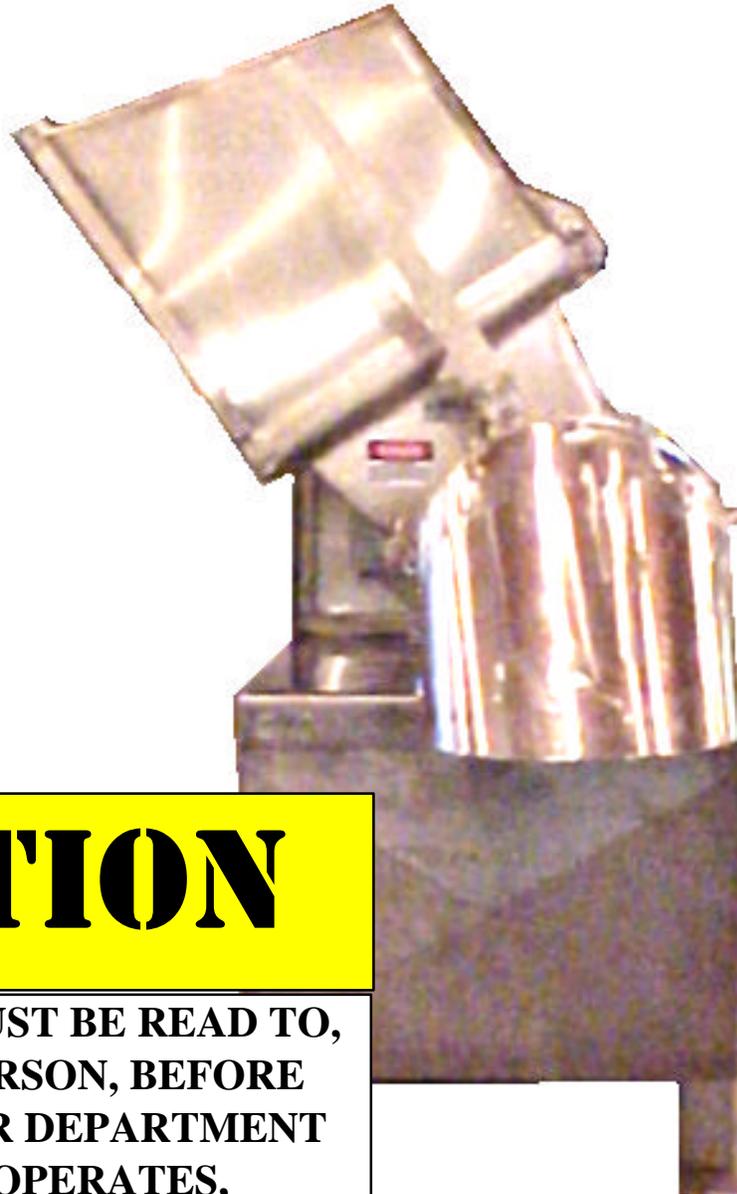


DIXIE GRINDERS INC.

1324 RAILROAD AVE. GUNTERSVILLE, AL 35976
(800) 745-0586 (256) 582-0477 FAX (256) 582-0478

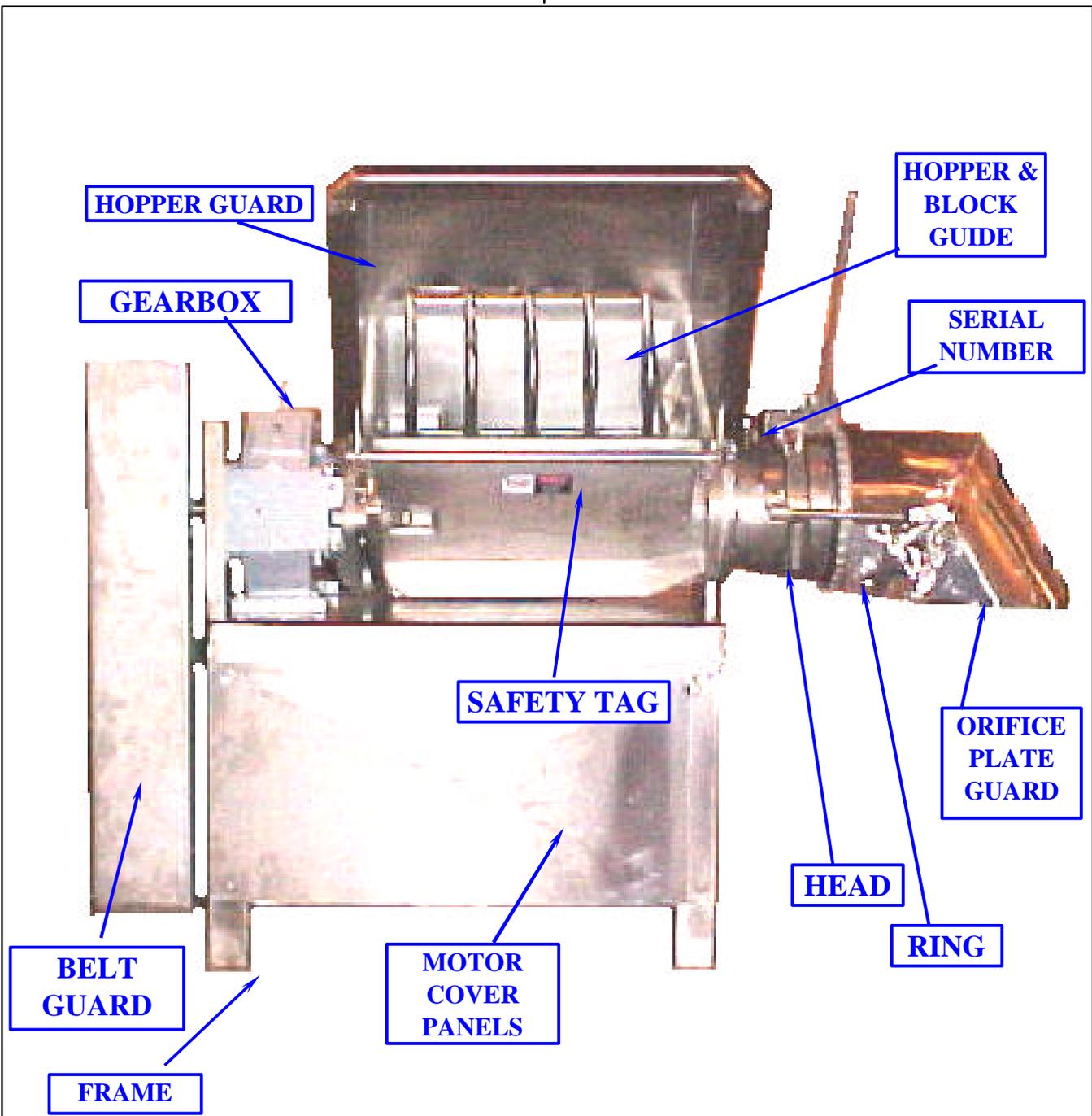
MODEL 16-12
GRINDER UNIT



CAUTION

**THIS MANUAL MUST BE READ TO,
OR BY EACH PERSON, BEFORE
THAT PERSON OR DEPARTMENT
UNCRATES, OPERATES,
MAINTAINS, OR SUPERVISES USE
OF THIS MACHINE IN ANY WAY.**

SAFETY INSTALLATION OPERATION MAINTENANCE



TYPICAL DIXIE 16-12 GRINDER UNIT

LISTED BELOW IS THE DEFINITION OF THE HAZARD LEVEL USED ON THE SAFETY STICKERS.



**IMMEDIATE HAZARDS
WHICH WILL RESULT IN
SEVERE PERSONAL INJURY**



KNOW YOUR MACHINE

READ OPERATING & SERVICE INSTRUCTIONS BEFORE INSTALLING PARTS OR SERVICING MACHINE IN ANY MANNER, BE SURE THAT MACHINE IS STOPPED AND ALL POWER IS OFF AND LOCKED OUT. THIS INCLUDES ELECTRICAL, HYDRAULIC, AIR, STEAM, ETC. FAILURE TO FOLLOW THIS RULE, OR TO PRACTICE SAFE OPERATING PROCEDURES CAN RESULT IN SEVERE PHYSICAL INJURY.

INTRODUCTION

A Grinder Unit is a type of size reduction machine. Its primary purpose is to grind meat, meat by-products, and other similar products.

The primary grinding components are a plate retaining ring, orifice plate, plate bushing, knifeholder with knife inserts, centering pin, spring or springs, head, feedscrew, hopper, gearbox, and drive pulleys. In most instances an electric motor drives the grinder unit.

This unit is mounted on a undermount frame (as shown on cover) or sidemount frame.

Standard safety equipment includes a belt guard, a hopper guard, and a plate guard. If a transition funnel is used, the plate guard is not required.

It is important that your application, and/or installation does not render these guards ineffective. If for any reason you believe these guards are not adequate, do not use the machine and call Dixie Grinders Inc. at once. (256) 582-0477 OR (800) 745-0586.

This machine was sold for a specific application. If you are not familiar with the application that this unit was sold for, check with Dixie Grinders Inc. before using the machine.

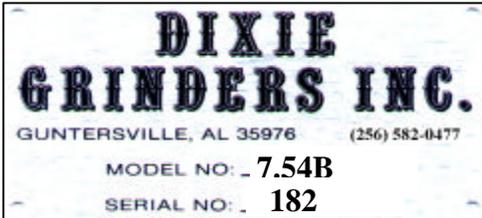
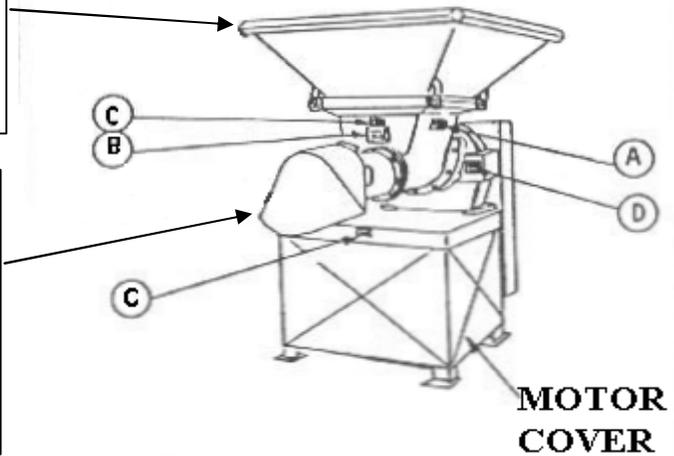
All operators and sanitation personnel should read this manual and understand it.

THE HOPPER GUARD AND PLATE GUARD MAY NOT BE ATTACHED FOR SHIPPING!

FAILURE TO USE GUARDS WHILE THE GRINDER UNIT IS IN OPERATION MAY RESULT IN SEVERE INJURY OR DEATH!

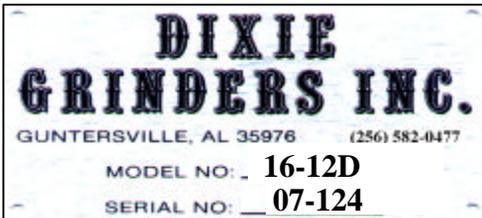
THE HOPPER GUARD IS PROVIDED TO RESTRICT ACCESS TO THE ROTATING FEEDSCREW!

THE PLATE GUARD IS PROVIDED TO RESTRICT ACCESS TO THE PLATE, THE KNIFEHOLDER, AND THE FRONT END OF THE FEEDSCREW!

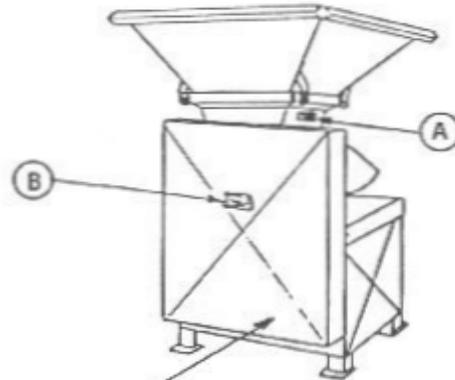


REPLACE SAFETY TAGS WHEN NECESSARY! CALL DIXIE GRINDERS INC. FOR REPLACEMENT SAFETY TAGS.

TAG D 1 EA. (ON GEARBOX)



TAG C 2 EA. (ON FRONT OF HOPPER AND FRONT OF FRAME)



THE BELT GUARD IS PROVIDED TO RESTRICT ACCESS TO THE V BELTS AND THE ROTATING PULLEYS!



TAG A 2 EA. (ON SIDES OF HOPPER)

KNOW YOUR MACHINE

READ OPERATING & SERVICE INSTRUCTIONS BEFORE INSTALLING PARTS OR SERVICING MACHINE IN ANY MANNER, BE SURE THAT MACHINE IS STOPPED AND ALL POWER IS OFF AND LOCKED OUT. THIS INCLUDES ELECTRICAL, HYDRAULIC, AIR, STEAM, ETC. FAILURE TO FOLLOW THIS RULE, OR TO PRACTICE SAFE OPERATING PROCEDURES CAN RESULT IN SEVERE PHYSICAL INJURY.

TAG B 2 EA. (ON BELT GUARD AND ON HOPPER FRONT)

"THE GRINDER HAS ARRIVED"

LIFT EQUIPMENT REQUIRED:

We recommend using a 10,000 pound or greater capacity fork lift with 60" or longer forks. Do not attempt to unload the grinder unit from a commercial van from ground level! Only authorized and properly trained equipment movers should attempt to unload the grinder unit. Remember to Work Safely!

PRE-UNLOADING INSPECTION:

Before the grinder unit is unloaded, inspect the unit for any damage before unloading. If the machine is damaged consult your management, the trucking company, and Dixie Grinders Inc. **before unloading the machine!**

UNLOADING GRINDER UNIT:

With the commercial van properly chocked and secured to the loading dock, and using only approved and adequate dock plates should any attempt be made to unload this machine. Lift only under the grinder frame, never attempt to pick up a grinder from the hopper or gearbox. The forks should be long enough to extend beyond the end of the frame a safe distance. Unload the grinder unit and all parts that have been shipped with the grinder unit. Consult the packing slip to insure that all pieces have been unloaded.

UNPACKING:

When the grinder has been properly unloaded it should be placed in a suitable location for unpacking. The belt guard protector and the shipping skids may be removed. Remove any spare parts that may have been shipped in the grinder hopper. Use appropriate equipment and appropriate personal safety equipment in this process. Remember to Work Safely!

