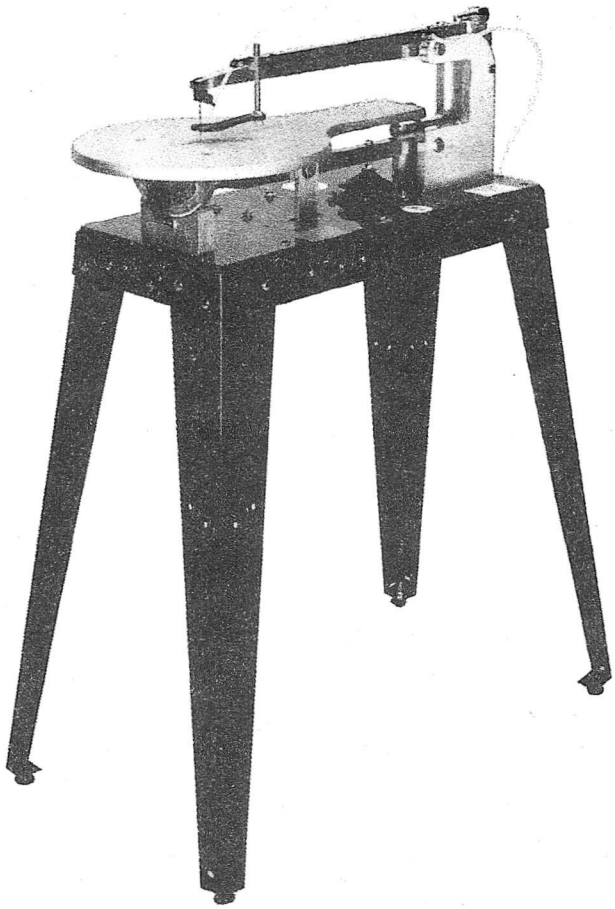
Bushton Manufacturing
Maker Of
Hawk Woodworking Tools

FOR MODELS 220 & 226
ULTRA HAWKS



READ THOROUGHLY BEFORE OPERATING

SAFETY FIRST

MANUAL #: 703-3729

CODE #: 0895

TABLE OF CONTENTS (RBI HAWK PRECISION SCROLL SAW)

SETTING UP YOUR NEW HAWK

Your new Hawk has been completely assembled and factory tested before being prepared for shipment. All adjustments have been made except for a few minor adjustments. After a few simple assembly procedures you'll be on your way to scrolling in no time!

The Hawk is shipped in three separate cartons.

Carton #1 contains the saw, manual, and blades.

Carton #2 contains the leg set, assembly hardware, and glides (rubber feet).

Carton #3 contains the Beginner's Choice Kit.

*We often ship additional items in each carton if ordered. Be sure to compare the items received with the packing list attached to each shipment. There will be one packing list for an entire shipment. If your shipment contains more than one carton, the packing list will be attached to the largest carton. On the packing list you will notice a customer number has been assigned to you. Please record this number for future contact with RBI.

While removing all items from their cartons be sure to inspect each one closely for shipping damage. If you feel your shipment may have been damaged, contact the local office of the transportation carrier. You will find their local number in the yellow pages under Shipping Carriers.

Tools you'll need to put your Hawk together:

- 7/16" wrench or ratchet
- 9/16" open end wrench
- A pair of standard pliers

Step #1

Remove the assembly hardware from the plastic pouch and install the 3/8" hex nuts on the glides (rubber feet). Screw them all the way down until they are next to the rubber.

Step #2
Insert the glides through the hole in the bottom of each leg. Install another 3/8" hex nut on the glide to hold it in place. Tighten the nut down securely. By tightening down securely, machine vibration will be considerably reduced (see fig. A-1).

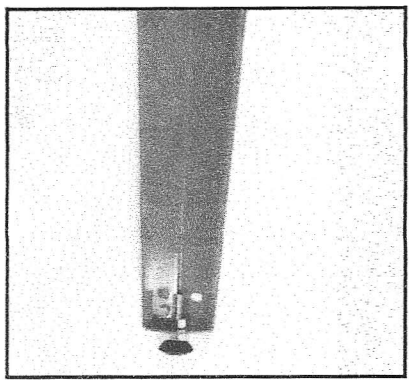


Fig. A-1

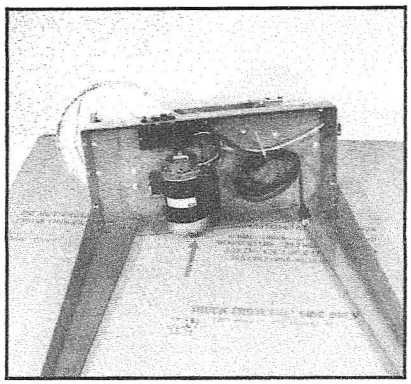


Fig. A-2

Step #3
After removing everything from the box close it back up and use it as a bench when installing the legs on your saw. Save your box in case a warranty situation arises. Turn the saw on its side and carefully lay it on the box. Install one leg on each corner of the base, using the 1/4" whiz nuts. Do not tighten completely. The carriage bolts should be able to move freely in the slots. Tighten these with a wrench when making final adjustments. Be sure the top of the leg is inside the base and then arrange bolt head in on the outside with the whiz nut to the inside of the base (see fig. A-2).

Step #4
With the legs installed, stand your new Hawk upright and securely tighten the carriage bolts on the legs with a 7/16" wrench or ratchet. For best operation of your saw be sure to set it on a solid level floor.

Step #5
Model 220 Hawk Ultra, 226 Hawk Ultra: Remove the rubber band from the cam handle on the rear of the upper arm and flip the cam. This will put tension on the blade. On the left hand side of the front section of the upper arm there is a small black tension adjustment handle. Push the handle backwards and you should feel tension begin to tighten.

Step #6
The final adjustment that you will want to make is to direct the dust blower hose. The dust blower hose is connected to the hold down arm with a hose clamp. Adjust the blower hose directly at the hole in the center of the sawtable. When adjusting your dust blower, it should keep an area the size of a half dollar directly around the blade clear of dust. Don't cut the exess tubing until all adjustments are made.

MAINTENANCE

There are a few more things you'll want to do before you begin to saw. Don't forget these handy tips. Later they should be done about every 20 hours of use.

Tip #1 — Using light machine oil (3-in-1 brand oil is good), put a few drops under the wedge pivot at the rear tension bar. You will also need to put a drop of oil on each side of the pivot point bearings. (This is where the bolts that hold the arm on are located, see fig. A-3).

Tip #2 — Use a cake of beeswax or paraffin and rub it on the round underside of the cam to keep friction from building up under the cam.

Tip #3 — Although we hand polished each Hawk table at the factory, after about 20 hours of use you may want to go ahead and apply a coat of wax to the table for protection. Apply Minwax Clear Wood Wax or Johnson Paste Wax with light pressure in a circular motion. Polish with a clean dry cloth. Be sure to remove all wax from the table top or it will coat your wood as you cut and make finishing difficult.

