

SHARPCHAIN®

RAZUR SHARP II

THE 'R2' SQUARE CHISEL
CHAIN GRINDER

OWNERS MANUAL

MANUFACTURED BY:

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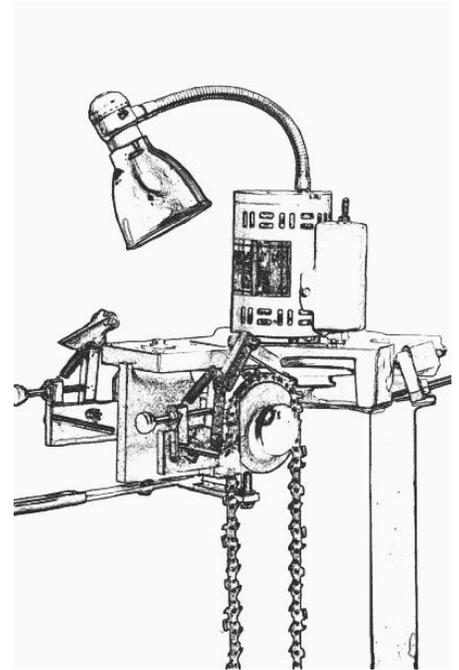
RAZUR SHARP II® - Before you Begin

The following instructions are condensed because you probably already know how to sharpen square chisel bit saw chain.

Your Razor Sharp II has been set, tested, and adjusted before it left Silvey.

The R2 is also shipped with a Silvey® SNO21-H wheel that has been dressed.

Inspect the grinder for damage before you use it. Rough handling by shippers can result in bent or broken parts.

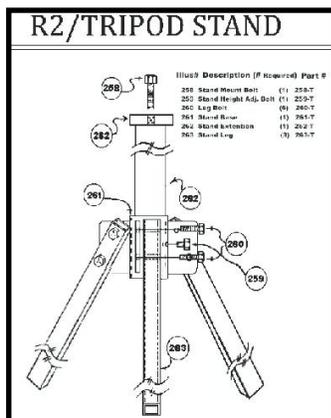


Also, check the grinding wheel for cracks and chips. If the wheel is cracked, chipped or out of balance, it may break apart when you turn the grinder on and could cause injury to you or the grinder.

Please: Read all of the operating instructions thoroughly before you start to use your grinder. You may contact us directly for additional help.

If you purchased and picked up your Razor Sharp II® grinder from a shop, your grinder is probably assembled and mounted on the stand. If you ordered your Razor Sharp II® and had it sent to you, this section will be helpful.

RAZUR SHARP II® - Unpacking & Assembling the Grinder



Open the top of the box - **DO NOT** destroy it. You may need to use the box and packing materials in the future. For example, if you need to send it in for repairs or to be rebuilt.

In the shipping box there was:
Razor Sharp II grinder
Instructions

- 1) Stand Base #261-T
- 3) Stand Legs #263-T

Bolt Bag: 1) Stand Mount Bolt # 258-T
 1) Stand Height Adjustment Bolt # 259-T
 6) Leg Bolts # 260-T

Larger view of stand on page 14.

The Stand Extension Pole was shipped in a separate box.

RAZUR SHARP II® - *Basic Operating Instructions*

1) Check to be sure that nothing is touching the grinding wheel. Retract the wheel dressers and move anything else that may come in contact with the wheel. Locate the large handle lever on the bottom front of the grinder. Move this handle until the chain bar assembly is away from wheel.

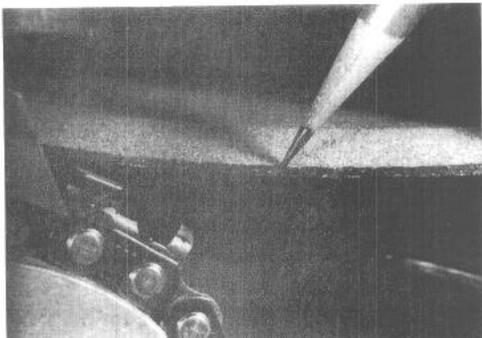


2) Find the toggle switch on top of the motor. The motor is reversible and the switch has three positions: back, middle and forward. One position makes the grinding wheel rotate clockwise, the middle position is off and the other position makes the grinding wheel rotate counter-clockwise.

