



Model 112 Cross Seamer Operating Manual



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Intended Use

The 112 Cross Seamer is a rotary hot air welder 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 this machine.
- The manufacturer does not approve of the removal of any safety guards while the 112 is in operation.
- The manufacturer does not approve of any unauthorized modification of the 112.
- Only a properly trained technician may operate the 112.
- Only a properly trained technician may perform any routine maintenance to the 112.
- Only a properly trained technician may perform any repairs to the 112.
- Only manufacturer approved replacement parts are to be used for the 112.

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

Explanation of Warnings

There are several different warning symbols placed on the Miller Weldmaster Model 112. These symbols are to alert the operator of potentially hazardous areas on the machine. Familiarize yourself with the their placement.



Caution, Laser Radiation. Do Not Stare into Beam or View Directly with optical instruments.

The Caution Laser Radiation Symbol is placed just below all the lasers on the Model 112. Do not look directly into the laser source. They are for fabric alignment only. Use caution when calibrating lasers.



Caution Hot.

The Caution Hot Symbol is placed on a guard near the Hot Air Nozzle on the Model 112. The Hot Air Nozzle and air blowing out of it are capable of 1350 degrees Fahrenheit temperature. Always wear proper protection when adjusting the Hot Air Nozzle.



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 carriage assemble 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 Miller Weldmaster 112 should always have the power disconnected before the cabinet door is open.



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 in regards to the nozzle and weld roller at all times.



Warning, High Temperature Air.

The Warning, High Temperature Air sticker is placed on the Heater Assembly. The Miller Weldmaster 112 is capable of temperatures reaching 1350 degrees F.



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 112.

Electrical and Air Requirements

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

Electrical Supply

The Miller Weldmaster 112 Cross Seamer includes a power cord that is approximately 12 feet in length. Due to the number of different style outlets available, the cord will not include a plug. It is recommended that your electrician install a plug that is comparable to your style power outlet. 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 112 Cross Seamer requires the following electrical requirements:

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

Shop Air Supply

The Miller Weldmaster 112 Cross Seamer 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 112 Cross Seamer requires 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.

Principles of Heat Sealing

Heat

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.

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. The faster the speed setting, the less 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 rollers is the final step when creating a weld. The pressure of the weld rollers compresses the heated material together completing the welding process.

Summery

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

6 Controls: Purposes and Functions

Circuit Breaker



The purpose of the Circuit Breaker is to protect the machine if a short were to occur somewhere in the system.

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.

In Shop Air Supply 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, shop air will run the pneumatics of the machine.

Turned to the off position, shop air will be cut off from the machine.

Power Switch



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

When the Power Switch is flipped to the on position, the internal air compressor will run and the drive system is ready for operation.

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

Heat Switch



The purpose of the Heat Switch is to control the power supply to the temperature controller, which generates heat from the heat elements.

When the Heat Switch is flipped 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 Heat Switch is flipped to the off position, the temperature controller will shut down and the heat elements will begin to cool.

Nozzle Switch

The purpose of the Nozzle Switch is to control the swing action of the nozzle swing assembly.

When the Nozzle Switch is flipped to the on position, the hot air nozzle will automatically swing into position for welding operation when the Start Button is depressed.

When the Nozzle Switch is flipped to the off position, the hot air nozzle will remain in the static position when the Start Button is depressed.

Laser Switch

The purpose of the Laser Switch is to change alignment between overlap seams and butt seams.

Flipped to the Overlap Seam position, the first set of lasers illuminates as a guide for fabric alignment for Overlaps, Pockets, Hems, and Beading.

Flipped to the Butt Seam position, the second set of lasers illuminates as a guide for fabric alignment for Cutting and Butts.

Auto Return Switch

The purpose of the Auto Return switch is to give the option of and automatic return at the finish of a seam.

Flipped to the Return position, the head carriage will automatically return at the completion of a weld or cut.

Flipped to the Off position, the head carriage will stop upon completion of a weld or cut.

Weld/Cut Switch

The purpose of the Weld/Cut Switch is to give the option between welding material and cutting material.

When flipped to the Weld position, the model 112 will be in the welding mode when the start button is depressed.

When flipped to the Cut position, the model 112 will be in the cutting mode when the cutter jog button is depressed.

Temperature Controller



The purpose of the Temperature Controller is to control and monitor the temperature of the air going into the nozzle.

The Temperature Controller input is adjusted by using either the up or down arrows to set the desired temperature which is displayed in green. The actual temperature is displayed in red.

