

# DRAPER®

## INSTRUCTIONS FOR

# 405mm Variable Speed Fretsaw with Flexible Drive Shaft

Stock No.22791

Part No.FS405V

**IMPORTANT:** PLEASE READ THESE INSTRUCTIONS CAREFULLY TO ENSURE THE SAFE AND EFFECTIVE USE OF THIS PRODUCT.



DRAPER®

## GENERAL INFORMATION

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.

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## 1. GUARANTEE

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 Helpline (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 guarantee period covering parts/labour is 12 months from the date of purchase except where tools are hired out when the guarantee period is ninety days from the date of purchase. The guarantee is extended to 24 months for parts only. This guarantee does not apply to 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 guarantee applies in lieu of any other guarantee expressed or implied and variations of its terms are not authorised.

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

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

Draper Tools Limited.



## 2. SPECIFICATION

The Draper Tools policy of continuous improvement determines the right to change specification without notice.

|                                    |                         |
|------------------------------------|-------------------------|
| Stock no. ....                     | 22791                   |
| Part no. ....                      | FS405V                  |
| Rated voltage .....                | 230V~50Hz               |
| Rated input (induction type) ..... | 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 .....            | 3300-10,000 r/min       |
| Sound pressure level .....         | 77.3dB(A)               |
| Sound power level .....            | 87.4dB(A)               |
| Vibration level .....              | 1.17m/s <sup>2</sup>    |
| Weight (net/gross) .....           | 13/16.7kg               |

**ALWAYS WEAR APPROVED SAFETY GOGGLES AND GLOVES.**

**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 

The fuse cover is removable with a small plain slot screwdriver. Ensure the fuse cover is replaced before attempting to connect the plug to an electrical outlet. If the cover is missing, a replacement must be obtained or the plug replaced with a suitable type.

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<sup>†</sup> 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.

<sup>†</sup>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:**

**On products exceeding 2000W it is recommended that the power cable and/or extension cable are fully unwound before a connection is made to the power supply. However, ensure the residual cable does not pose a trip hazard**

**WARNING:** When using electric tools basic safety precautions should always be followed to reduce the risk of fire, electric shock and personal injury including the following.

Read all these instructions before attempting to operate this product and save these instructions.

Safe operation

## 1. Keep work area clear

- Cluttered areas and benches invite injuries.

## 2. 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 of flammable liquids or gases.

## 3. Guard against electric shock

- Avoid body contact with earthed or grounded surfaces (e.g. pipes, radiators, ranges, refrigerators).

## 4. Keep other persons away

- Do not let persons, especially children, not involved in the work touch the tool or the extension cord and keep them away from the work area.

## 5. Store idle tools

- When not in use, tool should be stored in a dry locked-up place, out of reach of children.

## 6. Do not force the tool

- It will do the job better and safer at the rate for which it was intended.

## 7. Use the right tool

- Do not force 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.

## 8. Dress properly

- Do not wear loose clothing or jewellery, they can be caught in moving parts.
- Non-skid footwear is recommended when working outdoors.
- Wear protective hair covering to contain long hair.

## 9. Use protective equipment

- Use safety glasses.
- Use face or dust mask if working operations create dust.

## 10. Connect dust extraction equipment

- If the tool is provided for the connection of dust extraction and collecting equipment, ensure these are connected and properly used.

## 11. Do not abuse the cord

- Never yank the cord to disconnect it from the socket. Keep the cord away from heat, oil and sharp edges.

## 12. Secure work

- Where possible use clamps or a vice to hold the work. It is safer than using your hand.

## 13. Do not overreach

- Keep proper footing and balance at all times.

## 14. Maintain tools with care

- Keep cutting tools sharp and clean for better and safer performance.
- Follow instruction for lubricating and changing accessories.
- Inspect tool cords periodically and if damaged have them repaired by an authorised service facility.
- Inspect extension cords periodically and replace if damaged.
- Keep handles dry, clean and free from oil and grease.

## 15. Disconnect tools

- When not in use, before servicing and when changing accessories such as blades, bits and cutters, disconnect tools from the power supply.

## 16. 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.

## 17. Avoid unintentional starting

- Ensure switch is in "off" position when plugging in.

## 18. Use outdoor extension leads

- When the tool is used outdoors, use only extension cords intended for outdoor use and so marked.

## 19. Stay alert

- Watch what you are doing, use common sense and do not operate the tool when you are tired.

## 20. Check damaged parts

- Before further use of tool, it 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 by an authorised service centre unless otherwise indicated in this instruction manual.
- Have defective switches replaced by an authorized service centre.
- Do not use the tool if the switch does not turn it on and off.

## 21. Warning

- The use of any accessory or attachment other than one recommended in this instruction manual may present a risk of personal injury.

