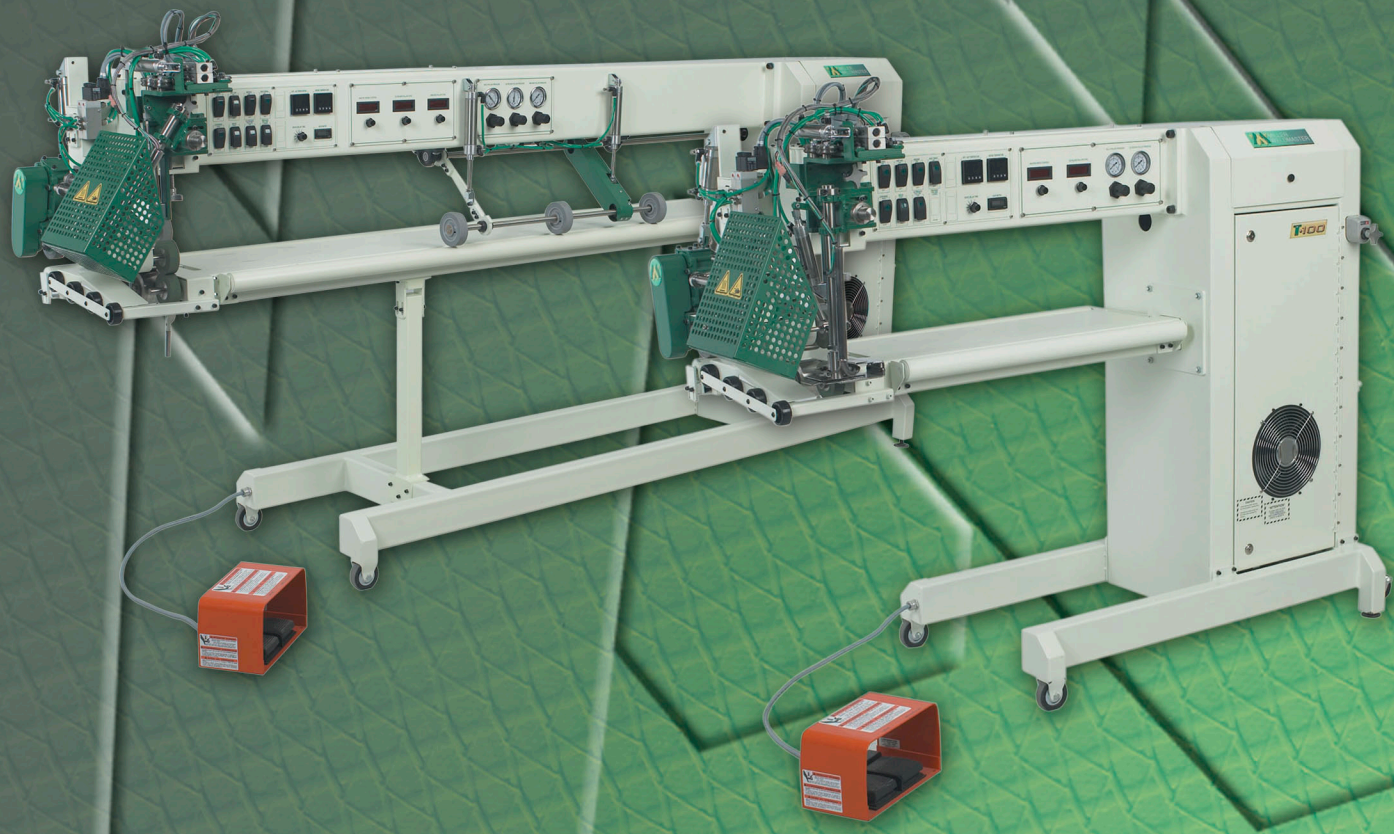
The Miller Weldmaster T-100 / T-500 Manual



Chapter 1: Machine Overview

Section 1.1: Intended Use

The T-500 and T-100 are rotary hot air welders intended to heat seal weldable thermal plastics such as:

-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

-Non-woven Polyester

-Non-woven Polypropylene

-Various Fusing Tapes

-Weldable Webbing

-Rigid Extruded Products

- The manufacturer does not approve of any other uses for these machines.
- The manufacturer does not approve of the removal of any safety guards while in operation.
- The manufacturer does not approve of any unauthorized modification of the machines.
- Only a properly trained technician may operate the T-500 and T-100.
- Only a properly trained technician may perform any routine maintenance to the T-500 and T-100.

- Only a properly trained technician may perform any repairs to the T-500 and T-100.
- Only manufacturer approved replacement parts are to be used for the T-500 and T-100.

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

Section 1.2: Electrical and Air Requirements

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

Module 1.2.1: Electrical Supply

The Miller Weldmaster T-500 and T-100 includes a power cord that is approximately 6 feet in length. Due to the number of different style outlets available, the cord will not include a plug. You may choose to have your power cord hard wired into your power supply. It is recommended that your electrician use a junction box with an on/off switch.

The Miller Weldmaster T-500 and T-100 are available in both single phase and three phase power, refer to your quotation for this specification.

The Miller Weldmaster T-500 and T-100 require the following electrical requirements:

- 208/240 volts
- 50Hz or 60Hz
- 40 amperes

If using the Miller Weldmaster T-500 and T-100 with a carriage, this requires the following electrical requirements:

- 208/240 volts
- 50Hz or 60Hz
- 60 amperes

Module 1.2.2: Shop Air Supply

The Miller Weldmaster T-500 and T-100 include 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 T-500 and T-100 require the following shop air requirements:

- Minimum of 65 psi at 3 cubic feet per minute.
- Not to exceed 125 psi.
- An in line water and dirt separator.
- It is not recommended to use an oiler for the air supply.

Section 1.3: Principles of Heat Sealing

Module 1.3.1: Heat

Hot Air

The heat required for the welding operation is created electrically by two heating elements located inside the heat element housing. The internal air compressor pumps air over the heat elements and carries the heat through the hot air nozzle, applying the heat to the material to be welded. The hot air temperature ranges from 100 to 1350 Degrees Fahrenheit or 25 to 730 Degrees Celsius.

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 900 Degrees Fahrenheit or 25 to 490 Degrees Celsius.

Module 1.3.2: 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 less heat needed to be applied to the material. The faster the speed setting, the more heat will have to be applied to the material. 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.

Module 1.3.3: Pressure

The pressure of the weld rollers is the final step when creating a weld. The pressure of the weld rollers compresses the heated

material together completing the welding process.

Module 1.3.4: Summary

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

Section 1.4: Transportation, Specifications, and Storage

Warning! It is recommended to use a forklift when moving a crated machine or removing crated machine from pallet.

Module 1.4.1: Transporting Within Production Facility

Due to the weight of the Miller Weldmaster T-500 and T-100, the manufacturer requires a forklift or tow motor to be used. The forks are to be inserted below the bottom frame along the center of gravity. Lift slowly to insure proper placement of forks.

Figure 1.1: T-100

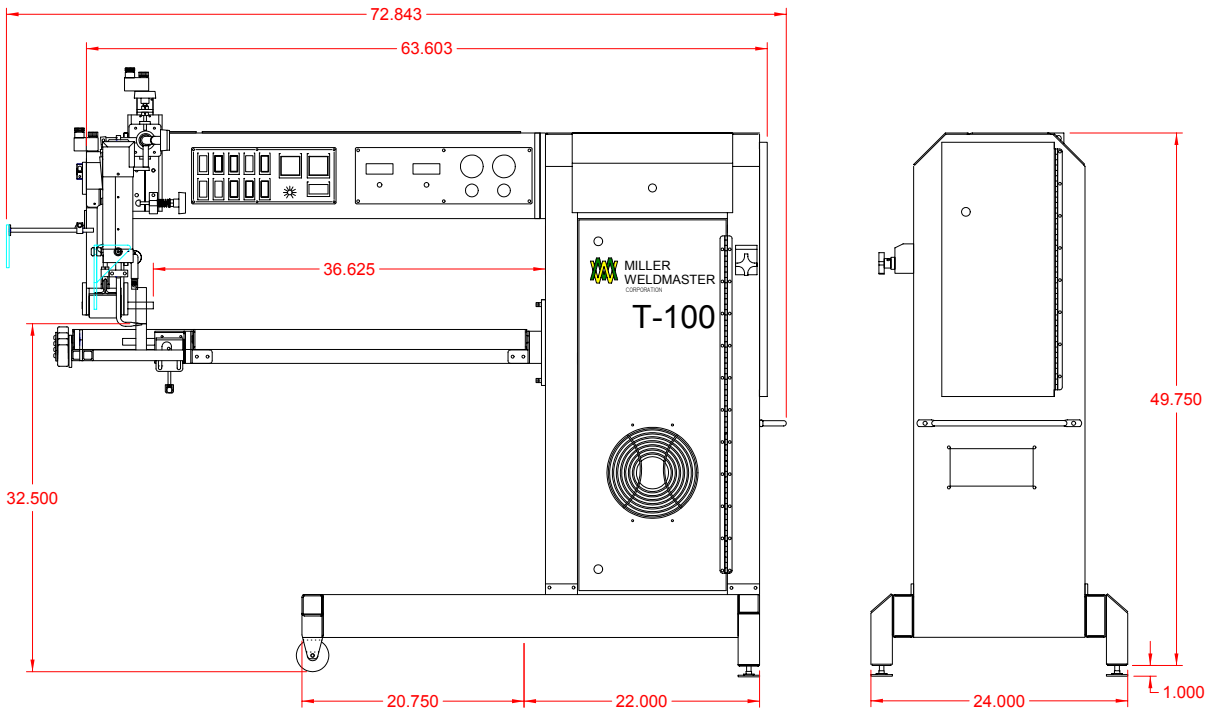
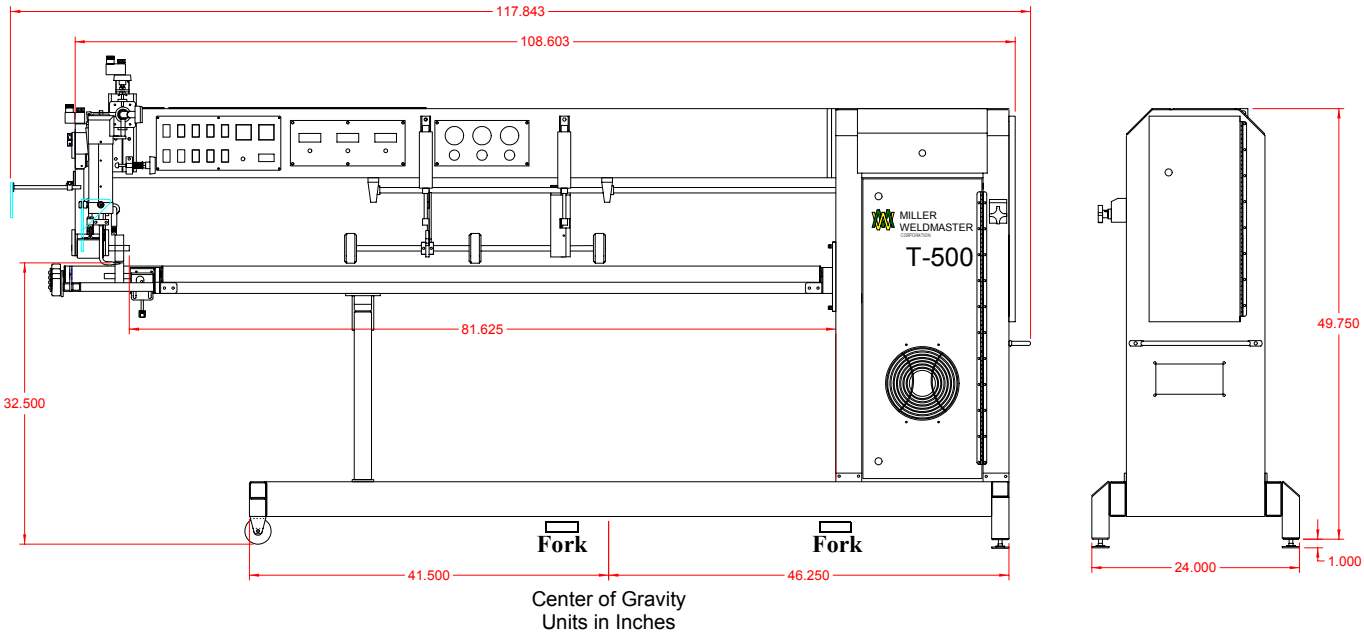