Hour Meter



The purpose of the Hour Meter is to monitor the amount of time the machine is in operation for servicing reasons. It is not resettable.

Drive Delay Control



The purpose of the Drive Delay Time Control is to stall the weld rollers temporarily and allow the hot air nozzle to swing into place.

If the Drive Delay Time Control is set at to high a setting, it will cause the material to be overheated at the very beginning of the seam.

If the Drive Delay Time Control is set at to low a setting, the material will not be welded at the beginning of the seam.

Speed Control



The purpose of the Speed Control is to control the speed of the carriage assembly during the welding process.

When the Speed Control is increased, the carriage assembly will travel faster.

When the Speed Control is decreased, the carriage assembly will travel slower.

Weld Roller Pressure



The purpose of the Weld Roller Pressure Regulator is to vary the amount of pneumatic pressure between the weld roller and the welding track.

Increasing the Weld Roller Pressure will increase the amount of pressure between the weld roller and welding track.

Decreasing the Weld Roller Pressure will decrease the amount of pressure between the weld roller and the welding track.

Torque Pressure



The purpose of the Torque Pressure Regulator is to vary the amount of clutch pressure or torque on the weld roller to help eliminate any wrinkling in the material.

Increasing the Torque Pressure will increase the amount of torque on the weld roller, or how fast the weld roller spins in relation to how fast the carriage assembly is traveling.

Decreasing the Torque Pressure will decrease the amount of torque on the weld roller, allowing the weld roller to be pushed and even allow some slippage.

Cutter Jog Switch



The purpose of the Cutter Jog Switch is to jog the cutter forward when in the cutting mode.

Depressing the Cutter Jog Switch when in the Cutting Mode will move the carriage assembly forward and drop the cutter down into position for a cut.

Return Run Switch



The purpose of the Return Run Switch is to give a means of returning the carriage assembly after it has stopped and needs returned.

Depressing the Return Run Switch will automatically return the carriage assembly to the start position. This may only be depressed at the completion of a weld or cut, when the carriage assembly is completely stopped.

Recommended Replacement Parts

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

2) 330207 Air Filter Cartridge



4) 330305 Heat Elements



1) 330033 Heater Relay



1) 322291 K-Thermocouple Assembly



1) 330093 Micro Switch



1) 330097 Micro Switch Cover



- 2) 379594 1.0 Amp Fuse
- 1) 379595 2.5 Amp Fuse



- 1) 330096 Heat System Fuse



- 1) 346307 Weld Roller Solenoid
- 1) 350060 Standard Solenoid



- 5) 379182 Cutter Blades



- 1) 376495 Roll of Teflon Tape



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.

14 Guides

Overlap Guide #379139



Pocket Guide #322363



Adjustable Tape Guide #322654



1/2 inch Hem Guide #379162

3/4 inch Hem Guide #379164

1 inch Hem Guide #379166



Truck Beading Guide #379248



Weld Rollers



Stainless Flex Hub Weld Roller 4.00 inch O.D.

362200 0.375 inch Stainless Flex Hub
362201 0.500 inch Stainless Flex Hub
362205 0.750 inch Stainless Flex Hub
362209 1.000 inch Stainless Flex Hub
362213 1.250 inch Stainless Flex Hub
362217 1.500 inch Stainless Flex Hub
362221 1.750 inch Stainless Flex Hub
362225 2.000 inch Stainless Flex Hub

Silicon Weld Roller 4.00 inch O.D. 55 Durometer

362101 0.500 inch Silicone Weld Roller
362105 0.750 inch Silicone Weld Roller
362109 1.000 inch Silicone Weld Roller
362113 1.250 inch Silicone Weld Roller
362117 1.500 inch Silicone Weld Roller
362121 1.750 inch Silicone Weld Roller
362125 2.000 inch Silicone Weld Roller

Silicon Weld Roller 4.00 inch O.D. 70 Durometer

370102 0.375 inch Silicone Weld Roller
370170 0.500 inch Silicone Weld Roller
370570 0.750 inch Silicone Weld Roller
370970 1.000 inch Silicone Weld Roller
371370 1.250 inch Silicone Weld Roller
371770 1.500 inch Silicone Weld Roller
372170 1.750 inch Silicone Weld Roller
372570 2.000 inch Silicone Weld Roller

Nozzles



Left Hand Hot Air Nozzles for 112 with 3inch Offset Ball Style for Swing

379777	0.500 inch Nozzle
379778	0.750 inch Nozzle
379779	1.000 inch Nozzle
379780	1.250 inch Nozzle
379781	1.500 inch Nozzle
379782	1.750 inch Nozzle *
379783	2.000 inch Nozzle *

Left Hand Preheat Hot Air Nozzles for 112 with 3inch Offset Ball Style for Swing

379800	0.750 inch Nozzle
379801	1.000 inch Nozzle
379802	1.250 inch Nozzle
379803	1.500 inch Nozzle
379804	1.750 inch Nozzle *
379805	2.000 inch Nozzle *

Note

The * symbol signifies the use these items requires the use of a wider fabric clamp.