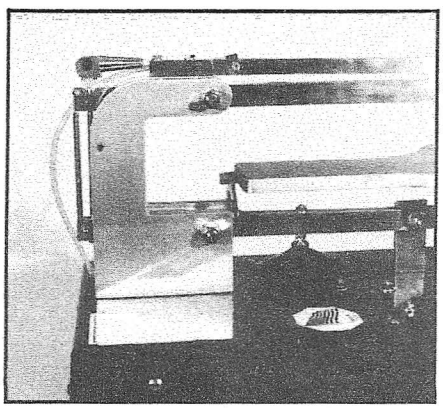


Fig. A-3

LET'S GO OVER A FEW SAFETY TIPS

Tip #1 --- Due to using a DC brush type motor, your Ultra Hawk saw cannot be plugged into a GFI (Ground Fault, Interpretor) receptical.

Tip #2 — Never allow anyone without proper training to use your Hawk. Children should always be carefully supervised while sawing.

Tip #3 — A clean workshop is a safe workshop. Keep your work area clean and uncluttered and especially keep others clear of running machinery. Be sure to remove all tools and wood scraps before starting the machine.

Tip #4 — Keep your hands away from all moving parts. Never try to make any adjustments to your Hawk while it's running. The electrical power should be disconnected before making adjustments on the machine.

Tip #5 — Dress for the occasion. Loose clothing and jewelry can be a hazard around working tools. Avoid loose fitting clothes, long sleeves, gloves, neckties, jewelry, rings, watches, etc. If you have long hair, be sure to pull it back. Always wear safety goggles, ear protection, and a mask in dusty operations.

Tip #6— To avoid electrical shock, do not operate your Hawk in a wet or damp area. Always keep safety guards in place. Never leave your saw running unattended.

Tip #7 — Be sure to use good materials for a top notch job. When cutting wood, be sure it has no loose knots or splintered surfaces.

LET'S TRY IT OUT!

After we have tested each Hawk, we leave the "test run" blade installed. This blade is a size #7 fret saw blade. (There are several different sizes and types of blades available but we will talk about them later.) This blade will work very well for the beginning exercises. The most important thing to remember is to relax. Don't be afraid of the saw --- it's a very safe tool --- but it must be respected.

For this project you will need:

1-1"x9"x11" piece of clear soft wood (pine)

Before you begin you will need to get the pattern of the jumping dolphin puzzle located in the RBI Pattern Pak enclosed with your saw. There are several ways to transfer patterns to your project material. Here are a couple of our favorites:

1. **Carbon Method --** Using a sheet of carbon paper (available at the local stationary shop), place it directly on the surface you plan to cut. Lay the original pattern or a photocopy directly on top of the carbon paper and carefully trace the pattern using a sharp pencil or a ball-point pen. Lift the pattern and carbon paper from the surface and you're ready to cut. **Warning: Depending on the material you plan to cut, the carbon from the paper is very difficult to remove from the surface. Be sure to carefully sand away all carbon or it will tend to bleed when finishing later.**

2. **Stick it —** This is our favorite. Make a photocopy of the original pattern and put the original away for safe keeping. Using the photocopy pattern, carefully spray aerosol adhesive directly to the back side of the pattern. Place the pattern face-side-up on the surface to be cut and rub gently to make sure all edges will be secure while cutting. **Note: When choosing a spray glue, use repositionable glue. The type intended for photographs is best.** After cutting is complete, remove the pattern from the surface and lightly sand to remove glue residue before finishing. (Some folks tell us that they use the same technique with rubber cement or a craft glue stick instead of spray adhesive.)

For your first project it's better to choose a soft wood to cut. We recommend sugar pine or ponderosa pine if it's available. Take the pattern of the jumping dolphin puzzle and prepare your project to be cut by attaching the pattern by the method you think will work best.

Now it's time to adjust the "hold down" foot on your Hawk to fit the thichness of the lumber you will be cutting. The "hold down" foot is the black nylon (plastic) piece that surrounds the blade on your saw. Using the knob on the right hand side of the saw located next to the upper arm, loosen the knob and raise the "hold down" foot. Now place the project you plan to cut on the table and bring the "hold down" foot back down until it gently rests on the surface of your project. Tighten the knob.

SAWING TECHNIQUES THE PROFESSIONALS USE

It is best to always start your cut at a point or corner of the project. Even for a pro it is almost impossible to blend starting and ending cuts on a straight part. If your pattern doesn't have a corner, then start sawing into the pattern line cutting across the grain. Your chances of the blade not wandering will be greater.

(When you have to start a cut on a long curve, try to cut just a little outside the line -- you can sand off the resulting bump.)

HERE'S A PRACTICE EXERCISE FOR TECHNIQUE

Over the years we've learned of several ways to help folks enjoy working with their new Hawks right away. Here's a technique-building tip that has helped many get started.

Step #1 -- Take a piece of paper (or draw directly on the wood with a felt tip or ball-point pen) and draw a series of straight and zipzag lines like the ones in the diagram. (See fig. A-4.)

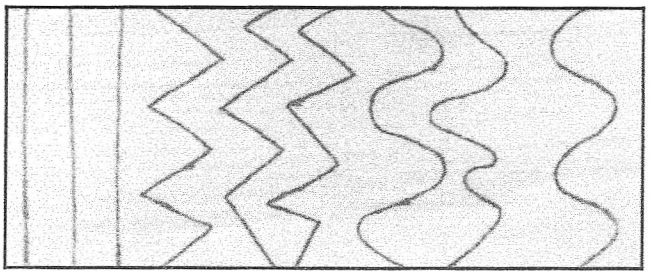


Fig. A-4

Step #2 -- After your wood is covered with lines, start cutting using the techniques above. After you've completed this project and you're comfortable with making sharp turns and straight lines you'll be ready to start your project.

Cutting corners and sharp turns -- This is the most exciting part of having a Hawk -- the flexibility to make a cut as intricate or as simple as you want. Your new Hawk can make a complete 360° cut in a project with less then 1/64" turning radius. When cutting a project that requires sharp turns and points. Here are a few pointers:

1. Start by making your cut all the way to the point where you want to make a sharp turn.

2. Now without feeding your project into the blade, slowly spin the wood around the blade in its own kerf. If you're used to using a bandsaw or jigsaw, you may be tempted to "set" the blade, **DON'T.** If you find that while cutting you tend to break blades often or there is smoke while you are trying to make a turn, you're not alone. Many people have this problem -- here's an easy way to remedy your case: don't lean side to side on the blade.

3. If your project clatters on the table or it tries to pull from your hands while making turns, you may want to go to a smaller blade. The smaller the blade size, the smaller the turning radius will be. For very intricate projects, the smallest size blade that you are comfortable with is best. (See our recommendation chart on page 7.)

LET'S MAKE A PROJECT

Now it's time to put all that you know to work for you! Remember, begin at a corner in your pattern and cut across the grain when you first start. Follow the line around; if you're right-handed you will probably be most comfortable feeding your project counterclockwise (vice versa for a left-handed scroller). It doesn't really matter which direction you cut, just go in the direction that feels most comfortable. Start at the outside of the pattern and work your way inward.

Some folks say scrolling is a lot like driving a car — we'd have to agree. When cutting along the line you can saw as fast or slow as you'd like by adjusting the variable speed knob. If you're cutting along and you start to wander from the line of the pattern, don't try to jerk back onto the line — you'll just end up with a bumpy project. The best technique is the "near hit" method. In most cases you would have to wander more than 1/8" from your pattern line to make an elephant look like a mushroom.

Always remember that the blade of your new Hawk is stationary and you drive your project. You must spin the wood — the blade will not turn. This is how most folks break blades when getting started. Always remember to feed directly into the blade — never lean to the side. Let the blade do the cutting.

