



Exploration & Production

GENERAL SPECIFICATION

Drilling & Wells

GS EP FP 339

Welding of Connectors to Conductor Pipe

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1. Scope

1.1 Purpose

This general specification was created to provide the requirements of TOTAL for the shop or field welding of connectors to pipe for down-hole application. This general specification provides additional requirements to supplement [API RP 5C6](#).

1.2 Equipment

This general specification covers the weld fabrication of connectors and handling attachments such as lift eyes and landing pads to pipe. This document includes practices currently being implemented by a broad spectrum of the industry.

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.

Standards

Reference	Title
API RP 5C6	Welding Connections to Pipe
API 1104	Welding of Pipelines and related facilities
API SPEC 5L – 43rd Edition	Specification for line pipe
ISO 13679	Petroleum & Natural Gas Industries – Procedures for testing casing and tubing connections
ISO 10005	Quality management systems – Guidelines for quality plans
NACE MR 0175	Petroleum & Natural Gas Industries – Materials for use in H ₂ S containing environment in oil and gas production

Professional Documents

Reference	Title
Not applicable	

Regulations

Reference	Title
Not applicable	

**Codes**

Reference	Title
Not applicable	

Other documents

Reference	Title
Not applicable	

Total General Specifications

Reference	Title
GS EP FP 338	Manufacturing specification for new ERW & SAW pipes for conductor pipe application

3. Purchasing Requirements

3.1 Requirement

The purchaser shall specify the following in the purchase order;

- Specification
- Quantity
- Delivery date
- Shipping instructions
- Type of pipe
 - Specification
 - Diameter
 - weight per foot or wall thickness
 - Grade
 - Range
- Type of connector
 - Manufacturers designation
 - Connector dimensional considerations
 - Description of weld attachments
 - . Pad eyes
 - . Lift eyes



4. Pipe

4.1 Requirement

Pipe may be supplied by the fabricator or the purchaser, as specified in the purchase order.

In all cases the pipes supplied shall come from a TOTAL approve mill and conform to the requirements of [GS EP FP 338](#).

Verification of qualified mills should be done before acceptance or placement of any orders.

5. Connectors

5.1 Requirement

Connectors may be supplied by fabricators or purchaser, as specified in the purchase order.

Forgings for the connectors may be carbon steel, low alloy, or other types of weld-able materials based on the design requirements for strength, toughness and other considerations.

In all cases the actual design of the connector should be validated before use, through either [ISO 13679](#) or historical data supplied by the designer – this validation should be done through the relevant TOTAL expert at head quarter level.

6. PAD Eyes / Lifting Eyes

If required these will be specified within the purchase order. In the event that they are requested the design and fabrication should be to a recognized standard and load tested after installation on to the conductor pipe at 1.5 x SWL (Safe Working Load).

All inspection of the welding of pad eyes shall conform to SR 30 of [API RP 5C6](#) pre and post load testing.

7. Welding Procedure Qualification

All Welding Procedure Specifications (WPS) and welding procedure qualification record (PQR) shall be submitted to TOTAL prior to commencement of any fabrication.

In addition to [API RP 5C6](#) the following shall apply;

7.1 Hardness testing

SR 26 - Hardness testing to be applied

7.2 Charpy Impact testing

SR 28 – Impact testing shall apply at all times unless otherwise specified on the purchase order / agreement. (at -20° C)

7.3 Post weld heat treatment (PWHT)

All welding shall conform to [NACE MR0175](#) or an agreed proprietary specification.

Where Post Weld Heat Treatment is specified this shall be done according to the Welding Procedure Specification but no higher than 10 Degrees C below the lowest tempering temperature of the materials constituting the weldment. All Connectors subjected to Post Weld



Heat Treatment shall be hardness tested after the Post Weld Heat Treatment and the results compared against the criteria defined on the original material specification.

8. Welder & Welding Operator Qualification

Welders and welding operators shall be qualified in accordance with Article III of the ASME Code, Section IX.

9. Production Welding Controls

Welding shall be in accordance with qualified Welding Procedure Specification and shall be performed by qualified welders or welding operators.

