NORTHFIELD #7 & #8 PLANER
TECH TIPS #1
July 26, 2001

TO ALL NORTHFIELD #7 & #8 PLANER OPERATORS:

Since 1961 when the first #7 Planer was built, there have been numerous modifications that enhance the operation and durability of the planer. Many of these can be retrofitted to older machines.

NEW MANUAL

We have recently (August 2000) come out with a new manual for the #7 Planers that covers parts for the older machines 61-68 that have the all chain drive. It also has exploded view drawings on the old cut screw knife grinder, and original design cutterbits.

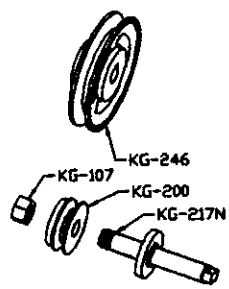
HOW TO READ SERIAL NUMBERS

A typical serial number is like this: 681234-C The first two digits reflect the year of manufacture. The last digit is a dummy. The digits between the first two and the last is the number of machines built that year. The alpha on the end signifies the month the machine was made. A=Jan, B=Feb, C=Mar, etc. Therefore, 681234-C is the 123rd machine built in 1968 in the month of March. On machines built in the year 2000 and later, the serial number is prefixed by an "A". Example: A001254-J. Note: The knife grinder also has a serial number, the machine serial number is either on the front spreader casting or in the drive side frame.

KNIFE GRINDER QUILL SHAFT

On machines built since 1987 we have used a one piece knife grinder shaft and one piece quill pulley / drive flange assembly. This new design make the grinding wheels run truer and also eliminates the problem of popping the bearing snap ring out of its groove if the quill nut is over tightened. There is also a cast iron motor pulley to replace the original stamped steel pulley which greatly reduces belt vibration transmitted into the grinding wheel. The following part numbers comprise this conversion:

KG-217N	One piece Quill Shaft
KG-200	Quill Collar / Pulley
KG-107	5/8 Quill Nut
KG-246	Cast Iron Motor Pulley



URETHANE FOAM FILLED CHIPBREAKER TOES

On #7 Planers built between 1961-1964, small closed cell urethane blocks were used in the chipbreaker toes to act as springs. Over time, the urethane gets hard and loses its resiliency reducing the individual toe travel. These can be resurrected by removing them from the chip breaker and collapsing them with a hammer a few times. Most of the resiliency seems to come back, and the blocks reinstalled will give years more service.

BACK PLATES ON CHIPBREAKER TOES

Anytime the chip breaker assembly is serviced, the 1/4-20 screws that attach the steel back plates to the ductile iron toes should be replaced with new SELF-LOCKING screws. This is particularly true of the toes used from 1961-1975 that used only two flat head screws for attachment. If the old screws are to be reused, an anerobic sealant like Loc-tite® should be applied. Failure to do this could cause the screws to vibrate out causing a chipbreaker toe to fall into the cutterhead causing considerable damage.

CHIPBREAKER TOE WEAR

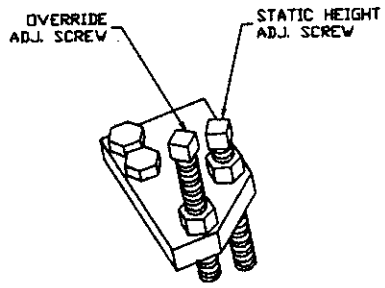
Over time, the chipbreaker toes experience wear from the constant rubbing of the rough stock under the toe tips. The wear pattern that evolves is that the middle is worn higher than the sides due to the tendency of operators to run stock down the middle of the machine. When this wear becomes excessive (over 1/8") it becomes difficult to arrive at a height setting for the chipbreaker assembly that will let it do its job of breaking the chips off and controlling chatter in the work piece. If set too high, it does not contact the work piece resulting in poor finish. If set too low, the sides of the chip breaker put excessive drag on the work piece causing jamming and feed problems. Chipbreaker toes can be repaired in several ways, short of replacing the toe set.

1. They can be welded up and remachined
2. The chipbreaker assembly can be machined shorter to cut the toe wear out, and the four mounting holes in the steel mounting bar can be elongated to compensate for the material removed. We provide this service at the factory.

