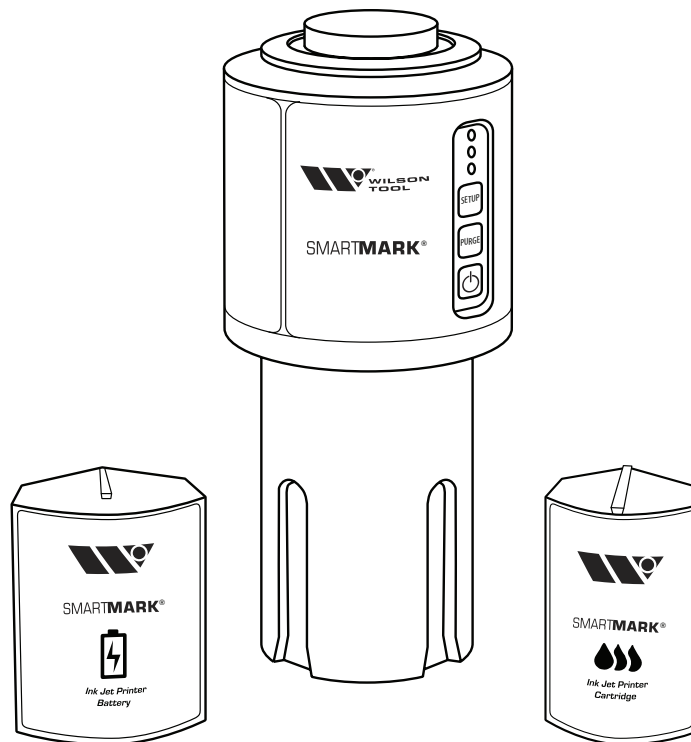




# SMARTMARK®

## USER'S GUIDE



[www.wilsontool.com](http://www.wilsontool.com) / smartmarkuser

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# INTRODUCTION

Thank you for purchasing SmartMark by Wilson Tool. This user's guide will cover the full range of user information for the SmartMark printer. For other information, please see the SmartMark Writer User's guide, which covers information pertaining to the SmartMark Writer software.

Please take the time to carefully read this manual, with particular attention to the Safety and Proper Use & Handling sections. It will answer any questions you may have regarding installation, startup, use, programming and maintenance, and will ensure that you are handling the SmartMark system safely. By taking time now, you will eliminate frustration during the early stages of operating the printer and prevent any unnecessary damage to the system.

If you have any questions, please don't hesitate to call our punching sales desk at 800-328-9646.

Thank you again for your business and we look forward to providing you with the best possible service and support.

Sincerely,

Wilson Tool

# SMARTMARK COMPONENTS

## 1. SmartMark printer

- o Button panel
  - Red status light- the following conditions cause the red light to glow:
    - During the power-up sequence, the red light will glow for 5 seconds at the beginning of the sequence.
    - It will glow when the battery is in need of recharging
    - It flashes briefly after printing each time to signal the progression to the next print job.
    - It glows during an alarm state (see Troubleshooting section on “Red Light Glowing” for more information on the alarm state).
    - It flickers once when the proximity sensor is triggered.
  - Amber status light- glows to show that printer is powering on. Also indicates that ink may be getting low. See Troubleshooting section on “Amber Light Glowing” for more information.
  - Green status light- will glow steadily when the printer is powered on and run through the start-up-light sequence to indicate “Print” mode. A flashing light indicates “Set-Up” mode.
  - Setup Button- turns Wi-Fi mode on and off, which enables printer to receive print jobs
  - Purge Button- Press and release to purge the system
  - Power Button- Turns printer on and off. Takes about 30 seconds and sequences from red to amber to green while powering on.
- o Retaining Clip- holds battery and ink cartridge in place
- o Keyway – total of four (4) keyways, keyed every 90°. Numbered 1-4.
- o Proximity Sensor- triggers printing when reaches a preset distance from the sheet.
- o Print head- where the ink comes out of the printer. Always keep the print head pointed down.
- o Ink Port- where the ink enters the printer from the ink cartridge.

**2. Printer stand** - for holding the printer when not in use. Collects any ink leakage and keeps print head from drying out. Can also be used as a die with the SmartMark printer.

## 3. Battery (2)

## 4. Ink Cartridge

## 5. Flush Cartridge

SmartMark Printer Specifications	
Power Supply	16.8 volt Lithium-Ion rechargeable battery
Battery Charge	A fully charged battery will measure 16.8 volts, and a completely discharged battery will measure 13.8 volts
Battery Storage Environment	Up to 3 months: -4°F to 115°F (-20°C to 45°C). Long Term: -4°F to 68°F (-20°C to 20°C).
Battery Operating Environment	Charging environment: 32°F to 115° (0°C to 45°C). In-use environment: -4°F to 140°F (-20°C to 60°C). Note: Battery life can be extended by storing and operating in cool to moderate temperatures
Printer Storage	0° to 140° Fahrenheit (-18° to 60° Celsius). See battery and ink cartridge storage recommendations if you are storing the printer with the battery and/or ink cartridge installed
Printer Operating Environment	41° to 68° Fahrenheit (5° to 20° Celsius)
Ink Color Options	Black
Ink General Description	Hi-Res lactate-based ink specifically formulated for producing high-quality marks on non-absorbent surfaces
Ink Composition	Lactate-Base
Ink Operating Environment	50°F to 100°F (10°C to 38°C). Note: The lower end of operating spectrum can affect the printing performance due to the thicker viscosity of the ink at cooler temperatures. Faded prints, or missing jets can be related to printing at cooler temperatures
Ink Drying Time	20 – 60 second dry time depending on the substrate material and other devices used to facilitate drying
Ink Capacity	50 ml replaceable ink cartridge
Ink Storage	A cartridge will last 12 months from date of manufacture when stored where the temperature remains within a range of 32°F to 100°F (0°C to 49°C). Prolonged exposure to temperature outside these limits may shorten the ink shelf life
Ink System	On-board purge pump, Xaar print head technology
Maximum Print Height	.7" (17.4mm)
Resolution	Vertical resolution = 185 DPI (dots per inch). Horizontal resolution = 200 DPI (dots per inch)
Print Technology	Third generation piezo impulse printhead, drop-on-demand technology with porous and non-porous ink capability
Clock	Real-time clock with battery backup
Communication	SmartMark comes set up to send print jobs via Wi-Fi, using SmartMark Writer or SmartMark Express software
MSDS Information	Contact Wilson Tool for MSDS information

# SAFETY REQUIREMENTS

## GENERAL SAFETY WARNINGS

### Work Area Safety

- Keep work area clean and well lit. Cluttered or dark areas invite accidents.