Carriage Belts

There are a total of 3 belts within the carriage assembly.

#379079 Double Sided Drive Belt

This belt is located in the upper carriage assembly.



#379077 Long Drive Belt

This belt is located in the 3.5 X 3.5 square tubing.



#379078 Upper Unit Drive Belt

This belt is located in the weld roller assembly.



Nozzle Adjustment

Nozzle placement is a key component in heat sealing. A properly placed nozzle will be centered on the weld roller approximately $\frac{1}{4}$ inch away and have a slight whistle during the welding process. When an adjustment is needed, turn the speed control to a low setting. Make the adjustment and check the nozzle placement by engaging the Start Switch. Remember that the nozzle placement will change when welding at different temperatures. Check the placement when the temperature is changed more than 200 degrees F (76 degrees C).

1. X Nozzle Adjustment - The X Nozzle

Adjustment allows left and right fine tuning of the Hot Air Nozzle. The proper X Adjustment will leave the Hot Air Nozzle centered on the Weld Roller.



2. Y Nozzle Adjustment - The Y Nozzle

Adjustment allows up and down fine tuning of the Hot Air Nozzle. The proper Y Nozzle Adjustment will leave the Hot Air Nozzle directed at the pinch point of the Weld Roller and the Welding Track. A whistling sound should be heard as the air from the nozzle hits this pinch point.



3. Z Nozzle Adjustment - The Z Nozzle

Adjustment allows in and out fine tuning of the Hot Air Nozzle. The proper Z Nozzle Adjustment will leave the Hot Air Nozzle approximately $\frac{1}{4}$ to $\frac{1}{2}$ inch away from the pinch point.



4. When finished, the Hot Air Nozzle should be placed like this.



Laser Alignment

Warning: When adjusting the lasers, do not look directly into the laser source. Use caution when calibrating lasers.

Overlap Seam

1. Turn the 112 power switch on. Leave the heat switch and the power switch in the off position. Load some scrap vinyl under the fabric clamp and extend to the end of the machine. Turn the left and right vacuums on.



2. Engage the weld roller to the down position. Turn the speed control to a speed of 50. Using a ballpoint pen, place it on the inside edge of the weld roller, where the laser should be. Depress the start button and edge the roller the length of the welder.



3. If needed, make the first adjustment by loosening the clamping collar to calibrate the laser in and out to the drawn line. When satisfied, tighten clamping collar.



4. If needed, make the second adjustment by loosening the allen screw and calibrate the laser by turning the top of it. This will rotate the laser line. When satisfied, tighten the allen screw. Repeat steps 3 and 4 if necessary.



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5. When finished, the laser lines should line up perfectly with the drawn line.



Butt Seam

Flip the Laser Switch to the Butt Seam mode. Move the weld roller over so that the edge against the laser. Follow the same procedure as the Overlap Seam.

Micro-Switch Adjustments

This page will detail each of the micro-switches on the Miller Weldmaster 112. It will describe the micro-switch function and what the adjustment will change. The first three pictures are shown as sets. All are adjusted by loosening the clamping collar and sliding the set into the desired position, then tighten the collar.

Head Park Safety Switch - This micro-switch recognizes the head carriage to be in the start position. The welding and cutting functions will not begin unless this switch is activated.



Cutter Go Safety Switch - This micro-switch will allow the cutter to jog forward when the Cutter Jog Switch is depressed in the cut mode. The cutter will not jog forward if this switch is not activated.

Reverse End Limit Switch - This micro-switch will stop the reverse motion of the head carriage when it is activated. When tripped, the head carriage will go through a deceleration of approximately six inches and just touch the stopper.



Cutter Jog Safety Switch - This micro-switch is a 2nd safety switch to allow the cutter to jog forward. The cutter will not jog forward if this switch is not activated.

Cutter Read Stop Limit Switch - This micro-switch will allow the cutter to stop jogging forward. When tripped, it stops the cutter jog process.