SITE CONSIDERATIONS:

It is important that the permanent position of the grinder unit provides clearance of several feet behind, to either side, and approximately eight feet or more in front of the grinder unit.

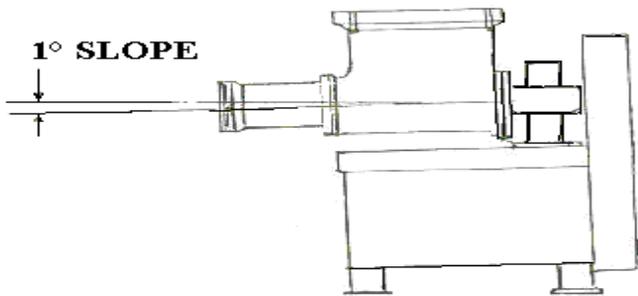
If the grinder is set on a stand, or leg extensions are attached, an adequate platform must be provided to provide safe access to the grinder unit. It will be necessary to have an approved platform or device to provide access so the unit can be properly sanitized, disassembled, assembled, and maintained. Consideration must be given to allow for complete service to the grinder unit.

Platforms should be so designed not to make the hopper guard, or other guarding, ineffective. The hopper guard is not a hopper for holding a large amount of material, it is designed to keep the operator away from the feedscrew. If the location of this grinder unit compromises this feature, special guarding may be necessary. Consult your Safety Engineer, Plant Engineer, and O.S.H.A. for all regulations related to the guarding of this machine.

Only the feedscrew puller and ring lift can be attached to the grinder unit directly. Do not use the grinder frame to support other equipment without prior approval from Dixie Grinders Inc. The grinder frame is not to be used as a personal stand, and under no circumstances should anyone be allowed to climb on it or use it as a platform. Remember to Work Safely!

INSTALLATION:

The machine can be installed in its permanent position after the skidding has been removed. Use only adequate equipment and properly trained personnel to install the grinder in its permanent position. Use great care in moving this equipment, it is heavy and must not be tipped, tilted, jarred or jammed into position. We recommend a 1° slope to allow water to drain from the grinder unit.



UNIT CONTROLS.



Dixie Grinders Inc. does not supply motor controls, starters, stop/start stations, disconnects, or other related equipment that is required to control the function of the grinder unit.

We recommend serious consideration is given to the location of the start/stop station.

We strongly recommend that additional stop stations are located where deemed appropriate.

Disconnects that can be locked out should be so located that employees that have to operate, service, and sanitize the unit can lock the unit out. Each employee that has to work on this machine should be given a lock and key and trained in proper procedures for LOCK OUT/TAG OUT!

Please consult with your Safety Engineer, your Electrical Engineer, and O.S.H.A. for all regulations related to the controls and wiring for this machine.

We do not recommend the use of wye-delta or star delta starters. In some areas this is required. If your machine must be wired this way the operators must understand that they cannot begin to grind product until full power is supplied to the grinder feedscrew. If there is product in the grinder hopper before the unit is turned on, the grinder may not have enough torque to start grinding in the reduced torque condition.

Frequency controllers are very useful, but with the exception of a grinder connected directly to a pump unit or mechanical deboner, the use of a frequency controller on a grinder unit is usually not necessary. We do recommend a frequency controller or some form of speed control is used to feed the grinder, and often to take the product away from the grinder.

We do not recommend remote operation of any grinder unit unless special precautions are taken, and that all possibilities of employee injury are eliminated.

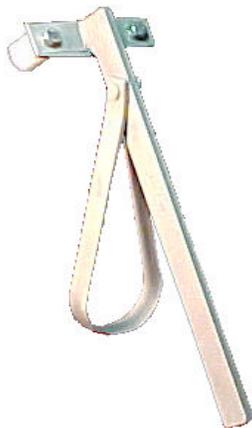
DISASSEMBLY TOOLS:

If the grinder is not located on floor level make no attempt to disassemble the grinder unit without an adequate platform or provisions provided by the installation contractor, plant engineer, or plant safety officer. The grinder has many parts that have square edges and cutting edges. Adequate safety equipment should be used at all times!

After the grinder has been installed in its permanent position, it can be disassembled.

Plate Lifter

This is used to remove the plate and bushing from the grinder unit, or on assembly to install the plate and bushing into the grinder unit.



GRINDER UNIT DISASSEMBLY:

POWER LOCKED OUT!

When the grinder unit has been properly secured, disassembly can begin.

Step 1. Use the Ratchet Assembly to remove the ring. The Ratchet Assembly is shown in the locked position for grinder operation. To use the Ratchet Assembly, with the Power Locked out, support the handle with one hand, and slide the lock toward the grinder hopper. This will release the ratchet dog. Using the Ratchet lever and ratchet dog to push the ring counter-clockwise to loosen the grinder ring. When the ring can be turned by hand, return the ratchet lever and dog to the locked position.

Step 2. When the ring has been loosened turn it off by hand. Depending on the ring type, the ring may weigh 100 lbs. or more. If this is more than you can lift, get help! Use the ring remover if your machine has been equipped with one. Do not attempt to remove the ring if you are out of position, or if the ring is higher than the center of your chest, or if you cannot lift this much on your own! Do not bang the ring threads against the centering pin!



Step 3. PLATE REMOVAL:

Using the plate lifter, remove the plate and bushing from the grinder unit. It is necessary to lift while pulling on the bushing. Do not use screwdrivers or other tools to pry the plate from the grinder unit.



POWER LOCKED OUT!

Step 4. KNIFEHOLDER REMOVAL:

Remove the knifeholder from the face of the grinder. The knife inserts are sharp, so wear appropriate gloves.

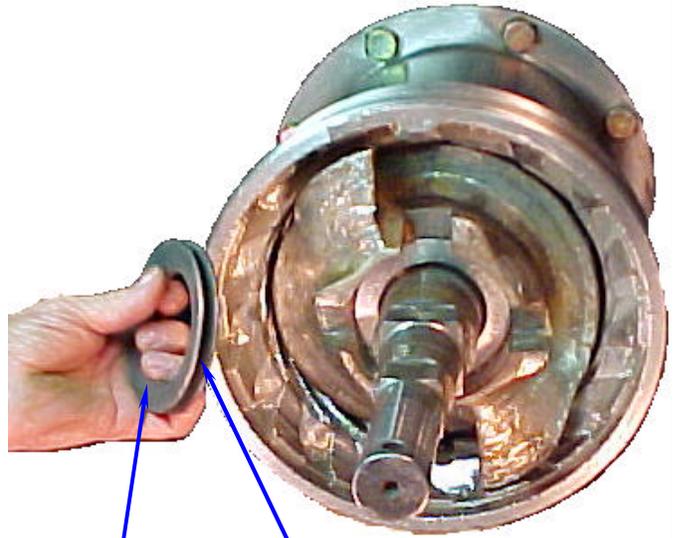


POWER LOCKED OUT!

Step 5. REMOVE SPRINGS: Remove the Belleville springs, 2 each. Some pins have a spacer collar behind the Belleville springs, if this collar is used, remove it also.



POWER LOCKED OUT!

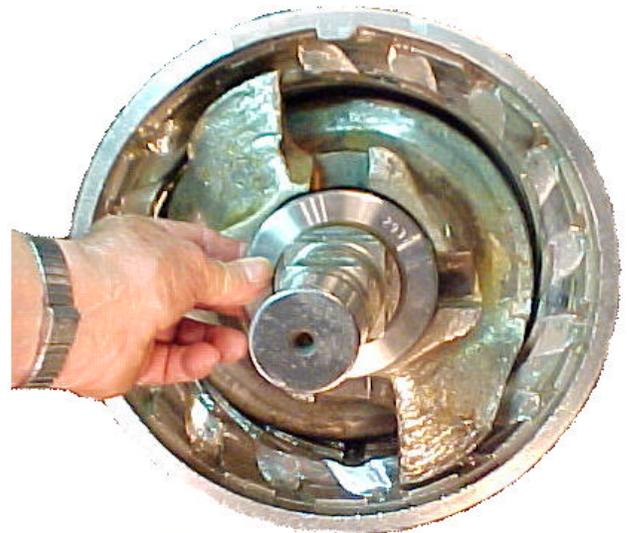


OUTWARD
FACING
SPRING

INWARD
FACING
SPRING

Step 5 continued. The hand is removing the #2938 springs, notice that these also have one spring facing inward and one facing out.

POWER LOCKED OUT!



Step 6. Remove the #2937 spacer collar.

POWER LOCKED OUT!



Step 7.
REMOVE THE
CENTERING PIN

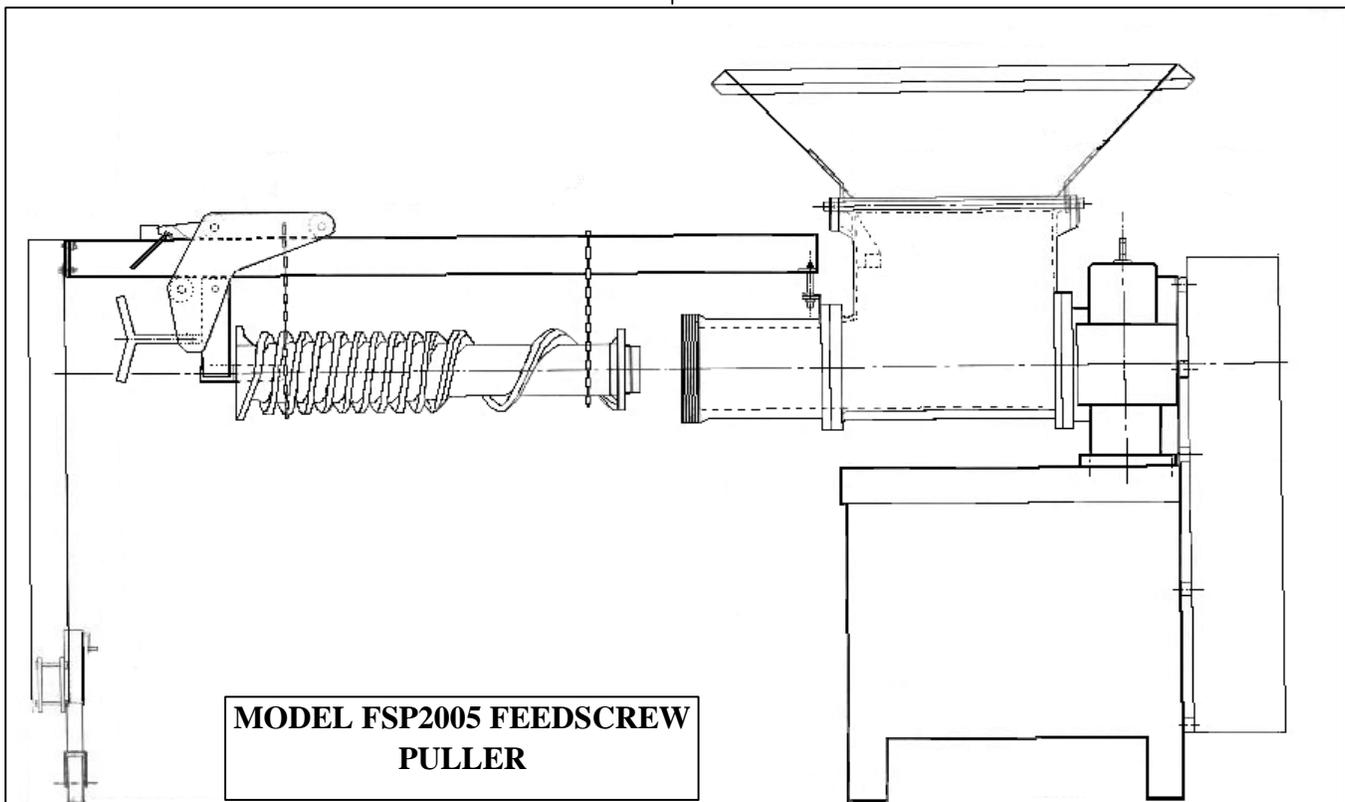


**It may be necessary to hold the feedscrew in
while pulling the pin out.**

**Wash out the pin hole after removing the pin in
preparation of using the FSP2005 Feedscrew
Puller.**



**Do not loose the pin key when you
are removing the pin!**

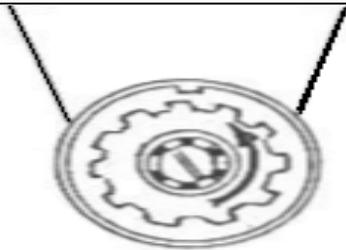


With the feedscrew removed from the grinder unit, it can now be wired. Dixie Grinders Inc. does not supply motor controls, disconnects, or stop/start stations. Please consult your Electrical Engineer, your Safety Engineer, OSHA, and other Federal, State, and local regulations.



KNOW YOUR MACHINE

READ OPERATING & SERVICE INSTRUCTIONS BEFORE INSTALLING PARTS OR SERVICING MACHINE IN ANY MANNER, BE SURE THAT MACHINE IS STOPPED AND ALL POWER IS OFF AND LOCKED OUT. THIS INCLUDES ELECTRICAL, HYDRAULIC, AIR, STEAM, ETC. FAILURE TO FOLLOW THIS RULE, OR TO PRACTICE SAFE OPERATING PROCEDURES CAN RESULT IN SEVERE PHYSICAL INJURY.



ROTATION: When the grinder unit has been disassembled, and then wired according to all applicable codes and regulations, rotation can be checked. **Do not turn the unit on until you are positive that no one is in harms way!** The grinder feedscrew should turn counterclockwise! After the rotation has been checked **LOCK OUT THE POWER!**



KNOW YOUR MACHINE
READ OPERATING & SERVICE INSTRUCTIONS BEFORE INSTALLING PARTS OR SERVICING MACHINE IN ANY MANNER. BE SURE THAT MACHINE IS STOPPED AND ALL POWER IS OFF AND LOCKED OUT. THIS INCLUDES ELECTRICAL, HYDRAULIC, AIR, STEAM, ETC. FAILURE TO FOLLOW THIS RULE, OR TO PRACTICE SAFE OPERATING PROCEDURES CAN RESULT IN SEVERE PHYSICAL INJURY.

