# INTERNATIONAL STANDARD

# ISO 9283

First edition
1990-12-15

**AMENDMENT 1**
1991-06-15



## Manipulating industrial robots — Performance criteria and related test methods

## AMENDMENT 1: Guide for selection of performance criteria for typical applications

*Robots manipulateurs industriels — Critères de performance et méthodes d'essai correspondantes*

*AMENDEMENT 1: Guide pour le choix des critères de performance pour des applications typiques*

Reference number
ISO 9283 : 1990/Amd.1 : 1991 (E)

## 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.

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.

Amendment 1 to International Standard ISO 9283 was prepared by Technical Committee ISO/TC 184, *Industrial automation systems and integration*, Sub-Committee SC 2, *Robots for manufacturing environment.*





International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
Printed in Switzerland

## Introduction

In the introduction to ISO 9283 : 1990 it is stated that the tests described may be applied in whole or in part, depending upon the robot type and requirements. The selection of tests is made by the users of ISO 9283 in accordance with their own specific requirements.

The aim of this amendment is to give guidance for the selection of essential robot tests for typical applications. Consequently the number of tests may be limited.

Table 1 on page 2 contains a list of some typical robot applications; the essential tests for the different applications have been marked with an "X".

# Manipulating industrial robots — Performance criteria and related test methods

## AMENDMENT 1: Guide for selection of performance criteria for typical applications

**Table 1 — Guide for selection of performance criteria for typical applications**

| Criteria to be tested | Reference in ISO 9283 | Applications | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Spot welding 1) | Handling/ loading/ unloading 1) | Assembly 1) | Assembly 2) | Inspection 1) | Inspection 2) | Machining/ deburring/ polishing/ cutting 2) | Spray-painting 2) | Arc-welding 2) | Adhesive/ sealing 2) |
| Unidirectional pose accuracy | 7.2.1 | X | X | X | X | X | X | | | X | |
| Unidirectional pose repeatability | 7.2.2 | X | X | X | X | X | X | | | X | |
| Multi-directional pose accuracy variation | 7.2.3 | | X | X | X | X | X | | | | |
| Distance accuracy | 7.3.2 | X[3] | X[3] | X[3] | X[3] | X[3] | X[3] | | | | |
| Distance repeatability | 7.3.3 | X[3] | X[3] | X[3] | X[3] | X[3] | X[3] | | | | |
| Pose stabilization time | 7.4 | X | X | X | X | X | X | | | | |
| Pose overshoot | 7.5 | X | X | X | X | X | X | | | X | |
| Drift of pose characteristics | 7.6 | X | X | X | X | X | X | | | X | |
| Path accuracy | 8.2 | | | | X | | X | X | X | X | X |
| Path repeatability | 8.3 | | | | X | | X | X | X | X | X |
| Cornering deviations | 8.4 | | | | X | | X | X | | X | X |
| Stabilization path length | 8.4.2 | | | | X | | X | X | | X | X |
| Path velocity accuracy | 8.5.2 | | | | | | | X | X | X | X |
| Path velocity repeatability | 8.5.3 | | | | | | | X | X | X | X |
| Path velocity fluctuation | 8.5.4 | | | | | | | X | X | X | X |
| Minimum positioning time | 9 | X | X | X | X | | | | | X | |
| Static compliance | 10 | X | X | X | X | | | X | | | |

1) Application where pose-to-pose control is normally used.

2) Application where continuous path control is normally used.

3) Only in case of explicit programming.