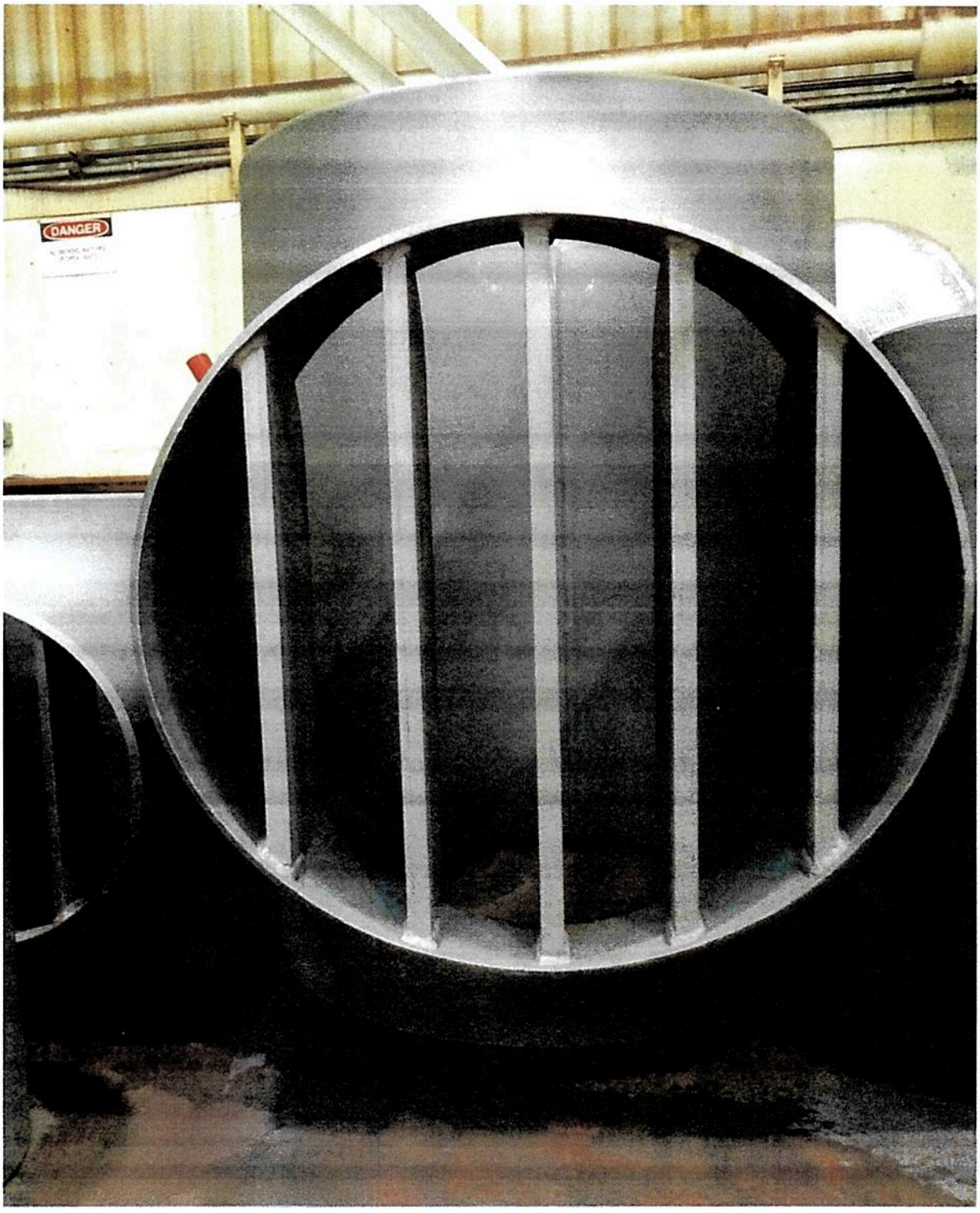
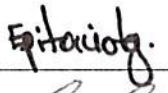
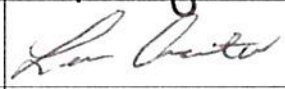
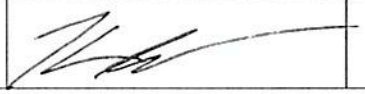
WELDBEND®

Bar Tees Procedure: Series 4000



Approvals

The signatures below certify that this Barred Specification has been reviewed and accepted and demonstrates that the signatories are aware of all the requirements contained herein and are committed to ensuring their provision.

