

***DAVIDUNION***

**D550T | Original Instructions**

The all new DAVID 550T is an electric rotary tool which is suitable for the post-processing 3D printing and plastic model craft hobbyists. We apply the patent from the DAVID 365 to DAVID 550T which is enhanced and called "Auto-torque Engine SP", so the users can choose three different modes to deal with various processing situations easily by switching the 2-stage A.T. Mode button. The DAVID 550T also has a built-in the "Self-calibration Mode". When the sensitivity of auto-torque compensation decreases due to the natural wear of the motor, by entering the "Self-calibration Mode", the controller can remap current states of the motor, so that the auto-torque compensation can be restored the performance of the factory setting as much as possible!

## Main Features

- + Auto Torque Compensation: 60%, 100% or Off.
- + Self-calibration Mode
- + From 2,500 to 18,000 RPM
- + Stall Torque: 500 gf-cm
- + Precision shaft with 2 Japan made bearings
- + Capacity of the Spring Chuck: 0.3 - 4.0mm
- + High-end Tool kit - 8pcs (Model No. M3001)

# Safety Instructions



## WARNING

**Read all safety warnings and all instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or injury.**

Save all warnings and instructions for future reference.

## General Power Tool Safety Warnings

1. Work area safety
  - a. Keep work area clean and well lit. Cluttered or dark areas invite accidents.
  - b. Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. Power tools create sparks which may ignite the dust or fumes
  - c. Keep children and bystanders away while operating a power tool. Distractions can cause you to lose control.
2. Electrical safety
  - a. Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools. Unmodified plugs and matching outlets will reduce risk of electric shock.
  - b. Avoid body contact with earthed or grounded surfaces, such as pipes, radiators, ranges and refrigerators. There is an increased risk of electric shock if your body is earthed or grounded.
  - c. Do not expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.
  - d. Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts. Damaged or entangled cords increase the risk of electric shock
  - e. When operating a power tool outdoors, use an extension cord suitable for outdoor use. Use of a cord suitable for outdoor use reduces the risk of electric shock.
  - f. If operating a power tool in a damp location is unavoidable, use a residual current device (RCD) protected supply. Use of an RCD reduces the risk of electric shock.

### 3. Personal safety

- a. Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating power tools may result in serious personal injury.
- b. Use personal protective equipment. Always wear eye protection. Protective equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.
- c. Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool. Carrying power tools with your finger on the switch or energizing power tools that have the switch on invites accidents
- d. Remove any adjusting key or wrench before turning the power tool on. A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
- e. Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.
- f. Dress properly. Do not wear loose clothing or jewelry. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewelry or long hair can be caught in moving parts.

### 4. Power tool use and care

- a. Do not force the power tool. Use the correct power tool for your application. The correct power tool will do the job better and safer at the rate for which it was designed.
- b. Do not use the power tool if the switch does not turn it on and off. Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- c. Disconnect the plug from the power source before making any adjustments, changing accessories, or storing power tools. Such preventive safety measures reduce the risk of starting the power tool accidentally
- d. Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. Power tools are dangerous in the hands of untrained users.
- e. Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.
- f. Use the power tool, accessories and tool bits etc. in accordance with these instructions, taking into account the working conditions and the work to be performed. Use of the power tool for operations different from those intended could result in a hazardous situation.

## 5. Service

- a. Have your power tool serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the power tool is maintained. If the replacement of the supply cord is necessary, this has to be done by manufacturer or his agent in order to avoid a safety hazard.

