



INSTRUCTION MANUAL

This instruction manual is intended to be a guide when operating your custom engineered welder. To ensure optimal performance from your welder, please follow the recommendations and specifications precisely.

For more technical information regarding this machine call our Resolution Center at: 1-855-888-WELD or email service@weldmaster.com.

You can also subscribe to Miller Weldmaster Insiders to stay updated on tech tips, machine maintenance updates, and more at:

www.weldmaster.com/insiders.

330.833.6739

www.weldmaster.com





Table of Contents

Chapter 1: Intended Use	Page 3
Chapter 2: Electrical and Air Requirements	Page 4
Chapter 3: Explanation of Warnings	Page 5-6
Chapter 4: Principals of Heat Sealing	Page 7
Chapter 5: Operating Procedures	Page 8
Chapter 6: Shut Down Procedure	Page 9
Chapter 7: Heat System Adjustments	Page 10
Chapter 8: Definition of Controls	Page 11-15
Chapter 9: Definition of Pneumatics	Page 16
Chapter 10: Definition of Components	Page 17-18
Chapter 11: Maintenance	Page 19-22
Chapter 12: Troubleshooting	Page 23
Chapter 13: Spare Parts	Page 24
Chapter 14: Welding Tips	Page 25-26
Chapter 15: Notes	Page 27-30



1.0 Intended Use

The Miller 116 rotary hot wedge welder is intended to heat seal weldable Thermal plastics such as:

- Non-woven polypropylene
- Vinyl (PVC) laminated fabrics
- Vinyl (PVC) coated fabrics
- Vinyl (PVC) films
- Polyurethane (PU) coated fabrics
- Polyurethane (PU) films
- Polypropylene (PP) coated fabrics
- Polyethylene (PE)
- Thermoplastic Rubber (TPR) film
- Thermoplastic Rubber (TPR) fabrics
- Rigid Extruded Products

The manufacturer does not approve of any other uses for this machine.

The manufacturer does not approve of the removal of any safety guards while the 116 is in operation.

The manufacturer does not approve of any unauthorized modification of the 116.

Only a properly trained technician may operate the 116.

Only a properly trained technician may perform any routine maintenance to the 116.

Only a properly trained technician may perform any repairs to the 116 only manufacturer approved replacement parts are to be used for the 116.

The manufacturer will not be held liable for any damage or injuries occurring from any inappropriate use of this machine.



2.0 Electrical and Air Requirements

Warning! Only a qualified electrician may connect the electrical power electrical supply.

The Miller Weldmaster 116 welding line has the following electrical requirements:

- 220 volts
- 50 or 60 Hz
- 40 amperes

The Miller Weldmaster 116 welding line comes as a single or three phase machine. Please refer to the quote to determine which phase you have.

Shop air supply

The Miller Weldmaster 116 welding line machine includes an in shop air supply valve that allows quick connects and disconnects to your shop air supply. Due to the number of different style airline connectors, a male quick connect is not included. You will want to select a male quick connect with a ¼ inch NPT (National Pipe Thread) to match your female quick connect.

The Miller Weldmaster 116 welding line machine requires the following shop air requirements:

- Minimum of 100psi at 3 cubic feet per Minute.
- An in line water and dirt separator.

Safety notes

Do not adjust the material while the machine is moving. Keep hands, long hair, loose clothing, and articles such as neckties away from the rollers have pinch points rollers to avoid entanglement and entrapment that can trap body parts or clothing and cause serious injury. Provide enough space around machine to ensure the safe and effective operation. The machine must be motionless and moving parts blocked before any cleaning, oiling, adjusting, repairing or maintaining work is done on any repairing or maintaining work is done on any part of the machine. Always wear Personal protective equipment. (PPE) refers to protective clothing, helmets, goggles, or other garment designed to protect the wearer's body from injury.

3.0 Explanation of Warnings

There are several different warning symbols placed on the Miller Weldmaster 116. These symbols are to alert the operator of potentially hazardous areas on the machine. Familiarize yourself with their placement and meaning.



