

**DRAPER**<sup>®</sup>

230V 405mm

# SCROLL SAW WITH FLEXIBLE DRIVE SHAFT

**22791**UK  
CA CE

These instructions accompanying the product are the original instructions. This document is part of the product, keep it for the life of the product passing it on to any subsequent holder of the product. Read all these instructions before assembling, operating or maintaining this product.

This manual has been compiled by Draper Tools describing the purpose for which the product has been designed, and contains all the necessary information to ensure its correct and safe use. By following all the general safety instructions contained in this manual, it will ensure both product and operator safety, together with longer life of the product itself.

All photographs and drawings in this manual are supplied by Draper Tools to help illustrate the operation of the product.

Whilst every effort has been made to ensure the accuracy of information contained in this manual, the Draper Tools policy of continuous improvement determines the right to make modifications without prior warning.

# 1. TITLE PAGE

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## 1.1 INTRODUCTION:

**USER MANUAL FOR: 230V 405mm Scroll Saw with Flexible Drive Shaft**

**Stock No: 22791**

**Part No: FS405V**

## 1.2 REVISION HISTORY:

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**Date first published: February 2010.**

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**First revision date: May 2020.**

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**Second revision date: August 2020.**

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**Third revision date: September 2022.**

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As our user manuals are continually updated, users should make sure that they use the very latest version.

**Downloads are available from:** <http://drapertools.com/manuals>

Draper Tools Limited  
Hursley Road  
Chandler's Ford  
Eastleigh  
Hampshire  
SO53 1YF  
UK

Delta International BV  
Oude Graaf 8  
6002 NL  
Weert  
Netherlands

**Website:** [drapertools.com](http://drapertools.com)

**Product help line:** +44 (0) 23 8049 4344

**General Fax:** +44 (0) 23 8026 0784

## 1.3 UNDERSTANDING THIS MANUAL'S SAFETY CONTENT:

**WARNING!** – Information that draws attention to the risk of injury or death.

**CAUTION!** – Information that draws attention to the risk of damage to the product or surroundings.

## 1.4 COPYRIGHT © NOTICE:

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## 3. WARRANTY

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### 3.1 WARRANTY

Draper tools have been carefully tested and inspected before shipment and are guaranteed to be free from defective materials and workmanship.

Should the tool develop a fault, please return the complete tool to your nearest distributor or contact

**Draper Tools Limited, Chandler's Ford, Eastleigh, Hampshire, SO53 1YF. England.**

**Telephone Sales Desk: (023) 8049 4333 or Product Help Line (023) 8049 4344.**

A proof of purchase **must** be provided with the tool.

If upon inspection it is found that the fault occurring is due to defective materials or workmanship, repairs will be carried out free of charge. This warranty period covering parts is 24 months and labour is 12 months from the date of purchase except where tools are hired out when the warranty period is 90 days from the date of purchase. This warranty does not apply to any consumable parts, any type of battery or normal wear and tear, nor does it cover any damage caused by misuse, careless or unsafe handling, alterations, accidents, or repairs attempted or made by any personnel other than the authorised Draper warranty repair agent.

**Note:** If the tool is found not to be within the terms of warranty, repairs and carriage charges will be quoted and made accordingly.

This warranty applies in lieu of any other warranty expressed or implied and variations of its terms are not authorised.

Your Draper warranty is not effective unless you can produce upon request a dated receipt or invoice to verify your proof of purchase within the warranty period.

Please note that this warranty is an additional benefit and does not affect your statutory rights.

**Draper Tools Limited.**



# 4. INTRODUCTION

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## 4.1 SCOPE

This machine is designed for Hobby / DIY use. Any other application is considered misuse.

## 4.2 SPECIFICATION

Stock no. ....	22791
Part no. ....	FS405V
Rated voltage .....	230V/50Hz
Motor .....	90W
Max. cut .....	50mm (2")
Throat depth .....	400mm (16")
Blade length .....	127mm (5")
Speed (no load) .....	550-1600r/min
Stroke length .....	20mm (0.59")
Table tilt .....	0-45°
Table size .....	415mm Max. x 255mm Max.
Flexi-shaft speed .....	3,300-10,000 r/min
Sound pressure level .....	77.3dB(A)
Sound power level .....	87.4dB(A)
Vibration level .....	1.17m/s2
Weight (net/gross) .....	13/16.7kg

## 4.3 HANDLING AND STORAGE

- Care must be taken when handling this product.
  - Dropping this power tool could have an effect on its accuracy and could also result in personal injury. This product is not a toy and must be respected.
- Environmental conditions can have a detrimental effect on this product if neglected.
  - Exposure to damp air can gradually corrode components.
  - If the product is unprotected from dust and debris, components will become clogged.
  - If not cleaned and maintained correctly or regularly, the machine will not perform at its best.

