

This is a preview of "ISO 17078-2:2007". [Click here to purchase the full version from the ANSI store.](#)

First edition
2007-12-15

Petroleum and natural gas industries — Drilling and production equipment —

Part 2:

Flow-control devices for side-pocket mandrels

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

*Partie 2: Dispositifs de régulation de la vitesse d'écoulement pour
raccords à poche latérale*



Reference number
ISO 17078-2:2007(E)

© ISO 2007

This is a preview of "ISO 17078-2:2007". [Click here to purchase the full version from the ANSI store.](#)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.



COPYRIGHT PROTECTED DOCUMENT

© ISO 2007

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

This is a preview of "ISO 17078-2:2007". Click here to purchase the full version from the ANSI store.

Contents

Page

Foreword.....	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions.....	2
4 Symbols and abbreviated terms	7
4.1 Abbreviations	7
4.2 Symbols and engineering terms	7
5 Functional specification	9
5.1 General.....	9
5.2 Functional characteristics	9
5.3 Well parameters	10
5.4 Operational parameters	11
5.5 Compatibility with well-related equipment.....	12
5.6 Environmental service classes	12
5.7 Design validation grades	12
5.8 Product functional testing grades	12
5.9 Quality control grades.....	13
5.10 Additional required testing	13
6 Technical specification	13
6.1 General requirements.....	13
6.2 Technical characteristics	14
6.3 Design criteria	15
6.4 Allowable design changes.....	18
6.5 Design verification and validation requirements	18
6.6 Product functional testing requirements	19
7 Supplier/manufacturer requirements.....	19
7.1 General.....	19
7.2 Documentation and data control.....	19
7.3 Product identification requirements	22
7.4 Quality control requirements.....	22
7.5 Heat-treating-equipment qualification	27
7.6 Welding requirements	28
7.7 Non-destructive examination requirements	28
7.8 Storage and shipping preparation	28
7.9 Allowable changes after manufacturing.....	29
7.10 Reconditioning of flow-control devices	29
Annex A (normative) Design validation and product functional testing requirements	30
Annex B (normative) Environmental service classes	35
Annex C (normative) Design validation grades	37
Annex D (normative) Product functional testing grades	38
Annex E (normative) Interface testing requirements	39
Annex F (normative) Insertion testing requirements	42
Annex G (normative) Probe and travel testing and load rate determination	46

This is a preview of "ISO 17078-2:2007". [Click here to purchase the full version from the ANSI store.](#)

Annex H (normative) Dynamic flow testing and flow coefficient calculation	56
Annex I (normative) Back-check testing	80
Annex J (normative) Opening and closing pressure testing	88
Annex K (normative) Bellows actuation life cycle testing	95
Annex L (normative) Erosion testing requirements	98
Annex M (normative) Shelf (bellows integrity) testing requirements for nitrogen-pressure-charged flow-control devices	101
Annex N (normative) Conducting port/seat leakage rate testing	105
Annex O (informative) Performance testing — Recommendations for a flow-control device performance test facility	109
Annex P (informative) Performance testing — Prediction correlations using a simplified flow-control device performance model	118
Bibliography	126

This is a preview of "ISO 17078-2:2007". [Click here to purchase the full version from the ANSI store.](#)

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 17078-2 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, pulling and kick-over tools, and latches for side-pocket mandrels*

A part 4 dealing with practices for side-pocket mandrels and related equipment is under development.

Introduction

This part of ISO 17078 has been developed by users/purchasers and suppliers/manufacturers of subsurface flow-control devices used in side-pocket mandrels (hereafter called flow-control devices) 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 flow-control devices. Further, this part of ISO 17078 addresses supplier/manufacture requirements that set the minimum parameters with which suppliers/manufacturers shall 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 grade for a specific application.

Well environmental service classes. There are four environmental service classes for flow-control devices that provide the user/purchaser with a range of choices from which to select products to meet varying environmental conditions.

Design validation grades. There are three design validation grades for flow-control devices 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 meet the requirements and that the user/purchaser is able to compare these requirements with its 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 three product functional testing grades for flow-control devices that provide the user/purchaser with a range of choices for confirming that individual products manufactured under this part of ISO 17078 meet the design specifications.

Quality control grades. There are two quality control grades 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 industry. ISO 17078-3, to be published, is intended to provide requirements for running, pulling and kick-over tools, and latches used in conjunction with side-pocket mandrel flow-control devices.