and providing a system of trough spouting into your clean grain collection system. A collection hopper for this purpose is supplied with the machine and is pictured above.

From the Grader Shells the desired grain is diverted into one of the two small Indents located on each side of the machine. Here the object is to lift the short material such as buckwheat seeds, short kernels or cracked grain in cereals. The drum pockets lift this material and deposit it into the trough system inside the drum. This trough is adjustable to the left or right to determine the amount of material to be removed. The RPM of the drum is adjustable as shown and is a critical part of the separation. An average Indent RPM is 58 turns. The viewing doors will give you an insite as to how high the small seed material is being lifted. A flashlight or extension light may be quite advantageous to see inside the drum.

The desired grain is passed through the small pocket Indent and on into the large pocket Indent. The screenings are collected in the internal trough of the small Indent and are augered out into the screenings system. In the large pocket Indent the long seeds such as wild oats and white caps are separated by not being picked up. Here the desired kernels of cereals are picked up by the pockets and are dropped into the trough. Again the trough angle is adjustable as is the RPM speed of the rotating drum.

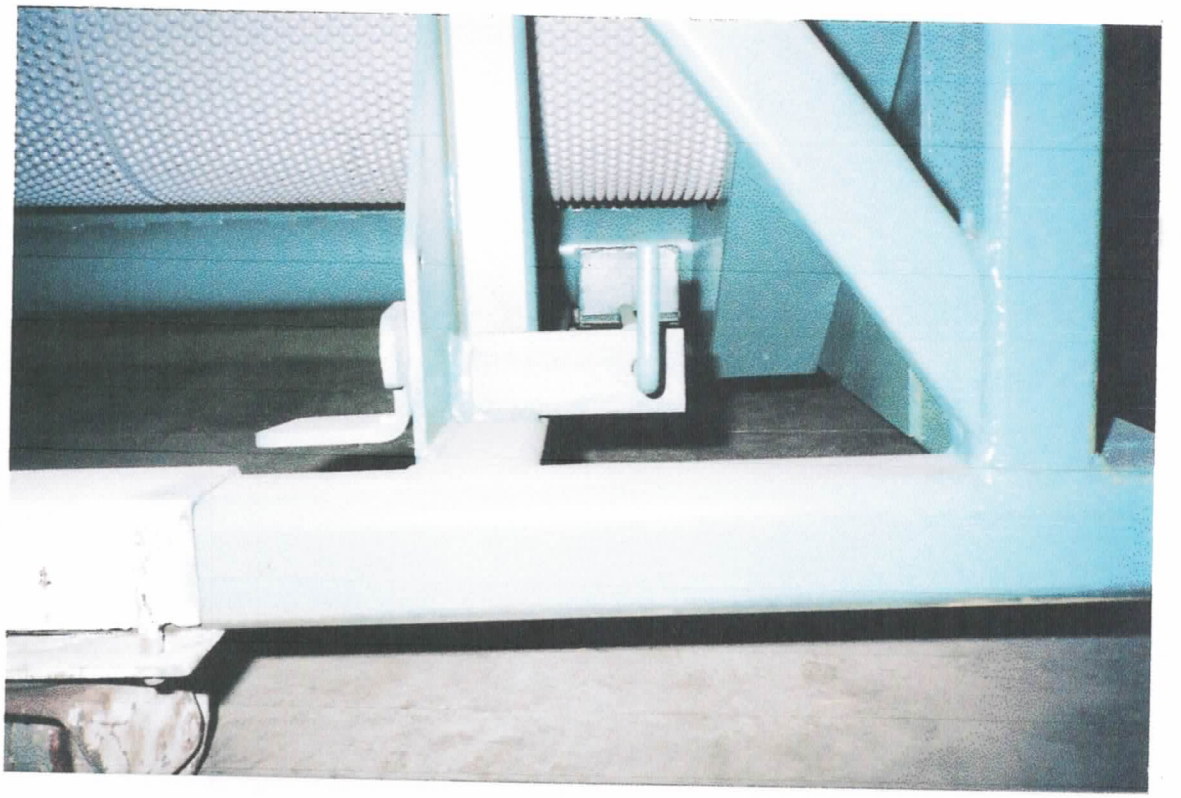
Interior view of an Indent trough system showing the trough in a fully upright position. The auger will discharge the grain collected.

Caution:

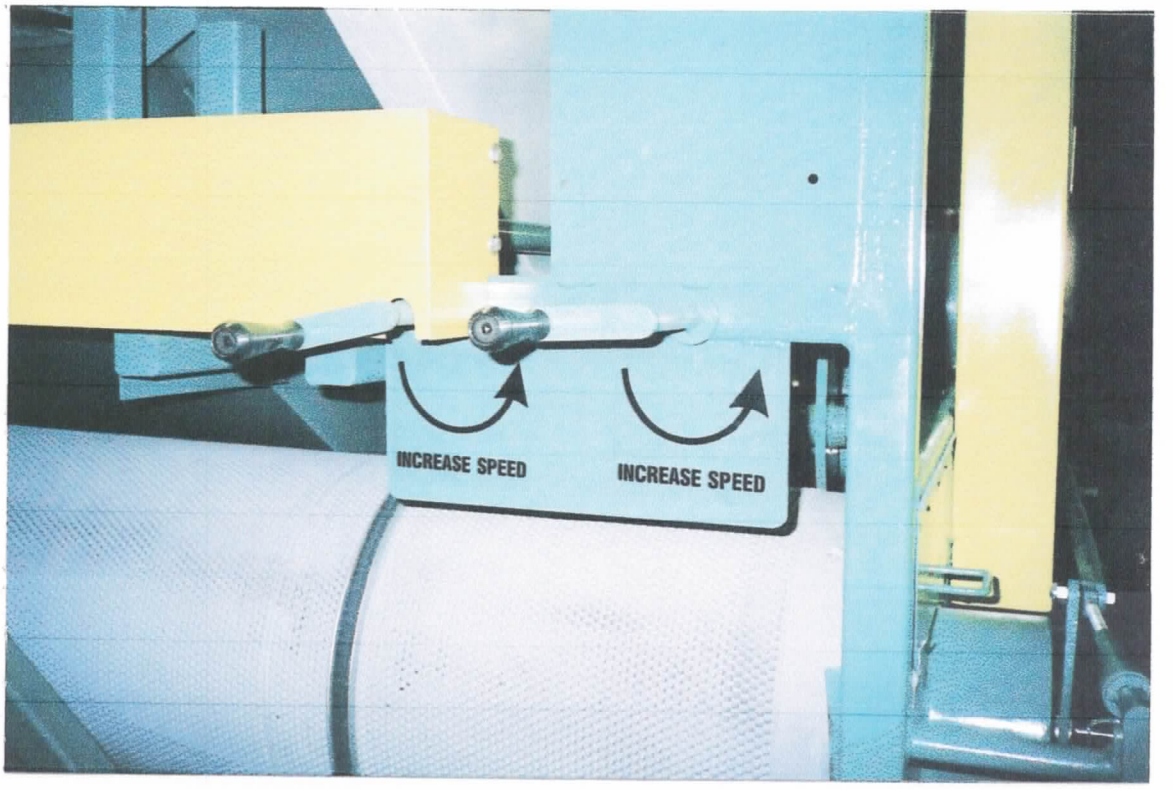
All moving parts are dangerous. The guards are installed for your protection. Do not remove them. Do not wear loose clothing around machinery and keep children out of the work area.

A retarder system is adjustable from the outside of the machine. This is used to hold back or speed up the seed discharge from the Indent Drum. Too much retarder use may result in undesirable seeds being picked up. Use of this adjustment will require some trial and error. The white poly covers on the outside are similar to the retarder inside the Indent Drums.