### **Safety warnings common for carving operations:**

- a. This power tool is intended to function as a carving tool. Read all safety warnings, instructions, illustrations and specifications provided with this power tool. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury.
- b. Operations for which the power tool was not designed may create a hazard and cause personal injury
- c. Do not use accessories which are not specifically designed and recommended by the tool manufacturer. Just because the accessory can be attached to your power tool, it does not assure safe operation.
- d. The outside diameter and the thickness of your accessory must be within the capacity rating of your power tool. Incorrectly sized accessories cannot be adequately controlled.
- e. The arbour size of wheels, sanding drums or any other accessory must properly fit the spindle or collet of the power tool. Accessories that do not match the mounting hardware of the power tool will run out of balance, vibrate excessively and may cause loss of control.
- f. Do not use a damaged accessory. Before each use inspect the accessory. If power tool or accessory is dropped, inspect for damage or install an undamaged accessory. After inspecting and installing an accessory, position yourself and bystanders away from the plane of the rotating accessory and run the power tool at maximum no-load speed for 1 minute. Damaged accessories will normally break apart during this test time.
- g. Wear personal protective equipment. Depending on application, use face shield, safety goggles or safety glasses. As appropriate, wear dust mask, hearing protectors, gloves and workshop apron capable of stopping small abrasive or workpiece fragments. The eye protection must be capable of stopping flying debris generated by various operations. The dust mask or respirator must be capable of filtering particles generated by your operation. Prolonged exposure to high intensity noise may cause hearing loss.

- h. Mandrel mounted wheels, sanding drums, cutters or other accessories must be fully inserted into the collet or chuck. If the mandrel is insufficiently held and/or the overhang of the wheel is too long, the mounted wheel may become loose and be ejected at high velocity.
- i. Keep bystanders a safe distance away from work area. Anyone entering the work area must wear personal protective equipment. Fragments of workpiece or of a broken accessory may fly away and cause injury beyond immediate area of operation.
- j. Hold power tool by insulated gripping surfaces only, when performing an operation where the cutting accessory may contact hidden wiring or its own cord. Cutting accessory contacting a "live" wire may make exposed metal parts of the power tool "live" and could give the operator an electric shock.
- k. Always hold the tool firmly in your hand(s) during the start-up. The reaction torque of the motor, as it accelerates to full speed, can cause the tool to twist.
- l. Use clamps to support workpiece whenever practical. Never hold a small workpiece in one hand and the tool in the other hand while in use. Clamping a small workpiece allows you to use your hand(s) to control the tool. Round material such as dowel rods, pipes or tubing have a tendency to roll while being cut, and may cause the bit to bind or jump toward you.
- m. Position the cord clear of the spinning accessory. If you lose control, the cord may be cut or snagged and your hand or arm may be pulled into the spinning accessory.
- n. Never lay the power tool down until the accessory has come to a complete stop. The spinning accessory may grab the surface and pull the power tool out of your control.
- o. After changing the bits or making any adjustments, make sure the collet nut, chuck or any other adjustment devices are securely tightened. Loose adjustment devices can unexpectedly shift, causing loss of control, loose rotating components will be violently thrown
- p. Do not run the power tool while carrying it at your side. Accidental contact with the spinning accessory could snag your clothing, pulling the accessory into your body.
- q. Regularly clean the power tool's air vents. The motor's fan will draw the dust inside the housing and excessive accumulation of powdered metal may cause electrical hazards
- r. Do not operate the power tool near flammable materials. Sparks could ignite these materials
- s. Do not use accessories that require liquid coolants. Using water or other liquid coolants may result in electrocution or shock.

## Kickback and related warnings

Kickback is a sudden reaction to a pinched or snagged rotating wheel, sanding band, brush or any other accessory. Pinching or snagging causes rapid stalling of the rotating accessory which in turn causes the uncontrolled power tool to be forced in the direction opposite of the accessory's rotation. For example, if an abrasive wheel is snagged or pinched by the workpiece, the edge of the wheel that is entering into the pinch point can dig into the surface of the material causing the wheel to climb out or kick out.

The wheel may either jump toward or away from the operator, depending on direction of the wheel's movement at the point of pinching.

Abrasive wheels may also break under these conditions. Kickback is the result of power tool misuse and/or incorrect operating procedures or conditions and can be avoided by taking proper precautions as given below.