Turn the grinder to one of the ON positions. Check the rotation of the wheel.

You want the grinding stone to be rotating counter-clockwise before you dress the wheel. If you grind with wheel rotating clockwise the momentum of the wheel tends to pull the dresser pivot into the motor mount.

If the wheel is going in the wrong direction turn the motor off. Allow the wheel to stop turning before you turn it back on in the opposite direction. Do not try to change rotation while the wheel is rotating even if the motor is turned off. Do not put anything in contact with the wheel to slow it down – Allow it to stop on its own.

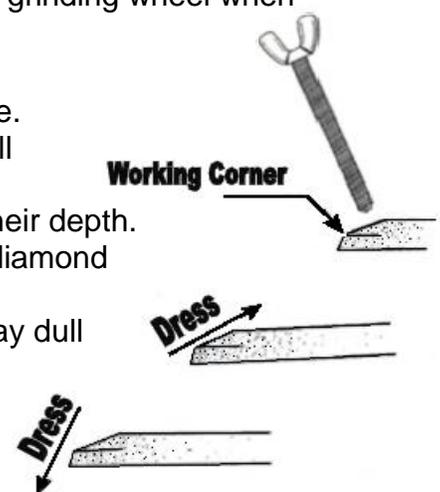


3) Find the switch on the lamp and turn it on. The lamp is mounted on a flexible arm. Move the lamp to a position where you can easily see the corner of the stone. This is done by shining the light on the top side of the stone so the leading edge is slightly shadowed. **The light bulb you use is no more than 50 Watts MAX!**

4) Find the diamond tipped wheel dressers. They are located on the motor mount that covers the grinding wheel.

These dressers pivot on their mounts and are used for shaping the grinding wheel; adjust the diamond dressers so the dresser tips barely touch the grinding wheel when pivoted in their mounts.

5) Turn the grinder ON so that the motor runs counter-clockwise. Pivot the diamond dressers on their mounts and remove a small amount of material, making easy and complete passes. Tighten the diamond dressers in small increments to increase their depth. Slowly shape the wheel like the drawings. Do not overload the diamond dressers, forcing them to make hard cuts will shorten their life. Dressing the stone restores the working corner. It also cuts away dull abrasive material and exposes a fresh surface for grinding.



RAZUR SHARP II® - *Basic Operating Instructions*

WARNING: Dressing out large amounts of wheel material in one pass may cause the wheel to chip or break while it is spinning.

This could injure you and damage your grinder.

Always dress away from the working corner of the wheel.

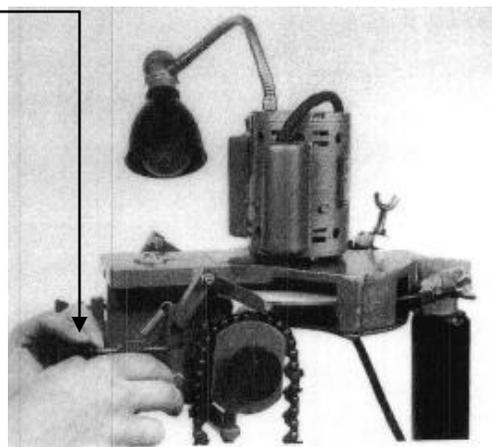
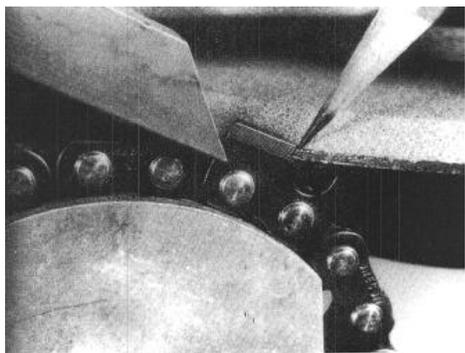
This keeps the corner from crumbling. Once the wheel is shaped, it will require light dressings between chain sharpening. If a chain is very dull, the stone may need to be dressed more often.

