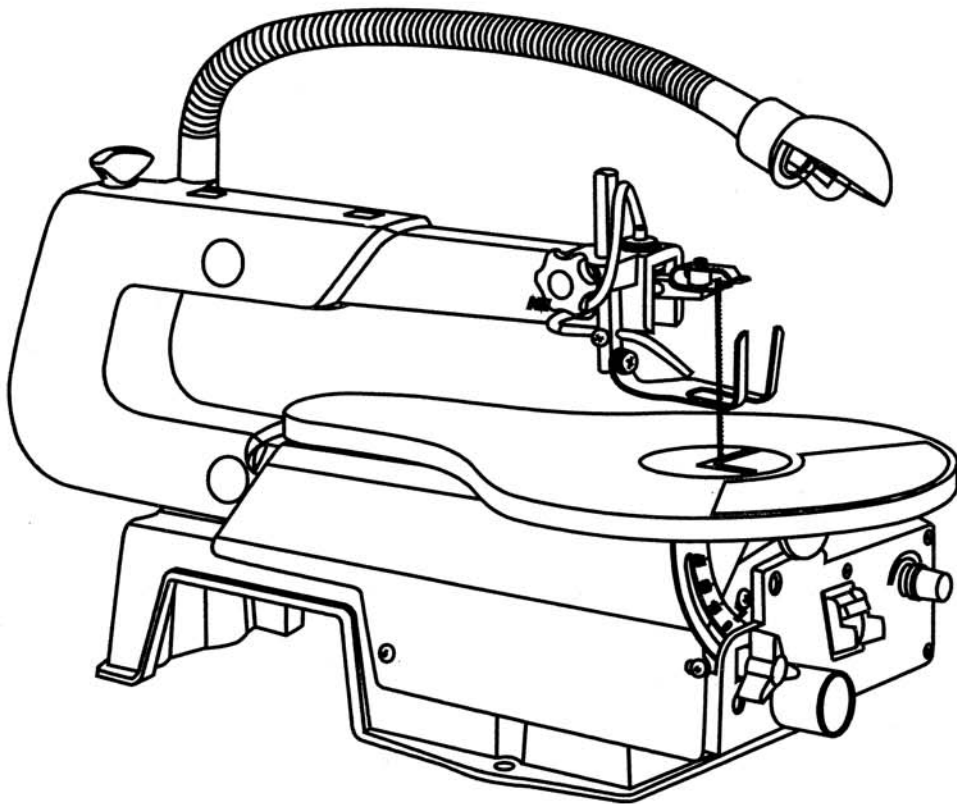


OPERATION MANUAL

16 "VS Scroll Saw

With Flex Shaft



Attention: No advice will be made for any changes of structure . Read and understand this manual before operate this tool

SAFETY RULES FOR SCROLL SAWS

⚠ WARNING FAILURE TO FOLLOW THESE RULES MAY RESULT IN SERIOUS INJURY.