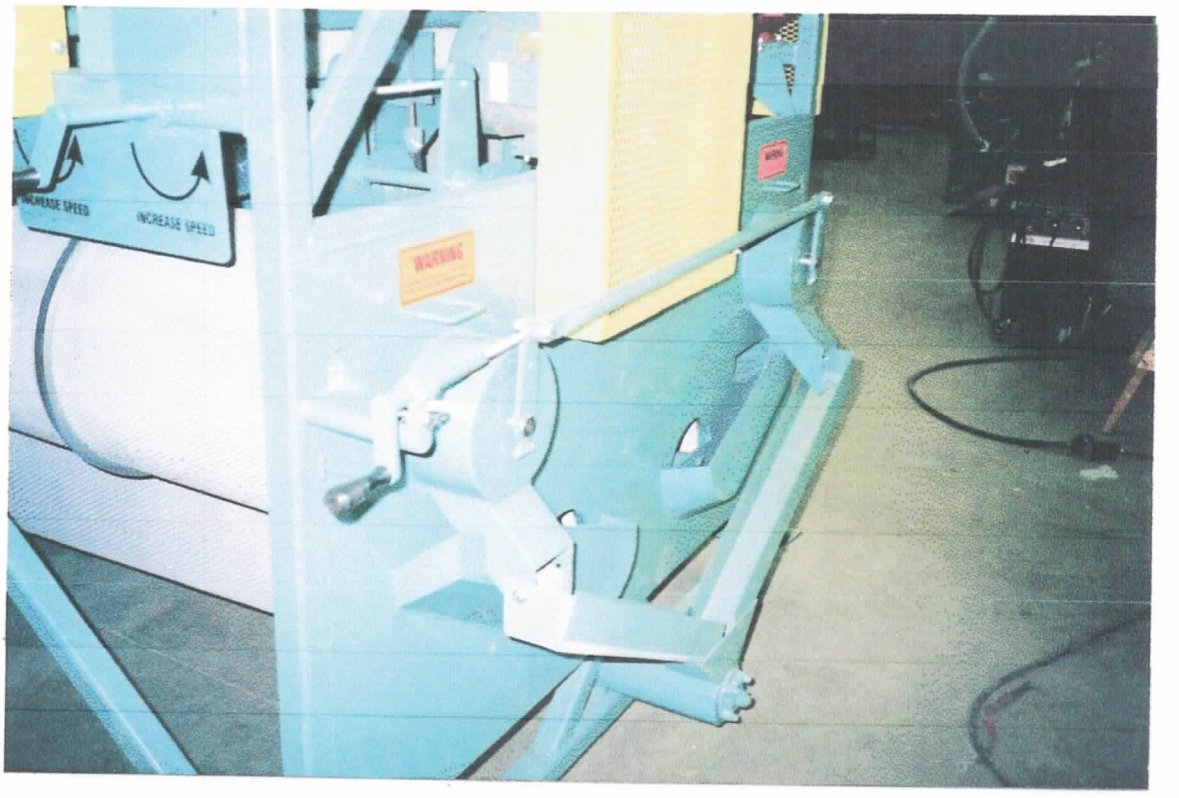
The control lever shown controls the pitch angle of the Indent trough.



Note that when cleaning grains such as Oats the Indent will not pick up the desired kernels but instead will separate by removing other grains and a few short plump kernels out of your desired seeds . These will be discharged through the trough system. The clean seed Oats will be discharged through the former screenings outlet. Located here is a valve system to change and divert the now clean grain into your normal collection system.

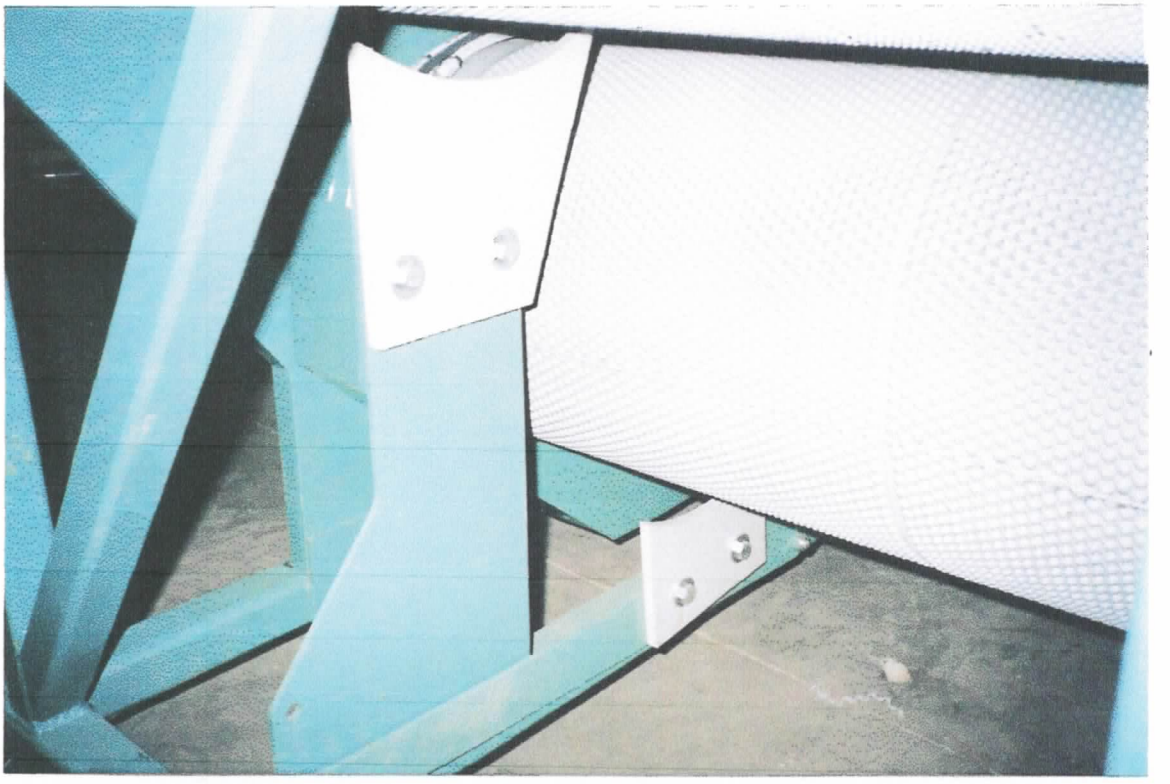


The speed of the Indent Drums is a very important adjustment. The average RPM is 58 turns and may be be counted by using a watch with a second hand. The control handles shown will change the speed as indicated. It will be advantageous to view the changes as made through the Indent inspection doors. Here you can see how far up the material is being lifted before dropping into the trough.

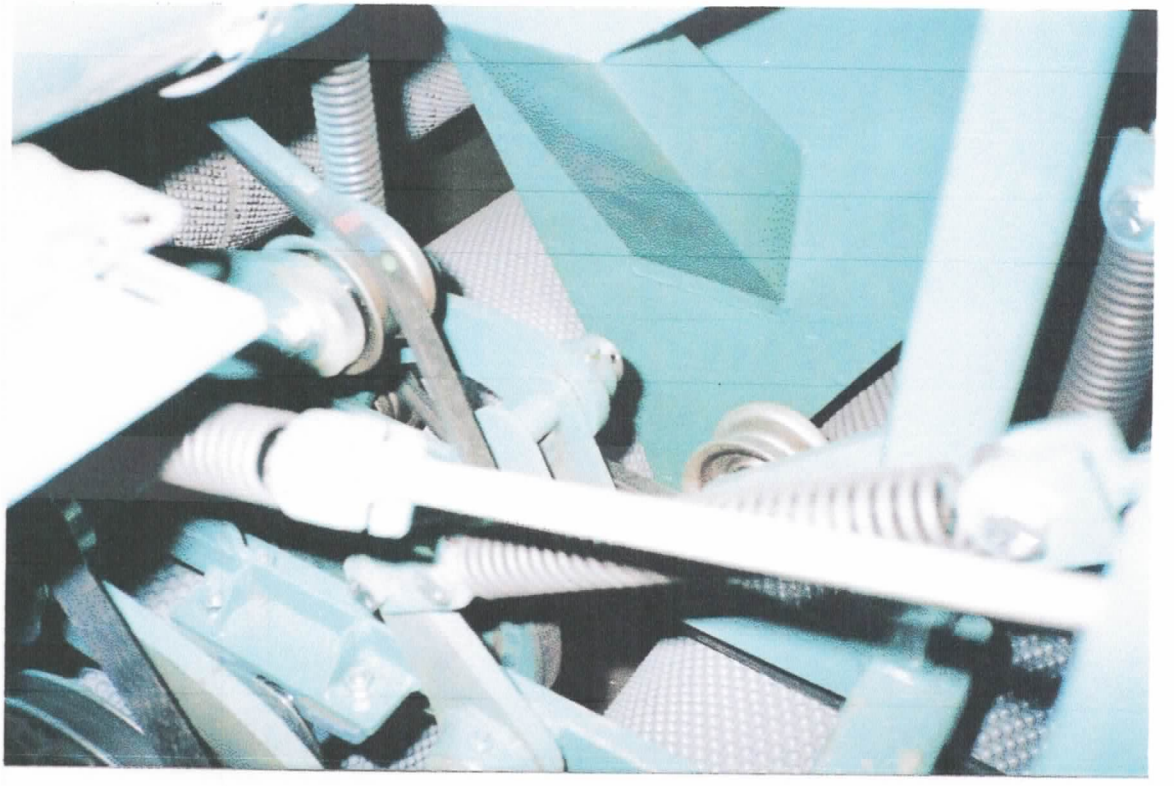


This adjustment shown is the pitch of the trough inside the small pocket Indent Drums. Here small grain material is removed from the larger grain and is dropped into the trough system and discharged into the screenings as shown. The desirable grain remains inside the Indent Drum and is discharged into the large pocket Indent.

