



American Welding Society®  
DETROIT SECTION



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5:30 - 8 PM @ BÖLLHOFF,  
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@ 10 AM
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(More info on pg 11)
- May 10:** CWI Exam
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Chicago
- Sept. 25:** Annual Golf Outing  
(More info on pg 6)
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(More info on pg 11)
- Oct. 18:** CWI Exam

Check out the latest videos published  
by the American Welding Society  
on its YouTube page.

AWS Technical Nights are open to everyone!  
We encourage that members bring students  
and non-members to learn more about our  
organization and industry.



## AWS-Detroit Technical Meeting SECTION AWARDS NIGHT Thursday, May 8, 2025 • 5:30 to 8:00pm Böllhoff

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Join us for an insightful presentation on WELTAC, a cutting-edge solution in welding and fastening technology. We will also highlight new advancements in RIVSET and RIVTAC, showcasing their precision, strength, and versatility in modern applications. This session offers a great opportunity to engage with industry peers and explore the future of mechanical joining. To enrich the experience, we will feature product demonstrations and hands-on examples, allowing you to see these technologies in action and understand their practical applications. To complement the evening, we will be offering a BBQ dinner accompanied by beer and wine, providing a relaxed atmosphere for networking and discussion.

To RSVP, please visit: [www.eventsquid.com/event/28419](http://www.eventsquid.com/event/28419)

**AWARDS NIGHT CEREMONY.** The May Technical Meeting will include our annual awards ceremony. We will be honoring three of our members for all the hard work they do for AWS and what they do to promote welding.

### *Congratulations to This Year's Fine Honorees!*

*Section Awards – to be presented by Awards Chairman Michael Karagoulis*

NICHOLAS BERCHERT  
*Section Appreciation*

STEVE GUCCIARDO  
*Section Appreciation*

GEORGE MEEKER  
*Section Appreciation*

There are a couple of our members who have district or national awards pending at this time. Stay tuned for updates this fall!



Chairman's Message  
**Russ Webster**

### ***Hello AWS – Detroit Members and Friends,***

Ladies Night is here! Whoops, sorry, Ladies Night was here and gone! For those who attended, it was a great time. I would like to thank Donnie Crist and the executive team for putting on a fantastic event. It was a fun filled evening and a great fundraising event. Thank you to everyone who attended.

Take note, our next technical night it will be held May 8th at Böllhoff. Registration is open so please sign up. The night will consist of a mechanical joining demonstration, Q&A and also a nice meal. I hope to see you there.

One last thing to mention, anyone interested in becoming an AWS Detroit Executive committee member please feel free to contact me at [russ.webster@gm.com](mailto:russ.webster@gm.com). The time commitment is small, but the reward is large.

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**Our Mission** is to advance the science, technology and application of welding and allied joining and cutting processes worldwide, including brazing, soldering and thermal spraying. AWS Detroit provides support for the industry in many ways, including:

- Institutional Grants (endowment based);
- Scholarships through Application (endowment based);
- Scholarships through aptitude (HSWC);
- Vocational Support (case by case but budgeted each year), Institution (e.g. supply gas and materials), Local Contest (e.g. travel expense), International Contest (e.g. travel expense);
- Student Memberships (evaluated each year);
- Student Chapter (evaluated each year);
- Technical and Educational Opportunities.

# Beyond The Process

By Jason Nicholson

*As a high school student and even into college I had a difficult time in school and didn't understand how education would apply to welding. I would ask myself "Why do I need to learn this? When am I going to use it?" I've even had college students ask me the same question. If you are going to school right now, you might even be wondering that yourself. I'd like to share with you some important lessons I learned in school, and why I believe education is critical to anyone in the welding industry.*

**Geometry & Trigonometry:** One of the most important things to understand in the welding industry is the triangle. A fillet weld is essentially a triangle. When you measure a fillet weld's legs with weld gauges, you are inspecting the size of the triangle. This size is critical because it determines the strength of the weld. If the legs or throat are too small, then the weld will eventually fail. Knowing this and understanding why it is important is one of the most valuable pieces of knowledge to a welder. Welders who make undersized welds aren't welders for long.