SANITATION: Appropriate clothing should be worn, and all safety precautions should be taken before cleaning any equipment. Typical grinder units have tin plated feedscrews, heads, rings, and often the grinder hopper is also tin plated. Before you begin to clean your machine, make sure any commercial cleaning agents are approved for cleaning tin plated surfaces. If no mention of tin is on the label but the cleaner is not recommended for aluminum do not use it unless you have contacted the cleaner manufacturer for their recommendations. Do not use high pressure streams of water to clean a grinder unit. It is possible to drive water past the oil seals and damage the gearbox.

Do not allow any cleaning agent to sit on the tin plated surfaces for an extended period of time. Apply the soap, and rinse it off immediately!

After cleaning, rinse the unit with large quantities of hot water. We strongly recommend drying the unit and applying a liberal amount of mineral oil to all tin plated surfaces. If the machine is not going to be used for an extended period, apply a coat of edible grease to all surfaces and wrap the grinder in plastic.

SANITIZERS: Iodine sanitizers. Iodine reacts with tin. If the Iodine is in sufficient strength and has been on the tin plated surfaces long enough it will turn anything that touches the surface deep purple. Other sanitizers also may react with tin plated or stainless steel surfaces. Check label instructions before using. If you notice that the tin plating is coming off of your grinder unit contact Dixie Grinders Inc.

UNIT ASSEMBLY: Please study all of the grinder parts shown on the exploded view before you attempt to assemble the grinder unit. The exploded view is at the rear of the maintenance instructions. (These instructions assume that the grinder unit has not been disassembled any further than the instructions already given.)

MAKE SURE THE POWER IS STILL LOCKED OUT BEFORE ASSEMBLY.

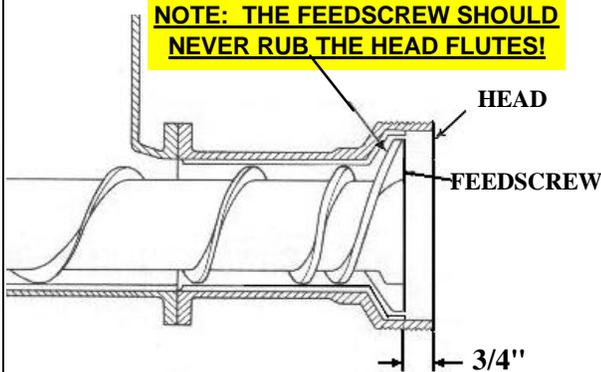
Step 1. INSTALL FEEDSCREW.
Using the Model FSP2005 feedscrew puller, or other device, install the feedscrew into the grinder unit. Do not attempt to install the feedscrew by hand, or by yourself. You will notice that when using the FSP2001 the feedscrew usually engages on the drive spline with little effort.

POWER LOCKED OUT!

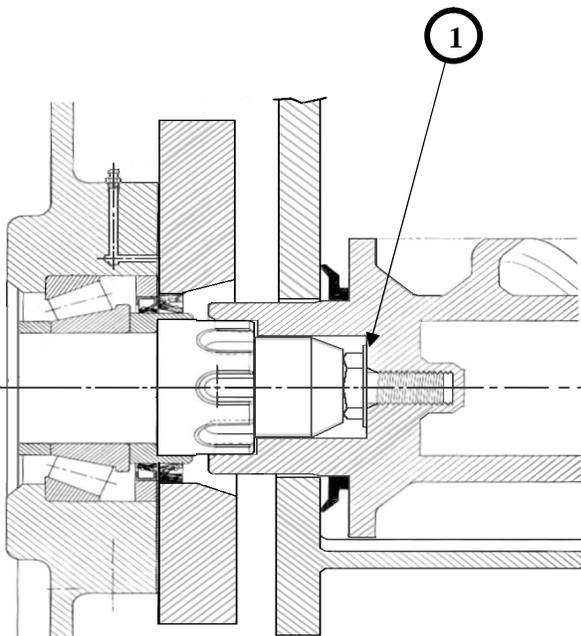
POWER LOCKED OUT!

If the feedscrew does not slide up on the spline, it may be necessary to push down and in, while turning the feedscrew slightly to engage the drive spline. Never reach into the hopper to engage the drive spline. The feedscrew will jump in another inch when it is seated on the spline. Check the head space!

NOTE: THE FEEDSCREW SHOULD NEVER RUB THE HEAD FLUTES!



The head space should be checked on a weekly basis. The head space is 3/4" on all DGI grinder units. This should be done with the excluder seal removed. Spacers should be added if the measurement is more than 3/4". Spacers should be removed if less than 3/4".



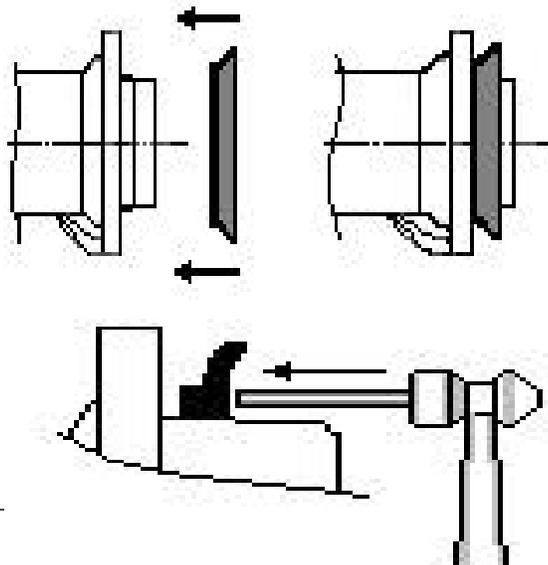
HEAD SPACE ADJUSTMENT.

Item 1 is the Thrust Screw (P# 1039 for 150 HP grinders, P# 0606 for 75 or 100 HP grinders). It is used with 1/8" thick Adjustment Washers (P# 2423 for 150 HP grinders, P# 1614 for 75 or 100 HP grinders) and 1/16" thick Adjustment Washers (P# 2424 for 150 HP grinders, P# 1615 for 75 or 100 HP grinders). Add or subtract washers to obtain the 3/4" head space dimension.

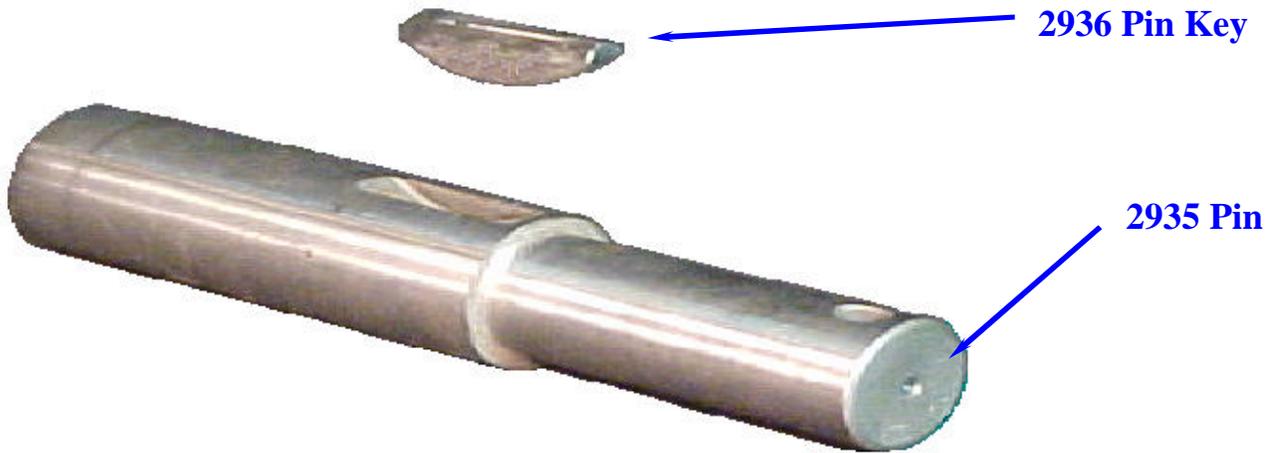
NOTE: This step is necessary when changing feedscrews, heads, hoppers, or if the gearbox has been rebuilt. Failure to set the proper head space may result in serious damage to the unit. If the feedscrew is allowed to rub the head, metal particles may contaminate your finished product!

When the Head Space has been adjusted, remove the feedscrew so that the Unit can be assembled for operation.

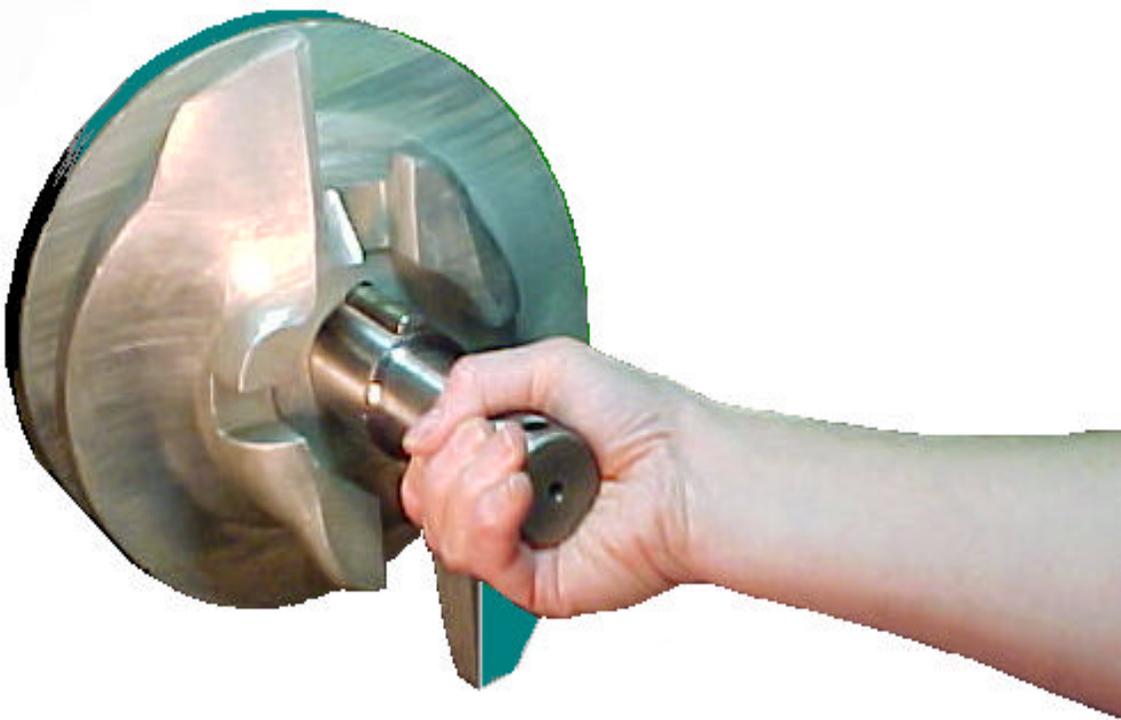
Remember the excluder seal should not be on the feedscrew when adjusting the head space.



Installation of excluder seal. Please note the direction, the lip is suppose to touch the face of the hopper! See drawing above.



Step 2. Install the #2936 Pin Key in the #2935 Pin

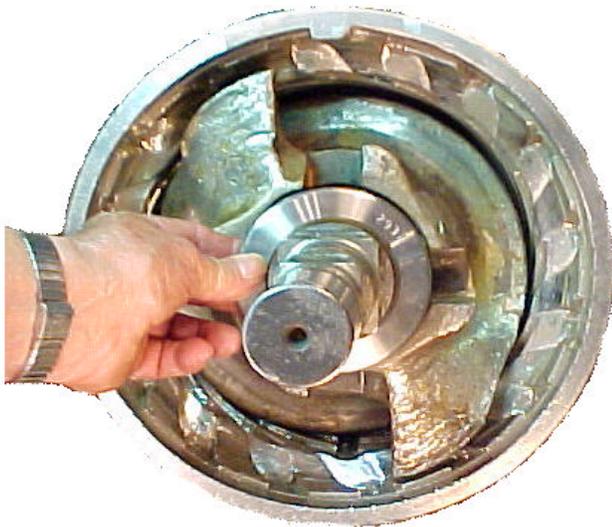


Step 3. Install the #2935 Pin with the #2936 Pin Key installed into the feedscrew. Do not beat the pin into position, reposition the key, and try again. Beating the pin into position will insure that you will never get the pin out! The pin with the key in position should simply slide in and out.

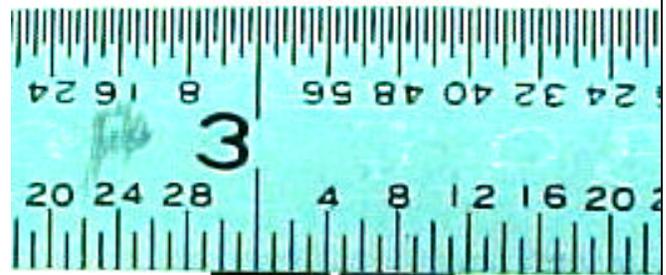
POWER LOCKED OUT!

POWER LOCKED OUT!

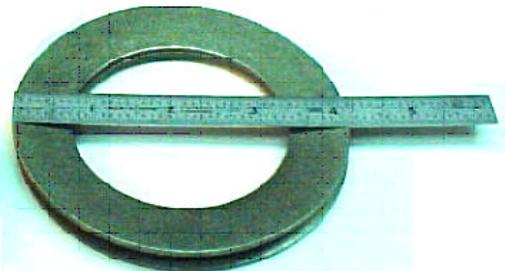
Step 4. Install the #2937 spacer collar over the pin. This part can go in either side up.



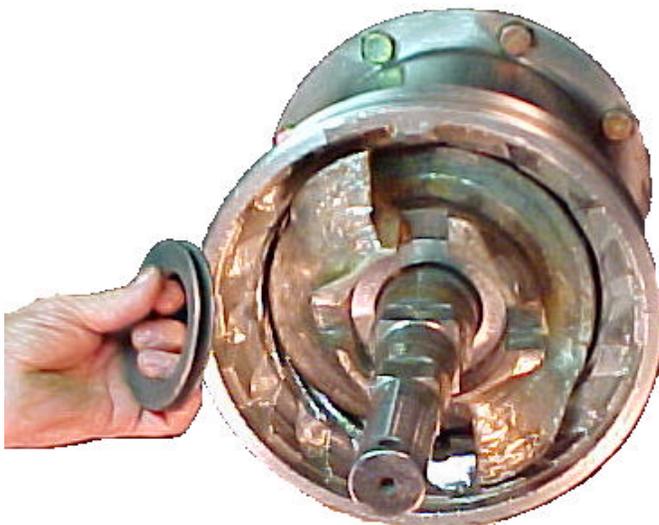
Step 5. Install the #2938 springs. The first spring install facing inward, the second spring facing outward. No exceptions, not just on Thursday, every time.



