



# 手提直式氣動雕刻機

## 寶劍101

- ◎ 輕巧靈活有如蛟龍般的直式雕刻機 ◎
- ◎ 有效的降低了最危險的反撥跳刀狀況 ◎



## 使用說明書

### 一、安全須知

**警告：**使用本工具時，為了減少受傷的意外事故，必須注意以下所列舉的基本安全事項。使用本產品之前，請通讀並遵守安全須知，並將其妥善保存。

- 1、工作場所應打掃乾淨，清理妥當，雜亂無章將導致事故。
- 2、不可讓孩童靠近工作場所。與作業無關的訪客也必須保持安全距離。
- 3、不使用的氣動工具應存放到乾燥而孩童伸手不及的高處，並加鎖保管。
- 4、工作時務必使用護眼罩和護耳罩。另外，需佩帶防塵口罩、安全護手套、安全帽和圍裙等個人防護裝備。
- 5、作業以安全第一為原則。工件要用夾具或壹鉗卡緊。這樣做比用手按壓更為可靠，也能夠讓雙手專心操作。
- 6、作業時腳步要站穩，身體姿勢要保持平衡。
- 7、不使用時，維修前以及更換附件(如：刀具及研磨工具等)之前，必須拆卸連接氣管的快速接頭才行。
- 8、開動工具前務必把扳手類拆除下來。這一點與安全有關，應養成習慣，嚴格遵守。
- 9、謹防誤觸開動，尤其在更換附件(如：刀具及研磨工具等)時應確認連接氣管的快速接頭是否已拆卸，否則很容易誤觸開關而造成傷害。
- 10、保持高度警覺，充分掌握情況，以正常的判斷力從事作業。疲憊時或受藥物及酒精影響導致意識昏沉時，切不可開動工具。
- 11、在繼續使用氣動工具之前，應詳細檢查各部位零件以

及防護裝置有無損壞，以便決定能否正常工作，能否發揮正常效能。檢查轉動部分的對準，結合狀態，各零件有無異常，安裝是否妥善以及其它足以給工作帶來不良影響的情況。如防護以及其他零件損傷了。應即委託服務中心或其它適當單位進行修理或更換。

- 12、為了保證設計的完整性，氣動工具的蓋罩和螺釘類不可隨便拆除。
- 13、不可勉強使用工具，按其用途使用工具，才能獲得良好的效果並且比較安全。
- 14、注意著裝，不可寬鬆長袖，或穿帶手飾進行工作，因為可能會被高速旋轉的部件纏住而發生意外。在室外工作時宜帶橡皮製手套與防滑的靴子。留長髮的人最好帶帽子。
- 15、注意保養工具，刀具必須時時保持銳利的狀態以及獲得良好的加工性與安全。請按照規定潤滑與更換部件。手柄要保持乾燥清潔，不沾油脂。
- 16、只能使用本工具專用的法蘭盤及鎖緊螺帽。
- 17、切勿損壞芯軸、法蘭盤或鎖緊螺帽。這些部件受損會導致工具受損。
- 18、檢查工件支撐是否妥當。
- 19、工件應握緊。
- 20、不可觸摸正在運轉的部件，雙手並緊握握柄上的護手板後方。
- 21、進行研磨時要使用砂輪規定表面。
- 22、警告：使用本操作說明所推薦以外的附件或部件容易造成傷害事故。