After you've completed your test project, step back and take a look at your first success...CONGRATULATIONS! Look at the sides of the project and inspect for burn marks. If there are burn marks on your projects, you've got room for improvement on feeding straight into the blade. If your line seems a little bumpy, you'll want to concentrate on the "near hit" technique. Now you're ready to finish your project and get going again.

Be sure to read over the Sawing Techniques section for more tips and techniques on all types of cutting.

BLADES FOR EVERY OCCASION

There are practically hundreds of types and styles of blades available for cutting most any material you choose. On the next page is a chart that will help you better understand the most popular types and sizes of blades for your saw.

Fret Saw Blades
Originally designed for a hand fret saw, these blades are ideal for the power scroll saw. This is the best blade for general cutting. It is recommended for wood, plastics, fabric, paper, and most other non-metal materials.

Diamond Blades
The diamond blade is the newest and most unique blade yet. This blade is manufactured by impregnating a round rod with diamonds. For folks that enjoy making stained glass projects or do large amounts of ceramic and marble cutting, the diamond blade is the answer. The diamond blade must be used with the drip tank system to keep it from loading up with glass particles and causing the blade to break.

Jeweler's Saw Blades
These blades are designed for use in the hand held jewelers saw frame still used frequently among jewelry designers. Its hardened steel composition and teeth configuration make it ideal for cutting both ferrous and non-ferrous metals such as gold, silver, brass, and aluminum.

HOW TO CHANGE A BLADE FOR MODELS 220 ULTRA & 226 ULTRA

Front Cam Benefits

With the front cam, the blade can be changed without getting off your stool or stretching to reach the back of the saw. This feature is great when making inside cuts or for someone that isn't able to get around easily.

Here's an easy step-by-step method for changing the blade on your Hawk (220 ULTRA & 226 ULTRA).

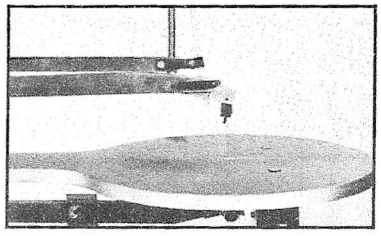


Fig. A-5

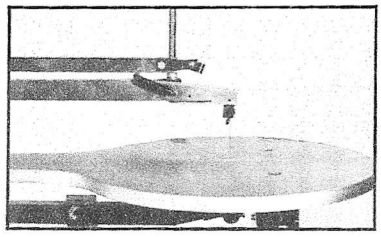
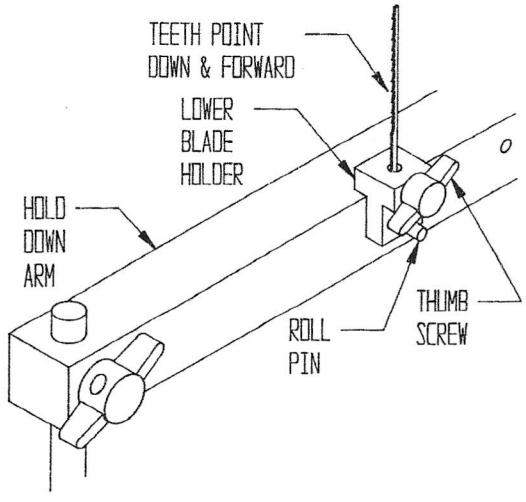


Fig. A-6

Step #1 — The front cam has two positions: the released position (for changing blades), (see fig. A-5) and the tensioned position (for sawing) (see fig. A-6). The blade tension is adjusted with the cam-over at the back of the saw. Begin blade changing by releasing the front cam (black handle on the left side of the upper arm). By flipping the handle in the complete forward position your blade tension will be released. Loosen the thumb screw on the upper blade holder to release the old sawblade.



Step #2 — Choose the size and type of blade you will be using. (Make your selection from the blade chart located on page 7.) Located at the front of the lower arm will be the lower blade holder. Holding the blade holder at both ends (with your index finger and thumb), remove it by pushing down slightly and sliding the blade holder forward.

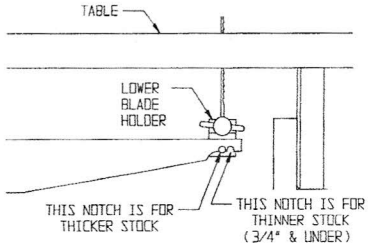
Step #3 — Now let's mount the blade in the bottom blade chuck. The lower blade holder is "T" shaped when viewed from the front. It has a pin through the bottom and a thumb screw to clamp the blade. To hold the chuck while changing blades there are two holes in the hold down arm. Only one hole is needed; there is an extra. Place the lower blade holder against the hold down arm with the pin in the hole and the top portion over the hold down arm (see figure above) so the blade will not rotate when the thumb screw is turned.

Step #4 — Remove any remaining portion of the blade from the chuck. Make sure that all broken blade pieces are cleared away. With the teeth pointing forward and down toward the chuck, insert the blade through the hole in the top of the lower blade holder so the bottom end of the blade is touching the bottom of the hole in the chuck. The blade must come straight out of the chuck.

Step #5 — Using the thumb screw, tighten the new blade in the chuck. Be careful not to over tighten the chuck—more is not always better. When the blade is over tightened you will crimp the blade and weaken it at the point where the blade enters the chuck. This will make the blade prone to breaking next to the blade holder.

Step #6 — Remove the blade holder from the hold down arm and thread the blade up through the slot in the table. Be sure the teeth on the blade are facing the front of the saw. (See fig. A-7). Sliding the chuck back under the lower arm in the slot. There are two notches in the lower arm for the lower blade holder to fit in. The front one is for thinner stock (3/4" and under), and the back notch is for thicker stock (see figure on the next page).

Step #7 — Using your index finger, bring the upper arm down while pinching the blade between you thumb and second finger (see fig. A-8). Push the blade back into the slot in the front of the upper blade holder. Make sure the blade is completely to the back of the blade holder and the top of the blade is touching the stop pin. Tighten the blade holder knob with your right hand.



Step #8 — Now it's time to begin re-tensioning the blade. Most every different size of blade require a little alteration in the tension put on the blade. A good rule of thumb to remember is this: when moving to a smaller blade, lighten the tension — when moving to a larger blade, increase the tension slightly.

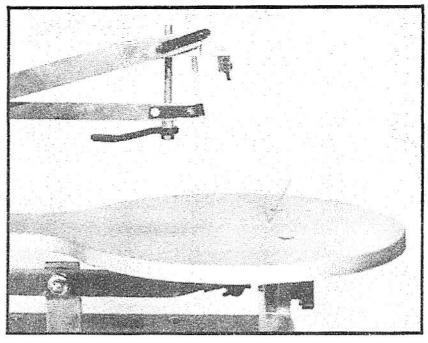


Fig. A-7

Step #9 — Begin the tensioning process by flipping the front cam back to the tensioned position. Now begin tensioning the blade with the rear cam by slowly moving the rear camover handle back to the original position. Adjusting the tension is done with the rear cam. Stop tensioning when the blade makes a clear ping when plucked like a guitar string. For more information see BLADE TENSIONING.

Step #10 — You're finished changing the blade! Yeah! Put your tools away and you're ready to get started sawing. Each time you change the blade it will get easier. Soon you'll be changing a blade in seconds.