Figure 1.2: T-500



Module 1.4.2: Transporting Outside Production Facility

The manufacturer requires the Miller Weldmaster T-500 and T-100 be placed on a pallet using a forklift or tow motor. The forks are to be inserted below the bottom frame along the center of gravity. Secure the machine to the pallet. To protect the various controls and features, crate the machine. When loading into a truck for transportation, use a forklift or tow motor.

Module 1.4.3: Storage

The manufacturer recommends that any time the machine is not in use, it must be protected from excess dust and moisture.

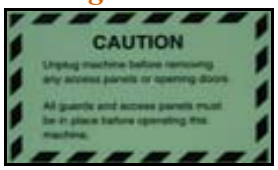
Table 1-1:

Specifications	T-100	T-500
Approximate Weight	510 lbs	780 lbs
Approximate Crated Weight	800 lbs	1090 lbs
Crated Width	32 in	32 in
Crated Length	75 in	120 in
Crated Height	65 in	65 in
Noise level during operation	90 dB(A)	90 dB(A)

Section 1.5: Explanation of Symbols

There are several different warning symbols placed on the Miller Weldmaster T-500 and T-100. These symbols are to alert the operator of potentially hazardous areas on the machine. Familiarize yourself with the their placement.

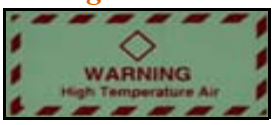
Figure 1.3:



Caution, Unplug Machine…

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

Figure 1.4:



Warning, High Temperature Air…

The Warning High Temperature Air sticker is placed on the Heater Assembly. The T-500 and T-100 are capable of temperatures reaching 1350 degrees F.

Figure 1.5:

Caution, Do Not Apply Stress...

The Caution, Do Not Apply Stress sticker is placed on the Heater Assembly. Do not apply any unnecessary force on this part of the T-500 and T-100.

Figure 1.6:

Pinch Points...

The Pinch Point decal is placed on the protective guard of the T-100 and T-500. The symbol is to alert the user of the pinch point of the two weld rollers.

Figure 1.7:

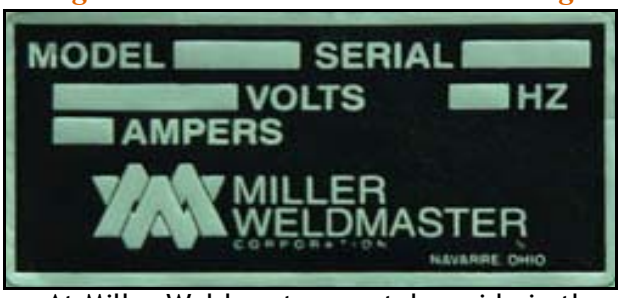
Heat...

The Heat decal is placed on the protective guard of the T-100 and T-500. The symbol is to alert the user of the hot air or hot wedge.

About Your Miller Weldmaster

Each Miller Weldmaster has this sticker located on the rear of the machine. It identifies the model number and serial number of each welder. It will also state the voltage, amperes, and hertz required for operation.

Figure 1.8: Model & Serial Number Tag



At Miller Weldmaster, we take pride in the quality and craftsmanship that goes into each machine. Each welder is built specifically to your needs. Each technician that helped to manufacture your welder is proud to leave his or her signature.

Figure 1.9: Quality Control Sticker

NOTE: Contact information is listed here, for your convenience.

Section 1.6: Controls: Purposes and Functions

Figure 1.10:
Circuit Breaker

Circuit Breaker

The purpose of the Circuit Breaker is to protect the machine if a short were to occur somewhere in the system. It is also used to disconnect the machine from the power source if needed.

Flipped to the on position, the Circuit Breaker will supply the machine with electricity for operation.

Flipped to the off position, the Circuit Breaker will prevent the supply of electricity to the machine.

Figure 1.11:
In Line Shop Air Valve

In Line Shop Air Valve

The purpose of the In Shop Air Supply Valve is to connect and disconnect the shop air supply to the machine.

Turned to the open position as shown *(Figure 1.11)*, shop air will run the pneumatics of the machine.

Turned to the off position, shop air will be cut off from the machine. This will disable the machine from working properly.

Figure 1.12:
Weld Roller Foot Switch

Weld Roller Foot Switch

The purpose of the Weld Roller Foot Switch is to control the raising and lowering of the weld rollers.

Engaging or depressing the Weld Roller Foot Switch will raise the top weld roller assembly.

Disengaging or releasing the Weld Roller Foot Switch will lower the top weld roller assembly in a controlled manner.

Figure 1.13:
Drive Foot Switch

Drive Foot Switch

The purpose of the Drive Foot Switch is to begin and end the welding process. When the Drive Foot Switch is depressed, the heat source will swing into place and the weld rollers and puller rollers will begin to turn.

When the Drive Foot Switch is released, the heat source will return to the static position and the weld rollers and puller rollers will cease to rotate.

Figure 1.14:
Power Switch

Power Switch

The purpose of the Power Switch is to turn the machine on and off.

When using hot air, if the Power Switch is turned to the on position, the internal air compressor will run if the drive system is ready for operation.

When using hot wedge if the Power Switch is turned to the on position, the drive system is ready for operation.

When using hot air and the Power Switch is turned to the off position, the machine will continue to run for approximately 3 minutes through a cool down cycle and then automatically shut off.

When using hot wedge and the Power Switch is turned to the off position, the machine will immediately shut off

Figure 1.15:
Hot Air Switch

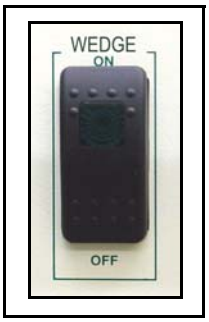
Hot Air Switch

The purpose of the Hot Air Switch is to control the power supply to the hot air temperature controller, which generates heat from the heat elements.

When the Hot Air Switch is turned to the on position, the temperature controller will be activated and begin raising the temperature to the preset temperature. It will take approximately 3-5 minutes for the temperature to reach the set point.

When the Hot Air Switch is turned off, the hot air temperature controller will shut down and power will be removed from the heat elements.

Figure 1.16:
Wedge Switch



Wedge Switch

The purpose of the wedge switch is to control the power supply to the wedge temperature controller, which generates heat to the wedge.

When the wedge switch is turned to the on position, the wedge temperature controller will be activated and begin raising the temperature to the preset temperature. It will take approximately 3-5 minutes for the wedge to reach the set point.

When the wedge switch is turned off the wedge temperature controller will shut down and power will be removed from the wedge.

Figure 1.17:
Heat Swing Switch

Heat Swing

The purpose of the Heat Swing Switch is to control the swing action of the heat swing assembly.

When the Heat Swing Switch is turned to the on position, the heat source will automatically swing into position for welding operation when the Drive Foot Switch is depressed.

When the Heat Swing Switch is turned to the off position, the heat source will remain in the static position when the Drive Foot Switch is depressed.

Figure 1.18:
Drive Switch

Drive Switch

The purpose of the Drive Forward/Reverse Switch is to control the rotational direction of the weld rollers and puller rollers.