6) With the motor off and the stone stops turning. Place the chain in the holder with the teeth facing *INTO* the leading edge of the stone.

7) Advance the chain on the holder and place a cutter tooth in front of the chain stop. The cutter should be facing the stone with its open side in. Locate the feed arm and slide the appropriate cutter tooth close to the grinding wheel. Do not hit or force the chain into the wheel as the grinding wheels are very brittle. A crack or chip may cause it to blow apart when the grinder is turned ON again which can cause injury.

8) Find the two black thumbscrews. Use the thumbscrew that adjusts the stop on the cutter's heel and the thumbscrew that stops the slide depth to align the corner in the grinding wheel with the corner of the chisel cutter.

9) At the tip of the pencil shown below, the edge of the stone aligns perfectly with the corner of the chisel cutter. Proper positioning should look like this.



10) Move the feed arm so the cutter slides away from the grinding wheel. Double check and make sure nothing is touching the wheel. Turn the motor ON and watch the rotation of the grinding wheel, it should rotate so the wheel is turning into the cutter tooth. If it is not turning into the tooth, turn the motor off letting the wheel stop turning on it's own and turn the motor back on so the wheel is turning into the tooth. Not only does grinding *INTO* the tooth keep the bur on the inside of the tooth, it directs the sparks into the shroud area of the grinder.

RAZUR SHARP II® - *Sharpening for the First time*

11) Grinding *INTO* the tooth will NOT splinter the chrome allowing the tooth to stay sharper longer. The chrome is the hardest part of the tooth, if it is splintered, it will not hold an edge very long. Which is the reason why Silvey® chisel & round grinders have two (2) direction motors.



12) Begin sharpening the first tooth, ALWAYS grinding into the tooth. Grind a little at a time, to be sure you don't burn the tooth.

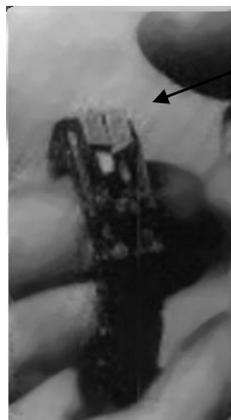
Remember Brown discoloration = Tooth too hot
Blue discoloration = Tooth way too HOT!

If the chain is really "Rocked", do not try to take it all off at one time. Go around the chain as many times as needed to take off the discoloration, taking a little of each time. If the working edge of the stone is dark and the teeth are heating up, the stone may need to be dressed to expose sharper abrasive material.

13) Make final adjustments using the cutter stop and depth screw. Slide the chain away from the stone and check to be sure the corners line up and all of the dull material is removed. All of the material must be removed for the chain to be properly sharpened.

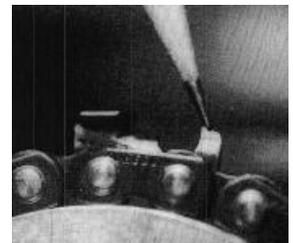
14) Once the first tooth is sharpened to your satisfaction, proceed to the next cutter tooth that is on the same side of the chain. Continue to sharpen every other tooth in sequence until all the cutting teeth on that side are sharpened.

15) Remove the chain from the chain holder and put it in the holder on the other side. Start the steps over starting with Step 6. When one tooth is ground on that side has been ground check to be sure that the sharpened cutter on this side is equal in length with the sharpened cutters on the other side.



16) Although both teeth are sharp, if both teeth are NOT of equal length, the chain will not cut straight. To perform at its best a chain needs to have all of its teeth the same length. When you are satisfied with this tooth, proceed to the next cutter on the same side. Continue until all teeth on that side are sharpened.