Caution Hot: The “Caution: Hot” symbol is placed on a guard near hot surfaces.



Danger: Pinch Points. The “Danger: Pinch Points” symbol is placed near any potential pinch points. Do not place any body parts near these sections of the machine while the machine is running



Caution: Unplug Machine. The “Caution: Unplug Machine” sticker is placed near the opening of the cabinet and all access panels. To prevent electrocution, the machine should always have the power disconnected before the cabinet door is open.

3.0 Explanation of Warnings



Warning: Keep Hands Clear: The “Warning: Keep Hands Clear” sticker is placed on the Heater Assembly. To prevent any pinching or burns, be aware of the location of your hands at all times.



Warning: High Temperature Air. The “Warning: High Temperature Air” sticker is placed on the Heater Assembly.



Caution: Electricity .The “Caution: Electricity” sticker is placed near areas that contain electrical components.



4.0 Principals of Heat Sealing

Hot Wedge:

The heat required for the welding operation is created electrically by heating elements located inside the wedge. Heat dissipates through the aluminum core of the wedge, to the contact area, applying heat to the material to be welded. The temperature ranges from 100 to 830 Degrees Fahrenheit or 25 to 450 Degrees Celsius

Speed:

The speed of the weld rollers determines the amount of time the heat is applied to the material being welded. The slower the speed setting the more the material will be heated. To achieve the best weld, a minimal amount of heat should be applied to the material while still achieving a full weld. Too much heat will cause distortion of the material while not enough heat will prevent the material from welding.

Pressure:

The pressure of the weld roller is the final step when creating a weld. The pressure of the weld roller compresses the heated material together completing the welding process.

Summary:

When heat sealing, the correct combination of heat, speed and pressure will allow you to achieve a properly welded seam.



5.0 Operating Procedures

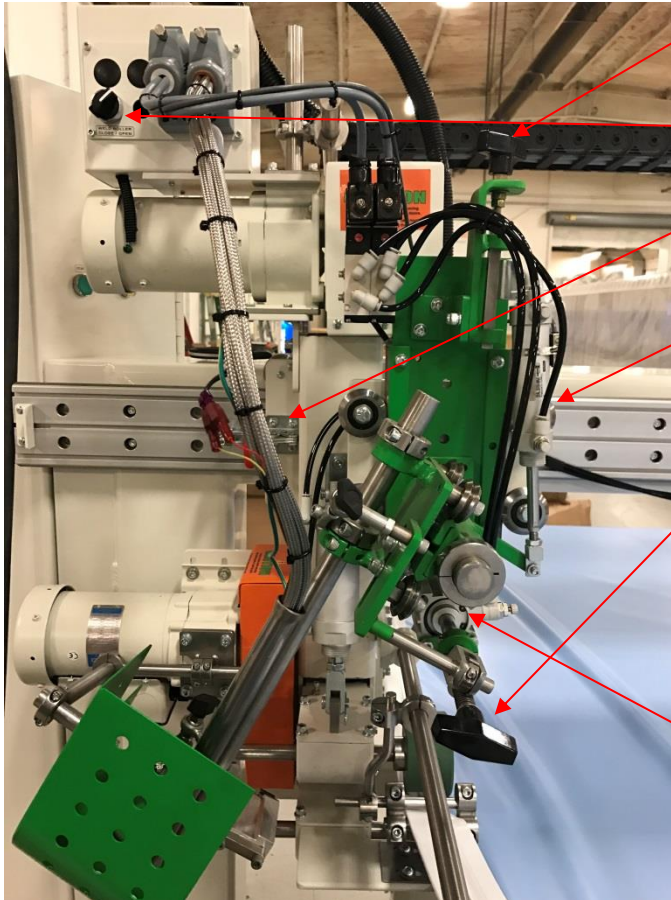
1. Insure that all cabinet doors are closed and locked.
2. Insure that all safety guards are in place.
3. Rotate the In shop air supply valve to the open position.
4. Turn the circuit breaker to the on position.
5. Press the blue reset button.
6. Turn on the heat.
7. Adjust the Temperature to the desired temperature.
8. Check for the proper alignment of the weld rollers. Make any adjustments necessary.
9. Check for the proper alignment of the fabric guides. Make any adjustments necessary.
10. Check for proper adjustment of the hot wedge.
11. Turn the Swing button to the on position.
12. Turn the Motor button to the on position.
13. Load all material that is needed for your welding operation onto the un-wind stands.
14. Properly place the material through the machine and turn the puller switch to the close position.
15. Turn on any remaining buttons that are needed to complete your welding operation.