When the Drive Switch is turned to the forward position, the weld rollers and puller rollers will rotate in the welding direction, when the Drive Foot Switch is depressed.

When the Drive Switch is turned to the reverse position, the weld rollers and puller rollers will rotate in the opposite or reverse direction when the Drive Foot Switch is depressed. The hot air nozzle will not swing into position in the reverse setting. The hot wedge however, will for maintenance purposes.

Figure 1.19:
Override Switch

Override Switch

The purpose of the Override Switch is to engage the complete welding process without using the Drive Foot Switch.

When the Override Switch is turned to the run position, the heat source will swing into place and the weld rollers and puller rollers will turn for welding operation, as if the Drive Foot Switch were depressed.

When the Override Switch is turned to the stop position, the heat source will swing out and the weld rollers and puller rollers will cease to rotate, stopping the welding operation as if the Drive Foot Switch were released.

Figure 1.20:
Outboard Puller Switch

Outboard Puller Switch

The purpose of the Outboard Puller Switch is to control the Outboard Puller Assembly, which assists moving material from the welding area, in conjunction with the double roller beam.

When the Outboard Puller Switch is turned to the on position, the Outboard Puller Assembly will automatically lower into the pulling position and the puller rollers will rotate when the Drive Foot Switch is engaged.

When the Outboard Puller Switch is turned to the off position, the Outboard Puller Assembly will remain in the raised position when the Drive Foot Switch is engaged. The puller rollers will not rotate.

Figure 1.21:
Inboard Puller Switch

Inboard Puller Switch

The purpose of the Inboard Puller Switch is to control the Inboard Puller, which assists feeding material into the welding area, in conjunction with T-500 welders with a double roller beam.

When the Inboard Puller Switch is turned to the lower position, the inboard puller assembly will automatically lower itself to the pulling position. The rollers will turn when the Drive Foot Switch is engaged.

When the Inboard Puller Switch is turned to the raise position, the Inboard Puller Assembly will return to the raised position. The puller rollers will not rotate when the Drive Foot Switch is engaged.

Figure 1.22:
Master Speed Control

Master Speed Control

The purpose of the Master Speed Control is to control the speed of the weld rollers and puller rollers during the welding process.

By turning the Master Speed Control dial clockwise, the speed of the weld rollers and puller rollers will increase.

By turning the Master Speed Control dial counter clockwise, the speed of the weld rollers and puller rollers will decrease.

Outboard Puller Sync

The purpose of the Outboard Puller Sync Control is to synchronize the outboard puller rollers to the weld rollers. The Outboard Puller Sync numbers are only used as a reference and do not have any relationship and should not match the master speed control settings.

By turning the Outboard Puller Sync Control dial clockwise, the Outboard Puller will increase in speed in relation to the weld rollers.

Figure 1.23:
Inboard Puller Sync

By turning the Outboard Puller Sync Control dial counterclockwise, the Outboard puller will decrease in speed in relation to the weld rollers.

The Master Speed Control for the machine determines the overall speed of the weld rollers and puller rollers. The speed ratio between the weld rollers and puller rollers will remain the same whether increasing or decreasing the Master Speed Control.

Inboard Puller Sync

The purpose of the Inboard Puller Sync Control is to synchronize the inboard puller rollers with the weld rollers. The Inboard Puller Sync numbers are only used as a reference and do not have any relationship and should not match the Master Speed Control settings.

Figure 1.24:
Weld Roller Pressure

By turning the Inboard Puller Sync Control dial clockwise, the Inboard Puller will increase in speed in relation to the weld rollers.

By running the Inboard Puller Sync Control dial counterclockwise, the Inboard Puller will decrease in speed in relation to the weld rollers.

The Master Speed Control for the machine determines the overall speed of the weld rollers and puller rollers. The speed ratio between the weld rollers and puller rollers will remain the same whether increasing or decreasing the Master Speed Control.

Weld Roller Pressure

The purpose of the Weld Roller Pressure Regulator is to vary the amount of pneumatic pressure between the weld rollers.

By turning the Weld Roller Pressure Regulator clockwise, the pressure between the weld rollers will increase.

Figure 1.25:
Outboard Puller Pressure

By turning the Weld Roller Pressure Regulator counterclockwise, the pressure between the weld rollers will decrease.

Outboard Puller Pressure

The purpose of the Outboard Puller Pressure Regulator is to vary the amount of pneumatic pressure on the outboard puller rollers.

By turning the Outboard Puller Pressure Regulator clockwise, the pressure of the Outboard Puller will increase.

By turning the Outboard Puller Pressure Regulator counterclockwise, the pressure of the Outboard Puller will decrease.

NOTE: Whenever decreasing the pressure you need to drop the pressure to 0 psi then move to your desired pressure, which is usually 30 psi.

Figure 1.26:
Inboard Puller Pressure

Inboard Puller Pressure

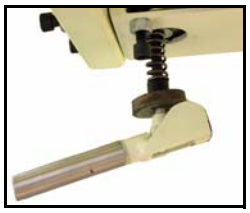
The purpose of the Inboard Puller Pressure Regulator is to vary the amount of pneumatic pressure on the inboard puller rollers.

By turning the Inboard Puller Pressure Regulator clockwise, the pressure of the Outboard Puller will increase.

By turning the Inboard Puller Pressure Regulator counterclockwise, the pressure of the Outboard Puller will decrease.

NOTE: Whenever decreasing the pressure you need to drop the pressure to 0 psi then move to your desired pressure, which is usually 30 psi.

Figure 1.27:
Rear Roller Tensioner



Rear Roller Tensioner

The purpose of the Rear Roller Tensioner is to stretch material that shrinks due to the heat from the welding process, in conjunction with the double roller welding arm. Engaging the Rear Roller Tensioner Lever to the vertical position will apply pressure between the two rear rollers.

By turning the Rear Roller Tensioner Lever clockwise, the pressure between the Rear Rollers will increase, causing more stretch in the material.

By turning the Rear Roller Tensioner Lever counterclockwise, the pressure between the Rear Rollers will decrease, causing less stretch in the material.

Figure 1.28:
Upper Weld Roller Sync

Upper Weld Roller Sync/Vari-Drive

Every Miller Weldmaster T-500 and T-100 comes with some type of Upper Weld Roller Sync Control. It may have a digital Upper Weld Roller Sync Control, or it will have a mechanical Vari-Drive Control.

- The purpose of the Upper Weld Roller Sync Control and the Vari-Drive is to vary the synchronization between the upper and lower weld rollers.

By increasing the Upper Weld Roller Sync or the Vari-Drive, the upper weld roller speed will increase in relation to the lower weld roller.

Figure 1.29:
Vari-Drive

By decreasing the Upper Weld Roller Sync or the Vari-Drive, the upper weld roller speed will decrease in relation to the lower weld roller.

Chapter 2: Heating System Overview and Adjustments

Section 2.1: Hot Air Heating System

Nozzle placement is a key component in heat sealing. A properly placed nozzle will be centered on the weld rollers approximately 1/4 - 1/2 inches away and have a slight whistle during the welding process.

WARNING! The Hot Air Heating System near the Nozzle and the Nozzle Clamp is very hot and will cause burning if not allowed to cool before handling. Turn the Heat and Power Switches to the off position and allow the Hot Air Heating System to cool for at least 30 minutes before touching with bare skin. Length of time may vary depending on ambient temperature and environmental conditions.

Adjusting Nozzle

When an adjustment is needed, set the desired Weld Roller pressure (or P.S.I.) and turn the Speed Control to the lowest setting. Make the adjustment, and then check the Nozzle placement by engaging the Drive Foot Switch.

The angle of the Nozzle must be adjusted after the machine has cooled down to avoid personal injury. While all other Nozzle adjustments must be made after the machine has been brought up to welding temperature.

The Weld Roller Pressure and the temperature of the Nozzle both play an important role in the placement of the Nozzle. Varying Weld Roller Pressure (or P.S.I.) will change the position of the Weld Roller Pinch Point causing the Nozzle to become misaligned. The Nozzle placement will also change when welding at different temperatures. As the temperature increases, the Nozzle expands lowering it's position on the Weld Rollers. As the Temperature decreases, the Nozzle contracts raising it's position on the Weld Rollers. Check the placement of the Nozzle when the temperature is changed more than 200 degrees F (93 degrees C) or the Weld Roller Pressure is changed more than 10 p.s.i.

NOTE: Every 200° F change in temperature will require realignment of Nozzle.

Adjusting Nozzle Angle

The Nozzle angle is the angle at which the Nozzle Tip is blowing air in at the Weld Rollers. This relationship should be parallel so that air flow is directed into the Weld Roller Pinch Point. Having the angle of the Nozzle misaligned will cause the fabric to become overheated leaving the seam under heated and unwelded. Before proceeding with adjusting the angle you must be certain that the temperature of the Nozzle is cool to the touch. Turn the Heat Switch to the off position and wait for the machine to cool down. Depress the Drive Foot Switch to swing Nozzle into place and check angle of the Nozzle. If not properly placed, (Figure2.1) release the Drive Foot Switch to swing Nozzle out and proceed with the following:

The angle of the Nozzle must be adjusted after the machine has cooled down to avoid personal injury.

Figure 2.1:

Figure 2.2:

1. Turn the Override Switch to the on position which will swing the Nozzle into place so that the angle can be adjusted.
2. Loosen the Nozzle Clamp enough to let the Nozzle rotate but not become disconnected. (Figure2.2)
3. Rotate the Nozzle accordingly so that the angle of the Nozzle Tip is parallel with the Weld Rollers
4. Tighten the Nozzle Clamp so that the Nozzle is held securely in place forming a tight seal around the ball end of the Nozzle and the Dual Element Housing. (Figure2.2) Check to see if the proper adjustment of the Nozzle has been made. (Figure2.3) Repeat steps 1 through 4 until correct.

