

JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS Z 3811 : 2000

**Standard qualification procedure
for welding technique of aluminium
and aluminium alloy**

ICS 25.160.01

Descriptors : aluminium, aluminium alloys, gas tungsten-arc welding, gas metal-arc welding, approval testing

Reference number : JIS Z 3811 : 2000 (E)

Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of International Trade and Industry through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law. Consequently **JIS Z 3811 : 1976** is replaced with **JIS Z 3811 : 2000**.

In this revision, in the kinds of the standard qualification procedures for technique, MN-1P and MA-3P are deleted from the recent executing condition. Though the shape and dimensions of test material and the method for preparing a test material are the same as conventional ones, the width of a bend test specimen of a sheet test material is changed in order to conform to other standards. Details of the appearance test items and the bend test criterion are added to the acceptance/reject criterion to clarify the standard for evaluation.

Date of Establishment: 1965-02-01

Date of Revision: 2000-11-20

Date of Public Notice in Official Gazette: 2000-11-20

Investigated by: Japanese Industrial Standards Committee
Divisional Council on Welding

JIS Z 3811 : 2000, First English edition published in 2002-04

Translated and published by: Japanese Standards Association
4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

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Printed in Japan

Standard qualification procedure for welding technique of aluminium and aluminium alloy

1 Scope This Japanese Industrial Standard specifies the standard technical qualification procedure and acceptance criteria for TIG and MIG welding techniques of aluminium and aluminium alloy.

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS H 4000 *Aluminium and aluminium alloy sheets and plates, strips and coiled sheets*

JIS H 4080 *Aluminium and aluminium alloys extruded tubes and cold-drawn tubes*

JIS K 1105 *Argon*

JIS Z 3001 *Welding terms*

JIS Z 3122 *Methods of bend test for butt welded joint*

JIS Z 3232 *Aluminium and aluminium alloy welding rods and wires*

3 Definitions For the main terms used in this Standard, the definitions in **JIS Z 3001** apply, and the rest of the terms shall be as follows.

- a) **testing material** A plate or a tube with specified shape and dimensions which is prepared for the test.
- b) **welded material** A welded testing material.
- c) **test piece** That which is processed in specified shape and dimensions from the welded material in order to carry out a bend test.

4 Classification of standard technical qualification test Standard technical qualification tests shall be classified as given in Table 1 according to the welding method, type of a joint, classification of the thickness of a testing material, welding position and the like, and the symbols thereof shall be as given in Table 1.

Table 1 Type of standard technical qualification test

Type of joint	Classification of thickness of testing material mm	Presence of backing metal ⁽¹⁾	Welding position	Welding method and symbol	
				TIG welding	MIG welding
Butt welding of plate	Thin sheet (3 in sheet thickness)	A	Flat position (F)		MA-1F
			Vertical position (V)		MA-1V
			Horizontal position (H)		MA-1H
			Overhead position (O)		MA-1O
		N	Flat position (F)	TN-1F	MN-1F
			Vertical position (V)	TN-1V	MN-1V
			Horizontal position (H)	TN-1H	MN-1H
			Overhead position (O)	TN-1O	MN-1O
	Medium plate (8 in plate thickness)	A	Flat position (F)		MA-2F
			Vertical position (V)		MA-2V
			Horizontal position (H)		MA-2H
			Overhead position (O)		MA-2O
		N	Flat position (F)	TN-2F	MN-2F
			Vertical position (V)	TN-2V	MN-2V
			Horizontal position (H)	TN-2H	MN-2H
			Overhead position (O)	TN-2O	MN-2O
	Thick plate (20 or over in plate thickness)	A	Flat position (F)		MA-3F
			Vertical position (V)		MA-3V
			Horizontal position (H)		MA-3H
			Overhead position (O)		MA-3O
		N	Flat position (F)	TN-3F	MN-3F
			Vertical position (V)	TN-3V	MN-3V
			Horizontal position (H)	TN-3H	MN-3H
			Overhead position (O)	TN-3O	MN-3O
Butt welding of pipe	Thin wall thickness pipe (4 in wall thickness)	A	Horizontal and vertical fixation (P)		MA-1P
		N	Horizontal and vertical fixation (P)	TN-1P	
	Medium wall thickness pipe (12 to 15 in wall thickness)	A	Horizontal and vertical fixation (P)		MA-2P
		N	Horizontal and vertical fixation (P)	TN-2P	MN-2P
	Thick wall thickness pipe (20 or over in wall thickness)	N	Horizontal and vertical fixation (P)	TN-3P	MN-3P

Note (1) "A" means application of backing metal. "N" means no application of backing metal.

5 Welding method A testing material shall be welded as follows.

- a) Manual welding by TIG welding
- b) Semi-automatic welding by MIG welding

6 Welding position

6.1 The position of butt welding for plate shall be the flat position, vertical position, horizontal position and overhead position as shown in Fig. 1.

6.2 The position of butt welding for pipe shall be horizontal fixation (vertical and overhead) and vertical fixation (horizontal) as shown in Fig. 2.

