



Quality Guideline for Drawn Arc Fasteners

1 Introduction

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. This standard determines the quality guideline for standard steel drawn arc fasteners.

1.2 Applicability. The requirements of this document become mandatory for all weld fasteners. Supplier's compliance with the requirements of this quality guideline is the basis for the technical release. The specifications shall be met in all GME regions.

1.3 Remarks. For clarification of this standard or editorial comments, contact GME Material & Presses and Joining Technology department.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW3059 GMW14056

2.3 Additional References.

WS-5J

WS-1J

GWS-7, additional requirements for large welding areas necessary for brackets (extended weld time)

3 General

The mechanical and material characteristic of the drawn arc fastener have a great influence on the process stability and process reliability.

The manufacturer of the fastener shall provide and guarantee a constant high fastener quality.

Therefore a quality management system shall be established to ensure the constant high quality of the products.

The batch of fastener is released as soon as the raw material test and the final product test has successfully completed, the process capability is given and the documentation is available.

4 Product Requirements

4.1 Material and Geometry of Fasteners. Following fastener characteristics are essential to meet the process requirements (see paragraph 2):

- Coating (Zinc-Plating) according to specification within the given tolerances (but 12 µm maximum)
- Material according to specification and drawing within the given tolerances
- Fastener shall be vibratory grinded
- Oil or grease free surfaces under consideration of corrosion protection.

- Weld process capability

4.2 Quality Assurance. A quality test of raw material and fasteners (made of it) shall be performed to ensure the constant process capability of the fastener. Quality tests include chemical analysis (e.g. carbon content ≤ 0.25 % by mass), micro structure, hardness etc. and shall be according to specifications and drawings.

This test shall be repeated as soon as a new raw material batch is used.

4.2.1 Raw Material Testing. Before starting of fastener manufacturing each raw material batch shall be tested according to paragraph 5.

Fastener definition:

- Defined Size
- Free of oil and grease
- Deburred

Further process steps of the fastener production are only allowed if the target of welding quality has been fulfilled by using original reference welding parameters (for raw material probe).

4.2.2 Final Product Testing. After surface treatment (coating and barrel finishing) the fastener batch shall be tested according to paragraph 5.

Fastener definition:

- Made in tool for series
- Barrel finished
- Zinc Plating

Further process steps of the fastener production are only allowed if the target of welding quality has been fulfilled by using original reference welding parameters (for final product testing) and the quality is documented.

- 50 subsequent fasteners shall be welded.
- Each individual weld must comply with the reference weld quality to get a final approval. A minimum fusion / fusion length of 90 % is requested.

5 Weld Test Details

5.1 Specification of the Base Sheet Material. The material should be uncoated soft steel e.g. GMW2M-ST-S-CR3-UNCOATED-U (recommendation).

The sheet gauge shall be taken from Tables 1 and 2.

Table 1: Brackets

Material Thickness of Base Sheet in mm	Material Thickness of Bracket in mm
0.8	1.00
1.0	1.25
1.25	1.50
1.5	2.00
1.5	2.50

Table 2: Studs

Material Thickness of Base Sheet in mm	Studs
0.8	All

5.2 Weld Test. According to:

- WS-5J
- GMW14056