6.0 Shut Down Procedure

1. Clamp the material to the output end of the machine. This ensures the material will be in the proper position for the next production.
2. Turn the Heat button to the off position. The Temperature Controller should shut off.
3. After the machine has shut off, turn the Circuit Breaker to the off position.
4. After the machine has shut off, rotate the In Shop Air Supply Valve to the off position.
5. Once the machine is turned off, rotate the shafts on the unwind, and or the rewind to top dead center and open the chucks. This will ensure the material will stay on the roll. If this isn't done there is a chance the roll of material will unwind spooling off on the floor. This could be a major problem because the machine runs under tension and rewinding the material back by hand could affect the performance of the machine.

7.0 Heat System Adjustments



Side to side adjustment Moves the wedge left and right to the weld rollers.

Weld roller open /close Opens and Closes the weld rollers.

Head locking clamp Locks the head unit in the proper welding position.

Upper unit air cylinder Moves the upper unit up and down applying pressure to the lower weld rollers.

In and out adjustment.

Moves the wedge in and out .Turning the adjustment knob clockwise moves the wedge in and counterclockwise moves the wedge out.

Up and down adjustment

Moves the wedge up and down. Turning the wedge adjustment knob clockwise , raises the wedge Turning the knob counter clockwise lowers the wedge.

8.0 Definition of Controls



Electric Disconnect: Will disconnect the machine from the power source if needed. This is also the lock out tag out point for the electrical source on the machine.



Emergency stop: This is used in an emergency situation only. This will stop all functions of the machine and take it to a safe state. This will shut power off to any moving part of the machine and will turn the heat to the off position.



Reset button: This button is used whenever the machine is turned on in the morning or an emergency stop button has been pressed. This is to signify the machine is clear and is able to start.



Start button. Starts motion to the machine.



Yellow pause button: Pauses the machine from running.

8.0 Definition of Controls



Edge Guide: This will turn on/off the material edge guide on the unwind stands. Used to keep material tracking straight into the machine.



Unwind On/Off: This will turn on and off the unwind stand.



Puller Off/On: This button will open and close the puller rollers.



Emergency Stop Light: This will be illuminated when an E-Stop is pushed.



Brake: The Air Brake Switches are used to turn on one or both of the air brake calipers. This is used to help control tension in the material.

8.0 Definition of Controls



Heat: The power switch turns the power On/Off to the hot wedge temperature controller.



Heat Swing Switch: The purpose of the wedge swing switch is to control the swing action of the wedge swing assembly. When the wedge swing switch is turned to the on position, the wedge will automatically swing into position for welding operation when the start button is pressed.



Conveyor Switch: This will turn on and off the motor drive for the conveyor

Footage counter: The footage counter switch turns the digital footage counter system on/off. When in the "on" position it gives power to all the footage counting functions.



Footage Counter: The Footage counter displays the length of the welded product. The switch turns the footage counter on/ off.

8.0 Definition of Controls



Temperature Controller: The Hot Wedge temperature controller regulates the temperature controller is the real time temperature of the wedge. The bottom number that is displayed on the displayed on the temperature controller is the set temperature or welding temperature. Use the up arrow to increase and the down arrow to decrease the temperature.



Hour Meter: The hour meter monitors the hours of use on your machine. The hour cannot be reset.



Drive Delay This controls the amount of time the machine waits to start pulling material through after we push the start button. This is to help reduce an unwelded spot or to reduce overheating at the push of the start button.



Drive: This will jog forward anything that is turned on.