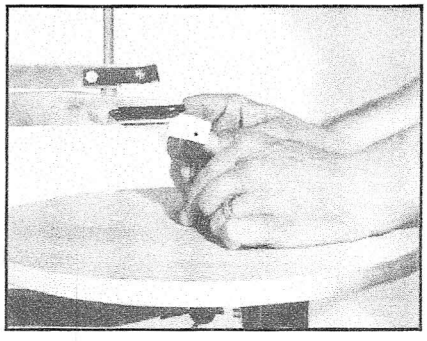
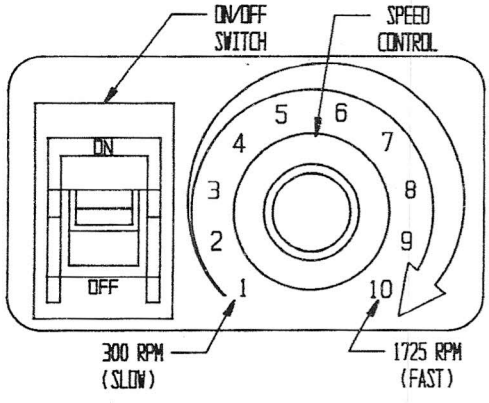


Fig. A-8

Note: If you break a blade, simply place the front cam handle in the released position (to release the blade tension) and change the blade. Return the front cam handle to the tensioned position. The tension should be correct and should not need adjusting.

SPEED CORRELATION CHART

NO.	SPEED	NO.	SPEED
1	300 RPM	6	1200 RPM
2	500 RPM	7	1325 RPM
3	725 RPM	8	1500 RPM
4	850 RPM	9	1650 RPM
5	1025 RPM	10	1725 RPM



BLADE TENSIONING

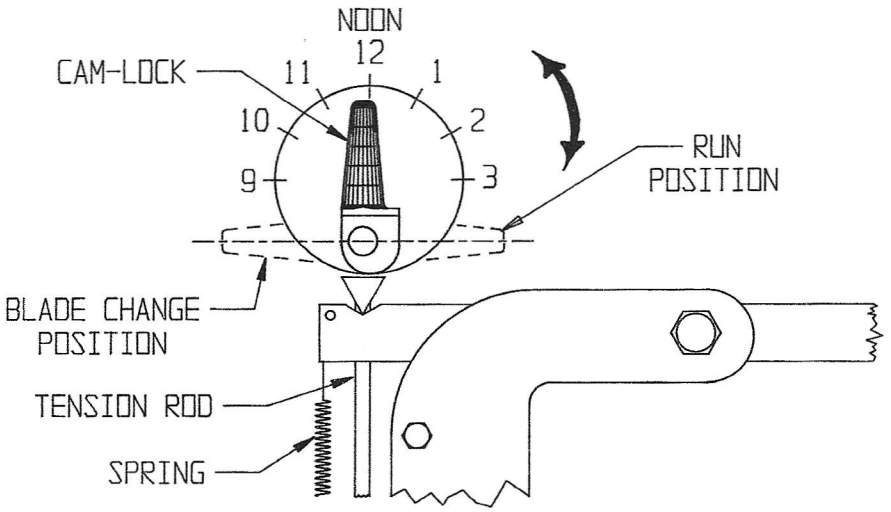
To adjust the blade tension release the cam-lock at the rear of the saw by flipping the cam toward the back or away from the front of the saw. This will release blade tension.

Clock Method: If you look at the saw from the left side (rear cam-lock at your left hand) imagine the cam-lock as the hand of a clock. If you look at the chart on the right you will see the cam-lock in the straight up or 12 o'clock position. The object here is to set the point at which tension starts as you lift the cam-lock toward the front of the saw with the suggested clock position in the chart. To change the point at which tension starts **you grasp the tension rod** and either spin it clockwise or counter-clockwise. Spinning it clockwise will reduce the tension (make the cam stop

at a higher clock position) and spinning it counter-clockwise will increase the tension (make the cam stop at a lower clock position). Once you have tension starting at the correct clock position, pull the cam lever all the way over toward the front of the saw and the tension will be set at the correct pressure for each blade. (If you have questions, view the Hawk Scroll Saw Video for a visual demonstration). The positions in the diagram below are to be used as a reference point. You may use a little more or a little less tension.

BLADE TENSION CHART

BLADE	CLOCK POSITION 220	226
#9 - #12	11:00	10:00
#7	11:30	10:30
#5	11:30	11:00
#2	12:30	12:00
#2/0	12:30	12:30



BLADE TENSION ADJUSTMENT

ADVANCED SCROLLING TECHNIQUES

Bevel Sawing

Bevel Sawing is a fun way to add another dimension to a project. To make a bevel cut you simply tilt the table of your Hawk and begin cutting. Many folks use the bevel sawing technique to create inlays, dovetail joints, and the 3-D pictures like the one we'll make for this project.

Make a copy of the desert pattern from your Pattern Pak and attach it to a piece of 1/2" wood — just about any kind of wood will work. Now beginning with the most inside line (in this case it's the desert floor and cactus), tilt the saw table at 3 degrees to the right and make the first cut in a clockwise direction.

Now tilt the table 3 degrees to the left and follow the next pattern line (the ground and mountains). For the final cut, you will need to tilt the table to the right at 4 degrees and follow the last line. Now push each piece into position to make a fun 3-D project.

NOTE: If tilting the table more than 40° to the right, the lower blade holder needs to be reversed so the thumb screw is on the left side of your lower arm (see figure on next page).

The bevel cutting techniques may also be used for making all types of inlays. There is a detailed project pattern in your RBI Pattern Pak for complete instructions on making inlays.

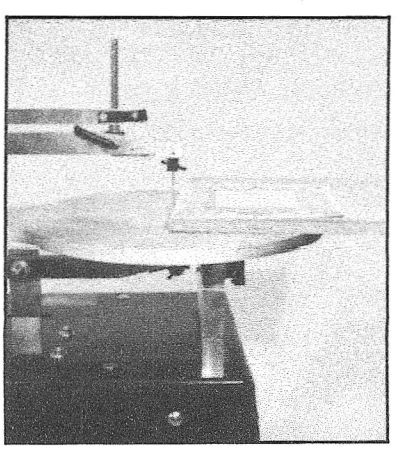
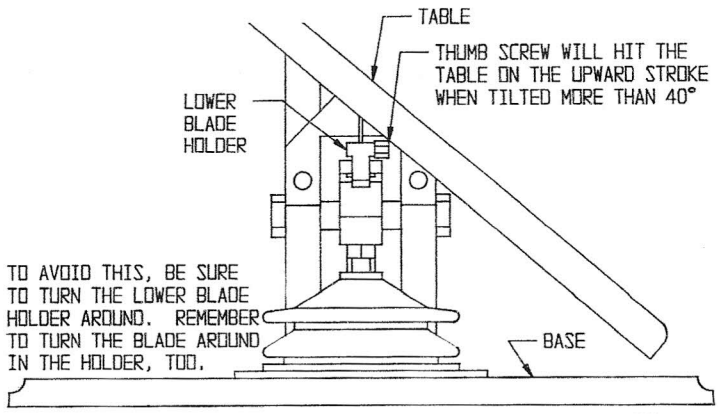


Fig. A-10

Stack Cutting

This is a technique most pros use when they are making several projects of the same pattern. Remember your Hawk has the ability to cut up to a full 2-5/8" thick material, so you can stack most projects at least 2" high. There are many ways to keep the projects from slipping while cutting. Here are a few of our favorites:



- **Hot Melt Glue** — Many times when pros are cutting they use a hot glue gun to glue pieces all together. They put the pieces together in a stack (remember, not more than 2") and run a bead of glue in a zigzag down two sides of the project material. By making a zigzag, the material will hold together when cutting in any direction.