When these springs are new the uncompressed height of the two springs is over 1/4" as shown above. This is how they are to be installed, touching at the center, a gap at the outside. One spring facing in, one facing out.



#2938 4-1/8" OD x 2-5/8" ID





Step 6. Replace the #1155 inserts in the #2930 knifeholder. Use the insert removal tool #10315 shown above. Do not drive the inserts out from the outside edge, you will shear the pins that locate the knife inserts.



Check the knifeholder for flatness after the inserts are installed, it should not rock. Knifeholders that rock do not work. If there is any clearance, a few thousandths of an inch, it may be at the center of the knifeholder. Clearance at the outside will cause the grinder to fail to function. Ok, I know a 4-bladed knife is shown and you are using a 2-bladed knife, it still has to sit flat.



Insert locating pin.

POWER LOCKED OUT!



Step 7. INSTALL KNIFEHOLDER
Install the Knifeholder into the grinder. Inserts face to the outside. You won't believe how many operators put them in backwards!



**Use a soft mallet, a block of soft wood or soft plastic to tap the inserts in place.
Do not use a steel faced hammer!**

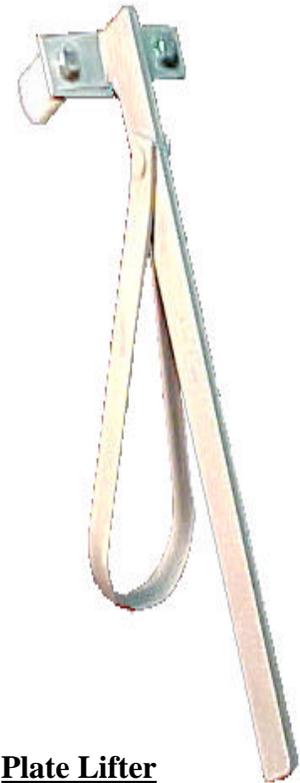
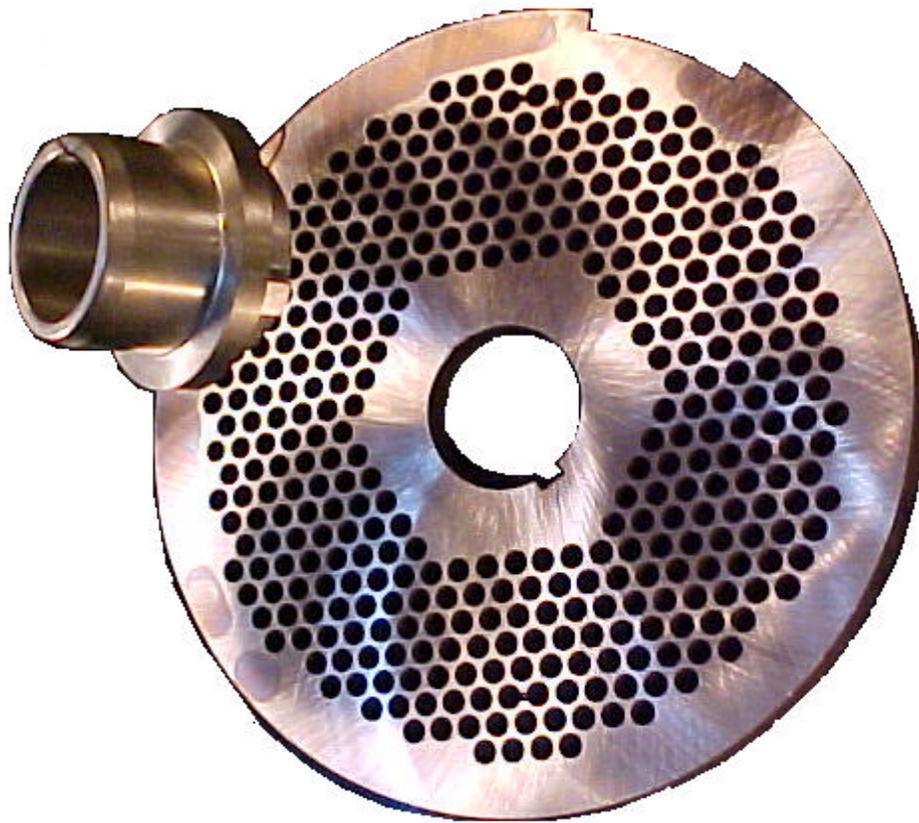


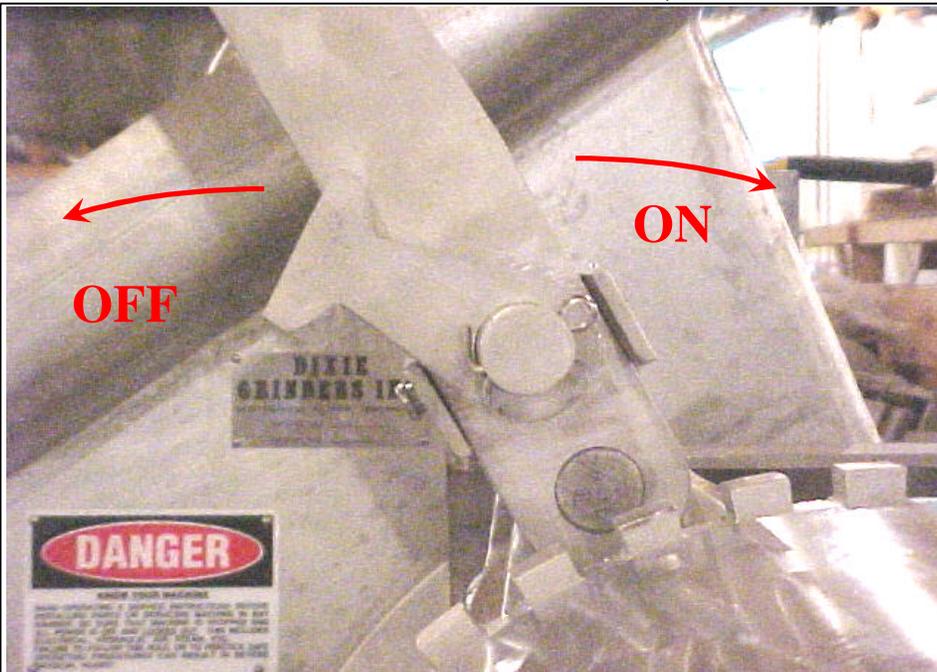
Plate Lifter

Step 8. Install bushing in plate. Lubricate the inside of the bushing with an edible lubricant. If you don't know which one to use, contact your quality control department, management, or maintenance. Failure to do so can cause the bushing to seize to the pin! It is also a good practice to apply a light coating of edible lubricant to the inside surface of the plate (the side that runs against the insert). This helps to keep the plate cool until product arrives at the plate.

Step 9. Install plate and bushing. Place plate-bushing combination over the end of the pin. Slide the plate toward the grinder head. Using the plate lifter, lifting on the bushing, slide the plate and bushing into the machine. Yes the feedscrew is heavy and some effort is required to do this. If the plate and bushing slide into the grinder easily, something is wrong!



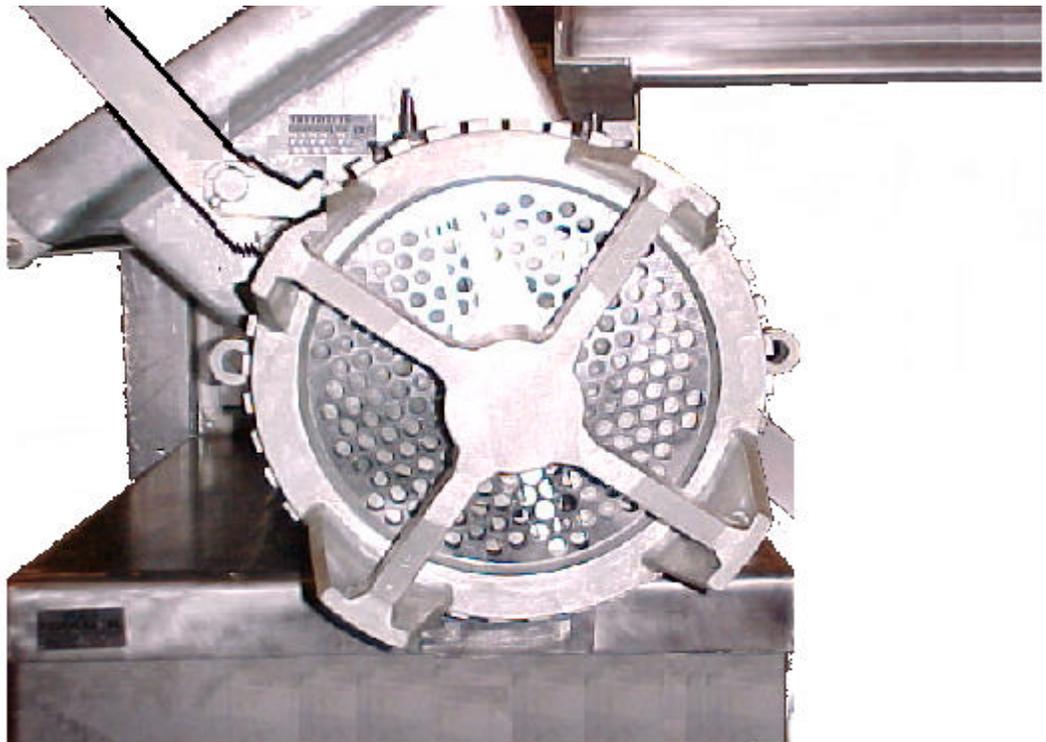
POWER LOCKED OUT!



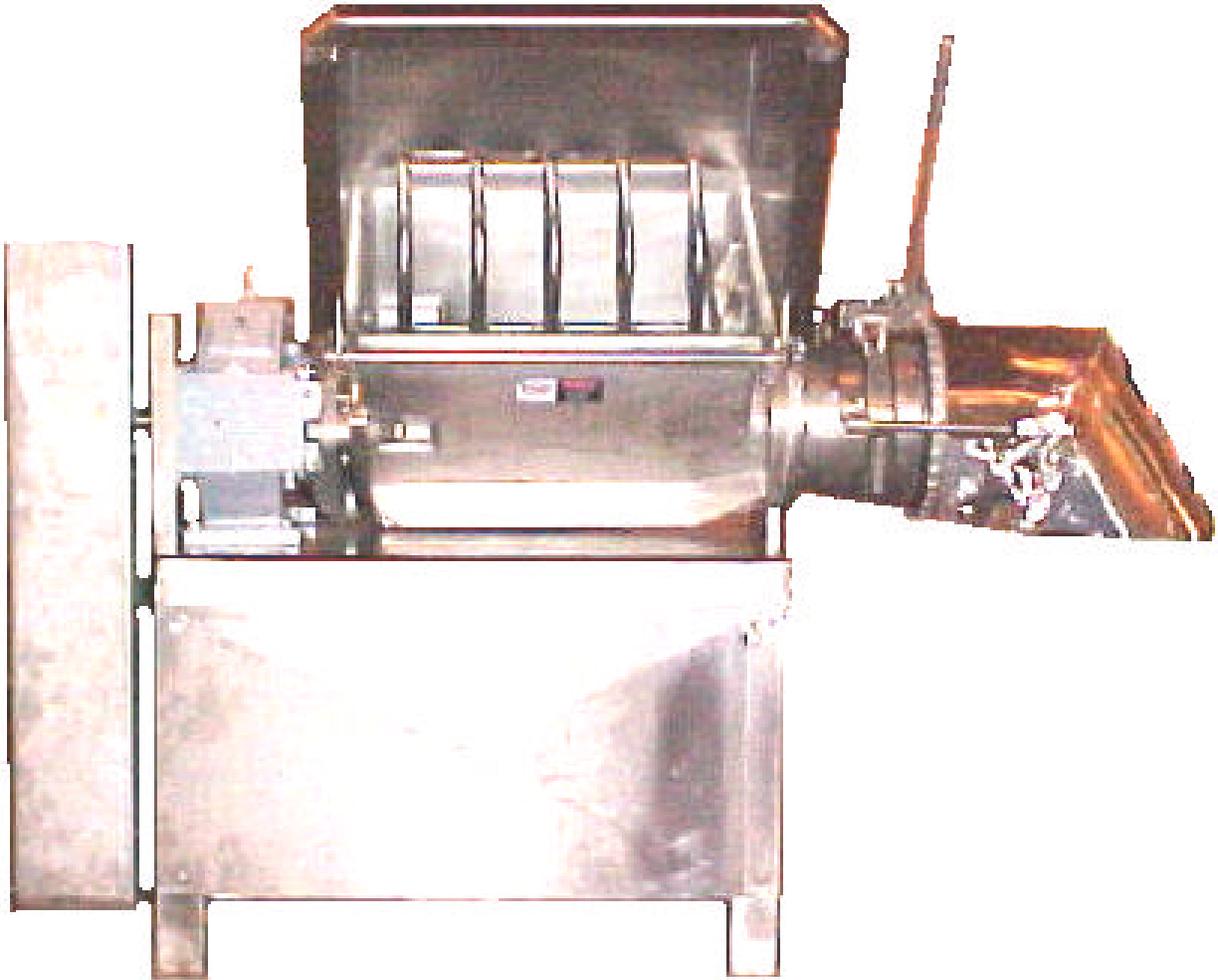
**POWER
LOCKED
OUT!**

Step 10. If you have not already done so, return the ratchet lever pawl and lever to the locked position. This keeps the pawl from getting into your way when putting the ring on.

Step 11. Install Ring. The grinder ring is heavy. Use the RL2000 ring lift if you have one, or get help to install the ring. Once started on the threads, turn clockwise until hand tight.



Using the ratchet assembly, pushing on the lever, tighten the ring until tight, it does not need to be so tight that you are about to tip the machine over, just snug. When snug, flip the ratchet pawl over, and loosen the ring 1/8" turn. Return ratchet lever and pawl to the lock position.