## 5. HEALTH AND SAFETY INFORMATION

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### 5.1 GENERAL SAFETY INSTRUCTIONS FOR POWER TOOL USE

When using any type of power tool there are steps that should be taken to make sure that you, as the user, remain safe.

Common sense and a respect for the tool will help reduce the risk of injury.

**Read the instruction manual fully.** Do not attempt any operation until you have read and understood this manual.

Most important you must know how to safely start and stop this machine, especially in an emergency.

**Keep the work area tidy and clean.** Attempting to clear clutter from around the machine during use will reduce your concentration. Mess on the floor creates a trip hazard. Any liquid spilt on the floor could result in you slipping.

**Find a suitable location.** If the machine is bench mounted the location should provide good natural light or artificial lighting as a replacement. Avoid damp and dust locations as it will have a negative effect on the machine's performance. If the machine is portable do not expose the tool to rain. In all cases do not operate power tools near any flammable materials.

**Keep bystanders away.** Children, onlookers and passers by must be restricted from entering the work area for their own protection. The barrier must extend a suitable distance from the tool user.

Unplug and house all power tools that are not in use. A power tool should never be left unattended while connected to the power supply. They must be housed in a suitable location, away locked up and from children. This includes battery chargers.

**Do not overload or misuse the tool.** All tools are designed for a purpose and are limited to what they are capable of doing. Do not attempt to use a power tool (or adapt it in any way) for an application it is not designed for. Select a tool appropriate for the size of the job. Overloading a tool will result in tool failure and user injury. This covers the use of accessories.

**Dress properly.** Loose clothing, long hair and jewellery are all dangerous because they can become entangled in moving machinery. This can also result in parts of body being pulled into the machine. Clothing should be close fitted, with any long hair tied back and jewellery and neck ties removed. Footwear must be fully enclosed and have a non-slip sole.

**Wear personal protective equipment (PPE).** Dust, noise, vibration and swarf can all be dangerous if not suitably protected against. If the work involving the power tool creates dust or fumes wear a dust mask. Vibration to the hand, caused by operating some tools for longer periods must be protected against. Wear vibration reducing gloves and allow long breaks between uses. Protect against dust and swarf by wearing approved safety goggles or a face shield. These are some of the more common hazards and preventions however, always find out what hazards are associated with the machine/work process and wear the most suitable protective equipment available.

**Do not breathe contaminated air.** If the work creates dust or fumes connect the machine (if possible) to an extraction system either locally or remotely. Working outdoors can also help if possible.

**Move the machine as instructed.** If the machine is hand held, do not carry it by the power supply cable. If the product is heavy, employ a second or third person to help move it safely or use a mechanical device. Always refer to the instructions for the correct method.

**Do not overreach.** Extending your body too far can result in a loss of balance and you falling. This could be from a height or onto a machine and will result in injury.

**Maintain your tools correctly.** A well maintained tool will do the job safely. Replace any damaged or missing parts immediately with original parts from the manufacturer. As applicable keep blades sharp moving parts clean, oiled or greased handles clean and emergency devices working.

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**Wait for the machine to stop.** Unless the machine is fitted with a safety brake, some parts may continue to move due to momentum. Wait for **all** parts to stop, then unplug it from the power supply before making any adjustments, carrying out maintenance operations or just finishing using the tool.

**Remove and check setting tools.** Some machinery requires the use of additional tools or keys to set, load or adjust the power tool. Before starting the power tool always check to make certain they have been removed and are safely away from the machine.

**Prevent unintentional starting.** Before plugging any machine in to the power supply, make sure the switch is in the OFF position. If the machine is portable, do not hold the machine near the switch and take care when putting the machine down, that nothing can operate the switch.

**Carefully select an extension lead.** Some machines are not suitable for use with extension leads. If the tool is designed for use outdoors, use an extension lead also suitable for that environment. When using an extended lead, select one capable of handling the current (amps) drawn by the machine in use. Fully extend the lead regardless of the distance between the power supply and the tool. Excess current (amps) and a coiled extension lead **will** both cause the cable to heat up and can result in fire.