17) All of the cutter teeth should be sharp now. You may want to remove the gullet material and check the rider depth gauges before installing this chain back onto your saw. This is also a good time to look the chain over for any cracks, breaks, bends or unusual wear. The cutter pictured needs to have its gullet removed and it's riders checked.



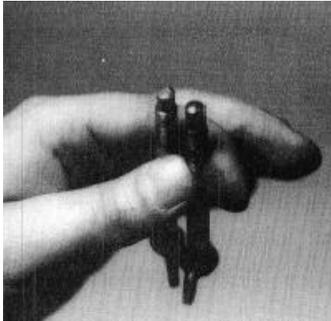
RAZUR SHARP II® - *Maintenance & Tips*

Your grinder should be stored inside out of the weather. Although it doesn't appear to be, your grinder is a delicate tool and should be treated with care.

The grinder dust that is made when sharpening chain is composed of small particles of metal and wheel abrasive. The grinder should be kept clean at all times and the motor and switch should be kept free from this conductive dust.

Lubrication of moving parts should be done with graphite or another dry lubricant. Oil or wet lubricants DO NOT work because they attract grinder grit (dust).

Diamond Dressers

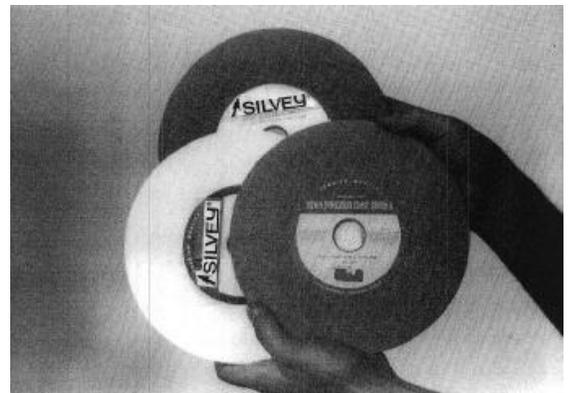
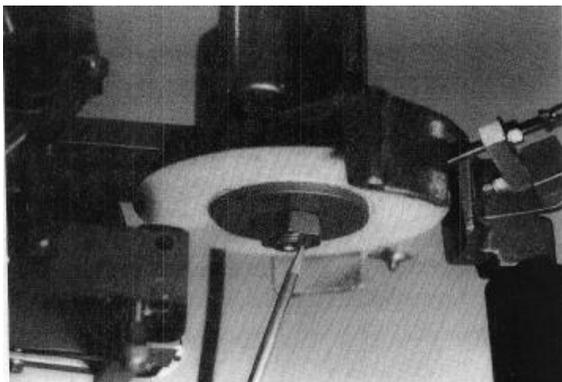


Diamond dresser tips will wear and the diamonds will wear out. The multi-point dressers will slough off diamonds as they get dull about ¼" down. The single point dressers only have one diamond and will need to be replaced when it gets dull. When you see 'sparks' while dressing your wheel, the diamonds are probably gone and the dresser needs to be replaced. Just unscrew the old diamond dresser and thread in a new one.

Multi-point stone dressers allow the operator to make a smooth stone surface and crisp working corner. Since the grinding wheel surface determines the ultimate shape and finish on the cutter tooth, it is extremely important that the wheel be smooth and well shaped.

Replacing the Grinding Wheel

The Silvey® SNO21-H wheel has been specifically formulated to the optimum specifications of grit, bond and motor RPM for Silvey® grinders.



The grinding wheel can be reached by removing the wheel cover which is held in place by two screws. Be sure to replace the arbor nut, flange washer and wheel cover before operating the grinder again.