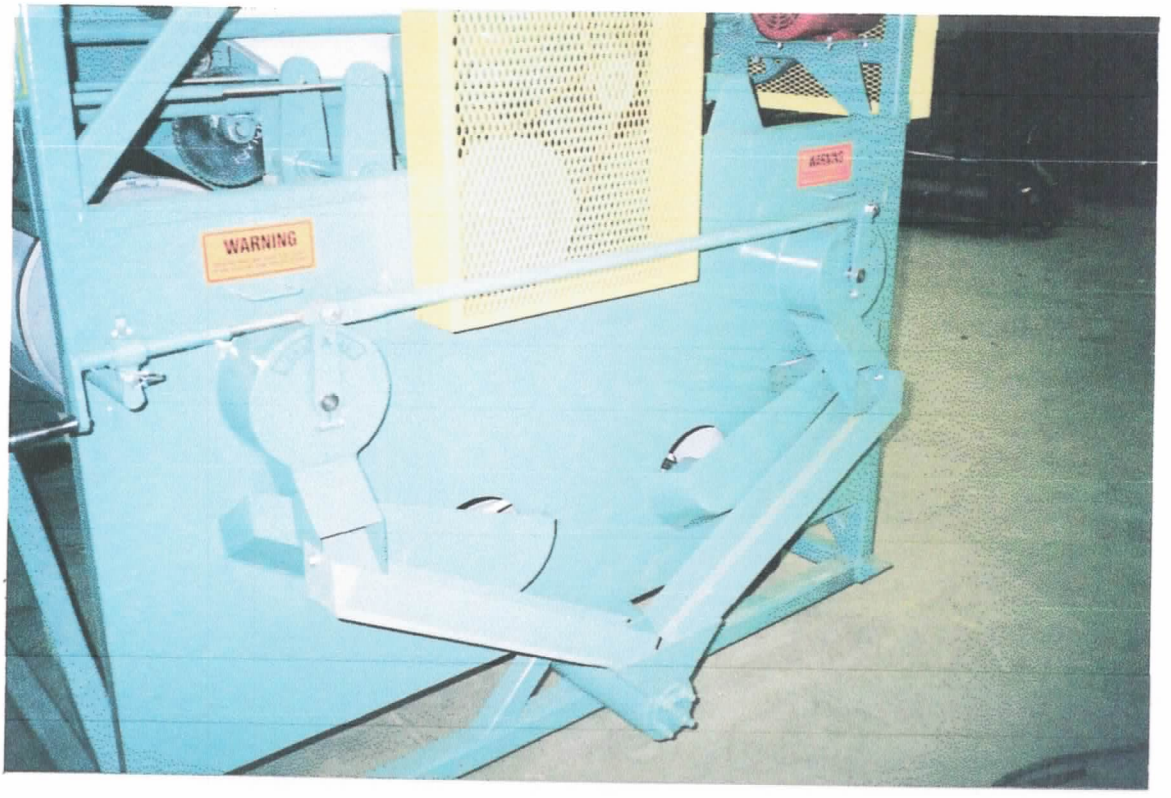
Shown here is the control adjustment of the two large pocket Indent trough systems. By adjusting the trough pitch to the left less grain will be collected and more will be lost into the screenings system. An adjustment to the right will allow the drum to place more material into the trough and by going too far will also collect undesirable seeds. Also shown on the bottom of the right hand collection cup is the thumb slide pull out to obtain an inspection sample from the Grader Shell discharge.



Support brackets for Indent Drum used when changing the Indent Drums.

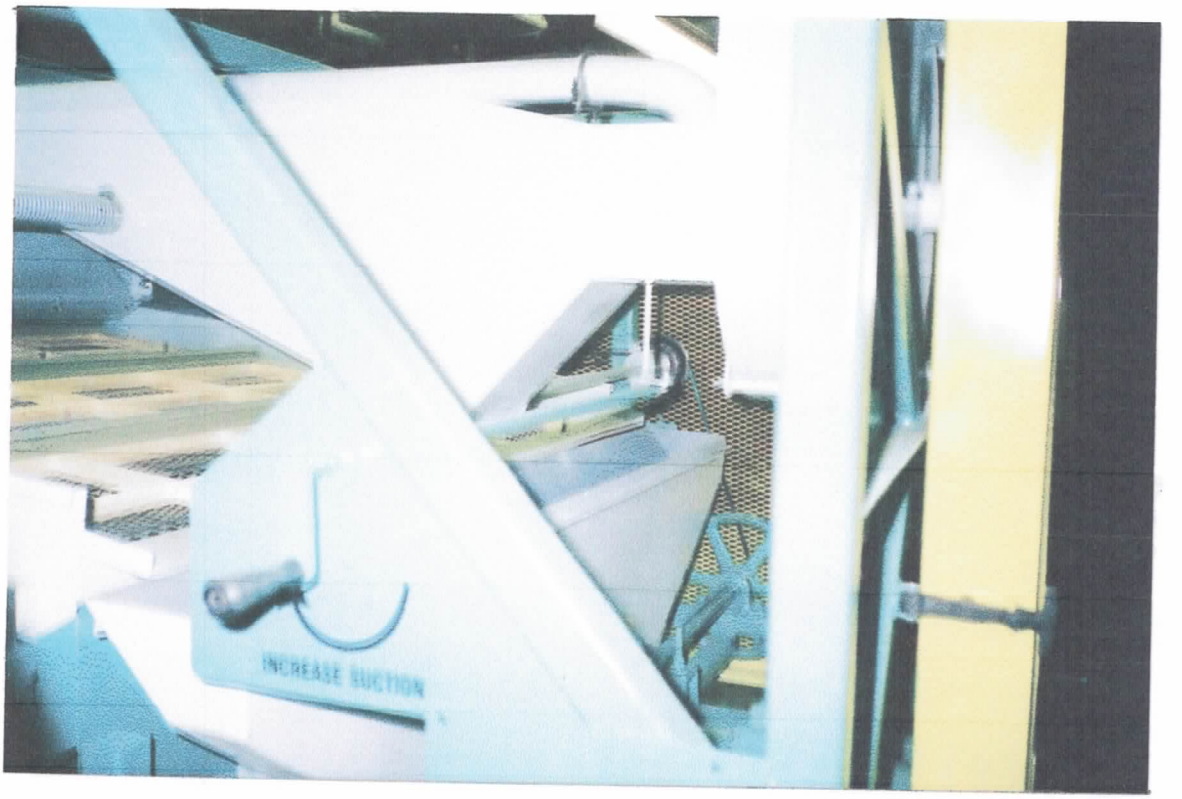


Spring loaded tightener system used to apply even tension on the Indent belt drives.