**Concentrate and stay alert.** Distractions are likely to cause an accident. Never operate a power tool if you are under the influence of drugs (prescription or otherwise), including alcohol or if you are feeling tired. Being disorientated will result in an accident.

**Have this tool repaired by a qualified person.** This tool is designed to conform to the relevant international and local standards and as such should be maintained and repaired by someone qualified, using only original parts supplied by the manufacturer. This will ensure the tool remains safe to use.

## 5.2 ADDITIONAL SAFETY INSTRUCTIONS FOR SAWS

Safety is a combination of operator common sense and alertness at **all** times when the scroll saw is being used.

BEFORE USING THE SAW:

### **Warning!**

FOR YOUR OWN SAFETY, DO NOT TRY TO USE YOUR SCROLL SAW UNTIL IT IS COMPLETELY ASSEMBLED AND INSTALLED ACCORDING TO THE INSTRUCTIONS AND UNTIL YOU UNDERSTAND THE FOLLOWING.

Your scroll saw must be bolted securely to a workbench. In addition, if there is any tendency for the scroll saw to move during certain operations, bolt your scroll saw workbench to the floor.

Location. This scroll saw is intended for use in dry conditions.

Protect eyes, hands, face, ears and body.

- To avoid being pulled into the blade:
  - i. Roll long sleeves above elbows.
  - ii. Do not wear
    - a. Gloves.
    - b. Jewellery.
    - c. Ties or other loose clothing.
  - iii. Tie back long hair.
- Do not cut pieces of material too small to hold by hand outside the blade guard.

## 5. HEALTH AND SAFETY INFORMATION

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- Avoid awkward hand positions where a sudden slip could cause your hand to move into the blade.
- To avoid lifting of the workpiece make sure the blade teeth point downward towards the table.
- To avoid blade breakage always adjust blade tension correctly.
- To avoid losing control of the workpiece or tool:
  - i. When cutting a large piece of material make sure it is fully supported at table height.
  - ii. Hold the workpiece firmly against the table.
  - iii. Do not feed the material too fast while cutting. Only feed the material fast enough so that the blade will cut without overloading.
  - iv. Use caution when cutting off material which is irregular in cross section and could pinch the blade before the cut is completed. A piece of moulding, for example, must lay on the table and not be permitted to rock while being cut.
  - v. Use caution when cutting off round material such as dowel rods or tubing. They have a tendency to roll while being cut causing the blade to bite. Use vee blocks to control the workpiece.
- To avoid injury:
  - i. Never leave the scroll saw with the power on or before the machine has come to a complete stop.
  - ii. Do not perform layout, assembly or set up work on the table while the saw is in operation.
  - iii. Turn saw off and remove plug from power supply before installing or removing any accessory or attachment.
  - iv. Never turn your scroll saw on before clearing the table of all objects (tools, scraps of wood etc.) except for the workpiece and related feed or support devices for the operation planned.

Should any part of this scroll saw be missing, damaged or any electrical component fails to perform properly, turn off power and remove plug from power supply, replace damaged, missing and/or failed parts before resuming operation.

Think safety – safety is a combination of operator common sense and alertness whenever the scroll saw is in operation. The operation of any power tool can result in foreign objects being thrown into eyes, which can result in severe eye damage. Always wear safety goggles which comply to a recognised standard.

### WARNING FOR YOUR OWN SAFETY

Read and understand the manual before operating this scroll saw.

- Always wear safety goggles or face shield which comply to a recognised standard.
- Plan your work to protect your eyes, hands, face and ears.
- Never leave the scroll saw with the power on.
- Adjust blade tension by hand before turning 'on'.
- Maintain control of the workpiece at all times, holding firmly against the table.

**DO NOT ALLOW FAMILIARITY (GAINED FROM FREQUENT USE OF YOUR SCROLL SAW) TO CAUSE A CARELESS MISTAKE. ALWAYS REMEMBER THAT A CARELESS FRACTION OF A SECOND IS ENOUGH TO CAUSE A SEVERE INJURY.**

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## 5.3 RESIDUAL RISK

**Important:** Although the safety instructions and operating manuals for our tools contain extensive instructions of safe working with power tools, every power tool involves a certain residual risk which can not be completely excluded by safety mechanisms. Power tools must therefore always be operated with caution!

## 5.4 CONNECTION TO THE POWER SUPPLY

**Caution:** Risk of electric shock. Do not open.

This appliance is supplied with a moulded 3 pin mains plug for your safety. The value of the fuse fitted is marked on the pin face of the plug. Should the fuse need replacing, ensure the substitute is of the correct rating, approved to BS1362 and ASTA or BS Kite marked.

