AS 3984—1991
ISO 9283: 1990

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.

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 7110 1

PREFACE

This Standard was prepared by the Standards Australia Committee on Information Processing Systems for Industrial Automation. It is identical with and has been reproduced from ISO 9283:1990 *Manipulating industrial robots—Performance criteria and related test methods.*

Under arrangements made between Standards Australia and the international Standards bodies, ISO and IEC, as well as certain other Standards organizations, users of this Australian Standard are advised of the following:

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For the purposes of this Australian Standard, the ISO text should be modified as follows:

(i) *Terminology* The words 'Australian Standard' should replace the words 'International Standard' wherever they appear.

(ii) *References* The references to International Standards should be replaced by references to Australian Standards as follows:

Reference to International Standard		*Australian Standard*	
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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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 Standard 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 $(x_j - y_j - z_j)$, 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.