### 二、安裝砂輪罩

- 1、砂輪罩必須安裝在工具上，確保砂輪罩的封閉側始終朝向操作員所在位置。



### 三、裝卸砂輪及刀具

注意：◎ 裝卸前確認連接氣管的快速接頭是否已拆卸以避免嚴重事故。

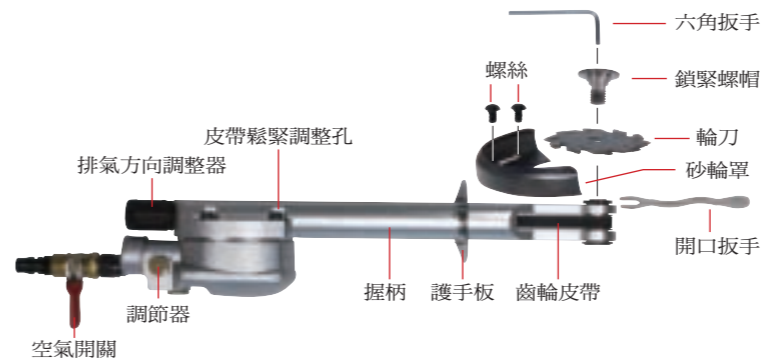
◎ 輪刀刀口鋒利，裝卸時必須全程佩戴安全護手套。用勾具小心勾起輪刀，然後安裝以避免受到傷害。

◎ 要用對刀具，不可使用用途及規格錯誤的刀具(3.5"規格要用3.5" 刀具或研磨器具)，若重量不對稱，使用時會產生很不平穩的震動與異音，並影響軸承及馬達壽命。



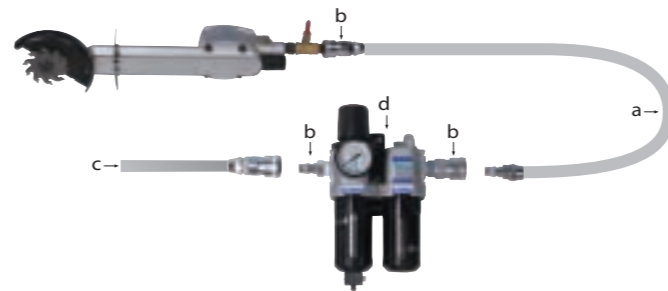
- 1、把裝置倒置使主軸朝上
- 2、把輪刀或砂輪裝到主軸上
- 3、把輪刀或砂輪的專屬鎖緊螺帽裝到主軸心螺母孔中，用開口扳手鎖定防止主軸轉動，再用六角扳手擰緊輪刀螺帽卡緊輪刀或砂輪。(如圖示)

- 4、輪刀與砂輪安裝時，一定要確保輪刀與砂輪孔徑和螺帽大小吻合，對準結合穩固、螺紋長度也足以匹配芯輪長度。



### 四、配置進氣系統

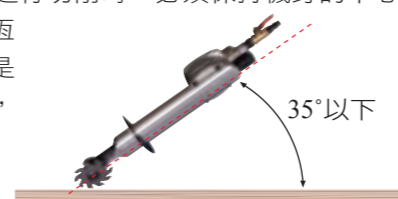
- 1、進氣系統配管圖示：a. 8×12mm導管2-3m b. 快速接頭 c. 進氣口 d. 濾水、調壓、注油三合一的三點組合(如圖示)
- 2、進氣系統：建議採用3HP(馬力)、容量50L(立方米)以上規格的空氣壓縮機，較能發揮本雕刻機的功能。



### 五、操作

注意：雕刻材質適用範圍以木雕及冰雕俱最佳效果

- 1、操作之前請檢查每個螺絲及各部分是否鬆動或脫落，快速接頭是否磨損漏氣。
- 2、空氣管連接時，不可有小砂粒、灰塵或異物掉入管內，這將會損壞氣動馬達(請檢查快速接頭與進氣孔)。
- 3、空氣壓力之使用請維持6kg/cm或以下，太高的壓力易造成馬達損壞並發生危險。
- 4、請正確使用，不可摔落或亂拖即不正當的施力而以致影響機體壽命。
- 5、操作時若發生異常聲音或震動，請關掉開關，並檢查及修理。
- 6、若打開進氣閥開機操作時，少數機率會發現無法啟動馬達，是葉片位置不正確剛好阻塞了進氣孔的緣故屬於正常現象，請立刻關閉進氣閥、拔下快速接頭，於機背皮帶輕輕向前或向後拉動再重新開機即可。
- 7、必須試行運轉，使用本工具對工件進行實際作業前，應將工具放置在安全位置，在最高空載轉速下至少試運轉30秒。如果發現任何震動或擺動現象，則說明刀具或砂輪安裝不當或平衡不佳，應立即停機。檢查工具，查找原因。
- 8、安全切削角度：進行切削時，必須保持機身的中心軸線與被切削體恆保持35° 以下是安全切削角度，如圖示