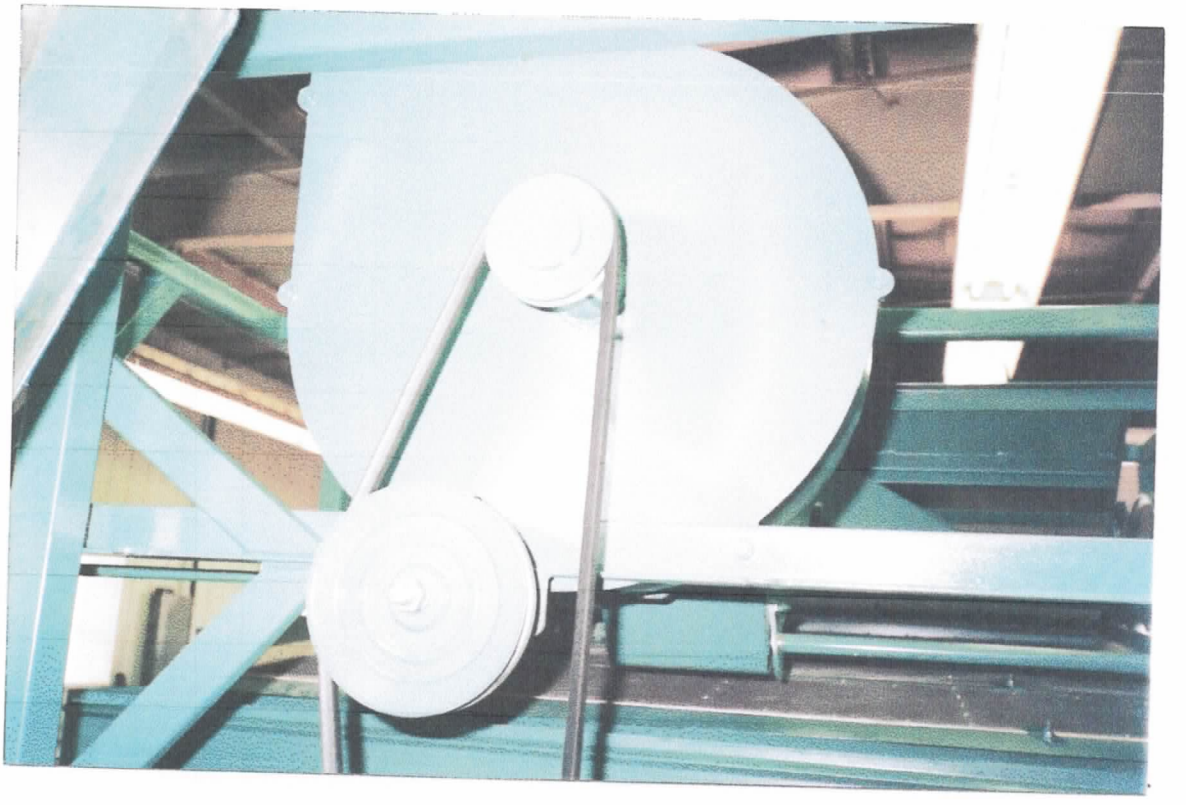


Screenings discharge and collection system.

Screenings auger belt tightener and hopper inspection door.



This adjustment shown is the control of the asperation. The suction required at the grain discharge is controlled by this lever. Also air is drawn from the Grader Shell area which prevents dust from going into the work area. The asperation hose from the clean grain discharge spout will remove dust and chaff which has resulted from agitation inside the cleaning system.



There is an adjustable manual variable speed pulley located on the fan drive shaft. By adjusting the diameter of this pulley you will increase or decrease the fan speed in conjunction with the primary aspiration adjustment control (page 22). This setting is to be used only if the primary adjustment control is not in the aspiration spectrum that is desired.

CLEANING VARIOUS CROPS

Peas

Peas do not process well when passed through an Indent Drum. The 2500 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

The cleaning machine is equipped with a Sieve; Grader Shells; and Indent Drums to process Oats. The main change required with this crop is that the large Indent will will not 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 2500 Cleaner. A problem with this crop is the immature seeds which are similar size to mature seed; they do nor germinate. To do a total separation of this crop 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.

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	51/2" 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.

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, it's 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 nor 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 <u>five</u> main sections or functional areas of the machine and each perform a definite part of the separational process.

1. <u>THE CYLINDER ITSELF</u>--- and this if 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 were 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 cylinnder, 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 amd 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 flexability. 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.

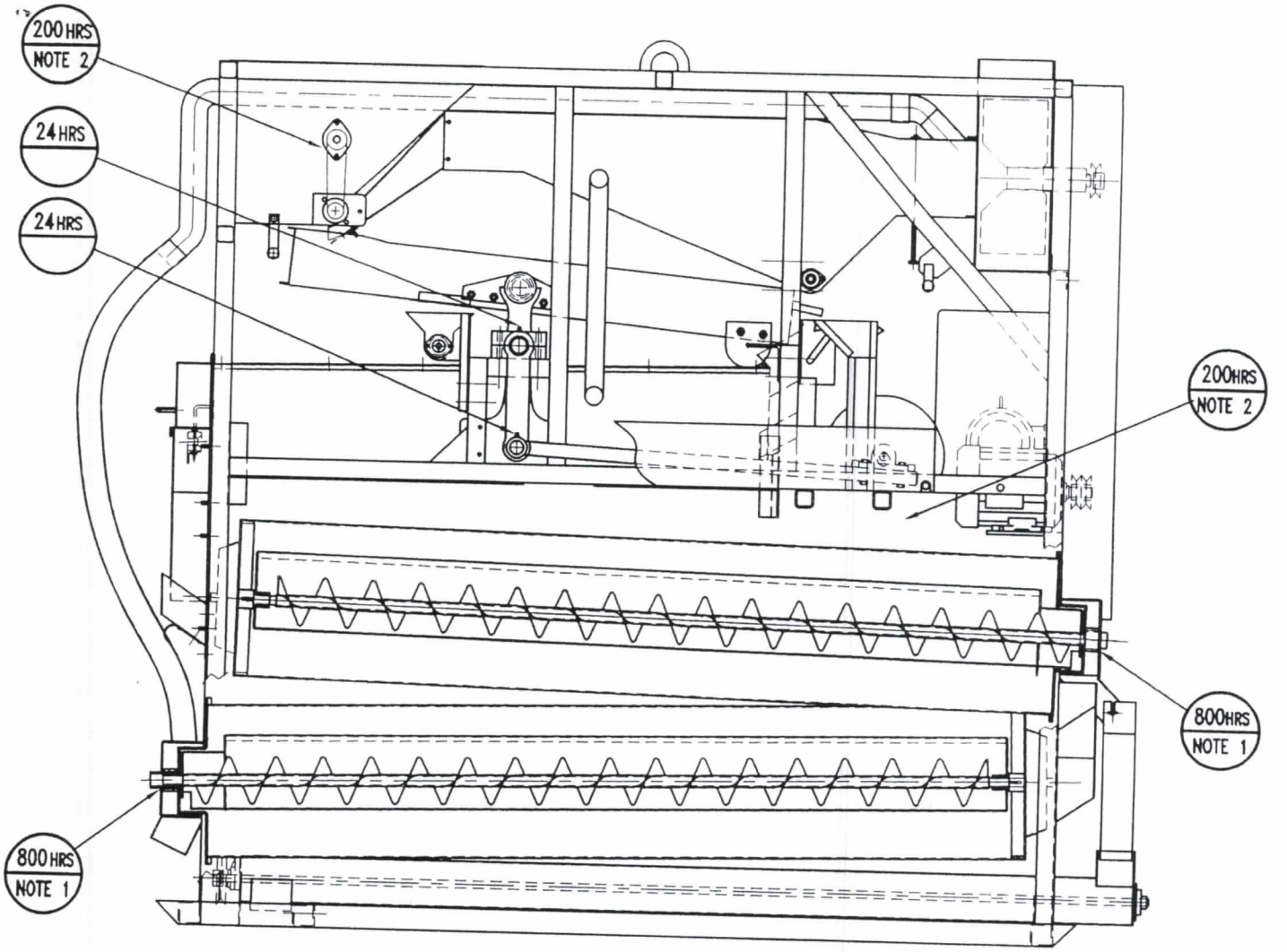
Changing Indents on Model 2500

- Ensure that 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.
- For spring loaded tensions on the Indent drive belt loosen the jam nut and turn the lower nut counter-clockwise to release the tension on each drive belt.
- For standard drive belt tensions simply loosen the nut on each idler to release belt tension.
- Loosen the screenings collection auger drive belt by turning the adjusting nut counter-clockwise.
- Lift the Indent supports for each Indent up until the plastic support is in contact with the Indent and tighten in place.
- Remove the Indent trough adjusting arms and tie bars from each pair if Indent center shafts by loosening pinch bolt on the adjusting arm and un-screwing the adjusting crank from the threaded rod.
- Remove final air suction hose.
- Remove the two bolts from each bearing support block on the inlet end of the Indents .
- Remove the four nuts holding each end plate to the cleaner and pull plate straight out to remove.
- The entire Indent assembly can now be removed from the cleaner and set on the floor for disassembly. *Note - when removing the Indent be careful not to bend the Indent Drum.
- With the Indent assembly on the floor remove the three bolts and nuts that attach the end hubs to the Indent drum.
- Pull the hub off the outlet end of the Indent (the end without the bearing support block) paying attention to where the plastic spacers are. Make sure spacers are put in the same place during re-assembly.
- Carefully pull the inlet end hub and trough assembly out of the Indent drum.
- 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 cleaner, making sure that 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 assemblys are fully reinstalled as they must be aligned with the drive pulley.
- Slide trough and inlet hub into replacement Indent drum, install outlet hub and the 3 bolts and nuts on each hub.
- 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.
- Adjust drive belt tension, double check to be sure all nuts, bolts etc. are in place and tight.