ASTA 

BSI 


Make sure the power supply information on the machine's rating plate are compatible with the power supply you intend to connect it to.

If a replacement plug is to be fitted this must be carried out by a qualified electrician.

The damaged or incomplete plug, when cut from the cable shall be disabled to prevent connection to a live electrical outlet.

This appliance is Class I † and is designed for connection to a power supply matching that detailed on the rating label and compatible with the plug fitted.

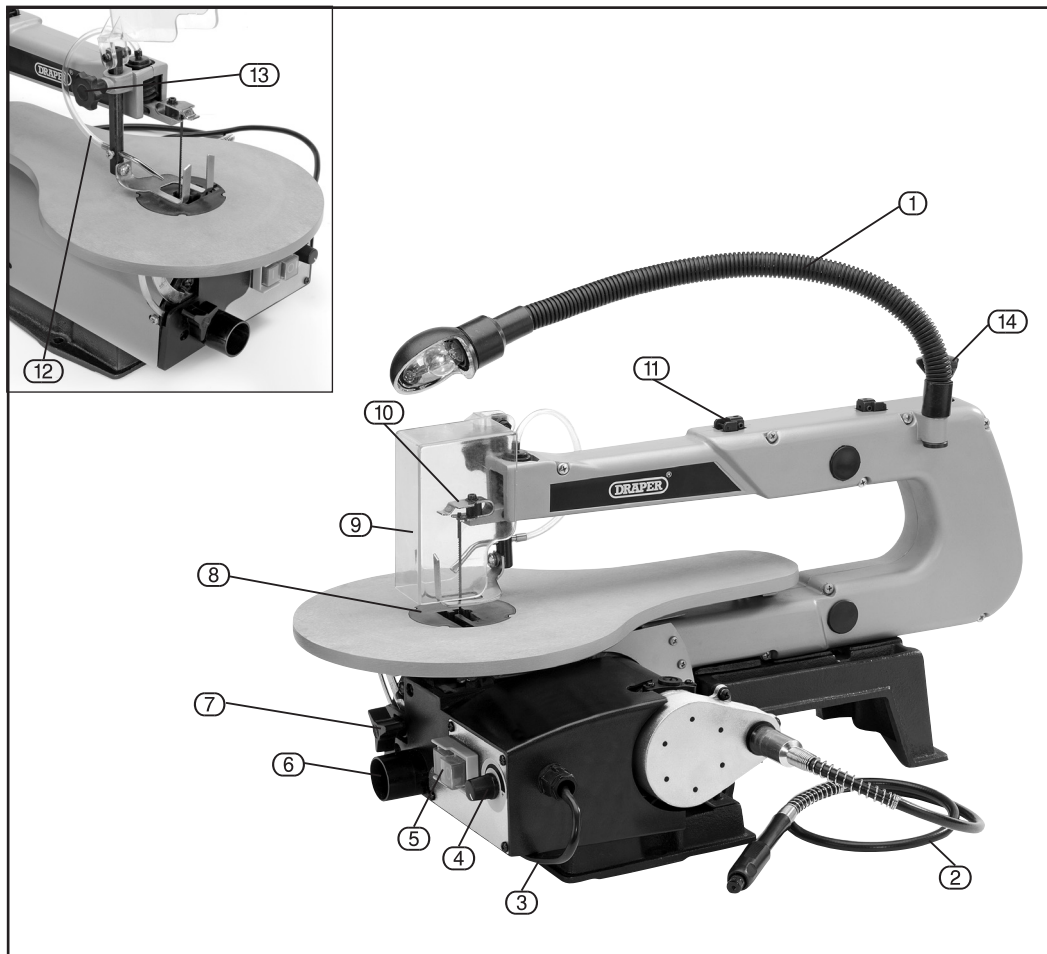
If an extension lead is required, use an approved and compatible lead rated for this appliance. Follow all the instruction supplied with the extension lead.

†Earthed:  This product requires an earth connection to protect against electric shock from accessible conductive parts in the event of a failure of the basic insulation.