**Physics:** Physics was a very challenging course for me in school. The math was complex, and the concepts were difficult for me to understand. I grasped the ideas much better when I got out in the workforce. As an intern, I got my first physics application involving Newton's Third Law: *For every action, there is an equal and opposite reaction.* I was at an automotive plant trying to get a part to the correct dimension, but there was a bracket on it that I just couldn't get right. Inspection showed that the bracket needed to be moved inwards, so I would adjust the fixture for the bracket in the direction it needed to go and make another part. The bracket was still out of tolerance and getting worse. After observing a clamping sequence, I realized that the clamp that was supposed to hold the bracket in place wasn't making adequate contact. The action or force from the clamp would cause the bracket to hit the fixture, and the bracket moved because of the additional force, an opposite reaction. The amount that it moved was proportional to how far away

it was from the correct position. The solution was to back the part out of the fixture the opposite way, which seemed counterintuitive, but it worked. With the bracket in the new location, the clamp landed on the part correctly and secured it in the right location. This was a lesson that I had to learn firsthand to truly understand it.

**Art and Architectural History:** What could art have to do with welding at all? You'd be surprised. Welding has been around for thousands of years; it just doesn't look anything like it used to. Before the Iron Age, the Greeks were making bronze sculptures that are still around today. The sculptures were made with "The Lost Wax Process." They would make a statue out of wax, put a mold around it, melt the wax out (Hence the "lost wax"), then put the molten bronze in the mold. After the bronze cooled, sculptors would remove the mold to reveal the statue. The process today is very similar, but the details are different. Today we call this process "Investment Casting." Investment castings are in everything from cars and trucks to submarines. If you work on any sort of casting, it's a good bet you've worked with an investment casting.

**Chemistry:** While in the Navy I welded valves in main-steam propulsion systems. Pipes and valves of the steam system were made of chromium-molybdenum, otherwise known as "chrome-molly." I had to pre-heat the weld joints to 300 degrees Fahrenheit. Those valves I welded could be pressurized up to

2,000 lbs. at temperatures over 800 degrees Fahrenheit. Without preheat, moisture in the air could be deposited in the weld and try to escape during solidification causing a crack. If any of those welds had failed, steam pressurized that high leaking out of the crack could kill someone. I took preheat requirements very seriously because I knew what the result could be. I didn't understand why cracking could happen. After taking chemistry, I learned how molecules can interact, specifically Hydrogen and Carbon. I learned that hydrogen could diffuse into any susceptible micro-structure, in this case chrome-molly, and it doesn't matter if hydrogen is a solid, liquid or gas. This can happen in almost any environment with a variety of different materials. My experience with chrome-molly and weld cracking gave me the motivation to see the importance of chemistry, and take these classes very seriously.

*Continued on page 7*



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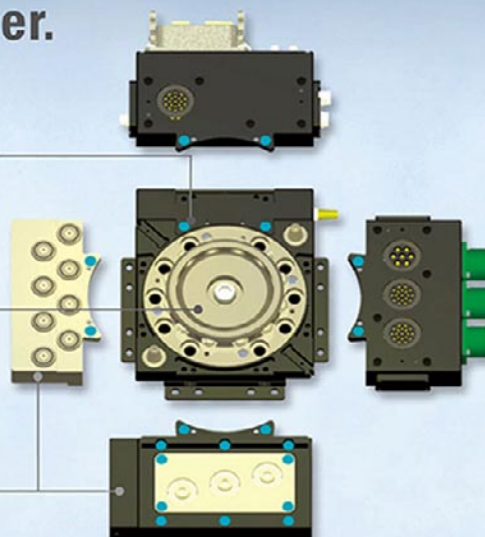
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# American Welding Society Annual Golf Outing

Save  Date

—September 25th, 2025—

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Kurt VanDonkelaar—[kvandonkelaar@romanmfg.com](mailto:kvandonkelaar@romanmfg.com)