Changing Grader Shells on Model 2500

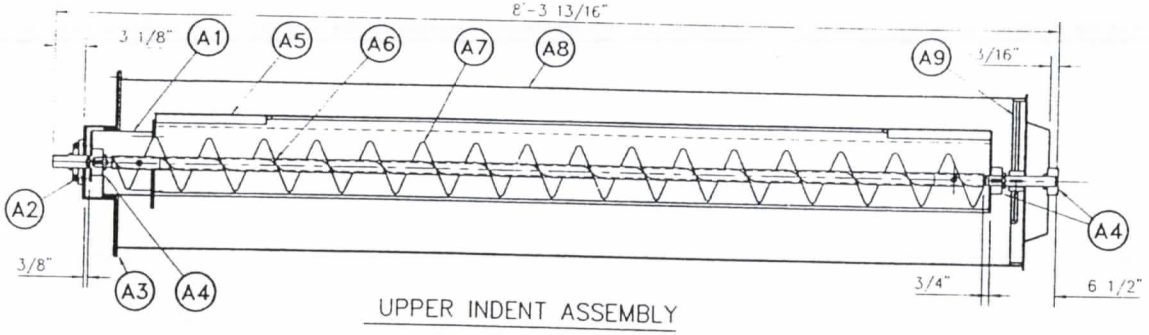
- Shut off and lock out power to cleaner.
- Remove plastic pipes from between Grader Shells.
- Remove four nuts holding Grader Shell collection chute to cleaner.
- Pull chute straight out to remove.
- Loosen set screw on each outlet hub.
- Pull Grader Shell assembly off of shaft using a twisting motion.
- 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.

GJESDAL MODEL 2500 LUBRICATION DIAGRAM

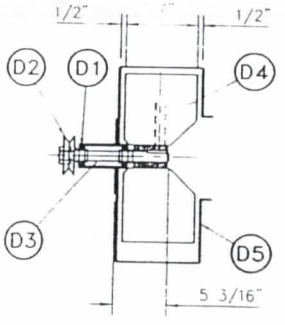


NOTES:

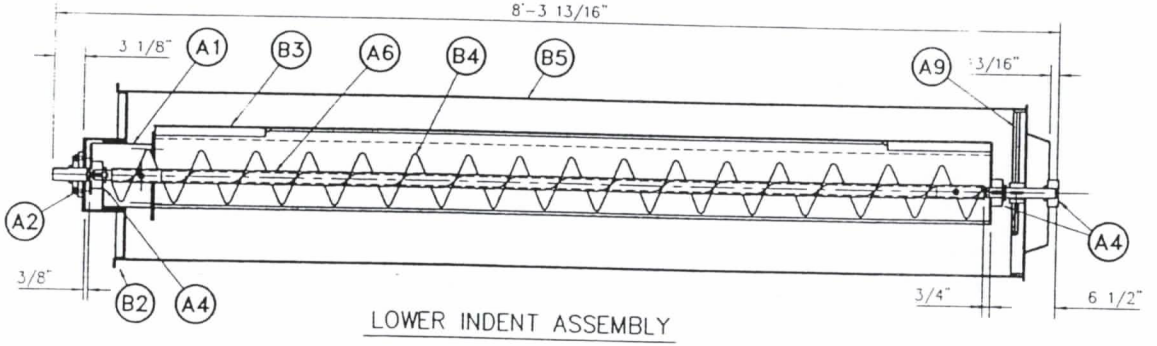
1. NYLARTRON BUSHINGS DO NOT NEED LUBRICATION, BUT A PETROLEUM BASED GREASE DOES HELP KEEP SOUND DOWN AND KEEP GRIT OUT THIS APPLIES ONLY TO UNITS WITH SERIAL NO.: RTG-2500-1001 TO 1008. DO NOT USE WATER BASED GREASE!
2. LUBE CHAIN WITH SUITABLE CHAIN LUBRICANT.