1. READ AND UNDERSTAND the instruction manual before operating this machine.
2. DO NOT OPERATE THIS MACHINE until it is completely assembled and installed according to the instructions.
3. OBTAIN ADVICE from your supervisor, instructor, or another qualified person if you are not thoroughly familiar with the operation of this machine.
4. FOLLOW ALL WIRING CODES and recommended electrical connections.
5. DO NOT OPERATE THIS MACHINE while under the influence of drugs, alcohol, or medication.
6. USE CERTIFIED SAFETY EQUIPMENT. Eye protection equipment should comply with ANSI Z87.1 standards, hearing equipment should comply with ANSI S3.19 standards, and dust mask protection should comply with MSHA/NIOSH certified respirator standards.
7. DO NOT WEAR TIE, GLOVES, or loose clothing. REMOVE WATCH, RINGS, and other jewelry. ROLL UP SLEEVES.
8. USE THE GUARDS WHENEVER POSSIBLE. Check to see that they are in place, secured, and working correctly.
9. SECURE THE MACHINE TO A SUPPORTING SURFACE.
10. NEVER START THE MACHINE BEFORE CLEARING THE TABLE OF ALL OBJECTS (tools, scrap pieces, etc.).
11. NEVER START THE MACHINE with the workpiece against the blade.
12. NEVER START THE MACHINE until all handles are locked and the blade is at the correct tension.
13. AVOID AWKWARD OPERATIONS AND HAND POSITIONS.
14. KEEP ARMS, HANDS, AND FINGERS away from the blade.
15. NEVER REACH UNDER THE TABLE while the machine is running. A moving blade under the table can cause injury.
16. ADJUST THE "HOLD-DOWN" FOOT for each new operation. Loss of control of the workpiece can cause injury.
17. HOLD THE WORKPIECE FIRMLY AGAINST THE TABLE.
18. DO NOT CUT A WORKPIECE THAT IS TOO SMALL TO BE SAFELY SUPPORTED.
19. DO NOT CUT A WORKPIECE THAT DOES NOT HAVE A FLAT SURFACE against the table.
20. MAKE RELIEF CUTS before cutting long curves. Never attempt to cut a curve that is too tight.
21. NEVER BACK A BOUND BLADE OUT OF A KERF with the saw running. Turn the saw "OFF", disconnect the saw from the power source, wedge the kerf and remove the blade.
22. USE CAUTION WHEN CUTTING IRREGULAR WORKPIECES. This type of workpiece can pinch the blade before the cut is complete.
23. USE CAUTION WHEN CUTTING ROUND MATERIAL. This type of workpiece has a tendency to "roll" and can cause the blade to bite.
24. PROPERLY SUPPORT LONG OR WIDE WORKPIECES.
25. NEVER PERFORM LAYOUT, ASSEMBLY, or set-up work on the table/work area when the machine is running.
26. TURN THE MACHINE "OFF" AND DISCONNECT THE MACHINE from the power source before installing or removing accessories, before adjusting or changing set-ups, or when making repairs.
27. TURN THE MACHINE "OFF", disconnect the machine from the power source, and clean the table/work area before leaving the machine. LOCK THE SWITCH IN THE "OFF" POSITION to prevent unauthorized use.

SCROLL SAW DISCLAIMER

Read the entire text of the operating instructions prior to the assembly and operation of the scroll saw. These operating instructions are intended to make it easier for you to get familiar with your saw and utilize its intended use. The operating instructions contain important notes on how to work safely, properly and economically with your machine and how to avoid dangers, save repair costs, reduce downtime, and increase the reliability and working life of the machine.

In addition to the safety regulations contained herein, you must in any case comply with the applicable regulations of your country with respect to the operation of the machine. Put the operating instructions in a clear plastic folder to protect them from dirt and humidity and store them near the machine. The instructions must be read and carefully observed by each operator prior to starting the work. Only persons who have been trained in the use of the machine and have been informed on the related dangers and risks are allowed to use the machine. The required minimum age must be met. In addition to the safety notes contained in the present operating instructions and the special regulations of your country, the generally recognized technical rules for the operation of wood working machines must be observed.

GENERAL NOTES

- When you unpack the device, check all parts for possible transport damages. In case of complaints the supplier is to be informed immediately.
- Complaints received at a later date will not be acknowledged.
- Check the machine for completeness.
- Read the operating instructions to make yourself familiar with the device prior to using it.
- Only use original Pioneer parts for accessories as well as for replacement and spare parts. Spare parts are available from your specialized dealer.
- Specify the part number, serial number as well as the type and year of construction of the device.

▲ WARNING

To avoid electrical hazards, fire hazards, or damage to the tool, use proper circuit protection. Your scroll saw is wired at the factory for operation. Connect to a branch circuit and use a 15 amp time delay fuse or circuit breaker. To avoid shock or fire, replace power cord immediately if it is worn, cut or damaged in any way. Do not use in wet conditions.