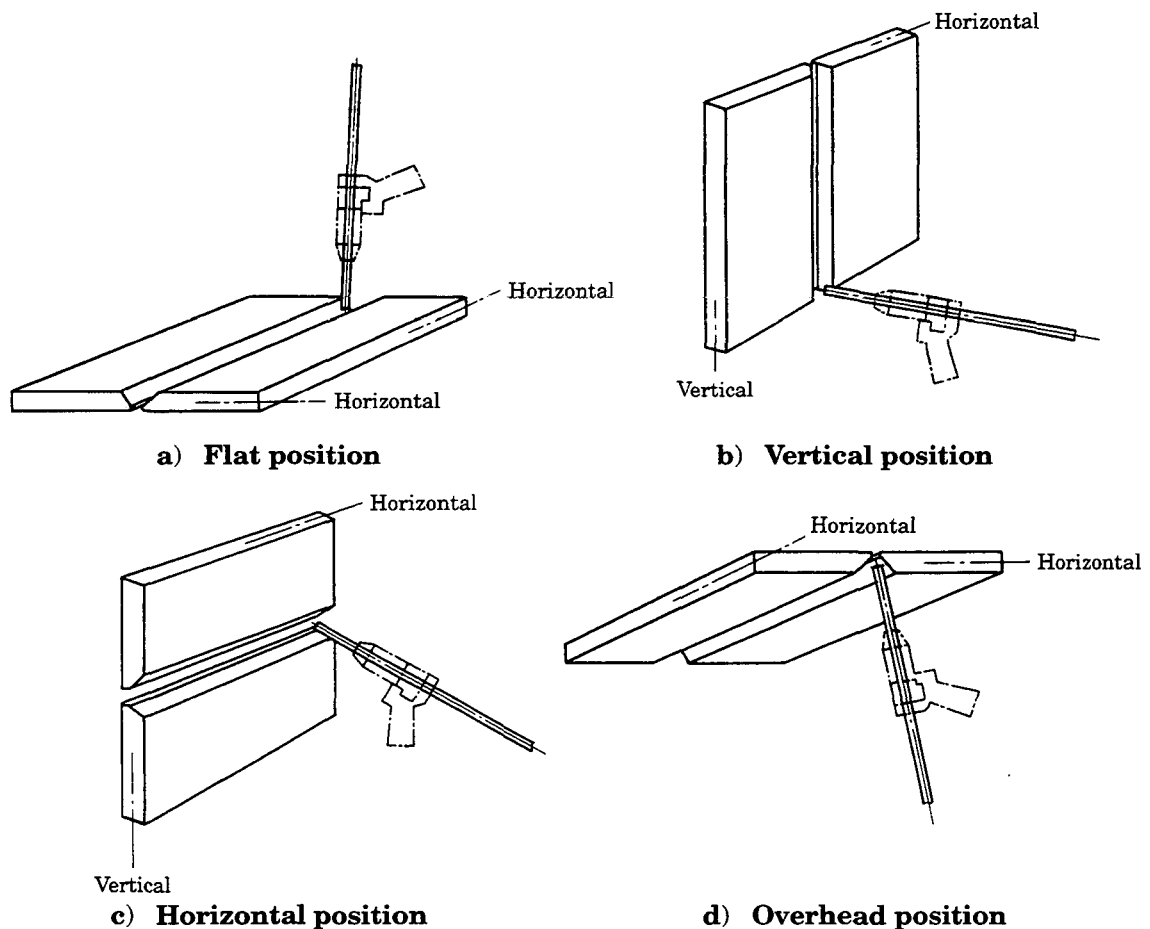


Fig. 1 Butt welding position for plate

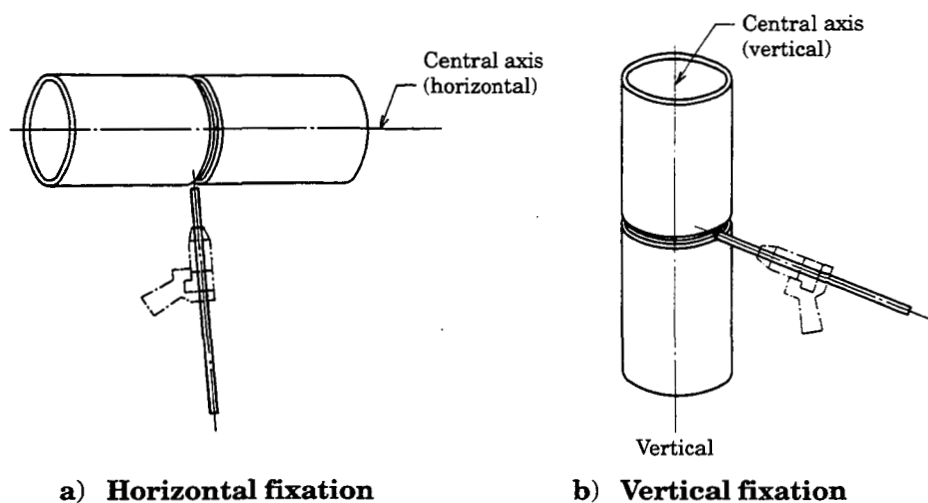


Fig. 2 Butt welding position for pipes

7 Shape and dimensions of testing material

7.1 The testing material for plates shall be classified into thin sheet, medium plate and thick plate, and the shape and dimensions thereof shall be as shown in Figs. 3 to 5.

7.2 The testing material for pipes shall be classified into thin wall pipe, medium wall pipe and thick wall pipe, and the shape and dimensions thereof shall be as shown in Figs. 6 to 8.