Figure 2.3:

Preliminary Steps Before Adjusting The Nozzle

Below are the steps that need to be taken before adjusting the nozzle

NOTE:The Nozzle angle must be adjusted prior to step 1 while the Nozzle is cold to avoid personal injury. (See "Adjusting Nozzle Angle" on page 2-2.)

Figure 2.4:

1. Preheat the Hot Air Heating System to the desired welding temperature by turning the Power and Heat Switches to the on position. The Nozzle will expand as the temperature is increased changing its position on the Weld Rollers.
2. Set the Weld Roller Pressure to desired setting, so that the Weld Roller Pinch Point is set. (Figure2.4)

Figure 2.5:

3. Turn the Master Speed Control to “000” to insure the Weld Rollers will not turn. (Figure2.5)
4. Depress the Drive Foot Switch to swing Nozzle into place and insure it will not hit the Weld Rollers. If the Nozzle should hit, release the Drive Foot Switch and turn the Depth Adjustment Knob counter clock-wise to move the Nozzle back away from the Weld Rollers so it does not hit.

Figure 2.6:

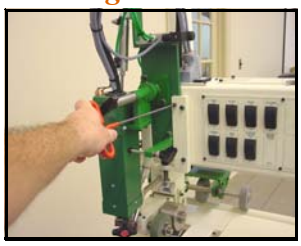
5. Turn the Master Speed Control to “100” to activate the Weld Rollers. (Figure2.6)

Nozzle Height

The Nozzle Height is the vertical relationship that the Nozzle Tip has with the Weld Rollers. The ideal height of the Nozzle Tip will be vertically centered between the Weld Rollers so that the Air flow is directed into the pinch point. If the Nozzle is to high or to low, welding speeds will not be as efficient as possible and may cause the fabric to be ascetically overheated. Depress the Drive Foot Switch to swing the Nozzle into place and check the height of the Nozzle Tip. If not properly placed, **(Figure2.7)** release the Drive Foot Switch to swing Nozzle out and proceed with the following:

Figure 2.7:

Figure 2.8:



1. The Front Locking Bolt must be loosened before adjustments can be made.Use a 3/16" Allen Wrench to loosen the Front Locking Bolt. The bolt should be just loose enough to allow for the height of the Nozzle to be adjusted. **(Figure2.8)** **(Figure2.9)**

2. Adjust the height of the Nozzle so that it is vertically aligned with the Weld Roller Pinch Point by turning the Height Adjustment Knob. **(Figure2.9)**

    a. clockwise to adjust the Nozzle up.

    b. counterclockwise to adjust the Nozzle down.

3. Depress the Drive Foot Switch to swing Nozzle into place and check to see if the proper height adjustment of the Nozzle has been made. **(Figure2.10)** Repeat steps 1 through 3 until correct.

4. Tighten the Front Locking Bolt.

5. Re-check the nozzle alignment once the bolt is tightened, as slight movement may occur.

Figure 2.9:

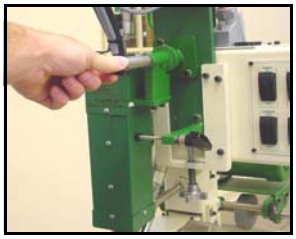
Figure 2.10:

Depth of Nozzle

The depth of the Nozzle is the distance that the Nozzle Tip is away from the Weld Roller Pinch Point, which is a very important factor when welding. The optimal distance is 0.25" to 0.50" away from the Weld Roller Pinch Point. Having the Nozzle too close to the Weld Rollers may result in the material contacting the Nozzle and burning the fabric, or cause the nozzle to be dragged into the rollers and cause damage to the nozzle. Having the Nozzle too far away may result in slower welding speeds. Depress the Drive Foot Switch to swing Nozzle into place and check the distance. If not properly placed, **(Figure2.11)** release the Drive Foot Switch to swing the Nozzle out and proceed with the following:

Figure 2.11:

Figure 2.12:



1. Adjust the depth of the Nozzle so that it is 0.25" to 0.50" away from the Weld Rollers by turning the Depth Adjustment Knob. **(Figure2.12)**

    a. clockwise to adjust the Nozzle in toward the Weld Rollers.

    b. counterclockwise to adjust the Nozzle back away from the Weld Rollers.

2. Depress the Drive Foot Switch to swing Nozzle into place and Check to see if the proper depth adjustment of the Nozzle has been made. **(Figure2.13)** Repeat steps 1 and 2 until correct.

Figure 2.13:

Nozzle Left/Right Alignment

The left/right alignment is the horizontal relationship the Nozzle has with the Weld Rollers. The center of the Nozzle must be placed directly in the center of the Weld Rollers. Having the Nozzle shifted to one side or the other will result in the weld being shifted to the side that the Nozzle is favoring leaving the opposite side unwelded. Depress the Drive Foot Switch to swing the Nozzle into place and check the left/right alignment. If not properly placed, **(Figure2.14)** release the Drive Foot Switch to swing the Nozzle out and proceed with the following:

Figure 2.14:

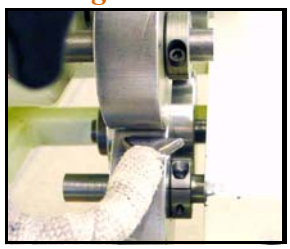


Figure 2.15:

1. Adjust the left/right alignment so that the Nozzle is centered on the weld rollers, by turning the Left/Right Nozzle Adjustment Knob. **(Figure2.15)**

    a. clockwise to adjust the Nozzle to the left

    b.counterclockwise to adjust the Nozzle to the right

2. Depress the Drive Foot Switch to swing the Nozzle into place and Check to see if the proper adjustment of Nozzle has been made. **(Figure2.16)** Repeat steps 1 and 2 until correct

Figure 2.16:

Section 2.2: Wedge Adjustment

The placement of the Wedge is the most important part in Hot Wedge Welding. A properly placed Wedge will be centered on the weld rollers from top to bottom as well as left to right and have the correct angle, tilt and depth. The wedge must contact the fabric with the proper amount of presure pushing the material into the weld rollers in order to achieve a superior weld.

WARNING!The Hot Wedge Heating System near the Wedge and the Wedge Mounting Shaft is very hot and will cause burning if not allowed to cool before handling. Turn the Heat and Power Switches to the off position and allow the Hot Wedge Heating System to cool for at least 20 - 30 minutes before touching with bare skin. Length of time may vary depending on ambient temperature and environmental conditions.

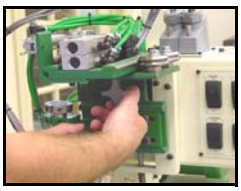
Adjusting Wedge

Wedge adjustment needs to be made at the start of every day when using the welder. When a Wedge adjustment is needed turn the and heat switches to the off position and let the machine cool down for at least 20 - 30 minutes (Length of time may vary depending on ambient temperature and environmental conditions). Set the desired Weld Roller Pressure before adjusting the Wedge. Varying Weld Roller Pressure (or P.S.I.) will change the position of the Weld Roller Pinch Point causing the Wedge to become misaligned. Ensure that the Master Speed Control is set to 000 so that the Weld Rollers do not turn. Having the Speed Control turned up with no material in the machine will allow the Weld Rollers to possibly suck the Weld Rollers into the pinch point possibly causing damage to the machine and giving an inaccurate wedge position. Turn the Override Switch to the on position. This will swing the Wedge into place so that proper placement can be checked and adjustments can be made. Make any adjustment needed, then check the Wedge placement. Unlike the Hot Air Heating System, the Wedge placement will not change do to various temperature changes. Therefore make all adjustments to the Hot Wedge Heating System while the Wedge is cold to help avoid personal injury. Below are the steps that need to be taken before adjusting the Wedge.

NOTE:Before making any adjustments to the Wedge ensure that the Speed Control is set to "000" and the Weld Rollers do not turn. Also note; the wedge is slightly loose at the point it is bolted to mount, to allow some float in the wedge when going over multiple thicknesses.

Figure 2.17:

Figure 2.18:



1.Turn the Wedge Switch to the off position and wait for the Wedge to cool down.

2.Turn the Master Speed Control to "000" to insure the Weld Rollers will not turn. (Figure2.17)

3.Turn off the Heat Swing Switch

4.Turn the Override Switch to the run position.

5.Ensure the Outboard Puller Switch is on.

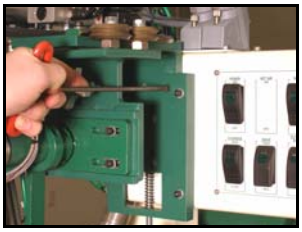
6.Remove the air pressure from the Heat Swing.

Wedge Height

The Wedge Height is the vertical relationship that the Wedge Tip has with the Weld Rollers. The ideal height of the Wedge will be vertically centered between the Weld Rollers so that the Wedge Tip is directed into the pinch point. If the Wedge is to high or to low, welding speeds will not be as efficient as possible and may cause the fabric to be aesthetically overheated, or causing materials not to be welded. Check the height of the Wedge Tip and if not properly placed proceed with the following: **(Figure2.19)**

Figure 2.19:

Figure 2.20:



1. The Front Locking Bolts must be loosened before adjustments can be made.Use a 3/16" Allen Wrench to loosen the Front Locking Bolt. The bolt should be just loose enough to allow for the height of the Wedge to be adjusted. **(Figure2.20)**

2. Adjust the height of the Wedge so that the Wedge Tip is vertically aligned with the Weld Roller Pinch Point by turning the Height Adjustment Knob: **(Figure2.21)**

   a. Clockwise to adjust the Wedge up.

   b. Counterclockwise to adjust the Wedge down.