SPECIFICATIONS

Dimensions LxWxHmm (in)	630x320x380(24-3/4x12-9/16x14-15/16)
Table size mm (in)	Ø254x415(10x16-5/16)
Saw blade length mm (in)	127 (5")
Cutting height maxim (in)	50 (2")
Throat depth mm (in)	400 (15-3/4")
Stroke mm (in)	19 (3/4")
Stroke speed per minute (variable)	550-1650
Table tilting (left)	0-45
Weight Net kg (lbs)	14.5 (32 lbs)
Dust port diameter mm (in)	35 (1-3/8")
Sound level at max. speed during idle running	76 dB (A)

GENERAL SAFETY RULES FOR SCROLL SAWS

▲ WARNING

When using electric tools basic safety precautions should always followed to reduce the risk of fire, electric shock and personal injury. Read all these instructions before attempting to operate this product. Save these instructions for future reference.

- Keep work area clear. Cluttered areas and benches invite injuries.
- Consider work area environment. Do not expose tools to rain. Do not use tools in damp or wet locations. Keep work area well lit. Do not use tools in the presence to flammable liquids or gases.
- Guard against electric shock. Avoid body contact with grounded surfaces.
- Keep other people away. Do not let others, especially children, not involved in the work touch or the power cord and keep them away from the work area.
- Store idle tools. When not use, tools should be stored in a dry locked-up place, out of reach of children.
- Do not force the tool. It will do the job better and safer at the rate for which it was intended.
- Use the right tool. Do not force small tools to do the job of a heavy-duty tool. Do not use tools for purposes not intended; for example do not use circular saws to cut tree limbs or logs.
- Dress properly. Do not wear loose clothing or jewelry that can be caught in moving parts. On-skid footwear is recommended when working outdoors. Wear protective hair covering to contain long hair.
- Use protective equipment. Use safety glasses. Use face or dust mask if cutting operations create dust.
- Connect dust extraction equipment. If devices are provided for the connection of dust extraction and collecting equipment, ensure these are connected and properly used.
- Do not abuse the power cord. Never pull the power cord to disconnect it from the socket. Keep the lead away from heat, oil and sharp edge.
- Secure work. Where possible use clamps or a vice to hold the work. It's safer than using your hand.
- Don't over reach. Keep proper footing and balance at all time.
- Maintain tools with care. Keep cutting tools sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories. Inspect power cables periodically and if damaged have they replaced by an authorized service facility. Inspect extension cables periodically and replace if damaged. Keep handles dry-clean and free from oil and grease.
- Disconnect tools. When not in use, before servicing and when changing accessories such as blades, bits, cutters, Disconnect tools from the power supply.
- Remove adjusting keys and wrenches. Form the habit of checking to see that keys and adjusting wrenches are removed from the tool before turning it on.
- Avoid unintentional starting. Ensure switch is in 'off' position when plugging in.
- Use outdoor extension leads. When the tool is used outdoors, use only extension leads intended for outdoor use and so marked.
- Stay alert. Watch what you are doing, use common sense and do not operate the tool when you are tired.
- Check damaged parts. Before further use of the tools, it should be carefully checked to determine that it will operate properly and perform its intended function. Check the 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 by an authorized service center unless otherwise indicated in this instruction manual. Do not use the tool if the switch does not turn on and off.
- Warning. Repaired by a qualified person. This electric tool compliers with the relevant safety rules. Repairs should only be carried out by a qualified person using original spare parts; otherwise this may result in considerable danger to the user.

Blade Selection Chart

Teeth/Inch	Width	Thickness	Speed spm	Material
10	110" (2.8mm)	020"(0.5mm)	1200-1600	Hard soft material 3/16" Up to 2" (4.8mm-50mm)
15	110"(2.8mm)	020"(0.5mm)	800-1200	Extremely thin cuts on material 3/32 to 1/2" thick (2.4mm-13mm)
18	095"(2.4mm)	010"(0.3mm)	550-800	For tight radius work in thin materials 3/32" to 1/8" thick (2.4mm-3mm)

ELECTRICAL

EXTENSION CORDS

Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the product's plug. When using a power product at a considerable distance from the power source, use an extension cord heavy enough to carry the current that the product will draw. An undersized extension cord will cause a drop in line voltage, resulting in a loss of power and causing the motor to overheat. Use the chart provided below to determine the minimum wire size required in an extension cord. Only round jacketed cords listed by Underwriter's Laboratories (UL) should be used.