### Personal Safety

- Use personal protective equipment when using SmartMark. Always use eye protection.
- Do not overreach. Keep proper footing and balance at all times. This ensures better control of the tooling in unexpected situations.

### Battery

- SmartMark uses a rechargeable lithium-ion battery.
- Only use specifically designated battery pack. Use of any other batteries may create a risk of fire.
- Recharge battery only with charger included in SmartMark package.

### Ink and Flush Cartridge

- CAUTION! Contents may be harmful if swallowed. Avoid contact with eyes. Keep out of reach of children. Damage to the cartridge or printer resulting from modifying or refilling the cartridge is not the responsibility of Wilson Tool. Intended for single use only. Not licensed for modification. Wilson Tool may change product designs, features, or specifications at any time.

### Important Icons

Some of the following symbols may be used on this product. Proper interpretation of these symbols may allow you to operate the product better and safer manner.



CAUTION: Indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury.



RECYCLE: This product uses rechargeable lithium-ion batteries and ink cartridges. Local, state or federal regulations may prohibit disposal of batteries and ink cartridges in ordinary trash. Consult your local waste authority for information regarding available recycling and/or disposal options.



WARNING: Danger of fire risk.

# SYSTEM REQUIREMENTS

## MACHINE REQUIREMENTS

The SmartMark printer runs in a thick turret punch press only. It has a fixed length and is not adjustable. It is designed strictly for use in punch presses that are equipped with an adjustable ram stroke (i.e. hydraulic or electromechanical). See your machine operator's manual for instructions on how to make length adjustments.

## HARDWARE REQUIREMENTS

SmartMark users must have a PC with an Ethernet port or Wi-Fi network adapter. Either form of network connection is required to communicate with the router.

## GENERAL

The SmartMark printer represents a unique and innovative approach to sheet metal marking. The operation of this tooling is unlike any other style of tooling manufactured for use in a turret punch press. Therefore, it is imperative that all persons involved in the operation of the turret punch press read and become thoroughly familiar with this section on Proper Use & Handling. Failure to do so may result in operator injury, damage to the turret punch press and/or to the SmartMark printer itself.

## TAMPERING/UNAUTHORIZED DISASSEMBLY

Do not attempt to repair the printer yourself. Removal of or tampering with any parts and/or components of the SmartMark printer will limit or exclude you from any warranties or guarantees that apply.

## PRINTER

**IMPORTANT!** Always keep printer in an upright position. Use the printer stand whenever the printer is not in use, as this will keep your work surface clean from ink, and will prevent the printer head from drying out.

### Dropping the Printer

Please note that dropping the printer may result in damage that is not covered under any Wilson Tool warranties.

### Cleaning the Printer

- Use of protective gloves is recommended when handling cleaning solvents.
- Clean the printer using the solution that was supplied in your Service Kit. Alternatively, other store-bought solvents may be used for general cleaning and ink removal on the exterior surfaces of the printer, but Wilson Tool cannot guarantee the results. For internal cleaning, see “Flushing Instructions.”
- To remove ink from skin, Reduran hand cleaner is recommended, and is also supplied in the Service Kit.

### Purging the Printer

- Purge printer before use, a minimum of once per day. Printer does not need to be purged unless it's about to be used.
- For purging instructions, see “Printer Setup and Installation.”

### Printer Storage

- Always store the printer in an upright position. Use the printer stand for most convenient and clean storage.
- When not in use for more than 8 hours, remove printer from machine and store in printer stand to prevent from drying out print head.
- The SmartMark printer can be stored within a temperature range of 0° to 140°F without the battery or ink cartridge. See Battery Storage and Ink Storage sections below if you are storing the printer with the battery and/or ink cartridge installed.
- If the printer is to be stored for longer than a month, the ink should be flushed from the system to prevent drying and clogging within the system. See “Flushing Instructions” in the Maintenance section of this manual.



## INK CARTRIDGES

### Ink Cartridge Disposal

- Empty ink cartridges must be disposed of in accordance with federal, state and local hazardous waste regulations.
- For ink cartridge recycling locations in the United States, go to <http://earth911.com/recycling/>

### Ink Cartridge Storage

- Ink cartridge will last 12 months from the date of manufacture when stored where the temperature remains within a range of 32°F to 100°F (1°C to 38°C).
- Prolonged exposure to temperature outside these limits may shorten the ink shelf life.

### Ink Operating Environment

- SmartMark ink will operate within the range of 50°F to 100°F (10°C to 38°C).
- Note that the lower end of operating spectrum (50°F) can affect printing performance due to the thicker viscosity of the ink at cooler temperatures. Faded prints, or missing jets can be related to printing at cooler temperatures.

### Monitoring the Ink Level

#### Using the Amber Light

- When approximately 50 ml of ink has passed through the printer, the amber status light will glow. In order to ensure that the printer is in fact low on ink, Wilson Tool recommends that you monitor the ink level by weight (see below).
- The amber light will continue to glow after the new ink cartridge is installed. To reset the amber light, first press the “Set-Up” button on the button panel. The green status light will flash. Next, press and hold the “Purge” button for approximately 5 seconds, or until the amber light goes out. Finally, press the “Set-Up” button again. The green status light will stop flashing, and you are ready to resume printing. The amber light will glow again after another 50 ml of ink has passed through the printer.

#### By Weight

The ink level can also be monitored by weight. A weight scale has been included with your SmartMark System.

- Start by weighing the printer with a full ink cartridge to establish a baseline for reference, then weigh the printer again after a period of use.
- The difference in weight will account for the amount of ink used.
- When the difference is approximately 50 grams, the cartridge needs to be replaced.
- Note: If the cartridge is completely emptied from use, the printer will need to be re-primed by purging the system (see “Purging the Printer”).