Step 12. INSTALL THE PLATE GUARD. After the ring has been tightened, install the plate guard. Slide the guard rods into the clamp that is mounted to the machine. Tighten the wing nuts.

Check and make sure the hopper guard, block guide, and hopper guard are all in position. If all guards are in position the machine is ready for production. Keep the power locked out until you are ready for this machine to operate. The power should be turned off and locked out whenever the machine is not in use for an period of time, or any procedures that actually involve touching the machine. There are no adjustments or any activities that need to be done to the machine while the power is on.



Danger! Keep Away! This means that for no reason, never ever, in any way, put your hands on or in this machine while it is being operated. This machine is designed to grind hard frozen blocks of meat. This machine cannot tell the difference between you and a block of meat, so stay the heck away from it! If a block is bouncing in the hopper for some reason, turn it off, then **LOCK IT OUT!** Then, using a long hook, pull the block out of the hopper. Report the grinder's condition to your supervisor immediately. This machine is designed to operate without any help, we don't want you to be pushing on the blocks, stepping on them, or doing anything to help the blocks thru the hopper. Keep your hands away from this machine, do not reach into the opening of the hopper guard for any reason, do not reach under the plate guard for any reason. If you touch the machine while the power is on, severe physical injury is possible. Think of your family, think of yourself, but above all, **THINK!**



KNOW YOUR MACHINE

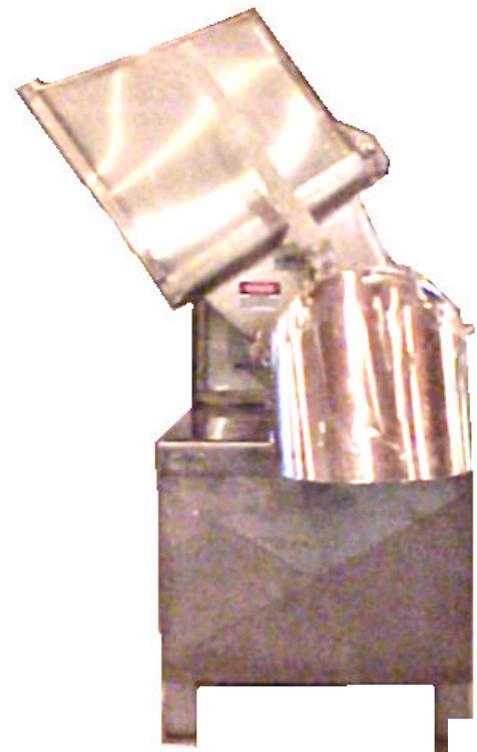
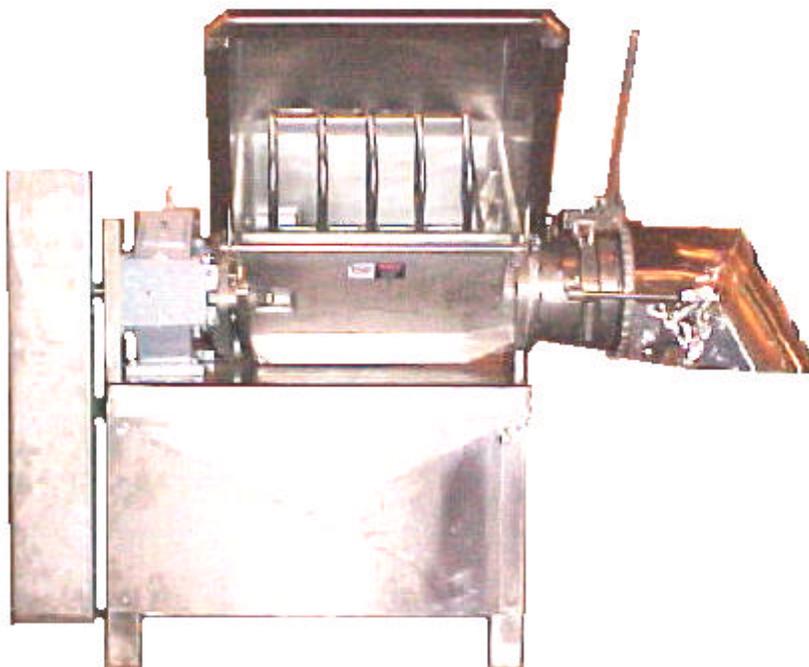
READ OPERATING & SERVICE INSTRUCTIONS BEFORE INSTALLING PARTS OR SERVICING MACHINE IN ANY MANNER, BE SURE THAT MACHINE IS STOPPED AND ALL POWER IS OFF AND LOCKED OUT. THIS INCLUDES ELECTRICAL, HYDRAULIC, AIR, STEAM, ETC. FAILURE TO FOLLOW THIS RULE, OR TO PRACTICE SAFE OPERATING PROCEDURES CAN RESULT IN SEVERE PHYSICAL INJURY.

Operating Instructions. When blocks of meat are ready to be ground, stripped of their packaging, and a suitable container or conveyor is in position and running, making sure no person or persons are near the machine, it is then safe to turn the grinder on. Immediately begin feeding the frozen blocks of material into the grinder. The grinder prefers to have the blocks fed into it with the narrow side in and the flatter the side down. Feed the blocks one at a time, the 75HP machine should grind three 60 pound blocks per minute, the 100 HP machine should grind four 60 pound blocks per minute, and the 100 HP machine should grind five 60 pound blocks per minute. The blocks should always be 6" thick or less, never wider or longer than the smallest dimension of the hopper. When the last block has been ground, wait until the block has exited from the machine before you turn it off. Stopping the machine while full of product makes restart almost impossible. If for some reason the machine has to be turned off while full of meat, it is necessary to apply hot water to the outside of the machine for a long time to thaw the meat before restart should be considered. Damage to the drive components, including the motor, gearbox, belts, and motor starter may occur if starting under load.

When the last block of meat has exited the machine, turn it off. Grinders do not like to be shut off full and they also don't like to run empty. Empty running will damage the inserts and the surface of the plate, it can also cause the pin and bushing to weld together.

Grinders do not like to grind tramp metal, wood, cardboard, meat hooks, shovels, forks, and so on. If you see a non meat item fall in the hopper, shut it off, but do not grab for it, we don't care how fast you are!

Never turn the grinder on to push the plate out of the head! You will damage the machine and it is extremely dangerous.



**MAINTENANCE INSTRUCTIONS:
GRINDER RING.**

The grinder ring needs little maintenance other than thread inspection. The center support should contact the slip in bushing at the same time that it contacts the plate. If there is any clearance between the plate bushing and the center support after the ring has been tightened first inspect the plate for flatness, see page 15. If the plates are flat, or within .002 per side of being flat, send the ring in for rebuilding. If foreign material causes a plate to break, inspect the ring before use. The center support sets back .500 \pm .000/-.002

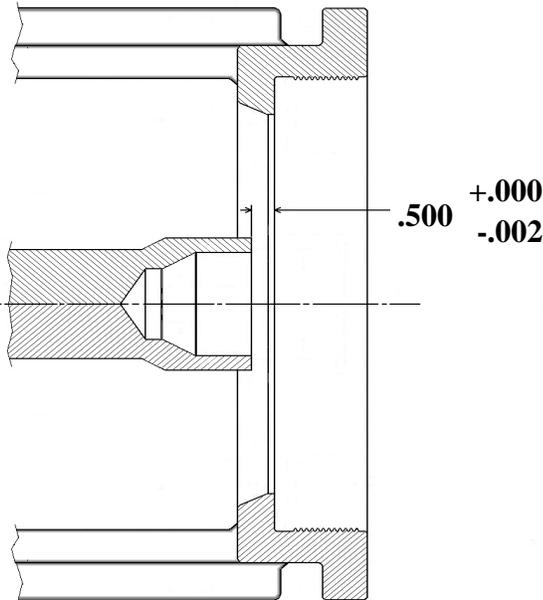
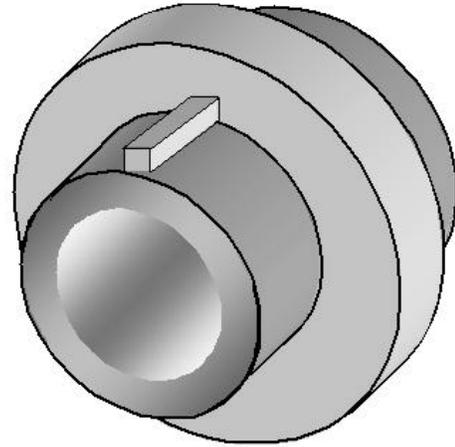


PLATE BUSHING.

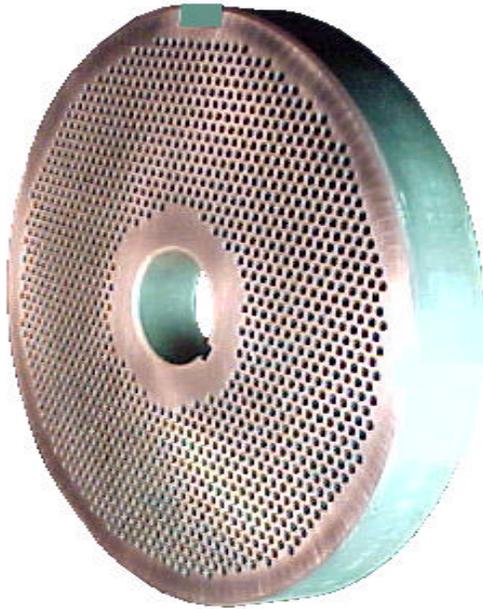
The plate bushing supports the weight and the side load of the feedscrew. Being a plain bearing it relies on the product for lubrication and cooling. The bushing is mild steel and carburized. The hardness is only .040 deep, and some of this is used during the honing after the bushing has been hardened. Therefore we recommend to discard the bushing when it measures 2.665 ID. Typical wear is very even. Checking or grooves indicate that the machine is run empty often. Normal life is about one month.

Failure to change the pin and bushing shortens the life of the feedscrew and the head. When the pin and bushing become worn they allow the feedscrew to contact the head. This results in rapid wear to the feedscrew and head, and can even lead to metal in the finished product.



GRINDER PLATES.

The orifice plate is probably the most important single part of a meat grinder. Dixie Grinders Inc. sells only "PREMIUM" type tool steel plates. Extensive testing has shown time and time again that our selection of tool steel performs the best over the entire range of products ground. Our special heat treatment process, which includes a soak at -300°F for two hours, gives our plates the toughness that we have found is required. Other steels may stay sharper, but when it breaks into ten pieces its sharpness is no longer an advantage.



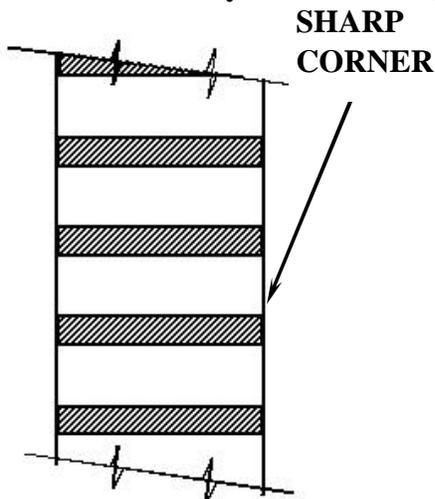
Plates continued. (This inspection is performed with the plate out of the machine.)

Sharp plates may cut you, be careful!

Inspect the plate before each use. Inspect the edge of the holes, they should form sharp corners. The plate should be clean.

Check for discolored plates, do not use a plate with a deep blue coloring between the holes. Check for cracks, especially between the holes. If cracks are present, do not use the plate. Check for grooves, broken holes, and any other defect. Do not use defective orifice plates. The plate must be 3/4" thick or thicker.

We recommend that a fresh plate surface should be used every 8 hours of operation. Operations that run empty or with hard to grind materials may have to change plate



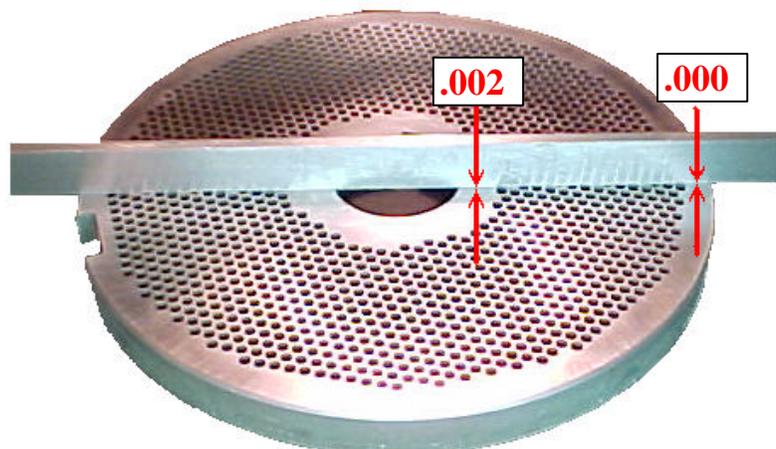
Grinder Plates should be sharpened with a vertical type surface grinder, typically called a "Blanchard Type". With this type of surface grinder the plate should be placed directly over the center of the table. We do not recommend sharpening the plates when they are placed out on the table, not directly over the center of the table.

If you have a Pieco or Van Norman surface grinder we recommend using our grinding wheels to sharpen the plate. These specialized grinding wheels produce the correct surface finish to provide clean, cool, cutting. Plates that are not sharpened correctly will not grind even the softest of meats. The plates must be flooded with coolant when they are ground. The horsepower rating of your surface grinder will determine feed rate. The plate should be sharpened enough to restore the edge of the hole, and remove any discoloration from running empty (see Maintenance Instructions, Grinder Plates). Nicks and gouges should be ground out.

The plates should be ground perfectly flat, or slightly concave, .002 per side max.

We offer a factory modified Van Norman surface grinder to our customers. This machine sharpens the plates quickly and properly.

Improperly sharpend plates is the most common grinder problem.

