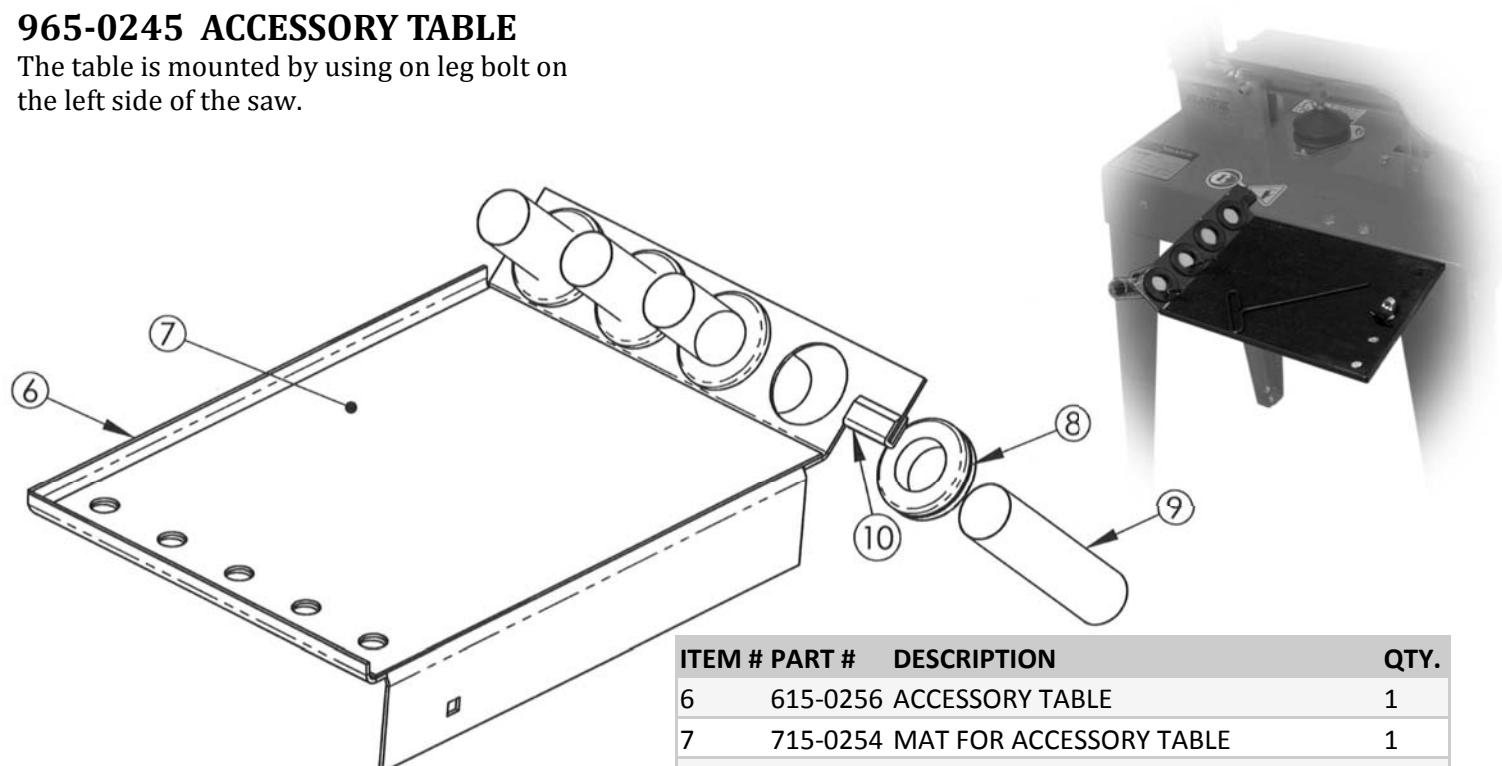


965-0245 ACCESSORY TABLE

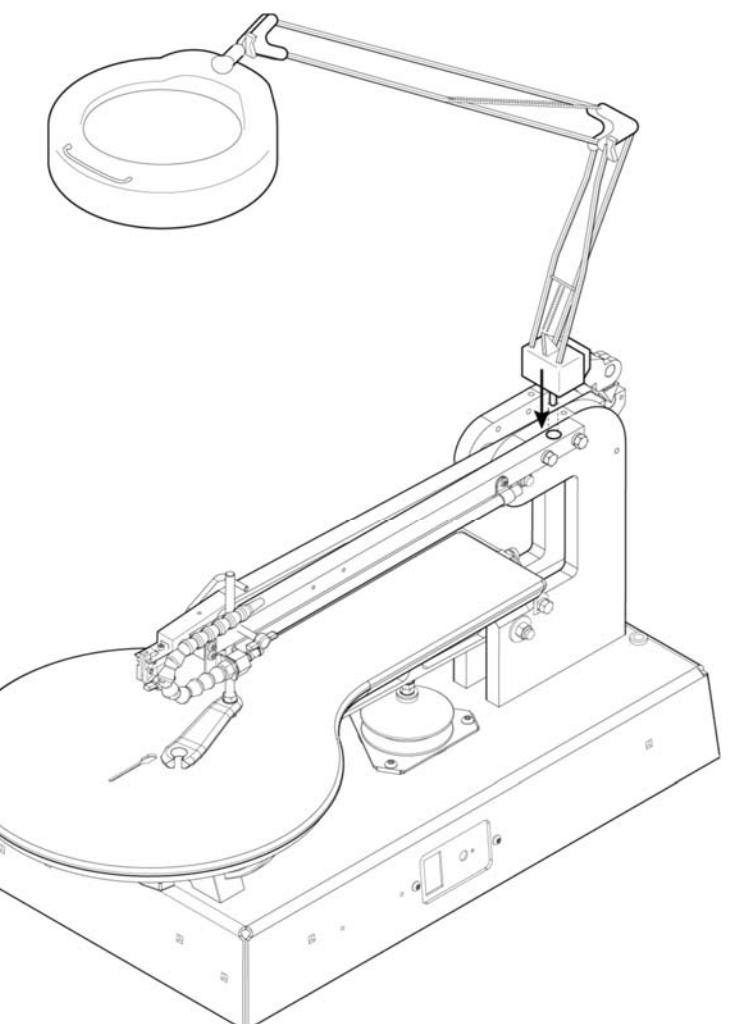
The table is mounted by using on leg bolt on the left side of the saw.



ITEM #	PART #	DESCRIPTION	QTY.
6	615-0256	ACCESSORY TABLE	1
7	715-0254	MAT FOR ACCESSORY TABLE	1
8	715-0233	GROMMET 1" FOR BLADE TUBE	4
9	865-0804	1 X 4 BALDE TUBE	4
10	615-0259	EDGE TRIM	1

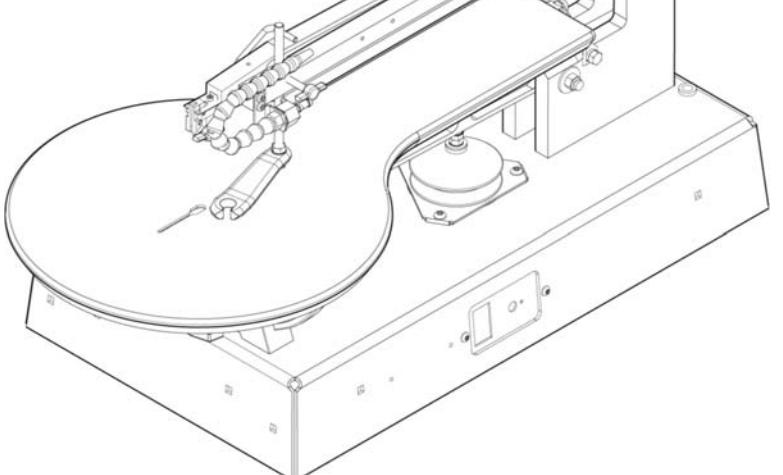
865-2210 MAGLIGHT

The maglight can be mounted directly in the mounting hole of the accessory arm. There is no need to use a clamp on mount. Some versions of the light require that the rear tension cam be pointed to the back and not the front of the saw.



865-0100 FOOTSWITCH

The footswitch is mounted into the wall outlet and the saw is plugged into the footswitch. Note the foot switch is just a start stop switch. It does not vary the speed of the saw.



HAWK
Woodworking Tools

Bushton Manufacturing, LLC
P.O. Box 127, 319 S. Main St.
Bushton, KS 67427
620-562-3557
www.hawkwoodworkingtools.com

BM-20 and BM-26 OPERATORS MANUAL



ALWAYS READ ALL INSTRUCTIONS AND SAFETY

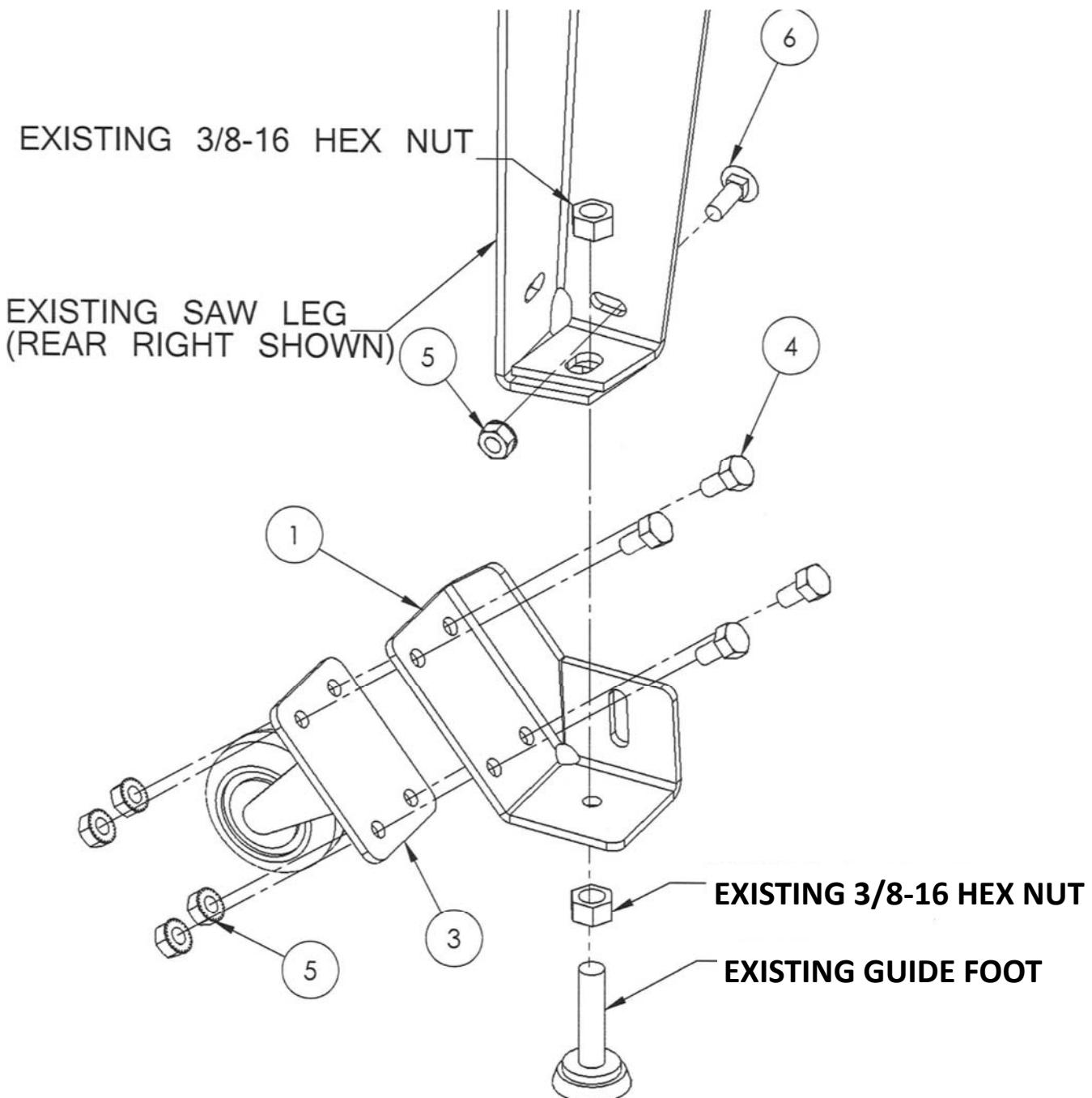
“AMERICAS WOODWORKING MACHINERY MANUFACTURER SINCE 1929”

ALWAYS THINK SAFETY FIRST

CONTENTS

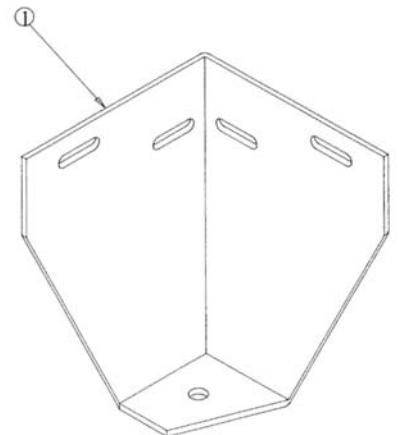
Contact Information	3	Left/Right Hand Accessory Arm	21
Warranty	3	Maintenance	22
Ordering Information	3	Front Cam Blade Tension Release Adjustment	22
Specifications	3	Table Care	22
Site Considerations	5	Tension Rod	22
Warnings	6	Saw Alignment	22
Safety Procedures	7	Trouble Shooting	23
Unpacking	8	Blade Issues	23
Assembling the Saw	8	Motor/Controller Problems	24
Blade Selection	9	Assembly Drawings/Parts Breakdowns	25
Blade Changing	10	Base Machine Assembly	25
Bottom Loading	10	Arms Sub Assembly	26
Top Loading	11	Motor/Pitman Arm Sub Assembly	27
Blade Tensioning	12	Table/Tilt Assembly	28
Speed Control	12	Upper Arm Assemblies	29
Nose Stroke Adjustment	13	Lower Arm Assemblies	30
Blade/Table Alignment	14	Tension Rod Assembly	31
Adjustment of Table to Arms	14	Bellows Assembly	31
Adjusting Back of Table	14	Accessory Arm Assembly	32
Adjustment of Blade in Holder	14	Leg Options	33
Table Tilt	14	Chair Leg Assembly	33
Cutting Techniques	15	Bench Leg Assembly	34
Practice Cut	15	Leg Extension Kit	34
First Project	16	Accessories	
Inside Cuts	16	Saw Caster Kit	35
Project	16	Accessory Table	36
Compound Cuts	17	Mag Light	36
3-D Deer	17	Foot Switch	36
1/4 Turn Project	17		
Turtle	17		
Bevel Cuts	18		
Dog in House	18		
Bowel	19		
Stack Cutting	20		
Hot Glue	20		
Double Sided Tape	20		
Edge Taping	20		
Nails	20		
Cutting using Drip Tank	20		
Cutting flat Items	20		
Cutting Bottles	20		

965-1910 SAW CASTER KIT



KEY #	PART #	DESCRIPTION	QTY
1	600-0051	CASTER BRACKET LEFT	1
2	600-0050	CASTER BRACKET RIGHT	1
3	705-0056	CASTER	2
4	725-0043	1/4-20 x 1/2" LG HEX HEAD BOLT	8
5	745-0223	1/4-20 WHIZ NUT	10
6	745-0099	1/4-20 x 5/8" LG CARRIAGE BOLT	2

965-0956 BENCH LEG



PART #	DESCRIPTION	QTY.
600-3008	SCROLL SAW LEG SHORT	4
745-0099	1/4-20 X 5/8" LG CARRIAGE BOLT	12
745-0223	1/4-20 LOCK WHIZ NUT	12
705-0057	LEVELING PAD	4
770-0058	3/8-16 HEX NUT	8

CONTACT INFORMATION

You can reach our customer service department Monday thru Friday from 8:00 am to 5:00 pm Central Time.

Customer Service
Bushton Manufacturing, LLC
P.O. Box 127
319 South Main Street
Bushton, KS 67427
Phone: 620-562-3557

e-mail: customerservice@hawkwoodworkingtools.com

LIMITED WARRANTY

We guarantee that all Hawk Products are free from defects in materials and workmanship for one full year from the date of purchase. This warranty is automatically started when we ship your new Hawk Product. The warranty is tied to the original owner and is not transferable. If given as a gift, tell us who it is to and what day the gift will be given so that the warranty can be properly registered. The warranty covers parts only labor and shipping charges still apply.

This warranty does not obligate us to bear the cost of shipping charges in connection with the repair or replacement of the defective parts, nor shall it apply to any machine upon which repairs or alterations have been made unless authorized by us. This warranty is void if damage is the result of misuse or abuse of the machine. This warranty is non-transferable. Tampering with any electrical control components voids this warranty.

When receiving a freight item from a common carrier, the customer must note on the receipt any damage to the carton. This is required for all insurance claims. If you do not note any damage to the shipping carton, you assume the cost of any damages caused by shipping that are not covered by insurance.

We shall in no event be liable for consequential damages or contingent liabilities arising out of the use of any machine, or out of the failure of any machine to operate properly. No express, implied or statutory warranty other than herein set forth is made or authorized to be made by us.

Warranty information will be based on information given at the time of purchase. This warranty is not transferable from one owner to another. Any repairs and or replacement parts must be done by Bushton Manufacturing, LLC. In order for parts to be honored by this warranty, the part must be official Hawk Woodworking Tools parts supplied by Bushton Manufacturing, LLC.

ORDERING INFORMATION

To order you can contact customer service by mail, phone or e-mail as listed on top of this page.

You will need to provide the item number, description and quantity you want.

You can pay by check, money order, MasterCard, VISA, American Express or Discover Card.

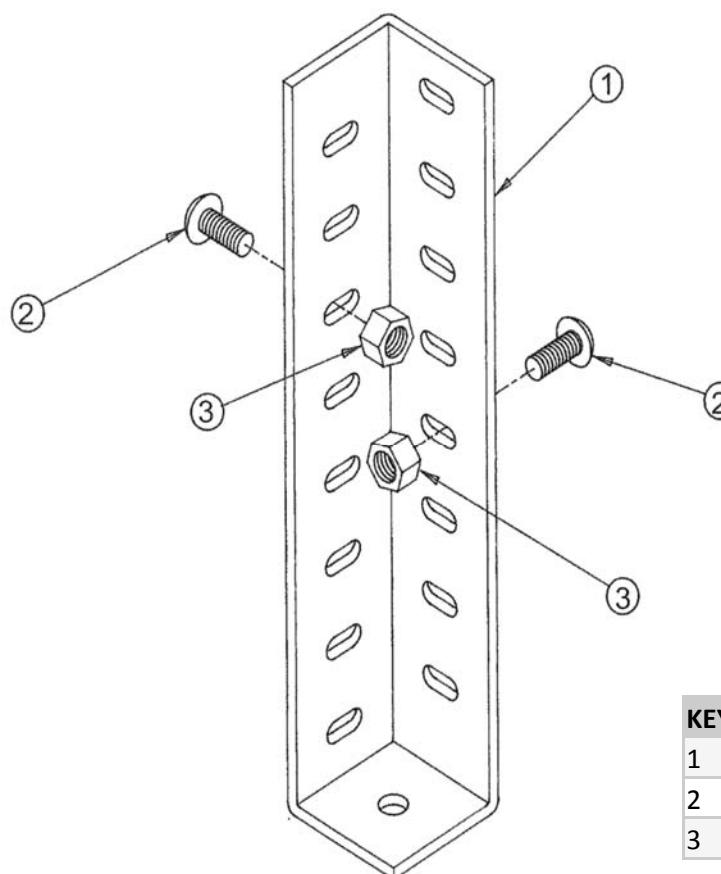
We do not have a set shipping and handling charges table at this time contact customer service for the amount of these charges for your order.