**Important: If using an extension lead, follow the instructions that came with your lead regarding maximum load while cable is wound. If in doubt, ensure that the entire cable is unwound. Using a coiled extension lead will generate heat which could melt the lead and cause a fire.**

## 6. TECHNICAL DESCRIPTION

### 6.1 IDENTIFICATION



- |                         |                            |
|-------------------------|----------------------------|
| ① Directional worklight | ⑧ Table insert             |
| ② Flexi-shaft           | ⑨ Blade guard              |
| ③ Mains power cable     | ⑩ Blade holder             |
| ④ Variable speed dial   | ⑪ Non-pin blade holders    |
| ⑤ No-Volt on/off switch | ⑫ Air hose                 |
| ⑥ Dust extraction       | ⑬ Blade guard locking knob |
| ⑦ Angle adjustment knob | ⑭ Blade tightening knob    |

## 7. UNPACKING AND CHECKING

### 7.1 PACKAGING

Carefully remove the product from the packaging and examine it for any sign of damage that may have happened during shipping. Lay the contents out and check them against the parts shown below. If any part is damaged or missing, please contact the Draper Help Line (the telephone number appears on the Title page) and do not attempt to use the product.

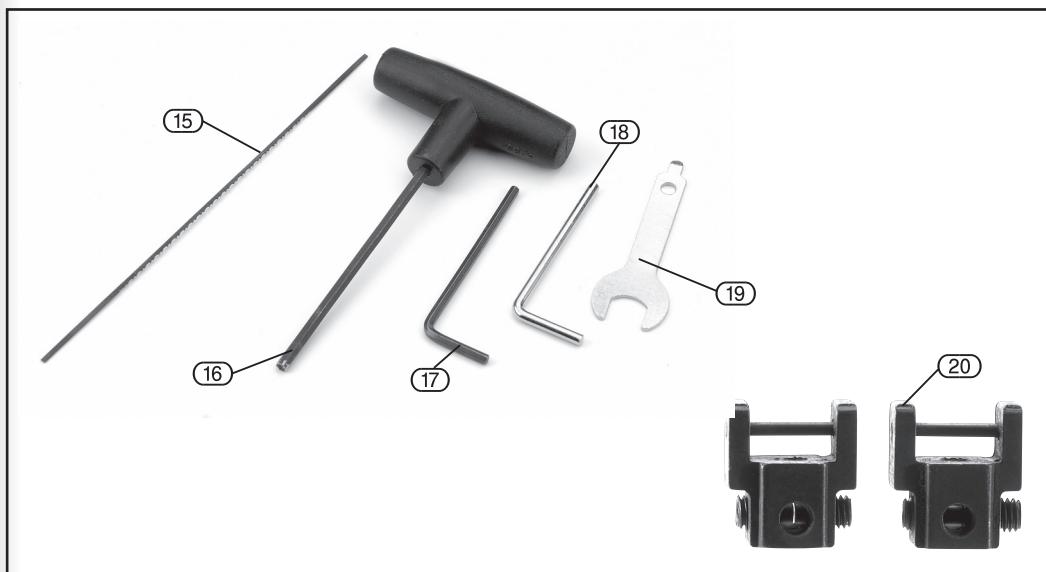
The packaging material should be retained at least during the warranty period, in case the machine needs to be returned for repair.

#### Warning!

- Some of the packaging materials used may be harmful to children. Do not leave any of these materials in the reach of children.
- If any of the packaging is to be thrown away, make sure they are disposed of correctly, according to local regulations.

### 7.2 WHAT'S IN THE BOX

As well as the saw, there are several parts not fitted or attached to it.



(15) Pinless blade

(16) T-handle

(17) Hex. key

(18) Flexi-shaft tightening tool

(19) Flexi-shaft tightening wrench

(20) Pinless blade holder clamps

## 8. PREPARING THE SCROLL SAW

**Note:** Remove the plug from the socket before carrying out adjustment, servicing or maintenance.

### 8.1 BLADE GUARD – FIG. 1

Pass the bolts (A) through the blade guard (9) and the blade holder (10).

Secure using the fixing nut provided (B).

Adjust the height of the blade guard to a few millimetres above the workpiece height, securing in place using fixing nut (C).

**Note:** Never use this machine with the blade guard missing or in the raised position.

The scroll saw must be securely bolted to a workbench (fixings not supplied). Choose a suitable location that allows plenty of room for a large workpiece to be fed on and off the table without interference.

### 8.2 DUST BLOWER – FIG. 2

Ensure dust blower (D), is fixed into the guard holder location hole (E) and secured using bolt (F).

