

# STEEL GMA (MIG/MAG) WELDING VIRTUAL AND HANDS-ON

WQPA2

**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 contains three components. The first is a theory component delivered virtually/online/classroom with a self-study test. The second component involves a Hands-On Skills verification on techniques for making butt joint with backing, open butt, fillet and plug/slot welds in both steel and bronze wire.

The course is relevant for 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, participants will have an improved understanding of Gas Metal Arc Welding (GMAW) and the proper use of GMA (MIG/MAG) welding equipment and will be given a coupon set to practice the welds required for the Weld Training and Certification (WCSA3)

The module will cover all introduction to GMAW, including the application of electricity in the welding environment, 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 participant will understand how to identify and correct weld defects. Participants will learn how to make each type, as well as how to visually inspect and destructively test each weld.

At the completion of the Hands-On session it will be determined if the participant is competent to proceed to the Steel Welding Certification program. If it is established the participant required more training, they will be required to attend another hands-on session prior to

attending the I-CAR Steel Welding Certification program. The additional hands-on session costs will be deducted from any combined pre-registration fees paid with a balance being payable for the certification session prior to attending.

### Recommendations

This course covers the theory and practical application of steel GMA (MIG/MAG) welding. Prior to attending this course, participants should have an understanding of the collision repair process. This course forms part of the pre-entry criteria for the I-CAR Steel Welding Certification (WCSA3)

### Also Available

MIG Brazing Hands-On Skills Development (BRZ02)

MIG Brazing Hands-On Skills Development (BRZ02) provides hands-on training that prepares collision repair shops and technicians for the shift to a new welding technique for some high-strength steel (HSS) and ultra high-strength steel (UHSS) vehicles entering the market.

Squeeze-Type Resistance Spot Welding Hands-On Skills Development (ST015L01)

Today's advanced metals are making squeeze-type resistance spot welding a must have skill. Repair shops and their technicians will be better positioned for the future after experiencing this hands-on course. Coupled with the like instructional class on squeeze-type resistance spot welding, technicians will be able to further their skills with hands-on practice.

## Course Highlights

Points: Part of WCSA3

Estimated Duration: 4 Hours

Format: Classroom/Online/Virtual 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:

- 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 TESTING AND CERTIFICATION

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

##### Instruction

Participants will be briefed with a refresh on Machine set up and maintenance of GMA (MIG) welding equipment. This will include how to identify and correct defective welds and how welds will be visually and destructively tested for certification.

##### Hands-On Practice

Following the instruction participants will apply their knowledge through practice with combinations of Steel and Bronze GMA (MIG/MAG) welds. The time spent on supervised practice will be based on the participant's skill level and visual and destructive testing results

Participants will work with two different thicknesses of automotive-grade, zinc-coated steel—16 gauge (1.4-1.6 mm) and 22 gauge (0.68-0.81 mm).

##### Skills Verification Test

The final phase of testing consists of the participants taking the hands-on test, when he or she demonstrates the ability to perform the specified 15 welds. All 15 welds must pass against I-CAR standards in order to receive the certification. Participants will be given multiple attempts to perform each weld if necessary.

##### Certification

All earned I-CAR Steel Welding Certification designations are valid for three years from the passing date.

##### Retesting

Participants who are unable to properly complete all of the welds during the event may retake the training and test on another dates and pass in order to receive the certification. Participants who pass 70% of their welds will be retested at no charge. Those who do not, will complete a full retest at their expense. The I-CAR Steel Welding Certifications remains active three years from the test date.

##### 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 participant 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:

- Steel GMA (MIG/MAG) Welding Theory (WCS06e)
- MIG Brazing (BRZ01e)
- Steel GMA (MIG/MAG) Theory and Preparation (WQPA3)
- BRZ02 Hands-On Skills Training (BRZ02)

## 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

#### After completing this course, you will be able to:

- Understand how to set and tune, and maintain welding machine
- Perform proper welding techniques
- Make common GMA (MIG) welds on multiple thicknesses of steel in vertical and overhead positions

#### 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.