You can order many times online at www.hawkwoodworkingtools.com

965-1151 LEG EXTENSION KIT

TWO EXTENSION PER KIT, ONE KIT WILL TILT SAW

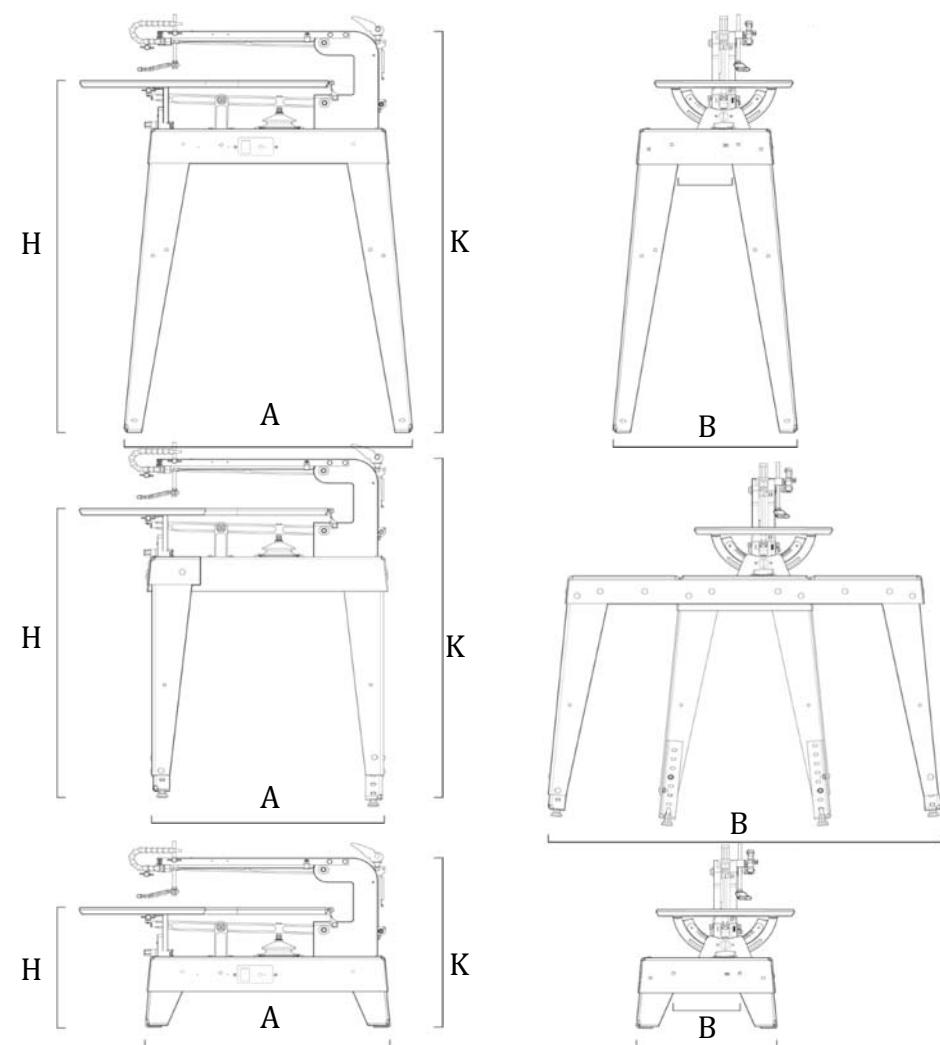
TWO KITS REQUIRED TO RAISE SAW



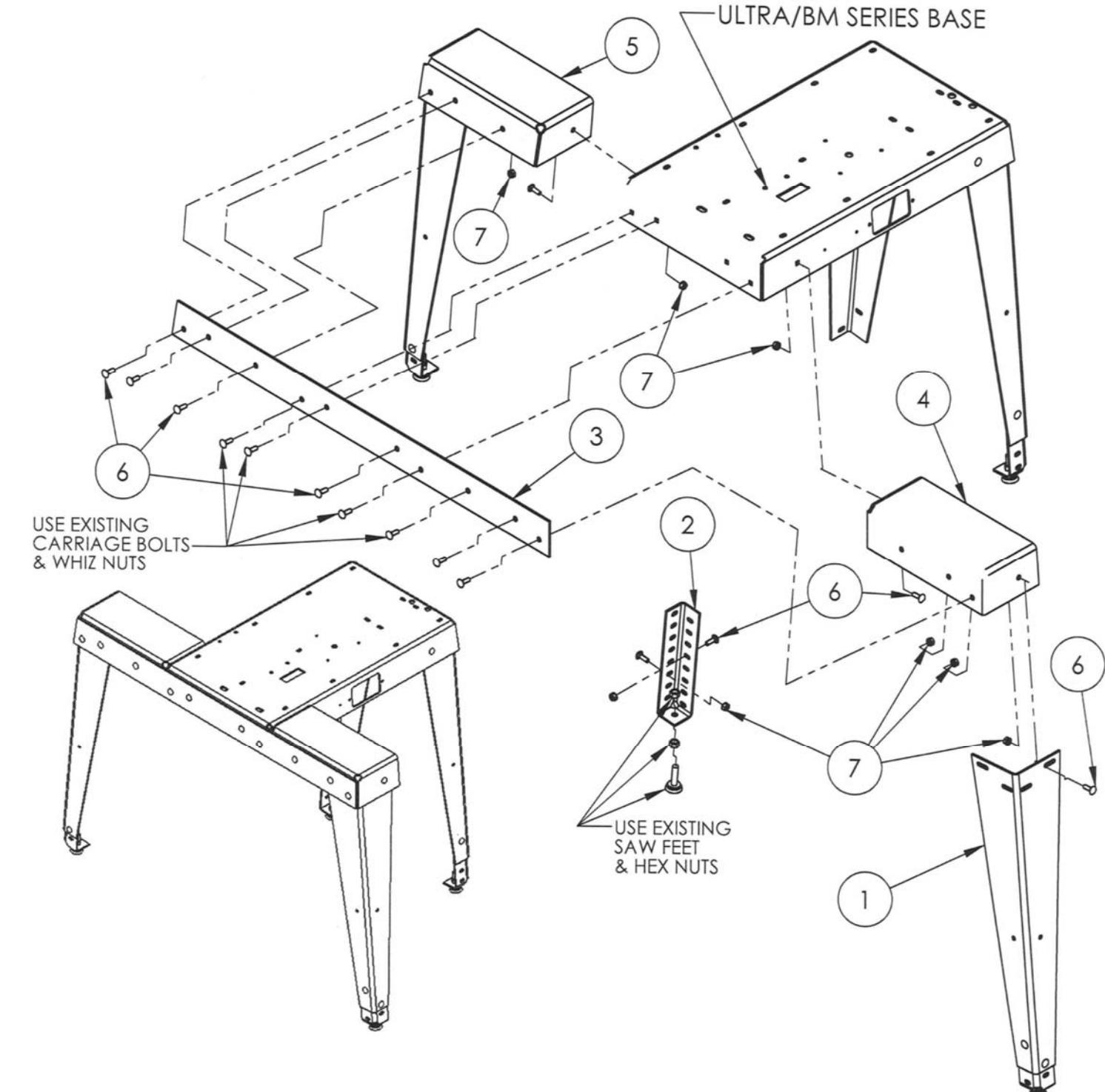
KEY #	PART #	DESCRIPTION	QTY
1	600-1027	LEG EXTENSION	2
2	745-0099	1/4-20 x 5/8" LG CARRIAGE BOLT	4
3	745-0223	1/4-20 WHIZ LOCK NUT	4

SPECIFICATIONS

Throat Capacity	BM-20	BM-26
Maximum Cutting Thickness	20"	26"
Cutting Strokes per Minute	2 1/2"	2 1/2"
Work Table	100-1750	100-1750
Dimension H Cutting Table Height	13 1/2"	13 1/2"
Standard Legs	39"	39"
Standard legs w/extensions	43 1/2"	43 1/2"
Chair legs	31 to 38"	31 to 38"
Bench Legs	13"	13"
Dimension K Overall Height		
Standard Legs	47"	47"
Standard legs w/extensions	51 1/2"	51 1/2"
Chair legs	39 to 46"	39 to 46"
Bench Legs	21"	21"
Dimension A		
Standard Legs	29	35"
Chair legs	29"	35"
Bench Legs	24"	30"
Dimension B		
Standard Legs	19	19
Chair legs	41"	41"
Bench Legs	14"	14"
Maximum forward tilt (extension on back legs only)	15 Degrees	12 Degrees
Table Over Hang	7"	7"
Motor	DC TENV	DC TENV
Mounting	10 Gauge Steel Legs	10 Gauge Steel Legs
Weight	93 Pounds	97 Pounds
Floor Space Requirements	19 1/2" x 33"	19 1/2" x 39"
Manufacturer's Warranty	1 Year	1 Year
Shipping Dimensions		
Box # 1	39" x 21" x 20"	39" x 21" x 20"
Box # 2 Standard Legs	7" x 7" x 37"	7" x 7" x 37"
Box # 2 Chair Legs	30#	30#
Box # 2 Bench Legs	7" x 7" x 37"	7" x 7" x 37"
	38#	38#
	7" x 7" x 15"	7" x 7" x 15"
	8#	8#



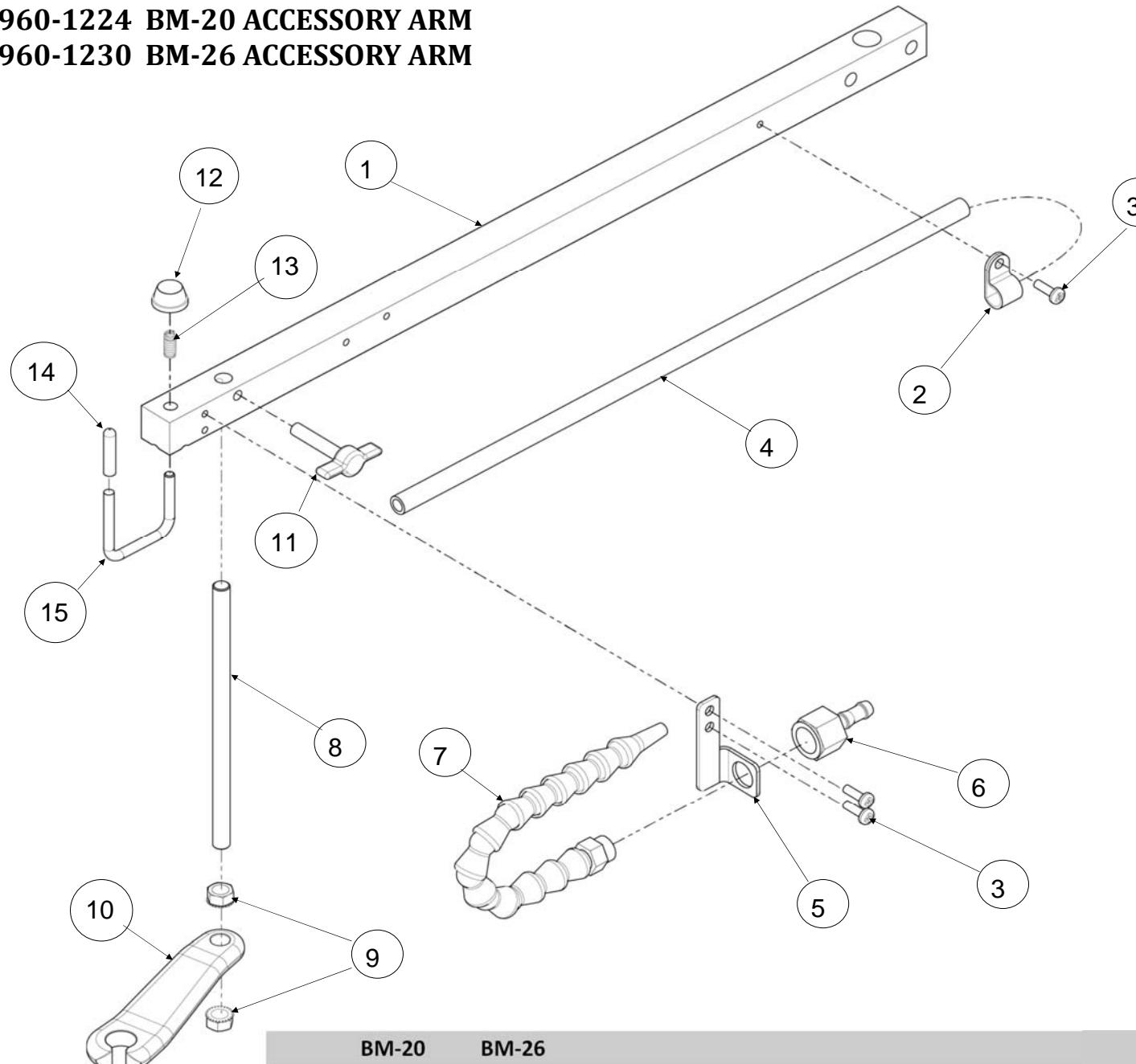
965-0950 CHAIR LEG KIT



KEY #	PART #	DESCRIPTION	QTY
1	633-2011	SHORT SAW LEG	4
2	600-1027	SAW LEG EXTENSION	4
3	615-2010	CHAIR LEG MOUNT PLATE ULTRA/BM SERIES	1
4	615-1278	CHAIR LEG BRACKET RIGHT	1
5	615-1277	CHAIRLEG BRACKET LEFT	1
6	745-0099	1/4-20 x 5/8"LG CARRIAGE BOLT	16
7	745-0223	1/4-20 LOCK WHIZ NUT	16

960-1224 BM-20 ACCESSORY ARM

960-1230 BM-26 ACCESSORY ARM



KEY #	BM-20	BM-26	DESCRIPTION	QTY.
1	615-3215A	615-8066A	HOLD DOWN ARM	1
2	715-0275	715-0275	HOSE LOOP	1
3	770-0088	770-0088	#8-32 X 1/2" ROUND HEAD MACH. SCREW	3
4	715-0274	715-0274	POLYETHYLENE TUBING 3/8" OD	1
5	505-0004B	505-0004B	BLOWER TUBE BRACKET	1
6	715-0308	715-0308	1/4" ID, FEMALE HOSE BARB	1
7	715-0321	715-0321	LOC-LINE 1/4" ID SEGMENT	12
8	785-2012	785-2012	HOLD-DOWN FOOT ROD	1
9	770-0080	770-0080	FLANGED LOCK-WHIZ NUT 5/16-18	2
10	715-0104	715-0104	HOLD DOWN FOOT	1
11	715-0222	715-0222	THUMB SCREW	1
12	705-0403	705-0403	RETAINER CAP	1
13	705-0402	705-0402	SPRING	1
14	715-0401	715-0401	RUBBER CAP	1
15	615-1169	615-1169	ARM RETAINER	1

SITE CONSIDERATIONS

FLOOR TYPE

Your Hawk Precision Scroll Saw will operate with less vibration if it is placed on a concrete floor surface, such as a garage or workshop. You will experience excessive vibration if placed on a wooden surface, or surface other than concrete. The use of rubber mats under the saw may help with vibration. If your saw is properly assembled following the procedures in this manual and then placed on a concrete floor, you should experience little or no vibration.

WORKING CLEARANCE

Working clearance can be thought of as the distance between machines and obstacles that allow safe operation of every machine without limitation. Consider existing and anticipated machine needs, size of material to be processed through each machine, and space for auxiliary stands and/or work tables. Also, consider the relative position of each machine to one another for efficient material handling. Be sure to allow yourself sufficient room to safely run your machines in any foreseeable operation and keep dust collection hoses off the floor and out of the way.

LIGHTING AND OUTLETS

Lighting should be bright enough to eliminate shadows and prevent eye strain. Electrical circuits should be dedicated or large enough to handle combined motor amp loads. Outlets should be located near each machine so power or extension cords are not obstructing high traffic areas. Be sure to observe local electric cords for proper installation of new lighting, outlets, or circuits.

GROUNDING

In the event of an electrical short, grounding provides electric current a path of least resistance to reduce the risk of electrical shock. This tool is equipped with an electric cord which has a equipment-grounding conductor which must be properly connected to a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.

Improper conditions of the electrical-grounding conductor can result in risk of electrical shock. The conductor with green or green and yellow striped insulation is the electrical-grounding conductor. If repair or replacement of the electrical cord or plug is necessary, do not connect the equipment grounding conductor to a live terminal.

WARNING

 This equipment must be grounded. Verify that any existing electrical outlet and circuit you intend to plug into is actually grounded. Under no circumstances should the grounding pin from any three-pronged

plug be removed. Serious injury may occur.

EXTENSION CORD

Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current load your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and over-heating.

CAUTION

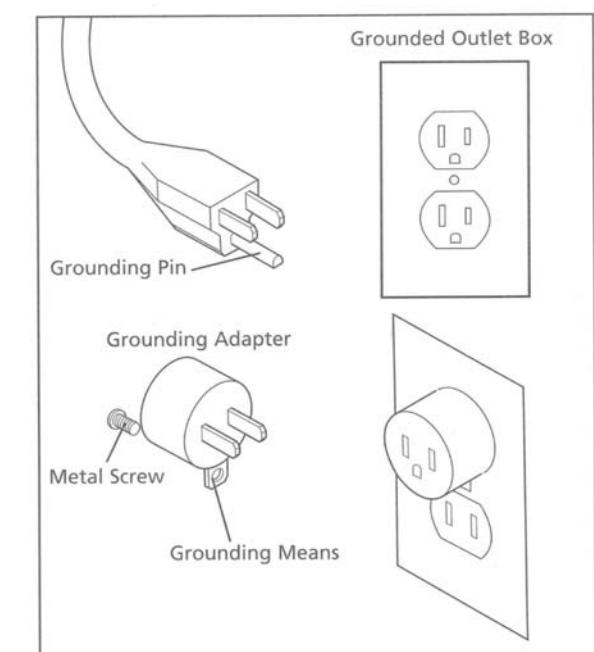
 We have covered some basic electrical requirements for the safe operation of your machine. These requirements are not necessarily comprehensive. You must be sure that you comply with local and state codes.

Ensure compliance by checking with your local municipality or a licensed electrician.

110V OPERATIONS

This tool is intended for use on a circuit that has an outlet that looks like the illustrated below. **DO NOT PLUG SAW INTO A GFI BREAKER.** (Ground Fault Interrupter receptacle). The saw uses a DC brush type motor and may cause the breaker to 'trip'. This will not affect the operation of the saw, it just shuts it off. Whenever possible, plug your saw into a standard 3-pin grounded receptacle. A temporary adapter may be used to connect the plug to a 2-pole receptacle if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet can be installed by a qualified electrician. The green colored rigid ear, lug, and the like extending from the adaptor must be connected to a permanent ground such as a properly grounded outlet box.

Please note: The use of grounding adapters is prohibited in Canada by the Canadian Electrical Code.



WARNING



Some dust collected by power sanding, sawing, grinding, drilling, and other construction activities contains chemical known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- lead or lead-based paints.
- Crystalline silica from bricks, cement, and other masonry products.
- Arsenic and chromium from chemically treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safely equipment, such as dust masks that are specifically designed to filter out microscopic particles.

CAUTION



Safety doesn't just happen, it is planned! Accidents don't just happen, they are caused!

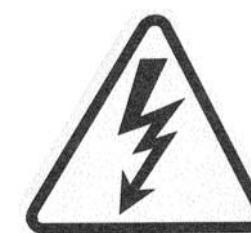
INFORMATION & HELP!



Always read and follow the instructions/manual for any machine tool.

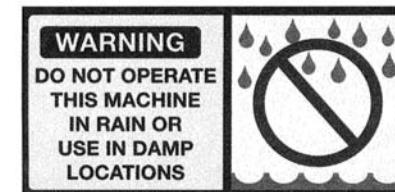
running could result in bruising or minor injury.

ELECTRICAL SHOCK!