CHIPBREAKER ADJUSTING SCREWS

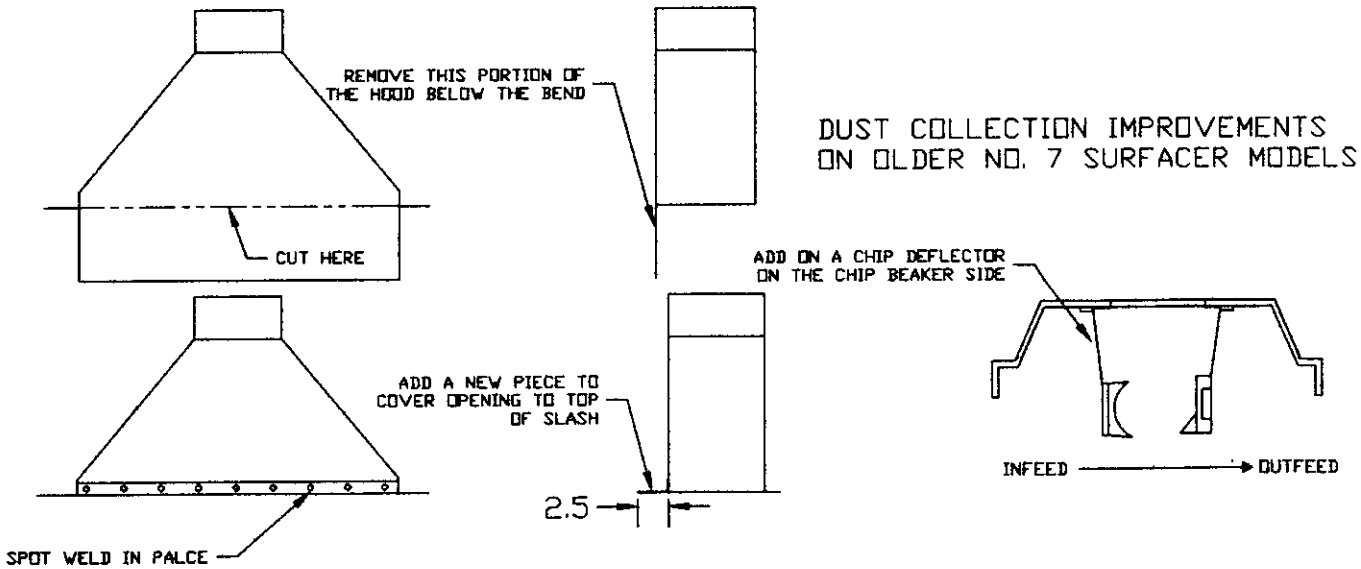
There has always been some confusion on how the chipbreaker has to be set. There are two 3/8" square head set screws on each end of the chipbreaker bar. The screw on each end that is closest to the chipbreaker assembly is the static height adjuster. The screw on each end that is furthest from the chipbreaker is the override adjustment. The static height adjusting screws sit on the machine side frames and are the ones to set the height of the chipbreaker .020" above the cutting circle of the knives. The overrides are the screws that contact the sectional infeed roll bearing blocks and cause the chipbreaker to be lifted when the sectional infeed roll senses an excessively heavy cut coming. If the sectional infeed roll did not lift the chipbreaker assembly, the incoming

wood would hit the steel back plate and drive the chipbreaker into the cutterhead, destroying the knives and damaging the cutterhead. Because the overrides are set approximately 1/16" above the sectional infeed roll bearing blocks, the sectional infeed roll MUST BE SET before the chipbreaker is set.



IMPROVED CHIP COLLECTION

On machines built in the 1960's and 1970's, the addition of an infeed sheet steel chip deflector can greatly improve chip collection through the shavings hood. These early machines had a short deflector that hung down from the shavings hood. The addition of an infeed chip deflector that bolts to the inside of the cast iron top sash and drops down in front of the chip breaker improves the air flow through the cutterhead window formed by the chipbreaker toe tips and the pressure bar shoe. The short deflector that was part of the shavings hood, should be cut off and a horizontal piece of sheet metal added to the shavings hood to seal the front of the hood to the top of the top sash.