## BATTERIES

### Battery Storage

- For storage up to 3 months, store within a temperature range of -4°F to 115°F (-20°C to 45°C). For long-term storage, store within a range of -4°F to 68°F (-20°C to 20°C).
- Note that battery life can be extended by storing and operating in cool to moderate temperatures.
- Batteries store best and will retain the longest life when stored at a partial charge.

### Battery Operating Environment

- Ideal charging environment: 32°F to 115° (0°C to 45°C).
- In-use environment: -4°F to 140°F (-20°C to 60°C).
- Note that battery life can be extended by storing and operating in cool to moderate temperatures.

### Battery Disposal

- The SmartMark printer uses a rechargeable lithium ion battery that must be disposed of according to federal, state and local hazardous waste regulations.
- For information on proper disposal, go to: <http://www.epa.gov/osw/hazard/wastetypes/universal/batteries.htm#rec>

### Recharging Batteries

- The red light on the button panel will flash when the battery is in need of recharging.
- The printer will still operate while the light is flashing, but the battery should be replaced within approximately 10 minutes to prevent a failure during a subsequent print cycle. If not replaced while flashing, the light will eventually glow solid red, at which point, the printer will cease to function until the battery is recharged.
- To recharge, plug the charger into an appropriate power outlet and place the battery in the docking station.
- A red light on the charger will indicate a low battery level.
- A green light will show when fully charged.
- A fully charged battery will measure 16.8 volts, and a completely discharged battery will measure 13.8 volts.

## SHIPPING, RETURNS OR TRANSPORTATION

- Retain the box the SmartMark system arrives in for ease of shipping, transportation or returning parts, if necessary.
- If you are shipping or transporting all or part of the SmartMark system, be sure to abide by local, state and federal regulations on the transport or shipment of hazardous materials.

## PRINTER SETUP & INSTALLATION

Before you use the printer for the first time, read and follow these instructions:

### Unpacking your SmartMark Delivery

1. Make sure all parts listed on the Package Contents sheet are included in the two (2) boxes that came with your SmartMark shipment.
2. On the printer, remove rubber cap from the ink port and protective tape from print head. Place printer on printer stand.
3. Remove batteries from packing materials and remove protective tape from contacts of the battery you plan to use first.
4. Remove rubber cap from ink cartridge you plan to use first.

### Charging and Installing the Battery

- The SmartMark printer uses a Lithium-Ion battery. The battery that comes with your SmartMark will carry some charge but will not be fully charged.
- To charge, plug the charger that came with your SmartMark into a power outlet and place the battery in the docking station. A red light on the charger will indicate a low battery level, which will change to green when fully charged.
- When the battery is fully charged, install it into the printer by snapping it into place. It will be held in place by the retaining clip. It can be released by wedging a thumbnail between the printer and the battery and pulling outward.

### Installing the Ink Cartridge

- The ink cartridge is installed and removed in the same way as the battery pack.
- Snap into place on the printer, ensuring that the ink outlet on the cartridge faces the ink port on the printer. The cartridge will be held in place by the retaining clip.
- To remove ink cartridge, wedge a thumbnail between the cartridge and the printer and pull outward.

## Purging the Printer

A brand new SmartMark printer will need to be purged of air. After a new ink cartridge is installed, follow this procedure:

1. Turn printer on by pressing the lower button (Power Button) on the button panel. The printer will take about 30 seconds to power on, and will sequence through several colors of status lights during the process. When the green light glows solid, the printer is on.
2. Press and release the “Purge” button to initiate a single purge cycle. A stream of ink expelled from the print head indicates a full purge.
3. If needed, press and release the “Purge” button again to run additional purge cycles. Repeat the process until a stream of ink is expelled from the print head. It may take five or six cycles to completely bleed the air from the system.
4. Blot the ink dry from the print head using a non-abrasive and lint-free pad. Blotting the ink will remove the excess ink from the print head and is recommended over wiping, which may scratch and damage the print head or potentially drive lint particles into the print head.
5. Test the print quality by simulating the printing process. Hold the printer a few inches above a piece of paper. Press and hold down the large round button on the top of the printer. Lower the printer to within 1/4” of the paper and move the printer across the paper to simulate printing. Release button and repeat if necessary. If there are portions of the text that are missing or faded, repeat the purge process and test again.

## NETWORK SETUP

### Using the router that comes with your SmartMark system

1. Plug the router that came with your SmartMark into a wall outlet that is within 60 feet of your PC.
2. If your PC does not have wireless capability, connect it to the router using an Ethernet cable.

### Using an alternative router and network

There are other optional Wi-Fi configurations possible with the SmartMark printer other than using the included TP-Link router. These options are used in conjunction with an existing on-premise Ethernet or Wireless network. Because Wilson Tool has no knowledge of the intended network environment, these options cannot be supported by Wilson Tool and are done at your own risk. For more information on alternative Wi-Fi configurations. See the Advanced Networking Guide.

## ADVANCED NETWORKING GUIDE

This will cover the more advanced options for networking the SmartMark printer.

***We recommend these advanced options be implemented by an IT professional.***

This document assumes the reader has prior knowledge of networking technologies such as TCP/IP, Ethernet, and Wireless. There are other optional configurations possible with the SmartMark printer and the included TP-Link router. These options are used in conjunction with an existing on-premise Ethernet or Wireless network. Because Wilson tool has no knowledge of the intended network environment, these options cannot be supported by Wilson Tool and are done at your own risk.

*Note: The SETUP button on the SmartMark printer enables and disables the onboard wireless adapter. A flashing green light indicates the Wireless adapter is enabled.*

**1. SmartMark connected to client Wi-Fi (no router)**

Pros: TP-Link router not required.

Allows access to the SmartMark printer from any computer that is connected to your local network.

Cons: Requires you to change the configuration of the SmartMark printer.  
Not compatible with all wireless network security types.

**2. Two networks on the same PC (Ethernet and Wireless)**

Pros: Retains stock settings on the TP-Link router and the SmartMark printer.

Allows access to the SmartMark printer from any computer connected to the WilsonTool-SmartMark Wireless network.

Cons: Computers will need both an Ethernet and a Wireless adapter.  
Only computers in range of the TP-Link router can access the SmartMark printer.