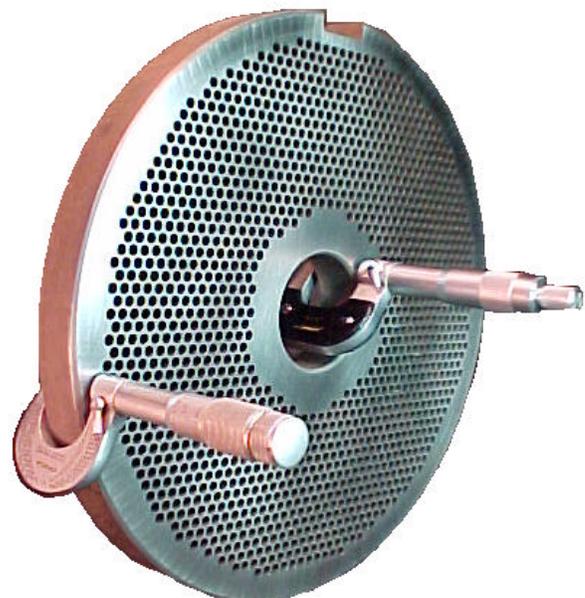


If your plates are turning blue, the operators are running the grinder empty. The blue color indicates temperatures up to 600°! This is above the draw temperature of this steel, and unless the heat affected zone is removed this plate will crack. Under careful examination you may be able to determine how deep the discoloration is by looking down the holes. We recommend removing this layer, plus .030! Plates with cracking between the holes can be attributed to this condition 99% of the time.

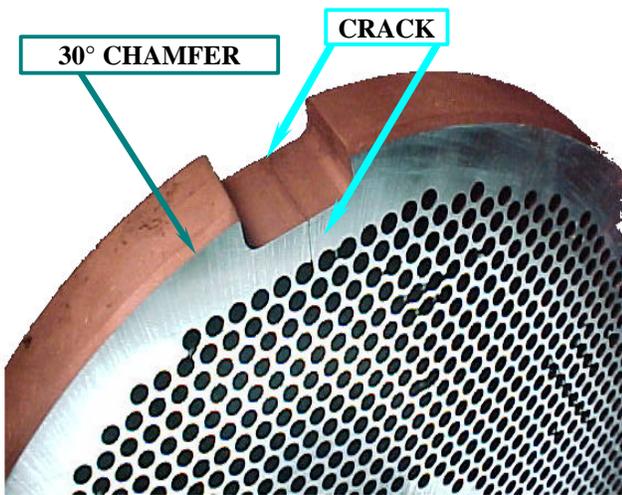
The most important feature, however, is sharpness. Most people think that a grinder plate should shine like a mirror, the fact is that a certain amount of roughness is required. The roughness of the plate is what keeps the the inserts sharp. We supply a specially manufactured grinding wheel that is 36 grit, rather than the 60 or 80 that other companies sell. The grains themselves should be soft and what is called friable, that is when dull, it should leave the wheel. If you buy a good knife, you sharpen it with a very soft stone. These plates are harder and tougher than a knife blade, therefore it only makes sense to sharpen it with a soft stone. Dress the wheel before sharpening each plate. Do not let the wheel spark out, when the plate is sharp, get the wheel off the plate!

A majority of all service calls eventually point to the customers real problem, dull plates. Next to plate sharpness, plate flatness is important. Grinder plates should be ground flat, or slightly concave. Using a precision straight edge and feeler gauges the amount of concave can be determined (see page 15). Plates that are ground convex will not work properly. The knife inserts will not seat at the outer edges of the plate, and the product will not be cut cleanly.

The plates also must be uniform in thickness. If the bearings in the table of your surface grinder are worn, it is possible that the plates will not be uniform. Using a micrometer, measure around the outside edge of the plate, there should be less than .0005 variation. Measure around the inside diameter also, this should also show less than .0005 variation. If the measurements are consistently less at the inside diameter than at the outside diameter you also may assume that the plate is concave, and if thicker it may be convex. It is rare that a plate would be convex on one side and concave on the other, but measuring with a ground straight edge and feeler gauges is the best test for flatness.

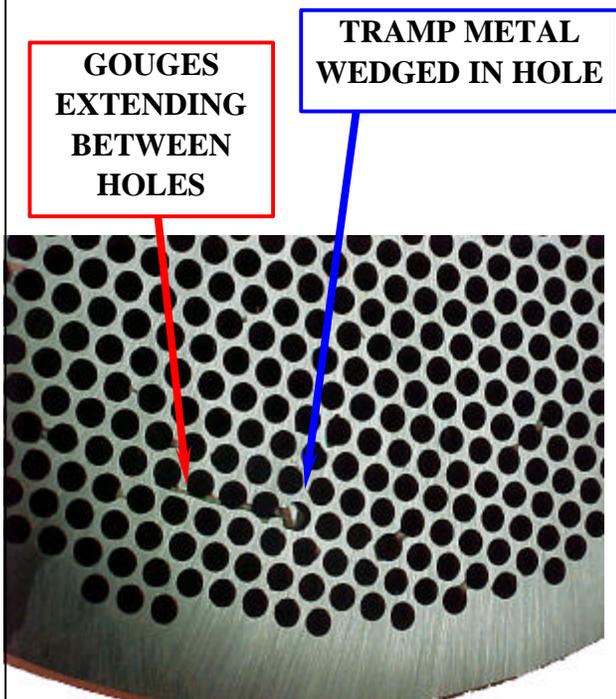


Examine the grinder plate for cracks before each sharpening. If tramp metal has been ground, examine the plate very carefully. A plate that is free of cracks will have a distinctive ring if struck with a small metal rod. Strike the edge of the plate on the 30° chamfer. Do not use a mallet to ring the plate, a gentle tap is sufficient. Plates that are cracked will not ring well, and often you will simply hear a thud.



Notice the tramp metal stuck in one of the holes. The tramp metal must be removed.

Note the gouges that extend from hole to hole. These gouges must be ground out.



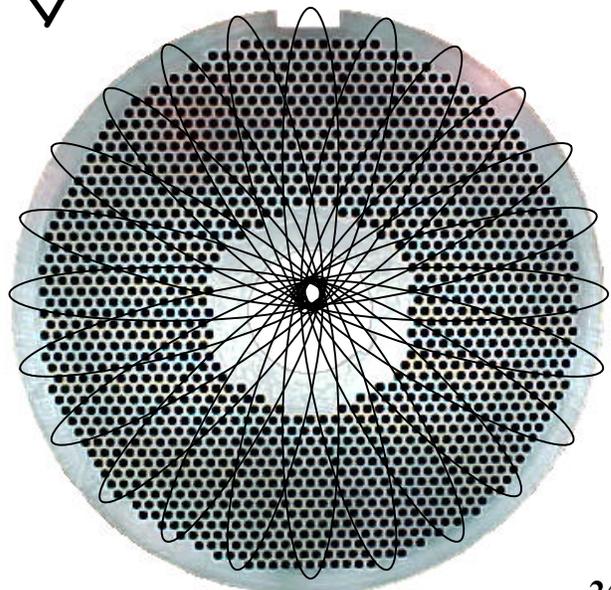
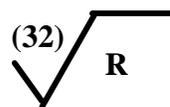
When grinding plates, **do not** place the plate at the outer edge of the surface grinder table.



Rather, place the plate over the center of the surface grinder table, like this!



The sharpened grinder plate should have fine lines extending from the outer edge, through the center of the plate, then back to the outer edge. In drafting terms the symbol would be



CENTERING PIN.

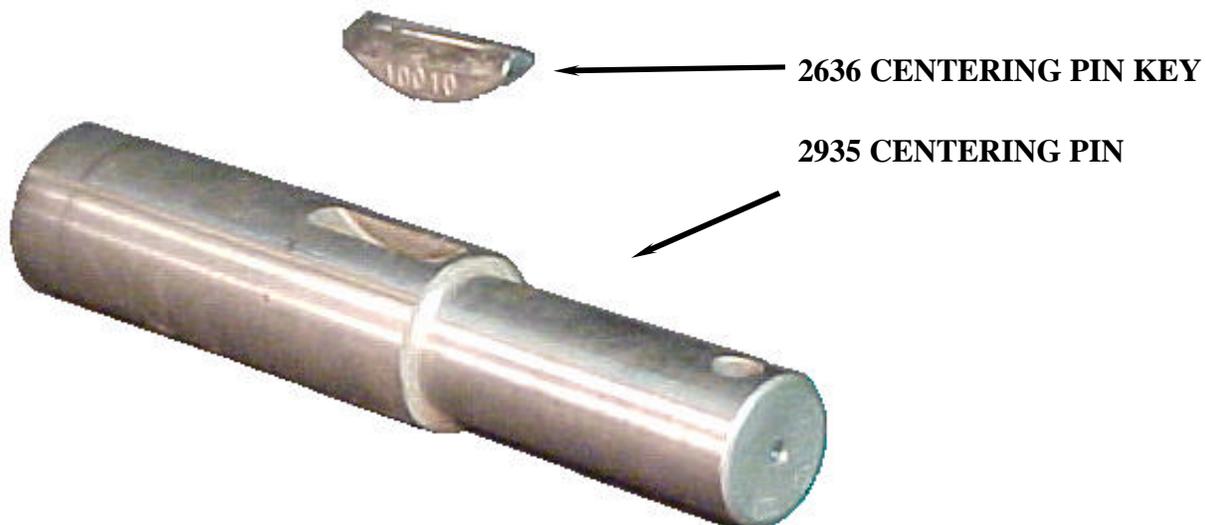
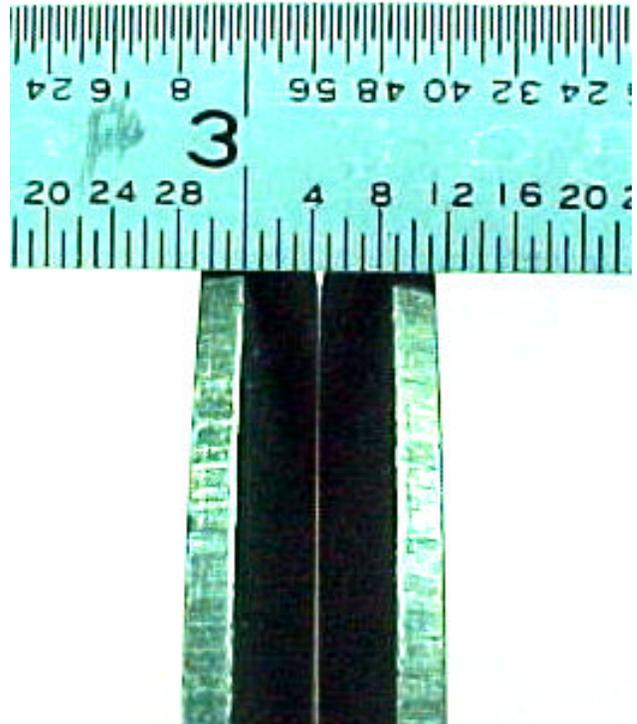
The pin must be removed daily for sanitation. The vent slot should be clean, and free of obstruction. The small diameter that the bushing runs on is the only place that wears. Some discoloration is permissible, but if this area turns blue, it is possible that the machine was run empty for an extended period of time. The damage from empty running cannot be repaired, and the pin should be replaced.

Under normal conditions the pin usually lasts about three months, or three bushings. If some roughness is noticed this can be smoothed out with an external grinder, or very fine sand paper in a lathe. A rough surface on the pin will wear the bushings out at an unexceptable rate.

The pin should be replaced when the diameter has .030 wear, or it measures 2.625.

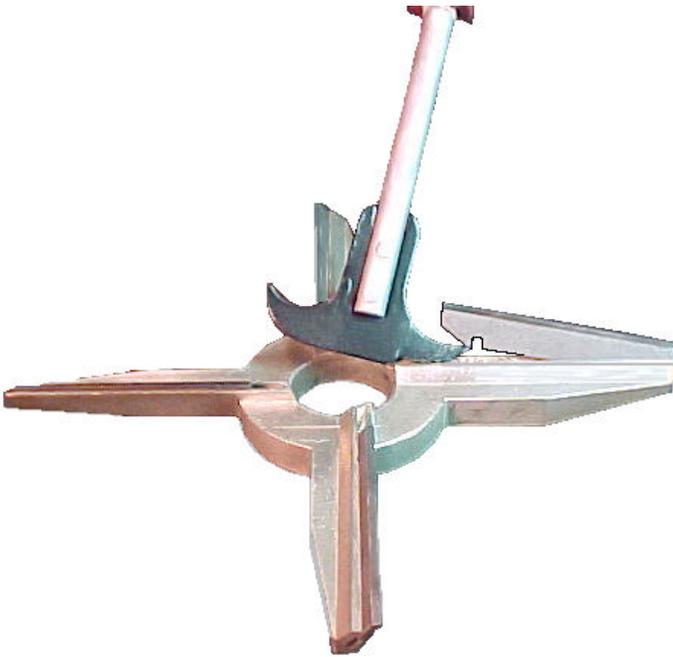
SPRINGS.

The washer springs last a very long time. They are designed to last for about five million cycles, so it is doubtfull they will ever wear out. When placed together as shown, the gap at the outside should measure at least 1/4".

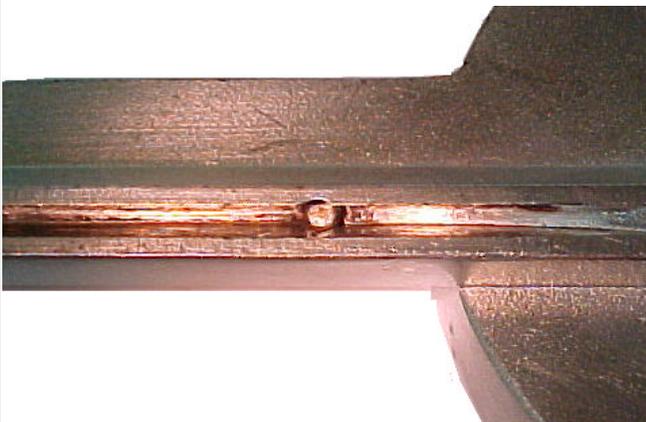


KNIFEHOLDERS.