- **Double Sided Tape** — Some Hawk owners tell us that they think the glue gun is a mess and they prefer to use carpet layer's double stick tape. To hold your project together with tape you just sandwich a couple of strips between each layer and you're ready to go.

- **Nails** — We've even talked to some real purists that prefer to stick with traditional woodworking item and just stack'em up and nail'em. If you use this method, be sure your nails are not sticking out of the projects or they will scratch and mar the table surface. **This is the best way to hold your stack together. Make sure your nails are in the waste area of your project.**

To practice the technique of stack cutting we will make a pair of identical shelf support brackets. For this project you will need two pieces of 1" x 8" lumber. Any kind will do — hard or soft wood. Make sure both pieces are the same size. Stack them up and hook them together the way you like the best. Now put your project to the side — we've got another technique to learn before we can start cutting your project.

Note: Always make sure your table top is completely square before making a stack cut project or you will find that the projects will be smaller on the bottom than they are at the top.

Inside Cuts

Making an inside cut is simply cutting an opening in your project without making an entry cut. Making inside cuts is impossible with the bandsaw, but the Hawk can make them in a snap! First, begin by drilling a hole in the scrap area that is to be removed. Make sure the hole is big enough for the blade to fit through.

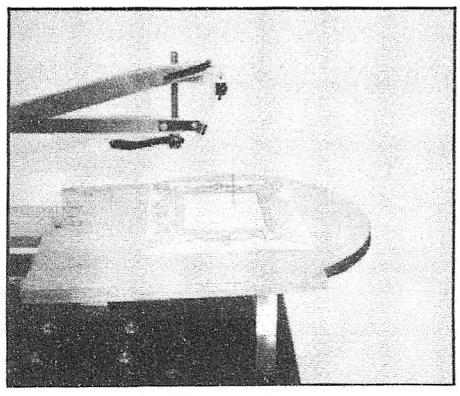


Fig. A-11

Now you will need to release the tension on your blade. Remember the front cam tension release lever? (It's the little black bar on the left front side of the upper arm.) Flip the front cam lever all the way to the front. This should release the tension on your blade. Now remove the blade from the upper blade holder by unscrewing the knob on the right side of the upper blade chuck (see fig. A-11).

Tilt the blade forward to the front of the slot in the table and thread the blade through the hole you drilled. You're now ready to replace the blade in the upper blade chuck and put your front tension cam back in its tensioned position (see fig. A-12).

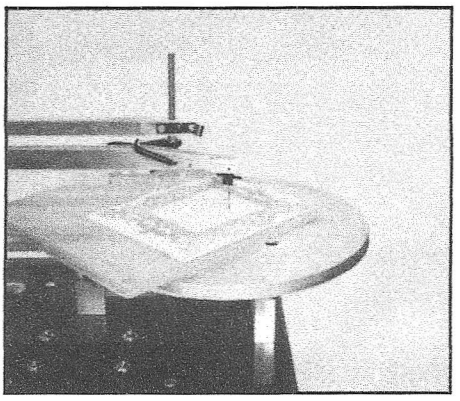


Fig. A-12

After you have made your cut, release the blade tension again, remove the top end of the blade from the top blade holder, and remove the workpiece. You did it!

Here's where your project comes in — there's a few inside cuts. You need to drill a hole in the shaded area of the pattern and follow the instructions above for technique. Be sure to cut out all shaded sections in the pattern, Now you've made the brackets into a beautiful ginger bread-style shelf! These are great to use as shelf brackets, or you might even want to finish them and put them in a window or doorway just to add a warm touch.

Compound Sawing

This is probably the toughest technique to learn for most folks, but making a compound cut can certainly be rewarding when you finally master it. By cutting all four sides of a project you add a completely new dimension to a simple project. We've enclosed a pattern for one of our favorite Christmas tree ornaments for you to try.

To begin your compound cut project you will need a 2" x 2" x 4" piece of softwood. Our favorite is basswood. Begin by taking the face pattern (the one that looks like you're looking at a reindeer head on), and attach the pattern (the one that looks like the profile of a reindeer) and glue it on the adjoining side. Now using the cutting techniques you've already learned, cut out the face pattern. Be sure to keep all the pieces if they separate.

After you have made the entire face cut, carefully put all of the pieces together and tape them securely back in their original place with masking tape. Now take the profile pattern and cut it out in the same way you did the face pattern. After you take all the pieces apart you will find a perfectly dimensioned reindeer inside. (This is a fun way to make brain teaser puzzles.) Some wood carvers tell us they like to cut out their blanks first by compound cutting, then they finish them with carving tools.

TROUBLESHOOTING

If you're getting a little frustrated, here are some troubleshooting tips that might help.

- **Excessive Blade Breakage**

  If you think you're breaking a lot of blades, here are a few tips:

  A. Be sure you are using the right size and type of blade for the material you are trying to cut. You can make sure by checking the blade recommendation chart on page 7.

  B. If the blade tends to break right above the bottom blade chuck, your blade is not installed in the lower blade chuck correctly. Helpful hint: be sure the blade is coming straight out of the blade chuck as pictured on page 8. Remember — when tightening the blade, don't over tighten. If you tighten the chuck too tightly you'll crimp the blade and weaken it just above the blade chuck. This will cause the blade to break.

  C. If the blade is breaking just below the upper blade chuck, chances are that you are not getting it in the upper blade chuck correctly. Remember — the blade must be all the way to the back of the slot and the top of the blade must be touching the roll pin.

- **Wood is Jumping on Table**

1. Constant down pressure must always be applied while cutting. In most cases the weight of your hand is more than enough to keep the project on the table, but you must maintain the pressure during the entire cutting process.

2. If you prefer, every Hawk comes complete with a hold down foot that surrounds the blade and keeps the project securely to the table. (Be sure you have lowered the hold down foot to touch the top of the surface.)

3. You may find that you are using a blade that is too large for the type of cutting you are doing. If the blade is too coarse, the project will lift from the worktable when making turns.

REMEMBER --- We are only a phone call away. If you ever have a question regarding your Hawk or its operation, just give us a call at **1-800-487-2623**. Our customer service representatives are on call from 8 a.m. to 5p.m. (Central time), Monday through Friday.

ORDERING REPLACEMENT PARTS AND ACCESSORIES

To speed delivery and reduce errors when ordering parts always give the name, model number, and serial number of your machine. Use the part number and description as shown in the parts list. Do not use the key numbers (the numbers in the circles on the parts breakdown drawing), always use the part number and description given in the parts list.

