

Australian Standard[®]

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

This Australian Standard was prepared by Committee IT/6, Information Processing Systems for Industrial Automation. It was approved on behalf of the Council of Standards Australia on 16 August 1991 and published on 15 November 1991.

The following interests are represented on Committee IT/6:

Australian Electrical and Electronic Manufacturers Association

Australian Information Industry Association

Australian Robot Association

Confederation of Australian Industry

Department of Technical and Further Education N.S.W.

Division of Manufacturing Technology, CSIRO

University of Melbourne

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First published as AS 3984—1991.

PREFACE

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<i>Reference to International Standard</i>	<i>Australian Standard</i>
ISO	AS
TR 8373 Manipulating industrial robots— Vocabulary	3877 Manipulating industrial robots— Vocabulary
9787 Manipulating industrial robots— Coordinate systems and motions	3986 Manipulating industrial robots— Coordinate systems and motions
9946 Manipulating industrial robots— Presentation of characteristics	3987 Manipulating industrial robots— Presentation of characteristics

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CONTENTS

	<i>Page</i>
1 Scope	5
2 Normative references	5
3 Definitions	5
4 Units	6
5 Abbreviations and symbols	6
5.1 Basic abbreviations	6
5.2 Quantities	6
5.3 Indices	6
5.4 Other symbols	6
6 Performance testing conditions	7
6.1 Robot mounting	7
6.2 Conditions prior to testing	7
6.3 Environmental and operating conditions	7
6.4 Displacement measurement principles	7
6.5 Instrumentation	8
6.6 Load to the mechanical interface	8
6.7 Test velocities	8
6.8 Definitions of poses to be tested and paths to be followed	9
6.9 Number of cycles	14
6.10 Test procedure	14
7 Pose characteristics	14
7.1 General description	14
7.2 Pose accuracy and pose repeatability	16
7.3 Distance accuracy and repeatability (applicable only to robots with the facility for explicit programming)	21
7.4 Pose stabilization time	24
7.5 Pose overshoot	25
7.6 Drift of pose characteristics	26
8 Path characteristics	27

	<i>Page</i>
8.1 General	27
8.2 Path accuracy (AT)	27
8.3 Path repeatability (RT)	30
8.4 Cornering deviations	30
8.5 Path velocity characteristics	32
9 Minimum positioning time	33
10 Static compliance	34
11 Test report	34
Annex	
A Example of a test report	36
B Guide for selection of performance criteria for typical applications	40

Manipulating industrial robots—Performance criteria and related test methods

1 Scope

This International Standard describes methods of specifying and testing the following performance characteristics of manipulating industrial robots:

- unidirectional pose accuracy and pose repeatability;
- multi-directional pose accuracy variation;
- distance accuracy and distance repeatability;
- pose stabilization time;
- pose overshoot;
- drift of pose characteristics;
- path accuracy and path repeatability;
- cornering deviations;
- path velocity characteristics;
- minimum positioning time;
- static compliance.

This International Standard does not specify which of the above performance characteristics are to be chosen for testing a particular robot. The tests described in this International Standard are primarily intended for developing and verifying individual robot specifications, but can also be used for such purposes as prototype testing, type testing or acceptance testing.

This International Standard applies to all manipulating industrial robots as defined in ISO/TR 8373. However, for the purpose of this International Stan-

dard the term “robot” means manipulating industrial robot.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/TR 8373:1988, *Manipulating industrial robots — Vocabulary*.

ISO 9787:1990, *Manipulating industrial robots — Coordinate systems and motions*.

ISO 9946: *Manipulating industrial robots — Presentation of characteristics*.

3 Definitions

For the purposes of this International Standard, the definitions given in ISO/TR 8373 and the following definitions apply.

3.1 cluster: Set of attained poses, corresponding to the same command pose, used to calculate the accuracy and the repeatability characteristics (shown diagrammatically in figure 6).

3.2 barycentre: For a cluster of n points, defined by their coordinates $(x_i - y_i - z_i)$, the barycentre of that cluster of points is the point whose coordinates are the mean values \bar{x} , \bar{y} and \bar{z} calculated by formulae given in 7.2.1.