**3. Router as a bridge (Ethernet or Wireless)**

Pros: Retain stock settings on the SmartMark printer.

Allows access to the SmartMark printer from any computer connected to the WilsonTool-SmartMark Wireless network.

Cons: Requires you to change the configuration of the TP-Link router.  
Not compatible with all wireless network security types.

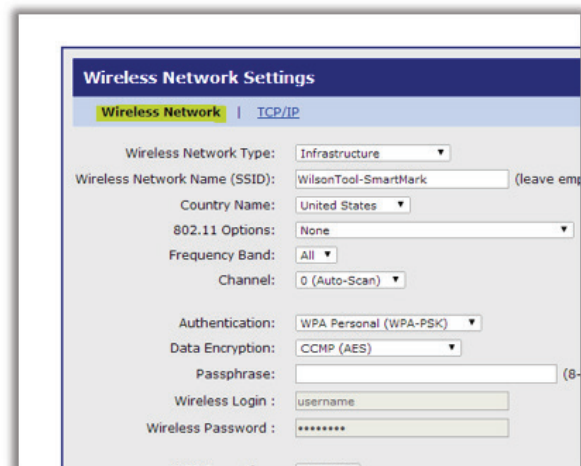
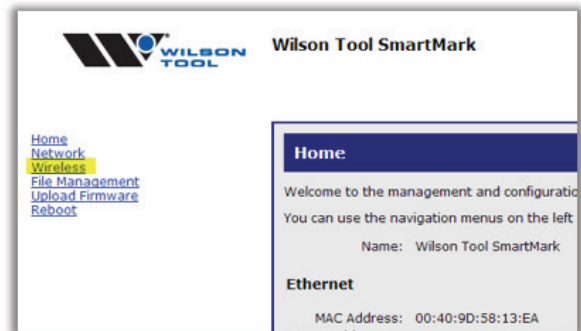
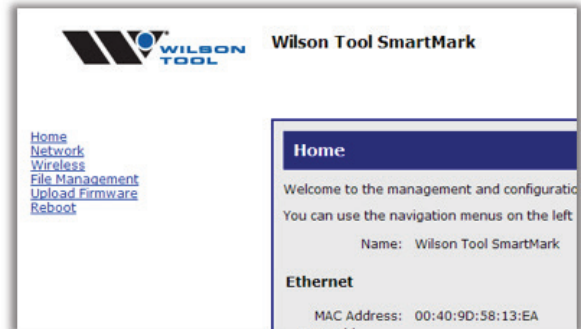
*This option will not be covered in this document.*

Please reference The TP-Link Users Guide located on the resource CD packaged with the TP-Link router or visit [www.tp-link.com](http://www.tp-link.com)

## 1. SmartMark connected to client Wi-Fi (no router)

The SmartMark printer is capable of joining a different wireless network. The default settings join it to the TP-Link router and its pre-configured settings for the wireless network SSID: **WilsonTool-SmartMark**. In order to access the web interface of the SmartMark printer and change the wireless settings it will require first using one of the other connection methods. We recommend using either of the basic options for this.

1. Once you have established a connection with the SmartMark printer using Basic option 1 or 2, enter the default IP address **192.168.240.201** into a web browser address field and press enter.
2. You will be asked for a username and password. Enter “root” for the username and “leader” for the password. You should now see the web interface of the SmartMark printer.
3. From the menu on the left side select Wireless. Please Note: The Network menu item is not to be used and has no effect on any wireless settings.
4. Under Wireless Network Settings, enter the settings required for access to the desired wireless network, then click Apply.



5. Under Wireless TCP/IP Settings enter the desired settings, then click Apply. (Static IP Recommended)

**Wireless TCP/IP Settings**

[Wireless Network](#) | **TCP/IP**

**IP v4 Settings**

☐ Obtain an IP address automatically

☒ Use the following IP address

IP v4 Address:

Subnet Mask:

Default Gateway:

Primary DNS:

Secondary DNS:

**IP v6 Settings**

6. Once you have applied the settings in both sections, select Reboot from the left menu and click the Reboot button. The SmartMark printer will reboot, you will have to push the Setup button on the SmartMark printer to enable WI-FI, indicated by a flashing green light.

**Wilson Tool SmartMark**

Home  
Network  
Wireless  
File Management  
Upload Firmware  
**Reboot**

**Reboot**

Click Reboot to reboot this device.

**Reboot**

The SmartMark printer will attempt to connect to the networking settings provided. Test to see if you can locate the device on network. Accessing the web interface of the SmartMark printer with its new IP address is a good test.

If communication is successful you can begin working with the device on the new network. This will require changing or adding the new IP address into the printer setup configuration page under the Printer menu within the **SmartMark Writer** program.

If it fails, a reset might have to be performed on the SmartMark printer in order to gain access to the device once again.

### Reset the wireless settings on the SmartMark printer.

1. Power on the SmartMark printer.
2. Wait for a solid green power indicator light.
3. Push the SETUP button to enable Wi-Fi.
4. Hold the SETUP button until the indicator light starts to quickly flash, then release the button.
5. Push the PURGE button. The SmartMark printer will restart back to the default settings.

*Please Note: Not all wireless security options have been tested nor does Wilson Tool support them.*

## 2. Two networks on the same PC (Ethernet and Wireless)

The SmartMark Writer program makes FTP calls directly to the IP address of the SmartMark printer which means you can have the PC connected to your local network (Wired or Wireless) as well as the **WilsonTool-SmartMark** network (Wired or Wireless) so long as they are using different sub nets for each network.

For example: Local network (Ethernet connection) 192.168.1.xxx

TP-Link router (wireless connection) 192.168.240.xxx

For the sake of this guide we will assume the “Client PC” is running Windows 7 and both an Ethernet adapter and a wireless adapter are installed.