American Welding Society  
DETROIT - SECTION 011



Open Range—7:30am

Registration—8:00am

Shotgun Start—9:00am

## MAY HOTLINE

### What is Preheat?

Although this term is used in various industries, as inspectors we are interested in preheat from a welding standpoint. This can become complex, and at the risk of oversimplifying, I will attempt to unpack the basic principle associated with the practice and application of preheat. I'm going to address this from a 'why' and 'how' perspective as it's presented in AWS D1.1/D1.1M. Although the reason for the application of preheat is important to understand, many times this is mandated at the engineering level and the reason is not made readily available to the manufacturing personnel. As a welder or CWI we simply need to comply, so for that reason, we need to understand what it means and how to follow through with the application of preheat. Let's start with what preheat is, then we can get into why we do it and how we do it.

I would guess that most of us have an understanding of the meaning of this word. It seems pretty self explanatory, but what exactly does it mean? Regardless of the context, I think the meaning is generally the same. You are heating something to some temperature before beginning the next step of a further process. In cooking or baking for example you might preheat an oven to a certain temperature before placing a prepared food into the oven before cooking or baking. In welding, although the basic concept of heating to a temperature prior to a next operation still applies, exactly what the process is, why and how we do it is a bit more complex.

AWS A3.0M/A3.0, Standard Welding Terms and Definitions recognizes preheat as a noun and a verb. When used as a noun preheat is the heat applied to the workpiece(s) to attain and maintain the preheat temperature prior to joining, thermal

cutting, or thermal spraying. When used as a verb, preheat is the act of applying heat to the workpiece(s) prior to joining, thermal cutting, or thermal spraying. So, if we look at this from the welding, or joining aspect, we understand that heat is applied from some external source to our workpiece prior to welding. I think the question then becomes, 'is this performed locally at the weld joint or is the entire workpiece, or weldment, placed into an oven and brought to a predetermined temperature prior to welding?'

To answer this question, we should consult the welding standard or code to which our weldment is to be manufactured. For the purposes of this discussion, we'll consult the current revision of AWS D1.1/D1.1M. Here we find a slight variation on the definition, 'the application of heat to the base metal immediately before welding, brazing, soldering thermal spraying or

*Continued on page 9*



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## "Beyond the Process" *continued from page 4*

**English:** Often, we find ourselves having to communicate with any number of people, from team members to customers. Incorrect use of the English language can accidentally lead to miscommunication. Depending on who is on the other end, this can be very expensive. Throughout my time as both a welder and an engineer I've had to write work instructions, procedures, and training guides. Clear language the reader can understand is critical, otherwise whatever you are trying to communicate isn't doing its best job and may be misunderstood.

If you are in school and are having trouble staying motivated to learn and wondering when you are going to use your education, the best motivation is to find out why it is or could be important to you. I had to find out why school or training was important for me to learn and apply things. Sometimes it was for success in the company in making a part correctly for a customer, and other times it was a matter of life and death. So, I ask again, "When am I ever going to use this?" My answer is "every day."

If you would like to share why any learning is important to you or would like some advice or motivation feel free to email me:

Jason Nicholson, Welding Engineer  
CWI, CRAW-T, CSSYB

**[nicholsonjason4955@gmail.com](mailto:nicholsonjason4955@gmail.com)**

Jason Nicholson is a Michigan native and Welding Engineer for General Dynamics: Land Systems. He started his career in Welding when he joined the U.S. Navy as a Hull Maintenance Technician in 2004. While serving, he attained the Naval Enlisted Code (NEC) – 4955: U.S. Navy Certified Welder. He was Honorably discharged in 2010. He received his AS in Welding Engineering Technology from Delta Community College in 2012. He transferred to Ferris State University and graduated with a BS in Welding Engineering Technology in 2014. He has worked in a variety of industries from Submarines, Shipbuilding, and Automation, and has worked in locations across the world from Japan to Massachusetts.