- a. Maintain a firm grip on the power tool and position your body and arm to allow you to resist kickback forces. The operator can control kickback forces, if proper precautions are taken.
- b. Use special care when working corners, sharp edges etc. Avoid bouncing and snagging the accessory. Corners, sharp edges or bouncing have a tendency to snag the rotating accessory and cause loss of control or kickback.
- c. Always feed the bit into the material in the same direction as the cutting edge is exiting from the material (which is the same direction as the chips are thrown). Feeding the tool in the wrong direction causes the cutting edge of the bit to climb out of the work and pull the tool in the direction of this feed.
- d. When using rotary files, cut-off wheels, high-speed cutters or tungsten carbide cutters, always have the work securely clamped. These wheels will grab if they become slightly canted in the groove, and can kickback. When a cut-off wheel grabs, the wheel itself usually breaks. When a rotary file, high-speed cutter or tungsten carbide cutter grabs, it may jump from the groove and you could lose control of the tool.

# Main Unit

## D550T Controller



## D550T Handpiece





## Basic Information

### Bit installation

- Step 1. Press the shaft lock button and rotate the shaft by hand until it engages the shaft lock. Do not engage the shaft lock while the tool is running.
- Step 2. With the shaft lock engaged, loosen (do not remove) the spring chuck.
- Step 3. Insert the bit or accessory shank fully into the spring chuck. With the shaft lock engaged, tighten the spring chuck.

### Overload Protection

This tool has a overload protection feature built into it to protect the motor in the event of a stall. If you put too much pressure on the tool for too long, or bind the bit in a work piece, especially at high speeds, the motor will stop and the power indicator (red light) on the controller panel will flash continuously. Please turn off the controller, and then turn on the power again after removing the operation error or obstacle.

## Advanced Functions

### Auto-torque Engine SP

Push the A.T. Mode button on the controller to set the handpiece into the Auto-torque Mode:

**First stage** (60% output): A.T. Mode indicator shows breathing light.

**Second stage** (100% output): A.T. Mode indicator shows constant light.

Press the A.T. Mode button to cycle through the first, second stage, and mode off.

### Self-calibration Mode

- Step 1. Adjust the speed control knob to the lowest; confirm that the main power switch on the controller is off (power off).
- Step 2. Connect the controller to AC outlet.
- Step 3. Connect the handpiece to the controller and then turn on the power switch on the handpiece. (At this point, the motor is still stationary.)

After the above preparations are done, keep pressing the A.T. Mode button then turn on the main power switch on the controller. The motor of the handpiece will start running, and the A.T. Mode indicator will start blinking. Do not move the handpiece or give any resistance to the handpiece (running motor) until the A.T. Mode indicator shows light off, then you can start using it. The Self-calibration takes about 5~8 seconds to set in.

## Accessories

### M3001 - The Basic Bit Set

- 1.0mm Twist Drill
- 1.5mm Twist Drill
- Hart Bur
- Point Bur
- Ball Bur
- 1.5mm Straight Flat End Fissure
- 3.0mm Straight Flat End Fissure
- 0.1mm Thickness Saw Blade



Materials: Carbon Steel

Shank Size: 2.35mm

Recommended Speed: 1,500 ~ 10,000 RPM

Recommended for materials: Plastics and Resins

### Handpiece Rest



### Fuse

Unscrew the cap to replace a fuse.

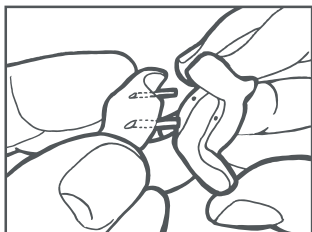
Spec. 250V 5x20mm 1A



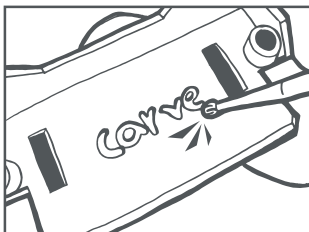
## Applications

Please see the illustrations below for user instructions.