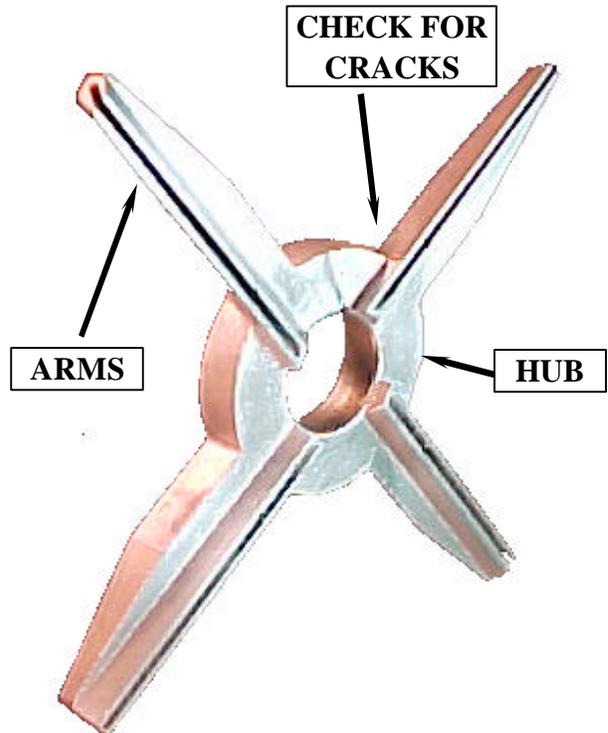
Inserting the pointed end of our insert remover into the slot of the knifeholder provides a quick and easy way to remove the knife inserts. Removing them in this manner minimizes damage to the insert locating pins found in the bottom of the insert slots in the knifeholder. We recommend starting with fresh inserts at every plate change! This includes when turning the plate around.



With the inserts out, inspect the slots. Every knifeholder has a pin that lines up with a notch in the knife insert. If the inserts are removed incorrectly these pins can be broken. Send your knifeholder with broken pins to Dixie Grinders Inc. for repair.



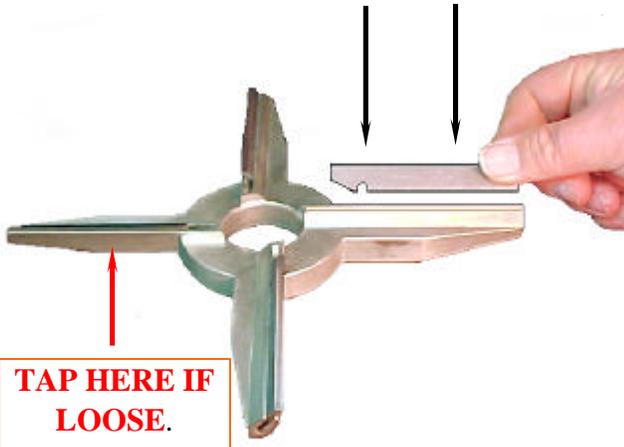
Inspect the knifeholder arms. When small pieces of tramp metal are ground, often the tips of the knifeholder become peened shut. With a small file, or burr grinder, these can be opened up. Larger pieces of metal may bend the arms clockwise at the tips. Inspect the arms where they are connected to the hub of the knife, if there are any signs of cracking, throw the knife away immediately.



Examine the knife inserts. The edge of the insert should be free of burrs, Be careful, the inserts are sharp!



Line the notch of the insert up with the pin in the bottom of the slot of the knifeholder. If necessary tap the insert into position with a soft mallet, a soft rubber hammer, or a piece of pine. The inserts should fit snugly in the slots, but they should not have to be beat in. It may be necessary to open the slots slightly if they are too tight. Use a small flat file, or a cut-off wheel. Tap on the face of the knifeholder if they are too loose.

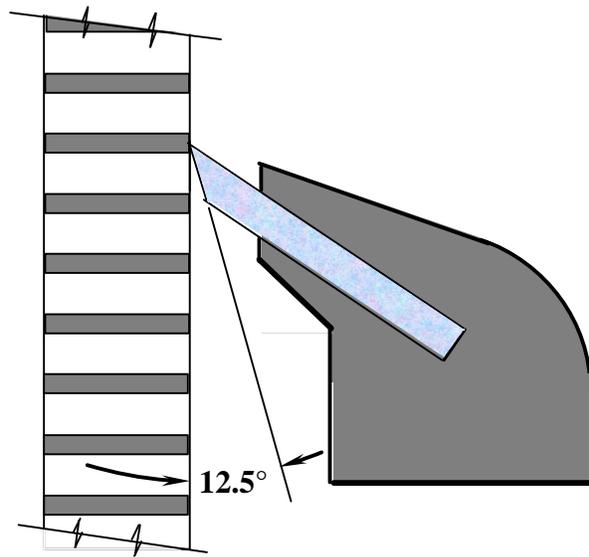


When the inserts have been properly installed turn the knifeholder over and check it for flatness. Use a properly sharpened plate, or other known "true flat" surface. If the knifeholder rocks, check to make sure all the blades have been properly seated. Check the bottom of the slots for obstructions. Make sure that the slot of the insert is lined up with the pin in the bottom of the slot.

A slight rock is permissible, a feeler gauge of .005 should not fit under the knife insert that is not touching the plate.



The combination of the insert slot angle and the angle that the inserts are ground provide that only the leading edge of the knife insert contacts the plate. This slight amount of clearance allows the insert to seat within a few revolutions of the grinder being turned on. The amount of material removed from the leading edge of the insert is not measurable, but it is advised that the first product that comes out of any meat grinder on start up is discarded.



If inserts are not properly installed, excessive clearance will result.

Excessive clearance will keep the grinder unit from functioning properly, and in many cases it will not grind.

We recommend that maintenance, or a responsible person is entrusted with the function of changing inserts and sharpening the grinder plates. The success of your operation depends on it.

If you do not have the equipment to sharpen your plates, or you do not know if they are being sharpened properly, send them to Dixie Grinders Inc. (attention Service Department) and we will examine your plate, sharpen it properly, and return it to you promptly.

HEAD.

The heads have three different types of flutes. The bore flutes, the spin flutes, and the spin lugs.

The bore flutes are the spiral flutes that extends for about 15". The spin flutes are the flutes that are on the tapered section. The spin lugs are the flutes behind the plate.

Compare the picture of the new head to this worn head, the flutes should be sharp, not rounded.



BORE
FLUTES

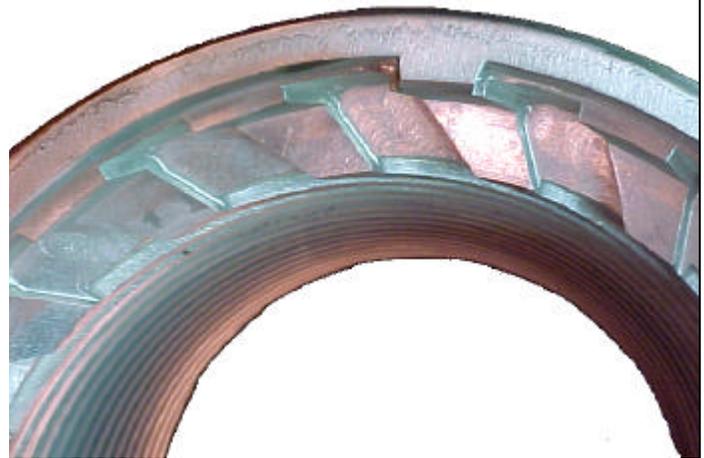
SPIN
FLUTES

SPIN
LUGS

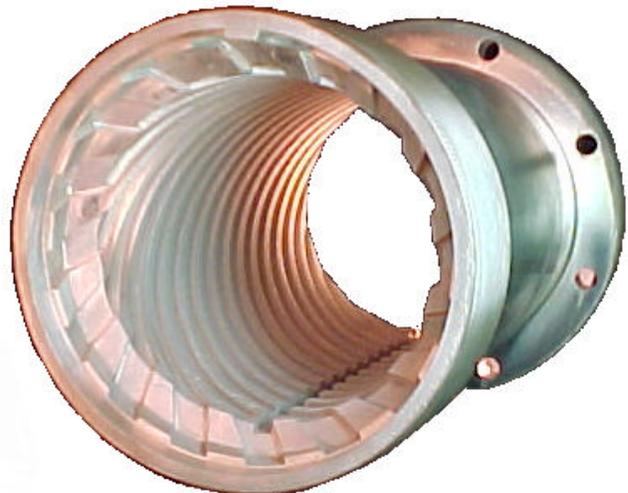
The edges of the flutes should have a square corner. When they become rounded the head should be rebuilt.

Bore flute wear can be measured with our head guage.

When new the bore gauge fits tight. The wear limit depends on your application. For fine hole plates the head should be rebuilt when the clearance over the guage is 1/16" With large hole plates, 1/8" is the limit. Product definition suffers, and there is a loss of production when the wear is more than these amounts.



Notice the sharp corners on a new head.

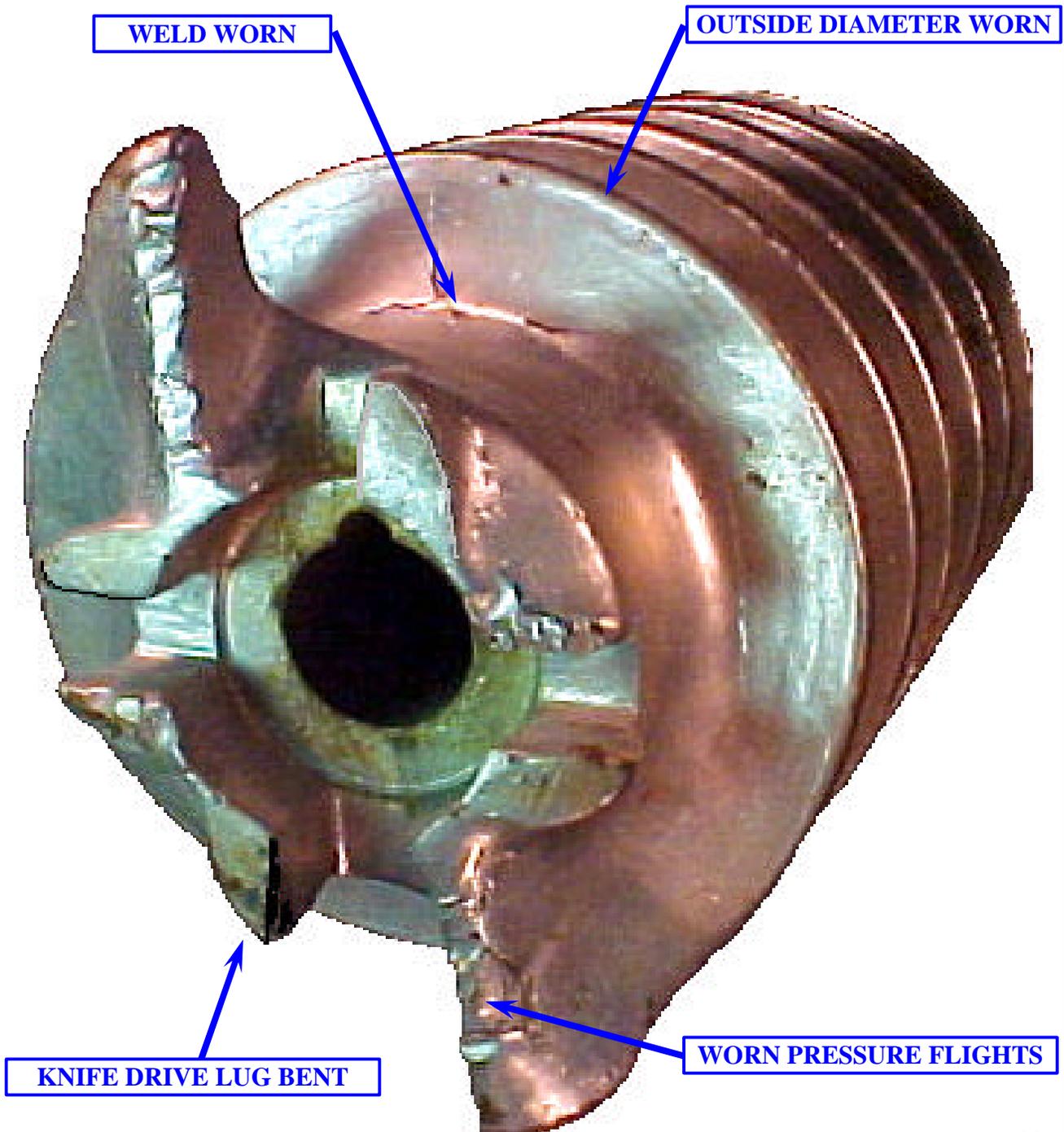


Shown is a new 11-9 spiral fluted head with 16 flutes. Pretty isn't it.

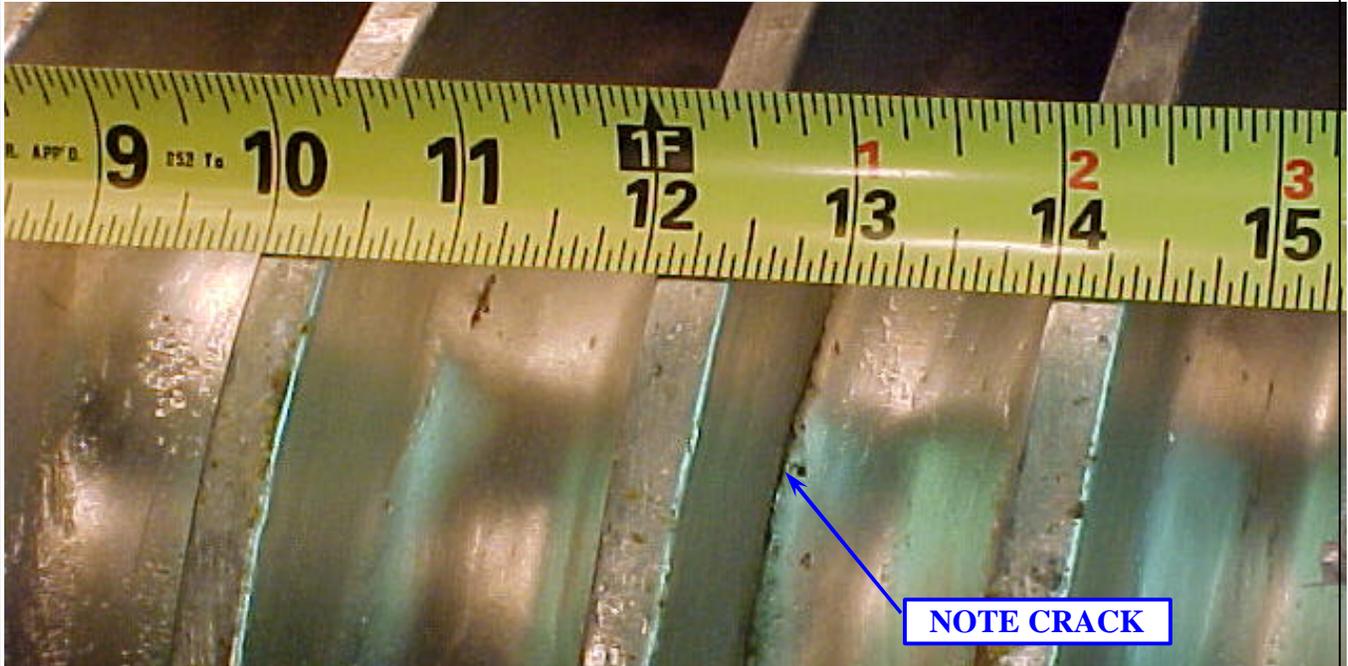
FEEDSCREW.