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**"What is Preheat?"** *continued from page 6*

cutting,' but I think you'll agree the concept is the same. In Part F, Clause 5.7 you'll find the preheat and interpass temperature requirements for welding. In this section, are the minimum temperatures for preheat and interpass temperatures based on material type/grade and thickness. Also, alternate methods for SAW, and hardness requirements of the HAZ. For preheat on material and thickness requirements you'll be directed to Table 5.8. Here you'll find that steels are grouped into categories. Each category will indicate the welding process, the thickness of the part at the point of welding and the minimum preheat and interpass temperature that is required.

What you may have noticed is that our original question, 'is this performed locally at the weld joint or is the entire workpiece, or weldment, placed into an oven and brought to a predetermined temperature prior to welding?' was not answered. Or was it?

Anyone even remotely familiar with code work probably knows that footnotes in tables and figures are extremely important. Unfortunately, these notes are sometimes overlooked. In the case of Table 5.8, one note in particular will help us to determine the answer to the exact question we're asking. Note 2 sends us to sub-clause 7.11, Welding Environment, and sub-clause 7.6, Preheat and Interpass Temperatures. 7.6 is the clause we are currently interested in. 7.6 paragraph 2 states, 'preheat and all subsequent minimum interpass temperatures shall be maintained during the welding operation for a distance at least equal to the thickness of the thickest welded part (but not less than 3 in. [75 mm]) in all directions from the point of welding.' This seems to indicate that preheat is applied locally. But does this mean that you can't or shouldn't place the weldment in an oven? No, it doesn't mean that at all. Sometimes a weldment can't be placed into an oven simply because of its physical size. In that situation the local application of heat would come into play. However, if

the weldment size does permit an oven as an option, that may be the best way to go. Additional information can be found in the commentary section, which is intended to provide "insightful information into provision rational." Under C-5.7, AWS D1.1/D1.1M tells us that 'the entire part or only the metal in the vicinity of the joint to be welded may be preheated.' Keeping in mind that we are still required to meet the requirements of Table 5.8, the commentary section provides us with the information that we 'may' use an oven or apply heat locally. Now that we have a basic understanding of what preheat is and how to apply it, let's touch on why we do it.

From a "code" perspective, the primary function of preheat is to control (or slow down) the cooling rate of the weld metal and surrounding base metal. When the temperature of the steel is elevated, any entrapped hydrogen is allowed to diffuse more rapidly. This in turn helps to prevent cold cracking. Although we won't be