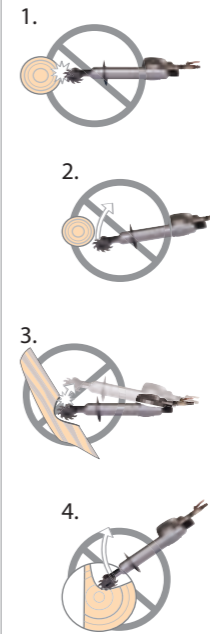
- 9、為了避免反撥跳刀：以下圖示說明造成反撥的危險切削角度，必須避免此類工作。

### 危險警告

當輪刀的前端接觸到物體時，或者當木材夾住切割中的輪刀時，機體可能會產生反撥。前端接觸時會產生急速反撥，把輪刀彈向操作人員。如果輪刀被夾住會急速推回工作人員。上面兩種情況的任何一種都會使你失去對工具的控制，造成身體嚴重受傷。

用戶應該採取以下步驟防止切割作業時發生事故或者受傷。

- (1) 了解機體反撥的基本原理就能夠減少或避免驚惶失措。驚惶失措會導致事故。
- (2) 馬達運轉時，用雙手牢牢抓住機身，右手抓住後把手，左手抓住前把手，將其緊緊抓住，牢牢抓住會幫助你減輕機體反撥和保持控制。如圖示5



### 六、保養和檢查

- 1、氣動馬達內部會因水氣關係造成生鏽，快速運轉會造成磨損，所以使用後請由進氣孔注入少許氣動工具專用油(CU-60A)按開關讓氣動馬達低速空轉一下保養。
- 2、檢查安裝螺釘：要經常檢查安裝螺釘是否緊固妥善，若發現螺釘鬆了，應立即重新扭緊，否則會導致嚴重的事故。

### 七、規格

型 式	寶劍 101
無負荷轉速	10500 R.P.M
塑刷砂輪規格	MAX. 6000 R.P.M
輪刀規格	
外徑	3.5英寸(88mm)
厚度	3mm.5mm
穴徑	12mm
空氣消耗量	0.2m <sup>3</sup> /min
全長	420mm
淨重量	1.4 kg

日友園 (盆栽專業用工具)製造

地址：64342台灣省雲林縣林內鄉九芎村大同路2號  
TEL:+886-5-5896246 FAX:+886-5-5897600  
<http://www.sidiao.com>



## Hand held straight air carving tool

### Mighty Sword 101

- Characterized by lightness and flexibility
- Most efficiently reduce the dangerous situation of wheel bouncing back



### — Instructions —

#### 1. Safety Guidance

**Caution:** To reduce the danger, read the safety rules before operation and follow them cautiously. Properly preserve the tool after using.

- Keep work area clean. Cluttered areas invite injuries.
- Keep children away. All visitors who are not related to the operation should be kept in a safe distance.
- When not in use, the tool should be stored in dry a high or locked-up place, and out of reach of children.
- The personal protective equipment such as safety glasses, ear muffler, dust mask, safety gloves, helmet and apron... etc. must be worn during operation.
- Use clamps or a vise to hold the work. It is safer than using your hand, and it frees both hands to operate the tool.
- Keep proper footing and balance at all times.
- Disconnect the quick coupler when not in use, before maintenance, and when changing accessories (i.e. blades, and grinding tools).
- Form the habit of checking to see that the wrench is removed from tool before turning it on.
- Avoid unintentional starting that invites injuries. Make sure the quick coupler has been removed especially when changing accessories (i.e. blades, and grinding tools).
- Stay alert, watch what you are doing, and use common sense. Do not operate the tool when you are affected by drugs and alcohol, or when you are unconscious.
- Check damaged parts before further use of the tool. A guard or other parts 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 the operation. A guard or other part that