UPPER ROLL SPRINGS - NF-500

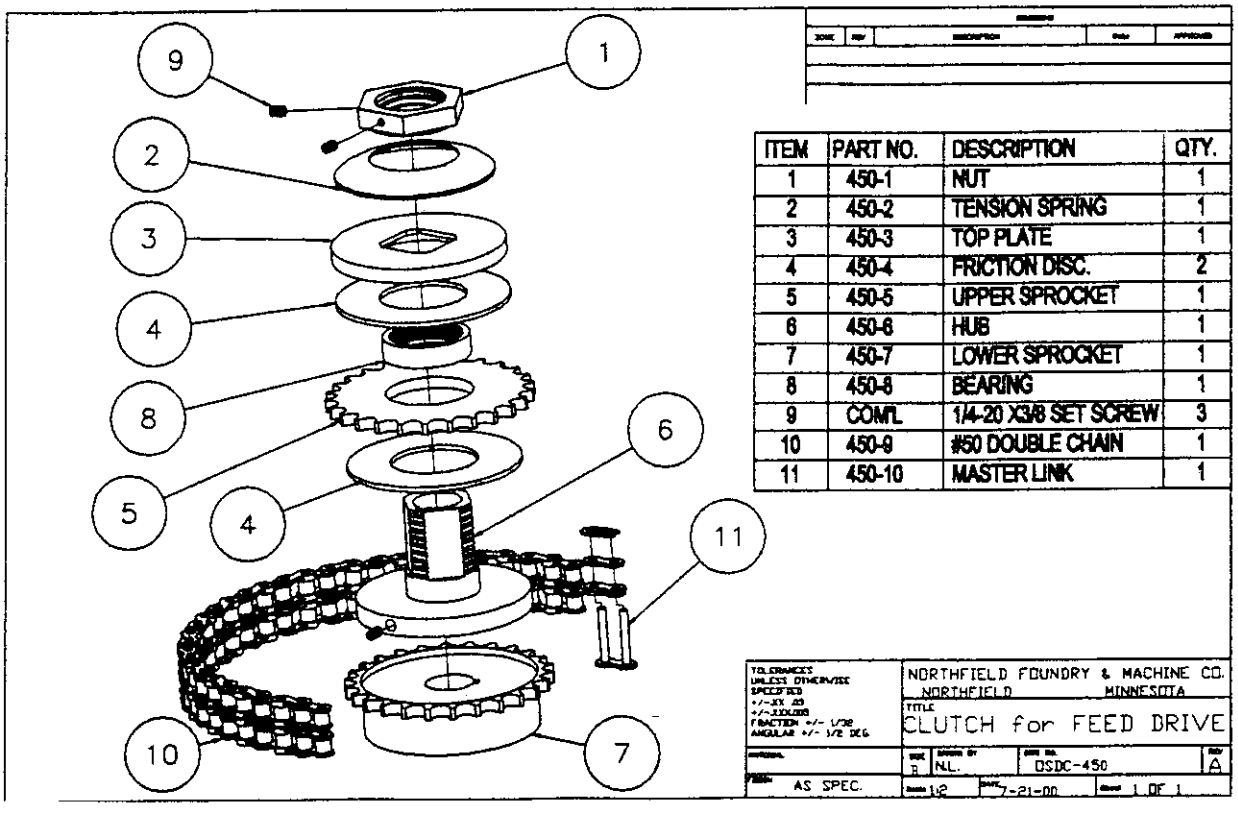
If your planer has upper roller springs wound from square spring stock, be very suspicious of them being collapsed. We highly recommend that they be replaced with new design NF-500 springs wound from round spring stock. These have more pressure and are not as prone to collapse. Quite a few feeding problems can be traced to collapsed roller springs. These are the 4 springs that sit on top of the square upper roller bearing blocks. Check also that any of the (4) 25-12 upper spring holder castings aren't cracked.

CLUTCH SPACER

On machines built since 1968 that have the vertical drive shaft roller drive, make sure that there is a tubing spacer under the clutch. This spacer slips over the 1-1/4" output shaft of the big right angle gear box and supports the lower half of the clutch. What can happen is that the set screw that holds the lower half of the clutch can loosen allowing the clutch to slip down the output shaft of the big right angle gear box. The output shaft then slides into the upper half of the clutch making it direct drive. This can result in broken upper & lower roller gear boxes and bent stub shafts. The part number for the clutch spacer is 25-418.

CLUTCH

The overload clutch on top of the main gear reducer has 2 functions. First to protect the drive system in an overload condition, and second to act as a universal joint to keep the vertical drive shaft from binding when the lower roll cam shafts are actuated which shifts the vertical drive shaft back and forth slightly.



ITEM	PART NO.	DESCRIPTION	QTY.
1	450-1	NUT	1
2	450-2	TENSION SPRING	1
3	450-3	TOP PLATE	1
4	450-4	FRICTION DISC.	2
5	450-5	UPPER SPROCKET	1
6	450-6	HUB	1
7	450-7	LOWER SPROCKET	1
8	450-8	BEARING	1
9	COM'L	1/4-20 X3/8 SET SCREW	3
10	450-9	#50 DOUBLE CHAIN	1
11	450-10	MASTER LINK	1

NORTHFIELD FOUNDRY & MACHINE CO.
NORTHFIELD MINNESOTA
CLUTCH for FEED DRIVE
DSDC-450
NL.
7-21-00
AS SPEC.
1 OF 1

SLIPPING CLUTCH

A slipping feed clutch is usually caused by two things. 1. The clutch is loose and needs to be tightened, or 2. The clutch plates have gotten oily and have become glazed.