Electrical shock- electrocution symbol: unplug this machine before performing any maintenance or repair procedures. Replace any worn or damaged electrical cables. Keep all electrical guards and/or shields in place.

DO NOT OPERATE IN WET/DAMP AREAS!



Do not operate this machine in the rain or use in damp conditions or standing water. Failure to observe this warning may result in a serious injury or electrocution!

LOOSE CLOTHING AND HAIR!



Keep loose clothing rolled up and out of the way of machinery and keep hair pulled back.

LIFTING



As this saw weighs over 100 pound it is necessary to have 2 people lift.

SAFETY GLASSES!



Always wear safety glasses or goggles for proper eye protection. Everyday glasses only have impact resistance lenses and are not safety glasses.

KEEP HANDS AND FINGERS CLEAR!

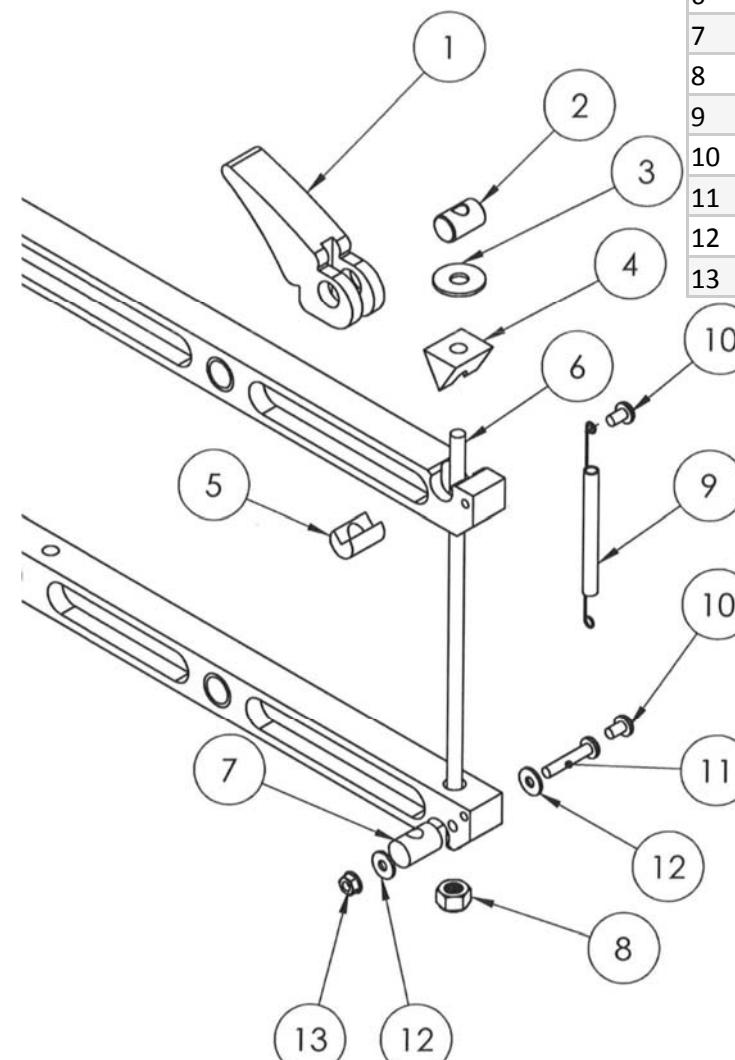


Keep all hands and fingers away from all moving parts, including the scroll saw blade. Serious injury may result if direct contact is made with the blade while the machine is running. Keep all guards and/or shields in place.

Caution: keep fingers from under the upper arm while in operation.

Keep fingers and arms away from the vertical motion of both upper and lower arms. Direct contact while the saw is

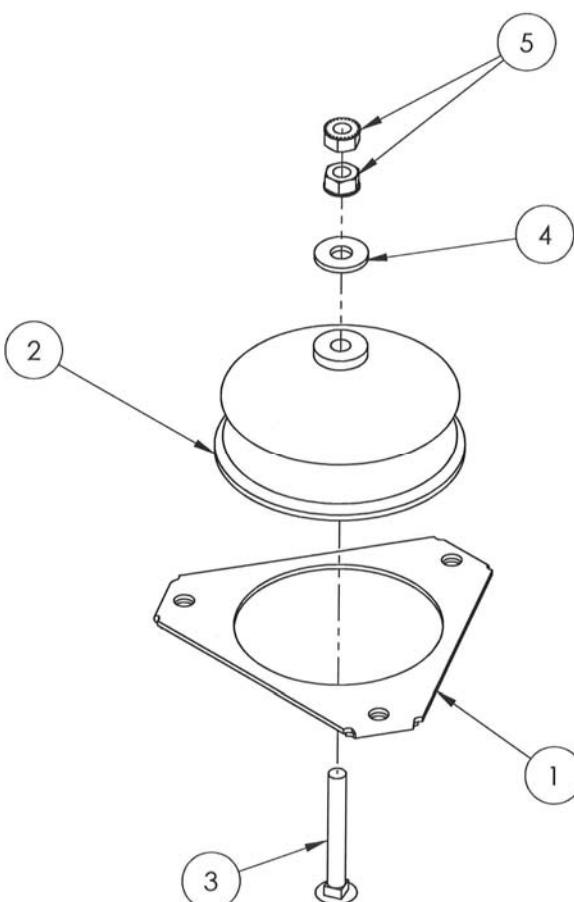
960-1231 TENSION ROD ASSEMBLY



KEY #	PART #	DESCRIPTION	QTY
1	705-0024	CAM REAR TENSION	1
2	715-0077	ROUND PIVOT, REAR CAM HANDLE	1
3	715-0103	NYLON WASHER	1
4	715-0075	WEDGE PIVOT	1
5	605-0039	WEDGE PIVOT ADAPTER	1
6	715-1272	TENSION ROD	1
7	715-0216	ROUND PIVOT BOTTOM	1
8	715-0079	5/16-18 NYLOCK NUT	1
9	710-2036	SAW ARM SAFETY SPRING	1
10	755-0060	#10-32 X .3125 FLAT HEAD MACHINE SCREW	2
11	715-0313	#10-32 X 1 FLAT HEAD MACHINE SCREW	1
12	755-0045	#10 SAE FLAT WASHER	2
13	755-0055	#10-32 KEEPS NUT	1

955-0001 BELLows ASSEMBLY

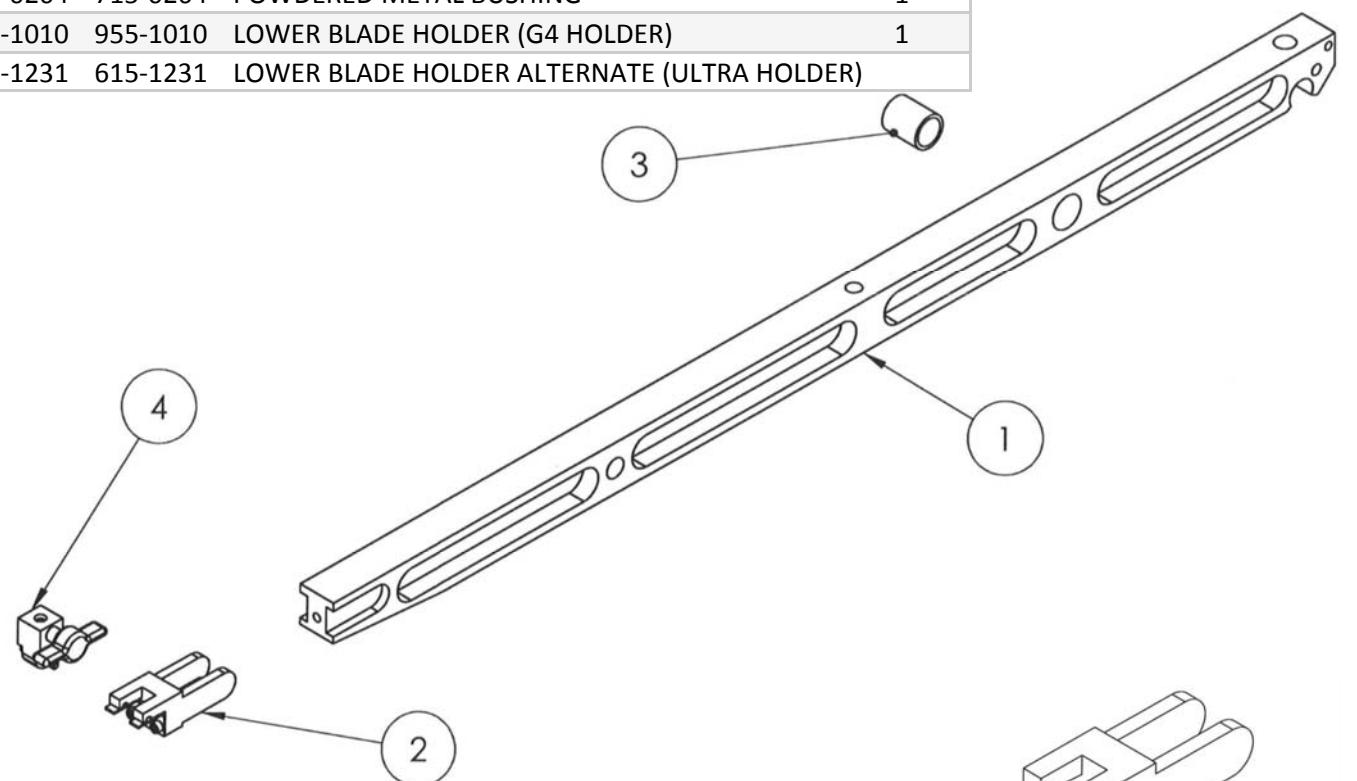
KEY #	PART #	DESCRIPTION	QTY
1	605-0003	BELLows BRACKET	1
2	715-0024	RUBBER BELLows	1
3	750-0213	1/4-20 x 2" LG CARRIAGE BOLT	1
4	745-0177	1/4" FLAT WASHER	1
5	745-0223	1/4-20 WHIZ LOCK NUT	2



960-1223 BM-20 LOWER ARM ASSEMBLY

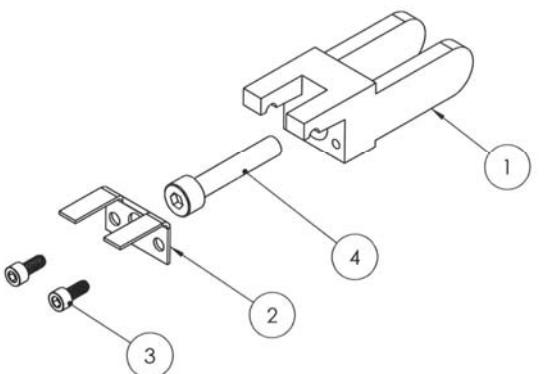
960-1229 BM-26 LOWER ARM ASSEMBLY

BM-20	BM-26			
KEY #	PART#	PART#	DESCRIPTION	QTY
1	615-4213A	915-9238A	BOTTOM ARM	1
2	711-0100	711-0100	NOSE ADJUST STROKE BRACKET ASSEMBLY	1
3	715-0264	715-0264	POWDERED METAL BUSHING	1
4	955-1010	955-1010	LOWER BLADE HOLDER (G4 HOLDER)	1
	615-1231	615-1231	LOWER BLADE HOLDER ALTERNATE (ULTRA HOLDER)	



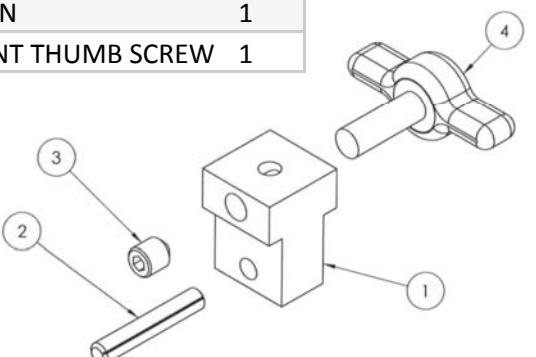
711-0100 NOSE ADJUST STROKE BRACKET

KEY #	PART#	DESCRIPTION	QTY
1	711-0014	LOWER BLADE HOLDER BRACKET	1
2	711-0012	LOWER BLADE HOLDER CLIP	1
3	711-0210	#4-40 X .25 LONG SHCS	2
4	705-0102	#10-32 X 1 LG SHCS	1



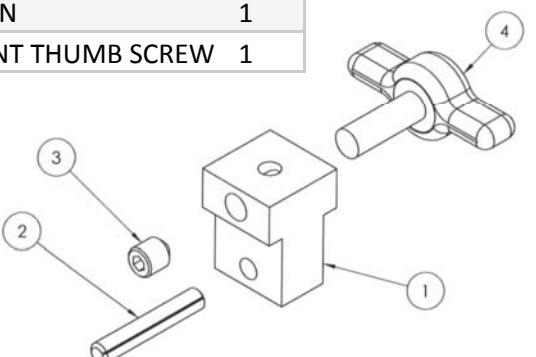
955-1010 BLADE HOLDER G4 STYLE

ITEM #	PART #	DESCRIPTION	QTY.
1	370-0512	BLADE HOLDER BODY	1
2	791-0053	1/4-20 1/4 LG FLAT POINT SET SCREW	1
3	710-0042	.125 X .75 LG ROLL PIN	1
4	715-0221	1/4-20 X .5 FLAT POINT THUMB SCREW	1



615-1231 BLADE HOLDER ULTRA STYLE

KEY #	PART #	DESCRIPTION	QTY.
1	715-1252	LOWER BLADE HOLDER BODY	1
2	710-0042	.125 X .75 LONG ROLL PIN	1
3	715-0256	#10-32 FLAT POINT SET SCREW	1
4	715-0257A	#10-32 X .5 LONG THUMB SCREW	1



SAFETY PROCEDURES:

- DO NOT PLUG SAW INTO A GFI BREAKER.** (Ground Fault Interrupter receptacle). The saw uses a DC brush type motor and may cause the breaker to 'trip'. This will not affect the operation of the saw, it just shuts it off. Whenever possible, plug your saw into a standard 3 -pin grounded receptacle. See page 6 for further information.
- SUPERVISE CHILDREN & VISITORS.** Never allow anyone to use your Hawk without proper training. Although the Hawk is safe for children to use, they should always be carefully supervised.
- CHILD-PROOF YOUR WORKSHOP** with padlocks, master switches, and by removing starter keys. Each Hawk Scroll Saw comes equipped with a red locking safety switch key. Remove the red key when the saw is not in use.
- KEEP WORK AREA CLEAN.** Cluttered areas and benches invite accidents. Be sure to remove all tools and wood scraps before starting the machine.
- KEEP HANDS AND FINGERS AWAY** from moving parts . Always disconnect from power source before adjusting or servicing. Make sure switch is in OFF position before re-connecting.
- WEAR PROPER APPAREL.** Do not wear loose clothing, gloves, neckties, rings, bracelets, or other jewelry which may get caught in moving parts. Non-slip footwear is recommended. Wear protective hair covering to contain long hair.
- TO AVOID ELECTRIC SHOCK,** do not operate your Hawk in a damp or wet area.
- DO NOT FORCE TOOL.** It will do the job better and safer at the rate for which it was designed.
- HOLD WORK SECURLY ON TABLE.** Use constant light down pressure while cutting to avoid wood jumping. Use hold-down foot, if you prefer.
- ALWAYS WEAR SAFETY GLASSES.** Everyday eye glasses only have impact resistant lenses, they are NOT safety glasses.
- DON'T OVER-REACH.** Keep proper footing and balance at all times.
- MAINTAIN SAW WITH CARE.** Use sharp blades and keep saw clean for best and safest performance. Follow recommended maintenance procedures in this operators manual. It is the owners responsibility to maintain equipment to Hawk's manual specification.
- USE PROPER EXTENSION CORD.** Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current load your product will draw. An undersized cord will cause in line voltage resulting in loss of power and over-heating.
- CHECK DAMAGED PARTS.** Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.
- NEVER LEAVE TOOL RUNNING UNATTENDED.** TURN POWER OFF. Do not leave tool until it comes to a complete stop.
- NEVER STAND ON TOOL.** Serious injury can occur if the tool is tipped or if the cutting blade is unintentionally contacted.
- USE RECOMMENDED ACCESSORIES.** Consult owner's manual for recommended accessories. The use of improper accessories may cause risk of injury to the operator.
- NEVER OPERATE A MACHINE WHEN TIRED, OR UNDER THE INFLUENCE OF DRUGS OR ALCOHOL.** Full mental alertness is required at all times when running a machine.
- NEVER ALLOW UNSUPERVISED OR INEXPERIENCED PERSONNEL TO OPERATE THE MACHINE.** Make sure any instructions you give in regards to machine operation are approved, correct, safe, and clearly understood.
- IF AT ANY TIME YOU ARE EXPERIENCING DIFFICULTIES** performing the intended operation, stop using the machine! Then contact our service department or ask a qualified expert how the operation should be performed.

UNPACKING AND ASSEMBLING OF THE LEGS

MAIN BOX

Saw
Manual
Patterns
T-handle Allen wrench
Cd
Catalog

STANDARD LEG BOX

4 legs
12 1/4-20 carriage bolts for the legs
12 1/4-20 nuts
4 glides
8 3/8-16 nuts for the glides

Step one:

Put nuts on glides. Fig 1.

Step Two:

Insert glides into the bottom of the legs and place on the second nut. Fig 2.

Step Three:

Place saw on the shipping box on the side. Put legs in place using three carriage bolts per leg. Fig 3.

Step Four:

Tighten leg bolts. Fig 4.

Step Five:

Adjust glides to level saw.