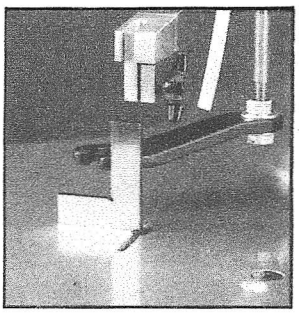
1. Give complete machine identification.
   A. Machine Name_____
   B. Model Number_____
   C. Serial Number_____

2. Completely identify the part.
   (Return the old part if necessary)
   A. Part Number_____
   B. Part Name_____

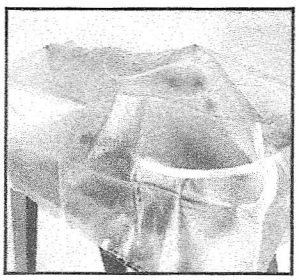
3. State your return address.
   Your Name_____
   Company_____
   Street Address_____
   Mailing Address_____
   City_____State_____Zip_____
   Telephone(_____) _____-_____

4. Send the order to **rbi**ndustries.

ACCESSORIES FOR YOUR NEW HAWK

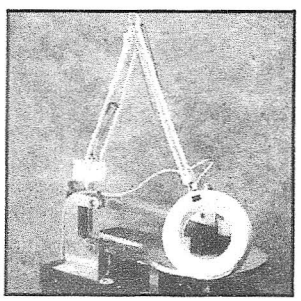


Precision Blade Square
For the precision scroller, the blade square is a must. Because the kerf of a scroll saw blade is so small, your worktable must be perfectly square when working in thick materials or a tapered cut will occur. By using this precision made machinist's square you can quickly check your table alignment with complete confidence.
865-0700 $15.95

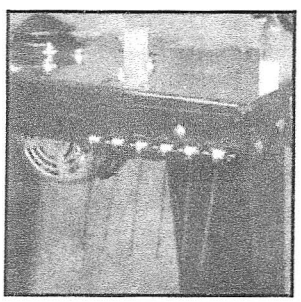


Dust Cover
This handy all-weather dust cover protects your Hawk saw from the harmful effects of workshop dust. Made from high-tech polycarbonate materials, it's designed for a lifetime to keep your Hawk from harm's way. One size fits all models.
865-0900 $16.95

Apron
Protect your clothes from sawdust and chips and let folks know you're a proud member of the RBI family with this RBI signature work apron. Made from heavy-duty polyester poplin, this apron is machine washable and stain resistant. Adjustable neck and waist straps make this a perfect fit for any crafter.
865-0600 Heavy-duty Cotton $10.95
865-0601 Denim $ 7.95



Magnifier Light
This premium quality magnifier light is a must for those who make small, intricate projects with their Hawks. This optical quality lens clearly magnifies your project to a 3 diopter, so you can see every detail while cutting. Mounts right to your saw or a benchmount clamp is included for other uses.
865-1210 $99.95



Blade Rack
Oh no--you've broken another saw blade. That's all right--there's no extra stretching or effort involved thanks to your handy RBI blade rack. This little device mounts easily on one of the table legs of your Hawk, and lets you choose from one of six of the extra blades that it holds.
965-0200 $12.95

Foot Switch
On-off switch enables user to turn the saw on and off by foot, leaving the hands free. The scroll saw plugs into the foot switch and the foot switch plugs into the wall, no wiring required.
865-0100 $24.95

Books
We carry a large selection of books on scroll sawing. These include books on technique as well as pattern books. Please call for details.

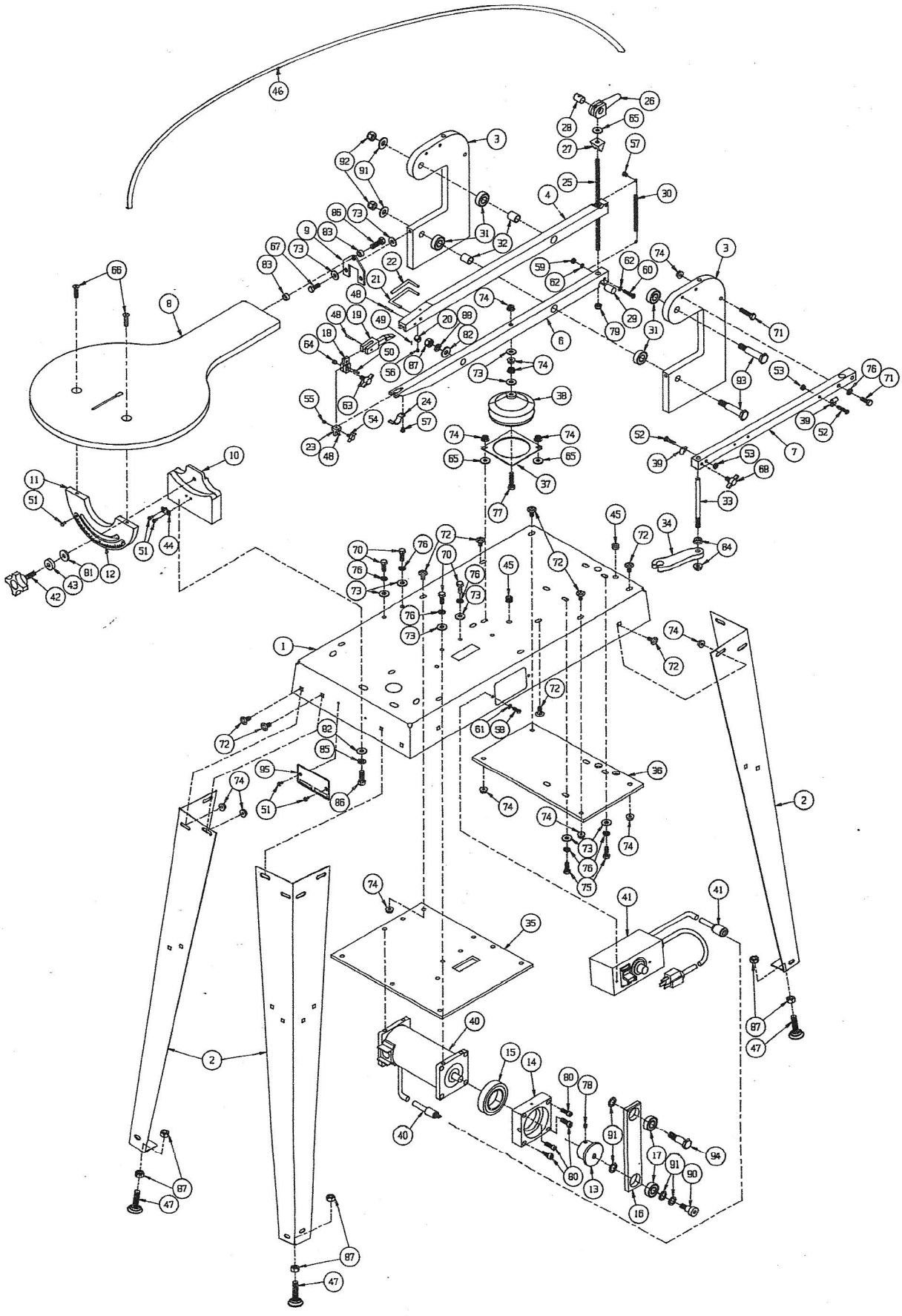
PARTS LIST MODEL 220 ULTRA HAWK

To speed up delivery and reduce errors when ordering parts always give the name, model number, and serial number of your machine. Use the part number and description as shown in the parts list. Do not use the key number (the numbers in the circles on the parts breakdown drawing). Always use the part number and description given in the parts list.