8.0 Definition of Controls



Master Speed Control: This controls the overall speed of the machine; this is based on the upper weld roller speed.



Conveyor Sync: This controls the sync speed of the conveyor.



Upper weld roller: This controls the sync speed of the upper weld roller. This will control how much bead material is feed into the machine.



Weld Roller :The weld roller switch opens and closes the weld roller.

9.0 Definition of Pneumatics



Weld roller pressure: The purpose of the weld roller pressure regulator is to vary the amount of pneumatic pressure between the weld rollers.



Nozzle swing: Regulates the amount of air pressure used to swing the nozzle in and out.



Brake Pressure: The brake pressure regulates the amount of air pressure supplied to the air brake which holds tension onto the material.

10.0 Definition of Components



Unwind stand: The unwind stands are designed to pay off the material at a controlled rate of speed to allow for material tension into the welding heads.



Pinch Roller: The output pullers are equipped with a driven nip roller. The upper nip roller will open and close.

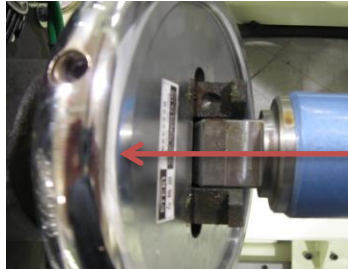


Footage counter: When in place allows the machine to count how much material has been run.



Slitter: This can be used to cut the material to width.

10.0 Definition of Components



Push here to open safety chuck.

Safety Chuck The Safety Chuck allows for quick change of material. Pressing on the top of the Safety Chuck we allow it to snap open so that the shaft may be removed or inserted. Once the shaft is inserted press against the top of the safety chuck to close it.

Removing the shaft. To remove the shaft you must have the safety chuck top dead center to open. To open rotate the shaft to where the opening of the safety chuck is top dead center. Next you must open the turn handle. Once both safety chucks have been open use a Crain or a fork lift to remove the shaft.



Adding and removing air from the shaft. To add and remove the air from the shaft you must use the air nozzle to inflate the shaft to lock the core in place to rewind the material. To remove the air push down on the valve till all the air is released from the shaft.

Air Break: The air brake holds constant tension on the material as it is fed into the machine.

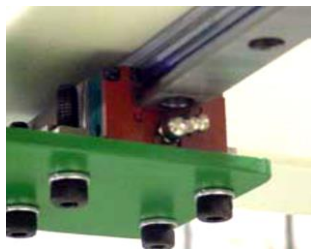
11.0 Maintenance

Bearings

The Miller Weldmaster 116 has several bearings, although not a high maintenance item, bearings should be inspected once a month to ensure there is not excessive corrosion, rust, or dirt. Also inspect for any looseness or wear. If needed, lubricate bearings once every 6 months with 80w – 90w gear oil.

WARNING! Only a qualified technician may perform maintenance on this machine. This may be a Miller Weldmaster representative or someone trained by a Miller Weldmaster representative.

WARNING! Machine must be disconnected from power source before any maintenance can be done. Inspect once a month to ensure there is not excessive corrosion, rust, or dirt. Also inspect for any looseness or wear. If needed, lubricate bearings once every 6 months with 80w – 90w gear oil.



Linear slide



Pillow block



Flange bearing

WARNING! Only a qualified technician may perform maintenance on this machine. This may be a Miller Weldmaster representative or someone trained by a Miller Weldmaster representative.

WARNING! Machine must be disconnected from power source before any maintenance may begin.



11.0 Maintenance

Chains

The machine has several chains that are used to drive weld rollers. Although not a high maintenance item, chains should be inspected once a month to ensure there is not excessive corrosion, rust, or dirt. Also inspect for any looseness or slack. If needed, lubricate chains once a month with 80w – 90w gear oil. The upper units weld roller drive chain

1. Turn the circuit breaker to the off position.
2. Disconnect the power cord from the power supply. If the power cord is hard wired, shut the power supply off at the junction box.
3. Locate the Chain lubrication hole on the upper weld roller assembly. If needed, apply a few drops of oil to the chain through the lubrication hole.