*Continued on page 11*



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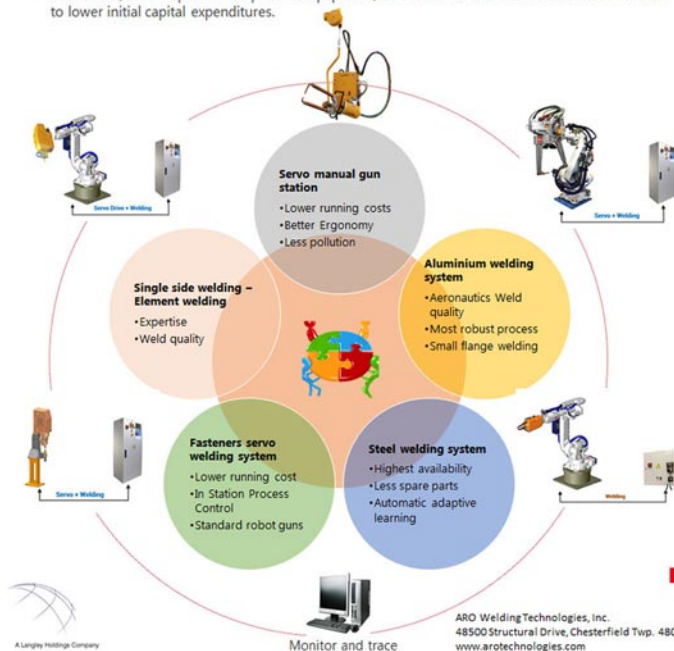
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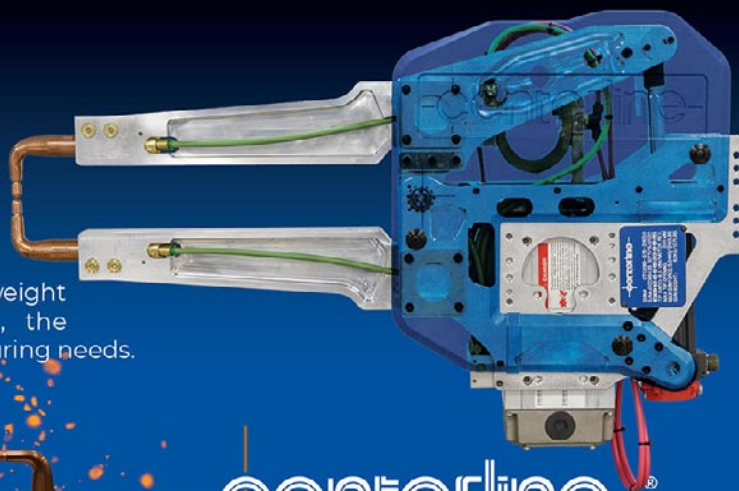
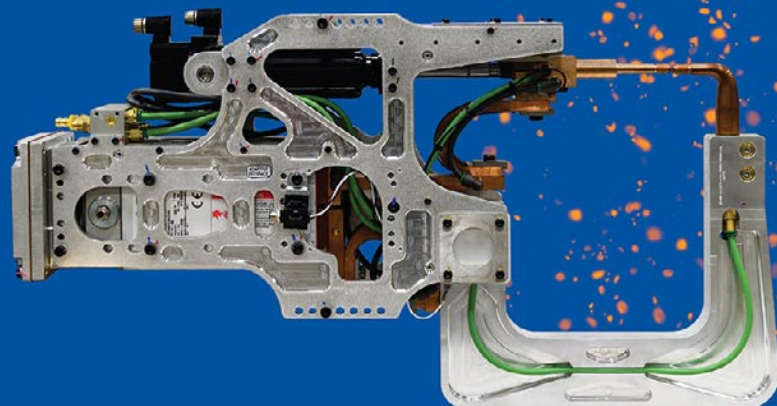
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**"What is Preheat?"** *continued from page 9*

discussing them here, for quenched and tempered steels slow cooling is not desired and not recommended by steel manufacturers and must be handled differently. In addition to the elements described in Table 5.8, Annex B, Guideline on Alternative Methods for Determining Preheat must be consulted. This is a normative annex and is mandatory within AWS D1.1. There we can see that two methods for estimating welding conditions for avoiding cold cracking are stated. They are Heat Affected Zone (HAZ) hardness control and Hydrogen Control. Each of these are covered individually and followed up with a section for the selection of method. Following that is a detailed guide for each method. Within this section are minimum preheat and interpass temperatures for low, medium and high restraint level classifications, which add another level of complexity.

Even with all these methods and guidelines to help minimize welding related defects, D1.1 makes it clear that experience, engineering judgement, research and calculation must all be utilized for making a determination in preheat selection. They also state that 'no method is available for predicting optimum conditions in all cases.' That is why I mentioned early in this article that as welders or inspectors we may not necessarily understand why a specific method, temperature, cooling rate or time at temperature is specified by contract, but just understand that compliance must be your focus.

If this subject and others like it are interesting to you and you're not already an AWS CWI, why aren't you? If becoming a CWI is a career path that you would like to pursue, the AWS-Detroit Section typically hosts two AWS CWI Seminar/Exams yearly. The next seminar/exam dates and location for 2025 are as follows:

**CWI Seminar May 04 – 09, 2025 / Exam May 10, 2025**

Detroit Metro Airport Marriott  
Address: 30559 Flynn Dr, Romulus, MI 48174  
Phone: (734) 729-7555

**CWI Seminar October 12 – 17, 2025 / Exam October 18, 2025**

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Check the AWS-Detroit e-Bulletin often for other helpful information, at <https://awssection.com/detroit/>. For more information on how to become properly trained and certified by the American Welding Society and to register, you can visit [www.aws.org/certification](http://www.aws.org/certification).