	Name	Signature	Position	Date
Prepared by	Epitacio Torres Garcia		QA Metallurgist	02/24/2020
Reviewed by	Lou Cantu		Assistant Purchasing Agent	02/25/2020
Approved by	Kevin Coulas		Vice-President of Production	02/28/2020

Contents

1 General Information

1.1 Purpose

This procedure involves interpretations, requirements, and related processing controls specified on Barred Tees.

1.2 Scope

This procedure covers all requirements that shall apply for Barred Tee Manufacturing.

1.3 References

- ASME B16.9 Factory-Made Butt-Welding Fittings
- ASTM A234 Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High temperature.
- ASTM A860 Wrought High-Strength Ferritic Steel Butt-Welding Fittings
- ASME B16.5 Pipe Flanges and Flange Fittings
- MSS-SP-75 Specification for High-Strength, Wrought, Butt-Welding Fittings

2. Design and Fabrication

2.1 General Requirements:

1. Guide bars shall be provided to prevent entry of pigs/ spheres in branch pipeline. Opening in branch pipeline through scrapper guided bars shall not be more than 40% of the area of opening in the main pipeline.
2. The barred tee shall provide an unobstructed profile for pigging operations in either direction.
3. Guide bars shall conform to material quality and manufacturing standards, and welding compatibility to the main body of the tee.
4. Guide bars shall be of ample proportions and arranged in a configuration presenting an acceptable streamline contour to allow liquid flow and thus not induce vibration.
5. Guide bars of barred tees should not be welded directly to the high stress areas around the extrusion neck.
6. Guide bar edges on the run side of the tee shall be rounded and bars positioned to contain the cups of a pig within the inner diameter of the run.
7. The bar ends shall be machined or ground to fit into the branch and welding shall be a continuous fillet weld on both sides.
8. Burrs of welding material shall not protrude into the run of the tee.

9. All butt weld ends shall be beveled as per ASME B16.9/ MSS-SP-75 as applicable.
10. Repair by welding on parent metal of the barred tee is not allowed.

2.2 Welder Requirements:

1. All welders should follow the procedure qualifications records (PQR) for FCAW processes as per section IX, ASME Boiler and Pressure Vessel Code.
2. The QA department, Engineering department and the welder should discuss this specification and all the prints to clarify any questions or concerns.

2.3 Special Requirements:

1. All guide bars will be welded according to Weldbend barred tee prints.
2. All guide bars will be marked with the Weldbend logo and bar heat code.
3. Bars must be nominal 1/2" or 7/8" thickness depending on the tee size.
4. The relevant welding zones of the tee shall be pre-heated to 200 ºF minimum.
5. PWHT (post weld heat treatment) stress relieve at 1000ºF minimum for 60 minutes minimum.
6. When ordering any barred tee, Weldbend's customer agrees to this procedure and accepts all provisions and requirements as stated.
7. When the customer specifies any change, the request must be in writing and approved by Weldbend.

3. Material and Welding Equipment and Consumables. (FCAW)

3.1 Guide Bars

Guide bars shall be ASTM A-36.

3.2 Equipment

a) Steel drive rolls

Must be clean and free of grime or dirt.

b) Gun liner

Make sure your gun liner is always protected; never drive or roll anything heavy over the gun cable.

c) Gun

Gun nozzle, tip, and diffuser screw must be clean and free of splatter.

Any damage to the gun nozzle tip must be reported.

d) Gas Container

Must always be secure with chains.