Key #	Part #	Description	Qty.
01	615-4217	SAW BASE, ULTRA 220	1
02	600-2007	SAW LEGS	4
03	615-2214	ARM SUPPORT, ULTRA 220	2
04	615-1212	TOP ARM, ULTRA 220	1
06	615-4213	BOTTOM ARM, ULTRA 220	1
07	615-2215	HOLD DOWN ARM	1
08	605-5005	LARGE SAW TABLE, 220/226	1
09	615-2211	REAR TABLE SUPPORT BRKT	1
10	615-3027	TALL BASE TILT	1
11	615-3020	TABLE TILT	1
12	715-0236	TABLE TILT SCALE, ALUM.	1
13	615-1263	COUNTERWEIGHT, ULTRA 220/226	1
14	615-2261	CARRIER BEARING CRADLE	1
15	715-0262	CARRIER BEARING	1
16	615-4193	PITMAN ARM	1
17	735-0007	1/2ID BALL BEARING	2
18	715-5181	UPPER BLADE HOLDER	1
19	615-5153	TOP BLADE HOLDER BRKT	1
20	715-2154	FRONT CAM	1
21	715-1168	FRONT CAM HANDLE	1
22	715-0164	CAP, BLACK RUBBER, 3" LONG	1
23	715-0252	LOWER BLADE HOLDER	1
24	715-0099	PLASTIC C-CLIP	1
25	615-0220	TENSION ROD 9"	1
26	615-1074	REAR CAM-OVER HANDLE	1
27	715-0075	ALUMINUM WEDGE PIVOT	1
28	715-0077	CAM-OVER HANDLE ROUND PIVOT	1
29	715-0216	LOWER PIVOT ROUND	1
30	710-2036	SPRING	1
31	715-1208	THRUST BEARING, SHIELDED	4
32	715-0264	1/2"ID BRASS BUSHING	2
33	685-2012	HOLD DOWN FOOT ROD	1
34	715-0104	HOLD DOWN FOOT	1
35	615-1222	MOTOR BRACE	1
36	615-0260	ARM SUPPORT BRACE	1
37	615-1025	BLOWER BELLOW BRACKET	1
38	715-0024	BLOWER BELLOWS	1
39	715-0275	3/8" NYLON HOSE CLAMP	2
40	704-0013	MOTOR, 1/8HP, 90V DC	1
41	715-0259	VARIABLE SPEED DC CONTROL	1
42	705-1042	5/16-18 X 1-1/4 SQUARE KNOB	1
43	615-0268	KNOB SPACER	1
44	715-0101	SCROLL SAW POINTER	1
45	715-0273	RUBBER GROMMET, 3/8" ID	2
46	715-0274	3/8" OD TUBING	55
47	705-0057	GLIDES	4
48	710-0042	1/8 X 3/4 ROLL PIN	3
49	715-0201	5/64 X 3/8 ROLL PIN	1
50	715-0205	3/16 X 1/2 ROLL PIN	1
51	710-0012	#7 X 5/16 RD HD DRIVE SCREW	7
52	715-0247	8-32 X 1 RD HD MACHINE SCREW	2
53	791-0050	8-32 HEX NUT	2

Key #	Part #	Description	Qty.
54	715-0255	10-32 X 1/2 SHCS(UNB) W/T-KNOB	1
55	715-0256	10-32 X 3/16 SSS FL. PT. (UNBRAKO)	1
56	790-0031	10-32 X 3/16 SSS, KNURL CUP PT	1
57	710-0035	10-32 X 1/4 RD HD MACH. SCREW	2
58	745-0106	10-32 X 1/2 RD HD MACH. SCREW	2
59	745-0107	10-32 HEX NUT	1
60	780-0019	10/32 X 1 RD HD MACH. SCREW	1
61	715-0191	3/16 INTERNAL LOCK WASHER	2
62	745-0112	3/16ID X 1/2OD RIVET BURR	2
63	715-0221	1/4-20 X 1/2 SHCS (UNB) W/T-KNOB	1
64	791-0053	1/4-20 X 1/4 SSS FL. PT. (UNBRAKO)	1
65	715-0103	1/4ID X 3/4OD X 1/16 NY. SPACER	3
66	715-0244	1/4-20 X 3/4 FL HD SKT CAP SCW	2
67	725-0043	1/4-20 X 1/2 HEX HD BOLT	2
68	615-1183	1/4-20 X 3/4 SHCS W/T-KNOB	1
70	735-0052	1/4-20 X 1 HEX HD BOLT	4
71	735-0080	1/4-20 X 1-1/4 HEX HD BOLT	3
72	745-0099	1/4-20 X 5/8 CARRIAGE BOLT	24
73	745-0177	1/4 FLAT WASHER	14
74	745-0223	1/4-20 FLANGED LOCK/WHIZ NUT	28
75	750-0206	1/4-20 X 3/4 HEX HD BOLT	4
76	750-0207	1/4 SPLIT LOCK WASHER	10
77	750-0213	1/4-20 X 2 CARRIAGE BOLT	1
78	770-0095	1/4-20 X 1/4 SOC. ST SCW, KNURL PT	1
79	715-0078	1/4-20 NYLON LOCK HEX NUT	1
80	790-0059	1/4-20 X 1-1/4 SOC. HD CAP SCREW	4
81	715-1120	5/16ID X 7/8OD X 1/8 NY. SPACER	1
82	745-0150	5/16 FLAT WASHER	3
83	745-0517	5/16ID X 1/2OD X 1/4 NYLON SPACER	2
84	770-0080	5/16-18 FLANGED LOCK/WHIZ NUT	2
85	770-0178	5/16 SPLIT LOCK WASHER	2
86	770-0181	5/16-18 X 1 HEX HD BOLT	3
87	770-0058	3/8-16 HEX NUT	9
88	770-0071	3/8 SPLIT LOCK WASHER	1
90	625-0033	1/2 X 1/2 SOC HD SHLDR BOLT, GR	1
91	715-0014	1/2ID X 3/4OD X 18GA WASHER	6
92	715-0210	1/2-13 NEOPRENE LOCK NUT	2
93	715-0229	1/2-13 X 3-3/4 HEX BOLT	2
94	715-1109	1/2 X 1 RD HD SOC. SHLDR BOLT	1
95	715-2070	SERIAL TAG, #220	1
96	703-3729	MANUAL, HAWK SAWS, ULTRA	1
	703-0700	WARRANTY CARD, GENERAL	1
	715-0094	DECAL, ALL GUARDS IN PLACE	1
	702-0011	DECAL, FINGERS FROM UNDER ARM	1
	745-0205	DECAL, MADE IN USA, OCTAGON	1
	715-0092	DECAL, RBI HAWK	1
	702-0002	DECAL, RBI MADE IN USA, ROUND	1
	702-0025	DECAL, SAW PATENT NUMBERS	1
	715-0091	DECAL, SCROLLER'S HOTLINE	1
	702-0034	DECAL, BLADE TENSIONING CHART	1
	615-1231	LOWER BLADE HOLDER ASSEMBLY	
	615-1182	UPPER BLADE HOLDER ASSEMBLY	
	615-1251	BOLT BAG FOR SAW LEGS	

PARTS BREAKDOWN
220 ULTRA HAWK



PARTS LIST MODEL 226 ULTRA HAWK

To speed up delivery and reduce errors when ordering parts always give the name, model number, and serial number of your machine. Use the part number and description as shown in the parts list. Do not use the key number (the numbers in the circles on the parts breakdown drawing). Always use the part number and description given in the parts list.