**Ampere rating (on tool data plate)

	0-2.0	2.1-3.4	3.5-5.0	5.1-7.0	7.1-12.0	12.1-16.0
Cord Length	Wire Size (A.W.G.)					
25'	16	16	16	16	14	14
50'	16	16	16	14	14	12
100'	16	16	14	12	10	—

**Used on 12 gauge - 20 amp circuit.

NOTE: AWG = American Wire Gauge

WARNING:

Keep the extension cord clear of the working area. Position the cord so that it will not get caught on lumber, products or other obstructions while you are working with a power product. Failure to do so can result in serious personal injury.

WARNING:

Check extension cords before each use. If damaged replace immediately. Never use product with a damaged cord since touching the damaged area could cause electrical shock resulting in serious injury.

ELECTRICAL CONNECTION

The installed electric motor is completely wired ready for operation.

The customer's connection to the power supply system, and any extension cables that may be used, must conform to local regulations.

Important remark:

Defective electrical connection cables

Electrical connection cables often suffer insulation damage.

Possible causes are:

- Pinch points when connection cables are run through window or door gaps.
- Kinks resulting from incorrect attachment or laying of the connection cable.
- Cuts resulting from running over the connecting cable.
- Insulation damage resulting from forcefully pulling out of the wall socket.
- Cracks through aging of insulation.

Such defective electrical connection cable must not be used as the insulation damage makes them extremely hazardous. Check electrical connection cables regularly for damage. Make sure this is disconnected from the mains when checking. Electrical connection cables must comply with the regulations applicable in your country. Single-phase motor

- The power voltage must coincide with the voltage specified on the motor's rating plate 120□60Hz.

GROUNDING INSTRUCTIONS

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with an electric cord having an equipment-grounding conductor and 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.

Do not modify the plug provided. If it will not fit the outlet, have the proper outlet installed by a qualified electrician.

Improper connection of the equipment-grounding conductor can result in a risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal.

Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the product is properly grounded.

Repair or replace a damaged or worn cord immediately. This product is intended for use on a circuit that has an outlet

like the one shown in figure 1. It also has a grounding pin

ADDITIONAL SAFETY RULES FOR SCROLL SAWS

- This scroll saw is intended for use in dry conditions, and for indoor use only.
- Do not cut pieces of material too small to hold by hand outside the blade guard.
- Avoid awkward hand positions where a sudden slip could cause a hand to move into the blade.
- Always use the blade guard to avoid possible injury due to blade breakage.
- Do not perform layout, assembly or set up work on the table while the cutting tool is in operation.
- Never turn your scroll saw on before clearing the table of all objects: (tools, scraps of wood, etc) expect for the work piece and related feed or support devices for the operation planned.

PROPER USE

Machines meet all valid CSA/US machines guidelines as well as all relevant guidelines for each machine.

- The machine must only be used in technically perfect condition in accordance with its designated use and the instructions set out in the operating manual, and only by safety-conscious persons who are fully aware of the risks involved in operating the machine. Any functions disorders, especially those affecting the safety of the machine, Should therefore be rectified immediately.

- The safety, work and maintenance instructions of the manufacturer as well as the technical data given in the calibrations and dimensions must be adhered to.

- Relevant accident prevention regulations and other, generally recognized safety-technical rules must also be adhered to.

- The machine may only be used, maintained, and operated by persons familiar with it and instructed in its operation and procedures. Arbitrary alterations to the machine release the manufacturer from all responsibility for any resulting damages.

- The machine may only be used with original accessories and tools made by the manufacturer.

- Any other use exceeds authorization. The manufacturer is not responsible for any damages resulting from unauthorized users are the sole responsibility of the operator.

The machine has been built using modern technology in accordance with recognized safety rules. Some remaining hazards, however, may still exist.

- Long hair and loose clothing can be hazardous when the work piece is rotating. Wear personal protective gear such as a hair net and tight fitting work clothes.