RAZUR SHARP II® - *Maintenance & Tips*

Compensating for Wheel Wear

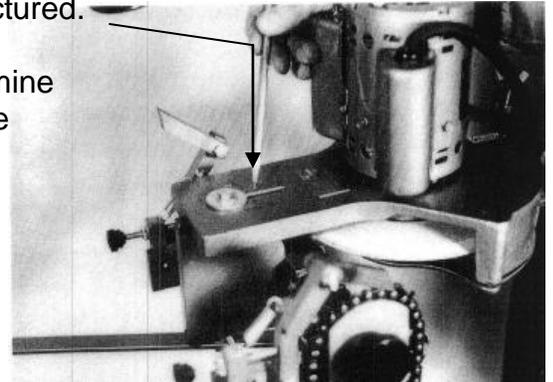
Your grinding wheel will gradually become smaller in diameter as you dress the stone with the diamond dresser and sharpen chain. This can be compensated for by sliding the chain carriage assembly closer to the grinding wheel.

This adjustment slot is located on the grinder housing pictured.

Use the diameter scale on the top of the grinder to determine the size of the stone. Use the scale and pointer under the grinder to match chain holder mechanism with the wheel diameter.

This adjustment allows the operator to keep the location where the cutter tooth comes in contact with the arch of the grinding wheel the same, even though the wheel diameter wears smaller.

If you like your top angle blunt, lag behind the scale when compensating for wear.
If you like your top angle greater, lead the scale a little.



Fine Tuning

There is not one formula for sharpening chisel chain on which all Professional filers would agree is best. Everyone who runs and grinds chisel chain has their own grinding style. Some of the factors that determine the type of grind that will work for you are size and type of wood being cut, the kind and size of saw that is being run and so on.

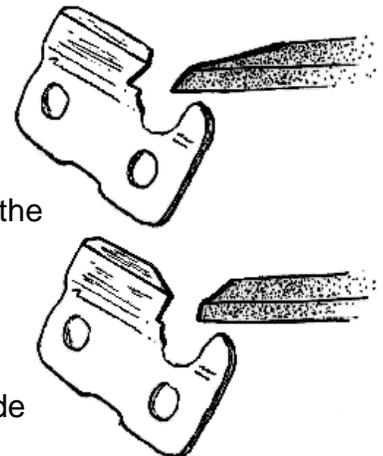
Outlined in the next section are some guidelines that will hopefully give you a place to start in developing your own grinding style.

Reshaping the grinding wheel

1) The mounting blocks for the diamond dressers for the wheel may be pivoted. This will change the grinding wheel shape by changing the path of the diamond dressers.

2) The shape of the chain's cutter face is greatly affected by the shape of the grinding wheel. The angle of the outer edge of the wheel is a determining factor in the angle ground into the cutter's side plate.

The angle of upper dressed surface of the wheel is a determining factor of the inner angle ground into the cutter's top plate and also determines the outer top plate angle.



RAZUR SHARP II® - *Reshaping the grinding wheel*

The diameter of the grinding wheel and the location on the arch of the wheel where the cutter tooth comes in contact with the grinding surface are also determining factors on the angles ground into the cutter tooth.

(See: Compensating for Wheel Wear. In the Maintenance section)

When changing the angles of the mounting blocks, move them only a small amount, redress the grinding wheel and then test grind.

A little change has a big effect on the grind in the cutter tooth.

3) Make sure that the leading edge of the stone is thick enough to remove some of the gullet area but don't make it so thick that it cuts deeply into the tie strap under the cutter, this weakens the tie straps. Surface strength is important to the cutter chassis.

Chain breakage, that would otherwise not develop, often occurs on tie straps that have been ground into.

Changing the Inner Angle of the Top Plate

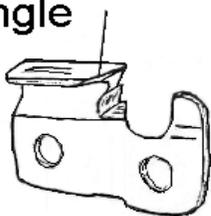
1) The inner angle of the top plate is changed by lowering or raising the grinding stone holder. To raise or lower the grinding stone you **must** first remove the lower shroud guard and the nut and support washer that hold the stone onto the holder.

There is an allen head set screw located in the thread area of this holder.

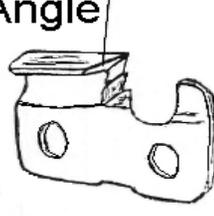
You probably noticed it when you changed grinding wheels.

This set screw can be loosened and the holder will slide on the motor shaft.