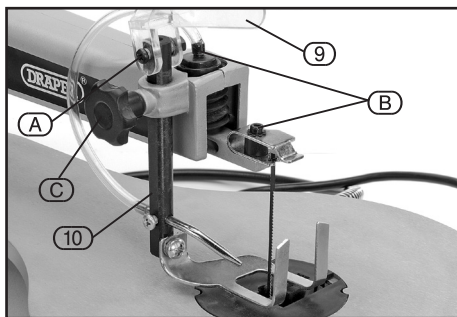


FIG. 1

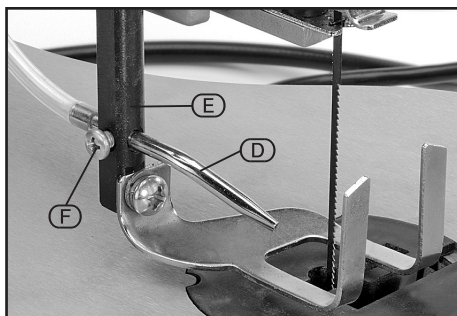


FIG. 2



## 9. OPERATING INSTRUCTIONS

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### 9.1 BASIC SCROLL SAW OPERATION

**PLEASE read and understand the following items about your scroll saw before attempting to use the saw.**

The saw does not cut by itself. Allow the saw to cut by guiding the material into the blade.

The blade cuts **ONLY** on the down stroke.

Guide the material into the blade slowly because the teeth of the blade are fine and only cut on the down stroke.

There is a learning curve for each person. During that period it is expected that some blades will be broken until you become more proficient.

Cutting material less than 25mm thick will give the best results.

When cutting material over 25mm thick the user must guide the material very slowly into the blade and take extra care not to bend or twist the blade.

Teeth on scroll saw blades wear out and as such, blades must be replaced frequently for optimum cutting results. Scroll saw blades generally stay sharp for between 30 minutes to 2 hours dependent on material being cut.

To obtain accurate cuts you must compensate for the blade's tendency to follow the wood grain.

When choosing a blade to use with this scroll saw consider the following:

- Very fine, narrow blades should be used to cut in thin wood 6mm thick or less.
- To cut wood over 6mm thick use wider blades.
- Most blade packaging states the size or thickness of material that a blade is intended to cut and the radius, size of curve, which can be cut.
- Wider blades cannot cut curves as tightly as thinner blades can.
- Narrower blades work well only on thinner material.

Blades wear faster:

- When cutting plywood which is very abrasive,
- Sawing material thicker than 19mm,
- Sawing hardwood,
- When side pressure is exerted.

## 9. OPERATING INSTRUCTIONS

### 9.2 NO-VOLT ON/OFF SWITCH – FIG. 3

In event of a power supply disruption, the machine will require manually restarting once the power has returned.

To switch the machine 'on' press the green button marked 'I'.

To switch the machine 'off' press the red button marked 'O'.

**Note:** Remove the plug from the socket before carrying out adjustment, servicing or maintenance.

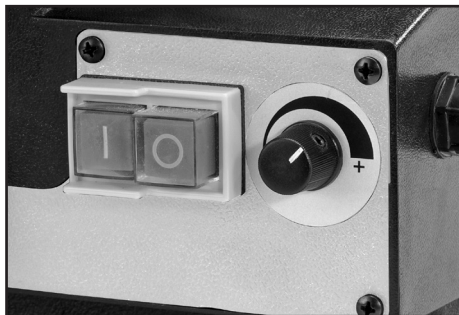


FIG. 3

### 9.3 MAKING EXTERNAL SCROLL CUTS – FIG. 4

One of the features of this saw is that it can be used to make scroll cuts in the centre of a board without cutting through on the edge.

- To make internal cuts in a board remove the scroll saw blade described on page 9.
- Drill a 6mm hole in the board where you wish to make an internal cut.
- Place the board on the saw table with the hole in the board over the access hole in the table.
- Install blade through hole in board, re-attach blade to blade holders and adjust blade tension.
- When finished making the internal scroll cut remove the blade from the blade holders.

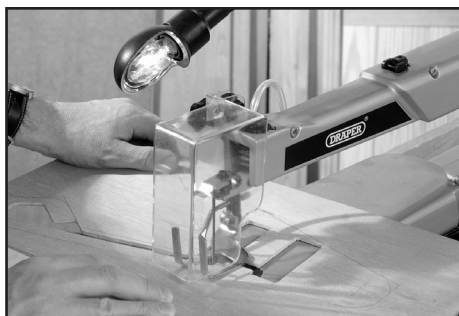


FIG. 4

### 9.4 CHECK TABLE ALIGNMENT – FIG. 5

A bevel scale is provided under the work table as a convenient guide for setting the approximate table angle.

