



FUSION PLUS⁺

PLASTIC REPAIR STATION

OPERATING MANUAL

PN: WS-1000



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PRODUCT DESCRIPTION

The FUSION Plus+ Plastic Repair Station is the industry's first completely microprocessor controlled plastic welding station. No knobs, no flow gauges, no worries. To begin welding, remove the welding wand from its docking cradle and the Fusion Plus+ welder will auto-start. Using the fingertip control switch conveniently located on the wand, select the desired welding temperature setting and the welder rapidly heats up. You are now ready to weld. When welding operations are complete, return the Wand to the docking cradle and the system cycles off and goes into sleep mode automatically. Simple, precise, powerful...

This tool is specifically designed for plastic repair using precision temperature control. Please read the operating manual prior to use to familiarize yourself with the features and safe operation of the system.

INTRODUCTION

The head of the Fusion wand gets extremely hot during use and caution should be taken to avoid injuries or damage to objects that may come in contact with the tip. Be sure to comply with the following warnings and cautions for your safety.

1. Power to the unit should be 110VAC.
2. Prior to use, check the unit for any shipping damage.
3. During operation, the head of the Fusion wand is extremely hot and will cause serious burns if it makes contact with exposed skin.
4. Do not use the product near combustible gases or flammable materials.
5. Turn the power switch OFF and allow the unit to cool prior to storing the unit.
6. Keep the Fusion Pro clean. Use a damp cloth and a small amount of liquid detergent. Never submerge the unit in liquid or allow any liquid to enter the station. Never use any solvent to clean the case.
7. This unit is designed specifically for plastic welding and should not be used for any other purpose.
8. Fire may be a result if the system is not used safely:
 - Be careful when using the Fusion Pro in places where there are combustible materials;
 - Do not use in the presence of combustible materials;
 - Be aware that heat may be conducted to combustible materials that are out of sight;
 - Place the Fusion Plus+ wand in its stand after use and allow it to cool down before storage;
 - Do not leave the Fusion Pro unattended when it is switched on.
9. Make sure the work area is well ventilated.

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To Prevent Electrical Shock, Be Sure To Take The Following Precautions:

1. Make sure the unit is grounded. Always connect power to a grounded receptacle.
2. Do not stress the AC power cord.
3. Do not bump, hit, pour water/liquids or otherwise subject the fusion wand to physical shock. This may damage the heater, or result in an electrical shock.
4. While there are no user serviceable parts, it is important to always turn off and unplug the system before starting any repairs or maintenance. An electric shock can result in serious injury or death.
5. Do not expose the unit to moisture or operate the unit with wet hands.
6. When finished, turn the power switch off and remove the AC power cord from the wall.
7. Do not modify the unit.



OPERATIONAL WARNINGS:

- To extend the life of the heating element, avoid using a *low air flow* and/or *high temperature continuously*. The heating element has a duty cycle of a maximum 20 minutes of continuous use. It is very important to ensure that the welding wand is placed back on its docking cradle in order to completely cool down between welding operations. Do not switch the fusion wand on while it is in the cooling stand. Failure to comply with these instructions may result in damage to the unit.
- Do not aim the hot air at your eyes or others as serious eye damage may occur.
- The fusion wand produces a lot of heat during operation. Do not allow the heater and nozzle to contact exposed skin as burns will occur.
- Death or serious injury may result from electric shock.
- The metal nozzle operates at a high temperature. Keep the hot air away from the body, clothes and flammable material when in operation. Do not touch the nozzle! Always replace the fusion wand to its original holder when not being use. The metal nozzle will remain hot for some time after being switched off.
- Do not block the nozzle, or it may overheat and damage the heating element.
- Do not leave the system unattended when it is powered on.
- Do not use if damaged: If the Fusion Plus+ becomes faulty, discontinue use immediately.
- Unplug the system power cord when not in use.

