

Raytheon Quality Note
HK

Revision - Date
12 – 11/9/2015

WELDING AND BRAZING REQUIREMENTS

1. SCOPE

- 1.1. Revision 12 replaces revision 11 dated 04/09/2009.
 - 1.1.1. Revision 12 is a complete rewrite to standardize format and clarify wording and structure of requirements.
- 1.2. The applicable revision of this document is determined by:
 - 1.2.1. The revision specified on the purchase order, or
 - 1.2.2. The revision in effect at the time of the purchase order if no revision is listed on the purchase order
- 1.3. The purpose of this document is to ensure Raytheon suppliers and their sub-tier suppliers who perform welding and brazing meet Raytheon standards and have processes capable of producing compliant hardware.
- 1.4. This document is invoked if the production part or any sub component requires welding and/or brazing in accordance with one of the specifications listed on the Raytheon Quality Notes website (<http://qnotes.raytheon.com>) for Quality Note HK.
 - 1.4.1. ASME Boiler and Pressure Vessel Codes are not controlled by this document.

2. APPLICABLE DOCUMENTS

- 2.1. The following documents are referenced in Sections 3 and 4 of this document
- 2.2. Raytheon Specifications
 - 2.2.1. Raytheon Quality Note HK Approved Supplier Listing
- 2.3. Other Specifications
 - 2.3.1. Refer to the table below for Non Raytheon specifications.

AWS C3.4	AWS D17.1	MIS-47201
AWS C3.5	AWS D17.2	SAE AMS-2680
AWS C3.6	G577917	SAE AMS-2681
AWS C3.7	MIL-B-7883	SAE AMS-STD-2219
AWS D1.1	MIL-STD-2219	SAE AMS-W- 6858
AWS D1.2	MIL-W-6858	WS-23719
AWS D1.6	MIL-W-8604	WS-33739
AWS D9.1	MIL-W-8611	

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3. REQUIREMENTS

3.1. The word "shall" invokes a binding requirement for the supplier to meet.

3.2. General Requirements

- 3.2.1. The supplier shall ensure the requirements of this document are flowed to their sub-tier suppliers.
- 3.2.2. The supplier shall ensure compliance to the requirements of this document from their sub-tier suppliers.
- 3.2.3. The supplier shall communicate all instances of nonconforming material delivery by their sub-tier suppliers to the Raytheon Procurement Agent.
- 3.2.4. The supplier and their sub-tier suppliers shall ensure they are approved by Raytheon for the process being performed. The list of Raytheon approved suppliers is located on the Raytheon Quality Notes website (<http://qnotes.raytheon.com>), adjacent to the applicable quality note.
- 3.2.5. The supplier shall contact the Raytheon Procurement Agent for further instructions if the above condition cannot be met.
- 3.2.6. The supplier shall follow the "Superseding Requirement" listed in the below table if the hardware TDP/drawing calls out a "TDP/Drawing Requirement" listed in Table 1 below.
- 3.2.7. The supplier shall contact the Raytheon Engineering Hotline (Reference Purchase Order) for clarification when a class of weld or braze is not specified.

3.3. Electron Beam Welding Requirements

- 3.3.1. The supplier shall electron beam weld in accordance with SAE AMS-2680 or SAE AMS-2681 when specified in the technical data package.

3.4. Brazing Requirements

- 3.4.1. Procedure and operator qualification shall be in accordance with the requirements of AWS except as noted in 3.4.1.1.
 - 3.4.1.1. Existing MIL-B-7883 Class B and C brazements, which are not fluid or gas retaining or carrying, may be qualified by

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previous successful inspection by Raytheon and delivery to Raytheon. Advance approval by Raytheon is required.

- 3.4.2. If the drawing specifies brazing in accordance with MIL-B-7883 Grade B, the supplier shall not be required to perform the internal inspection (Non-destructive testing) noted in the appropriate AWS specification unless internal inspection is explicitly required by the drawing.

- 3.4.2.1. The supplier shall satisfy all other inspection requirements of the AWS specification for Class B.

Table 1 – TDP/Drawing Supersession Requirements

Type	TDP/Drawing Requirement	Superseding Requirement
Fusion Welding	WS-23719	AWS D17.1 as Modified by WS-33739
Fusion Welding	G577917	AWS D17.1 as Modified by WS-33739
Fusion Welding	MIS-47201	AWS D17.1 as Modified by WS-33739
Fusion Welding	MIL-STD-2219	AWS D17.1 as Modified by WS-33739
Fusion Welding	AMS-STD-2219	AWS D17.1 as Modified by WS-33739
Fusion Welding	MIL-W-8604	AWS D17.1 as Modified by WS-33739
Fusion Welding	MIL-W-8611	AWS D17.1 as Modified by WS-33739
Fusion Welding	AWS D17.1	AWS D17.1 as Modified by WS-33739
Fusion Welding	AWS D1.1	AWS D1.1 and WS-33739 Appendix 1
Fusion Welding	AWS D1.2	AWS D1.2 and WS-33739 Appendix 2
Fusion Welding	AWS D1.6	AWS D1.6 and WS-33739 Appendix 3
Fusion Welding	AWS D9.1	AWS D9.1 and WS-33739 Appendix 4
Resistance Welding	AMS-W-6858	AWS D17.2
Resistance Welding	MIL-W-6858	AWS D17.2
Torch Brazing	MIL-B-7883	AWS C3.4
Induction Brazing	MIL-B-7883	AWS C3.5
Furnace Brazing	MIL-B-7883	AWS C3.6
Aluminum Alloy Brazing	MIL-B-7883	AWS C3.7

4. DATA SUBMISSION

- 4.1. There is no deliverable data to Raytheon required by this document.

5. NOTES

- 5.1. Order of Precedence – Conflicts between this document and other provisions within the Purchase Order are defined in the Terms & Conditions (TC-001)

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- 5.2. The requirements detailed in Section 3.2 only apply to welding and/or brazing requirements flowed down from Raytheon.
- 5.3. ASME certified sources can be found at
<https://www.asme.org/shop/certification-and-accreditation/locate-asme-certified-companies>.