When greater precision is required, loosen angle adjustment knob (7). Place a small square on the table and set it at 90° to the blade. When set, re-secure angle adjustment knob (7). If required, adjust the bevel scale indicator (G) to register 90°.

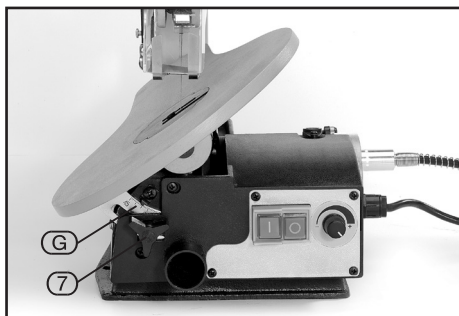


FIG. 5

**Note:** Remove the plug from the socket before carrying out adjustment, servicing or maintenance.

## 9.5 REMOVING AND REFITTING BLADES – FIGS. 6 & 7

**Note:** Only pin end blades fit this machine's blade holder.

Loosen the blade tension by unscrewing the blade tightening knob (14). Ensure the blade teeth cut on the down stroke.

The blade holder has two positions:

- Position (H) for side mounting the blade. This position is used when the workpiece exceeds the throat depth.
- Position (I) is for standard cutting.

Remove the table insert (8) for better access to the lower blade holder slightly press down on the upper arm (J), hook the lower blade pin under the lower blade holder in the appropriate slot. Double check to ensure the blade pins are correctly located. Hook the upper blade pin over the corresponding upper blade holder slot, release pressure on the upper arm.

Tension the blade by retightening knob (14).

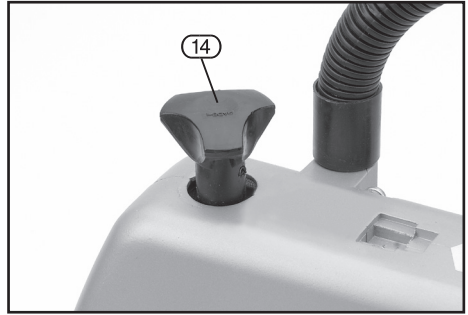


FIG. 6

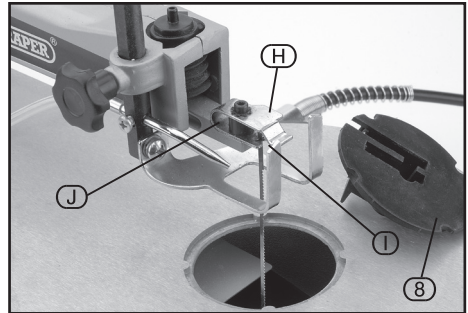


FIG. 7

## 9.6 DUST BLOWER/EXTRACTION – FIG. 8

To assist with cutting the scroll saw is equipped with a blower nozzle (L). Aim the nozzle at the cutting point and the sawdust build up will be blown clear enabling any guide marks on the workpiece to be seen.

### Dust extraction:

Inhalation of dust particles can be detrimental to health. The dust outlet must be connected with a dust extraction machine.

**Note:** Due to the outlet diameter, a size adaption may be necessary.

All wood dust (including dust from composites like chipboards and fibre boards etc.) is hazardous to health: it can affect the nose, the respiratory system and the skin. For example MDF (medium density fibreboard) which contains formaldehyde is a known carcinogen. In addition to the above measures a correctly fitted dust mask, suitable for the activity and in accordance to the relevant standard, must be worn.

For work activities involving exposure to fine wood dust, a mask rated to at least FFP2 should be used.

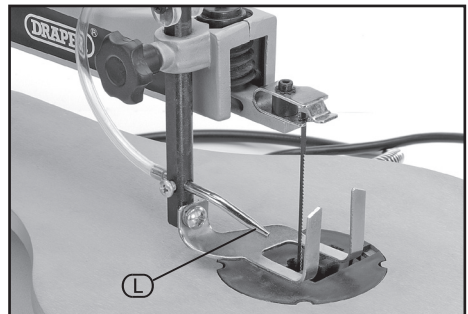


FIG. 8

## 9. OPERATING INSTRUCTIONS

### Flexible drive shaft:

- Remove the protective cap.
- Screw the flexible drive shaft into the threaded connector (2) (Fig. 9).
- Insert pin (M) into the location hole (N) to prevent chuck from spinning (Fig. 10). Open chuck jaws, insert chosen tool (Fig. 11) and reverse process to lock tool in place.