9.1 Fit-up

Connectors on each welded joint shall be verified against an optical alignment and verified as per SR 34 [API RP 5C6](#).

The maximum offset when measured across each connection face shall be 0° 8 minutes which equates to a target circle diameter (TCD) of 2" over 40 feet and the weld joint fit-up shall take into account squareness, unless otherwise previously agreed the specification maximum shall be 3.2 mm as measured across the connector face relevant to the pipe body.

10. Repair Welds

All repair welds after PWHT involving a second PWHT cycle shall be submitted to TOTAL for approval.

All repair welds shall be subjected to 100% NDT per the original criteria.

For repair welds involving PWHT the connectors shall be hardness tested after PWHT and the results compared against the criteria defined on the original material certification.

11. Inspection

11.1 Alignment Verification

Connector to pipe alignment verification shall be performed the method and procedure shall be approved before commencement of production.

11.2 Non Destructive Examination of weldments

Conduct visual examination in accordance with [API 1104](#) with the following additional requirements.

11.3 Radiographic examination

Radiographic examinations shall be conducted in accordance with the procedures set forth as per SR 29.

11.4 Ultrasonic Examination

Where the welding facility has the provision for ultrasonic examination of the production welds, this may be used subject to the purchaser's qualification and approval. This method of



examination shall be able to demonstrate that it has the same if not better capability as Radiographic examination and as such the welding facility shall provide a qualification capability study to prove the system.

11.5 Production Weld Test Frequency

Non destructive testing consisting of radiographic and visual inspection shall be conducted on 100 percent of all production welds.

11.6 Drift testing

In all cases the pipes shall be full length drifted by a mandrel 12" long and the drift size as follows;

- Id – 3/16" for pipe up to and including 20"
- Id – 5/16" for pipe over 20"

Where the pipe is going to be fitted with connectors that have a bore size smaller than the pipe Id then the connector size will be the governing drift size.

11.7 Length

Unless otherwise specified on the purchase agreement all lengths of plain end conductor pipe shall be 38 ft to 40 ft in length.

12. Traceability

Where connectors are being applied to conductor pipe a unique traceable number shall be applied to;

- each connector forging
- Pipe body

And a full unique traceable numbering system shall be applied to the finished assembled product and this unique number shall be marked on the pipe body. A full traceable documentation system shall be maintained.

13. Marking and protection

Standard mill varnish finish shall be applied to the external surface of pipes unless otherwise specified in the purchase agreement. The coating layer shall be uniform in appearance and thickness. The thickness of the coating should have no detrimental effect on storage, running or in-service operations.

Any machined (finished) threaded end shall have an agreed storage compound applied or Jet Marine Imperator.

Where "O" rings are utilized as part of the threaded connection performance the purchaser will decide before manufacturing if they have to be installed on the pipe before shipping or shipped separately.

All marking shall be in conformance with the following and [API SPEC 5L](#) appendix I plus any additional requests stated on the purchase agreement;



- At the designated pin end, two meters from the threaded connection, one ring (100 mm wide) of blue paint and one ring of yellow (100 mm wide) paint, with a space of 30 mm between the rings.

14. Certification requirements

Certification and the traceability shall be in accordance with [API SPEC 5L Annex F SR15](#), unless otherwise specified in the purchase agreement.

15. Quality Assurance

In all respects to manufacturing the supplier of the product shall provide a quality control plan (QCP) to TOTAL for approval. Inside this QCP shall be the agreed production route and the third party inspection points for TOTAL the QCP shall conform to [ISO 10005](#).

16. Bidding Phase

In addition to the above requirements the SUPPLIER shall provide for the type of product to be supplied:

- Mill origin of the pipe to be provided
 - Qualification records
- Mill origin of the forgings
- A complete list of all welding procedure standards (W.P.S.) and relevant Process Qualification Requirements (P.Q.R.) applicable.
- Performances of the Connector or threaded connection proposed (Burst, collapse, tensile, bending)
- Typical handling and make up procedures and relevant equipment.
- Spare parts list for connector.