3. The wedge system may need to be jarred when adjusting lower.

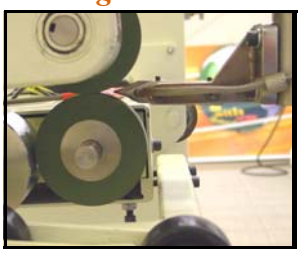
4. Check to see if the proper height adjustment of the Wedge has been made. **(Figure2.22)** Repeat steps 1 through 3 until correct.

5. Tighten the Front Locking Bolt.

6. Check wedge alignment once more after tightening the locking bolt.

Figure 2.21:

Figure 2.22:

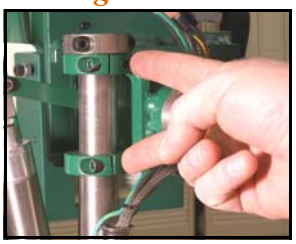


Wedge Squareness

The Wedge squareness is the horizontal angle that the Wedge Tip has with the Weld Rollers. This relationship should be parallel so that the Wedge Tip is aligned with the Weld Rollers. Having the angle of the Wedge misaligned will cause the seam to be less than 100% welded across the seam width. Check the squareness of the Wedge Tip and if not properly placed (Figure2.23) proceed with the following:

Figure 2.23:

Figure 2.24:



1. Loosen the two green clamping collars (not the top stainless steel) just enough to allow from rotation of the Wedge Shaft (Figure2.24)

2. Rotate the Mounting Shaft until the Wedge Tip is parallel with the Weld Rollers (Figure2.25)

3. Tighten the green Clamping Collars

    a. As the green clamping collars are tightened, the wedge squareness may move slightly out of alignment. Allow for this when tightening.

4. Check to see if the proper angle adjustment of the Wedge has been made. (Figure2.26) Repeat steps 1 through 4 until correct.

Figure 2.25:

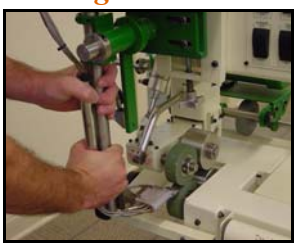
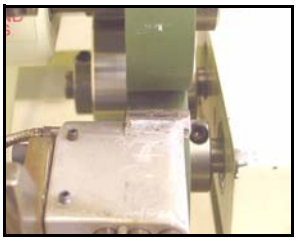


Figure 2.26:



Tilt of Wedge

The Tilt of the Wedge is the vertical angle at which the wedge Tip is positioned in relationship with the weld rollers. This relationship must be parallel (or level) with the pinch point of the weld rollers. When the wedge tilt is out of adjustment the seam will be uneven across the width of the weld. Check the Tilt of the Wedge and if not properly placed proceed with the following: **(Figure2.27)**

Figure 2.27:

Figure 2.28:

1. Loosen the 2 clamping collars on the Pivot Shaft for the Air Cylinder Mounting Bracket. **(Figure2.28)**

2. Pivot the Wedge Assembly until the Tilt of the Wedge is properly aligned in relationship with the Weld Rollers.

3. Securely tighten the clamping collars. Check to see if the proper tilt adjustment of the Wedge has been made. **(Figure2.29)** Repeat steps 1 through 3 until correct.

Figure 2.29:

Wedge Left/Right Alignment

The left/right alignment is the horizontal relationship the Wedge has with the Weld Rollers. The center of the Wedge Tip must be placed directly in the center of the Weld Rollers. The edge of the tips must be placed so that neither side is left exposed on the right or left side of the weld rollers. Having the Wedge Tip shifted to one side or the other will result in the weld being shifted to the side that the Wedge Tip is favoring leaving the opposite side unwelded. Check the left/right alignment. (Figure2.30) If not properly placed proceed with the following:

Figure 2.30:

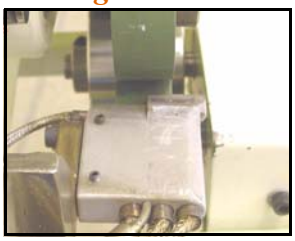
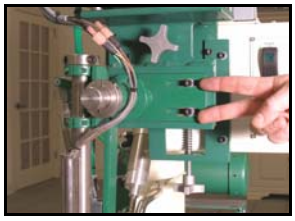


Figure 2.31:



1. The left/right adjustment bolts on the Wedge assembly must be loosened before adjustments can be made. Use a 3/16 Allen Wrench to loosen the 2 adjustment bolts approximately one turn, the bolts should be just loose enough to allow the Wedge to be adjusted. (Figure2.31)

2. Center Wedge on Weld Rollers by sliding Wedge Mounting Bracket. (Figure2.32)

3. Check to see if the proper alignment adjustment has been made. (Figure2.33) Repeat steps 1 to 3 until correct.

4. When centered tighten Adjustment Bolts.

Figure 2.32:

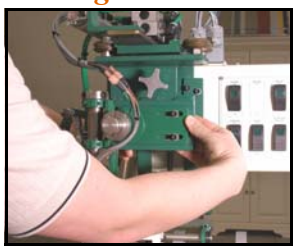


Figure 2.33:

Wedge Pressure or Depth Adjustment

Wedge Pressure is the amount of force that the Wedge is applying to both the top and bottom panel at the contact point pressing the fabric against the Weld Rollers. Adequate pressure of the Wedge will allow just enough heat to transfer into the material in order to produce a quality seam. Insufficient Wedge pressure will not allow enough quality contact if not enough heat to transfer into the fabric or film which will produce inefficient welding speeds as well as undesirable weld quality. While too much pressure will produce tracking problems and trouble keeping the material in the Weld Rollers and Guides. Check the Wedge Pressure by welding a test strip to be certain that the Wedge is contacting the fabric with the proper amount of pressure pushing the material against the Weld Rollers producing a quality seam. Should the Wedge Pressure need to be adjusted proceed with the following:

NOTE: Different thicknesses of material will require different Wedge Pressures. Weld a test strip to test the material with the Wedge Pressure.

Figure 2.34:

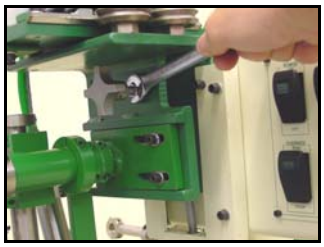


Figure 2.35:

1.To adjust the pressure of the Wedge, loosen the jam nut on the Depth Adjustment Knob. **(Figure 2.34)**

2.Turn the Depth Adjustment Knob counter-clockwise until the Wedge comes in contact with the Weld Roller Pinch Point: **(Figure2.35)**

3.Turn the Depth Adjustment Knob clockwise 2 full turns.

4.Tighten the jam nut down against the Heat System Mounting Plate.**(Figure 2.34)**

5.Check the Wedge Pressure by welding a test strip to be certain that the Wedge is contacting the fabric with the proper amount of pressure pushing the material into the Weld Rollers producing a quality seam. Repeat steps 1 through 4 until correct.

Chapter 3: Changing Heating Systems

Section 3.1: Changing from Hot Air to Hot Wedge

Figure 3.1:

Figure 3.2:

Figure 3.3:

1. Turn the Heat and Power Switch to the off position to activate the cool down cycle and wait for the machine to shut down.
2. Once the cool down cycle is complete and the machine has shut down the Main Power Supply must be disconnected. To do this turn off the Circuit Breaker to the off position. **(Figure3.1)**
3. The Main Air Supply must also be disconnected and depressurized. First, disconnect the Shop Air Supply by turning the ball valve to the off position. Second, release the quick connect fitting on the end of the air line which will allow you to remove it. Third, bleed off the remaining air in the system by slowly turning the ball valve to the on position. Once all the remaining air has escaped and the air cylinders are relaxed turn the ball valve back to the off position. **(Figure3.2)**
4. Once the machine has sufficiently cooled down and the Main Power an Air Supply have been disconnected remove the Fabric Guide from the machine. This will help clear obstructions while changing the Heating System.
5. The Front Locking Bolt must be loosened before changing the heating system.Use a 3/16” Allen Wrench to loosen the Front Locking Bolt. **(Figure3.3)**
6. Disconnect the green airline that supplies the Swing Solenoid on the Hot Air Assembly by pushing in on the white plug at the end of the air fitting and pulling out the airline. **(Figure3.4) (Figure3.5)**

Figure 3.4:

Figure 3.5:

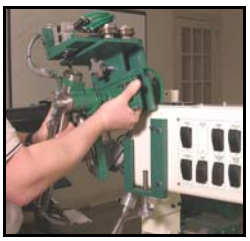
Figure 3.6:

Figure 3.7:

Figure 3.8:

Figure 3.9:

Figure 3.10:



7. Disconnect the black Hot Air Supply Line by pushing in the disconnect tab and removing the line. **(Figure3.6)**
8. Loosen the two screws on the grey plug located on top of the machine and unplug it. **(Figure3.7) (Figure3.8)**
9. Carefully remove the Hot Air Heating System by sliding the entire assembly upward until it is free. **(Figure3.9)**
10. Install the Hot Wedge Heating System carefully by placing the Heating System mounting Angle into the slide and sliding the assembly down until the mounting angle is against the Height Adjustment Knob. **(Figure3.10)**
11. Connect the two grey connectors into the sockets on top of the machine and tighten screws finger tight. Note that the connectors will only fit into their correct socket. **(Figure3.11) (Figure3.12)**
12. Install the Green Air Line into the black y-fitting by pushing in on the white plug and sliding the airline into place. **(Figure3.13)**
13. Finger tighten the Front Locking Bolt. **(Figure3.14)**
14. Change the Weld Rollers to Silicone Weld Rollers one roller at a time.
15. Align The Wedge See: *Section 2.2 Wedge Alignment*.

Figure 3.11:

Figure 3.12:

Figure 3.13:

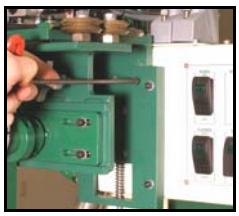
Figure 3.14:

Section 3.2: Changing from Hot Wedge to Hot Air

Figure 3.15:

Figure 3.16:

Figure 3.17:



1. Turn the Heat and Power Switch to the off position to activate the cool down cycle and wait for the machine to shut down.