### Warning!

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

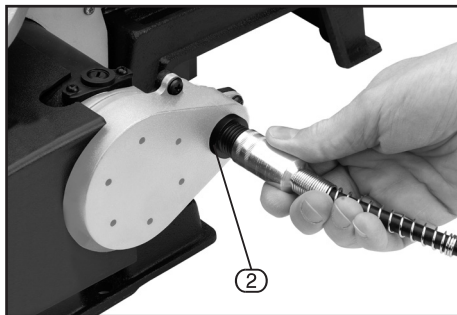


FIG. 9

### 9.7 OPERATING THE FLEXIBLE SHAFT

- Always allow the tool to operate as it was designed. Never force the flexible shaft .
- Clamp or otherwise secure the work to prevent it from shifting.
- Hold the tool tightly and keep it a safe distance from users. Always point the bit away from your body.
- 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.
- Slow speed is best for polishing operations, delicate woodcarving, or working on fragile model parts.
- High speed is suitable for operation on hardwoods, metals and glass, such as: carving, routing, shaping, cutting and drilling.

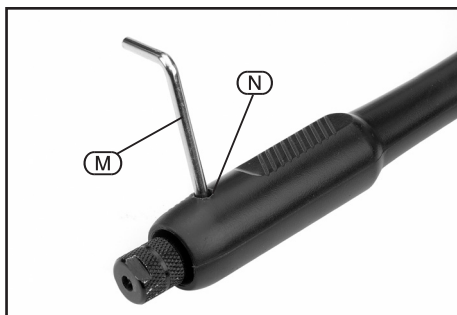


FIG. 10

### 9.8 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.



FIG. 11

## 10. TROUBLESHOOTING

### 10.1 TROUBLESHOOTING GUIDE

**Note:** Repairs should only be carried out by a qualified person.

Problem	Possible Cause	Remedy
Breaking blades.	Wrong tension. Over working blade. Wrong blade application.  Twisting blade.	Adjust blade tension. Reduce feed rate. Use narrow blades for cutting thin material, wide blades for thicker material. Avoid side pressure on blade.
Motor will not run.	Defective cable or plug. Defective motor.	Replace defective parts. Consult your service agent. Any attempt to repair this motor may be dangerous unless the repair is carried out by a qualified service agent.
Vibration.	Increase mounting of saw.  Unsuitable mounting surface.  Loose table.	Refer to the mounting instructions in this manual. The heavier your work bench is the less vibration. A plywood work bench is not as good as solid timber. Tighten table locking knob. Adjust table if necessary.
Blade runout – blade out of line with arm motion.	Blade holders not aligned.	Loosen screws holding blade holders to arms. Adjust the position of the blade holders – tighten screws.

# 11. EXPLANATION OF SYMBOLS

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## 11.1 EXPLANATION OF SYMBOLS



Read the instruction manual.



Wear face mask and safety glasses.



Wear ear defenders.



Wear protective gloves.



Do not abandon into the environment.



Keep out of the reach of children.



**Warning!**



**WEEE – Waste Electrical & Electronic Equipment.**  
Do not dispose of Waste Electrical & Electronic Equipment in with domestic rubbish.

## 12. DISPOSAL

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### 12.1 DISPOSAL

- At the end of the machine's working life, or when it can no longer be repaired, ensure that it is disposed of according to national regulations.
- Contact your local authority for details of collection schemes in your area.

In all circumstances:

- Do not dispose of power tools with domestic waste.
- Do not incinerate.
- Do not dispose of WEEE\* as unsorted municipal waste.



\* *Waste Electrical & Electronic Equipment.*

## CONTACTS

Draper Tools Limited, Hursley Road,  
Chandler's Ford, Eastleigh, Hampshire. SO53 1YF. U.K.

Delta International BV, Oude Graaf 8, 6002 NL, Weert, Netherlands

Help line: (023) 8049 4344

Sales desk: (023) 8049 4333

Internet: [drapertools.com](http://drapertools.com)

E-mail: [sales@drapertools.com](mailto:sales@drapertools.com)

General enquiries: (023) 8026 6355

Service/Warranty Repair Agent:

For aftersales servicing or warranty repairs, please contact the  
Draper Tools help line for details of an agent in your local area.

YOUR DRAPER STOCKIST

RDMC0922

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