## 22. Have your tool repaired by a qualified person

- This electric tool complies with the relevant safety rules. Repairs should only be carried out by qualified persons using original spare parts, otherwise this may result in considerable danger to the user.

## 4. SAFETY INSTRUCTIONS

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

### BEFORE USING THE SAW:

#### WARNING

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

1. Your fretsaw must be bolted securely to a workbench. In addition, if there is any tendency for the fretsaw to move during certain operations, bolt your fretsaw workbench to the floor.
2. Location. This fretsaw is intended for use in dry conditions.
3. Protect eyes, hands, face, ears and body.
  - a. 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.
  - b. Do not cut pieces of material too small to hold by hand outside the blade guard.
  - c. Avoid awkward hand positions where a sudden slip could cause your hand to move into the blade.
  - d. To avoid lifting of the workpiece make sure the blade teeth point downward towards the table.
  - e. To avoid blade breakage always adjust blade tension correctly.
  - f. 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.
- h. To avoid injury:
  - i. Never leave the fretsaw 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 fretsaw 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.
4. Should any part of this fretsaw 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.
5. Think safety - safety is a combination of operator common sense and alertness whenever the fretsaw 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.

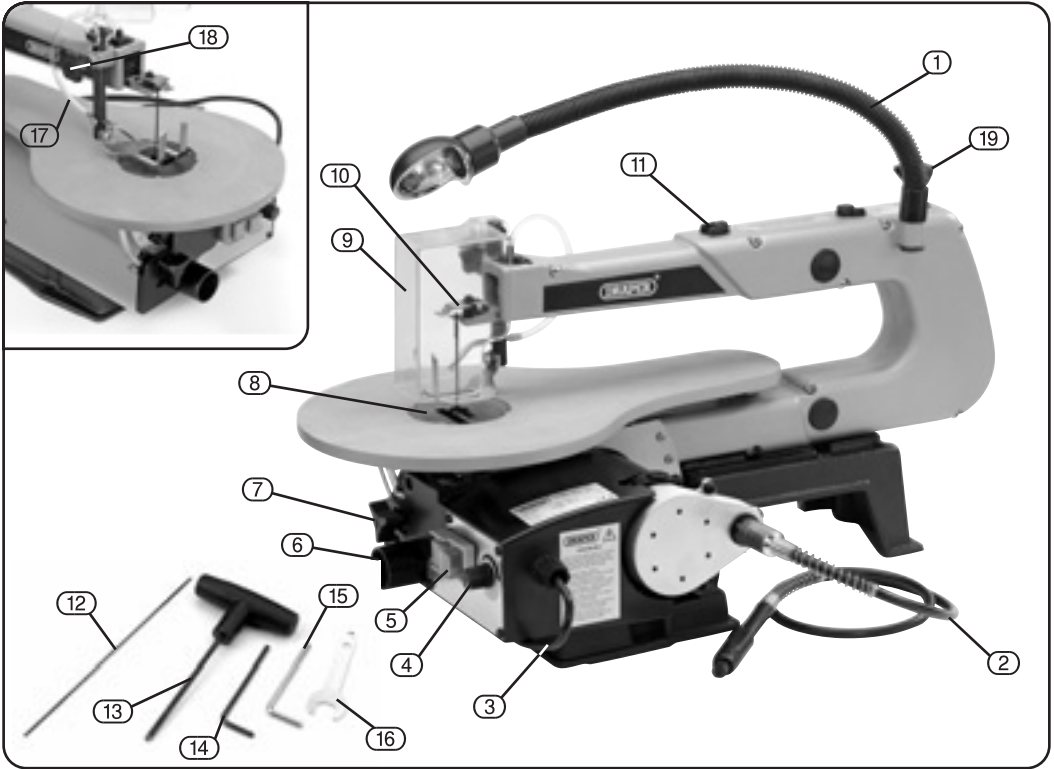
#### WARNING FOR YOUR OWN SAFETY

Read and understand the manual before operating this fretsaw.

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

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

## 5. IDENTIFICATION GUIDE



- |   |                        |   |                                |
|---|------------------------|---|--------------------------------|
| ① | Directional worklight. | ⑪ | Non-pin blade holders.         |
| ② | Flexi-shaft.           | ⑫ | Pinless Blade.                 |
| ③ | Mains power cable.     | ⑬ | T-handle.                      |
| ④ | Variable speed dial.   | ⑭ | Hex. key.                      |
| ⑤ | No-Volt on/off switch. | ⑮ | Flexi-shaft tightening tool.   |
| ⑥ | Dust extraction.       | ⑯ | Flexi-shaft tightening wrench. |
| ⑦ | Angle adjustment knob. | ⑰ | Air hose.                      |
| ⑧ | Table insert.          | ⑱ | Blade tightening knob.         |
| ⑨ | Blade guard.           |   |                                |
| ⑩ | Blade holder.          |   |                                |

- **UNPACKING:** After removing the packing material, make sure the product is in perfect condition and that there are no visible damaged parts. If in doubt, do not use the product and contact the dealer from whom it was purchased.