**Thin or Sharp
Angle**



**Blunt Top
Angle**



Adjustments to the stone should be made a little at a time, as small changes make big differences in the grind on the cutter tooth. Be sure to tighten all screw and replace the guard before operating the grinder again.

2) Generally, a thicker inner top plate angle will keep its edge a little longer. A thinner angle will cut better but will get dull faster.

This grinder will grind thicker top plate as the cutter plate tooth becomes shorter. You may want to adjust for this if you have a series of chains with short cutters to grind.

If you prefer thicker inner angles on new chains, lowering the grinding wheel will cause the grinder to cut thicker top plates.

RAZUR SHARP II® - *Tips on Grinding*

TIP: Do not overheat the tooth when grinding.

You do not need a thermometer to monitor heat, simply watch the surface of the cutter tooth. If the tooth starts to discolor, you are getting it too hot. If you heat a tooth to the point that it turns blue, you have ruined it. The blue color indicates the temper of the steel in the cutter tooth has changed.

Blue teeth occur when you are trying to grind too fast or when you are sharpening a "rocked" or extremely dull chain. When you grind out extensive tooth damage, you will be inclined to remove it faster than you should.

Try setting the grinder to remove only half of the damage on each tooth. When you have ground all the cutters and are back to where you started, reset the feed stop and grind out the rest of the damage on a second pass. By limiting the amount of material, you remove each pass you may reduce heating potential. Another advantage of "double" grinding is that the teeth get a chance to cool between the first and second grind.

Another cause of overheating is a dull grinding wheel. When the working corner of the stone and the area around it begins to darken, it is getting dull. A dull stone does not grind well and an inexperienced operator may be inclined to increase grinding pressure. To sharpen the wheel, run the dressers over it until the dark spots are gone. This will clean the wheel and expose fresh abrasive material.

TIP: Align the corner of the tooth with the working corner of the stone.

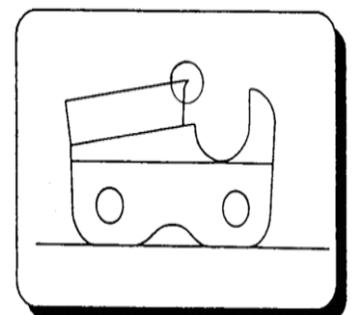
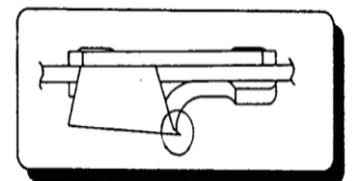
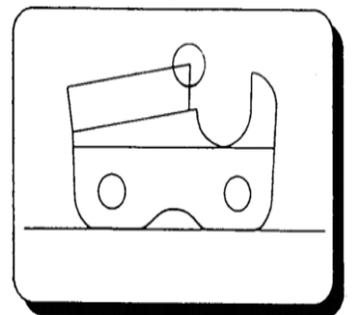
The key to successful chisel chain grinding can be summed up with this tip.

To obtain maximum "stay sharp" ability and cutting speed, these two corners should be aligned perfectly. If you grind "high" or above the corner, the chain will perform badly. It may look sharp to you but it will act as if it is dull. If you grind too "low" below the corner, the chain will cut but won't stay sharp very long.

If you look at a low chain closely, it will have a "bird's beak" edge on the corner of the tooth. This edge has little support and will become dull easily. In fact, even hitting a knot will dull a "low" ground chain.

The best rule to remember is:

*Align the corners perfectly but if you need to allow for a little error:
Be a **little** low.*



OTHER GRINDING TIPS - Dos & Don'ts

Do not grind with the corner or the stone high into the tooth; this makes a chain perform very poorly.

Do not leave a long and/or tall gullet.