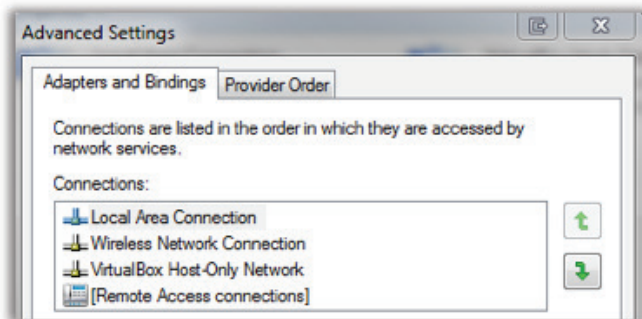
After the “Client PC” is setup and configured on your local network, connect to the TP-Link router “WilsonTool-SmartMark” network using the opposite adapter than your local network. If you are connected to your local network with an Ethernet cable, then connect to the TP-Link router via your wireless adapter using the SSID “WilsonTool-SmartMark” (Password: smart123). If you are connected to your local network wirelessly, then connect to the TP-Link router via the Ethernet port.

By default, Windows 7 sets the priority on a desktop computer to:

1. Ethernet or (Local Area Connection)
2. Wireless Network Connection
3. Any other types (virtual adapters)

The priority may need to be changed, depending on your configuration. If your local network is using the Ethernet adapter it should work as intended. If your local network is using the wireless adapter you will want to change the priority to use that adapter first and the Ethernet adapter second.

1. Local network (wired or wireless) should be first.
2. WilsonTool-SmartMark network (wired or wireless) should be second.
3. Any of the other network adapters.



To configure the adapter priority list, open **network and sharing center** (windows 7, 8), or **Network connections** (Windows XP).

Click on the **Advanced** menu item then select **Advanced Settings**.

Note: In Windows 7 you may have to press the Alt key to show the menu items.

After installing SmartMark Writer or Express on the “Client PC” it should now be able to communicate with the SmartMark printer while also communicating on the local network.

If you encounter issues or need to test connections, also included in the SmartMark program folder is a network launcher that will allow you to select the network adapter to use for the SmartMark Writer application. SmartMark\_Net.exe or SmartMarkExpress\_Net.exe



## MACHINE SETUP

### Step-by-Step Machine Setup

1. Measure the overall length of the printer (with the top button depressed) and record the length.
2. Determine the type of program cycle (e.g. wheel mode, scribe mode) that will be used in conjunction with the printer.
3. Set up the tool library of the CNC punch press with the appropriate tool lengths, offsets and tool types.
4. Load the CNC program (with print cycle) into the press control. For best results, the print cycle should be the first cycle in the machine program.

### Print Gap

Adjusting the tool length and length offset values in the machine control is required to maintain the proper print gap between the printer and the sheet metal. While a 1/16" (1.5mm) gap will yield the best image quality, a maximum gap of 1/8" (3mm) will still provide decent results for most print applications. The range of 1/16" - 1/8" (1.5 - 3mm) was established to provide a minimum distance to prevent interference, and a maximum distance to insure that the onboard proximity sensor comes within range of the sheet to trigger the print cycle. If the sensor doesn't "see" the sheet, it will fail to print.

### Sheet Flatness

For best results, the printer needs to maintain a distance of approximately 1/16" (1.5mm) between the face of the printer and the sheet to be printed upon. Therefore, it is advisable to run the print cycle at or near the beginning of the machine program to minimize interference with any sheet distortion that can occur when holes are punched, or forms in the sheet that could become obstacles for the printer.

## PRINTER

### Powering On the Printer

Press the power button to turn on the printer. It takes about 30 seconds to start up. The green status light will glow when it's ready.

If the printer will not be used for an extended period of time, shut it down by pressing the power button. Store upright in the printer stand if it will be unused for 8 hours or more.

### Receiving a Print Batch

1. Make sure that printer is turned on.
2. Prepare to send your print job as detailed in your SmartMark software manual.
3. Press "Setup" button on printer.
4. Green light on printer will blink.
5. Send print job to printer using your software.
6. Press "Setup" button on printer again.
7. Green light will be solid.
8. Printer is ready to print.

## SOFTWARE

For software operating instructions, see the User's Guide that came with your version of SmartMark software.

## MACHINE

### Installing Printer in Machine

With the printer turned on, load it into the predetermined C-station. Execute the machine program.

There is no need to turn the printer off at any time during the machine program.

For best results, the print cycle should be the first cycle in the machine program.

### Machine Programming

Use the following information in combination with your machine user's manual as a guide for programming your machine for the SmartMark printer.

- The upper assembly length is 208mm (8.19") [except for certain machines where the length is 198mm (7.796")].
- Adjust the machine stroke so the tool hovers approximately 2mm above the sheet surface when the ram is in the down position. This provides the correct distance so the tool can detect the presence of the sheet and also so the ink can spray onto the sheet correctly.
- Program the machine to move the sheet at 300 inches per minute (7.6 meters per minute).
- Program the sheet to begin moving immediately when the tool approaches the sheet.
- Program the sheet movement at least 1" (25mm) more than the expected print length.
- Ensure that there are no holes or formed features on the sheet. These could cause damage to the tool or cause problems with the printing process.
- Raise the tool at least 12mm (0.500") after printing so that the printer no longer detects the sheet. The printer will then increment to the next event in its program.

## MAINTENANCE

### Purging

Purge printer before use, a minimum of once per day. Printer does not need to be purged unless it's about to be used. For purging instructions, see "Printer Setup and Installation."

### Flushing

Flushing is required under the following circumstances:

1. When there are defects or abnormalities in the print quality, indicating clogging in the print head.
2. Before long-term storage of the printer, or before periods of dormancy exceeding 30 days.

Flushing removes dried ink or prevents the drying of ink on the inside of the printer, which may render the printer unusable or lower print quality.

**CAUTION!** Failure to use the correct flushing fluid (supplied in the Service Kit) may cause clogging or damage to the print head.

### Flushing Instructions

1. Remove the ink cartridge.
2. Press the purge button to make ink evacuate the printer. Continue pressing until the ink no longer comes out in a stream, but in drips.
3. Insert the flush cartridge into the printer in place of the ink cartridge.
4. Press the purge button.
5. Continue pressing the purge button until the flush cartridge has been emptied of solution and no solution or ink comes out of the printer when the button is pressed. This may take 3-5 minutes.
6. Remove the flush cartridge.
7. Wipe the print head and ink port with a clean wipe to remove any excess ink or solution.