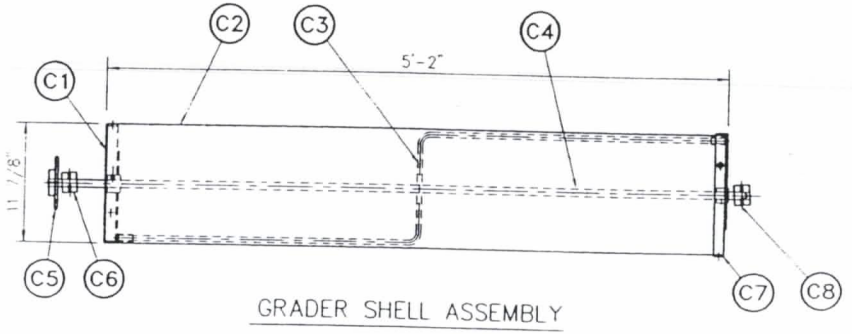
UPPER INDENT ASSEMBLY



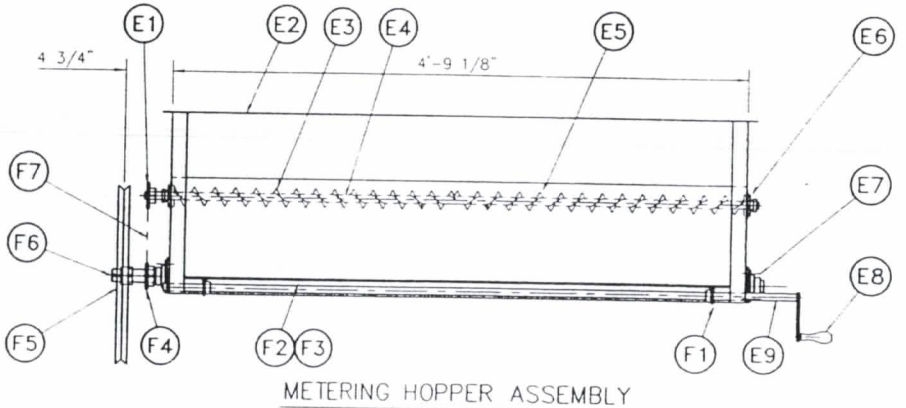
BLOWER ASSEMBLY



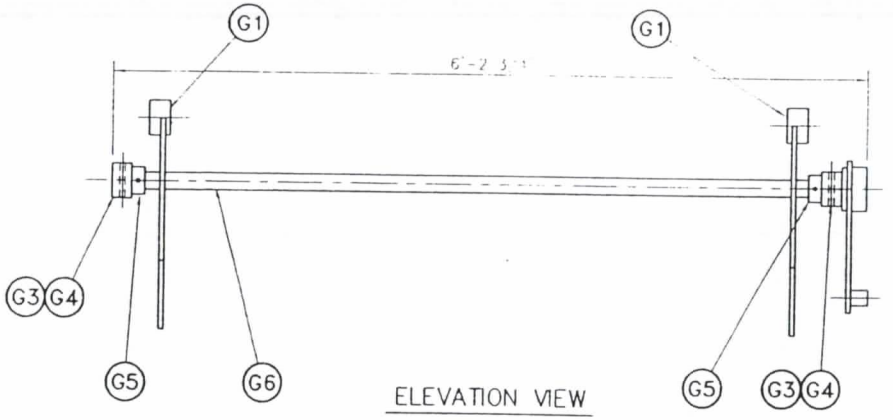
LOWER INDENT ASSEMBLY



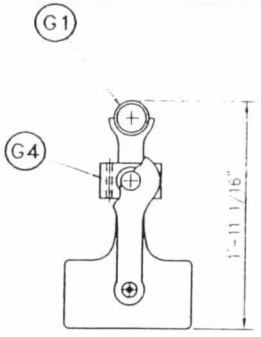
GRADER SHELL ASSEMBLY



METERING HOPPER ASSEMBLY

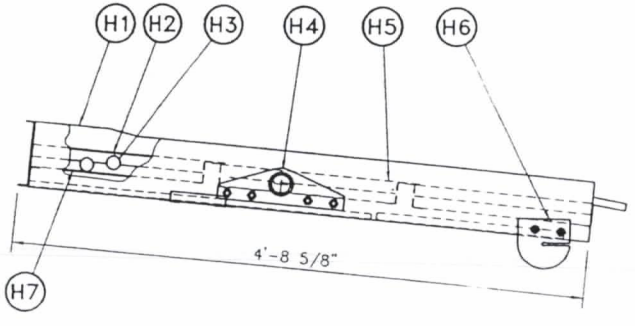


ELEVATION VIEW

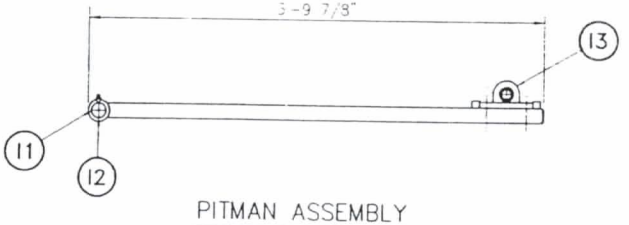


END VIEW

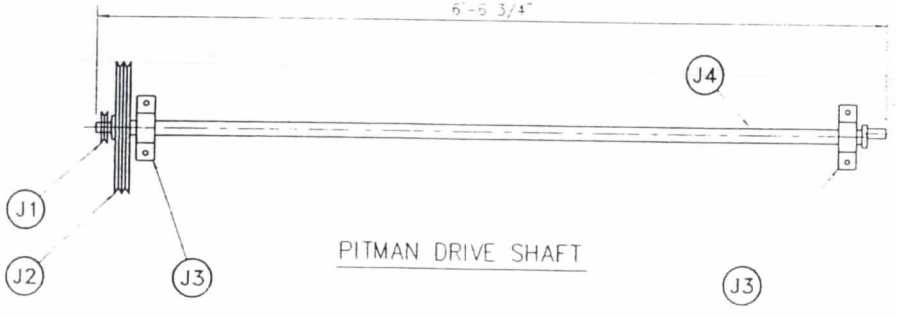
SHOE PIVOT ASSEMBLY



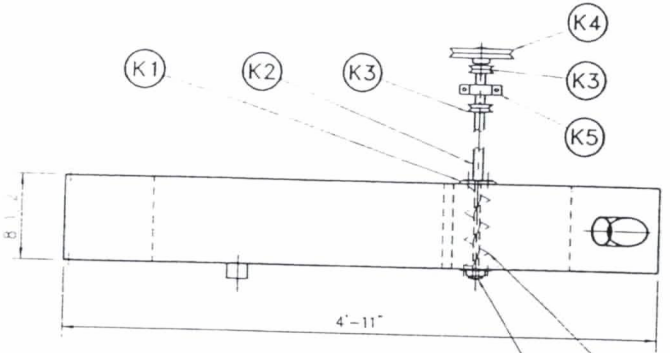
SHAKER SHOE ASSEMBLY



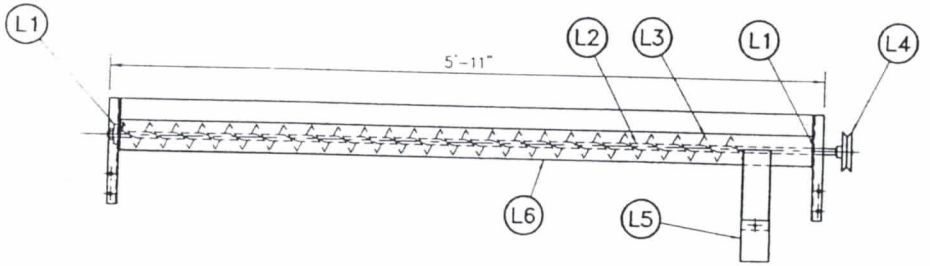
PITMAN ASSEMBLY



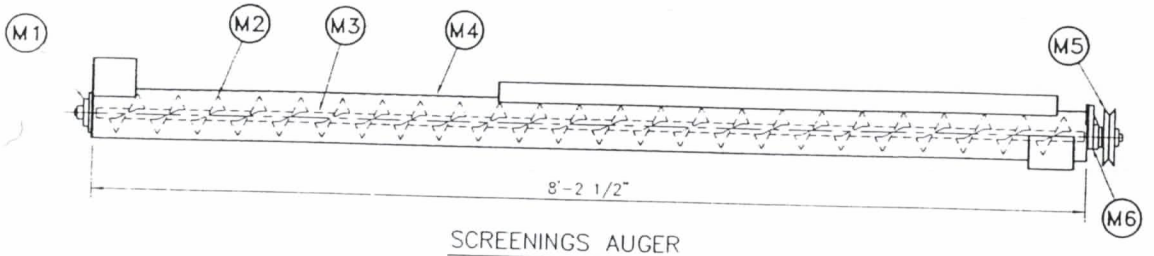
PITMAN DRIVE SHAFT



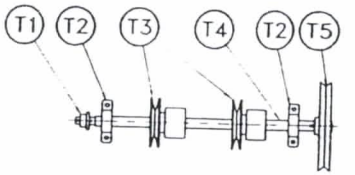
DUCT ASSEMBLY



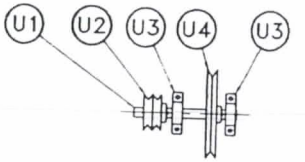
FINES AUGER ASSEMBLY



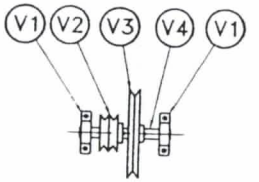
SCREENINGS AUGER



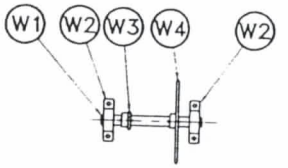
SPRING ADJ. PULLEY SHAFT



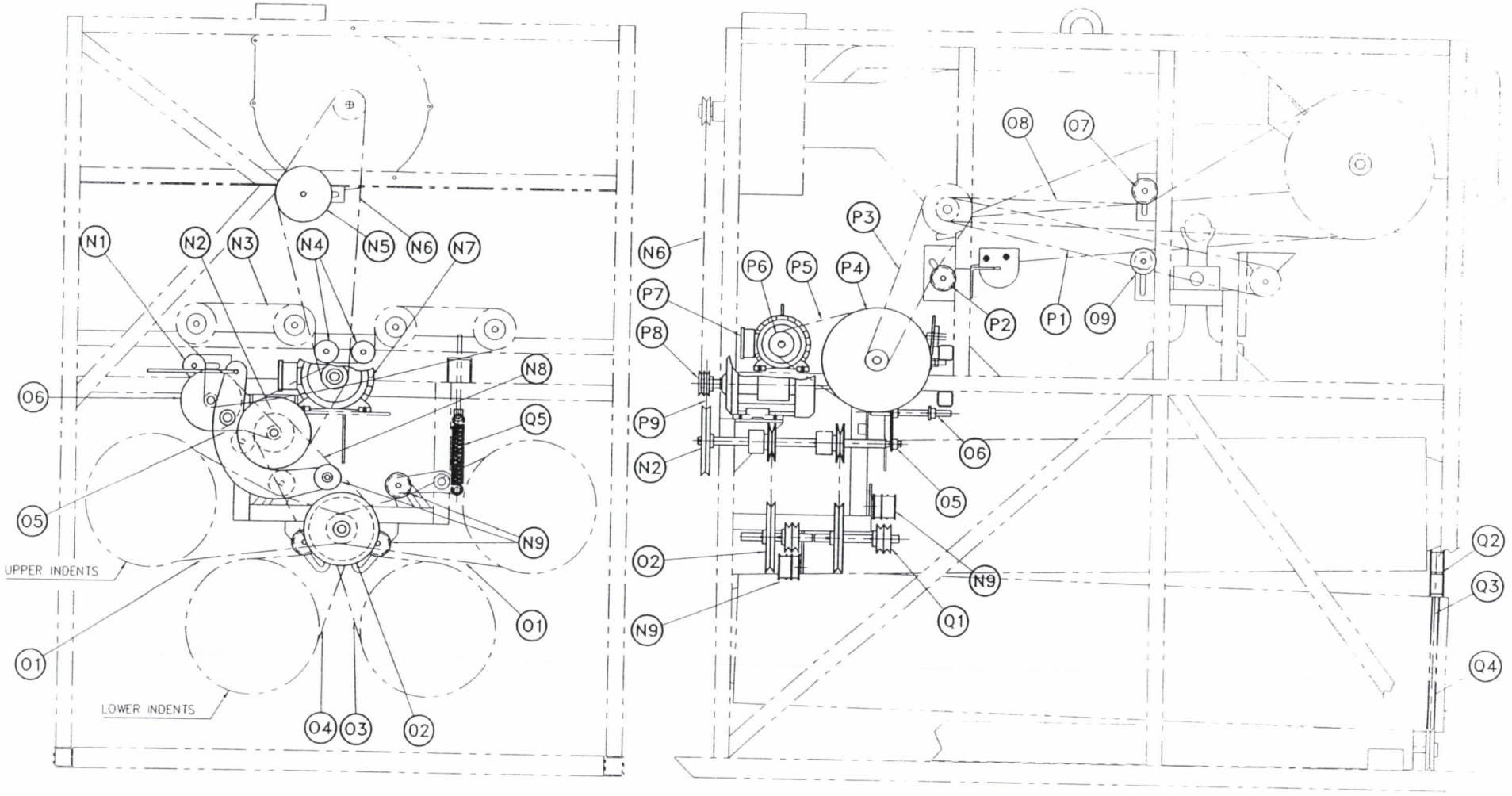
UPPER INDENT DR. JACK SHAFT



LOWER INDENT DR. JACK SHAFT



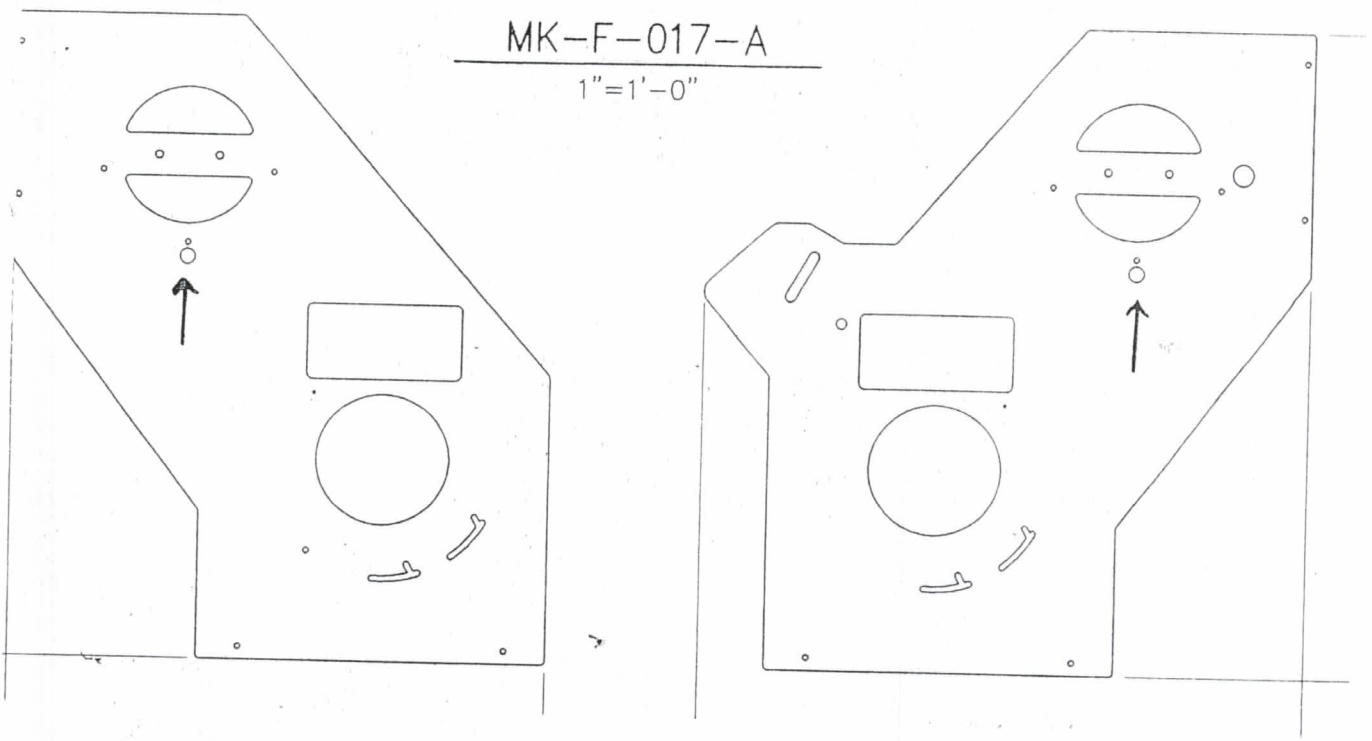
GRADER SHELL DR. JACK SHAFT



END VIEW

SIDE VIEW

DRIVE SYSTEM



Under the grain outlet for the upper indent's on the end plate is an indent seal clean out hole with a 1" plug. Remove this plug for cleaning out the indent seal plate when changes crop kinds or crop varieties. With the machine running, place a vacuum nozzle up against the clean out hole to remove any grain (s) that maybe in the seal plate. Once cleaned out replace plug back into the clean out hole.

Item	Description	Part Number	Supplier's Part Number
A1	Auger End Cap		
	Serial #RTG-M2500-1001 to 1008	B005-A	
	Serial #RTG-M2500-1009	B101-A	
	Serial #SLM-M2500-1010 and later	B101-A	
A2	Hub Bearing		
	Serial #RTG-M2500-1001 to 1008	M002-D	C/W Thrust Washer #B-003-10
	Serial #RTG-M2500-1009	B103-5	NTN #UCF206-104D1
	Serial #SLM-M2500-1010 and later	B103-5	NTN #UCF206-104D1
A3	O/F Hub No.1		
	Serial #RTG-M2500-1001 to 1008	B011-B	
	Serial #RTG-M2500-1009	B103-A	
	Serial #SLM-M2500-1010 and later	B103-A	
A4	End Cap Bearing		