- is damaged should be properly repaired or replaced by an authorized service center.
- To ensure the designed operational integrity of the air tool, do not remove installed covers or screws.
- Do not force the tool. It will do the job better and safer at the rate for which it was intended.
- Dress properly. Do not wear loose clothing or jewelry. They can be caught in the rapid rotating parts and cause injuries. Rubber gloves and non-skid footwear are recommended when working outdoors. Wear protective hair covering to contain long hair.
- Maintain the tool carefully. Keep the blades sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories. Keep the handles dry, clean, and free from oil and grease.
- You can only use the disc set and screw nut that are particularly for this air tool.
- Do not damage spindle, disc set, or screw nut because it will cause the tool to damage.
- Check the workpiece support.
- Tightly hold the tool when operation.
- Keep hands away from the rotating part. Both hands should be placed behind the hand guard and tightly holding the handle.
- Use only grinding wheels with a "Safe Speed" at least as high as the "No-Load RPM" indicated on the power tool nameplate.
- The use of the parts and accessories that are not mentioned in the instructions can easily cause injuries.

#### 2. Assembling the Wheel Guard

- Wheel guard must be installed on the tool. Make sure the enclosed side of the wheel guard is facing the operator.



#### 3. Assembling and Disassembling the Grinding Wheel and Cutting Wheel

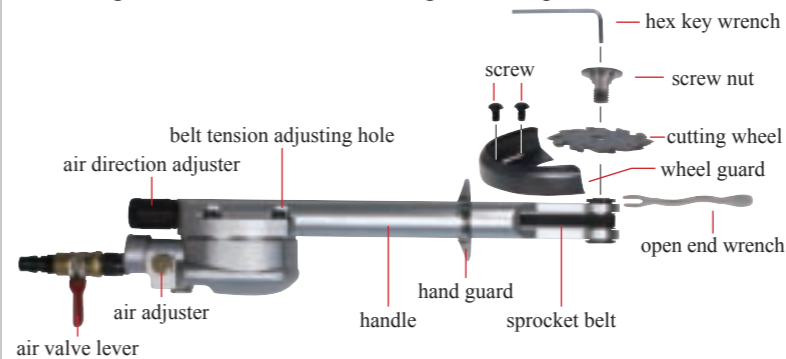
##### Caution:

- Make sure the pipe is disconnected to avoid severe injuries.
- Wear safety gloves when assembling and disassembling the sharp cutting wheel. To avoid injuries, use the hook tool the lift the wheel, as the figure shows.
- Use proper cutting wheel. Do not use the cutting wheel of wrong intention and wrong size (i.e. 3.5" cutting wheel or grinding wheel only matches 3.5" air tool.) Unmatched weight will cause unsteady vibration and strange sound, and affect the working life of bearing and motor.



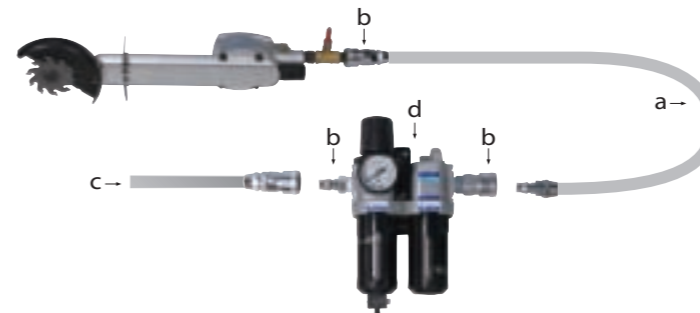
- Turn the tool upside-down so that the spindle will be facing up.
- Mount the cutting wheel or grinding wheel onto the spindle.
- Fix the screw nuts particularly for cutting wheel or grinding wheel onto the spindle, and secure the spindle from rotation with the open-end wrench. Use the hex key wrench to tighten the nut and firmly clamp the wheel, as the figure shows.

- Make sure the size of wheel aperture matches the nut size, and the nut is accurately and firmly screwed. The thread length should also match the length of the spindle.



