Socket Weld Fittings
Technical Specification Guide

Forged Fittings for Small-Bore Pressure Piping Systems

Socket weld fittings are forged pipe fittings manufactured with recessed socket ends for connecting small-diameter pipes. Produced mainly to ASME B16.11, they are available in carbon steel, stainless steel, and alloy steel for Class 3000, 6000, and 9000 applications.



Standard
ASME B16.11

Materials
ASTM A105 / ASTM A182 / ASTM A350

Pressure Class
3000 / 6000 / 9000

Size Range
NPS 1/8 – NPS 4

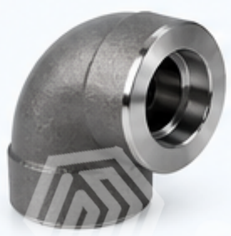
Standards, Pressure Classes and Materials



Applicable Standards

Standard	Description
ASME B16.11	Forged Socket Welding and Threaded Fittings
ASTM A105	Carbon Steel Forgings for Piping Components
ASTM A182	Stainless Steel and Alloy Steel Forgings
MSS SP-79	Socket Welding Reducing Inserts
MSS SP-95	Swage Nipples and Bull Plugs
ASME B31.3	Process Piping Installation Requirements

Pressure Classes



Class 3000	
Typical Pipe Schedule Reference	SCH 80 / XS
Common Applications	General pressure piping, utility systems, instrument piping

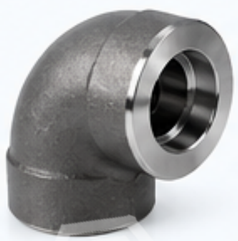


Class 6000	
Typical Pipe Schedule Reference	SCH 160
Common Applications	Higher pressure process piping and demanding service conditions



Class 9000	
Typical Pipe Schedule Reference	XXS
Common Applications	High pressure small-bore piping requiring maximum wall thickness

Material Options



Carbon Steel
ASTM A105

- Widely used in general pressure piping
- Good mechanical properties
- Suitable for utility and industrial applications



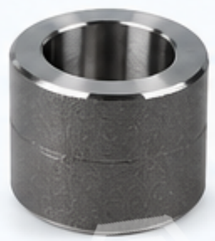
Stainless Steel
ASTM A182 F304 / F316

- Good corrosion resistance
- Suitable for chemical, petrochemical and offshore applications
- Available in F304, F316 and other grades



Alloy Steel
ASTM A182 F11 / F22

- Suitable for high temperature and high pressure service
- Common grades include F11, F22 and others
- Used in power, refining and petrochemical systems

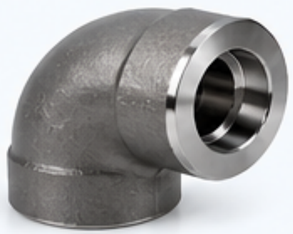


Low Temperature Steel
ASTM A350 LF2

- Suitable for low temperature service conditions
- Good toughness and impact resistance
- Commonly used in LNG, cryogenic and low temperature piping systems

Types and Size Range

Socket weld fittings are available in a variety of types to meet different piping layout and connection requirements.



