

The Basics of Welding Certifications and Test Positions

Welding certifications are procedures that a welder must follow to produce a sound weld according to the guidelines that are specified. The certification is a hands-on welding test that is always supervised by an individual that has been trained and approved by the organization that wrote the procedures and certifies the welder. These tests or certifications only qualify the welder for a single process and position. There is not a single welding certification that certifies a welder for all process, metals or positions.

Welding Codes

In reality, there are literally hundreds of welding codes. It comes down to the type of work involved and what organization is overseeing the welding procedures. In the United States the three biggest organizations are the:

1. AWS – American Welding Society
2. ASME – American Society of Mechanical Engineers
3. API- American Petroleum Institute

Even though the above organizations are the largest, there are many others like:

- ABS - American Bureau of Shipping
- MIL – STD - Military Standards
- The Canadian Welding Bureau
- D.O.T. – Department of Transportation
- State and Local Welding Certifications Codes

Most of these codes certify the welder for a specified length or period of time. In most cases, the welder must have a logbook signed to show that they have welded with the process and in that position every six months. The reason behind this is that most welders lose their skills in as little as two weeks without consistent practice or use. Even after a weekend of not welding, most people find their weld appearance goes downhill. It takes consistent practice to keep your eye/hand coordination at it's peak level at all times.

Welding Certification Processes

The most four common types of welding processes used for certifying welders are:

1. SMAW / Shielded Metal Arc Welding – Typically referred to as Stick Welding.
2. GMAW / Gas Metal Arc Welding – Commonly called MIG Welding.
3. FCAW / Flux Cored Arc Welding - Just another type of electrode for a MIG welder.
4. GTAW / Gas Tungsten Arc Welding – Most people know it as TIG Welding.

There are many other welding processes that a welder or even a welding machine can get certified in. Some examples include:

- Resistance Welding
- Brazing
- Soldering
- Plasma Welding
- Laser Welding
- Stud Welding
- Submerged Arc Welding

Welding Certification Positions

Welding certifications come in many positions depending on the type of structure that will be welded. In most cases it is broken down between structural and pipe welding. Structural positions are for welding plate and are the easiest to pass. Pipe positions are good for welding plate and pipe depending on what the code allows. Pipe certifications are much harder because it is an ever-changing position and never a simple straight line.

Structural positions have a coding system that identifies the position and joint type. The coding system is as follows:

- **1** stands for the flat position
- **2** stands for the horizontal position
- **3** stands for the vertical position
- **4** stands for the overhead position
- **F** stands for a fillet weld joint
- **G** stands for a groove weld joint

The way this system works is the position is first stated with a number, then right next to it the letter specifies the type of weld joint used. Here are some examples:

- **1F** is a flat weld done using a fillet joint.
- **2F** is a horizontal weld done using a fillet joint.
- **3F** is a vertical weld done using a fillet joint.
- **4F** is an overhead weld done using a fillet joint.
- **1G** is a flat weld done using a groove joint.
- **2G** is a horizontal weld done using a groove joint.
- **3G** is a vertical weld done using a groove joint.
- **4G** is a vertical weld done using a groove joint.

When it comes to structural certifications in particular, groove welds will also qualify the welder for fillet welds. However, fillet welds do **not** qualify the welder for groove welds. Most codes allow a welder to take a combination of the 3 and 4G positions, which typically qualifies the welder for all position structural welding plus pipe that is a minimum of 24 inches in diameter.

Pipe welding certifications also have a coding system to identify the position and joint type. They are very similar to structural welding but are more difficult to pass. The positions have the following designations:

- 1 stands for a pipe that is in the horizontal position and the welder welds in the flat position while rolling the pipe.
- 2 stands for a pipe in the vertical fixed position and the welder welds in the horizontal position.
- 5 stands for a pipe in the horizontal fixed position and the welder welds in the overhead, vertical and flat positions.
- 6 stands for a pipe in a fixed 45 degree position and the welder welds in the overhead, vertical, horizontal and flat positions.
- F stands for fillet weld.
- G stands for groove weld.
- R stands for restricted.

Pipe welding test positions have the same coding system as structural positions with one main exception. That is the “R” or restricted position. The restrictions used for pipe welders are designed to make the test as difficult as possible and at the same time provide the same types of obstacles that the welder will encounter in the field. Just like structural welding positions you simply identify the position with the number, then the joint type with the letter and finally if it is restricted there will be an R. For example a 6GR test would be a pipe in the fixed 45 degree position with a groove joint that is restricted.

Combination pipe welding certifications are not very common these days but there is one combination that is still used. The 2G and 5G combination welding certification is also considered a 6G certification. For most pipe welders they will take the 6G welding certification and that certifies the welder for all position pipe welding plus all position structural welding. For most welders the metal that they certify in is carbon steel or A36 steel. For other metals like stainless steel and aluminum, it is more of a job-specific certification that in most cases their employer pays for.

For more information see: [Welding Certifications and Tests](#)

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