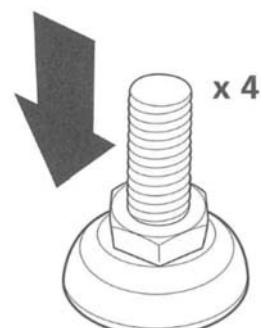


Fig. 1



Caution
2 Man Lift

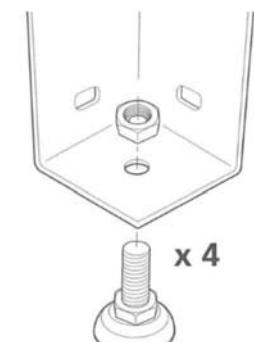


Fig. 2

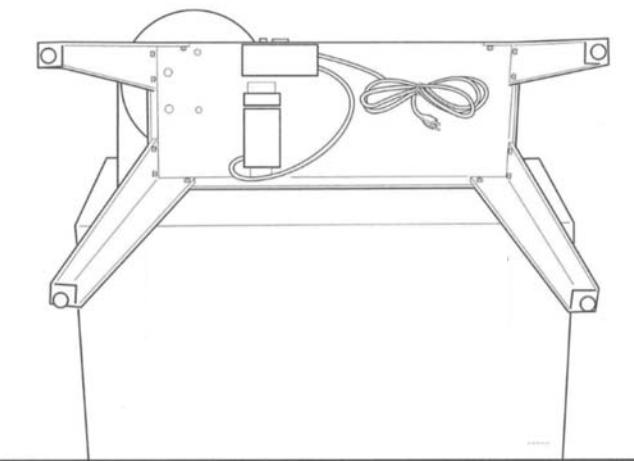


Fig. 3

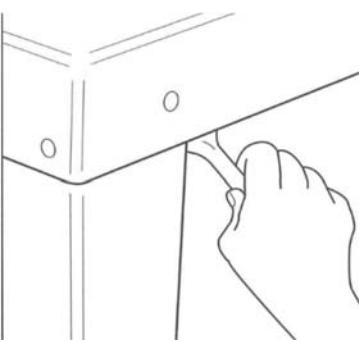
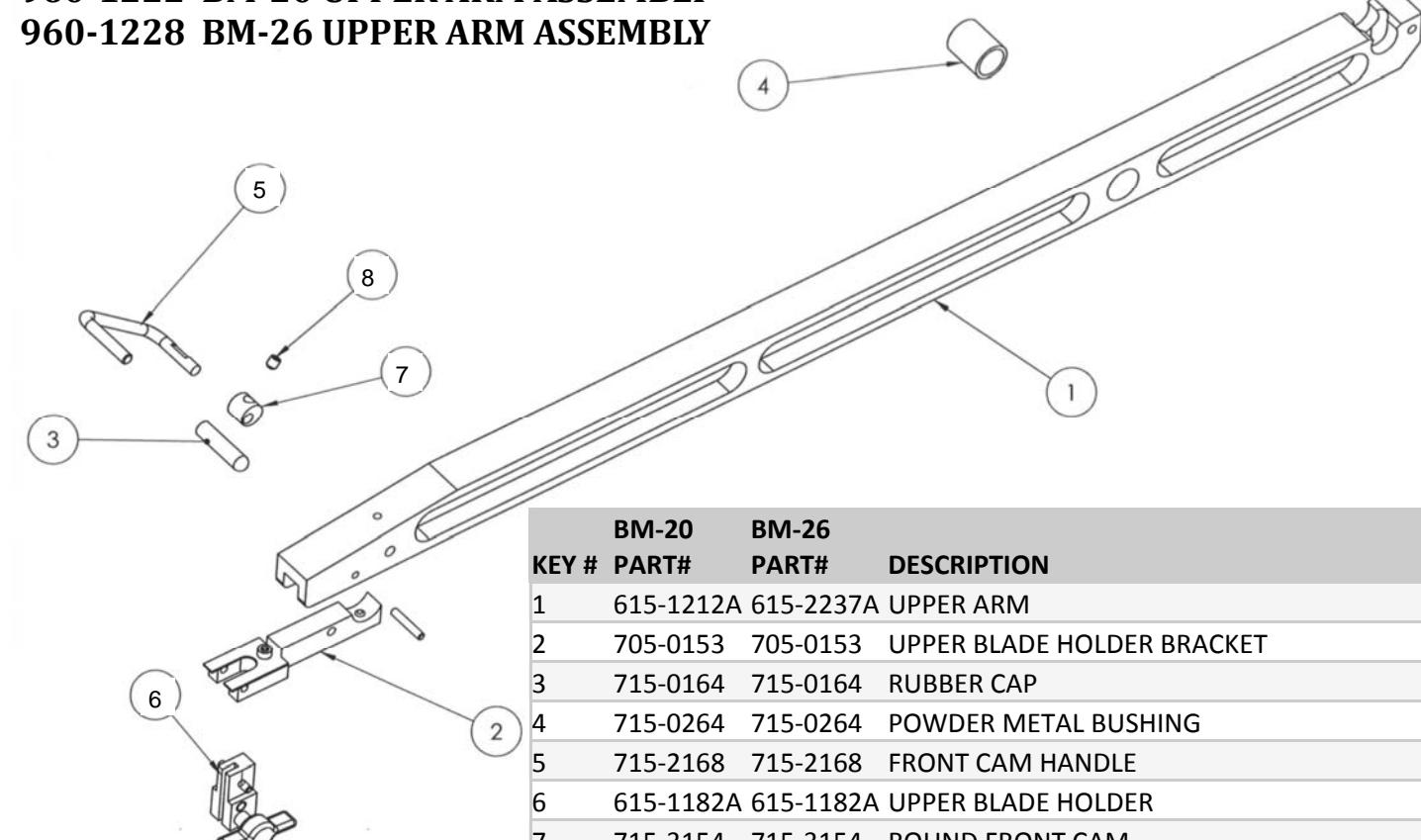


Fig. 4

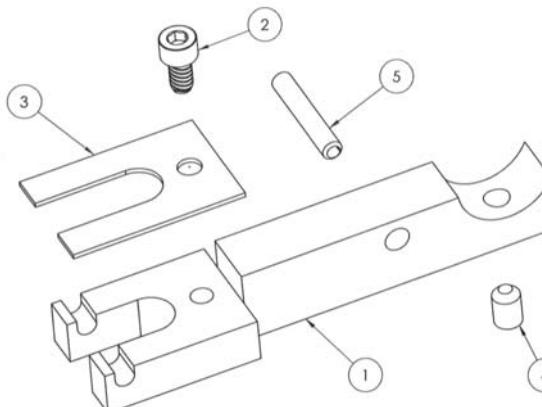
960-1222 BM-20 UPPER ARM ASSEMBLY

960-1228 BM-26 UPPER ARM ASSEMBLY

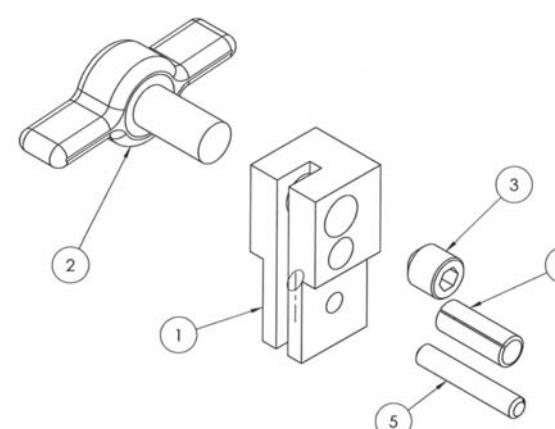


BM-20	BM-26			
KEY #	PART#	PART#	DESCRIPTION	QTY
1	615-1212A	615-2237A	UPPER ARM	1
2	705-0153	705-0153	UPPER BLADE HOLDER BRACKET	1
3	715-0164	715-0164	RUBBER CAP	1
4	715-0264	715-0264	POWDER METAL BUSHING	1
5	715-2168	715-2168	FRONT CAM HANDLE	1
6	615-1182A	615-1182A	UPPER BLADE HOLDER	1
7	715-3154	715-3154	ROUND FRONT CAM	1
8	790-0031	790-0031	#10-32 X .1875 CUP POINT SET SCREW	1
	600-0037		TOP ARM REINFORCEMENT	1
	735-0017		1/4-20 X .75 LONG SOCKET HEAD CAP SCREW	2

715-0153 UPPER BLADE HOLDER BRACKET



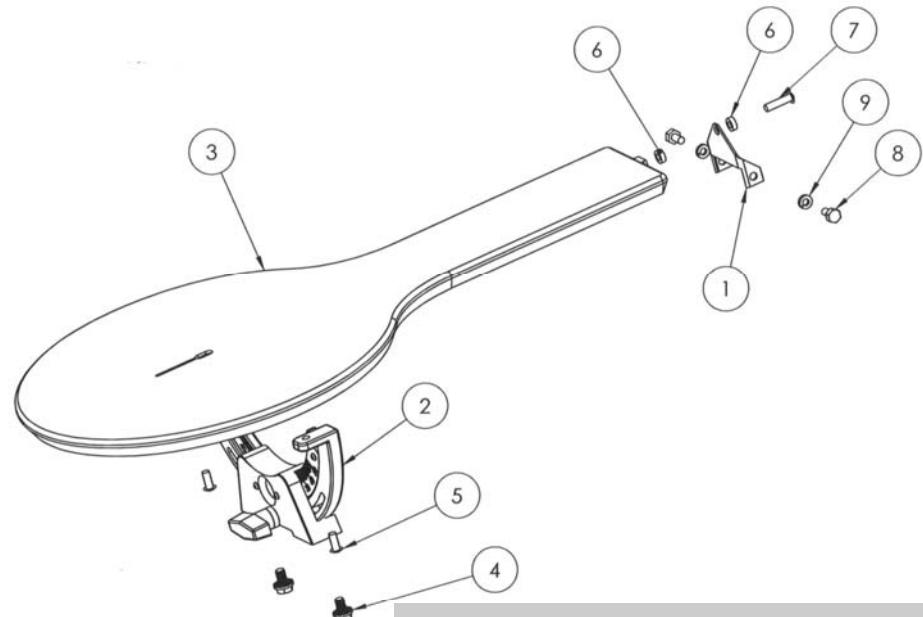
ITEM #	PART #	DESCRIPTION	QTY.
1	705-0003	upper blade holder bracket	1
2	705-0103A	#6-32 x .250 LG SHCS	1
3	711-0012	UPPER BLADE HOLDER BRACKET CLIP	1
4	715-0287	#10-32 X .25 LG NYLOIN INSERT BRASS FLAT POINT SET SCREW	1
5	710-0042	.125 X .75 LG ROLL PIN	1



615-1182A UPPER BLADE HOLDER

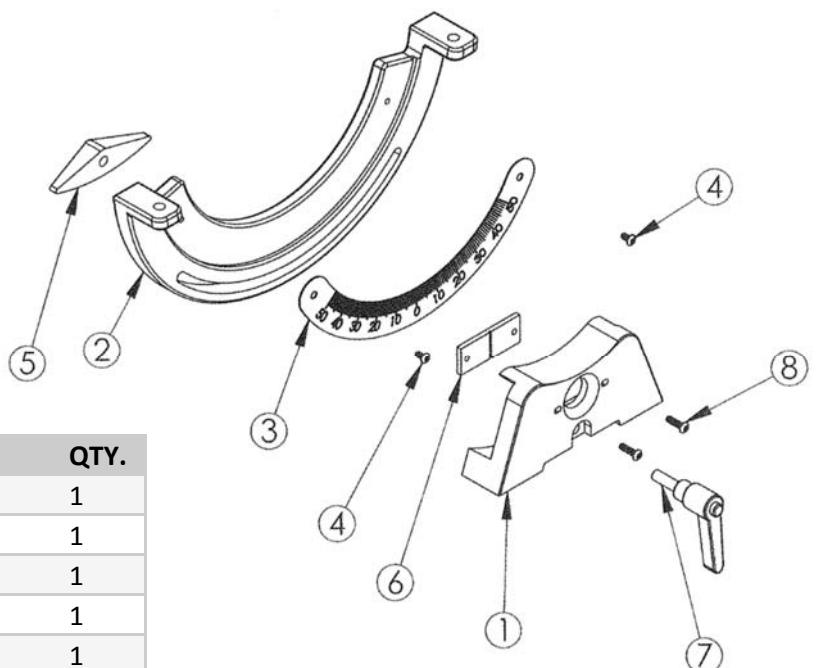
ITEM #	PART #	DESCRIPTION	QTY
1	715-5181A	AL UPPER BLADE HOLDER BODY	1
2	715-0221	1/4-20 X 1/2 LG THUMB SCREW FLAT POINT	1
3	791-0053	1/4-20 X 1/4 FLAT POINT SET SCREW	1
4	715-0205	.1875 X .5 LG ROLL PIN	1
5	710-0042	.125 X .75 LG ROLL PIN	1

TABLE ASSEMBLY



ITEM #	BM-20 PART #	BM-26 PART #	DESCRIPTION	QTY.
1	615-5211	615-4211	BACK TABLE SUPPORT BRACKET	1
2	955-0904	955-0904	TIlt TABLE ASSEMBLY	1
3	705-0006	705-0066	CUTTING TABLE	1
4	705-0111	705-0111	.5/16-16 X .5 LG HEX HEAD FLANGE BOLT	2
5	746-0046	746-0046	1/4-20 X .625 BOTTOM HEAD SCREW	2
6	705-0118	705-0118	.250 ID X .500 OD X .1875 LG NYLON WASHER	2
7	790-0136	790-0136	1/4-20 X 1 LG BUTTON HEAD SCREW	1
8	725-0043	725-0043	1/4-20 X .5 LG HEX HEAD MACHINE BOLT	2
9	750-0207	750-0207	1/4 SPLIT LOCK WASHER	2

955-0904 TILT TABLE ASSEMBLY



KEY #	PART #	DESCRIPTION	QTY.
1	715-0002	TABLE TILT, BASE MOUNT	1
2	705-0004	TABLE TILT, TABLE MOUNT	1
3	702-0060	TABLE TILT GAUGE	1
4	705-0102	#6-32 X 1/4" LONG BUTTON HD SCREW	1
5	705-0025	TABLE TILT, CLAMP	1
6	715-0003	TABLE TILT, POINTER	1
7	705-0026	KNOB, ADJ LEVER, 1/4-20 X 1-1/2 LG	1
8	705-0016	#6-32 X 1/2 LG, BUTTON HD SCREW	2

BLADE SELECTION:

BLADE TYPES AND TIPS:

There are literally hundreds of types, styles, and sizes of blades available for cutting most any material you choose. Here is some information on blade types. Go to our current catalog to see the 70+ blades we stock for your scrolling needs.

Fret Saw Blades:

Originally designed for a hand fret saw, these blades are ideal for power scroll saw. This blade is for use in general cutting. It is recommended for wood, plastics, rubber, fabric, paper, alabaster, and most non-metallic materials.

Reverse Tooth:

Reverse Tooth blades have skip tooth style teeth and reverse teeth that eliminate underside tear-out and provide a smooth splinter free finish

Double Tooth:

Double tooth blades have 2 teeth together followed by a flat space for effective chip removal. They cut fast leaving clean edges in wood or plastic.

Diamond Blades:

The diamond blade is the newest and most unique blade yet. The blade is manufactured by impregnating a round rod with diamond chips. For crafters who enjoy making stained glass projects, or do large amounts of ceramic or marble cutting, the diamond blade is the answer. The diamond blade must be kept wet at all times while cutting. Hawk Woodworking Tool stocks a drip tank system to use with your Hawk Scroll Saw. **Order Item #965-0300.** **DO NOT** attempt to cut tempered glass as this will shatter like a car windshield.

Metal Cutting/Jeweler's Saw Blades:

These blades are designed for use on the hand held jewelers saw frame still used frequently among jewelry designers. Its hardened steel composition and teeth configuration, make it ideal for cutting non-ferrous metals such as gold, steel, copper, brass, bronze, and aluminum. To cut metals using your Hawk Scroll Saw, you will need to slow the saw down and cut at a slower speed. We also recommend that the thickness of the metal not exceed 1/4".

Extended Gap Blades

The Polar, Mach Speed and the Modified Geometry blades have extended gaps between teeth to expel chip extremely fast. They can be used on soft or hard woods and even on horn or plastics leaving a smooth finish.

Continuous Reverse Teeth

This group of blades give very smooth edges since these blade cut both ways at all times. However that do not work well with thicker materials since the blade is always cutting back into the material. These blades include the Crown Tooth and the Ultra Reverse.

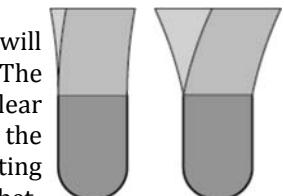
Spiral Blades

These blades are for cutting in any direction without turning. That is, you can push the board into the blade from any direction and it will cut. These blades are hard to control and tend to wander.



Blade Teeth

Blade teeth are cut by stamping, milling or grinding. The stamped tooth is the dullest and the ground tooth is the sharpest. The formation of these methods of cutting the tooth tends to bend the tooth to one side. The teeth are then set by bending them to each side in a wave like a hack saw or are individually bent. How accurately they are set (bent) to the side will dictate how straight the blade cuts.



How far the teeth are set to the side will define how wide of a cut a blade gives. The wider the teeth are set the better they clear the dust from cutting. For wide boards, the wider tooth set yields the fastest cutting speed. This is because the dust clears better in the larger wide gaps. Therefore, they do not burn the wood from the heat of friction of the trapped saw dust. However, if you are making a puzzle then you want a narrow set to yield a thin cut so that the pieces fit tight.

SELECT THE BEST BLADE FOR THE JOB:

Your new Hawk Scroll Saw uses standard 5 inch long, plain end (not pin end) scroll saw blades. The many varieties and sizes that are shown in our catalog are available to order from Bushton Manufacturing by phone or online. Make sure you use quality blades for best performance of your saw and achieve the best results with your projects.

This is just a little overview of the blades we offer. The complete list is in the centerfold of our catalog. We stock everyone of those blades for a reason. We try to have the best blade for your project in stock at all times. There is no one blade that works best for every need. That is why we have over 70 different blades in stock ready to ship.

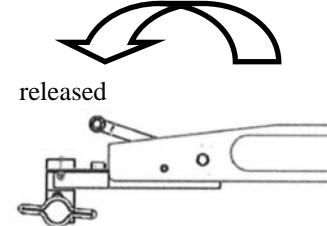
Experiment with the various types and sizes of blades to determine which works best for your application, cutting style, speed and the type of material you are working with. Our blade guide is only a starting point and not a rule. Use the blade size you feel most comfortable with and gives you the best results.

HOW TO CHANGE OR INSTALL A BLADE:

The Hawk Precision Scroll Saw offers a unique feature to scrollers; the ability to feed your blade either from the top to the table down **OR** from the bottom of the table up. Both have their own benefits. Feeding from the bottom of the table up enables you to set the blade tighter. Feeding your blade from top to bottom allows easier feed through your work piece if you were making an inside cut. No more fumbling around under the table! We will now look at both ways to install and feed your blade.

A. BOTTOM FEEDING: Feeding Your Blade from the Bottom Up:

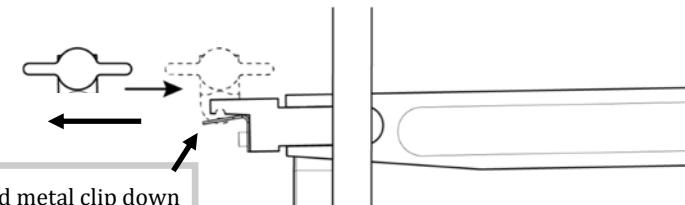
1. **Pull Quick-Release Blade Tensioner Forward.** Before you can change blades or replace a broken one, you need to release the tension to the blade. **Always pull the Quick Release Blade Tensioner forward before changing or installing a new blade.**



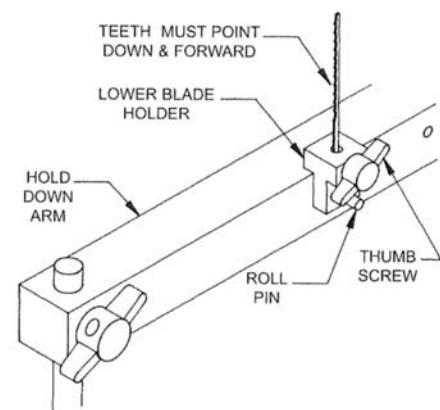
2. **Loosen Upper Blade Holder.** Turn the knob on the side of the upper blade holder to loosen clamps that hold the blade. Ensure there is no part of blade still inside blade holder if a blade was broken during operation.

3.

- Remove Lower Blade Holder.** Reach down under



4. **Insert New Blade.** Hold the lower blade holder and insert new blade into the open jaws, ensuring it sits all the way to bottom of holder. Teeth of blade should face forward or down. Hand tighten knob to hold blade, ensuring blade is at 90 degrees to holder.



5. **Re-install Lower Blade Holder.** Replace lower blade holder into stroke adjustment cradle, while feeding blade through hole in table. Also feed blade through work piece if making inside cuts. **Ensure blade teeth are facing forward.**

6. **Flip Across Upper Arm Retainer.**

You can flip across the upper arm retainer while you insert blade into upper blade holder. This ensures arms will not move while inserting blade it is not necessary to use the upper arm retainer to perform this operation. Do what you are most comfortable with.

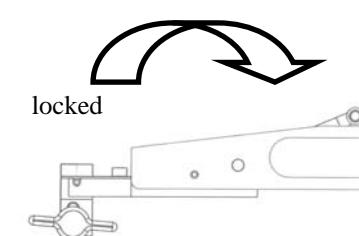
7.

- Insert Blade Into Upper Blade Holder.** Insert blade all the way into upper blade holder jaws and hand tighten knob on side of holder.