2. Once the cool down cycle is complete and the machine has shut down the Main Power Supply must be disconnected. To do this turn off the Circuit Breaker to the off position. **(Figure3.15)**

3. The Main Air Supply must also be disconnected and depressurized. First, disconnect the Shop Air Supply by turning the ball valve to the off position. Second, release the quick connect fitting on the end of the air line which will allow you to remove it. Third, bleed off the remaining air in the system by slowly turning the ball valve to the on position. Once all the remaining air has escaped and the air cylinders are relaxed turn the ball valve back to the off position. **(Figure3.16)**

4. Once the wedge has sufficiently cooled down and the Main Power an Air Supply have been disconnected remove the Fabric Guide from the machine. This will help clear obstructions while changing the Heating System.

5. The Front Locking Bolt must be loosened before changing the heating system. Use a 3/16" Allen Wrench to loosen the Front Locking Bolt. **(Figure3.17)**

6. Disconnect the green airline that supplies the Solenoids on the Hot Wedge Assembly by pushing in on the white plug located at the end of the y-fitting and pulling out the airline. **(Figure3.18)**

7. Loosen the screws on the two grey connectors located on top of the machine and unplug them. **(Figure3.19) (Figure3.20)**

Figure 3.18:

Figure 3.19:

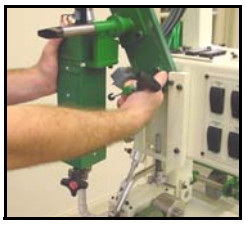
Figure 3.20:

Figure 3.21:

8. Remove the Hot Wedge Heating System by carefully sliding the entire assembly upward until it is free. **(Figure3.21)**

9. Install the Hot Air Heating System by placing the Heating System mounting Plate into the slide and sliding the assembly down until the mounting plate is against the Height Adjustment Knob. **(Figure3.22)**

Figure 3.22:



10. Connect the grey connectors into the sockets on top of the machine and tighten screws finger tight. Note that the plug will only fit into it's correct socket. **(Figure3.23)** **(Figure3.24)**

Figure 3.23:

11. Install the Green Air Line into the black air fitting by pushing in on the white plug and sliding the airline into place. **(Figure3.25)**

12. Connect the black Hot Air Supply Line by pushing in disconnect tab and installing line. **(Figure3.26)**

13. Tighten the Front Locking Bolt. **(Figure3.27)**

14. Change the bottom Weld Roller to a Knurled Steel Weld Roller and then the top if applicable.

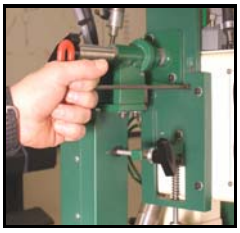
Figure 3.24:

15. For Proper Nozzle Alignment See: *Section 2.1.*

Figure 3.25:

Figure 3.26:

Figure 3.27:



Chapter 4: Operating Procedures

Section 4.1: Start Up

1. Insure that all cabinet doors are closed and locked.
2. Insure that all safety guards are in place.
3. Plug machine into proper electrical outlet, or turn on junction box if welder is hard wired in.
4. Rotate the In Shop Air Supply Valve to the open position.
5. Turn the Circuit Breaker to the on position.
6. Turn the Power Switch to the on position. The internal air compressor should start (on hot air machines).
7. Turn the Heat Switch to the on position. The Temperature Controller should light up.
8. Adjust the Temperature Controller to the desired temperature. It will take 3-5 minutes for the machine to reach the desired temperature.
9. Check for the proper alignment of the weld rollers. Make any adjustments necessary.
10. Check for the proper alignment of the fabric guides. Make any adjustments necessary.
11. Turn the Heat Swing Switch to the on position.
12. For Hot Air Machines: When the machine has reached the desired temperature, check for proper nozzle alignment by engaging the Foot Drive Switch. If aligned properly, there will normally be a whistling sound created from the airflow hitting the pinch point of the weld rollers. The nozzle should also be centered left and right. The nozzle should be spaced 1/4 - 1/2 inch away from the weld rollers.
13. If the Outboard Puller is going to be used, turn the Outboard Puller Switch to the on position. It is not necessary to turn this off when shutting down.

Section 4.2: Shut Down

1. Turn the Hot Air or Wedge Switch to the off position. The corresponding Temperature Controller should shut off.

2. Turn the Power Switch to the off position. **The machine will not shut off immediately!** Hot Air machines will go through a 3 minute cool down cycle to allow the heat elements to cool off. It will then shut down completely. The Hot Wedge machines do not have a cool down cycle and should shut down immediately.

3. After the machine has shut off, rotate the In Shop Air Supply Valve to the off position.

4. After the machine has shut off, turn the Circuit Breaker to the off position.

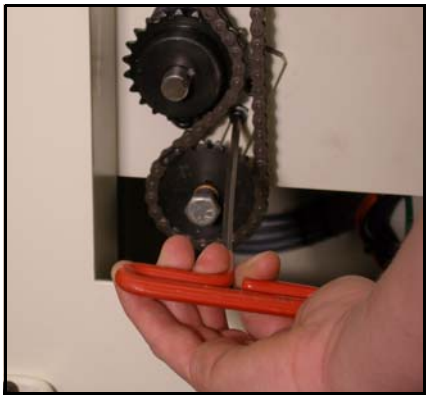
Chapter 5: Changing Welding Arms

WARNING! Only a qualified technician may change the Welding Arm to this machine. The technician will be someone trained by a Miller Weldmaster representative.

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 in, shut the power supply off at the junction box and leave on air supply

3. Unlock and open the end cabinet door. Locate and loosen the tensioner bracket bolts.



4. Loosen the setscrew on the lower drive gear and remove the gear and key.

5. Loosen and remove the 4 nuts on the mounting flange.

6. Using two or more persons, slide the Welding Arm straight out. It must be pulled straight out or the end shaft will become bent.

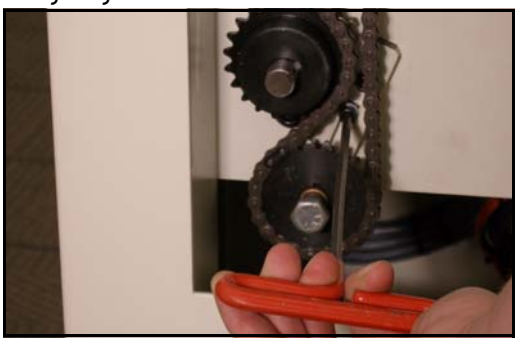
7. Set the welding arm down in a safe location. Unlock and open the front cabinet door.

8. Using two or more persons, pick up the desired welding arm.

9. Install the new welding arm.

10. Tighten the 4 nuts onto the mounting flange.

11. Insert the key and install the lower drive gear.Tighten the setscrew. Place key with the set screw indentation facing up so key will always fit into keyway ..



12. Tighten the chain tensioner assembly and tighten the bolts. Ensure chain is not loose. Close and lock cabinet doors

Chapter 6: Welding Tips

Section 6.1:

Figure 6.1: Bad Weld

Bad Weld

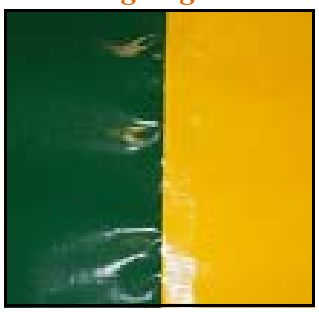
This is not a good weld. Although the fabric is somewhat welded, it is not what would be considered 100%. One of two things must happen for this weld to become excepted. Either the speed must be decreased or the heat must be increased.

Figure 6.2: Good Weld

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.

Figure 6.3: Upper Weld Roller going To Slow



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 Sync or Vari-Drive must be increased to eliminate this appearance.

Figure 6.4: Upper Weld Roller going To Fast

Upper Weld Roller going To Fast

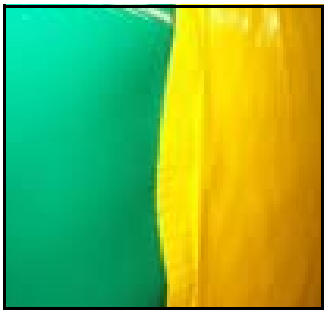
This is an example of the upper weld roller going too fast. The green panel goes through the left side of the welder and the yellow panel goes through the right side. The upper weld roller is going faster than the bottom weld roller. This shows in the wrinkling of the upper or right panel. The Upper Weld Roller Sync or Vari-Drive must be decreased to eliminate this appearance

Figure 6.5: Too Much Shrinkage

Too Much Shrinkage

This is an example of too much shrinkage in the material. Many thermoplastics tend to shrink when heated. Engaging the Rear Roller assembly or increasing the tension in the Real Roller Assembly will stretch the material and give a smoother appearance.

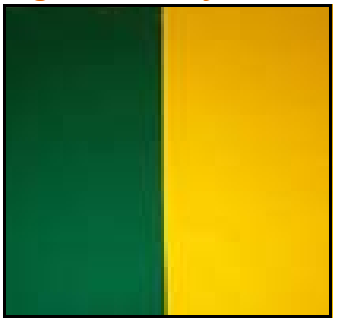
Figure 6.6: Too Much Rear Roller Tension



Too Much Rear Roller Tension

This is an example of too much Rear Roller Tension. The seam appears wavy due to over stretching the material. By decreasing the Rear Roller Tension or even removing the Rear Roller Tension the appearance will become smoother.

Figure 6.7: Perfect Seam



Perfect Seam

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

Section 7.1: Maintenance

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.