	Serial #RTG-M2500-1001 to 1008	M001-B	
	Serial #RTG-M2500-1009	B104-7	NTN #UCFL205-100D1
	Serial #SLM-M2500-1010 and later	B104-7	NTN #UCFL205-100D1
A5	Indent Trough		
	Serial #RTG-M2500-1001 to 1008	B007A-A	
	Serial #RTG-M2500-1009	B007-A	
	Serial #SLM-M2500-1010 and later	B007-A	
A6	Indent Auger Shaft		
	Serial #RTG-M2500-1001 to 1008	B009-1,2,3	
	Serial #RTG-M2500-1009	B100-1,2,3	
	Serial #SLM-M2500-1010 and later	B100-1,2,3	
A7	Indent Auger Flighting, Right Hand		
	Serial #RTG-M2500-1001 to 1008	B009-4	
	Serial #RTG-M2500-1009	B100-4	
	Serial #SLM-M2500-1010 and later	B100-4	
A8	Upper Indent Shell		
	17"dia x 90" Long	B104-1	
A9	Infeed Hub	B011-A	
B2	Outfeed Hub No.2		
	Serial #RTG-M2500-1001 to 1008	B004-A	
	Serial #RTG-M2500-1009	B102-A	
	Serial #SLM-M2500-1010 and later	B102-A	
B3	Indent Trough		
	Serial #RTG-M2500-1001 to 1008	B008A-A	

Item	Description	Part Number	Supplier's Part Number
	Serial #RTG-M2500-1009	B008-A	
	Serial #SLM-M2500-1010 and later	B008-A	
B4	Indent Auger Flighting, Left Hand		
	Serial #RTG-M2500-1001 to 1008	B009-5	
	Serial #RTG-M2500-1009	B100-5	
	Serial #SLM-M2500-1010 and later	B100-5	
B5	Lower Indent Shell		
	17"dia x 90" Long	B105-1	
C1	Grader Infeed Hub	B017A	
C2	Grader Shell, 12"dia x 62"lg		
C3	Mixing Bar	B014-2	
C4	Grader Shell Shaft	M003B	
C5	Grader Shell Driven Sprocket	D018-11	40B32 x 3/4" BKS
C6	Grader Shell Bearing - Infeed End		
	Serial #RTG-M2500-1001 to 1009	B018-A	
	Serial #SLM25001010	B018-A	
	Serial #SLM25001011 and later	S036-8	NTN # AELPFL204-012
C7	Grader Shell Outfeed Hub	B017B	
C8	Grader Shell Bearing - Outfeed End	B018-B	
D1	Fan Bearing	C030-10	NTN #UCS205-100D1N
D2	Pulley		
	Serial #RTG-M2500-1001 to 1010	C030-11	AS39 x 1"BKS
	Serial #SLM25001010	C030-11	AS39 x 1"BKS
	Serial #SLM25001011 and later	C030-11	1VM50 x 1"BKS
D3	Shaft	M003-D	
D4	Blower Wheel		
	Serial #RTG-M2500-1001 to 1010	B019-A	
	Serial #SLM25001010	B019-A	
	Serial #SLM25001011 and later	To Come	
D5	Intake Housing	C030-5,19,34	
E1	Mixing Auger Sprocket	C035-20	H4015 x 3/4"BKS

