

This is a preview of "ISO 12490:2011". [Click here to purchase the full version from the ANSI store.](#)

First edition  
2011-09-15

---

---

## **Petroleum and natural gas industries — Mechanical integrity and sizing of actuators and mounting kits for pipeline valves**

*Industries du pétrole et du gaz naturel — Intégrité mécanique et  
dimensionnement des motorisations et éléments de montage des  
vannes de conduites*



Reference number  
ISO 12490:2011(E)

© ISO 2011

This is a preview of "ISO 12490:2011". [Click here to purchase the full version from the ANSI store.](#)



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2011

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](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

This is a preview of "ISO 12490:2011". [Click here to purchase the full version from the ANSI store.](#)

## Contents

Page

Foreword .....	v
Introduction.....	vi
<b>1 Scope .....</b>	<b>1</b>
<b>2 Conformance .....</b>	<b>1</b>
2.1 Units of measurement.....	1
2.2 Rounding.....	1
2.3 Compliance with this International Standard .....	1
<b>3 Normative references.....</b>	<b>2</b>
<b>4 Terms and definitions .....</b>	<b>3</b>
<b>5 Symbols and abbreviated terms .....</b>	<b>6</b>
5.1 Symbols.....	6
5.2 Abbreviated terms .....	6
<b>6 Actuator types and configurations.....</b>	<b>7</b>
6.1 General .....	7
6.2 Actuator types .....	7
6.3 Actuator configuration.....	20
6.4 Action on loss of supply energy.....	21
<b>7 Design.....</b>	<b>21</b>
7.1 General .....	21
7.2 Pressure-containing parts .....	23
7.3 Bolting and tie rod design .....	24
7.4 Mechanically loaded parts.....	24
7.5 Springs and modules .....	24
7.6 Mounting kit .....	24
7.7 Stem extensions .....	25
7.8 Lifting.....	25
7.9 Handwheels and levers for manual override.....	25
7.10 Locking devices.....	26
7.11 Position indicators .....	26
7.12 Travel stops .....	26
7.13 Orientation .....	26
7.14 Sealing.....	26
7.15 Over-pressure protection .....	26
7.16 Design documents .....	26
<b>8 Sizing .....</b>	<b>26</b>
8.1 Information required for actuator sizing.....	26
8.2 Sizing method.....	28
<b>9 Instrumentation/regulation .....</b>	<b>28</b>
9.1 Torque limiting settings — Electric actuators.....	28
9.2 Torque/thrust limiting controls — Pneumatic/hydraulic actuators.....	29
<b>10 Materials .....</b>	<b>29</b>
10.1 Material specification .....	29
10.2 Service compatibility.....	29
10.3 Composition limits .....	29
10.4 Toughness test requirements for pressure-containing parts.....	30
10.5 Bolting for pressure-containing, mechanically loaded parts and mounting kits .....	31
10.6 Mechanically loaded parts.....	31

This is a preview of "ISO 12490:2011". [Click here to purchase the full version from the ANSI store.](#)

10.7	Sour service .....	31
11	Welding .....	31
11.1	Welding of pressure-containing parts .....	31
11.2	Structural welding.....	31
11.3	Impact testing.....	32
11.4	Hardness testing.....	33
11.5	Repair.....	33
12	Quality control.....	33
12.1	NDE requirements.....	33
12.2	Measuring and test equipment.....	34
12.3	Qualification of inspection and test personnel .....	34
12.4	NDE of repairs .....	35
12.5	Visual inspection of castings .....	35
13	Testing .....	35
13.1	General.....	35
13.2	Shell test .....	35
13.3	Piston seal test.....	36
13.4	Torque/thrust test — Pneumatic/hydraulic actuators.....	36
13.5	Testing of electric actuators.....	36
13.6	Actuator functional test .....	37
14	Surface protection .....	37
15	Marking .....	38
16	Preparation for shipment .....	38
17	Documentation.....	39
Annex A	(informative) Supplementary test requirements.....	40
Annex B	(informative) Optional documentation.....	41
Annex C	(informative) Purchasing guidelines.....	42
Annex D	(normative) Record retention .....	45
Annex E	(informative) Typical torque/thrust curves.....	46
Bibliography	.....	51

This is a preview of "ISO 12490:2011". [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 12490 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*.

This is a preview of "ISO 12490:2011". [Click here to purchase the full version from the ANSI store.](#)

## Introduction

It is necessary that users of this International Standard be aware that further or differing requirements can be needed for individual applications. This International Standard is not intended to inhibit a vendor from offering, or the purchaser from accepting, alternative equipment or engineering solutions for the individual application. This can be particularly applicable where there is innovative or developing technology. Where an alternative is offered, it is the responsibility of the vendor to identify any variations from this International Standard and provide details.