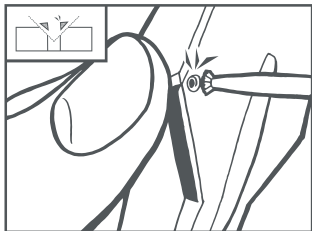
We highly recommend you to use the power tools with the M series accessories for the best user experience.



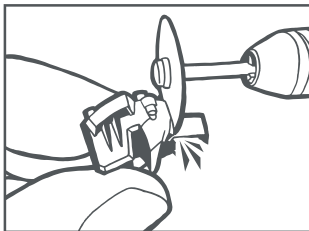
**D** Twist Drill Bits are for pile driving.



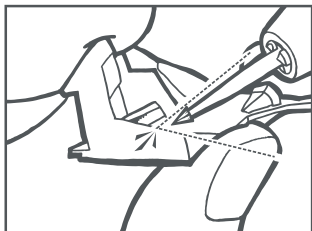
**D** The Ball Bur is used to create patterns. The sharp blades make tracks more stable.



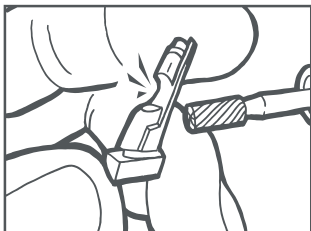
**D** You can easily make a funnel hole with the Hart Bur.



**D** The 0.1mm thickness Saw Blade is for cutting things in a no consume way.



**D** Remove defects or molding flash between narrow spaces by using the Point Bur.



**D** The Straight Flat End Fissures are mainly for cutting unwanted parts, such as sprue or creating round edges.

## Noise/vibration information

Noise emission values determined according to **EN 60745-2-23**.

Typically, the

A-weighted sound pressure level of the power tool is **74 dB(A)**.

Uncertainty  $K = 3$  dB. The noise level when working can exceed the volume stated. **Wear hearing protection.**

A-weighted sound power level of the power tool is 85 dB(A).

Uncertainty  $K = 3$  dB.

Vibration total values  $a_h$  (triax vector sum) and uncertainty  $K$  determined according to **EN 60745-2-23**:

$a_h = 9 \text{ m/s}^2$ ,  $K = 1.5 \text{ m/s}^2$ .

The vibration level given in these instructions has been measured in accordance with a standardised measuring procedure and may be used to compare power tools. It can also be used for a preliminary estimation of exposure to vibration.

The stated vibration level applies to the main applications of the power tool. However, if the power tool is used for different applications, with different application tools or poorly maintained, the vibration level may differ. This can significantly increase the exposure to vibration over the total working period. To estimate the exposure to vibration accurately, the times when the tool is switched off or when it is running but not actually being used should also be taken into account. This can significantly reduce the exposure to vibration over the total working period. Implement additional safety measures to protect the operator from the effects of vibration, such as servicing the power tool and application tools, keeping the hands warm, and organizing workflows correctly.

## Specification

### Model No. D550T

Input: 120V~ 60Hz / 230V~ 50Hz, 0.25A

Output: DC3-18V  $\equiv$  0.25A

Speed: 2,500-18,000 RPM

### Size & Weight:

Handpiece

Dia. 32mm x 163mm (excl. Connecting Cable)

/ 197g (Incl. Connecting Cable)

Controller

145mm x 83mm x 68mm / 956g

### What's in the box:

D550T Handpiece

D550T Controller

M3001 - The Basic Bit Set

Spring Chuck 0.3-4.0mm\*

Handpiece Rest

1A Fuse\*

1A Fuse (spare part 1pc)

\*Pre-assembled in the Handpiece.

## M series for the D550T

M1000 Series / M3000 Series / M5000 Series / M7000 Series

Please visit our website:

[www.davidunion.com](http://www.davidunion.com)



**David Union Co., Ltd.**

No. 90, Gongming S. 1st Rd., Annan District,  
Tainan City, 70968, Taiwan

**DAVIDUNION**

Made in Taiwan