## TROUBLESHOOTING

### Printer Status Lights

#### 1. Red Light Glowing

The red light glows, flickers or flashes for the following reasons:

- **During power-up**  
During the power-up sequence, the red light will glow for 5 seconds at the beginning of the sequence. This is normal and is not a reason for concern.
- **Low battery**  
It will flash when the battery is in need of replacement, and will glow steadily when the battery has died. After the battery begins flashing, you have approximately 10 minutes to replace the battery before it runs out of charge. Remove the battery by wedging a thumbnail between the battery and the printer and pulling outward. Replace with a fully-charged Lithium-Ion battery. For instructions on recharging the battery, see the “Recharging the Batteries” section of the manual.
- **Signaling the next print job**  
It flashes briefly after printing each time to signal the progression to the next print job. This is normal and is not a cause for concern.
- **Alarm State**  
The red light glows during an alarm state, and the printer will cease working. An alarm state is triggered when the system is overloaded and a lock-up occurs to prevent damage to the printer. Reset the printer by turning it off and restarting to end the alarm state mode. If the red light stays on after restarting, your battery may have died and you will need to replace it (see “Low battery,” above).
- **Proximity sensor is triggered**  
The red light will flash once when the proximity sensor has been triggered, signaling that the printer recognizes the print medium. This is not a cause for concern.

#### 2. Amber Light Glowing

The amber light glows for the following reasons:

- **Low Ink**  
When the amber status light glows, this indicates that 50 ml of ink have passed through your printer, and your ink cartridge may be nearly empty. Check the actual ink level by weight (see “Monitoring the Ink Level by Weight” in the Proper Use & Handling section of this manual), and replace cartridge if ink is low.  
  
The amber light will continue to glow after the new ink cartridge is replaced. To reset the amber light, first press the “Set-Up” button on the button panel. The green status light will flash. Next, press and hold the “Purge” button for approximately 5 seconds until the amber light goes out. Finally, press the “Set-Up” button again. The green status light will stop flashing. You are now ready to resume printing.
- **During Power-up**  
The amber status light glows temporarily while the printer is powering on. This is normal and is not a cause for concern. The amber light will go off and the green light will come on when the printer has completed the power-up process.

### Poor Print Quality

Poor print quality can occur for the following reasons:

- **Low Ink**  
When the printed image is faded or missing portions, first check the amber light. If the amber light on the button panel is glowing, follow the instructions for “Low Ink” above.

- **Printer needs to be purged**  
If low ink is not the problem, the jets in the print head may be clogged. To clear the clogged jets, run the printer through one or more purge cycles. See “Purging the Printer” in the Printer Setup section.
- **Clogged Print Head**  
If purging the printer does not improve the print quality, try unclogging the print head. Hold the printer over a waste receptacle at an angle with the print head facing downward and spray a solvent at the print head. Keep the print head facing downward to prevent solvent from entering the printer.
- **Low Temperature**  
At temperatures close to the lower end of the optimal ink operating spectrum (nearing 50°F), the viscosity of the ink increases and may cause faded prints or missing ink jets. Increase environmental temperature to improve print quality.

## Printing Problems

Follow these steps to diagnose a printer that will not print:

1. Does the printer have power?
  - a. Check that the battery has a charge. The red light will glow if the battery is dead, and the red light on the battery charger will also glow if the battery has no charge. Charge the battery or replace the battery with a charged battery if you find that the battery is dead.
  - b. Confirm that the printer is powered on. The green status light will be solid. If it is not on, press the power button, and wait until the green status light turns solid.
  - c. Confirm that the printer is in “print mode.” If the green light is flashing, the printer is in set-up mode. Press the setup button, and when the green light is solid, the printer is in print mode.
2. Does the printer have ink?
  - a. Check that an ink cartridge is installed in the printer, and that there is nothing blocking the transfer of ink from the cartridge into the printer through the ink port.
  - b. Check that there is ink in the system by pressing the purge button until ink is expelled from the printer. If no ink is expelled after purging, replace the ink cartridge.
3. Are all parts of printer functioning correctly?
  - a. Check that the print head and proximity sensor are clean. If not, dab them with a lint-free cloth to remove any ink or debris.
  - b. Check that the proximity sensor is functioning correctly by holding the print head against the print surface, then slowly pulling the printer away from the surface at a perpendicular angle. The red light should flash once when the proximity sensor triggers, indicating that the proximity sensor is working correctly. If no flash occurs and the proximity sensor is not obstructed by ink or debris, call Wilson Tool.
4. Does the printer have a job to print?
  - a. Did you create a print job via the SmartMark software and send it to the printer? If not, follow the instructions in your SmartMark software user's guide to create and send a print job.
  - b. Confirm that the desired print job has reached the printer by testing the printer manually. Simulate the printing process by depressing the large round button on the top of the printer while you move the printer horizontally across the print surface or a sheet of paper. If the printer prints the desired result, your printer is loaded with the proper print job. If it does not print the desired print job, resend it using your SmartMark software.
5. If all of the above questions do not lead you to a solution, contact Wilson Tool.

## Problems Connecting to Wireless Network

If you have trouble connecting to a wireless network, follow these steps to diagnose and solve the problem:

1. Try connecting to the network using the router that came with your SmartMark system (see Network Setup section in this manual for router installation).
2. If you are able to connect to the network using the SmartMark router, then the problem is likely with your local network settings.

Check that your own router and the SmartMark printer are connected to the same wireless network.

