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Petroleum and natural gas industries — Pipeline transportation systems — Test procedures for mechanical connectors

*Industries du pétrole et du gaz naturel — Systèmes de transport par
conduites — Modes opératoires d'essai des connecteurs mécaniques*



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Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 21329 was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 2, *Pipeline transportation systems*.

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Introduction

In some circumstances mechanical connectors provide a lower cost and/or enabling advantage to welded connectors usually used for pipelines. However, use of mechanical connectors has raised concerns about pipeline integrity due to the potential for leak paths and absence of a direct method of inspection. In the past, reassurance of the integrity of mechanical pipeline connectors has relied upon design information provided by the manufacturer, the results of finite element analysis and past experience.

This International Standard is primarily applicable to connectors to be used in a large number, and hence there is a significant burden in the number of connectors that need to be tested. However, it is recognized that the test burden can be reduced in project-specific cases, for example if there is no concern about fatigue, if the connector will not be subjected to fully restrained forces and/or if the connector design is less sensitive to accuracy of tolerance matching of components at assembly.

The tests specified in this International Standard provide a physical demonstration of the integrity of the pipeline connector. This International Standard has been developed from three main sources.

The first is the *Low cost pipeline connector systems joint industry project (JIP)*, (1995-1997)^[14], which defined the load envelopes for pipelines, identified the practical issues of installation, and conducted demonstration physical tests on three types of mechanical connectors.

The second source is ISO 13679, which has a parallel function for downhole connections.

The third is the *Connection testing specification JIP*, (1999-2000)^[15]. The JIP was sponsored by oil companies, connector suppliers, pipeline construction contractors and design consultants.