Cutter Ready Lower Limit Switch - This micro-switch allows the cutter to lower. This switch must trip before the Cutter Read Stop Limit Switch. When tripped, the cutter will lower into the cutting position and be ready for cutting operation.

Cutter Safety Limit Switch - This micro-switch will not let the head carriage to return if it is not engaged. This switch prevents damage to the cutter if it is in the lowered position by not allowing the head carriage to return. It is adjusted by loosening the bolts on the mounting bracket, and sliding the bracket into the desired position.



Forward End Limit Switch - This micro-switch will stop the forward motion of the welding or cutting process when tripped. It can not be adjusted.



Pull Cord Stop Limit Switch - This micro-switch will stop the welding or cutting process when activated. The switch itself can not be adjusted. To make an adjustment, do so to the pull cord itself.



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. **Air**

Filter Cartridge

The Miller Weldmaster 112 Cross Seamer has an 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. Otherwise the Air Filter Cartridge should be cleaned once every two weeks.

1. Flip the Circuit Breaker to the off position.



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



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.



4. Remove the Air Filter Cartridge.



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



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



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



Replacing Components

Warning! Only a qualified technician may perform any maintenance on the Miller Weldmaster 112. 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.

Heat Elements

The Heating Elements used by the Miller Weldmaster 112 are 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 Circuit Breaker to the off position.
3. Remove the 3 sheet metal screws from the top of the element housing.



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.



4. Remove the remaining 2 bolts from the top of the element housing.



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5. Unplug the 2 Thermocouple leads.



8. Remove the 4 leads from the heat elements.



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



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



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



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



11. Remove the aluminum air divider.



14. Install the aluminum air divider.



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



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



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

16. 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.

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



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17. Insert the 2 pieces of insulation between the wires and the aluminum air divider.



20. Install the 2 bolts into the top of the heat element housing and tighten.



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



21. Connect the thermocouple wire leads, wire #1 to red, and wire #2 to yellow.



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



Replace Air Filter Cartridge Every 2 Months

If the surrounding conditions in your production area are not clean, it is recommended that you change the Air Filter Cartridge every month. Otherwise change the Air Filter Cartridge every 6 months.

1. Flip the Circuit Breaker to the off position.
4. Remove the Air Filter Cartridge.



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.
5. Replace with a new Air Filter Cartridge, part number 330297.



3. Remove the Air Filter Cartridge End Cap.
6. Reinstall the Air Filter Cartridge.



Thermocouple

The Miller Weldmaster 112 uses a thermocouple to read the air temperature just before it reaches the nozzle. 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 C) or the heat elements burn out prematurely.

1. Turn the Circuit Breaker to the off position.



4. Remove the 4 screws, spacers, and safety guard from the bottom of the element housing.



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.



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



3. Unplug the 2 thermocouple leads.



6. Remove the thermocouple wire mount.



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



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



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



11. Tighten the thermocouple nut.



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



12. Reinsert the fiberglass insulation and the bottom cover.



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13. Install the thermocouple wire mount.



16. Install the safety guard, spacers and screws to the bottom element housing.



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



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



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.

1. Flip the Circuit Breaker to the off position.



4. Locate the Heater Relay located on the aluminum Heat Sink.



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.



5. Loosen and remove the 4 wire leads connected to the Heater Relay.



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



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 cabinet door.



Electronics Panel

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379818 Regulator

330601 Laser Power Supply

330163 12 Point Euro Strip

330029 Ratchet Relay

379261 5 Hp. Inverter

330751 Digital Display Power Supply

330041 Preheat Relay

379330 112 Relay

330707 Control Relay, 330708 Socket

330009 Brake Relay, 330013 Socket

330021 Cube Relay, 330025 Socket

330099 Fuse Block

330096 30 Amp Fuse

330017 Air Compressor Relay

330003 30 Amp Relay (Ring Compr.)

330033 Heater Relay

379491 Compact Distribution Block

330001 Cool Down Relay

330100 EMI Filter

379508 2 Pole High Amp Term Block

379596 150 VA Transformer

379595 2.5 FL Fuse

379594 1.0 CC Fuse (quantity 2)

330185 Solenoid Valve Coil

330183 Valve Body

379246 70 Amp Breaker, single phase



Fabric/Application Process Control Sheet

Material : _____

Created by : _____

Date : _____

Weld Roller Pressure	Temp.	Speed	Torque Pressure	Drive Delay	Weld Roller (√ = Steel)	Vacuum (X = Off)
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Overlap Seal

Butt Seal with Tape
on One Side

Hem

Hem with Rope

Pole Pocket

Webbing Reinforcement

Truckside Beading