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JIS Z 3801 : 1997

**Standard qualification procedure for  
manual welding technique**

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**Descriptors** : arc welding, gas welding, approval testing, testing, qualification approval,  
manual control systems

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In the event of any doubts arising as to the contents,  
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## Standard qualification procedure for manual welding technique

**1 Scope** This Japanese Industrial Standard specifies the standard qualification procedure for manual welding technique by shielded metal arc welding, TIG welding, and gas welding.

Remarks: The normative references to this Standard are as follows.

- JIS G 3101 *Rolled steels for general structure*
- JIS G 3103 *Carbon steel and molybdenum alloy steel plates for boilers and other pressure vessels*
- JIS G 3106 *Rolled steels for welded structure*
- JIS G 3136 *Rolled steels for building structure*
- JIS G 3445 *Carbon steel tubes for machine structural purposes*
- JIS G 3454 *Carbon steel pipes for pressure service*
- JIS G 3455 *Carbon steel pipes for high pressure service*
- JIS G 3456 *Carbon steel pipes for high temperature service*
- JIS G 3461 *Carbon steel boiler and heat exchanger tubes*
- JIS K 1101 *Oxygen*
- JIS K 1105 *Argon*
- JIS K 1902 *Dissolved acetylene*
- JIS Z 3001 *Welding terms*
- JIS Z 3122 *Methods of bend test for butt welded joint*
- JIS Z 3201 *Gas welding rods for mild steel*
- JIS Z 3211 *Covered electrodes for mild steel*
- JIS Z 3212 *Covered electrodes for high tensile strength steel*
- JIS Z 3316 *Tig welding rods and wires for mild steel and low alloy steel*

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

- (1) **combined welding** The welding in which initial 1 to 3 passes are performed by TIG welding, and the subsequent passes are performed by shielded metal arc welding.
- (2) **test material** Plates or pipes to be prepared for test
- (3) **test specimen** Plates or pipes welded
- (4) **test piece** A piece cut out into the specified shape and dimensions from a test specimen in order to carry out bend test

**3 Classification of qualification procedure for welding technique** The qualification procedure for welding technique shall be classified as indicated in Table 1 by the welding method, welding position, kind of joints, and division of the thickness of the test material, and its symbol shall be as indicated in Table 1.

**Table 1 Classification of qualification procedure for welding technique**

Kind of joint	Division of thickness of test material (mm)	Shape of groove	With/without backing metal (¹)	Welding position	Welding method and symbol			
					Shielded metal arc welding	TIG welding	Combined welding	Gas welding
Butt welding of plates	Thin plate (3.2 in thickness)	Square groove or single V groove	N	Flat position (F)	N-1F	T-1F		G-1F
				Vertical position (V)	N-1V	T-1V		G-1V
				Horizontal position (H)	N-1H	T-1H		G-1H
				Overhead position (O)	N-1O	T-1O		G-1O
	Medium plate (9.0 in thickness)	Single V groove	A	Flat position (F)	A-2F			
				Vertical position (V)	A-2V			
				Horizontal position (H)	A-2H			
				Overhead position (O)	A-2O			
		Single V groove	N	Flat position (F)	N-2F		C-2F	
				Vertical position (V)	N-2V		C-2V	
				Horizontal position (H)	N-2H		C-2H	
				Overhead position (O)	N-2O		C-2O	
	Thick plate (19.0 in thickness)	Single V groove	A	Flat position (F)	A-3F			
				Vertical position (V)	A-3V			
				Horizontal position (H)	A-3H			
				Overhead position (O)	A-3O			
		Single V groove	N	Flat position (F)	N-3F		C-3F	
				Vertical position (V)	N-3V		C-3V	
				Horizontal position (H)	N-3H		C-3H	
				Overhead position (O)	N-3O		C-3O	
Butt welding of pipes	Thin wall pipe (4.9 in thickness)	Square groove or single V groove	N	Horizontally and vertically fixed position (P)	N-1P	T-1P		G-1P
	Medium wall pipe (11.0 in thickness)	Single V groove	A	Horizontally and vertically fixed position (P)	A-2P			
			N	Horizontally and vertically fixed position (P)	N-2P		C-2P	
	Thick wall pipe (20 or over in thickness)	Single V groove	A	Horizontally and vertically fixed position (P)	A-3P			
			N	Horizontally and vertically fixed position (P)	N-3P		C-3P	

Note (¹) A; The backing-metal is used.

N; No backing metal is used.

Remarks: For details of thickness and external diameter of pipes, refer to Figs. 3 to 8.