#### 4. Intake System

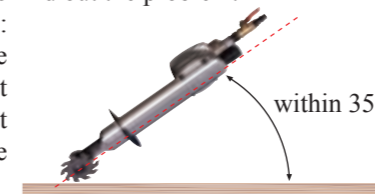
- Pipe arrangement: a. 2~3m lead hose (8×12mm) b. quick coupler c. inlet d. filter, air regulator, oiler (figure: three-in-one union set)
- Intake system: The air compressor above 3HP and 50L is recommended in order to bring the best function of this carving tool.



#### 5. Operation Guidance

**Caution:** The tool has the best effect on wood carving and ice carving.

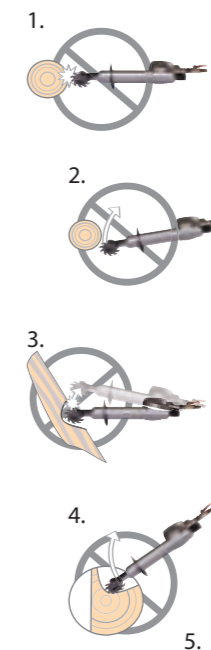
- Check all screws, parts, and quick coupler whether they are loosed, leaked or defaced before operation.
- Do not let the ash, small sand fall in the air hose while mounting the air hose because they will damage the air motor (check the quick coupler and inlet).
- Maintaining the air pressure at/under 6kg/cm<sup>2</sup>. Over high pressure may cause motor damages and dangers.
- Do not throw or drag the tool. Any improper use will reduce its working life.
- Please shut down and exam the tool when there is abnormal vibration or sound during operation.
- When the valve lever is switched on, there is little chance that the motor does not start operating, only if the vane is in a wrong position and blocks the air from the inlet; this situation is normal and you can solve it by doing the following procedure: switch off the valve lever, disconnect the quick coupler, slightly pull the belt at the tool's back, and restart the tool again.
- Apply a trial run in a safe location before operation. The trial run should last at least 30 seconds with the highest speed. Any failed installment or unbalance of cutting wheel or grinding wheel will cause abnormal vibration. You should shut and exam the tool to find out the problem.
- The safe cutting angle: The angle between the tool center and the cut object should be kept within 35°, as the figure shows.



- Avoid wheel bouncing back: The followings explain how dangerous cutting angles will cause the wheel bouncing back, and operators should avoid this situation.

##### Warning

The wheel may rapidly bounce back when the front edge of the wheel is cutting the material, or when the rotating wheel cuts deep into the material and is blocked by it. These situations can invite severe injuries because the operator could lose the control to the wheel. To avoid injuries, operators should follow the following procedures:



- Understand why and how the wheel bounces back, so operators will not panic and get injured when facing the situation.
- Tightly hold the tool to control the tool, and reduce the chance of wheel bouncing back when the motor is operating. Use right hand to hold the back handle, while left hand holding the front handle. As the picture 5 shows.



#### 6. Maintenance and Inspection

- Vapor may cause inside of the motor rust, and high speed running may cause damage. Put some Air Tool Oil (CU-60A) from the inlet, then switch on power and let the tool empty run with low speed for few seconds.
- Inspection on screws: Frequently check the screws whether they are firmly screwed. Any loose screws will cause severe injuries, so you must retighten every loose screw.

#### 7. Specifications

Model	MIGHTY SWORD101
Free Speed	10500 R.P.M
Grit Sander Size	Max. 6000 R.P.M
Cutting Wheel Size	
External Diameter	3.5" (88mm)
Thickness	3mm.5mm
Hole Diameter	12mm
Air Consumption	0.2m <sup>3</sup> /min
Overall Length	420mm
Net Weight	1.4 kg

日友園 Professional bonsai tool manufacturing

Address: No. 2, Datong Rd., Linnei Shiang, Yunlin County, Taiwan 64342 (R.O.C)

<http://www.sidiao.com>

FAX:+886-5-5897600

MADE in TAIWAN