Foreign metal has obviously damaged this feedscrew. This type of damage makes this feedscrew unfit for use. Other than the tramp metal damage, this feedscrew has sufficient wear to make it unusable.

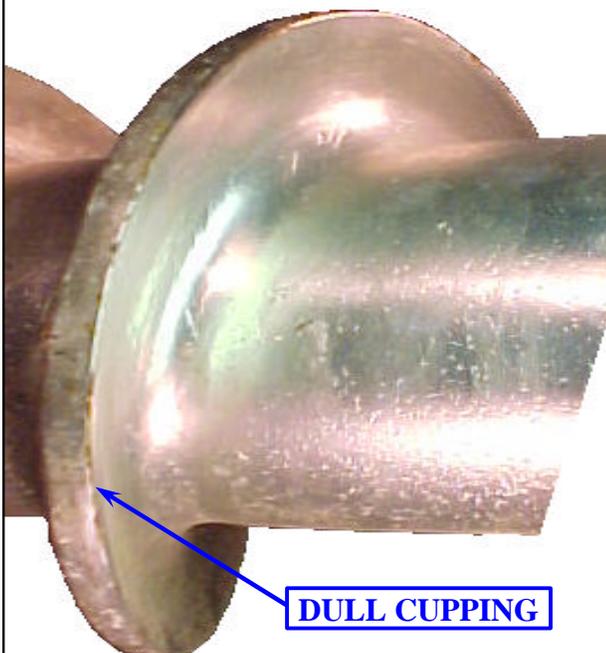
The outside diameter of the pressure flights are rounded. They should have a square edge. The front of the pressure flight should be flat. The outside diameter through the head section is rounded, and undersized. The knife drive lugs are bent (clockwise). This feedscrew is in serious need of rebuilding, and when rebuilt, it will look as good as new.



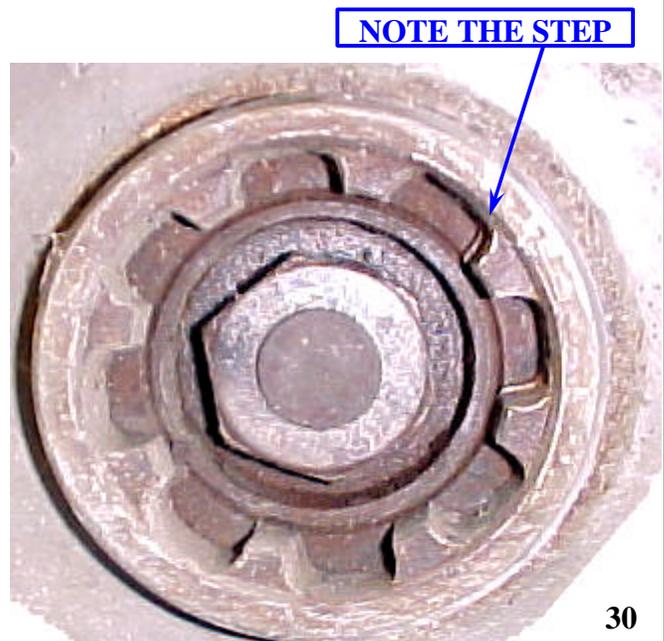
Examine the flights in the head section. Notice how the corners are rounded. The flighting should be replaced when it is worn down to 3/8" thick. Also notice the crack at the root of the shaft. There is so much wear of the weld that holds the flighting to the shaft that it is prone to cracking. A feedscrew with this amount of wear requires all new flighting. When we replace the flighting we machine the old flighting off, right down to the shaft. The flighting is replaced with new 1045 bar.



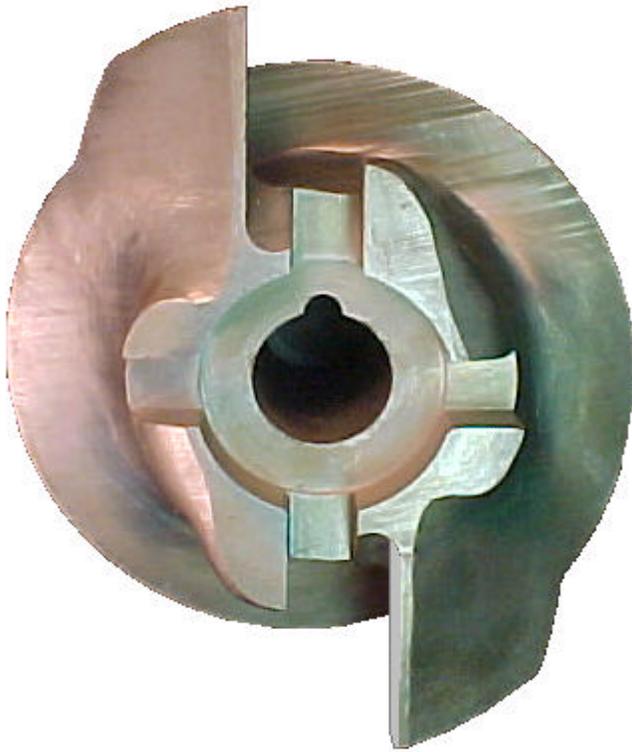
Examine the cupping. The cupping should have a sharp edge, so that it can aggressively capture the product being ground. When the cupping becomes dull the product is prone to rolling in the hopper.



Examine the drive spline. The main shaft does not engage 100% of the drive spline, therefore the amount of wear of the drive spline can be determined by examining the base of the spline. Also note the wear on the adjustment bolt.



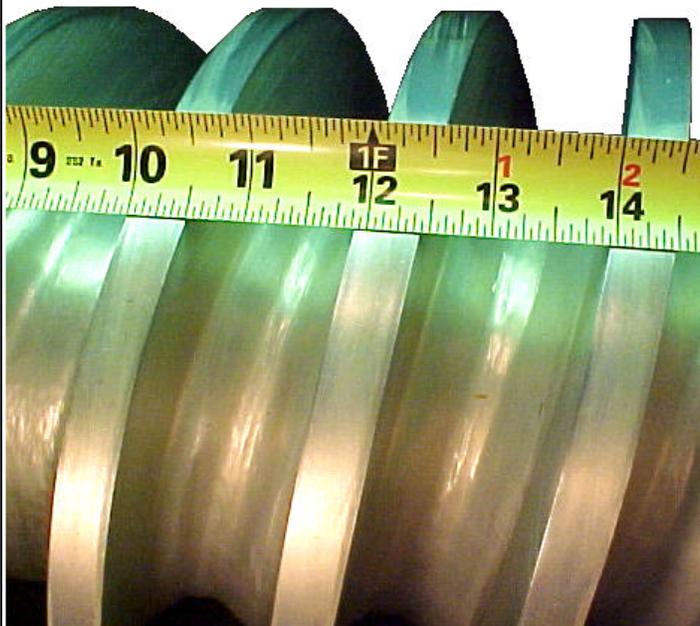
Note the sharp corners and square edges on a new feedscrew.



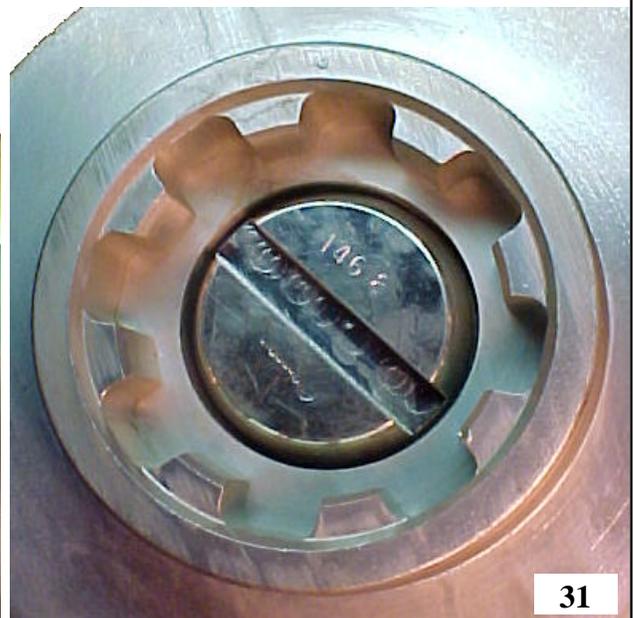
Sharp cupping is needed to aggressively grasp the product that falls into the hopper.



On a new or rebuilt feedscrew you will notice that the flighting is thicker. When new or rebuilt, the corners are square. Notice the nice fillet welds attaching the flighting to the shaft.



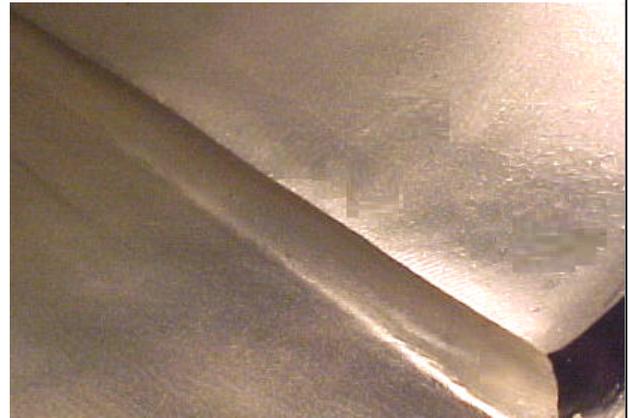
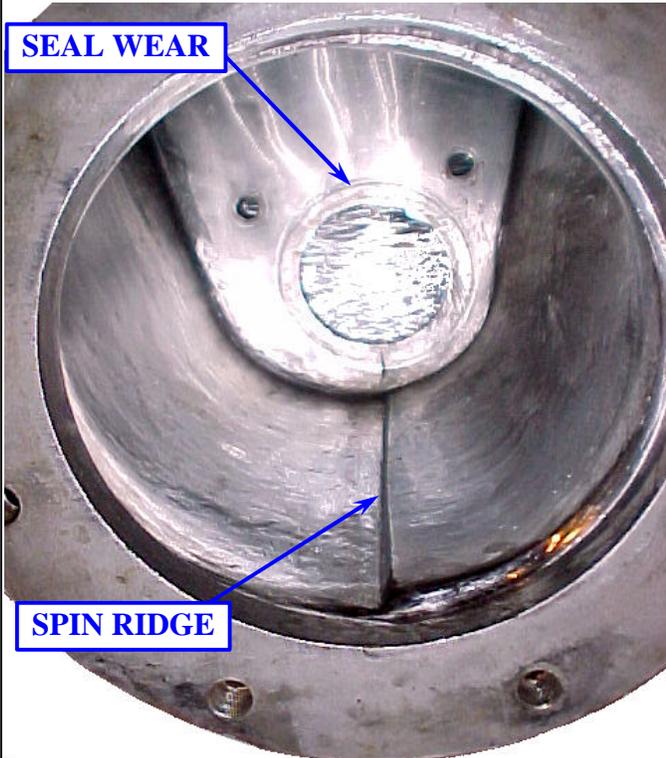
Shown below is a new drive spline with a thrust screw installed.



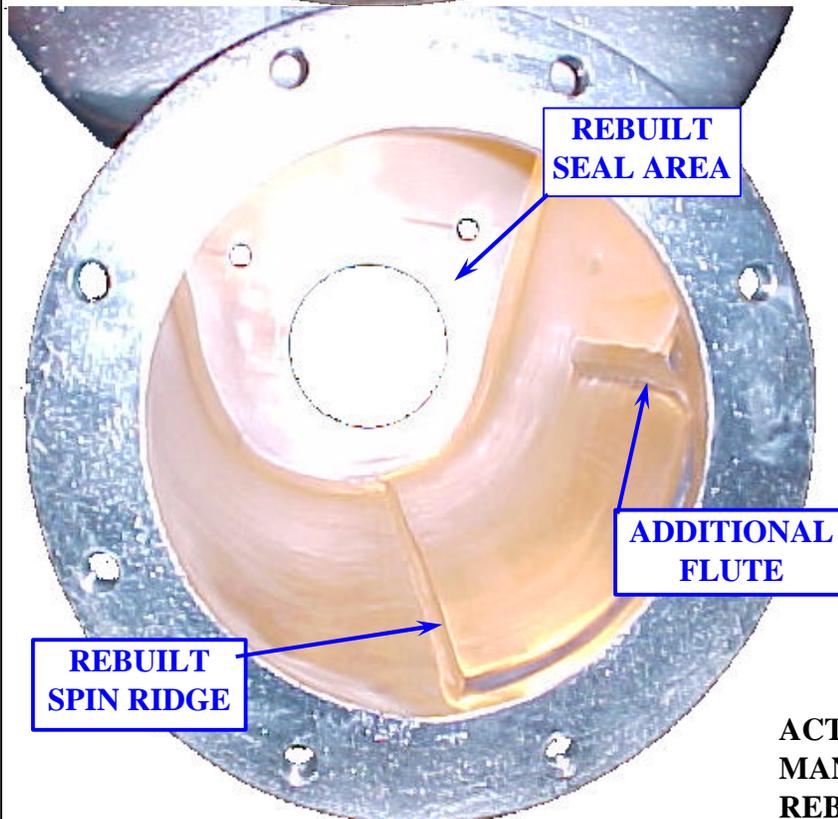
HOPPERS.

The spin ridge, which runs the length of the hopper at the bottom, should have a square corner. When this edge becomes rolled over, the feedscrew has difficulty feeding the head correctly. In time, the excluder seal will wear a ridge in the back flange of the hopper. The spin ridge and the seal area can be rebuilt.

Tin plated hopper wth new safety stickers.



Detail of rebuilt spin ridge, note the sharp corner.



Detail of additional flute, note the sharp corner.

ACTUAL PHOTO OF HOPPER MANUFACTURED IN 1973, REBUILT 1999.