3. If you are not able to connect using the SmartMark router, contact Wilson Tool.

# FREQUENTLY ASKED QUESTIONS

General	<b>Q</b>	<b>How do I get replacement parts?</b>
	<b>A</b>	For additional batteries or ink cartridges, call Wilson Tool sales desk 800-328-9646
Battery	<b>Q</b>	<b>How long will my battery last?</b>
	<b>A</b>	When new, the battery should last 8 hours or more. This duration will lessen over time and with use.
	<b>Q</b>	<b>How much time is left when the red battery light comes on?</b>
Cleaning	<b>A</b>	Approximately 10 minutes.
	<b>Q</b>	<b>How do I remove ink from the outside of the printer?</b>
	<b>A</b>	See “Cleaning the Printer” in the Proper Use & Handling section of this manual.
	<b>Q</b>	<b>How do I clean the print head?</b>
	<b>A</b>	Spray solvent at the print head with the print head pointing downward. Keep print head pointing down so that solvent does not enter the printer. Blot print head dry with link-free wipe.
	<b>Q</b>	<b>How do I remove ink from skin?</b>
	<b>A</b>	Use Reduran, a cleaner included in the Service Kit.
	<b>Q</b>	<b>How do I remove ink from sheet metal?</b>
Communication Network	<b>A</b>	Ink can be removed easily by wiping with a rag that has been saturated with paint removal solvents (i.e. acetone, lacquer thinner). Be sure to comply with all safety rules when using these products.
	<b>Q</b>	<b>Why can't I connect my printer to a wireless network?</b>
	<b>A</b>	See Troubleshooting section on “Problems Connecting to Wireless”.
	<b>Q</b>	<b>How do I know if my printer is connected to my wireless network?</b>
	<b>A</b>	Type into your browser address bar: 192.168.240.201. If you are able to pull up the page in your browser, your printer is connected to the appropriate wireless network. If not, your printer and router are not connected to the same network.
	<b>Q</b>	<b>How close does the router need to be to my printer?</b>
	<b>A</b>	Distance varies with obstructions. Typically within 60 feet.
	<b>Q</b>	<b>Can I use my own router?</b>
Ink	<b>A</b>	Yes. See the Network Setup section of this manual.
	<b>Q</b>	<b>How long will an ink cartridge last?</b>
	<b>A</b>	There is no definitive answer to this question. Ink consumption will vary based on how large you print and what mode you are in. Draft mode will extend your ink life, but will lighten density.
	<b>Q</b>	<b>How much ink is in a new ink cartridge?</b>
	<b>A</b>	50ml.
	<b>Q</b>	<b>How do I know if my ink cartridge is empty?</b>
	<b>A</b>	See “Monitoring the Ink Level” in the Proper Use & Handling section of this manual.
	<b>Q</b>	<b>Are ink cartridges refillable?</b>
	<b>A</b>	No.
	<b>Q</b>	<b>What ink colors are available?</b>
	<b>A</b>	Black only.

# FREQUENTLY ASKED QUESTIONS

Ink	Q	Can I paint over the ink?
	A	Yes.
	Q	Will the ink show through my paint?
	A	Typically, yes. But this will vary with paint type and color. You should always run a test sample to verify results.
	Q	Can the ink be cleaned off before painting?
	A	Yes.
	Q	How do I remove ink from sheet metal?
	A	Ink can be removed easily by wiping with a rag that is saturated with paint removal solvents (i.e. acetone or lacquer thinner). Be sure to comply with all safety rules when using these products.
	Q	How long does the ink take to dry?
	A	30 to 90 seconds depending on humidity levels and ventilation.
Machine	Q	Are there faster or slower drying inks available?
	A	No.
	Q	If I over stroke my machine, will it damage the printer?
	A	Yes. If the printer collides with the sheet due to improper stroke type or adjustment, there is potential for severe damage.
	Q	Can I print in X or Y axis?
	A	Yes. The printer has four keyways to allow you to print in any 90° direction.
	Q	Can I use the SmartMark in my auto-index station?
	A	Yes.
	Q	Can I leave my automatic lubrication system on while printing?
	A	This is not recommended.
Printer, Purging	Q	what CNC machine programming systems are compatible with SmartMark?
	A	See “Machine Requirements” in the System Requirements section of this manual.
	Q	My Amada has given me a “strip miss”. What do I do?
	A	There needs to be an uninterrupted, resistance-free connection between the ram nose and the turret during the print cycle. If the turret bore and/or the lifter springs are excessively oily, this will increase resistance at these connections, causing the machine to think the printer did not retract with the ram stroke even though it did. Wipe excess oil from the turret bore and the lifter springs to resolve this issue.
	Q	How often should I purge the printer?
Printer, Purging	A	Purge the printer before you use it for the first time. Purge at least once per day when the printer is in regular use.
	A	Purging is also recommended if you experience poor print quality. See “Purging Instructions” in the Equipment Setup section of this manual for instructions on how to purge the printer.
	Q	How do I purge the printer?
Printer, Status Lights	A	See “Purging Instructions” in the Equipment Setup section of this manual for instructions on how to purge the printer.
	Q	Why won't the amber light turn off after installing a new ink cartridge?
	A	See the Troubleshooting section of this manual, “Amber Light Glowing”.



# FREQUENTLY ASKED QUESTIONS

Printing, General	<b>Q</b>	<b>Does the SmartMark printer only print in one direction?</b>
	<b>A</b>	Yes.
	<b>Q</b>	<b>Can the SmartMark inkjet printer print on any steel materials?</b>
	<b>A</b>	Yes, but results will vary depending on material type, porosity and surface finish.
	<b>Q</b>	<b>What materials other than metal will it print on?</b>
	<b>A</b>	The printer should print on any solid surface material that can be detected by the proximity sensor.
	<b>Q</b>	<b>Is the print quality the same on all materials?</b>
	<b>A</b>	No. Results will vary depending on material type, porosity and surface finish.
	<b>Q</b>	<b>Where is the vertical center of the text in reference to the printer?</b>
	<b>A</b>	It is set to the center of the printer.
	<b>Q</b>	<b>Can you change vertical center justification on the printer?</b>
	<b>A</b>	No.
	<b>Q</b>	<b>Why does my printed image have lines running through it?</b>
	<b>A</b>	This is the result of clogged jets in the print head, or residual ink droplets on the face of the print head. See the Troubleshooting section of this manual, "Poor Print Quality".
	<b>Q</b>	<b>Can I print in fonts other than the three available?</b>
	<b>A</b>	No.
	<b>Q</b>	<b>Can I print graphic images?</b>
	<b>A</b>	No.
	<b>Q</b>	<b>The quality of my printer output is unacceptable, what can I do to improve this?</b>
	<b>A</b>	See the Troubleshooting section of this manual, "Poor Print Quality".
	<b>Q</b>	<b>Why is my start position incorrect?</b>
	<b>A</b>	The printed message is triggered by an optical proximity sensor. As a result, the reflectivity of the material can affect the start position of the message. The normal variance is +/- 1/16", but can occasionally exceed this range. Try to allow for this when considering the placement of the message.
	<b>Q</b>	<b>I interrupted my punching program while the printer was running. Where will the printer resume printing?</b>
	<b>A</b>	The printer will maintain its program position and begin on the line after the last printed line.
	<b>Q</b>	<b>Can I resume in the middle of a print job?</b>
	<b>A</b>	Yes. The printer can be stopped at any time during a print program cycle. It will resume at the point where it left off when put back into use. You will need to resume your CNC press program at the same point to synchronize the print message with the placement on the sheet. If however, you stop a print program before it is finished, and want to start over at the beginning, you will need to reset the printer by powering down and back up again.
	<b>Q</b>	<b>An odor is coming from my printer. What is it?</b>
	<b>A</b>	The SmartMark ink normally emits a "solvent-like" smell. If you notice any other smells coming from the printer, call Wilson Tool.
	<b>Q</b>	<b>I have turned on my printer but it won't print. What should I do?</b>
	<b>A</b>	See "Printing Problems" in the Troubleshooting section of this manual.
	<b>Q</b>	<b>I pressed the power button, but nothing happened.</b>
	<b>A</b>	See "Printing Problems" in the Troubleshooting section of this manual.

