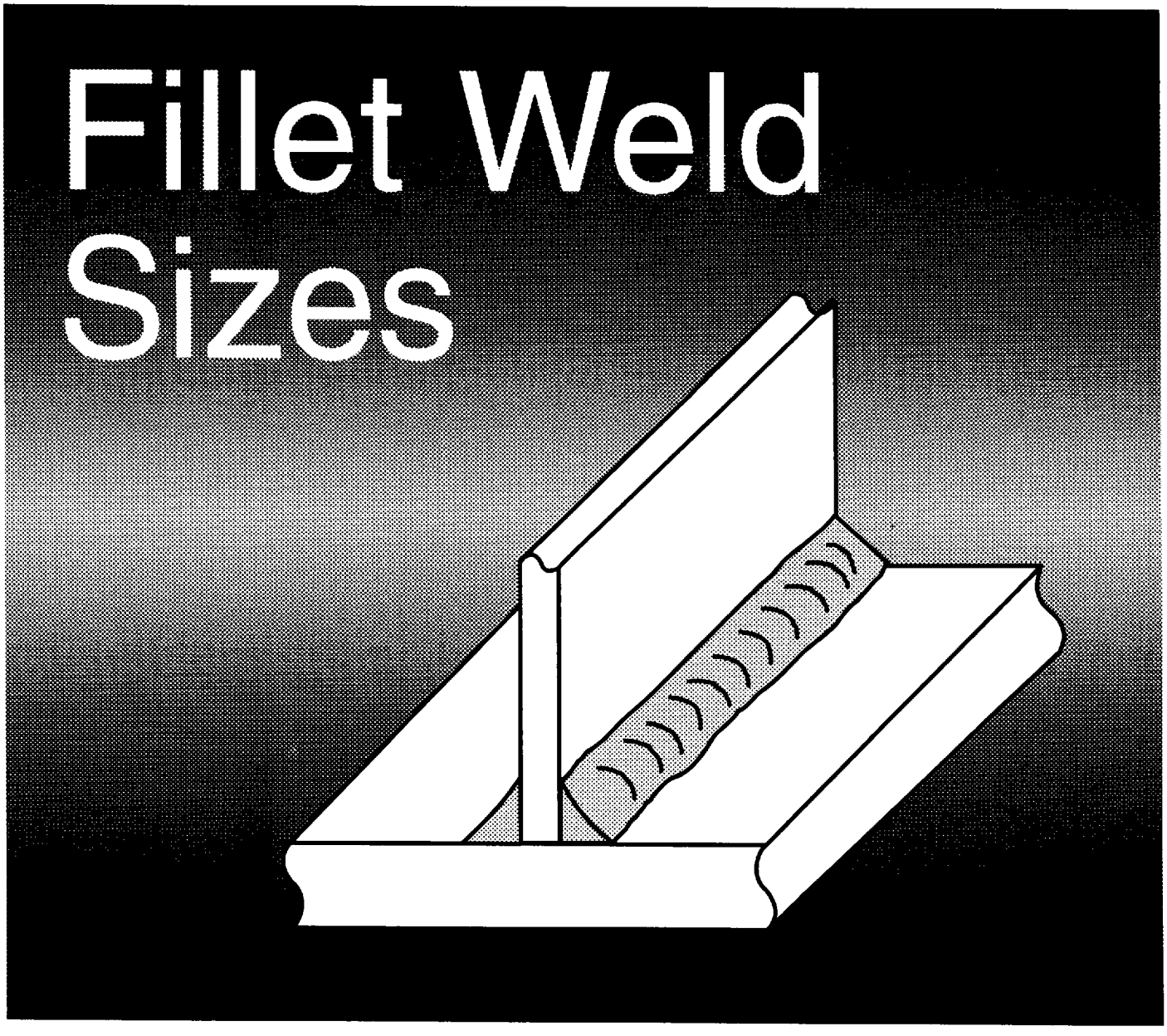
American Welding Society

Design Handbook for Calculating

Fillet Weld Sizes



DESIGN HANDBOOK
for
CALCULATING
FILLET WELD SIZES

Located, reviewed and reformatted under the AWS Product Development Committee as a service for quality-minded welding fabricators.

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FOREWORD

The design of a welded connection is usually the first operation in the construction of a welded product. The optimization of the design for the initial manufacturability and the life cycle performance of the component is a challenge to the designer.

Fillet welds are the most common joint designs in the fabrication of many welded products. The use of fillet welds simplifies the material preparation effort and increases the opportunity for using automation in the welding operation.

Traditional designs base the size of the welds on the allowable unit loads that the welds are expected to experience in the intended applications. For sections of different thicknesses, the minimum fillet size can be governed by the thicker member.

While this approach is conservative, the weld sizes may not be the optimum. As the volume of weld metal is severely impacted by the size of the weld, each increase in the specified leg length has a dramatic effect on the amount of welding required.

An alternative system for calculating fillet weld sizes was presented by two researchers. Selection of the correct fillet weld size is essential for the satisfactory performance of many weldments in service today. Fillet welds are used in virtually every industry, and when properly designed, provide effective and efficient connections. An alternate approach to the more traditional design philosophy is the basis for this handbook, and seeks to provide a method for determining the optimum fillet weld size.

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