11.0 Maintenance

Heater Relay

The Heater Relay acts as an interpreter between the Thermocouple and the Temperature Controller. Generally the Heater Relay will last several years. The Heater Relay should be replaced if the machine is experiencing erratic temperatures on the Temperature Controller or The Heat Elements are burning out prematurely.

WARNING! Only a qualified technician may perform any maintenance on machine. This may be a Miller Weldmaster representative or someone trained by a Miller Weldmaster representative.

WARNING! Machine must be disconnected from power source before any maintenance may begin.

Disconnect the power cord from the power supply. If the power cord is wired into the power supply, turn the power off at the junction box.



Unlock and open the control box door on the machine. Locate the Heater Relay located on the aluminum heat sink.



Remove the plastic cover and disconnect the 4 wires connected to the Heater Relay noting their location.



11.0 Maintenance

Remove the 2 mounting bolts and remove the Heater Relay.



Install the new Heater Relay using the 2 mounting bolts.



Reconnect the 4 wire leads to the Heater Relay. Yellow #0 to terminal 4, white neutral to terminal 3, red #3 to terminal 1, and red to terminal 2.



Close and lock the rear cabinet door.





12.0 Troubleshooting

Trouble Shooting your Model 116 **Frequently Asked Questions**

Not a good Weld?

Check heat, speed, and weld roller pressure and wedge placement. The tension on the unwind stands could affect the welding also.

I am burning a hole each time I start?

The drive delay time is set to high.

I have an unwelded part between the start and stop.

The drive delay time is set to low.

The material is not flowing through the guide smoothly?

Check alignment of each guide.

When I turn the power switch on the power doesn't seem to come on?

Check to see that the breaker is in the on position, Make sure the shop airline is connected to the machine and the valve is turned to open. Check each e-stop button looking to see if any had been pressed. Upon finding an e-stop button that has been pressed check to make sure the machine is in a safe operable condition and all persons are standing clear. Twist the e-stop button clockwise to release it. Press the reset button on the main control panel.

I have the motor button is turned to the on position and when I hit start it does not move?

Have an Electrician look into the control box to see that all inverters read ready.

The temperature will not heat up?

Have an Electrician check the fuse on the heater relay ensuring that it has not burned out. Check the heat elements, ensuring that they have not burned out. If all fuses and heat elements are good replace the heater relay.

The material isn't moving through the machine.

Check to make sure the puller is closed.

The material won't stay in the guide

Check the brake pressure on the unwind stand



13.0 Spare Parts

Recommended Replacement Parts

Miller Weldmaster can ship in stock parts to you within 24 hours of your order. However Miller Weldmaster recommends keeping wearable parts in stock to eliminate down time.

Miller Weldmaster recommends keeping the following quantities of spare parts in stock:

14.0 Welding Tips



Bad Weld This is not a good weld. Although the fabric is somewhat welded, it is not what would be considered 100%. One of two things must happen for this weld to become accepted. Either the speed must be decreased or the heat must be increased.



Good Weld This is a good weld. The fabric is welded 100%. You can see that the fabric is delaminating over the entire width of the seam.



Upper Weld Roller going To Slow This is an example of the upper weld roller going too slow. The green panel goes through the left side of the welder and the yellow panel goes through the right side. The upper weld roller is going slower than the bottom weld roller. This shows in the wrinkling of the bottom or left panel. The Upper Weld Roller clutch pressure needs to be increased.

14.0 Welding Tips



Upper Weld Roller going To Fast This is an example of the upper weld roller going too fast. The green panel goes through the left side of the welder and the yellow panel goes through the right side. The upper weld roller is going faster than the bottom weld roller. This shows in the wrinkling of the upper or right panel. The Upper Weld Roller clutch pressure needs to be decreased.



Too Much Shrinkage This is an example of too much shrinkage in the material. Many thermoplastics tend to shrink when heated. This is caused by overheating.



Perfect Seam This is an example of a perfect seam. There is no waviness, wrinkles, or puckers.