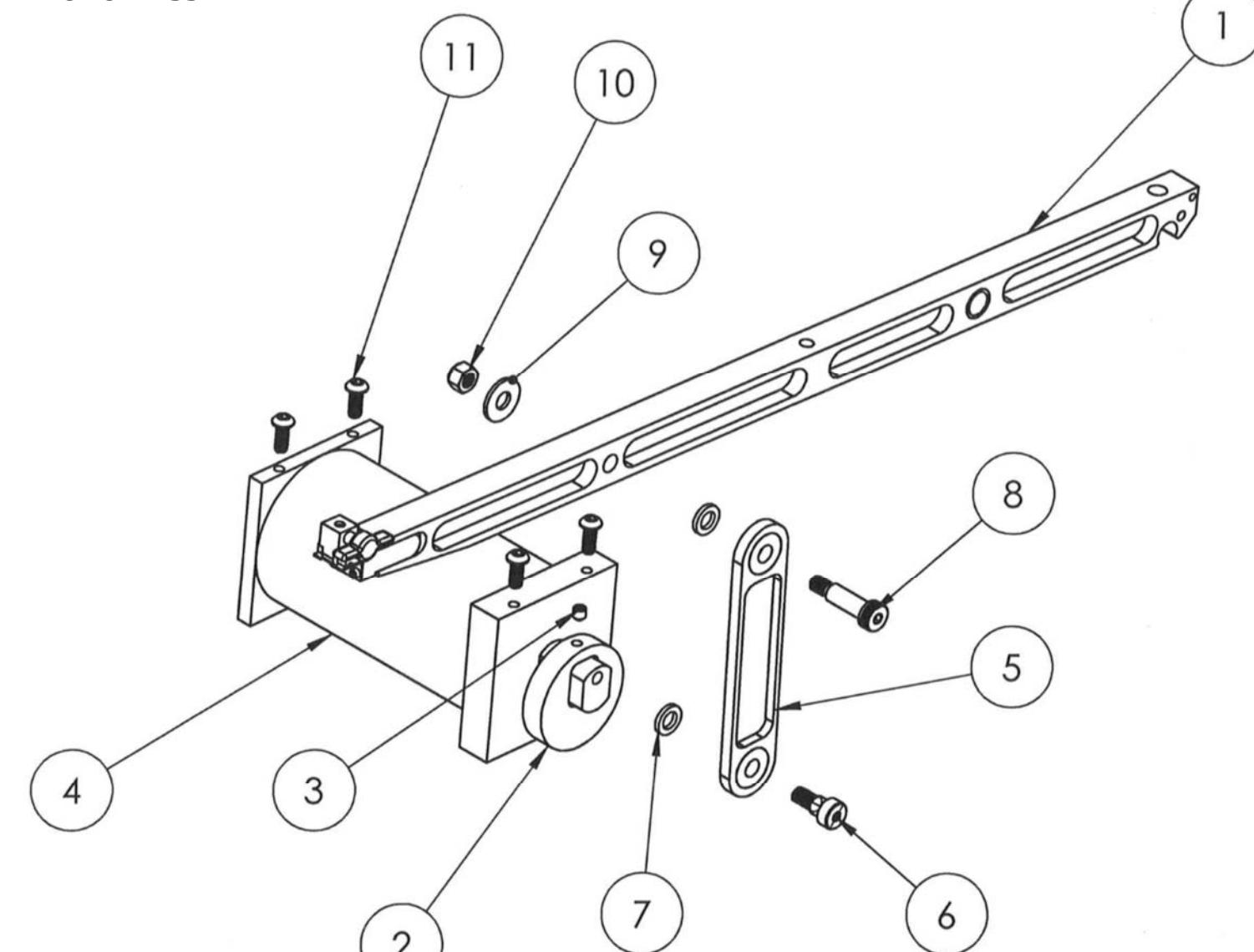
8.

- Flip Back Quick-Release Blade Tensioner.** **ALWAYS flip back Quick Release Blade Tensioner before using saw.** This will tension blade correctly.

9. **Check Blade Tension.** If you are using the same type blade, the blade tension is set. If not then adjust blade tension as necessary. Refer to blade tensioning instructions on page 12, or use chart on saw.

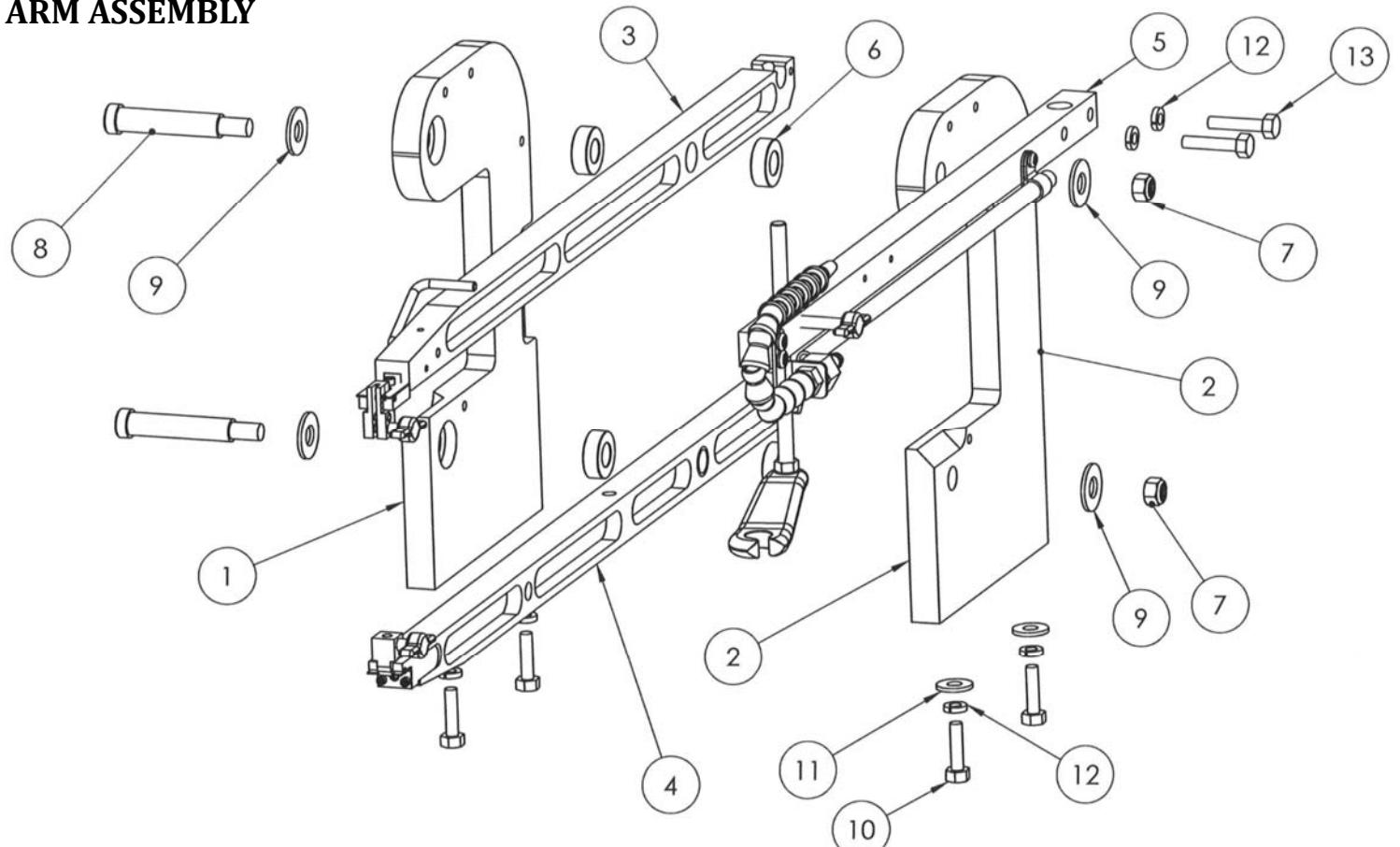


MOTOR ASSEMBLY



ITEM #	BM-20 PART #	BM-26 PART #	DESCRIPTION	QUAN
1	960-1223	960-1229	LOWER ARM ASSEMBLY	1
2	615-1263B	615-1263C	COUNTER WEIGHT	1
3	770-0083	770-0083	1/4-20 X .25 LG SH SET SCREW CUP POINT	1
4	704-4013	704-4013	MOTOR	1
5	960-1225	960-1225	PITMAN ARM ASSEMBLY	1
6	705-0114	705-0114	3/8 X 1/2 LG SHOULDER BOLT	1
7	711-0204	711-0204	SHIM .375 ID X .625 OD X .047 THICK	2
8	711-0201	711-0201	3/8 X 1 LG SHOULDER BOLT	1
9	745-0150	745-0150	5/16 FLAT WASHER	1
10	715-0079	715-0079	5/16-18 NYLON LOCK NUT	1
11	705-0105	705-0105	1/4-20 X .625 LG BUTTON HEAD CAP SCREW	4

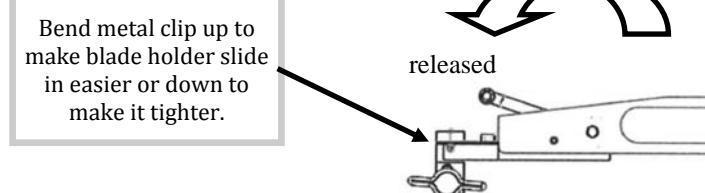
ARM ASSEMBLY



ITEM #	BM-20 PART #	BM-26 PART #	DESCRIPTION	BM-20 QUAN	BM-26 QUAN	PAGE #
1	609-0013	609-0015	LEFT ARM SUPPORT	1	1	
2	609-0014	609-0016	RIGHT ARM SUPPORT	1	1	
3	960-1222	960-1228	UPPER ARM ASSEMBLY	1	1	29
4	960-1223	960-1229	LOWER ARM ASSEMBLY	1	1	30
5	960-1224	960-1230	ACCESSORY ARM ASSEMBLY	1	1	32
6	715-1208	715-1208	SHIELD THRUST BEARING	4	4	
7	770-0051	770-0051	3/8-16 NYLOCK NUT	2	2	
8	745-0820	745-0820	1/2 x 2.5 LG SHOULDER BOLT	2	2	
9	770-0050	770-0050	3/8 FLAT WASHER	4	4	
10	735-0052	735-0052	1/4-20 x 1 LG HEX HEAD MACHINE BOLT	4	6	
11	745-0177	745-0177	1/4 FLAT WASHER	4	6	
12	750-0207	750-0207	1/4 SPLIT LOCK WASHER	10	12	
13	735-0080	735-0080	1/4-20 x 1-1/4 LG HEX HEAD MACHINE BOLT	2	2	

B. TOP FEEDING: Feeding Your Blade from Top to Bottom:

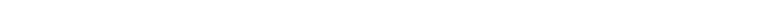
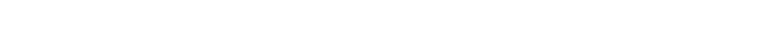
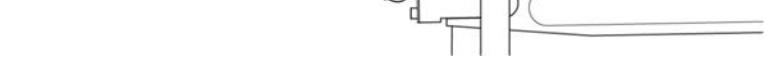
1. **Pull Quick-Release Blade Tensioner Forward.** Before you can change a blade or replace a broken one, you need to release the tension on the blade. Always pull the Quick Release Blade Tensioner forward before changing or installing a new blade. Just like the lower



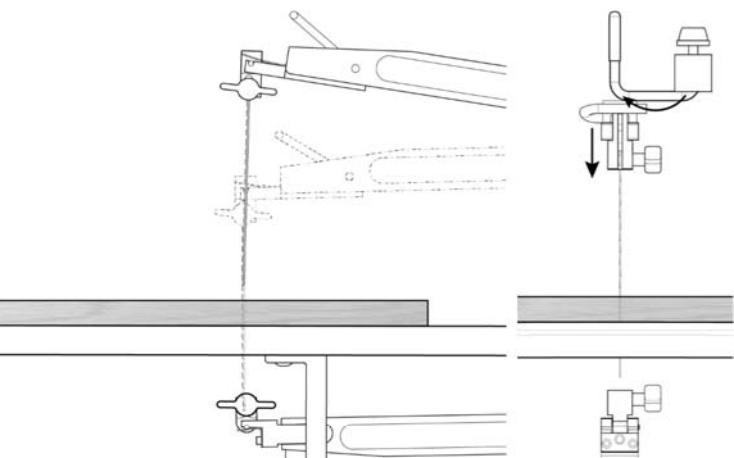
blade holders the upper blade hold just clips into place. You will need to adjust (bend) the clip to fit your needs as to how easy the blade holder clips into place.

2. **Leave both Top and Bottom Blade Holder in Place.** Remove any broken blades from both the top and bottom Blade Holders. Loosen knobs on both to ensure new blade will feed into each holder.

3. **Insert New Blade into Top Blade Holder.** Select and install new blade into Upper Blade Holder. The holder will tilt upwards to ease in this operation. Ensure teeth of blade are facing down and forward and at 90 degrees to holder. Hand tighten knob.



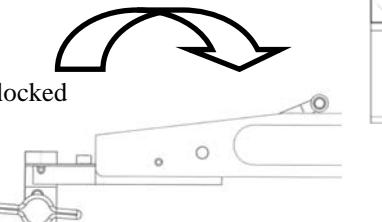
4. **Feed Blade Through Work piece and/or Hole in Table.** Feed your blade through your work piece if you are making inside cuts, and then through hole in



table, being careful not to bend the blades.

5. **Flip Across Upper Arm Retainer.** Flip across Upper Arm Retainer. This will stop the arms from moving while attaching the blade to the Lower Blade Holder.

6. **Insert Blade Into Lower Blade Holder.** Insert your blade into the Lower Blade Holder with it still installed in the Stroke Adjustment Cradle. **Ensure blade teeth are facing forward and down.**



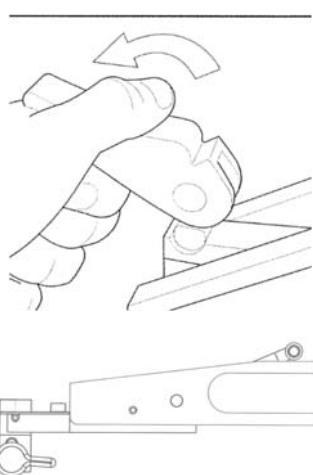
Tighten knob on side of Lower Blade Holder.

7. **Flip Back Release Blade Tensioner.** **ALWAYS flip back Quick Release Blade Tensioner before using saw.** This will tension blade.

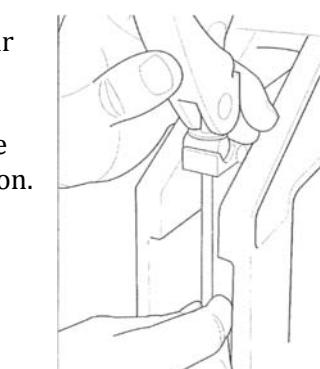
8. **Check Blade Tension.** If you are using the same type blade, the blade tension is set. If not then adjust blade tension as necessary. Refer to blade tensioning instructions on page 12, or use chart on saw.

BLADE TENSIONING:

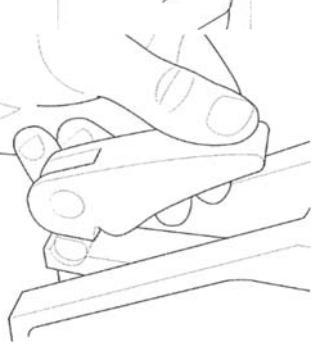
- Release the back tension adjustment cam.
- Lock the front tension quick release cam.
- cam lock, move the cam into position until it just starts to have tension on the rod.
- Compare this to the clock value on your saw and blade size.



- Turn the tension rod with your finger while holding the cam from turning until it is just starting to have tension on the rod in the desired clock location.



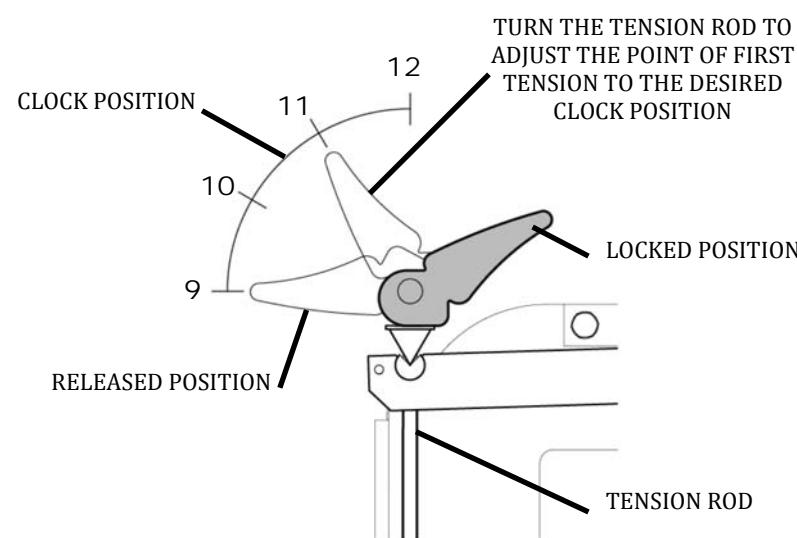
- Cam on over.



This yields the proper tension for the selected blade size.

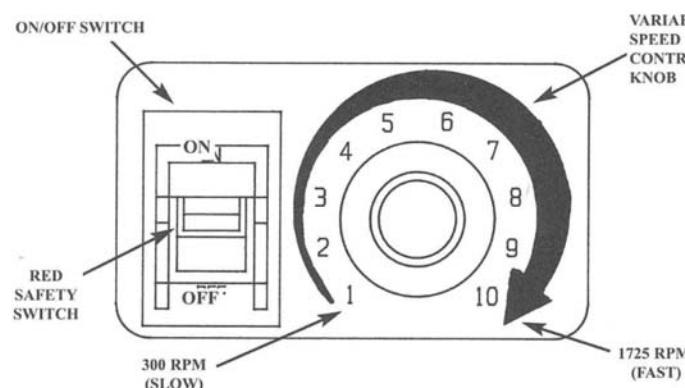
Keep in mind that this is just the starting point for tensioning your blade. You might need to have a little more or less tension on your blades depending on you, what you are cutting and type of blade used. You will quickly learn to set the blade tension for your needs.