If the clutch is loose, the best way to tighten it in the field is to loosen the two set screws that lock the 2-1/2" nut on top of the clutch. Wrap a chain wrench around the nut (it tightens clockwise) and put a 2' cheater pipe over the handle of the chain wrench. With your feet on the floor (not braced against the base of the machine) pull as hard as you can on the chain wrench with the cheater. This should be close to the factory torque setting for the clutch.

If the clutch still slips the clutch will have to be disassembled and the clutch plates (2 of them) cleaned or replaced.

To disassemble the clutch:

1. Loosen the 2-1/2" nut on top of clutch while clutch is still mounted on machine. (There are 2 set screws on the nut plates that need to be loosened first.)

2. Remove the master link on the double row chain that wraps around the clutch, and unwrap the chain.

3. Raise the top half of the clutch and loosen the set screw that holds the vertical drive shaft to the knob of the top half of the clutch. (This set screw is below the upper row of sprocket teeth.)

4. Slide the vertical drive shaft out of the top half of the clutch and up through the two outfeed roll right angle gear boxes. Wrap a piece of masking tape around the vertical drive shaft to keep it from dropping back down.

5. Remove the top half of the clutch from the machine and unscrew the 2-1/2" nut, remove the spring, floating drive plate, drive sprocket, and clutch discs.

6. If the clutch discs are in good mechanical condition, they can have the glaze scraped off of them with a putty knife and then be given a bath in lacquer thinner to remove any oil that has impregnated them.

7. Reassembly is in reverse order.

NOTE: The biggest cause of the clutch discs becoming oil soaked and glazed is failure to remove the grease that runs down the vertical drive shaft and collects on top of the clutch. Oil separates out of the grease and runs down into the clutch where it gets absorbed by the fiber clutch discs.

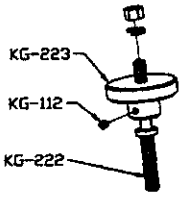
PRESSURE BAR

Over time the pressure bar shoe experiences wear due to the constant rubbing of the material being planed passing under it. This wear can be quite excessive, particularly in the center due to the tendency of operator to run stock down the middle of the machine. Eventually the wear gets to the point where it becomes difficult to find a setting that lets stock pass under the pressure bar without blocking it on the right and left sides. All that can be done at this point is to remove the pressure bar and remachine the shoe flat again. In some cases, it may become necessary to add a steel shim between the pressure bar and the steel top bar to compensate for the material removed. This will have to be done if the pressure bar adjusting screws do not have enough travel to lower the bar to the cutterhead cutting circle.

KNIFE GRINDER VERTICAL SLIDE SCREW

A new lathe cut vertical slide adjusting screw is now available that improves grinding by eliminating much of the back lash that was inherit in the old design. The part numbers comprise this conversion.

KG-222 Adjusting Screw
KG-223 Hand Knob
3/8-24 Full Nut
3/8 Lock Washer
KG-112 Set Screw for Hand Knob



OLD STYLE CHAIN DRIVE (1961-1968)

Pre 1968 #7 Planers used an all chain drive on the feed rollers. A #50 primary drive chain was used from the 20:1 gear reducer up to the sectional infeed shaft. A #50 secondary drive chain serpentined around the roller shafts and a tension idler. The problem with this drive was that when the sectional infeed roll climbed onto the leading end of a piece of stock the feed momentarily sped up, and when the sectional infeed roll fell off of the trailing end of a piece of stock the feed momentarily stopped. This speeding up and slowing down would leave marks on the work pieces such as burns or small dubs. The best way to counter this is to run the height of the sectional infeed roll as high as you can and still get stock to feed. By running it as high as you can, you minimize its travel and resultant speed up / slow down of the feed speed.

LOWER OUTFEED LEAF SPRINGS

The pre 1968 machines also had two leaf springs approximately 1" wide x 6" long that hold the 25-6G lower outfeed roller feed side bearing holder down onto the outfeed cam shaft. This was necessary because the #50 secondary drive chain loops under this roller and runs on a brass bushed 17tth contra-rotating sprocket. When the upper infeed roll climbs onto a piece of stock, it wanted to lift the lower outfeed roll off of its cam shaft. These leaf springs can become bent where they no longer hold the 25-6G

bearing holder down. If this happens, remove the two 1/4-20 bolts that hold the leaf springs to the table top and bend the springs flat again so they provide down pressure on the 25-6G bearing holder.