Elbow



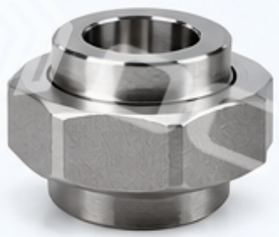
Tee



Cross



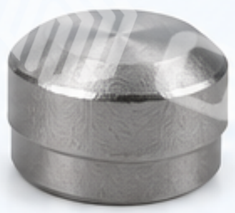
Coupling



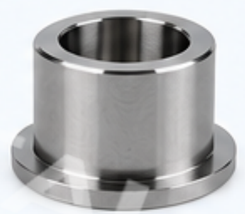
Union



Reducer



Cap



Insert / Stub End



Size Range and Specifications

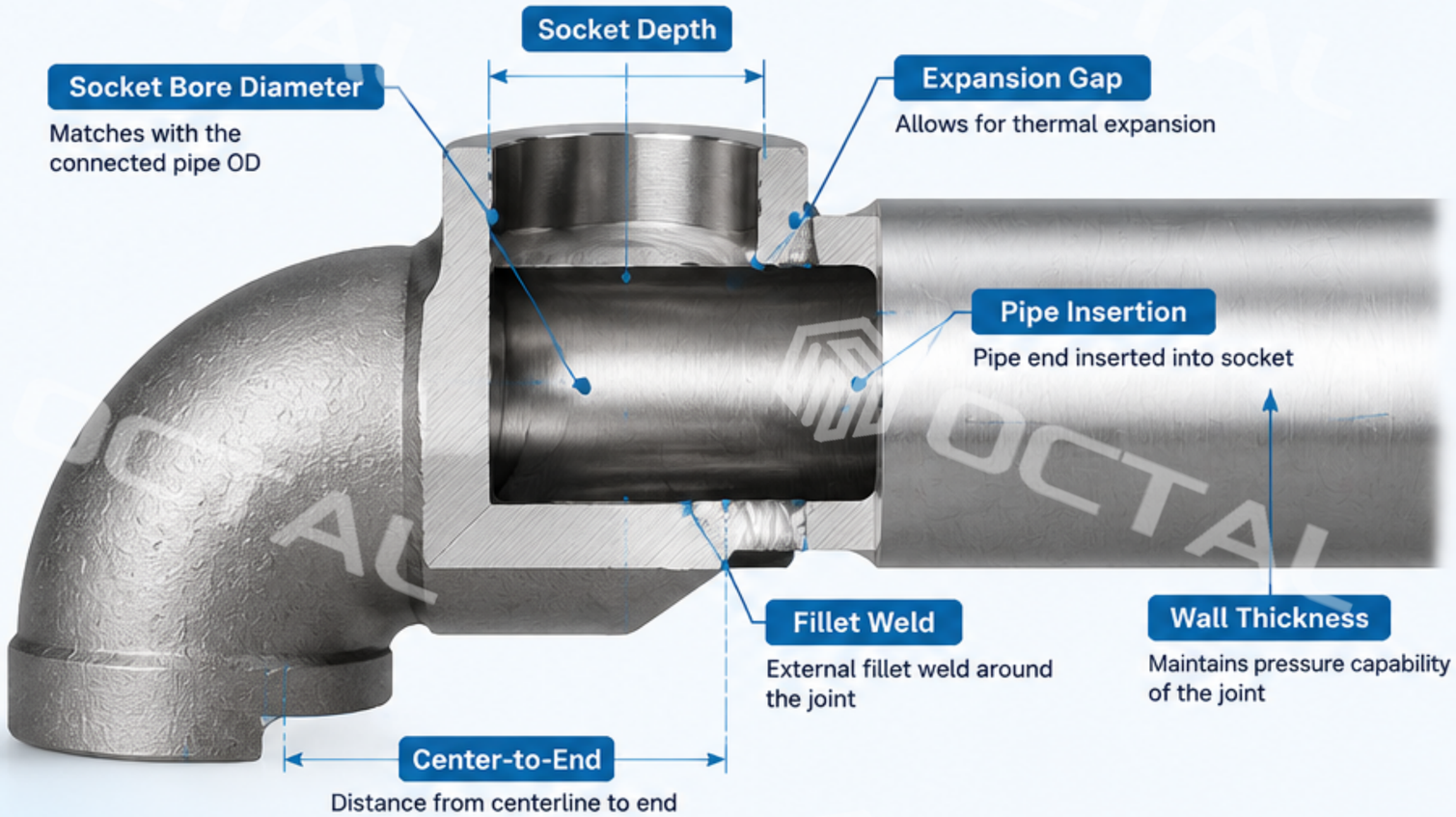
Item	Deccification
Nominal Size (NPS)	NPS 1/8 to NPS 4
Connection Type	Socket Welding
Pressure Class	Class 3000 / 6000 / 9000
Standard	ASME B16.11
Materials	Carbon Steel / Stainless Steel / Alloy Steel



Socket weld fittings are specified by nominal pipe size and pressure class. Selection depends on fitting type, material grade, service condition, and project specification.