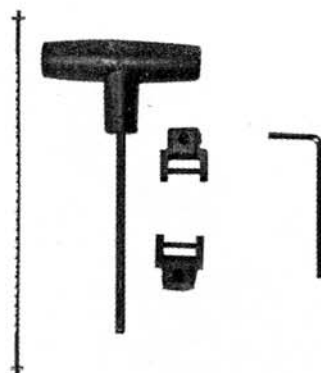
- Saw dust and wood chips can be hazardous. Wear personal protective gear such as safety goggles and a dust mask.

- The use of incorrect or damaged power cords can lead to injuries caused by electricity.

- Even when all safety measures are taken, some remaining hazards which are not yet evident Mays still be present.

- Remaining hazards can be minimized by following the instructions in "safety precautions", " Proper Use" in this operating manual.

- Do not force the machine unnecessarily: excessive cutting pressure may lead to rapid deterioration of the blade and a decrease in performance in terms of finish and precision. Avoid accidental starts: do not press the start button while inserting the plug into the socket.



Wrench , Blade , Pin less blade holder included

SCROLL SAW DESIGN FEACURES

1. Clamping screw:

For removing the saw blade

2. Working piece holder

3. Shaving blower:

Keeps the work piece area free from dust.

4. Variable speed switch

5. on/off power switch

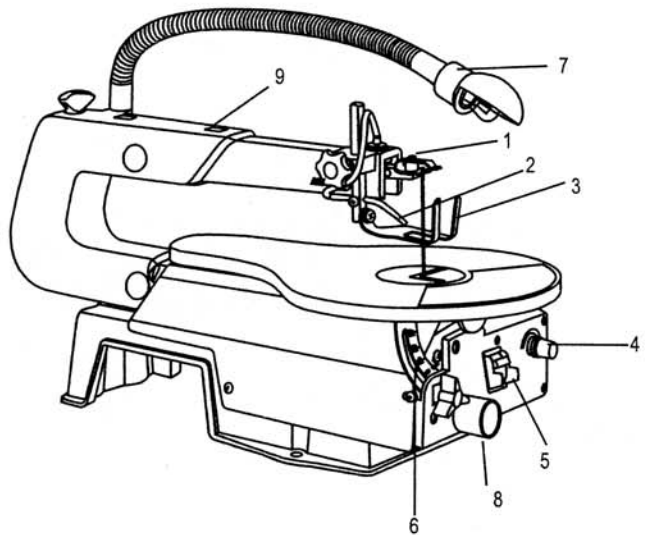
6. Angle scale:

Scale shows the tilting angle of table.

7. Adjustable light

8. Dust chute

9. Setting gauge for saw blades without pin



INSTALLATION

Setting the saw bench Setting the angle scale

- Release the lock knob and bring the saw bench To a right angle in relation to the saw blade.

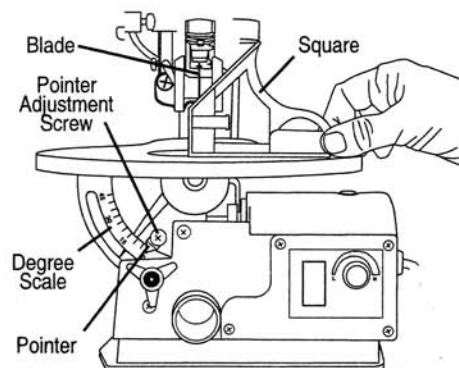
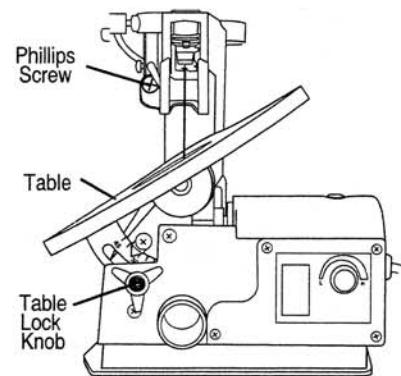
- Use a 90°angle to measure the right angle between the blade and the bench. The saw blade should be 90°to the angle.

- Close the knob again when the distance between the blade and the 90°angle is at a minimum. The bench should then be at 90°to the saw blade.

- Release the lock screw and bring the pointer to the zero position. Fasten the screw. Please note: the angle scale is a useful piece of supplementary equipment, but should not be used for precision work.