SECONDARY IDLER SPROCKET

The pre 1968 machines have a brass bushed 17tth spring loaded idler sprocket on the lower right corner of the machine side frame. This sprocket must be free to float vertically on its boss, as this sprocket allows for give in the system when the sectional infeed roll climbs onto a piece of stock. This sprocket must be free to float vertically, not tightened down. This sprocket and its slide base is held in position with two long 3/8" bolts with jam nuts locked together on the inside of the side frame.

LOWER FEED ROLL CHAIN

Most pre 1968 machine used a #50 chain between the two lower feed rolls. Some used a #40 chain and sprockets. Look for this when ordering repair parts.

20:1 CYLENT GEAR REDUCERS

Pre 1968 machines used a Size 1-1/2 20:1 Ratio gear reducer built by the Timing Gears Corp of Chicago, IL. This company went out of business in the 70's and no replacement parts are available. These were very reliable units and if kept full of oil, normally never wear out.

36:1 CYLENT GEAR REDUCERS

Some of the first post 1968 machines used the size 1-1/2 36:1 Ratio cylent gear reducers. Again, no parts are available. If these unit fail, the only alternative is to switch to the 40:1 gear reducer and mount plates that we are using today. This is not a terribly difficult conversion, but does involve drilling and tapping a few holes in the floor base of the machine. The feed motor and drive belt may also have to be replaced if you have the old 184 Frame motors that bolted to the inside end of the floor base.

OLD 1-1/2 RIGHT ANGLE DRIVE

From 1968 to 1980 we used a 1-1/2" dia Low Torque Brass bushed Tol-O-Matic right angle drive. We switched to the High Torque 1-1/4" units in May of 1980. If your 1-1/2 stub shafts have deep grooves worn in them and the 1-1/2" right angle gear boxes need replacement, we recommend you switch to the newer 1-1/4" drive. The 1-1/4" drive is more durable than the original and less prone to wear.

HD RIGHT ANGLE GEAR BOXES

In 1991 we switched to a Heavy Duty sand cast aluminum gear box for the upper 1-1/4 RH angle drive. This eliminates the problem of the original die cast Tol-O-Matic gear

cases cracking. If you are having case breakage problems it is highly recommended to convert to this new gear box.

TABLE ELEVATING SCREW NUT GREASE ZERK

The two most important grease zerks, and the two most overlooked, on the #7 Planer are the zerks that lube the 1"-8 threads tapped into the table for the elevating screws. These two zerks are accessed from the bottom of the table on the right and left sides in between the cam shafts. If these 1/4-28 straight zerks won't take grease, there is probably hard grease in the grease gallery that runs into the threads. Remove the zerk with a 5/16" socket and using a 7/32" twist drill with your fingers, hook out the hard grease. The gallery is approximately 1-1/2" long. Replace the zerk and attempt to grease again.

STRIPPED OUT TABLE ELEVATING NUTS

If the table elevating screw nuts have become stripped out, we have RH & LH brass inserts that can be installed in the table. The table must be removed from the machine and taken to a machine shop where they line up on old threaded holes and drill and ream then out to 1-1/4". The bottom of the table ear must then be spot faced and the brass inserts installed with 1/4-20 flat head screws. The grease galleries then need to be reestablished by putting a 7/32" twist drill through the grease gallery and drilling through the side of the brass insert into the threaded portion. The factory will work with your local machine shop to explain the setup and targeting procedures.

DAMAGE TO UPPER RIGHT ANGLE DRIVES

Following is the list of faults which causes damage to the upper right angle gear boxes any style:

1. Running the height of the upper outfeed roll more than .020" below the cutting circle of the knives.

2. Collapsed NF-500 upper roll springs.
3. Broken 25-12 upper roll spring holders
4. Running long unsupported stock that fulcrums off of the outfeed table edge and drives the upper outfeed roll upward.
5. Clutch with support spacer missing dropping down on output shaft and coupling direct.

RAISING BITS ON HELICAL HEADS

On the #7, #8, and #737 Planers, it is not necessary to raise cutterbits to maintain cutting circle. These machines have enough travel in the adjustment of the sectional infeed roll, chipbreaker, pressure bar and upper outfeed roll to make this unnecessary. The only instance where raising may be necessary, is if you have your carbide ground down to the mild steel investment casting and want to grind the mild steel away to expose more carbide.