



**WILLIAMS**  
VALVE CORPORATION

**Guidelines for Installation of Weld  
End Valves**

**DOC. No.: WEW-RP-001**

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## **Recommended Practice: Guidelines for Installation of Weld End Valves**

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## Scope

This recommended practice establishes a general guideline for the on-field welding of Williams butt weld and socket weld end valves.

This recommended practice is for reference purposes only. The recommendations set forth shall be superseded by federal, local and user regulatory laws, practices, and procedures.

Welding of valves is the responsibility of the end user and/or designate.

## 1. Qualification

### 1.1. Welder Qualification

- 1.1.1. The welder conducting the work shall be trained and certified in accordance with the requirements of ASME BPVC Section IX, ASME B31, ABSA, or an equivalent local certifying regulatory organization.

### 1.2. Weld Procedure

- 1.2.1. Welds shall be conducted in accordance with qualified weld procedures per section IX of the ASME Boiler & Pressure Vessel Code or equivalent.

## 2. Preparation

### 2.1. Workspace

- 2.1.1. All combustible materials should be removed from the work area prior to any heat-based cutting or welding commencing.
- 2.1.2. If any of the following conditions apply, special workspace preparation may be required:
  - 2.1.2.1. Excessive wind speeds (10 m/s or higher)
  - 2.1.2.2. Adverse atmospheric conditions: rain, snow, high humidity, etc.

### 2.2. Material

- 2.2.1. Components utilized shall conform to all relevant piping and/or user specification requirements.
- 2.2.2. Ambient temperature of the workpiece shall be above 10°C.



- 2.2.3. The area of work piece to be welded or thermal cut shall be cleaned and free of foreign contaminants. (dirt, grease, oil, rust, paint, etc.)
- 2.2.4. If the workpiece contains soft goods (plastics, elastomers, etc.) susceptible to high temperature, proper protection shall be utilized.
- 2.2.5. Except ball valve, all other type valves shall be fully closed prior to welding to protect seating surfaces. Ball valve shall be fully open prior to welding to avoid welding spatter adhering to the surface of ball, damaging the seat during opening.

### 3. Welding

- 3.1. The user should consult applicable ASME B31 or presiding specification within their jurisdiction for exact welding and PWHT requirements.
- 3.2. If work piece temperature is below 10°C, the welding groove and an area of 100mm around the groove shall be preheated as Table 1 indicates.

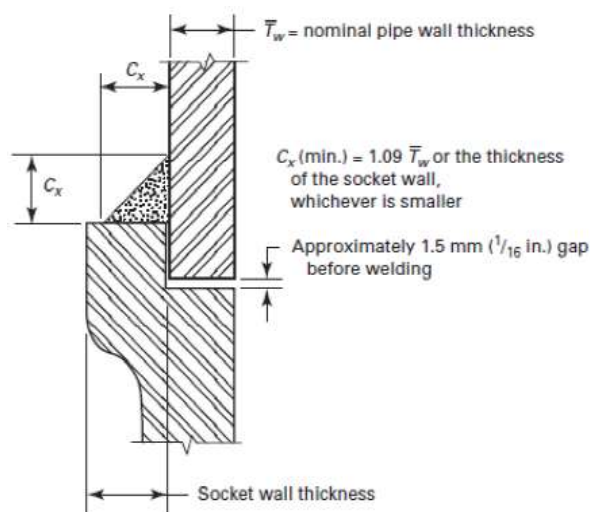
**TABLE 1**

Material Grade	Thickness (mm)	Minimum preheat (°C)
WCB, WCC, LCB, LCC, A105	<19	10
	≥19	95

\* Work piece temperature should not fall below pre-heat temperature. For other materials, contact Williams Engineering.

- 3.3. The welding dimensions for socket weld valves are per Figure 1.

**FIGURE 1**





- 3.3.1. Weld slag shall be removed between weld passes.
- 3.3.2. The final filler pass shall provide a slightly convex profile.

## 4. Post Weld Heat Treatment

- 4.1. Williams recommends using Localized PWHT procedures on valves. A partial heat treatment technique only effecting the HAZ of the weld shall be used to minimize impact to the sealing performance of valve.
- 4.2. The position of the obturator during post weld heat treatment shall comply with Table 2.

**TABLE 2: PWHT OBTURATOR POSITION**

<i>Design Standard</i>	<i>Valve Type</i>	<i>PWHT Position</i>
<i>API 600</i>	Gate	Half Open
<i>API 602</i>	Gate/Globe	Full Close
<i>API 603</i>	Gate	Half Open
<i>API 608</i>	Ball	Full Close
<i>API 6D</i>	Ball	Full Close or Full Open

*\* Failure to conduct PWHT with the obturator in the proper position may detrimentally impact performance.*

- 4.3. PWHT temperature should be monitored via thermocouples placed in the middle of the weld seam evenly spaced around the circumference of the weld.
- 4.4. Heating elements shall be placed on the weld seam as far away from the body of the valve as possible to avoid excessive heating to components critical to sealing performance.

## 5. Inspection & Testing

### 5.1. Weld Inspection

- 5.1.1. All welds shall be visually inspected for weld defects by qualified personnel.
- 5.1.2. Williams recommends performing NDE on critical welds.

### 5.2. Testing

- 5.2.1. The piping and welded valve(s) shall be hydrostatic tested in accordance with applicable code requirements, verifying weld integrity.