Use scrap wood for saw tests, adjust the bench if necessary.

Note: The table should not be on the motor block, this can cause undesirable noise.



Horizontal saw bench and diagonal cuts

- The saw bench can be positioned into a 45 degree diagonal position or be left in the horizontal position.

- You can read off the approximate degree of angle by using the angle scale located under the work bench. For more exact adjustment, use scrap wood for some saw tests:

Adjust the bench if necessary.

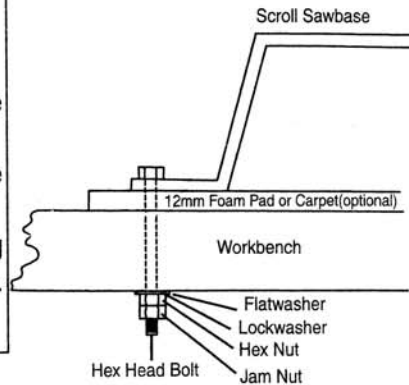
Before Operation

Mounting the saw on a work bench

•A workbench made from solid wood is better than one made of plywood,
As interfering vibrations and noise are more noticeable with plywood.

•The necessary tools and small parts for assembling the saw on a workbench are not supplied with the saw. However, use equipment of at least the following size:

1. Saw body
2. Foam rubber base
3. work bench
4. Flat seal
5. Washer
6. Hexagonal nut
7. Lock nut
8. Hexagonal bolt



⚠ WARNING

Switch off the saw and remove the power cord from power supply before installing saw blades in order to avoid injuries caused by unintentional activation of the saw.

REMOVING AND INSTALLING PIN TYPE BLADES

1. Rotate the blade tension knob anti-clockwise to release blade tension.

2. Remove table insert and remove blade from the inner upper and lower blade holders by pulling forward on blade and then lifting the blade through the access hole in the table. Slight downward pressure against the upper holder may be helpful when removing blade from upper holder.

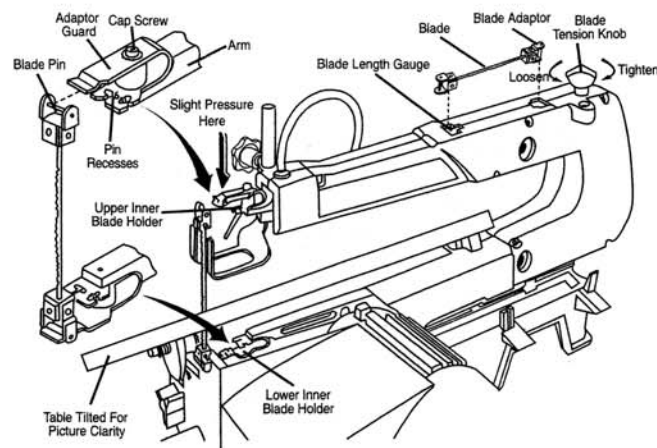
3. Look at the blade holders closely and notice the blade slots and pin recesses in the blade holders. The blade holders are made with two direction slots so you can position the blade for cutting from the front or from one side of the saw as shown.

Cutting from the side of the saw will be necessary when your work piece exceeds 16 inch in length. It allows your scroll saw to cut like a band saw. Only can use when horizontal cutting.

4. Install the blade while inserting one end of the blade through the access hole in the table and hook the blade pin in the pin recess in the lower blade holder. Slide the top blade pin into the pin recess of the inner upper blade holder. You may need to press down lightly on the upper blade holder to install the blade.

Carefully tighten the blade by rotating the blade tension knob clockwise just until you feel the slack in the blade removed. Double check to see that the pins are properly located in the blade holder. Then turn the blade tension knob ONE full turn clockwise.

This amount of blade pressure is required for most cutting operations and blades.