BLADE TENSION CHART		
BLADE SIZE	CLOCK POSITION	
	BM-20	BM-26
2/0	12:00	11:30
1	12:00	11:30
2	11:30	11:00
3	11:30	11:00
5	11:00	10:30
7	10:30	10:00
9	10:00	9:30
12	10:00	9:00

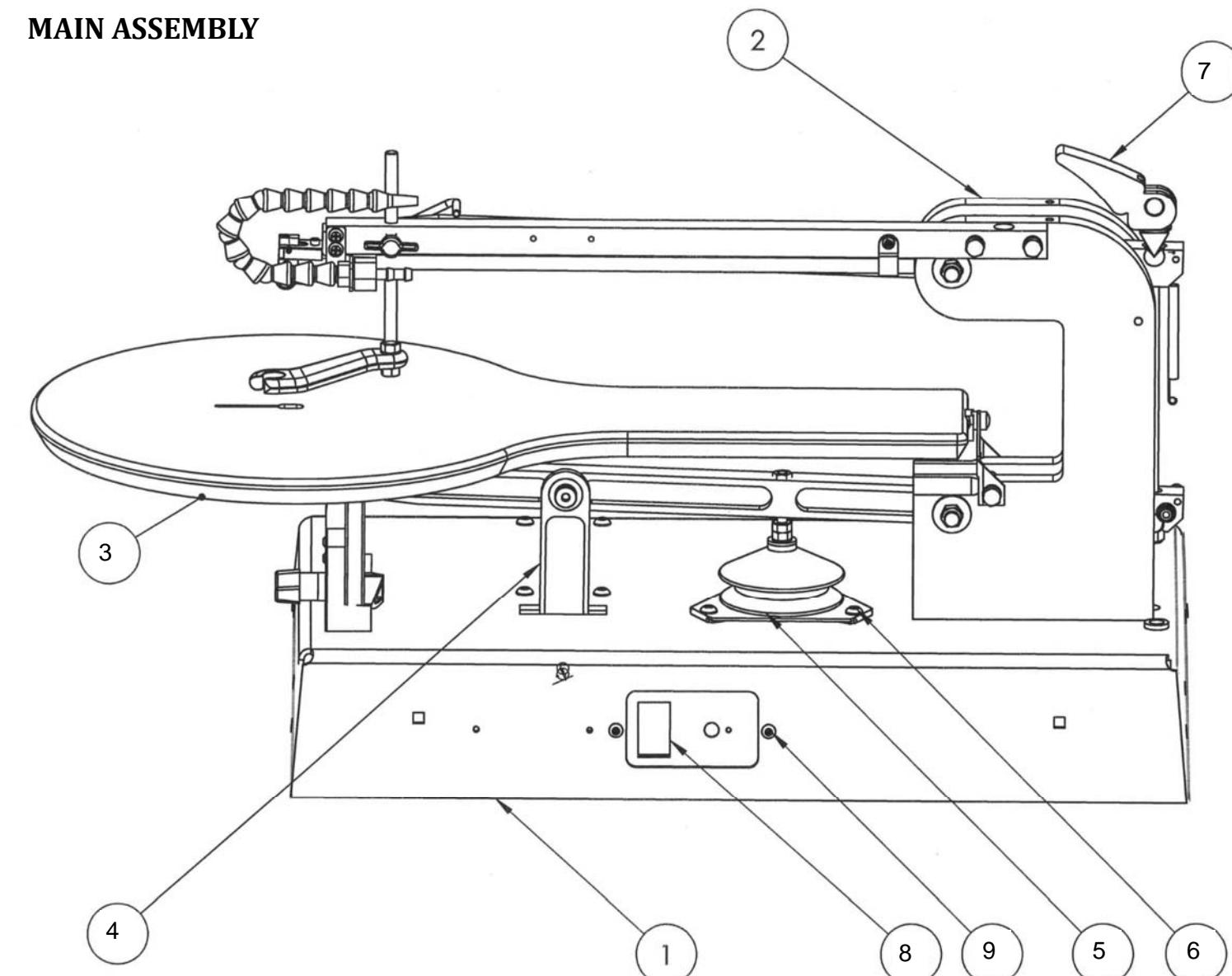


VARIABLE SPEED CONTROL

SPEED CORRELATION CHART			
NO.	SPEED	NO.	SPEED
#1	100 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	1750 RPM



MAIN ASSEMBLY



ITEM #	BM-20	BM-26	DESCRIPTION	QUAN	ASS'Y
1	615-6218	615-8226	BASE	1	
2			ARM ASSEMBLY	1	26
3			TABLE ASSEMBLY	1	28
4			MOTOR ASSEMBLY	1	27
5	955-0001	955-0001	BELLOWS ASSEMBLY	1	31
6	705-0106	705-0106	1/4-28 X 3/8 LG MACHINE SCREW	3	
7	960-1231	960-1231	TENSION ROD ASSEMBLY	1	31
8	715-2259	715-2259	CONTROLLER, 90V DC	1	
9	705-0140	705-0140	10-32 X 1/2 LG MACHINE SCREW	2	

gain confidence. Keep, the saw running while you spin the project will stop the blade getting pinched or bending, or worse, breaking.

- B. If the blade tends to swing out when attempting a sharp point, you may have to increase tension to the blade. Please refer to the instructions on how to tension your blade correctly as described on page 12.
- C. Blade selection. Some blades will turn better to one side because the teeth are set more to one side. Also the wider the teeth are set (bent to each side) the easier it is to turn sharp corners. See the blade selection page 9 of this manual and our catalog for the best blade for your needs.

6. BLADE IS MAKING TOO WIDE OF A CUT:

When a blade makes too wide of a cut use a thinner set/kerf blade such as the special puzzle.

7. WOOD IS JUMPING ON TABLE:

- A. 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.

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

- C. 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. In addition, when using a reverse tooth blade, the reverse teeth will give added lift to your project on the upward stroke. Additional downward pressure, or use of the hold-down foot may be needed.

TROUBLE SHOOTING:

MOTOR/CONTROLLER ISSUES:

Note: It is recommended that you send in your motor and controller if you encounter any issue. Making repairs and replacing parts yourself will void any warranty you may have on your machine. It may also compound problems which would otherwise have been easy to diagnose and repair.

1. **SAW DOES NOT START IMMEDIATELY-** A. Your new Hawk is equipped with a 'soft start' motor/controller assembly. This means there is a short time delay for the electrical system to become fully charged before coming up to full power or speed, thereby reducing motor burnout. It is also a safety feature that

allows the operator time to return both hands to the project before full speed is achieved. Soft start is the preferred operating procedure on better quality machinery.

2. **MOTOR IS OVERHEATING** – This problem is much more common in AC motors, but does happen on occasion in DC motors. Cause is usually a difference of friction between the bearings. Solution – Replace the bearings in the saw and motor. If problem persists, replace motor.

3. **MACHINE DOES NOT RUN** – There are several possible causes for why your machine may not function. Solution – First, check to be sure you are connected to an outlet. If using a footswitch, be sure the plug is fully engaged with the footswitch and that the footswitch is connected to an outlet. If everything is connected properly, check the 5 amp breaker located on the left side of the control box. Try pushing it in to re-engage it. If this still does not solve your problem, it is likely the brushes and armature need cleaned or there is a more serious problem in the control box and a technician should look everything over and make a diagnosis.

4. **MACHINE DOES NOT RUN UNLESS YOU PUSH ON ARMS** – This is a clear indication that the brushes and armature need cleaning. This causes stress to the controller as well and both should be looked at by a technician to determine potential damage. Solution – Clean armature and check brushes.

5. **MACHINE SLOWS DOWN WITH LITTLE TO NO PRESSURE** – This is often an indication that the brushes and contact area need cleaning. Solution – Clean armature and check brushes.

6. **MACHINE SOUNDS LIKE IT IS RUNNING BUT THERE IS NO MOVEMENT** – This is a very serious problem. It is rare and only occurs in the DC motors. The best case scenario is that the set screw that holds the flywheel to the motor shaft was either not secured completely or not secured correctly. The worst case scenario is that the motor shaft has broken inside the motor housing. Solution – Remove the aluminum block from the motor and check the motor shaft. If there are grooves around the visible portion of the shaft, then the set screw was not set properly. Order a new $\frac{1}{4}$ -20 set screw and be sure to secure it tightly to the flat portion of the shaft when re-installing the flywheel. If there are no grooves around the visible portion of the shaft, turn the motor on and hold the visible part of the shaft lightly. If the motor sounds like it is running normally, but the end you hold does not turn, it is likely the shaft is broken inside the motor casing. The only solution is to replace the motor.

NOSE STROKE ADJUSTMENT:

The blade stroke of the Hawk Scroll Saw is infinitely adjustable and allows you to set the stroking action of the blade from exactly vertical to aggressive action that will cut through hard woods like butter. You can set the blade to stroke exactly vertical when cutting thinner materials and soft woods to give you greater control while cutting. Alternatively, setting the blade at more of an angle will help greatly in cutting thicker hard woods up to 2 1/2" thick. Each Hawk Scroll Saw leaves the factory preset at the vertical stroke position.

Adjusting the nose stroke is a simple process. You will need to use the 5/32 stroke adjustment wrench that came with your saw. Follow the steps below.

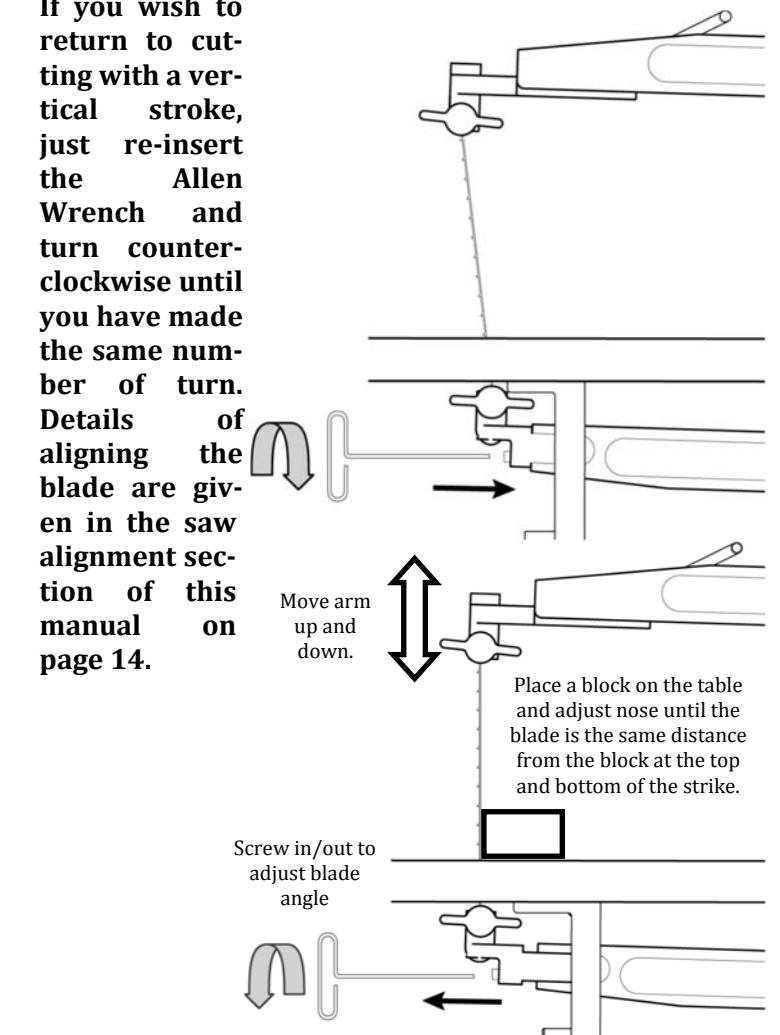
1. Pull Quick-Release Blade Tensioner Forward.

Before you can adjust the stroke you need to release the tension to the blade. Always pull the quick-release blade tensioner forward before attempting to adjust the stroke.

2. Insert 5/32 Allen Wrench

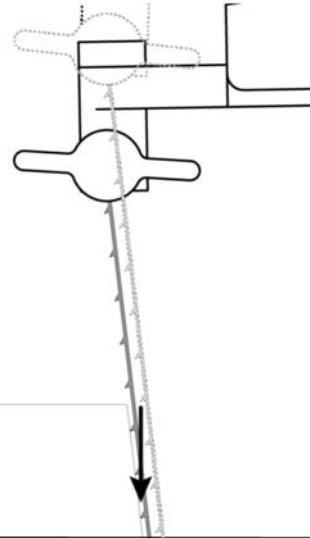
Take your 5/32 stroke adjustment Allen Wrench and insert into hole on front of the stroke adjustment cradle. See illustrations. Turn the Allen Wrench clockwise to force the lower blade position backwards – Thus giving a more aggressive blade stroke for cutting through thicker hard woods. Count the number of turns so that you can return it to the vertical position just by counting the turns.

If you wish to return to cutting with a vertical stroke, just re-insert the Allen Wrench and turn counter-clockwise until you have made the same number of turn. Details of aligning the blade are given in the saw alignment section of this manual on page 14.



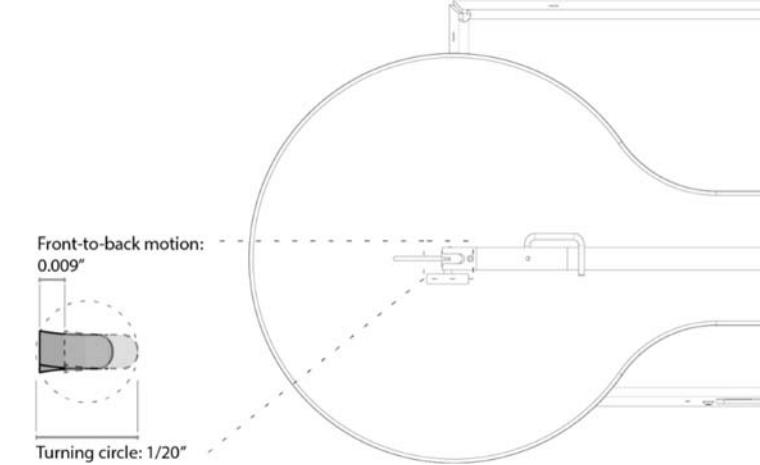
Check Blade Position.

You can easily check if your blade will stroke in the vertical position by using a machinist square. Place adjustment blade to check if you have desired stroke cutting angle. See illustration on left.



4. Flip Back Quick-Release Blade Tensioner

ALWAYS flip back quick-release blade tensioner before using saw. Once you have finished adjusting the stroke, flip back the quick release blade tensioner. This will tension blade correctly. If you need more tension on blade, refer to page 12 for blade tension adjustment or refer to chart on saw.



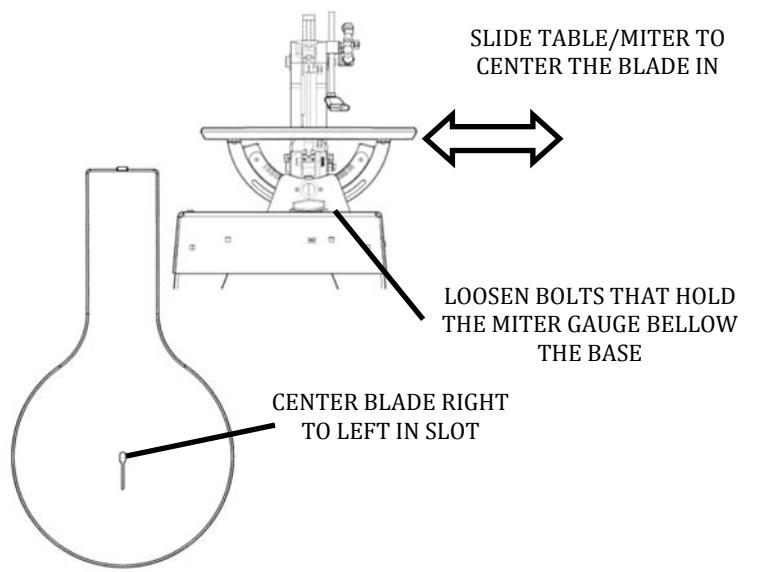
*Please note:

Once again, this is just a guide to help you adjust the stroke of your saw. If you feel more comfortable cutting all your projects set vertically, then you can do so. You may find that you set the stroke adjustment at an angle you are most comfortable with and leave it at that position. What is great about the infinitely adjustable stroking action is that you can set it for your preferred cutting style. It is completely customizable for every user. Please understand that you will get a more aggressive cut on thicker hard woods if you cut the stroke further back as described in step 2. This will help with burning of wood and also give you a cleaner, smoother cut when cutting thicker hard woods.

BLADE/TABLE ADJUSTMENTS

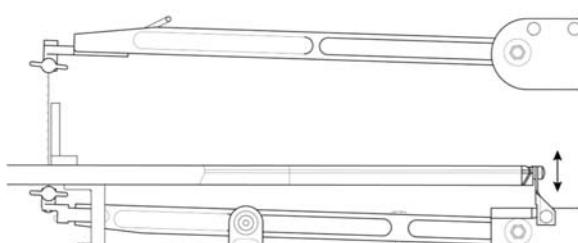
Adjustment of the table to arms:

Next loosen the bolts that hold the table miter gauge to the base. Slide the table so that the blade is centered in the hole. Tighten the table miter gauge to the base.



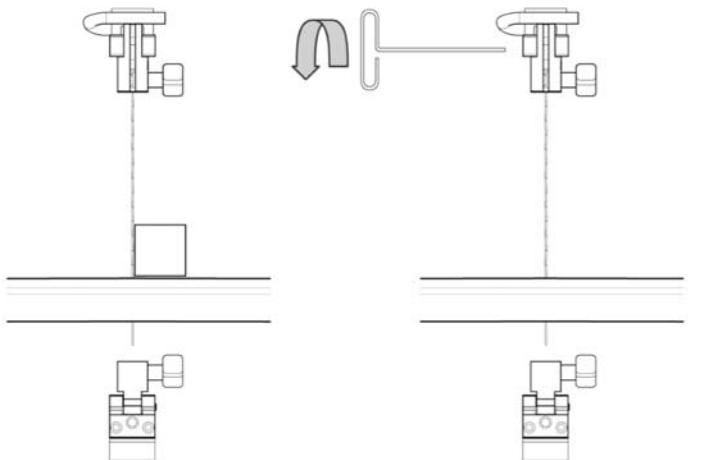
Adjusting back of table:

With the nose adjust stroke set to the vertical position, you can square the table to the saw by adjusting the table bracket of the back end of the saw. Place a square on the table next to the blade as shown. Then loosen the bracket on the back of the table and raise or lower it as shown to make the blade square.



Adjustment of blade in holder:

Then place a business card or a block on the table beside the blade. Move the arms thru an entire stroke. If the gap between the blade and the card/block on the side differs, then adjust the blade holders to push the blade to the side. This is done by loosening the thumbscrew and adjusting the setscrew on the opposite side, in or out, to move the blade from side to side. You can adjust both the upper and lower blade holders.

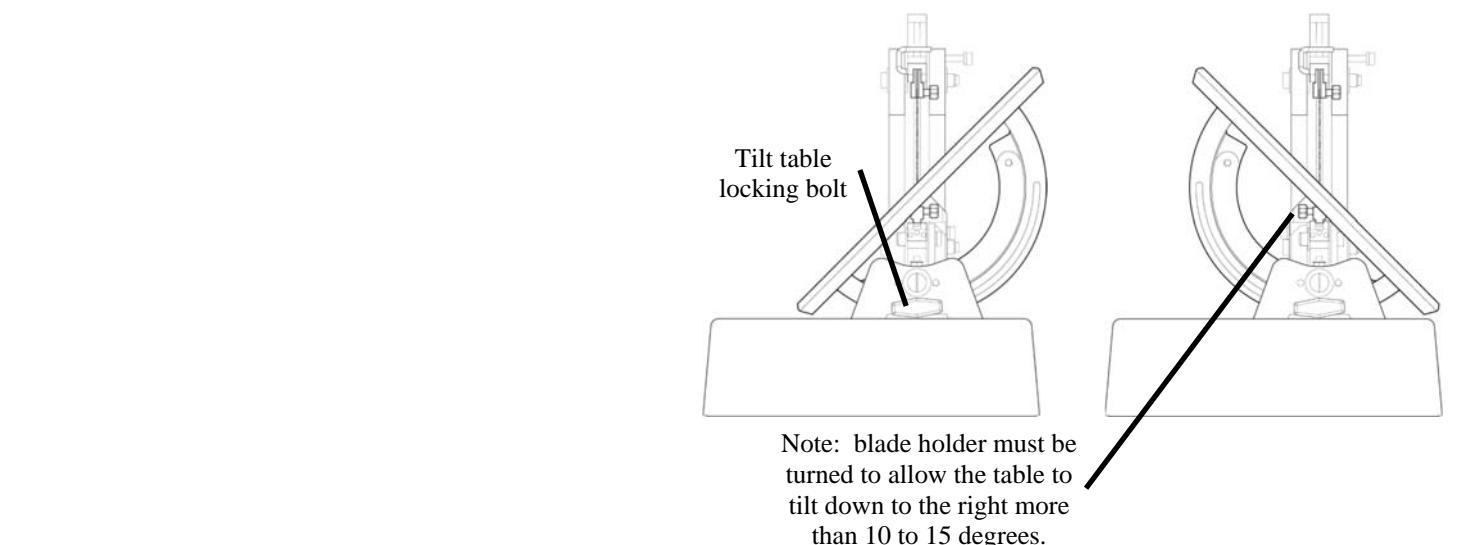


Note: The screws are set with Loctite and may be difficult to adjust. This is necessary because if they were not locked into place they slowly turn out causing bent or broken blades.

