AS 1101.4—1989

Australian Standard®

Graphical symbols for general engineering

Part 4: Machine elements

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Association of Consulting Engineers, Australia

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PREFACE

This Standard was prepared by the Standards Australia Committee on Technical Drawing to supersede AS 1101.4—1981.

This edition is technically the same as the previous edition but includes symbols for miscellaneous mechanisms and their components. Symbols described in Section 2 are identical with those described in the following International Standards:

ISO 3952/1—1981 *Kinematic diagrams—Graphical symbols—Part 1*
ISO 3952/2—1981 *Kinematic diagrams—Graphical symbols—Part 2*
ISO 3952/3—1979 *Kinematic diagrams—Graphical symbols—Part 3*
ISO 3952/4—1984 *Kinematic diagrams—Graphical symbols—Part 4*

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STANDARDS AUSTRALIA

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SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This Standard specifies definitions and graphical symbols for machine elements of kinematic diagrams for use in all branches of industry. It describes the basic symbols and the principles on which they are based and illustrates some representative examples of complete kinematic diagrams. Composite symbols can be devised by a combination of basic symbols. Symbols are identified by a basic 4-digit number (with extensions where appropriate), which includes the number 4, the number of the relevant table, and the number of the symbol itself.

NOTE: The number 4 represents the part number of this Standard, i.e. AS 1101.4.

1.2 APPLICATION. The symbols given in this Standard are suitable for use in technical documentation, as well as in technical and educational literature.

1.3 REFERENCED DOCUMENT. The following Standard is referred to in this Standard:

AS
1100 Technical drawing
1100.101 Part 101: General principles
1100.201 Part 201: Mechanical drawing

1.4 DEFINITIONS. For the purpose of this Standard, the definitions below apply.

NOTE: For terms used in technical drawing, see AS 1100.101.

1.4.1 Cam—a member (in a mechanism) which, by means of a profile on it engaging a follower, can convert an input motion, usually a steady rotation, to an output motion, usually either oscillating or reciprocating.

1.4.2 Clutch—a form of shaft coupling designed for quick and frequent engagement or disengagement.

1.4.3 Coupling—the whole combination of component links and pairs serving to connect two members together in such a way as to allow a certain prescribed freedom of movement between them.

1.4.4 Crank—an arm, integral with a rotating shaft, carrying at or near its outer end a kinematic pair so that, by means of other jointed members, a rotating input can be converted to an output, usually either oscillating or reciprocating, and vice versa.

1.4.5 Degrees of freedom—when applied to a rigid body or mechanism under some form of constraint, the degrees of freedom are equal to the number of additional parameters required to locate the body or mechanism in a given frame of reference.

1.4.6 Dwell—a member in a mechanism or machine undergoes dwell when, during regular motion, it remains stationary for a substantial portion of the cycle of its movement.

1.4.7 Gear—a rotatable toothed machine element used to transmit motion (usually between two rotating shafts) to another toothed machine element by successively engaging teeth.

1.4.8 Higher pair—a kinematic pair in which the contacting elements on the two members (or links) are in general not congruent, the contact between elements accordingly being at a point (or points), along a straight line (or straight lines), or along a curve (or curves).

1.4.9 Kinematics—that branch of mechanics which is limited to a study of displacements in a mechanism together with successive derivatives (most commonly velocities and accelerations, both relative and absolute) of components of the mechanism.

1.4.10 Kinematic pair—a joint (between two links) provided by physical contact between specified regions of the surfaces on the two members.

1.4.11 Link—a member (usually rigid) connected or in contact with other members (links) in a mechanism.

1.4.12 Link mechanism—a system of links whose function is to transmit, control, or constrain relative movement.

1.4.13 Lower pair—a kinematic pair in which the contacting elements on the two members (or links) are substantially congruent over the regions of contact thereby allowing surface-contact over regions of the elements.

1.4.14 Oscillating motion—motion back and forth between limits about a pivot (turning pair).

1.4.15 Pawl—a pivoted catch, engaging with a ratchet wheel or rack to prevent reverse motion, or to convert its own reciprocating motion into an intermittent rotary or linear motion.

1.4.16 Ratchet—a wheel which has regular teeth (usually 'saw-teeth' which are steeper at the trailing face than at the leading face), enabling it to be turned intermittently through the medium of a pawl which remains in contact with the ratchet wheel.

1.4.17 Reciprocating motion—rectilinear motion, back and forth between limits.

1.5 ABBREVIATIONS. Where brevity and conservation of space are necessary, abbreviations may be used in accordance with AS 1100.101. Terms