

# **CQI-15**

## **Special Process: Welding System Assessment Second Edition**

This is a preview of "AIAG CQI-15:2020". [Click here to purchase the full version from the ANSI store.](#)



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#### **Published by:**

**Automotive Industry Action Group  
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#### **APPROVAL STATUS**

*The AIAG Quality Steering Committee and designated stakeholders approved this document for publication on October 1, 2019.*

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ISBN#: 978 1 60534 448 5

## **CHANGES MADE TO CQI-15 2<sup>ND</sup> EDITION, 2<sup>ND</sup> PRINTING**

The following corrections were made to the CQI-15 2<sup>nd</sup> edition, 2<sup>nd</sup> printing:

1. Job Audit Process Tables, Section 2 Control Plan
  - Weld Lot Containment – All weld validation testing shall be performed prior to shipping (Batch & Hold)

**Changed to –**

- Weld Lot Containment – All weld validation testing shall be performed prior to shipping components with critical (CC) welds (Batch & Hold).

2. Drawn Arc Job Audit tab, item 4.6

- Control Limits – Control limits shall be utilized for controlling minimum load requirements

**Changed to –**

- Warning Limits – Warning limits shall be utilized for controlling the weld attributes. Warning limits to establish an alert prior to failure to meet specifications.

3. Resistance Welding Job Audit tab, items 7.3 and 7.5 are duplicates and will be combined into 7.3

- 7.3 Part touching details, locating pins, fixture locators and tooling mating surfaces – All details checked for looseness, all non-pinned details torque checked and match marked.
- 7.5 Part touching details, locating pins, fixture locators and tooling mating surfaces – All mating surfaces shall be free of expulsion and debris.

**Changed to –**

- 7.3 Part touching details, locating pins, fixture locators and tooling mating surfaces – All details checked for looseness, all non-pinned details torque checked and match marked. All mating surfaces shall be free of expulsion and debris.
- Item 7.5 will be deleted.

Note: For auditing/assessing purposes the CQI-15 2<sup>nd</sup> edition and the CQI-15 2<sup>nd</sup> edition, 2<sup>nd</sup> printing are considered equivalent.



## **FOREWORD**

Automotive Industry Action Group (AIAG) committees are made up of volunteers from member companies in the automotive industry. The work of preparing process audits is done by AIAG technical committees.

The main task of technical committees is to prepare Automotive Standards and System Requirements. Draft documents adopted by the technical committees are circulated to the Steering Committee for review and consensus approval. Publication of the documents requires approval by the Quality Steering Committee.

The Quality Steering Committee would like to acknowledge and thank the following individuals and their companies who have contributed time and effort to the development of this document.

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## INTRODUCTION

### General

The work of preparing *CQI-15 Special Process: Welding System Assessment (WSA) 2<sup>nd</sup> edition* was completed by the AIAG Welding Work Group. These welding requirements are complementary to customer and product standards.

The WSA can be used to assess an organization's ability to meet the requirements in this assessment, as well as customer, regulatory, and the organization's own requirements. The WSA can also be used between an organization and its suppliers.

In the WSA, the word "shall" indicates a requirement for purposes of the self-assessment. The word "should" indicates a recommendation. Where the term "such as" is used, any suggestions given are for guidance only.

Compliance to the WSA is determined using the table below:

<b>Red</b>	Any RED Element	<b>Does NOT meet the requirements, needs immediate action.</b> Process review indicates that there is a risk of non-conforming product.
<b>Yellow</b>	<100% GREEN -0- RED	<b>Does NOT meet the requirements, containment is in place.</b> Process review indicates that there is enough containment of non-conforming product.
<b>Green</b>	100% GREEN	<b>Meets all requirements.</b>

### Process Approach

The WSA supports the automotive process approach as described in IATF 16949.

### Welding System Assessment Goals

The goal of the WSA is the development of a welding management system that provides for continual improvement, emphasizing defect prevention and the reduction of variation and waste in the supply chain.

The WSA, coupled with an internationally recognized quality management system and applicable customer-specific requirements, defines the fundamental requirements for welding management systems.

The WSA is intended to provide a common approach to a welding management system for automotive production and service part organizations.

### Assessment Process

Ongoing assessments shall be conducted annually, unless otherwise specified by the customer, to reexamine the continuing compliance with the WSA. Each assessment shall include a review of the

organization's systems using the WSA. Successive Job Audits shall sample parts from different automotive component manufacturers that require compliance to the WSA document.

The assessment shall use the process approach to auditing/assessing as identified by the requirements of IATF 16949.

## Assessor Qualifications

Assessor(s) shall have the following specific experience to conduct the WELDING SYSTEM ASSESSMENT:

1. Be an experienced quality management system (QMS) internal auditor (for example, latest edition of IATF 16949, ISO 9001),
2. Assessor shall possess welding knowledge. Evidence shall include a minimum of 5 years experience in welding or a combination of formal education in welding and welding experience totaling a minimum of 5 years,
3. Assessor shall possess knowledge of and be familiar with the application of automotive quality core tools including statistical process control, measurement systems analysis, part approval, failure mode and effects analysis, and advanced quality planning.

Note: If more than one assessor is required to meet the above qualifications, the lead assessor shall be the person meeting the requirements in #1.

## Other Requirements

The organization shall keep records as evidence of compliance to the requirements identified in the WSA, as well as all appropriate action plans to address any nonconforming ratings. These records shall be readily available for review by any customer requiring compliance to the requirements within this document.





## 1 SCOPE

### 1.1 General

This document specifies process requirements for an organization or its suppliers performing applicable ferrous and non-ferrous metallic welding, who need to:

- demonstrate ability to consistently provide product that meets customer and applicable regulatory requirements, and
- enhance customer satisfaction through the effective application of the system, including processes for continual improvement of the system.

The Welding System Assessment is applicable to sites where customer-specified parts for production and/or service are processed throughout the automotive supply chain.

### 1.2 Application

All requirements of the CQI-15 Welding System Assessment are generic and are intended to be applicable to all organizations performing the welding operations addressed in this document, regardless of type, size, and product.

Eight Job Audit Process Tables have been developed and the appropriate Job Audit(s) is to be completed during the assessment. The Job Audit Process Tables are specific to welding processes as noted below:

#### **Gas Metal Arc Welding**

- Flux-Cored Arc Welding
- Gas Metal Arc Welding
- Shielded Metal Arc Welding
- Plasma Arc Welding
- Gas Tungsten Arc Welding
- Gas Metal Arc Braze Welding

#### **Laser Beam Welding**

- Laser Beam Welding

#### **Drawn Arc Welding**

- Arc Stud/Fastener Welding

#### **Resistance Welding**

- Resistance Spot Welding
- Resistance Seam Welding
- Mash Seam Welding
- Flash Welding
- Projection Welding