# FREQUENTLY ASKED QUESTIONS

Printing, General	<b>Q</b>	<b>Date/Time code is not printing the correct date/time.</b>
	<b>A</b>	The printer needs to be resynchronized with the processor clock. This can be accomplished through the SmartMark Writer software. Go to "Printer" on the toolbar of your SmartMark Writer window and select "Date/Time". Click the "Synchronize" button.
	<b>Q</b>	<b>How far away from the material can SmartMark print?</b>
	<b>A</b>	The ideal print gap (space between the printer and the sheet metal) is between 1/16" and 1/8". Distances greater than this may result in missed prints and reduced quality.
	<b>Q</b>	<b>How do I know if a program has successfully transferred to the printer?</b>
	<b>A</b>	There is a pop-up message at the end of the transfer process to indicate success or failure.
	<b>Q</b>	<b>How do I know what print job is loaded on my printer?</b>
	<b>A</b>	Type the following url into your browser's address bar: 192.168.240.201. You will be able to identify the print jobs that are loaded on your printer on this page.
	<b>Q</b>	<b>How many programs can you put on the printer?</b>
	<b>A</b>	130 print jobs is the maximum that the printer has been tested to hold.
	<b>Q</b>	<b>Can I alter my feed rate speed from the recommended 300 inches/7.62 meters per minute?</b>
	<b>A</b>	Yes. But this will result in changing quality and length of printed image.
	<b>Q</b>	<b>Can the print be adjusted to print faster or slower than the recommended 300 inches / 7.62 meters per minute?</b>
	<b>A</b>	No.
	<b>Q</b>	<b>Will the printer print with oil on my sheet?</b>
	<b>A</b>	Yes. If it is a light film as typically found on sheet metal as a preservation ("mill oil"). You will not be able to print on fresh "wet" oil.
	<b>Q</b>	<b>Will the printer print through sheet lubricants?</b>
	<b>A</b>	No. If lubricants are required, they will need to be applied after the print cycle.
	<b>Q</b>	<b>What is the maximum print height?</b>
	<b>A</b>	See "SmartMark Printer Specifications" in the introduction section of this manual.
	<b>Q</b>	<b>Can I print a mirrored image?</b>
	<b>A</b>	Yes. Standard practice is to print left to right (as viewed during printing) even though in actuality, the sheet moves under the printer from right to left. If you want a mirror image, reverse the direction of the sheet.
	<b>Q</b>	<b>I changed my printer mode from draft to standard (or vice versa), but it is still printing draft/standard. What do I do?</b>
	<b>A</b>	You must restart your printer after changing the print mode.
	<b>Q</b>	<b>My barcode is not readable, what can I do?</b>
	<b>A</b>	Alter the spacing of the barcode using the Barcode function in SmartMark Writer.
	<b>Q</b>	<b>What barcode reader gun should I use?</b>
	<b>A</b>	Wilson Tool offers a reader designed to read barcodes on reflective surfaces. Contact Wilson Tool for details.
	<b>Q</b>	<b>How can I reset my counter?</b>
	<b>A</b>	Reboot the printer by powering down and up again.
	<b>Q</b>	<b>I put a counter in my program, why did it only print once?</b>
	<b>A</b>	A counter program cannot be used with other types of print jobs. Send the counter job to the printer as the only job in the batch.

# FREQUENTLY ASKED QUESTIONS

<b>Printing, General</b>	<b>Q</b>	<b>What is the operating temperature range?</b>
	<b>A</b>	See Printer Specification section of the manual.
<b>Repairing</b>	<b>Q</b>	<b>I dropped the printer and it doesn't work, what do I do?</b>
	<b>A</b>	Call Wilson Tool
	<b>Q</b>	<b>Can I make repairs to the printer myself?</b>
	<b>A</b>	No. Servicing the printer yourself will void any warranties associated with this product.
<b>Safety</b>	<b>Q</b>	<b>Where can I find the MSDS sheet?</b>
	<b>A</b>	Contact Wilson Tool for MSDS information.
<b>Storage</b>	<b>Q</b>	<b>How do I store a used ink cartridge?</b>
	<b>A</b>	Put the rubber cap that came with the cartridge back over the outlet fitting to prevent drying out. Store as detailed in the Proper Use and Handling section of this manual under "Ink Storage."
	<b>Q</b>	<b>How should I store the printer?</b>
	<b>A</b>	Store as detailed in the Proper Use and Handling section of this manual under "Ink Storage."

## TIPS & TRICKS

### For Best Results

- Start with clean material.
- If using sheet lubricant, print before applying lubricant.
- Print first before doing anything else to the sheet (punching, etc).
- Maintain a 1/16" distance from sheet for best print quality.
- Print on flat material.

### Printer

- When not in use for more than 8 hours, remove printer from machine and store in printer stand to prevent from drying out print head.
- Store printer upright.
- Save packaging that SmartMark arrives in for storage purposes.

### Ink Use

- Use draft mode to save ink.
- Use draft mode if you intend to remove the ink from the substrate.