
**Petroleum and natural gas industries —
Drilling and production equipment —**

Part 3:

**Running tools, pulling tools and kick-over
tools and latches for side-pocket
mandrels**

*Industries du pétrole et du gaz naturel — Équipement de forage et de
production —*

*Partie 3: Outils de mise en place, de dépose, de déviation et de
verrouillage pour raccords à poche latérale*



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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 17078-3 was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 4, *Drilling and production equipment*.

ISO 17078 consists of the following parts, under the general title *Petroleum and natural gas industries — Drilling and production equipment*:

- *Part 1: Side-pocket mandrels*
- *Part 2: Flow-control devices for side-pocket mandrels*
- *Part 3: Running tools, pulling tools and kick-over tools and latches for side-pocket mandrels*
- *Part 4: Practices for side-pocket mandrels and related equipment*

Introduction

This part of ISO 17078 has been developed by users/purchasers and suppliers/manufacturers of running tools, pulling tools, kick-over tools, and latches used for the installation and retrieval of flow control and other devices in side-pocket mandrels intended for use in the worldwide petroleum and natural gas industry. This part of ISO 17078 is intended to provide requirements and information to all parties who are involved in the specification, selection, manufacture, testing and use of these latches and related tools. Further, this part of ISO 17078 addresses supplier/major manufacturer requirements that set the minimum parameters with which suppliers/manufacturers must comply to claim conformity with this part of ISO 17078.

This part of ISO 17078 has been structured to support varying requirements in environmental service classes, design validation, product functional testing and quality control grades. These variations allow the user/purchaser to select the necessary grade for a specific application.

Well environmental service classes. One environmental service class is provided for running tools, pulling tools and kick-over tools, and four environmental service classes are provided for latches. These variations provide the user/purchaser with a range of choices from which to select products to meet varying environmental conditions.

Design validation grades. There are two design validation grades for running tools, pulling tools, kick-over tools and latches that provide the user/purchaser with a range of technical and performance requirements. This ensures that the products supplied according to this part of ISO 17078 will meet the requirements and that the user/purchaser is able to compare these requirements with his or her preference or application and determine whether additional requirements are placed on the supplier/manufacture.

It is important that users of this part of ISO 17078 be aware that requirements in addition to those outlined herein can be needed for individual applications. This part of ISO 17078 is not intended to inhibit a supplier/manufacture from offering, or the user/purchaser from accepting, alternative equipment or engineering solutions. This can be particularly applicable where there is innovative or developing technology. Where an alternative is offered, it is the responsibility of the supplier/manufacture to identify any variations from this part of ISO 17078 and provide details.

Product functional testing grades. There are two product functional testing grades for running tools, pulling tools, kick-over tools and latches that provide the user/purchaser with a range of choices for confirming that products manufactured under this part of ISO 17078 meet the design specifications.

Quality control grades. There are two quality grades for running tools, pulling tools, kick-over tools and latches that provide the user/purchaser with the choice of requirements to meet specific preferences or applications. Additional quality upgrades can be specified by the user/purchaser as supplemental requirements.

In addition to this document, ISO 17078-1 provides requirements for side-pocket mandrels used in the petroleum and natural gas industries. ISO 17078-2 provides requirements for flow-control devices for side-pocket mandrels. ISO 17078-4 provides supplemental aids and guidelines for using these tools.

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Petroleum and natural gas industries — Drilling and production equipment —

Part 3:

Running tools, pulling tools and kick-over tools and latches for side-pocket mandrels

1 Scope

This part of ISO 17078 provides requirements and guidelines for running tools, pulling tools, kick-over tools and latches used for the installation and retrieval of flow control and other devices to be installed in side-pocket mandrels for use in the petroleum and natural gas industries. This includes requirements for specifying, selecting, designing, manufacturing, quality control, testing and preparation for shipping of these tools and latches. Additionally, it includes information regarding performance testing and calibration procedures.

The processes of installation, retrieval, maintenance and reconditioning of used running, pulling and kick-over tools and latches are outside the scope of this part of ISO 17078. Centre-set and tubing-retrievable mandrel applications are not covered.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality level (AQL) for lot-by-lot inspection*

ISO 3601-1, *Fluid power systems — O-rings — Part 1: Inside diameters, cross-sections, tolerances and designation codes*

ISO 3601-3, *Fluid power systems — O-rings — Part 3: Quality acceptance criteria*

ISO 6506-1, *Metallic materials — Brinell hardness test — Part 1: Test method*

ISO 6507-1, *Metallic materials — Vickers hardness test — Part 1: Test method*

ISO 6508-1, *Metallic materials — Rockwell hardness test — Part 1: Test method (scales A, B, C, D, E, F, G, H, K, N, T)*

ISO 6892, *Metallic materials — Tensile testing at ambient temperature*

ISO 9000, *Quality management systems — Fundamentals and vocabulary*

ISO 15156 (all parts), *Petroleum and natural gas industries — Materials for use in H₂S-containing environments in oil and gas production*

ISO 17078-3:2009(E)

ISO 17078-1:2004, *Petroleum and natural gas industries — Drilling and production equipment — Side-pocket mandrels*

ISO 17078-2:2007, *Petroleum and natural gas industries — Drilling and production equipment — Flow-control devices for side-pocket mandrels*

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

ASME BPVC-VIII:2007, *BPVC Section VIII-Rules for Construction of Pressure Vessels Division 1* ¹⁾

ASME BPVC-IX:2007, *BPVC Section IX-Welding and Brazing Qualifications*

ASTM A370, *Standard Test Methods and Definitions for Mechanical Testing of Steel Products*

ASTM D1415, *Standard Test Method for Rubber Property — International Hardness* ²⁾

ASTM D2240, *Standard Test Method for Rubber Property — Durometer Hardness*

ASTM E18, *Standard Test Methods for Rockwell Hardness of Metallic Materials*

SAE AMSH6875:1998, *Heat Treatment of Steel Raw Materials* ³⁾

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 9000 (for quality-system-related terms not given below) and the following apply.

3.1 acceptance
agreement/acknowledgement that latches and related tool component(s) and/or assembly(ies) can be used without restriction

NOTE Adapted from ISO 17078-1:2004, definition 3.1.

3.2 bluing
application of blue indicating fluid used to determine interference between parts

3.3 certificate of conformance
documentation declaring that a specific running, pulling or kick-over tool or latch meets the requirements of this part of ISO 17078 and the requirements of the functional specification

3.4 center-set mandrel US
centre-set mandrel GB
mandrel
device used to contain a flow-control device in the centre of a tubing string

1) American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016-5990, USA.

2) American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, USA.

3) SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, USA.