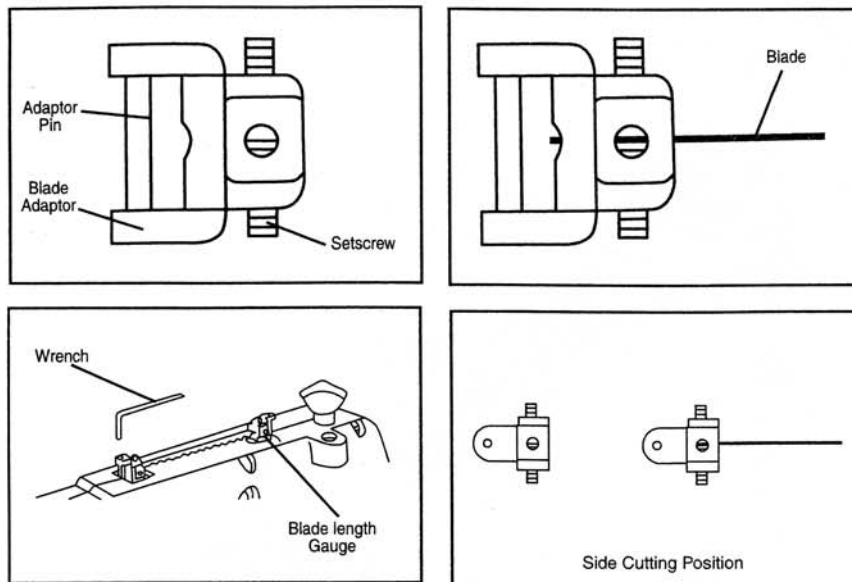


How to use flat saw blades(painless)

Use the adapters with flat saw-blades .The saw-blade is fixed with Allen screws.

Inserting the saw-blade to the adapters and securely tighten the other setscrew with the wrench provided.Then place the blade and adapters into the gauge to set the blade to the proper length as shown.

Adjust the blade tension according to pin type blade adjust on last section.



BASIC OPERATION

A scroll saw is fundamentally a "curve cutting tool" but which can also carry out straight and angled edge cuts. Familiarize yourself with the following important points prior to commissioning the saw.

- The saw does not automatically cut wood. You must feed the wood against the saw blade manually.
- The cutting process occurs while the blade moving.
- Feed the wood slowly against the saw blade as the saw blade teeth are small.
- Persons carry out work with the saw require training . The saw blade may break easily during this training time while the operator is still unfamiliar with the saw.
- The saw is best suited for sheets of wood less than 1" thick.
- Feed the wood especially slowly against the blade and avoid abrupt curves to prevent the saw blade from breaking, if you wish to cut wood sheet thickness than 1" .
- Saw blade teeth will get dull over time, saw blade must be replaced. Blade wear depends on type of wood and operator.
- Try and made sure that the saw blade follows the grain of the wood in order to obtain a clean cut.
- The saw speed must be reduced to minimum when cutting precious and non-ferrous metals.

Inside cuts

⚠ WARNING Switch off the saw and remove the cord from power supply before installing saw blades in order to avoid injuries caused by unintentional activation of the saw.

This saw is suited also to inset cuts, or cuts not starting at the edge of the work piece. Proceed as follows:

- Drill a 6mm (1/4") hole in the work piece.
- Turn the blade tension knob to release the tension in the blade.
- Place the bore hole over the saw blade slot in the work table.
- Install the saw blade through the hold in the piece and through the work blade slot, and the blade to the holds.
- When you have completed the inside cut, remove the saw blade and then remove the work piece from the table.

HOW TO USE SHAFT

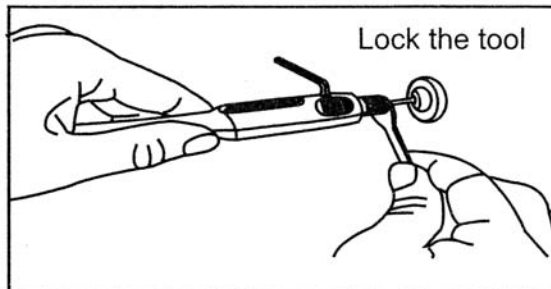
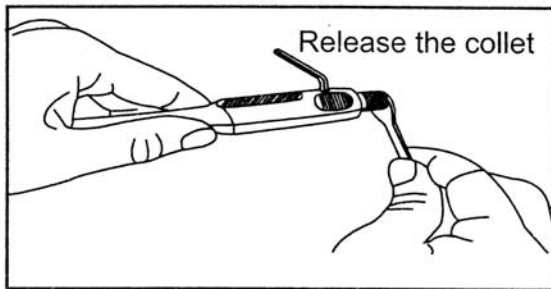
WARNING:

Always remove the electric cord from the power source before changing grinding wheel, brushes, lubricating or when working on the unit to avoid possible serious injury.