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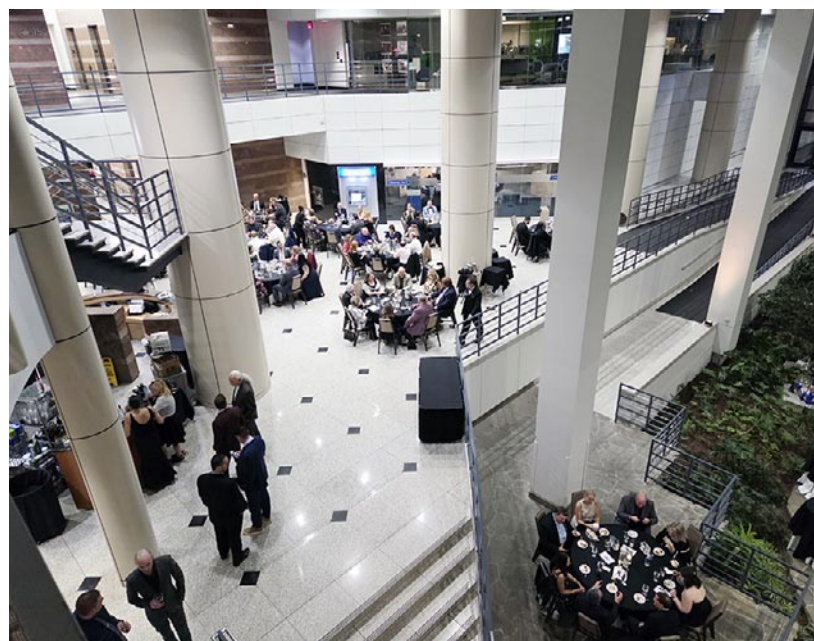


## Annual Ladies Night Scholarship Gala

The AWS Detroit Section hosted its annual Ladies Night Scholarship Gala fundraiser at the Westin Southfield Detroit Hotel in Southfield, Michigan. This annual event has been an important activity for the AWS Detroit Section for 82 years and affords a unique opportunity for the welding community to come together and celebrate the achievements of our industry. First Vice Chairman of the AWS-Detroit Section Donnie Crist was the host and past section chair Don Maatz was MC.

The funds raised from the evening gala are used to support the AWS Detroit Section Scholarship program. Which since its inception, has contributed well over \$1,000,000 to scholarships for students pursuing a career in welding. The success of events such as this have allowed the AWS-Detroit Section to now be in a position to award over \$90,000 in scholarships and workforce grants each year.

The event also marked the 100th anniversary of the section. A part of the Metro-Detroit region, the AWS Detroit Section has grown to be a strong voice within the welding community. And that growth has only been possible by the seemingly never-ending efforts of our volunteers. With a stated mission to advance the science, technology, and application of welding, the section utilizes multiple ways, including our annual Ladies Night Scholarship Gala, to encourage folks to participate in this important industry.





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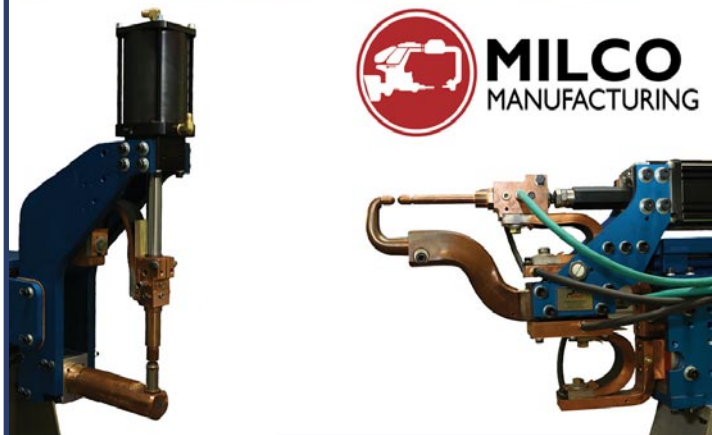
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