- Do not grind into the side straps.
- Do not try to adjust your grinder to corner both on the top side of the cutter and on the inside or the tooth.
This '**corner to corner**' grind is almost **impossible** to get with an assembled chain. Most of the time you want a thinner top plate than a "**corner to corner**" grind would get you anyway.
- Do not make big adjustments to the stone dressing blocks or the stone holder at one time.
- Do not change more than one thing at a time when you are trying to change how your grinder is set up; these are sensitive adjustments.
- Do always *wear* eye protection.
- Do grind a little at a time: even if it means going around the chain twice or more.
- Do check your chains for damage or breaks when you have them off for sharpening.
- Do make the cutter teeth equal in length on both sides.
- Do grind away all of the dull cutter tooth so the corner chrome has a clean sharp edge.
- Do keep your grinder clean and well maintained.
- Do mark where your dressing blocks are before you move them so you can "find your way back" if the changes you made were wrong.
- Do always try to make a better chain: There is not one best way or formula for grinding chisel chain.
- Do call, write, email or stop in if you have a question or problem with your grinder.

Razur Sharp II Parts List

ILLUS#	DESCRIPTION	PART#	ILLUS#	DESCRIPTION	PART #
	SN Serial Number Location		152	Cross Slide Mount	152-R
1	Motor	1-R	153	Cross Slide Extrusion	153-R
3	Motor Cord	3-R	154	Cross Slide Bar	154-R
4	Arbor	4-R	155	Chain Bar Mount	155-R
5	Arbor Flange	5-R	156	Chain Bar Mount Screw	156-R
6	Motor Mount Screw	6-R	157	Stop Mount Bracket	157-R
6B	Motor Lock Washers	6B-R	158	Handle	158-R
7	Switch	7-R	159	Handle Link	159-R
8	Arbor Nut	8-R	160	Handle Mount Spacer - Lg.	160-R
9C	Gib (Side)	9C-R	161	Handle Bushing.	161-R
9D	Gib (Small)	9D-R		R - 2 Handle Assembly	181-R
15	Lamp Assembly	15-R		Oil Plug	182-R
16	Boot	16-R	162	Dresser Block	162-R
17	Spring (Small)	17-R	163	Dresser Arm	163-R
18C	Wheel Cover	18C-R	164	Dresser Arm Bolt	164-R
19C	Motor Mount & Wheel Guard	19C-R	165	Lock Nut	165-R
24B	Stop Pawl	24B-R	166	Dresser Block Bolt.	166-R
27	Chain Bar Screw	27-R	167	Fiber Washer	167-R
39	Chain Bar Stop Screw & Knob	39-R	168	Plastic Lock Washer	168-R
39B	Tooth Length Adj. Screw & Knob	39B-R	169	Cross Slide Mounting Bolt	169-R
	Cord Lock	46B	170	Washer	170-R
53C	Tooth Length Adj. Screw Mount	53C-R	171	Fender Washer	171-R
57	Handle Mount Bushing	57-R	172	Cross Slide Assy Mount Bolt	172-R
63	Diamond Dresser	63-R	173	Handle Bolt	173-R
89	Handle Connector Bolt	89-R	174	Stop Mount Bracket Bolt	174-R
91	Tie Down	91-R	175	Handle Mount Bolt	175-R
92	Foam Tape	92-R	176	Aluminum Spacer	176-R
101	Nut	101-R	258	Stand Mount Bolt	258-RT
103A	Gib Adjustment Screw & Nut (Front)	103A-R	259	Stand Height Adj. Bolt	259-RT
103B	Gib Adjustment Screw & Nut (Bottom)	103B-R	260	Leg Bolt	260-RT
108	Nut	108-R	261	Stand Base	261-RT
111	Arbor Set Screw	111-R	262	Stand Extension	262-RT
112	Wheel Cover Screw	112-R	263	Stand Leg (Price Each Leg)	263-RT
114	Grinding Wheel **(SNO21-H)	114C-R		Tripod Stand Complete	300-RT
	Motor Bearings (Front End - Shaft)	146-A		Cross Slide Assembly	177-R
	Motor Bearings (Back End)	146-B		R - 2 Handle Assembly	181-R
151A	Chain Bar	151A-R		Oil Plug	182-R
151B	Chain Bar 50 / 63	151B-R			

R2/TRIPOD STAND