Item	Description	Part Number	Supplier's Part Number
E2	Hopper Sheet Metal Assembly	S042A	
E3	Mixer Flighting, Right Hand	C035-18	
E4	Mixing Auger Shaft	M015-E	
E5	Mixer Flighting, Left Hand	C035-17	
E6	Mixing Auger Bearing	C035-15	Insert: EN204-12SDDR (3/4") Flanget: 47MST
E7	Metering Roll Bearing	C035-12	Insert: EN206-20SDDR (1-1/4') Flanget: 62MST
E8	Revolving Handle	B045-4	
E9	Gate Adjustment Rod	B045A	
F1	Gate Drive Sprocket	B045-3	35T12 x 3/4"BKS
F2	Metering Gate Assembly	B045-A	
F3	Metering Gate Plastic Tip	B049-3	
F4	Auger Driver Sprocket	C035-2	H4015 x 1-1/4"BKS
F5	Pulley	C035-13	BS190 x 1-1/4"BKS
F6	Metering Roll	M004-C	
F7	Roller Chain	C035-22	RC40 x 45 links, c/w conn. link
G1	Pivot Rubber Bushing	C038-20	
G3	Pivot Block		
	Serial #RTG-M2500-1001	M016A-A	Custom block & bushing
	Serial #RTG-M2500-1002 to 1009	M016-A	
	Serial #SLM25001010 and later	M016-A	
G4	Pivot Block Bearing		
	Serial #RTG-M2500-1001	M016A-A	Custom bushing, one split
	Serial #RTG-M2500-1002 to 1009	C038-16	Torrington #17SF28
	Serial #SLM25001010 and later	C038-16	Torrington #17SF28
G5	Shaft Collar	C038-21	Standard 1-3/4"

Item	Description	Part Number	Supplier's Part Number
G6	Pivot Weldment	C038A	
H1	Shoe Weldment	S044A	
H2	Sieve Assembly		
H3	Tray Balls	C036-11	
H4	Shoe Pivot Bracket	C036-2,8	
H5	Sieve Hold Downs	C036-4	
H6	Slider Block	C036-5	
H7	Ball Trays		
I1	Bushing Housing	M-016-F	
I2	Bushing	M016-E	
I3	Pitman Bearing	C038-6	NTN #AELP205-100 (1")
J1	Pulley	C038-29	BS28 X 1"BKS
J2	Pulley	C038-28	2AK134 x 1-7/16"BKS
J3	Bearing	C038-27	NTN #UCP207-107D1 (1-7/16")
J4	Pitman Drive Weldment	C038-24,25,26	
K1	Rubber Flap	C039-15	
K2	Shaft	M017-A	
K3	Pulley	C039-19	BS30 x 1"BKS
K4	Pulley	C039-20	AS64 x 1"BKS
K5	Bearing	C039-17	NTN #AELPP205-100 (1")
K6	Flighting, RT. Hand	C039-3	
K7	Bearing	C039-18	NTN #AELPFL202-010 (5/8")
L1	Bearing	C034-6	NTN #AELPFL202-010 (5/8")
L2	Auger Saft	M015-A	

Item	Description	Part Number	Supplier's Part Number
L3	Flighting, RT Hand	C034-5	
L4	Pulley	C034-7	AS39 x 5/8"BKS
L5	Vinal Chute Extension	C034-10	
L6	Trough	S039-A	
M1	Bearing	C034-29	NTN #UELFC204-D12D1 (3/4")
M2	Flighting, Left Hand	C034-22	
M3	Auger Shaft	C034-19,20,21	
M4	Auger Housing	C034-12	
M5	Pulley		
	Serial #RTG-M2500-1001 to 1008	C034-31	BS70 X 3/4"BKS
	Serial #RTG-M2500-1009	C034-31	BS60 X 3/4"BKS
	Serial #SLM25001010 and later	C034-31	BS60 X 3/4"BKS
M6	Bearing	C034-30	NTN #UCFH204-012D1 (3/4")
N1	Plastic Chain Guide	D018-48	
N2	Spring Adjusted Pulley Shaft Ass'y		See T1 to T5 Inclusive
N3	Roller Chain	D018-13	RC40 x 9'-4 1/2"lg
N4	Idler Sprocket	D018-12	Aetna #AG2318S
N5	Idler Pulley	D018-15	Aetna #AG2721
N6	Belt		
	Serial #RTG-M2500-1001 to 1009	D018-36	A78
	Serial #SLM25001010	D018-36	A78
	Serial #SLM25001011 and later	D018-36	To Come
N7	Blower Motor	D018-1	3HP/1800RPM/182T TEFC
N8	Belt	D018-34	B49
N9	Idler Sheave		Aetna #AG2362S
O1	Belt	D018-38	B84

Item	Description	Part Number	Supplier's Part Number
O2	Lower Indent Dr. Jackshaft		See V1 to V4 Inclusive
O3	Belt	D018-37	B70
O4	Belt		
	Serial #RTG-M2500-1001 to 1009	D018-37	B70
	Serial #SLM25001010 and later	D018-52	B71
O5	Roller Chain	D018-42	RC40 x 34-1/2"lg
O6	Grader Shell Jack Shaft		See W1 to W4 Inclusive
O7	Idler Pulley	D018-16	Aetna #AG2352
O8	Belt	D018-42	A140
O9	Idler Pulley	D018-17	Aetna #AG2321
P1	Belt	D018-41	A92
P2	Idler Pulley	D018-16	Aetna #AG2352
P3	Belt	D018-40	A54
P4	Pitman Drive Shaft		See J1 to J4 Inclusive
P5	Belt	D018-39	A53
P6	Pulley		
	Serial #RTG-M2500-1001 to 1009	D018-6	1VL44 x 7/8"BKS
	Serial #SLM25001010 and later	D018-6	1VL44 x 5/8"BKS
P7	Pitman Drive Motor		
	Serial #RTG-M2500-1001 to 1009	D018-2	1-1/2HP/1800RPM/142T TEFC
	Serial #SLM25001010 and later	D018-2	1-1/2HP/1800RPM/56T TEFC
P8	Pulley		
	Serial #RTG-M2500-1001 to 1009	D018-5	2AK32 x 1-1/8"BKS
	Serial #SLM25001010	D018-5	2AK32 x 1-1/8"BKS
	Serial #SLM25001011 and later	D018-5	(To Come) x 1-1/8"BKS
P9	Belt		
	Serial #RTG-M2500-1001 to 1009	D018-35	A41
	Serial #SLM25001010	D018-35	A41
	Serial #SLM25001011 and later	D018-35	To Come
Q1	Upper Indent Dr. Jackshaft		See V1 to V4 Inclusive

Item	Description	Part Number	Supplier's Part Number
Q2	Idler Pulley		Aetna #AG2362S
Q3	Belt		
	Serial #RTG-M2500-1001 to 1008	D015-59	B72
	Serial #RTG-M2500-1009	D015-59	B84
	Serial #SLM25001010 and later	D015-59	B84
Q4	Drive Ring	B010-B	
T1	Sprocket	C041-2	40B10F x 3/4"BKS
T2	Bearing	C041-3	NTN #AELPP205-100 (1")
T3	Pulley	C041-4	TB Woods VC51 x 1"BKS
T4	Shaft	M017-B	
T5	Pulley		
	Serial #RTG-M2500-1001 to 1009	C041-5	AS94 x 1"BKS
	Serial #SLM25001010		
	Serial #SLM25001011 and later	C041-5	(To Come) x 1"BKS
U1	Shaft	M017-D	
U2	Pulley	C041-16	2BK36 x 1"BKS
U3	Bearing	C041-17	NTN #AELP205-100 (1")
U4	Pulley	C041-18	BS90 x 1"BKS
V1	Bearing	C041-9	NTN #AELP205-100 (1")
V2	Pulley	C041-22	2BK36 x 1"BKS
V3	Pulley	C041-23	BS90 x 1"BKS
V4	Shaft	M017-E	
W1	Shaft	M017-C	
W2	Bearing	C041-8	NTN #AELPP205-100 (1")
W3	Sprockets	C041-10	40B14F x 1"BKS
W4	Sprockets	C041-23	40B51F x 1"BKS

Item	Description	Part Number	Supplier's Part Number
	Optional Tachometer System		
X1	Target Sensor		
	RTG-M2500-1001 to 1002	C042-5	Electromatic #EI1808NPOPL
	RTG-M2500-1003 to 1004	C042-5	Electromatic #EI1808PPOS
	RTG-M2500-1005 to 1008	C042-5	Electromatic #EI1805PPOS-1 c/w Cable #CONL10-A2
X2	Tachometer	C042-7	Omron #H7ER-SBV
X3	Power Supply	C042-8	No. SLS-24-012 (24VDC, 1.2A)
X4	Switch	C042-9	ZBZ-BD2
X5	Switch	C042-9	ZBZ-BD1
X6	Switch Body	C042-9B	ZBZ-BZ103