



Exploration & Production

GENERAL SPECIFICATION

PIPELINES - RISERS

GS EP PLR 223

Carbon steel tees for pipelines (sweet service)

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04	10/05	Addition of "EP" root to GS identification
03	10/04	Revised § 10.1
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1. Scope

1. This specification defines the COMPANY's general technical requirements for the design, materials, manufacture, testing and inspection of forged carbon steel tees of the welding neck type, for use in onshore and offshore pipeline systems.
2. Tees specified in this specification are to be used in Sweet Service as defined in **GS EP COR 170**.
3. This specification applies to tees with minimum specified yield strengths ranging from 290 N/mm² (42,000 psi) to 482 N/mm² (70,000 psi).
4. Tees shall comply with the requirements of **MSS SP 75**, except where otherwise noted in this specification. Pressure-temperature ratings are defined in Appendix 1.
5. Requirements are specifically stated in this specification for tees where the properties of base material are to be ascertained after a Post Weld Heat Treatment, namely, at least when wall thickness at weld neck of tees is in excess of 31.8 mm.
6. Tees may be supplied welded onto piece(s) of pipe at least 500 mm long, when so required in the PPS. These welded pipe pieces are designated as "pup pieces" in this specification.
7. This specification shall be used in conjunction with a Project Particular Specification (PPS) detailing the additional tests and requirements or the possible modifications to the present specification, based on the particular design conditions of the pipeline Project.

2. Reference documents

The reference documents listed below form an integral part of this General Specification. Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the EFFECTIVE DATE of the CONTRACT.

The order of precedence of the applicable documents shall be:

- The Project Particular Specification (PPS)
- The General Specification
- The Codes and Standards in reference.

Applicable Codes and Standards, which are to be used in conjunction with this specification, are stated hereafter.

Unless otherwise specifically indicated in writing, the SUPPLIER shall work in accordance with the requirements specified herein and the applicable requirements of the latest editions of the referenced Codes and Standards, at time of contract award, whenever asked in the present specification.

Where this specification states no overriding requirements, the referenced Codes and Standards shall apply in full.

Standards equivalent to those referred to herein shall not be substituted without written Approval from the COMPANY.

The SUPPLIER shall equip himself with copies of all the reference specifications referred to in this specification and shall make them readily available to all fabrication, testing and inspection personnel involved on the work.

Standards

Reference	Title
MSS SP 75	Specification for high test wrought butt welding fittings
ASTM A 283	Low and Intermediate Tensile Strength Carbon Steel Plate
ASTM A 370	Mechanical Testing of Steel Products
ASTM A 578	Straight-beam ultrasonic examination of plain and clad steel plates of special application
ASTM E 10	Test method for Brinell hardness of Metallic Materials
ASTM E 23	Notched Bar Impact Testing of Metallic Materials
ASTM E 384	Guide for Test Method for Micro-hardness of Materials
ASTM E 709	Guide for Practice of Magnetic Particle Examination
ISO 148	Charpy impact test (V-notch)
ISO 1027	Radiographic Image Quality Indicators for non-destructive testing. Principles and identification
ISO 6507	Hardness test - Vickers test - Part 1: HV5 to HV10
BS 4515	Hardness test - Vickers test - Part 1: HV5 to HV10
ISO TS 29001	Quality systems: Model for quality assurance in production, installation and servicing
ISO/DIS 12096	Radiographic testing of longitudinal and spiral welds for the detection of imperfections
EN 10204	Types of inspection documents
BS EN 473	Qualification and certification of non-destructive testing personnel

Professional Documents

Reference	Title
API 5L	Specification for Line pipe
COFREND	Comité Français des essais non-destructifs (French Committee of non-destructive testing). Qualification and certification of non-destructive personnel

Regulations

Reference	Title
Not applicable	

Codes

Reference	Title
ASME Section VIII, Division 1	Boiler and Pressure Vessel Code
ASME Section V ANSI B 16.9	Boiler and Pressure Vessel code. Non-destructive Examination Factory-Made Wrought Steel Butt welding Fittings

Other documents

Reference	Title
Not applicable	

Total General Specifications

Reference	Title
GS EP PLR 202	Fabrication of longitudinally submerged arc welded pipes for pipelines (sweet service)
GS EP PLR 420	Site welding of carbon steel pipelines to API 1104 (sweet service)

3. General

3.1 Definition

Throughout this specification, the following definitions apply:

Purchaser	Means the COMPANY or the SUPPLIER (as applicable), which have placed the purchaser order to the MANUFACTURER.
Inspector	Means the COMPANY's representatives of members from an Inspection Agency duly appointed by the COMPANY or the SUPPLIER (as applicable) to act as its representatives for the purpose of the contract.
Approval	Means the authorisation in writing given by the COMPANY to the SUPPLIER to proceed with the performance of a specific part of the work without releasing in any way the SUPPLIER from any of its obligations or liabilities under the contract or at law. Approve, Approved and Approval shall be construed accordingly.
PPS	Designates the Project Particular Specification.

3.2 Approval of SUPPLIER's procedures

The SUPPLIER shall submit the following documentation for review and Approval one month prior to commencement of fabrication.

- Design calculations and fabrication drawings of tees
- Manufacturing, Procedure Specification, describing all proposed forming and forging operations, heat treatment, inspection and non-destructive testing in their correct sequence. This document will also include the characteristics of equipment used to carry out above mentioned operations
- Sketch showing location and orientation of test specimens in test tee
- Heat treatment and recording procedures, including number and location of thermocouples
- Dimensional inspection procedures
- Non-destructive inspection procedures
- Quality Control Plan
- Welding Procedures Specifications (where applicable)
- Welder qualifications (when applicable)
- Handling, storage and packing procedures
- Proposed measures for temporary corrosion prevention (non-coated tees).

Once approved these procedures shall not be altered without the written Approval of the COMPANY.

The SUPPLIER shall also submit for approval any deviations to the requirements specified in applicable technical documents.

3.3 Quality Assurance/Quality Control

The SUPPLIER shall operate a Quality Assurance system in accordance with [ISO TS 29001](#), approved by a recognised authority. The Quality Assurance Manual shall be submitted prior to commencement of work.

Four weeks prior to commencement of manufacture, the SUPPLIER shall prepare and submit a Quality Control Plan which describes the inspections to be performed during the supply of tees. The Quality Control Plan shall set forth "witness", "hold", and "monitor" points.

4. Design

4.1 Design data

Details of pipe diameter, wall thickness and material grades for the matching pipelines are stated in Appendix 1 of this specification, together with the relevant design conditions.

4.2 Tee design

1. All tees shall be designed to [MSS SP 75](#), unless otherwise stated in this specification. Moreover, the tees shall also conform to the applicable pipeline code or standard ([B31.4](#); [B31.8](#); [DNV OSF101](#)...). Calculation shall be provided to COMPANY for approval.