

STEEL GMA (MIG/MAG) WELDING THEORY AND PREPARATION

WQPA3

How well a technician understands the theory and practice of weld safety, working with and maintaining welding equipment, and what constitutes proper welds will impact the overall consistency and quality of welds. The need for technical expertise and welding skills are essential to collision repair technicians working on major collision damage. Poor welds can not only lead to part failure and compromised safety, but can impact the structural integrity of the vehicle and collision energy management. Correct welding methods will also improve cycle time during a repair.

Course Content

Overview

The content of this course pertains to collision repair professionals and offers fundamental knowledge related to steel GMA (MIG/MAG) welding theory and a practical delivery format. Upon completion of the course, students will have an improved understanding of Gas Metal Arc Welding (GMAW) and the proper use of GMA (MIG/MAG) welding equipment, as well as the best techniques for making butt joint with backing, open butt, fillet and plug/slot welds in both steel and bronze wire.

The module will cover all introduction to GMAW, including the application of electricity in the welding environment. GMA (MIG/MAG) welding equipment will also be assessed, such as setting up and turning a machine. Additionally, students will learn requirements for proper electrode wire, contact tip and shielding gas selection. Topics relating to performing welds—technique, surface preparation, heat management, will also be covered. Lastly, a student will understand how to identify and correct weld defects.

The remainder of the course will detail the different types of common collision repair welds—the plug, slot, fillet, open butt and butt

joint with backing welds. Students will learn how to make each type, as well as how to visually inspect and destructively test each weld.

Students will be given a coupon set to practice the welds required or the Weld Training and Certification (WCSA3)

Recommendations

This course covers the theory and practical application of steel GMA (MIG/MAG) welding. Prior to attending this course, students should have an understanding of the collision repair process.

Registration

To register for Steel GMA (MIG/MAG) Welding Theory and Preparation (WQPA3) click [here](#).

Also Available

Steel Welding Training and Certification

The Steel Welding Training and Certification offers technicians the opportunity to demonstrate their ability to perform a combination of 17 welds. Welds will be visually and destructively tested. If all 17 welds pass inspection, the passing technician will earn qualification status for five years.

Course Highlights

Points: Part of WCSA3

Estimated Duration: 4 Hours

Format: Classroom and Practical

Meets the I-CAR ProLevel 2 or 3 training requirements for the following roles:



STRUCTURAL TECHNICIAN



NON-STRUCTURAL TECHNICIAN

After completing this course, you will be able to:

- Identify different types of welds
- Understand how to set up and tune a welding machine
- Select the proper electrode wire, contact tip, and shielding gas
- Explain safety issues involved with steel welding
- Know how to properly prepare metal surfaces
- Explain the proper welding gun angles and techniques
- Identify and correct weld defects



WELDING TRAINING AND CERTIFICATION

WELDING QUALIFICATION TEST—3 GENRE

WCSA3

Major collision damage requires a greater level of expertise to repair and welding is one of the most critical skills necessary in completing that repair safely. Poor welds can lead to part failure and compromised safety for the passengers in the vehicle.

Gas Metal Arc welding on steel has many advantages and is a common practice in today's collision repair facilities. From machine setup to mastering refined techniques, it is critical that technicians have a thorough understanding of MIG, MAG and spot welding in order to achieve complete and safe repairs that ensure the vehicle is restored to its original condition.

Course Content

Overview

The Welding Qualification Series begins with a brief presentation of machine setup of the MIG and MAG welding equipment as well as providing information on weld defect identification and correction, and how welds will be visually and destructively tested for qualification.

Following the training, led by the Test Administrator, test participants will practice the combinations of steel, bronze and spot welds. The time spent practicing will be based on the participant's skill level and visual and destructive testing results.

When the participant is ready after practicing each weld, he or she will perform the final weld. This will continue through the series until all specified welds are completed to the satisfaction of the Test Administrator. All welds must be passed in order to earn credit. Participants who pass **60%** of their welds will be retested at no charge. Those who do not, will complete a full retest at their expense. The Welding Qualification remains active five years from the test date.

Participants will work with two different thicknesses of automotive-grade, zinc-coated steel—16 gauge (1.4-1.6 mm) 22 gauge (0.68-0.81 mm). These material thicknesses, and the welds selected, represent common weld joints required on today's vehicles.

With these selections, I-CAR is keeping pace with industry demands, mirroring this qualification test to welding requirements that technicians perform on a daily basis.

Recommendations

The Welding Qualification Test is NOT an introductory welding course. It is a hands-on practice session and verification of a technician's welding skill.

The student should have an understanding of the collision repair process, know how to work safely when welding, and have steel welding experience in a repair facility environment.

The following I-CAR Australia training courses are suggested:

- Squeeze-Type Resistance Spot Welding (WCS04)
- MIG Brazing (BRZ01)
- Steel GMA (MIG/MAG) Theory and Preparation (WQPA3)

Registration

To register for Welding Qualification Test—3 Genre (WCSA3) click [here](#).

Course Highlights

Points: 5

Estimated Duration: 8 Hours

Format: Hands on, Instructor led testing

Meets the I-CAR ProLevel 2 or 3 training requirements for the following roles:



STRUCTURAL TECHNICIAN



NON-STRUCTURAL TECHNICIAN



ALUMINIUM TECHNICIAN

After completing this course, you will be able to:

- Understand how to set and tune a welding machine for all the weld types
- Explain the different visual requirements for each weld type
- Perform proper welding techniques
- Know how to properly prepare joints for welding
- Identify and correct weld defects.

Also Available

Adhesive Bond Testing

Allows technicians to perform adhesive bond testing for steel to steel, steel to aluminium and aluminium to aluminium bonded repairs.