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PRODUCT FEATURES

- The solid state Fusion Plus+ electronic module features an intuitive lighted LCD touch screen display and precision microprocessor controlled heat/flow settings.
- A temperature sensor installed inside the heating element of the wand provides fast and accurate temperature control directly at the tip.
- The Fusion Pro Station is encased in a sturdy 580 pound capacity, 4-Drawer powder coated cart.
- System repair or service is made fast and easy. The integrated electronic module is a plug and play replacement that can be removed/replaced by the shop, on site in 5 minutes. Heating elements, air filters can all be replaced simply and easily.
- Auto-cooling design: When the Fusion Plus+ wand is placed in its docking cradle, the heater turns off and the flow of air automatically switches to high to cool the unit down rapidly.
- Constant feedback from the temperature sensor at the heating element automatically protects the product from an over temp condition.

DISPLAY FUNCTIONS & OPERATION

No.	FUNCTION	DESCRIPTION
1	Heating	Solid lit display indicates that the system is coming to temperature. When it flashes, the temperature is being maintained at the set temperature.
2	Cooling	In the auto cool down cycle, it indicates the decreasing temperature.
3	Standby	When this icon appears on screen it shows that they element is in standby mode, and the heat gun is at or near room temperature.
4	Set Temperature	Use the arrow buttons to set the temperature to a desired level, which is displayed here. CH0 is the default operating mode, 212 – 932 °F
5	Channel Preset	CH1, CH2, CH3 preset temperature setting accessed by pressing the button on the fusion wand.
6	Adjust Temperature/Air Flow	Press Up arrow ▲ to increase set temperature and air flow ,down arrow ▼ to decrease.
7	Display Temperature	This indicates the temperature at the fusion wand tip.
8	„Cal“ - Correction Value	Used to calibrate the heating element. The „Cal“ function is accessed from the SET button. This requires a precision thermometer.
9	Set & Enter	Press SET to activate Channel presets, and activate Cal function, and press ENTER to confirm the temperature once set.
10	Channel Preset Select	Press the button on the fusion wand to select Channels CH1 – CH3

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****From any preset CH setting, just tap the adjust temperature arrows and the CH0 'default' activates and remains the default channel for temperature control unless a channel preset is again activated by pressing the white button.**

OPERATING PROCEDURES

1. Ensure that the base unit power switch is in the “OFF” position.
2. Set fusion wand in the docking cradle.
3. Turn power switch to “ON” position. The LCD touchscreen will illuminate
4. Remove fusion wand from docking cradle. The system automatically powers up and defaults to the CH0 settings (CH0 is NOT a preset channel and has no memory storage but it can be manually changed to any combination of settings). Using the select button on the fusion wand will toggle through Channels 1-3 presets.
5. When the Display temperature reaches the desired Set temperature, the heating indicator light / symbols (sunlight icon) will flicker & flash, then maintain the set temperature. The unit is now ready for normal operation.

CHANNEL PROGRAMMING

Turn on the power switch at the back of the repair station.

The default setting during power up is CH0. Any combination of airflow and temperature can be selected by adjusting the appropriate settings with the up/down keys on the touch screen.

The pre-programmed settings are factory set for selections CH1-CH3. To select between the Channels, press the green button on the wand handle. Depressing the button repeatedly will cycle to the next channel.

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CH1. Temperature 302°F / Air Flow 100,
 CH2. Temperature 572°F / Air flow volume 120,
 CH3. Temperature 842°F / Air flow 180

PROGRAMMING

CH1 to CH3 are the three programmable settings



To set: Hold down the SET button on the screen and the green button on the wand handle simultaneously for two seconds. Once the indicator is released, the blue numbers 00 will start flashing.

This figure is used to reset the temperature. Use the ↑ and ↓ symbols below the CH to adjust the desired temperature. The adjustable temperature range is 212°F - 932°F.

Press the SET key to adjust the desired airflow for CH1. The digits will start to flash and the air volume can be adjusted from 0-200. Without adjustment, CH1 and the temperature will start to flash when you press the SET button.

Press the SET key again to adjust the temperature of CH2. Then press SET to adjust the air flow of CH2. Press SET to adjust the temperature of CH3. Press SET again to adjust the air flow of CH3. Press SET again to Switch between temperature readings in °C or °F. After all the changes have been entered, press ENTER again to store the program settings.