Key Dimensions and Connection Structure

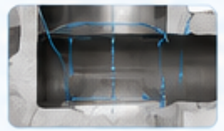
Socket weld fittings have a recessed socket end, allowing the pipe to be inserted into the fitting before an external fillet weld is applied. Proper control of key dimensions is essential for accurate alignment, reliable welding and pressure integrity.



Dimension Importance



Socket bore diameter
Match with connected pipe OD to ensure proper fit-up.



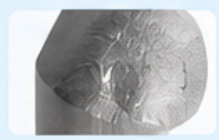
Socket depth
Controls insertion position and ensures adequate welding area.



Wall thickness
Maintains the pressure capability of the connection.



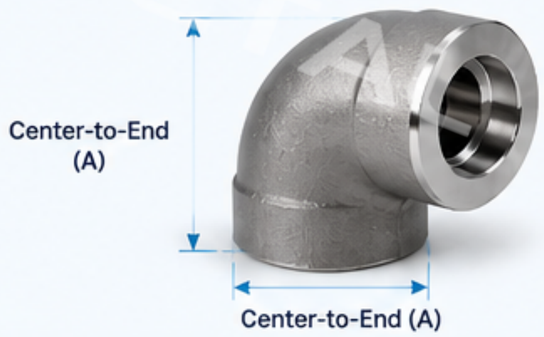
Center-to-end
Supports piping layout fit-up and ensures correct installation dimensions.



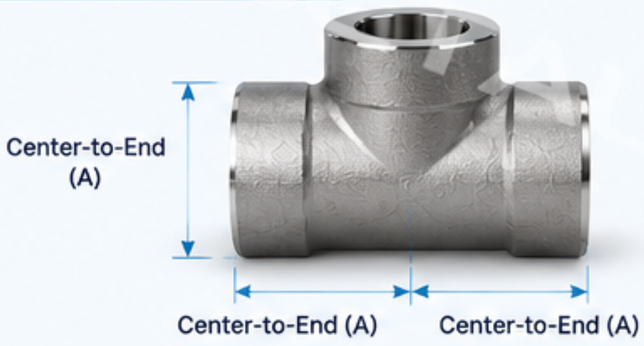
End geometry
Provides proper joint profile and supports welding quality.

Typical Dimensional Reference

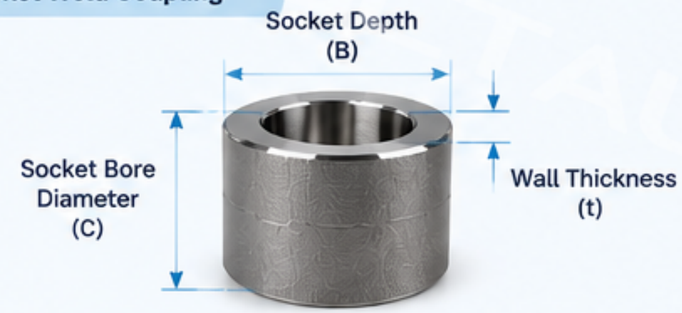
Socket Weld Elbow (90°)



Socket Weld Tee



Socket Weld Coupling



Manufacturing, Inspection and Documentation

1 Raw Material Verification



Verify material grade, heat number and supplier certification.

2 Forging



Form fittings by hot forging to achieve required mechanical properties.

3 Heat Treatment



Normalizing, annealing or solution treatment as per material specification.

4 Machining



Machine socket and end faces to required dimensions and tolerances.

5 Inspection



Dimensional, visual and NDT inspection as per applicable standards.

6 Marking



Mark with material grade, size, pressure class and heat number for traceability.

7 Delivery Documentation



Provide complete inspection records and certification with delivery.

Quality Documentation

Document	Purpose
EN 10204 3.1 Material Certificate	Chemical composition, mechanical properties and heat number traceability
PMI Report	Positive material identification verification
Dimensional Inspection Report	Size and tolerance confirmation
Hardness Test Record	Heat treatment and hardness verification
NDT Report	Surface defect inspection record



Traceability Summary

Socket weld fittings should be supplied with traceable material heat numbers, dimensional verification, and project-specific inspection records to support procurement and installation acceptance.