Module 7.1.1: Cleaning The Air Filter Cartridge

The Miller Weldmaster T-500 and T-100 have an internal air compressor that supplies airflow to the heat elements. Periodic cleaning and changing of the Air Filter Cartridge is necessary to maintain sufficient airflow. Insufficient airflow or any impurities in the airflow will shorten the life of the heat elements.

Clean Air Filter Cartridge Every Week

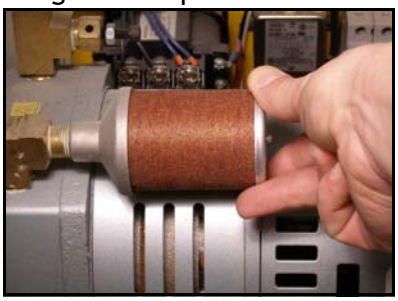
If the surrounding conditions in your production area are not clean, it is recommended that you clean the Air Filter Cartridge twice a week.

1. Turn the Circuit Breaker to the off position.

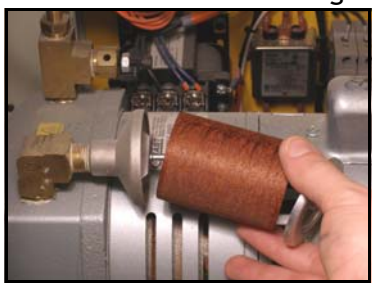
2. Disconnect the power cord from the power supply. If the power cord is wired into the power supply, turn the power off at the junction box.

3. Unlock the front cabinet door and open.

4. Loosen and remove the Air Filter Cartridge End Cap.



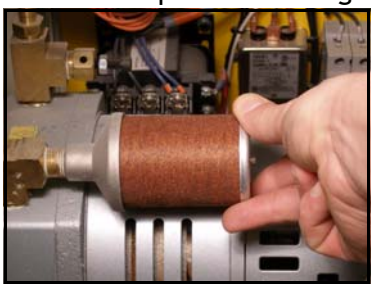
5. Remove the Air Filter Cartridge.



6. Using brake cleaner or a product containing high amounts of Ether, spray the Air Filter Cartridge from the inside out.

7. Dry the Air Filter Cartridge by blowing the Air Filer Cartridge from the inside out with shop air.

8. Reinstall the Air Filter Cartridge and Air Filter Cartridge End Cap onto the internal air compressor and tighten.



9. Close and lock the front door.

Module 7.1.2: Replace Air Filter Cartridge Every 3 - 6 Months

If the surrounding conditions in your production area are not clean, it is recommended that you change the Air Filter Cartridge every month.

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.

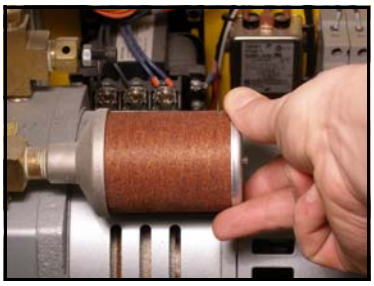
Warning! Machine must be disconnected from power source before any maintenance may begin.

1. Turn the Circuit Breaker to the off position.

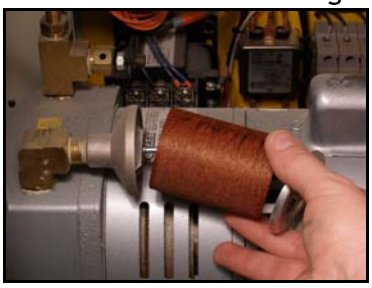
2. Disconnect the power cord from the power supply. If the power cord is wired into the power supply, turn the power off at the junction box.

3. Unlock the front cabinet door and open.

4. Remove the Air Filter Cartridge End Cap.

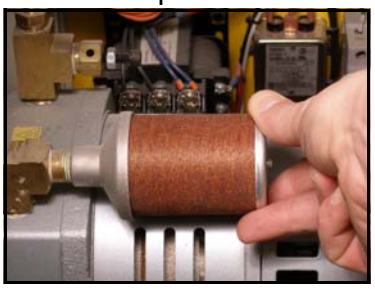


5. Remove the Air Filter Cartridge.



6. Replace with a new Air Filter Cartridge, part number 30297.

7. Reinstall the Air Filter Cartridge and Air Filter Cartridge End Cap onto the internal air compressor.



8. Close and lock the front cabinet door.

Module 7.1.3: Chains

The Miller Weldmaster T-500 and T-100 have several chains that are used to drive weld rollers and puller rollers. Although not a high maintenance item, chains should be inspected once a year to ensure there is not excessive corrosion, rust, or dirt. Also inspect for any looseness or slack. If needed, lubricate chains once a year 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.

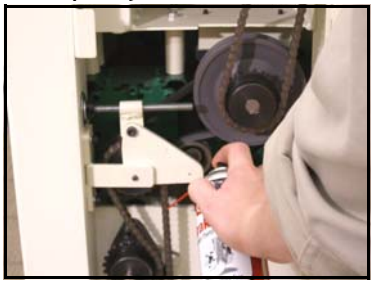
Warning! Machine must be disconnected from power source before any maintenance may begin.

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. Unlock and open the end cabinet door.

4. If needed, apply a few drops of lubrication to the chains. Be careful not to drip any onto the vari-drive belt.

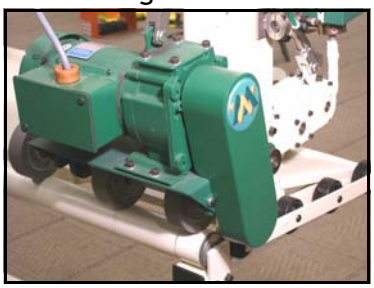


5. Close and lock the end cabinet door.

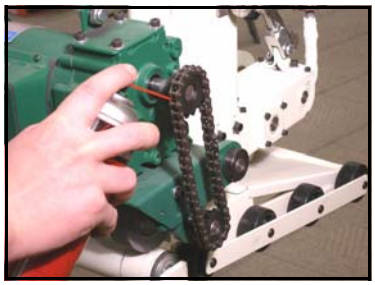
6. Locate the Chain lubrication hole on the upper weld roller assembly.

7. If needed, apply a few drops of lubrication to the chain through the lubrication hole.

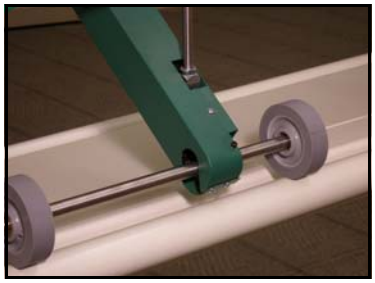
8. On the outboard puller assembly, if applicable, locate the gap at the rear bottom of the guard.



9. If needed, apply a few drops of lubrication to the chain through the gap.



10. On the inboard puller assembly, if applicable, locate the gap in the guard.



11. If needed, apply a few drops of lubrication to the chain through the gap.

Section 7.2: Replacing Components

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.

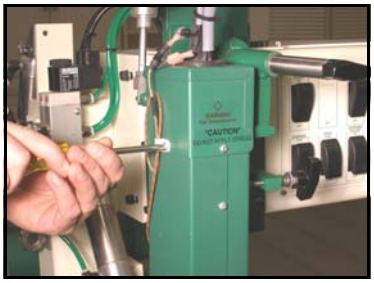
Module 7.2.1: Heat Elements

The Heating Elements used by the Miller Weldmaster T-500 and T-100are rated for 1000 hours of use at 1000 degrees F (537 degrees C). Although longer heat element life is possible with proper maintenance, 1000 hours is the average. If the Heat Elements fail prematurely, contact a Miller Weldmaster representative before replacement. It is recommended that both elements be changed even if only one burns out.

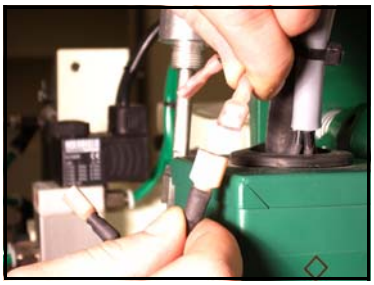
1. Turn the Service Disconnect to the off position.

2. 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.

3. Remove the 3 sheet metal screws from the top of the element housing.

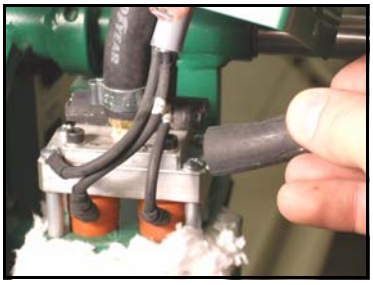


4. Carefully unplug the 2 Thermocouple leads, being careful not to pull the wires out of the leads.



5. Remove the top covering of the element housing and slide it out of the way.

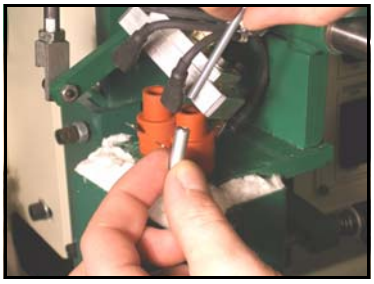
6. Remove the 2 pieces of insulation between the wire leads and the aluminum air divider.



7. Remove the 4 leads from the heat elements.

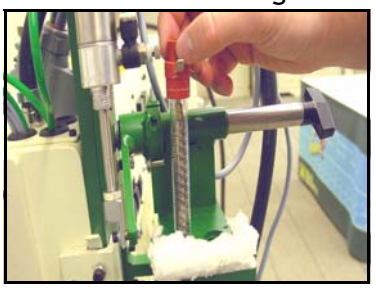
8. Loosen the 4 screws securing the aluminum air divider.