The packaging materials (plastic bags, polystyrene, etc.) must be disposed of in an appropriate refuse collection container. These materials must not be left within the reach of children as they are potential sources of danger.

## 6. ASSEMBLY

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

### 6.1 BLADE GUARD (Fig.1):

Pass the bolts (A) through the blade guard (B) and the blade guard holder (C).

Secure using the fixing nut provided (D).

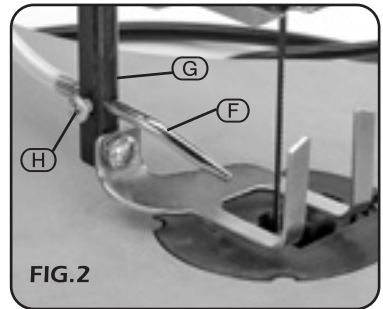
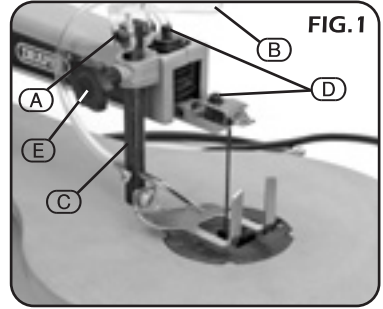
Adjust the height of the blade guard to a few millimetres above the workpiece height, securing in place using fixing nut (E).

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

The fretsaw 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.

### 6.2 DUST BLOWER (Fig.2):

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





## 7.1 BASIC FRETSAW OPERATION

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

1. The saw does not cut by itself. Allow the saw to cut by guiding the material into the blade.
2. The blade cuts **ONLY** on the down stroke.
3. Guide the material into the blade slowly because the teeth of the blade are fine and only cut on the down stroke.
4. 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.
5. Cutting material less than 25mm thick will give the best results.
6. 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.
7. Teeth on fretsaw blades wear out and as such, blades must be replaced frequently for optimum cutting results. Fretsaw blades generally stay sharp for between 30 minutes to 2 hours dependent on material being cut.
8. To obtain accurate cuts you must compensate for the blade's tendency to follow the wood grain.
9. When choosing a blade to use with this fretsaw consider the following:
  - a. Very fine, narrow blades should be used to cut in thin wood 6mm thick or less.
  - b. To cut wood over 6mm thick use wider blades.
  - c. 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.
  - d. Wider blades cannot cut curves as tightly as thinner blades can.
  - e. Narrower blades work well only on thinner material.
10. Blades wear faster:
  - a. When cutting plywood which is very abrasive,
  - b. Sawing material thicker than 19mm,
  - c. Sawing hardwood,
  - d. When side pressure is exerted.

## 7.2 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.



## 7.3 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.

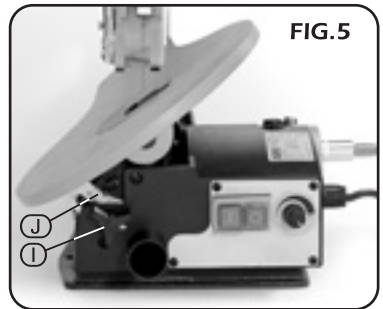
1. To make internal cuts in a board remove the fretsaw blade described on page 9.
2. Drill a 6mm hole in the board where you wish to make an internal cut.
3. Place the board on the saw table with the hole in the board over the access hole in the table.
4. Install blade through hole in board, re-attach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



## 7.4 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 locking knob (I). Place a small square on the table and set it at 90° to the blade. When set, re-secure locking knob (I). If required, adjust the bevel scale indicator (J) to register 90°.



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

## 7.5 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 tightening knob (K). Ensure the blade teeth cut on the down stroke.

The blade holder has two positions:

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

Remove the table insert (N) for better access to the lower blade holder slightly press down on the upper arm (O), 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 (K).

## 7.6 DUST BLOWER/EXTRACTION (Fig.8):

To assist with cutting the fretsaw is equipped with a blower nozzle (P). 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.