Key #	Part #	Description	Qty.
01	615-5225	SAW BASE, ULTRA 226	1
02	600-2007	SAW LEGS	4
03	615-1241	ARM SUPPORT, ULTRA 226	2
04	615-1237	TOP ARM, ULTRA 226	1
05	600-0037	TOP ARM REINFORCEMENT	1
06	615-4238	BOTTOM ARM, ULTRA 226	1
07	615-4066	HOLD DOWN ARM	1
08	605-5005	LARGE SAW TABLE, 220/226	1
09	615-0270	REAR TABLE SUPPORT BRKT	1
10	615-3027	TALL BASE TILT	1
11	615-3020	TABLE TILT	1
12	715-0236	TABLE TILT SCALE, ALUM.	1
13	615-1263	COUNTERWEIGHT, ULTRA 220/226	1
14	615-2261	CARRIER BEARING CRADLE	1
15	715-0262	CARRIER BEARING	1
16	615-4193	PITMAN ARM	1
17	735-0007	1/2ID BALL BEARING	2
18	715-5181	UPPER BLADE HOLDER	1
19	615-5153	TOP BLADE HOLDER BRKT	1
20	715-2154	FRONT CAM	1
21	715-1168	FRONT CAM HANDLE	1
22	715-0164	CAP, BLACK RUBBER, 3" LONG	1
23	715-0252	LOWER BLADE HOLDER	1
24	715-0099	PLASTIC C-CLIP	1
25	615-0220	TENSION ROD, 9"	1
26	615-1074	REAR CAM-OVER HANDLE	1
27	715-0075	ALUMINUM WEDGE PIVOT	1
28	715-0077	CAM-OVER HANDLE ROUND PIVOT	1
29	715-0216	LOWER PIVOT ROUND	1
30	710-2036	SPRING	1
31	715-1208	THRUST BEARING, SHIELDED	4
32	715-0264	1/2"ID BRASS BUSHING	2
33	685-2012	HOLD DOWN FOOT ROD	1
34	715-0104	HOLD DOWN FOOT	1
35	615-1222	MOTOR BRACE	1
37	615-1025	BLOWER BELLOW BRACKET	1
38	715-0024	BLOWER BELLOWS	1
39	715-0275	3/8" NYLON HOSE CLAMP	2
40	704-0013	MOTOR,1/8HP, 90V DC	1
41	715-0259	VARIABLE SPEED DC CONTROL	1
42	705-1042	5/16-18 X 1-1/4 SQUARE KNOB	1
43	615-0268	KNOB SPACER	1
44	715-0101	SCROLL SAW POINTER	1
45	715-0273	RUBBER GROMMET, 3/8" ID	2
46	715-0274	3/8OD TUBING (BY THE INCH)	61
47	705-0057	GLIDES	4
48	710-0042	1/8 X 3/4 ROLL PIN	3
49	715-0201	5/64 X 3/8 ROLL PIN	1
50	715-0205	3/16 X 1/2 ROLL PIN	1
51	710-0012	#7 X 5/16 RD HD DRIVE SCREW	7
52	715-0247	8-32 X 1 RD HD MACHINE SCREW	2
53	791-0050	8-32 HEX NUT	2
54	715-0255	10-32 X 1/2 SHCS(UNB) W/T-KNOB	1
55	715-0256	10-32 X 3/16 SSS FL. PT. (UNBRAKO)	1
56	790-0031	10-32 X 3/16 SSS, KNURL CUP PT	1
57	710-0035	10-32 X 1/4 RD HD MACH. SCREW	3
58	745-0106	10-32 X 1/2 RD HD MACH. SCREW	2
59	745-0107	10-32 HEX NUT	1
60	780-0019	10/32 X 1 RD HD MACH. SCREW	1
61	715-0191	3/16 INTERNAL LOCK WASHER	2
62	745-0112	3/16ID X 1/2OD RIVET BURR	2
63	715-0221	1/4-20 X 1/2 SHCS (UNB) W/T-KNOB	1
64	791-0053	1/4-20 X 1/4 SSS FL. PT. (UNBRAKO)	1
65	715-0103	1/4ID X 3/4OD X 1/16 NY. SPACER	3
66	715-0244	1/4-20 X 3/4 FL HD SKT CAP SCW	2
68	615-1183	1/4-20 X 3/4 SHCS W/T-KNOB	1
69	735-0017	1/4-20 X 3/4 SKT HD CAP SCREW	2
70	735-0052	1/4-20 X 1 HEX HD BOLT	4
71	735-0080	1/4-20 X 1-1/4 HEX HD BOLT	3
72	745-0099	1/4-20 X 5/8 CARRIAGE BOLT	20
73	745-0177	1/4 FLAT WASHER	14
74	745-0223	1/4-20 FLANGED LOCK/WHIZ NUT	24
75	750-0206	1/4-20 X 3/4 HEX HD BOLT	8
76	750-0207	1/4 SPLIT LOCK WASHER	14
77	750-0213	1/4-20 X 2 CARRIAGE BOLT	1
78	770-0095	1/4-20 X 1/4 SOC. ST SCW, KNURL PT	1
79	715-0078	1/4-20 NYLON LOCK HEX NUT	1
80	790-0059	1/4-20 X 1-1/4 SOC. HD CAP SCREW	4
81	715-1120	5/16ID X 7/8OD X 1/8 NY. SPACER	1
82	745-0150	5/16 FLAT WASHER	3
83	745-0517	5/16ID X 1/2OD X 1/4 NYLON SPACER	1
84	770-0080	5/16-18 FLANGED LOCK/WHIZ NUT	2
85	770-0178	5/16 SPLIT LOCK WASHER	2
86	770-0181	5/16-18 X 1 HEX HD BOLT	2
87	770-0058	3/8-16 HEX NUT	9
88	770-0071	3/8 SPLIT LOCK WASHER	1
89	707-6041	5/16-18 X 1-1/4 HEX HD BOLT	1
90	625-0033	1/2 X 1/2 SOC HD SHLDR BOLT, GR	1
91	715-0014	1/2ID X 3/4OD X 18GA WASHER	6
92	715-0210	1/2-13 NEOPRENE LOCK NUT	2
93	715-0229	1/2-13 X 3-3/4 HEX BOLT	2
94	715-1109	1/2 X 1 RD HD SOC. SHLDR BOLT	1
95	700-1034	SERIAL TAG, #226	1
96	703-3729	MANUAL, HAWK SAWS, ULTRA	1
	703-0700	WARRANTY CARD, GENERAL	1
	715-0094	DECAL, ALL GUARDS IN PLACE	1
	702-0011	DECAL, FINGERS FROM UNDER ARM	1
	745-0205	DECAL, MADE IN USA, OCTAGON	1
	715-0092	DECAL, RBI HAWK	1
	702-0002	DECAL, RBI MADE IN USA, ROUND	1
	702-0025	DECAL, SAW PATENT NUMBERS	1
	715-0091	DECAL, SCROLLER'S HOTLINE	1
	702-0034	DECAL, BLADE TENSIONING CHART	1
	615-1231	LOWER BLADE HOLDER ASSEMBLY	
	615-1182	UPPER BLADE HOLDER ASSEMBLY	
	615-1251	BOLT BAG FOR SAW LEGS	

PARTS BREAKDOWN
226 ULTRA HAWK