*****Note:** You cannot adjust airflow to zero. Generally the higher the temperature, the higher the airflow to prolong the life of the heating element.***

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Auto Off function

You can either place the fusion wand in the holder or you can press the green button for three seconds, the repair station will go into dormant state. The heater is turned off, the air flow goes to the maximum flow and the heater core is quickly cooled below 212°F, the screen shows a display of the moon. After the cooling cycle is complete, the fan stops running, and the repair station goes into a hibernation mode. To restart, press the wand button and cycle to the desired heat setting. Optionally, remove the fusion wand from the stand and it will start automatically.

Temporary Power Down Mode

Press the button on the fusion wand for at least 3 seconds or set the fusion wand in its stand. The heating element turns off and the cooling cycle begins, (indicated by the presence of the “snowflake” icon on the left of the screen). As the fusion wand cools down below 212°F, the icon will change to a half moon icon and the station will be in standby mode. The system will remain in this temporary power down state indefinitely, until the user removes the fusion wand from the stand.



CAUTION: REMEMBER, THE TIP IS HOT.

The tip and barrel of the fusion wand will cause serious burns if they are allowed to contact the skin. Always return the fusion wand to the docking cradle after each use. Plastic welders operate at high temperatures and can easily burn people or objects. Do not touch the tip and heater at any time and keep it a safe distance from flammable materials while the unit is on or while it's cooling. Please allow a sufficient time for the unit to cool before changing tips!

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Performing a repair

Please visit www.youtube.com and search for **Fusion Plus Plastic Welder** for step by step introduction on how to use this unit. If you have no access to the internet, please use the step by step instruction found below:

Pre-Operation:

1. Clean the repair area with warm soapy and water, and/or plastic cleaner
2. Identify plastic by ISO code on panel being repaired
3. Read the TDS/SDS for the repair materials
4. Match the base material type with the corresponding repair plastic.
5. Secure the bumper cover on a parts stand or holder

Operation:

1. Align the mating pieces together and secure with aluminum body tape on the front side of the repair area.
2. Confirm that the repair area is clean.
3. On the backside, sand the repair area with the recommended grit. (80-120 grit typically)
4. Use a grinder to taper in a V-shaped groove on the backside of the repair.
5. Set the fusion welder to the proper temperature for the plastic being repaired.
6. Using the hot air, preheat the beginning area of the weld joint to the point where the rod just begins to stick to the surface.
7. Start the weld approximately 6 mm ahead of the weld joint using slight downward pressure on the rod at a 90 degree angle to the repair surface. Allow the rod to flow into the weld joint, using a side to side motion for the flat rod, or an up/down motion for the round rod.
8. Press the repair rod into the plastic moving at a rate that allows the liquefied plastic to mix with the plastic being repaired. You should see a small wave of “wet” plastic ahead of the rod, flowing into the weld joint
9. Continue this process until both the width and length of the groove have been filled. More than one pass may be required to fill the repair area.
10. Allow the weld to cool.
11. Sand and feather edge the area to the surrounding contour. (not required on the backside if not visible)

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12. Remove the aluminum body tape on the front.
13. Confirm that the repair area is clean.
14. On the front side, sand the repair area with the recommended grit.
15. Use a grinder, taper in a V-shaped groove on the front side of the repair.
16. Backsand the repair area using 120 – 180 grit sandpaper
17. Set the fusion welder to the proper temperature for the plastic being repaired.
18. Lay down a small amount of welding rod into the V-groove using the hot air flow from the fusion wand, once again, starting slightly before the weld joint.
19. Press the repair rod into the plastic moving at a rate that allows the liquefied plastic to mix with the plastic under repair.
20. Continue this process until both the width and length of the groove have been filled. More than one pass may be required to fill the repair area.
21. Allow the weld to cool.
22. Remove the aluminum body tape (if applied in the first step).
23. Sand and feather edge to the surrounding contour.



Thank you for choosing Fusion plus Plastic Repair Station!

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