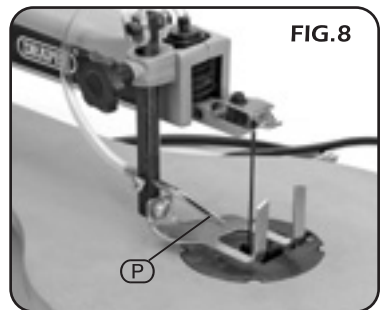
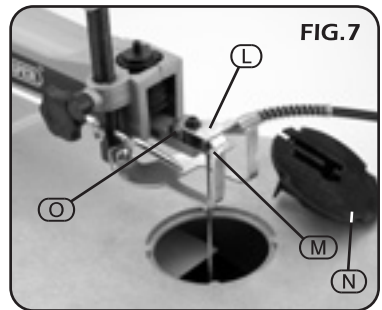
### DUST EXTRACTION:

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.

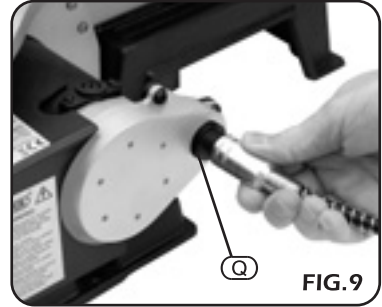
For work activities involving exposure to fine wood dust, a mask rated to at least FFP2 should be used.



## 7. OPERATION & USE

### FLEXIBLE DRIVE SHAFT:

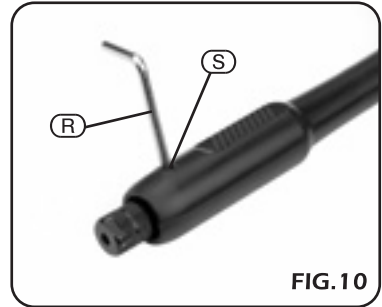
1. Remove the protective cap.
2. Screw the flexible drive shaft into the threaded connector (Q), Fig.9.
3. Insert pin (R) into the location hole (S) to prevent chuck from spinning. Open chuck jaws, insert chosen tool (Fig. 11) and reverse process to lock tool in place.



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

### 7.7 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 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.



### 7.8 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.



## 8. TROUBLESHOOTING

**- NOTE:**

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

| PROBLEMS  | POSSIBLE CAUSES  | REMEDIES   |
|---|--|--|
| Breaking blades.                                | <ol style="list-style-type: none"> <li>1. Wrong tension.</li> <li>2. Over working blade.</li> <li>3. Wrong blade application.</li> <li>4. Twisting blade.</li> </ol> | <ol style="list-style-type: none"> <li>1. Adjust blade tension.</li> <li>2. Reduce feed rate.</li> <li>3. Use narrow blades for cutting thin material, wide blades for thicker material.</li> <li>4. Avoid side pressure on blade.</li> </ol>  |
| Motor will not run.                             | <ol style="list-style-type: none"> <li>1. Defective cable or plug.</li> <li>2. Defective motor.</li> </ol>   | <ol style="list-style-type: none"> <li>1. Replace defective parts.</li> <li>2. Consult your service agent. Any attempt to repair this motor may be dangerous unless the repair is carried out by a qualified service agent.</li> </ol>   |
| Vibration.                                      | <ol style="list-style-type: none"> <li>1. Increase mounting of saw.</li> <li>2. Unsuitable mounting surface.</li> <li>3. Loose table.</li> </ol>                     | <ol style="list-style-type: none"> <li>1. Refer to the mounting instructions in this manual.</li> <li>2. The heavier your work bench is the less vibration. A plywood work bench is not as good as solid timber.</li> <li>3. Tighten table locking knob. Adjust table if necessary.</li> </ol> |
| Blade runout-blade out of line with arm motion. | <ol style="list-style-type: none"> <li>1. Blade holders not aligned.</li> </ol>  | <ol style="list-style-type: none"> <li>1. Loosen screws holding blade holders to arms. Adjust the position of the blade holders - tighten screws.</li> </ol>   |

## 9. DISPOSAL OF POWER TOOLS

- 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 abandon in the environment.
- Do not dispose of WEEE\* as unsorted municipal waste.



\* Waste Electrical & Electronic Equipment.

## 10. EXPLANATION OF SYMBOLS/PICTOGRAMS



- Attention



# NOTES



- **DRAPER TOOLS LIMITED,**  
Hursley Road, Chandler's Ford,  
Eastleigh, Hampshire. SO53 1YF. U.K.
  
- **Helpline:** (023) 8049 4344
- **Sales Desk:** (023) 8049 4333
- **Internet:** [www.draper.co.uk](http://www.draper.co.uk)
- **E-mail:** [sales@drapertools.com](mailto:sales@drapertools.com)
- **Sales Fax:** (023) 8049 4209
- **General Enquiries:** (023) 8026 6355
  
- **Service/Warranty Repair Agent**  
For aftersales servicing or warranty repairs, please  
contact the Draper Tools Helpline for details of an  
agent in your local area.

YOUR DRAPER STOCKIST

NWDH260210

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