TABLE TILT:

Work Table Tilts a full 45° both left and right. No tools required, you just have to remove the lower blade holder and place it back in with the thumb screw to the left to tilt the table all the way down on the right side. To adjust the table angle you loosen the locking bolt as shown in the diagram, then tilt the table and re lock the locking bolt. If you are tilting the table more than 10 degrees down to the right, you must remove the lower blade holder and insert it back in with the thumb screw to the left not the right.

The hold down foot must be removed when tilting the table at large angles.



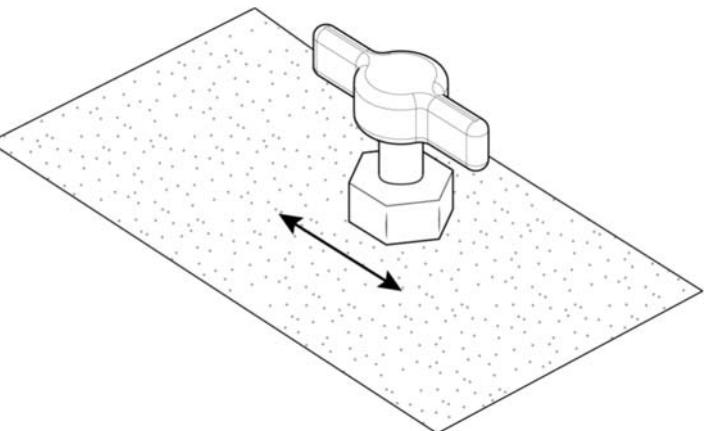
TROUBLE SHOOTING:

BLADE ISSUES:

1. BLADE PULL OUT

If your blades are pulling out of the blade holders then here is a list of tips.

- A. Make sure the blade holder is clean. Spray brake part cleaner into the holder to remove any oil build up from the blades.
- B. Remove thumb screw and make sure it is clean and flat. To clean it from rust etc. place a nut on it and rub it flat on to 80 to 100 grit sand paper as shown below.



- C. If thumb screw is worn then replace thumb screw.
- D. If the thumb screw is loose in the aluminum body of the blade holder then replace the blade holder.
- E. Tension fluctuations can cause blade pull out. This can be caused by worn wedge pivots. The wedge pivot should have a point to it. Also the 'V' groove wear part the wedge sits in might need to be replaced. Older saws did not have the 'V' groove part as a replaceable piece, on those saw the arm must be drilled out to accept the replacement wear part.
- F. If the tension is reducing while running, that means the rear tension cam is spinning while the saw is running. Clean or replace the nylon washer under the rear tension cam above the wedge pivot.

2. EXCESSIVE BLADE BREAKAGE:

If you think you are breaking an excessive amount 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 section chart in our catalog.
- B. If the blade tends to break right above the bottom blade holder, your blade is not installed in the lower blade holder correctly. Be sure your blade is installed at 90 degrees to the blade holder and inserted all the way into the holder.
- C. If the blade is breaking just below the upper blade holder, chances are you are not installing it in the upper blade holder correctly. Again, make sure your blade is installed at 90 degrees to the blade holder and inserted all the way into the holder.

- D. Excessive blade breakage may also be caused by the Quick-Release Blade Tensioner set screw becoming loose. This will need to be checked and adjusted from time to time. Please refer to page 22 for instructions on how to do this.

• **Please Note:** You should expect to change your blade after every 15 to 30 minutes of use. Your blade will become dull quickly. You'll get better results if you change your blade frequently. Always remember to drive the wood and not force the wood into the blade. If you have trouble getting your work piece to turn and the blade smokes while cutting, you will need to practice your technique. Remember, you must feed into the front of the blade only. If you have poor control of your blade and it seems to wander and respond very slowly, you might not have quite enough tension to the blade. Please refer to page 12 for instructions on how to tension your blade correctly.

3. BLADE IS BURNING THE WOOD:

- 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 section chart in our catalog and blade tips on page 9 of this manual.

- B. It may take a little practice, but you are probably leaning on the blade from side to side when cutting. Remember it's the project that moves and not the blade. Your cutting surface is the front side of the blade only.
- C. Some woods just seem to be more prone to burning than others. Of course hardwoods like oak and walnut will burn if cut at too high of a RPM speed. Using wide blades with a larger gap between the teeth will reduce burning. Not using reverse tooth blades will also reduce burning as these types of blades can clear the dust better. Take advantage of your variable speed saw and slow it down. Slower speeds are recommended for metal, glass, plastic, some harder woods and thinner metals. Cherry and mahogany are difficult woods to cut without burning because of their resin content.

4. BLADE KEEPS BENDING AND TWISTING:

- 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 section chart in our catalog.

- B. If your blade is bending backwards farther than you feel it should, check your tensioning. Please refer to instructions on how to tension your blade correctly as described on page 12.

5. BLADE IS CUTTING TO LARGE OF A RADIUS:

When you first get started using your saw, you may have difficulty making sharp turns. Here are a few pointers you'll want to keep in mind:

- A. Feed your project right to the point where you want to make the turning point and stop feeding. Now, with the saw still running, spin the project around in the saw blade radius or kerf without feeding the wood. You may need to spin your project very slowly until you

MAINTANANCE:

FRONT CAM BLADE TENSION RELEASE ADJUSTMENT:

On the front of the upper arm of the HAWK scroll saws is the front cam release mechanism.

Function

The cam handle is pulled forward to release the blade tension and pushed back to apply the tension on the blade. The cam is shown released in figure 1. the cam is shown locked in figure 2.

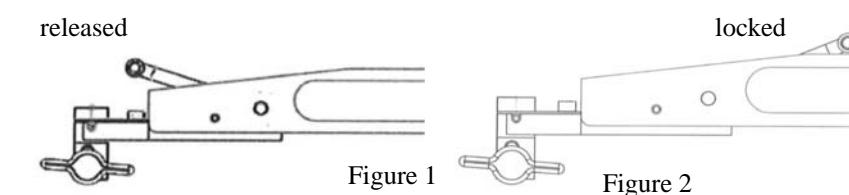


Figure 1

Figure 2

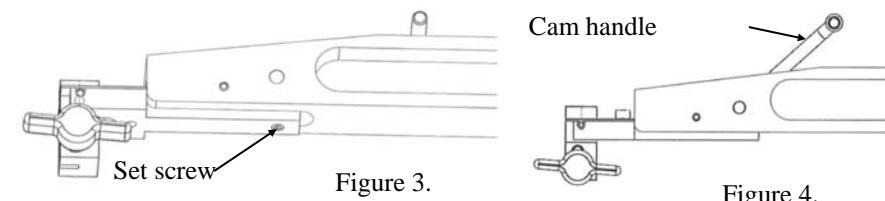


Figure 3.

Figure 4.

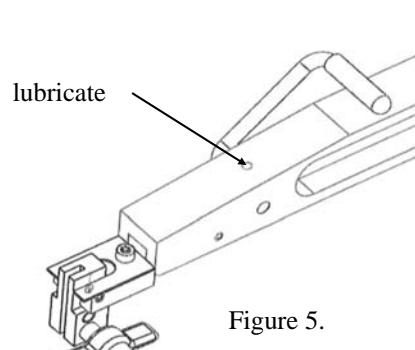


Figure 5.

Adjustment

The set screw on the under side of the upper blade holder bracket as seen in figure 3 should be tightened so that without a blade in the saw the cam handle meets resistance when the cam lever is in position shown in figure 4. if this is not the case then you will need to adjust the set screw by turning it in or out until the resistance starts at that point. This needs to be checked every few months of saw use. If it is not tensioned properly, the cam lever can release when you are cutting. If it is too tight then it will cause damage to the blade holder bracket. When adjusting this set screw turn it no more than 1/4 turn at a time before checking. You will need a 3/32 allen wrench to make this adjustment.

Lubrication

The cam of this mechanism should be lubricated with Dri-tool lube thru the hole shown in figure 5.

TABLE

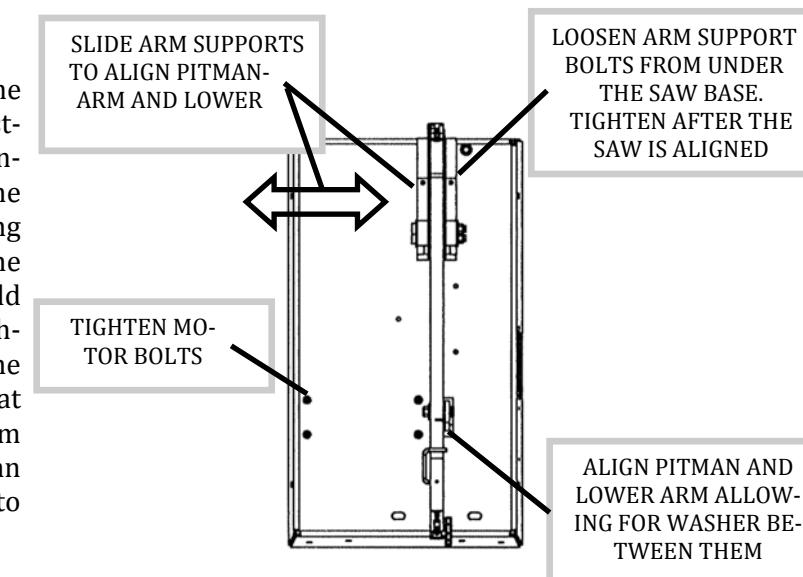
Apply a sealer/wax ,such as paste wax or Top Saver, to the surface of the cutting table twice a year or as needed. This will keep the table clean, smooth, and slick for cutting. This will make it easier to slide and turn your projects while cutting.

TENSION ROD

The wedge pivot on the tension rod should be lubricated on the bottom with Dri-tool lube.

Be sure not to get any lubricants on the nylon washer on top of the wedge pivot. Dirt or lubricant on the nylon washer will cause the tension rod to loosen while running.

The Wedge pivot and wedge adapter should be replaced before they are worn to the point of causing tension fluctuations in the blade. These fluctuations are a cause blade breakage and pull out.

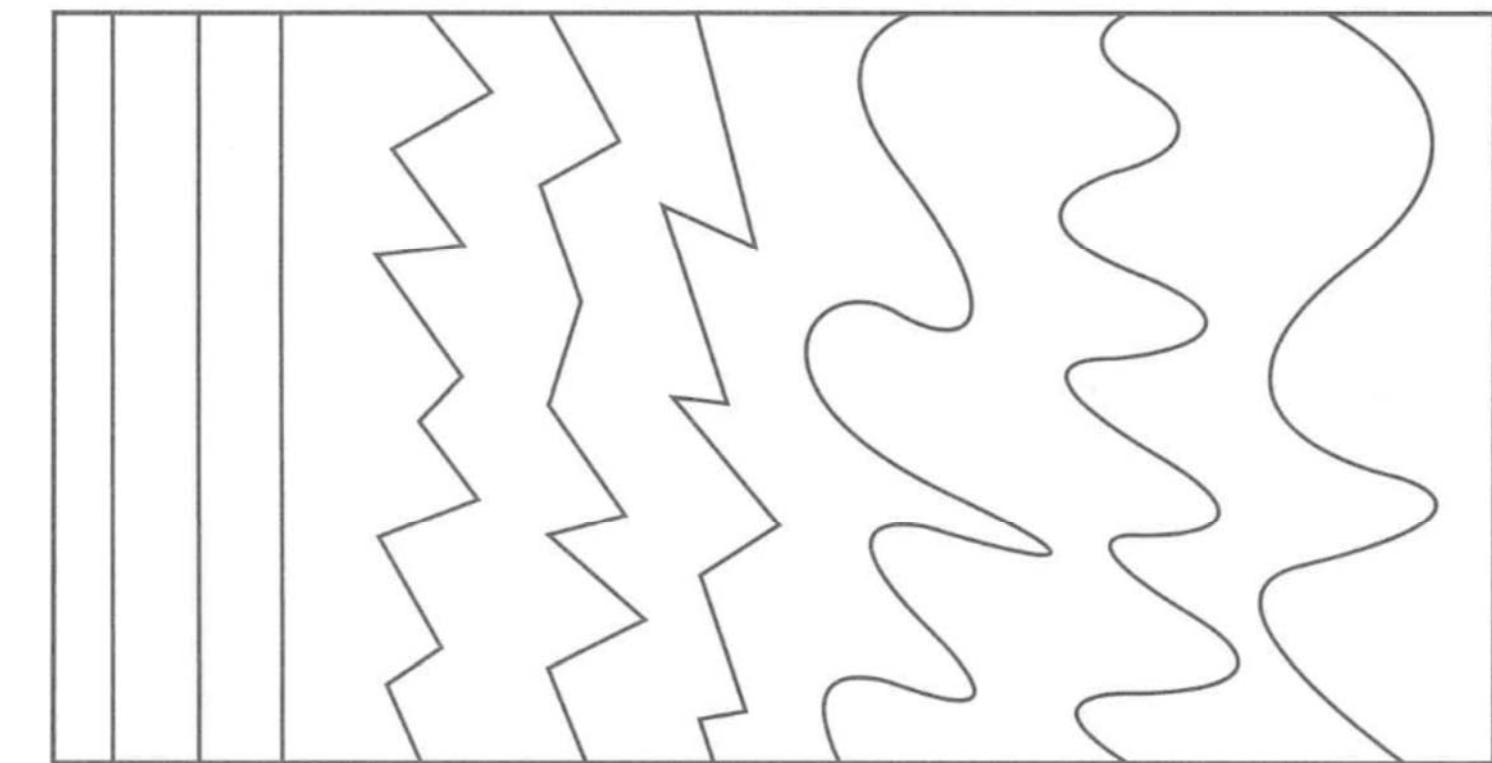


CUTTING TECHNIQUES

PRACTICE EXERCISES:

Over the years, we've learned several ways to help beginners enjoy working with their new Hawk right away. Here's a technique building tip that has helped many get started:

Take a piece of wood. Copy the drawing below on the wood using a pen or pencil. You do not need to be an artist. Remember- most important thing is to relax while sawing. Don't be afraid of the saw- it is a very safe tool- but it must be respected.



1. Cutting a Straight Line

Place the piece of wood on the table and adjust the Hold Down Foot. Check to make sure the Variable Control Knob is set to zero, and turn on the saw. Adjust the Variable Control Knob to a speed you are comfortable with. We suggest somewhere between half-way and three- quarters until you get used to cutting. Now start cutting the straight lines, slowly, pushing the wood forward through the blade and letting the blade do the work. Cut all three lines trying to keep as close to the line as possible.

2. Cutting a Zig-Zag Line

Start by making your cut all the way to the point where you want to make a sharp turn. Now, without feeding the wood into the blade, slowly spin the wood around the blade in its own 'kerf'. (the kerf is the width of the cut which results from the teeth being set, or bend, to the side yielding a wider cut than the thickness of the material the blade is made from). Continue cutting the next straight part until you reach the turning point again. Use this process and cut through to the other side of the wood. If there is smoke while you turn the wood you may be applying pressure to the side of the blade when cutting.

3. Cutting a Wavy Line

Start making a cut in the wood and turn the piece using your hands to follow the curve of the wavy line. Don't forget, the blade will only cut in one direction, you must turn the wood as you cut. If your project clatters on the table or tries to pull from your hands while making turns, you may want to go to a smaller blade size. The smaller the blade size, the smaller the turning radius capacity. For very intricate projects, the smaller size blade that you are comfortable with is best. See our blade selection section of this manual on page 9 and our blade chart in our catalog..

CUTTING YOUR FIRST PROJECT:

For this project you will need a piece of soft clear wood (pine will work great). Before you begin, you will need to transfer the car pattern located on this page to your wood. There are several ways to transfer patterns to your project material. Here are a couple of inexpensive ways:

1. Carbon Method

Using a sheet of carbon paper, 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 pencil or a ball point pen. Note: Depending on the material you plan to cut, the carbon from the paper may be very difficult to remove from the surface. Be sure to carefully sand away all carbon or it will tend to bleed when applying stain or finishing sealer later.

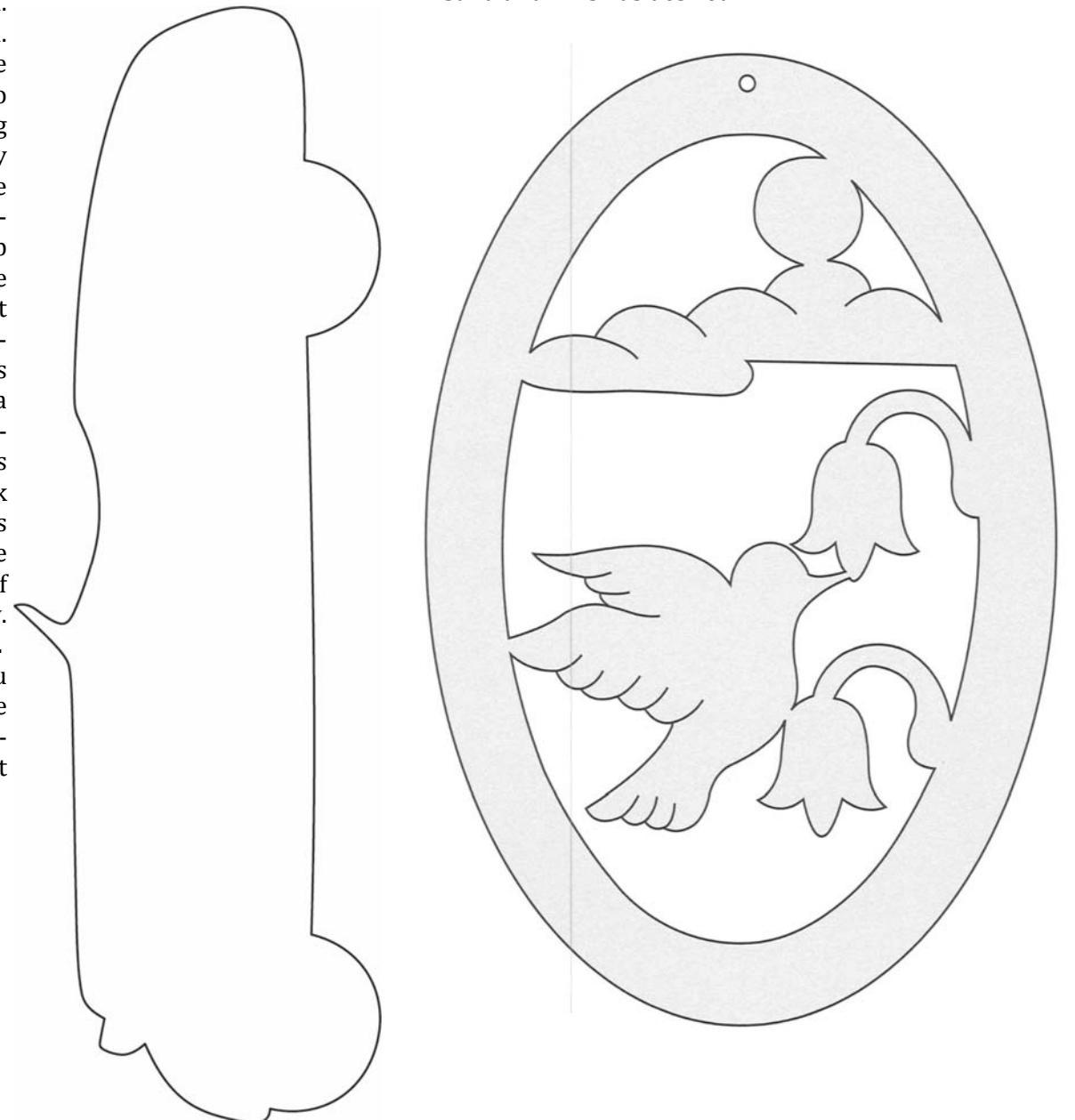
2. Spray Adhesive Method

This is the most popular method. Make a photocopy of the pattern and carefully spray aerosol adhesive directly to the back side of the pattern.