3.3 Consumables

a) Flux core wire

AW A5.20, ASME SFA-5.20 E71T1C

The welding wire must be covered when it is not in use.

b) Shielding gas

Argon 75%, Carbon dioxide 25%

3.4 Safety

Evaluate your equipment, visually inspect everything before beginning a job.

Wear the proper personal protective equipment.

Never look at the flash and always use your helmet.

Ground the frame of your equipment and the metal being welded.

Make sure your equipment is fully turned off.

Dispose of waste properly and safely.

Keep your workspace tidy.

4. Inspection and Testing

4.1 General

1. The tees shall meet all the mechanical characteristics and chemical composition of the applicable standard.
2. Dimensional inspection shall be performed.
3. All fillet welds shall be subject to 100% visual examination.
4. Nondestructive inspection will be performed using the liquid penetrant testing method or any other nondestructive method recommended by the QA Department shall be performed.
5. When the customer requires an NDT report the barred tee will be sent out for testing to approved NDT facility.

5. Test Certification

5.1 General

1. MTR for the tee.
2. MTR for the guide bar(s).

3. Nondestructive test report when it is required by customer.

6. Revision History

Revision	Date	Name	Change Ref.
2	03/05/2016	Epitacio Torres Garcia	Note 2.3.2 added 4.1.5 was revised
3	03/16/2016	Epitacio Torres Garcia	2.3.5 Added temperature and time 3.1.2 Added minimum yield strength
4	04/04/2016	Epitacio Torres Garcia	Series 4000 added to name Note 2.3.3 added Changed Mn and Si % up to maximum
5	05/13/2016	Epitacio Torres Garcia	3.4.1 Added welder certification Note 2.3.9 Added
6	06/13/2016	Epitacio Torres Garcia	2.3.7 Was changed to reflect actual practice Chemical composition add note maximum to Mn and Si
7	03/25/2018	Epitacio Torres Garcia	Reviewed 2.3.3. Deleted 2.3.5. Added 2.2.2 welder qualification Added welding procedure as reference Deleted 2.1.2
8	06/01/2018	Epitacio Torres Garcia	Reviewed 2.1.7, 2.2.1, 2.2.2, 5.1.2, added 3.2 table
9	02/28/2020	Epitacio Torres Garcia	Reviewed and updated -All

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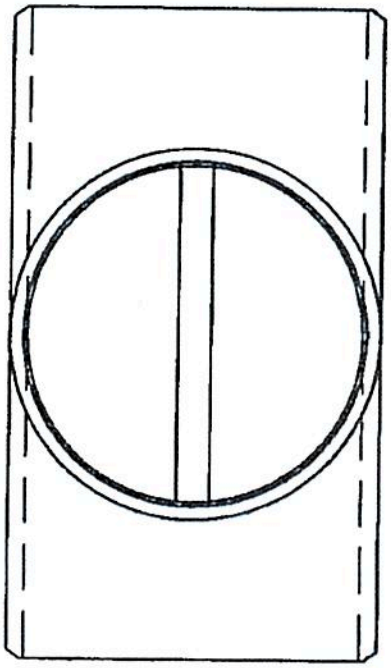
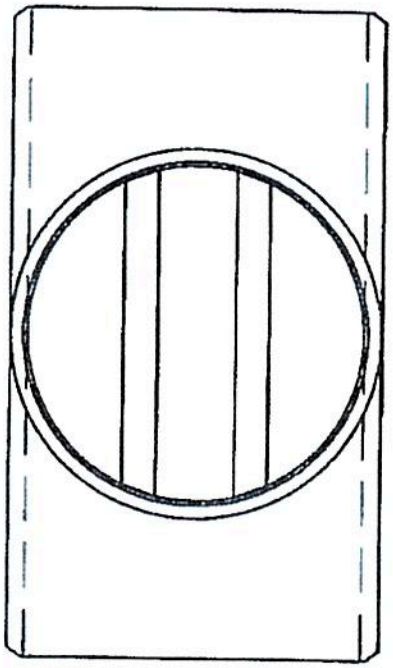
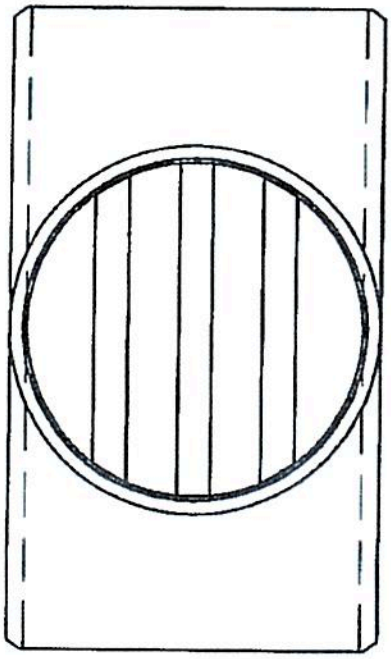