9. Remove the 4 screws and spacers being careful not to loose the 4 spacers.



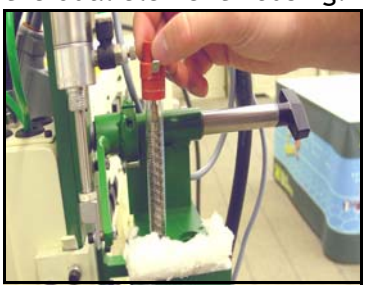
10. Remove the aluminum air divider.

11. Carefully remove the heat elements from the element housing.



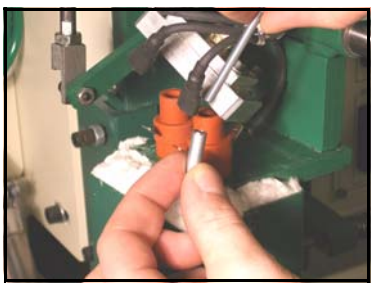
NOTE: Inspect each element for any broken off fragments of glass or wire. Any missing fragments will be in the dual element housing. These fragments must be removed before installing new elements.

12. Carefully install 2 new heat elements into the dual element housing.



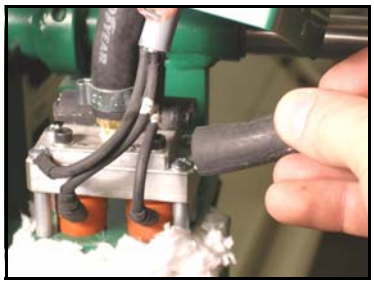
13. Install the aluminum air divider.

14. Install the 4 spacers and screws and tighten down.



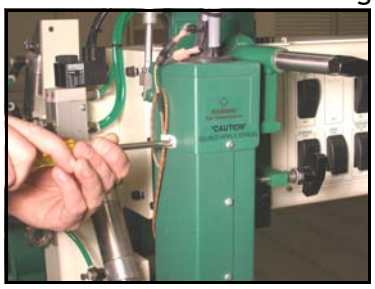
15. Connect the four wire leads to the elements. Make sure wires #1 and #3 plug onto one element, and wires #2 and #4 plug onto the other element.

16. Inset the 2 pieces of insulation between the wires and the aluminum air divider.

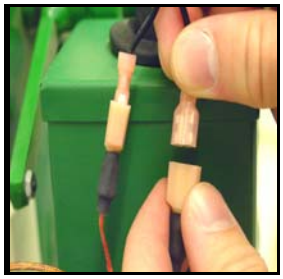


17. Slide the top covering back onto the heat element housing. Make sure to feed the thermocouple connections through the top hole.

18. Install the 3 sheet metal screws to the top of the heat element housing.



19. Connect the thermocouple wire leads, wire #1 to red, wire #2 to yellow.Thermocouple



The Miller Weldmaster T-500 and T-100 use a thermocouple to read the air temperature just before it reaches the nozzle, or the ambient heat from the wedge. The typical life expectancy of a thermocouple varies. The thermocouple should be replaced if the machine does not maintain a constant temperature of +/- 2 Degrees F (+/- 1 Degree Celsius) or heat elements burn 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.

1. Turn the Circuit Breaker to the off position.

2. 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.

3. Unplug the 2 thermocouple leads.

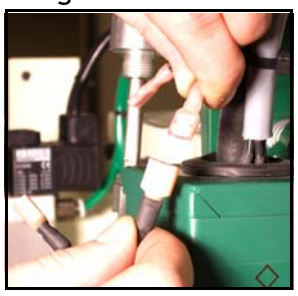
4. Remove the hot air nozzle by loosening the clamp..

5. Remove thermocouple wire mounts.

6. Remove the bottom cover and some of the fiberglass insulation from the element housing.

7. Using an 7/16 wrench, carefully loosen and remove the thermocouple nut.

8. Remove the thermocouple carefully, it may be snug.



9. Install the new thermocouple with all the spacers in the sequence shown. Make sure the thermocouple is inserted all the way.

10. Tighten the thermocouple nut.

11. Reinsert the fiberglass insulation and bottom cover with screws.

12. Install both thermocouple wire mounts.

13. Install the nozzle and clamp. Make certain to install the clamp with the ring side up.

14. Plug in the thermocouple leads, wire #1 to red, and wire #2 to yellow.

Module 7.2.2: Heater Rely

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.

1. Turn the Circuit Breaker to the off position.

2. 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.

3. Unlock and open the rear cabinet door on the machine.

4. Locate the Heater Relay located on the aluminum heat sink.

5. Remove the plastic cover an disconnect the 4 wires connected to the Heater Relay.

6. Remove the 2 mounting bolts and remove the Heater Relay.

7. Install the new Heater Relay using the 2 mounting bolts.

8. 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.

9. Close and lock the rear cabinet door.

Chapter 8: Recommended Replacement Parts

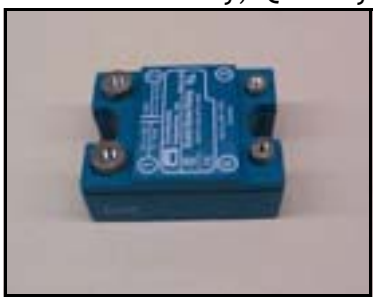
Section 8.1: Recommended Replacement Parts

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

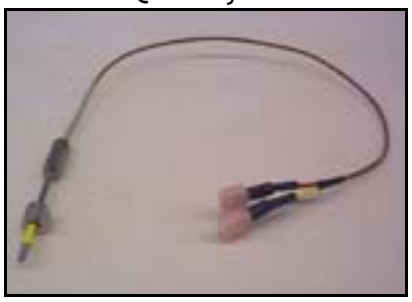
330207 Air Filter Cartridge; Quantity -2-

330305 Heat Elements; Quantity -4-

330033 Heater Relay; Quantity -1-



322291 K-Thermocouple Assembly; Quantity -1-



379594 1.0 Amp Fuse; Quantity -2-
379595 2.5 Amp Fuse; Quantity -1-

346307 Weld Roller Solenoid; Quantity -1-
350060 Standard Solenoid; Quantity -1-

Miller Weldmaster and our distributors can ship parts to within 24 hours of your order. However you will eliminate down time and next day shipping costs by stocking these parts.

Chapter 9: Accessories

Section 9.1: Knurled Stainless Steel Weld Rollers

Table 9-1:

Knurled Stainless Steel Weld Rollers 3.200 inch O.D.	
360001	0.500 inch width
360003	0.625 inch width
360005	0.750 inch width
360009	1.000 inch width
360013	1.250 inch width
360017	1.500 inch width
379025	1.750 inch width
360025	2.000 inch width
360031	2.250 inch width
360034	2.500 inch width

Section 9.2: Silicone Molded Weld Rollers

Table 9-2:

Silicone Molded Weld Rollers 3.200 inch O.D. @ 55 Durometer	
379451	0.500 inch width
379452	0.625 inch width
379453	0.750 inch width
379454	1.000 inch width
379455	1.250 inch width
379456	1.500 inch width
379457	1.750 inch width
379458	2.000 inch width
379459	2.250 inch width
379460	2.500 inch width

Table 9-3:

Silicone Molded Weld Rollers 3.200 inch O.D. @ 80 Durometer	
379451	0.500 inch width
379452	0.625 inch width
379453	0.750 inch width
379454	1.000 inch width
379455	1.250 inch width
379456	1.500 inch width
379457	1.750 inch width
379458	2.000 inch width
379459	2.250 inch width
379460	2.500 inch width

Table 9-4:

Silicone Molded Weld Rollers 3.200 inch O.D. @ 70 Durometer	
379451	0.500 inch width
379452	0.625 inch width
379453	0.750 inch width
379454	1.000 inch width
379455	1.250 inch width
379456	1.500 inch width
379457	1.750 inch width
379458	2.000 inch width
379459	2.250 inch width
379460	2.500 inch width

Section 9.3: Rear Tension Rollers

Table 9-5:

Smooth Steel Rollers 3.200 inch O.D.	
360225	2.000 inch width

Section 9.4: Nozzles

Table 9-6:

Standard T-100 & T-500 Right Hand Hot Air Nozzles with Ball End	
380701	0.500 inch width
380703	0.625 inch width
380705	0.750 inch width
380709	1.000 inch width

Table 9-6:

Standard T-100 & T-500 Right Hand Hot Air Nozzles with Ball End	
380713	1.250 inch width fluted style
380717	1.500 inch width
380721	1.750 inch width
380725	2.000 inch width

Table 9-7:

T-100 & T-500 Left Hand Hot Air Nozzle with Ball End	
380729	0.500 inch width
380733	0.750 inch width
380737	1.000 inch width
380741	1.250 inch width
380745	1.500 inch width
380749	1.750 inch width
380751	2.000 inch width

*Most T-100 & T-500 welders are Right Hand Swing. The Swing is defined by the direction the Hot Air Nozzle swings into the welding position. For example, if the Hot Air Nozzle is normally positioned to the left and swings to the right to begin the welding operation, it is a Right Hand Swing.

*There are a number of Miller Weldmaster welders that have some custom built nozzles. These would be for special applications. If your nozzle does not resemble any of the pictured nozzles, consult a Miller Weldmaster representative.

Section 9.5: Guides

- 381032 Hot Air/ Hot Wedge Universal Overlap Guide,Top Mount Style

- 381033 Acrylic Hot Air/ Hot Wedge Universal Overlap Guide

- 382001 T-100 & T-500 Adjustable Closing Guide

- 382007 T-100 & T-500 Fin Seal Guide Adjustable up to 2 inches

- 382009 T-100 & T-500 Adjustable Tape or Webbing Guide

- 381128 T-100 T-500 , 1 1/4" Hem Guide For Wedge.
- 379762 T-100, T-500, 1 1/4" Hem Guide For Hot Air Top Mount

*The Hem Guide is available with different widths and material gaps. Sometimes a sample of your material will be needed to insure the proper guide is supplied.

*The Hem Guide is also be modified to have a rope accompany the hem. The diameter of the rope is required for this.