Never spray the wood. Leave to dry for a couple of seconds then apply to wood surface rubbing gently all over. You may also want to cover the pattern with clear packing tape. This will help lubricate the blade while cutting and also make it easier to remove the pattern after cutting. Always remember to make a photocopy of your pattern so that you always have a copy on file. Hawk Woodworking Tools has Aerosol Spray Adhesive available for purchase if you can't find it locally.

Order Item #865-1950.

Now using the skills you learned on the practice exercises, follow the outline of the car to cut it out.



Inside Cuts:

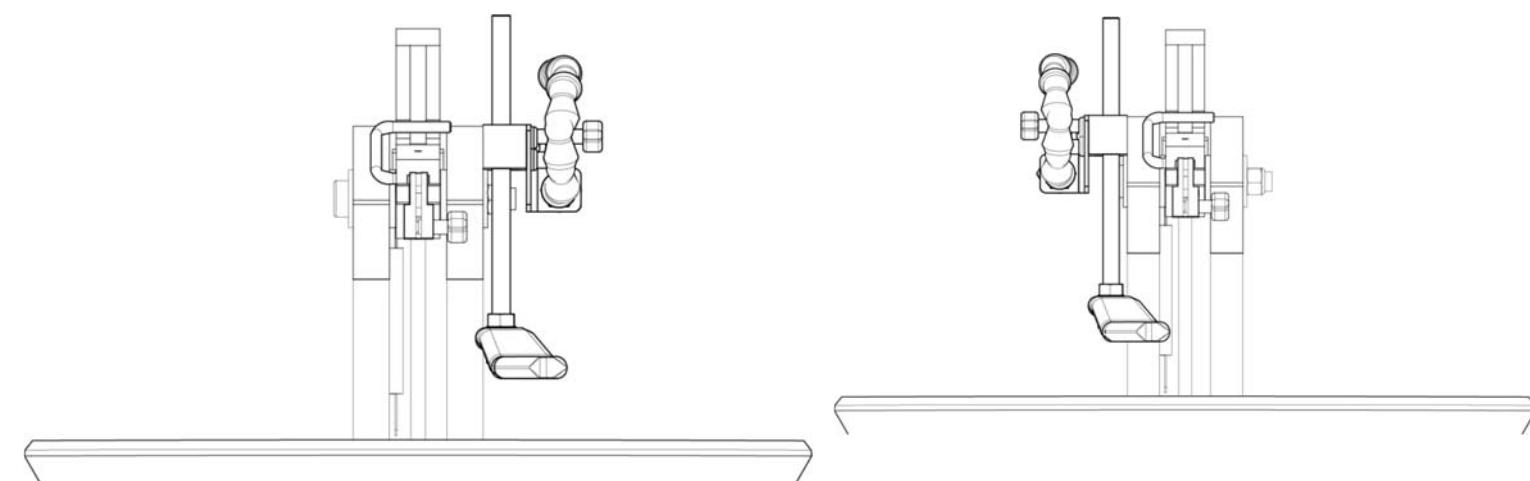
Making an inside cut is simply cutting an opening in your project without making an entry cut. Making inside cuts is impossible with the band saw, but the Hawk can make them in a snap! First, begin by drilling a hole in the scrap area which is to be removed. Make sure the hole is big enough for the blade to fit through. Using the top or bottom loading techniques discussed on page 10 and 11 of this manual you can feed the blade thru the drilled holes to cut out the area.

Hummingbird Project

- Copy and apply the hummingbird ornament pattern to a board or piece of plywood.
- Drill the 5 pilot holes in the areas that are to be cut out along with the hole for hanging the ornament.
- Insert the blade thru one of the holes by top or bottom loading the blade and cut out the area.
- Repeat for each of the 5 inside cut areas
- Cut out the outside of the ornament
- Sand and finish as desired.

RIGHT OR LEFT HAND OPERATION:

The accessory arm on your new Hawk is completely customizable to suit your particular style of scrolling. You can change over the accessory arm and its components from the factory installed right-handed position to the left-handed side of the saw. You can also turn the blade holders around so that the knob is on the left-hand side. You can set your saw up and customize it to operate in a way that you are most comfortable with. If you wish to change over the position of the accessory arm, just follow these simple steps.



1. Remove Two Screws

First remove hose from blower nozzle adapter by carefully pulling. Pull hose through clamp located to rear of arm. Next, locate and remove the two screws that hold the accessory arm on the rear arm support. Carefully lift off the accessory arm.

2. Swap Over Arm Components

Remove the two screws that hold the lower nozzle bracket and upper arm retainer. Swap components over and reinstall. The blower nozzle should now be on the left-handed side of the arm.

3. Swap Over Hold-Down Foot Knob and Rear Hose Clamp

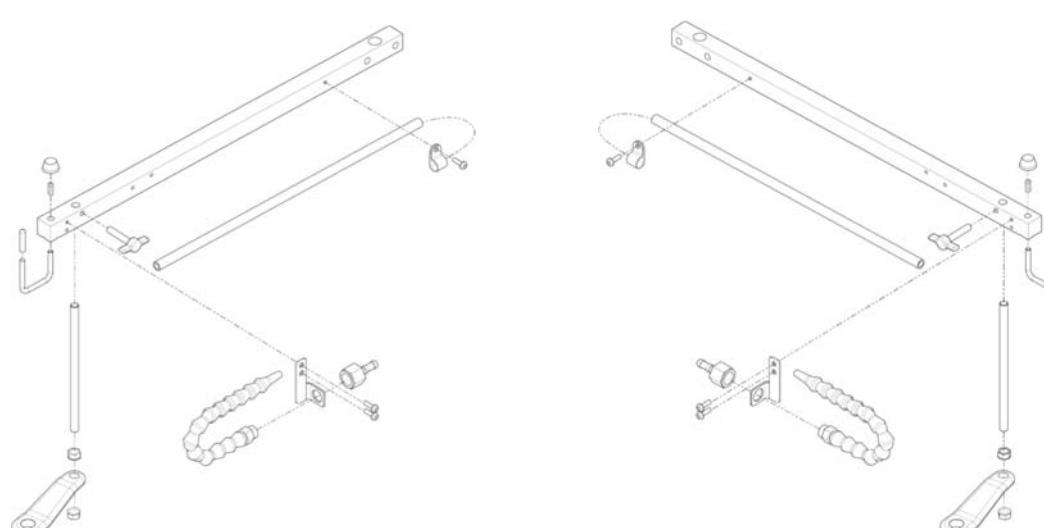
Remove hold-down foot knob and reinstall on the left-hand side on accessory arm. Also remove rear hose clamp and reinstall on left side of arm. Ensure all screws are tight.

4. Reinstall Accessory Arm On Left

Now that you have moved all accessory arm components over to the left-handed operation, you can reinstall the accessory arm on the left handed side on the rear arm support.

5. Feed Blower Hose

Swap rubber grommet to other side of rear arm support and feed blower hose through hole. Feed hose through rear hose clamp and re-attach to blower nozzle adapter. Check all connections.



Changing Over Position Of Blade Holder From Right To Left:

You will first need to remove blade from upper and lower blade holders before starting this operation.

1. Upper Blade Holder

To swap upper blade holder knob from right to left-hand side, remove blade holder. Turn blade holder around so that knob is now left and re-install.

Note: Loctite is used on the set screw to keep it from backing out when you tighten the blade clamp. Therefore, it might be hard to turn the set screw.

2. Lower Blade Holder

The lower blade holder is completely removable. Just remove from cradle and turn blade holder around so that the knob is now on the left hand side. Ensure teeth are forward and down when re-installing blade.

STACK CUTTING:

This is a technique most pros use when they are making several projects of the same pattern. Your Hawk Scroll Saw has the ability to cut up to a full 2 1/2" thick material, so you can stack most projects and keep them 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 all the pieces together. They put the pieces together in a stack (remember, not more than 2 1/2"), and run a bead of glue in a zig-zag down two sides of the project material. By making a zig-zag, the material will hold together when cutting in any direction.

Double Sided Tape:

Some Hawk owners tell us that they think the glue is messy 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.

Masking Tape:

Simply wrap the corners, thereby sandwiching multiple pieces together. Remove the tape when completed and lightly sand to remove any sticky tape residue.

Nails:

Simply stack your pieces and nail together to hold them. If you use this method, be sure your nails do not stick out of the bottom of your projects or they will scratch and mar the table surface. This is the most solid way to hold your stack together.



CUTTING USING DRIP TANK

When using a diamond blade and cutting metal, you need to keep the blade cool or it will not last. To keep the blade cool, we recommend the use of a drip tank attachment. To install it you screw the rod into the top of the arm supports. Next slide the tank on to the rod. Then run the hose down to the blade. You can tie the hose on to the loc-line to help position the hose. You will want the loc-line pointed away from the blade so that it does not blow the water away. You only need a slow drip of water to keep the blade cool. Set it so that it creates a small puddle of water around the blade when using.

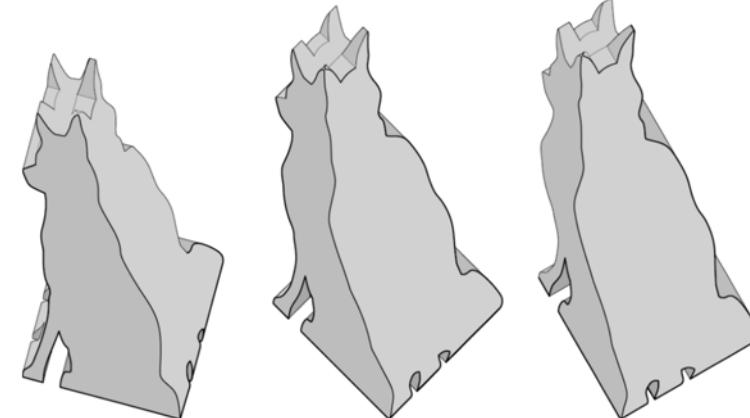
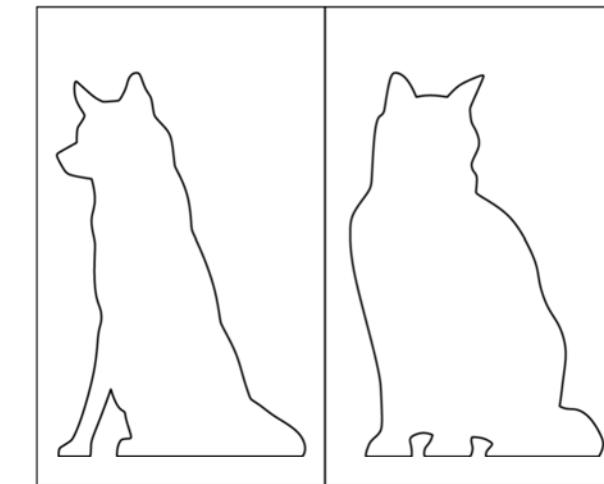
For cutting glass, ceramic tile or hard rock/stone using a diamond blade the drip tanks is a necessity. When cutting metals using metal or jewelers blades, a drip tank is helpful.

Tips:

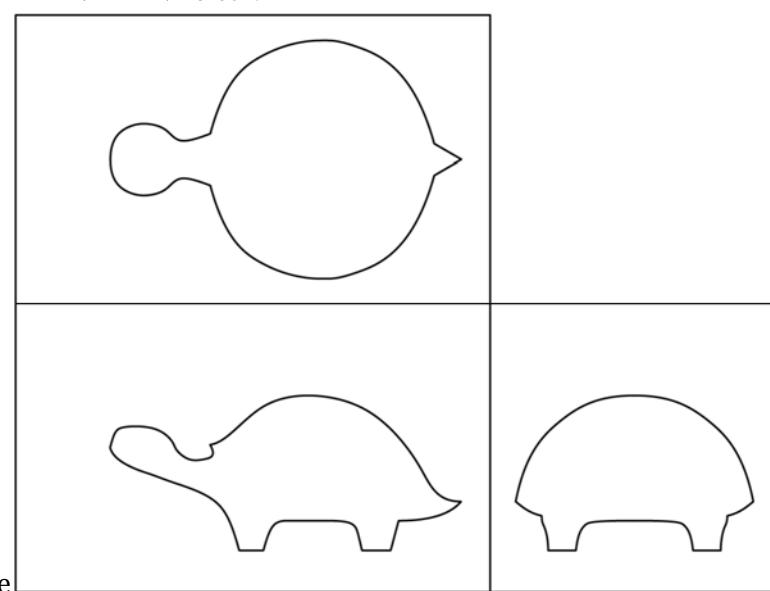
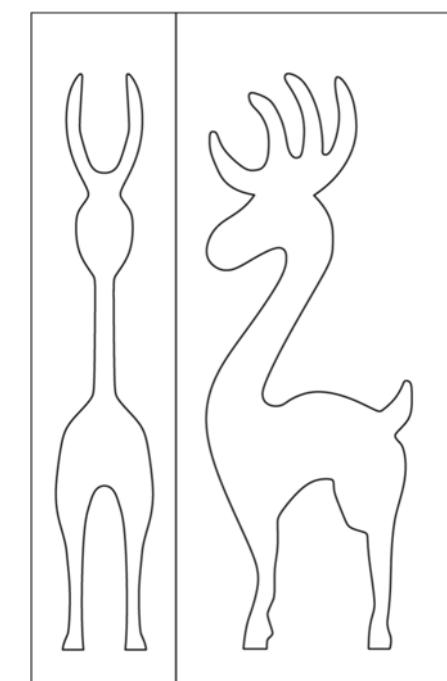
- To keep yourself dry set a layer of plastic and a old towel on your lap.
- After cutting spray the blade holder and table with WD -40. (WD stands for water displacement) Then wipe it dry. This will help prevent corrosion of the blade holder, table, etc.

COMPOUND SAWING:

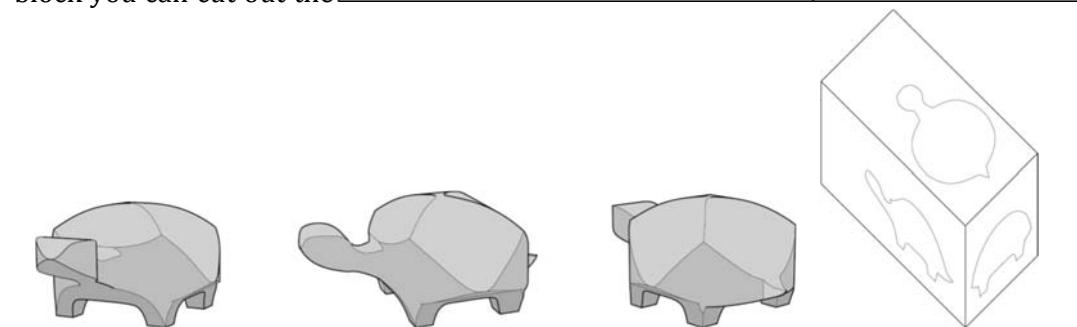
This is probably the toughest technique to learn for most crafters, but making a compound cut can be rewarding when you finally master it. By cutting all four sides of the project you add a completely new dimension to a simple project. Enclosed is a pattern for one of our favorite Christmas tree ornaments for you to try. To begin your compound cut project you will need a 3/4" x 1-1/2" x 3-1/2" piece of soft wood. Our favorite is basswood, bit pine will work very similar. 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 the 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. Next, take the profile pattern and cut it out 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 carver's tell us that they like to cut out their blanks first by compound cutting, then they finish them with wood carving tools.



With the cutting thickness of 2-1/2" of the HAWK you can cut on 3 sides as well. For this we show the turtle shown here. It uses a 1-1/2 x 1-1/2 x 2-1/2 block.

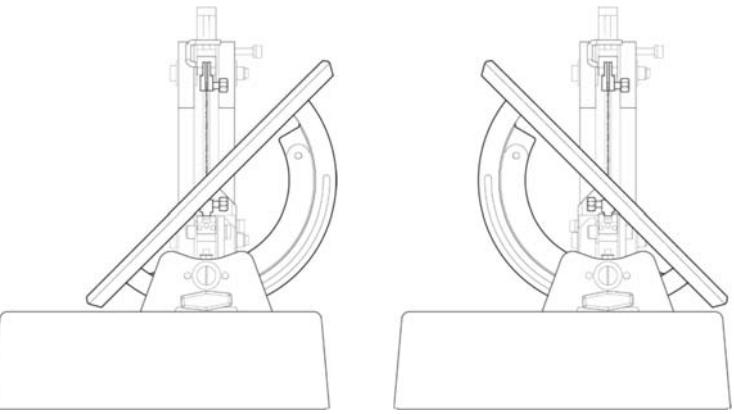


You can also cut 2 different items to create '1/4 turns'. Using a 1-1/2" x 1-1/2" x 2-1/2" block you can cut out the dog/cat shown here.



BEVEL SAWING:

Bevel sawing is a fun way to add another dimension to a project. To make a bevel cut, simply tilt the table of your Hawk Scroll Saw before cutting as shown below. Many crafters use the bevel technique to create inlays and 3-D pictures. There are many patterns available that use this



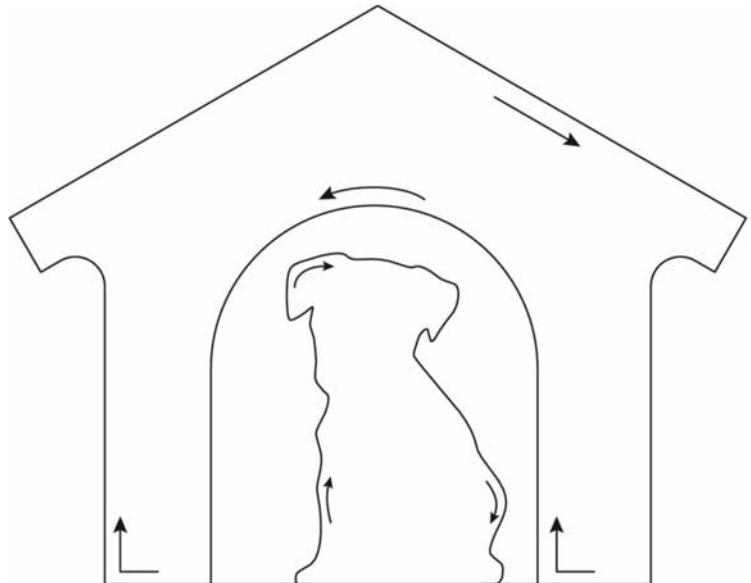
technique.

NOTE: If you are tilting the table more than 15 degrees to the right, the lower blade holder must be reversed so the knob is on the left. This will allow the knob to clear the table. See the table tilt section on page 14 of this manual.

Now you have the bowl ready to finish as you see fit.

If you are going to use it for food, nuts or candy, then you need to use a food grade finish like food grade mineral oil or shellac.

For the dog in the house shown below, you need to tilt the right side of the table down 2 to 3 degrees. (note: the wider the blade the larger the angle need). Cut the pattern in the direction of the arrows. The doorway will slide back and house and dog will stay in the front.



By using this same method, you can stack pieces of wood you can create inlays. The larger piece will lay into the smaller part. You will need to adjust the angle to obtain the proper depth of an inlay for a given blade type and size.

For the Bowl on the next page you will need to follow the steps listed below to yield the finished bowl shown on the next page.

- You will need a board 3/4" thick board at least 8.5" by 5.5".
- Make a copy of the pattern full size.
- Attach the pattern to the board.
- Then drill a hole along each line at 30 degrees in the direction the blade will be.
- Set the saw angle at 30 degrees.
- Cut along each line and separate the segments of the bowl as shown.
- Glue the top 3 section together.
- Sand the inside of the bowl smooth.
- Glue on the bottom section.
- Sand the outside of the bowl smooth.