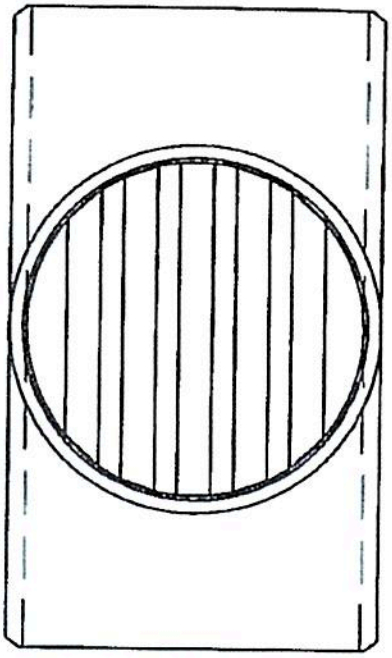
EQUALLY SPACED BARS
4 - 6" BRANCH = 1 BAR



EQUALLY SPACED BARS
8 - 10" BRANCH = 2 BARS

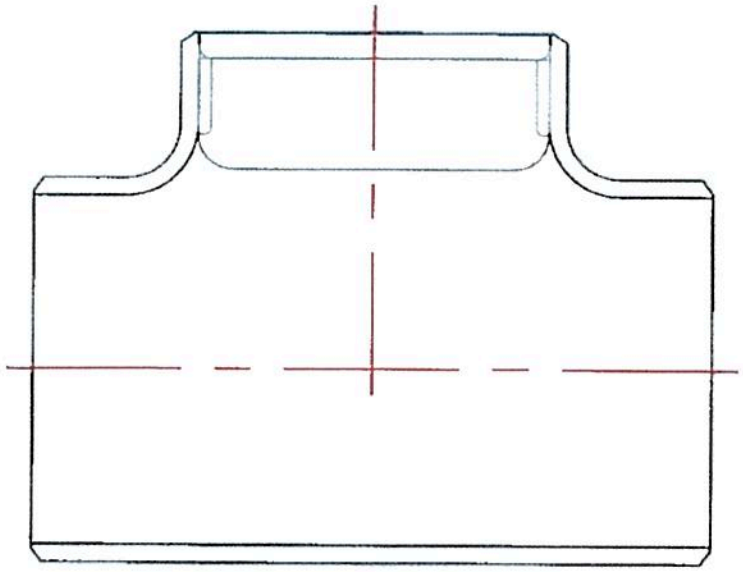


EQUALLY SPACED BARS
12 - 20" BRANCH = 3 BARS



EQUALLY SPACED BARS
24 - 48" BRANCH = 5 BARS

4 - 18" BARS ARE 1/2" THICK
20 - 48" BARS ARE 7/8" THICK



Typical Bar Positioning

Barred tee shall provide an unobstructed profile for pigging operations in either direction

4 - 18" Bars are 1/2" Thick
20 - 48" Bars are 7/8" Thick