WARNING:

This electric tool is in accordance with the relevant safety requirements. To assure safety and reliability, all repairs should be performed by an Authorised Service Centre.

- Remove protective cap from the threaded bushing
- Place flexible shaft onto the threaded bushing
- Clamp tool in the drill chuck 3.2mm (1/8") diameter.



- Firmly hold threaded shaft at the handle and switch on the speed control.
- Having finished the work, remove the flexible shaft and place the protective cap in place.

Attention: When working with the flexible shaft, cover the saw blade with blade guard.

OPERATING THE FLEXIBLE SHAFT

1. Always allow the tool to operate as it was designed. Never force the flexible shaft.
2. Clamp or otherwise secure the work to prevent it from shifting.
3. Hold the tool tightly and keep it at a safe distance from users. Always point the bit away from your body.
4. Ensure that ventilation openings are kept clear when working in dust conditions. If it is necessary to clear dust of inside parts, disconnect the tool from the power supply first and avoid damaging internal parts.
5. Slow speed is best for polishing operations, delicate woodcarving, or working on fragile model parts.
6. High speed is suitable for operation on hardwoods, metals and glass, such as: carving, routing, shaping, cutting and drilling.

AFTER OPERATION

Do not touch the moving part when the flexible shaft is just switched off.

Do not put down your tool before the working head stops rotating.

MAINTENANCE

⚠ WARNING : In the interests of operational safety, always switch off the saw and remove the cord from power supply before carrying out maintain work.

General

Re-application of the wax coating on the work table makes feeding the work piece to the blade easier.

Motor

The power cord should be replaced immediately if pulled out, cut or damaged in any other way. Do not lubricate the motor bearings or internal parts!

Saw arm bearings

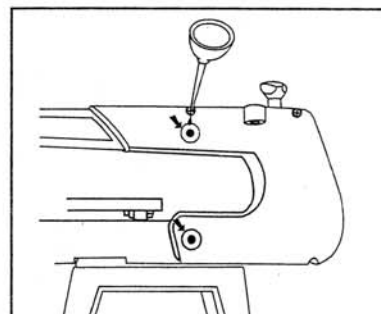
Lubricate the saw arm bearings every 10 hours. Proceed as follow .

- Turn the saw to the side.
- Apply a generous amount of SAE 20 oil to the shaft end and bronze bearings.
- Let the lubricant oil work in overnight.
- Repeat the procedure the next day on the other side of the saw.

TROUBLESHOOTING TABLE

⚠ WARNING

: In the interests of operational safety, always switch off the saw and remove the mains plug before carrying out maintenance work.



Fault	Possible cause	Action
Saw blades break	Tension incorrectly set	Set the correct tension
	Load too great	Feed the work piece more slowly
	Incorrect saw blade variety	Use the correct saw blades
	Work piece not fed straight	Avoid exerting side pressure
Motor does not function	Power extension cable faulty	Change faulty cable
	Motor faulty	Call customer service. Do not attempt to repair the motor yourself as this should be carried out by trained personnel.
Vibration NOTE: The saw vibrates slightly when the motor is running in normal operation	Saw incorrectly installed	Refer to the instructions in this manual
	Unsuitable underlay	The heavier the work bench is the less the vibration. A bench made from plywood always vibrates more than one made from solid wood. Select the work bench best suited to your working conditions.
Saw blade swings out Holder not aligned straight	The work bench is not screwed down or is on the motor	Tighten the locking lever
	The motor is not secured	Securely screw the motor in place
	Holders not aligned	Loosen the screws with which the holders are fastened to the arm. Align the holders so that they are perpendicular to each other and retighten the screws.

16" SCROLL SAW PARTS DIAGRAM

