
**Worm gears — Geometry of worms —
Name plates for worm gear units, centre
distances, information to be supplied
to gear manufacturer by the purchaser**

*Engrenages à vis cylindriques — Géométrie des vis — Plaques
signalétiques des réducteurs à roue et vis, entraxes, informations
à fournir au tailleur d'engrenages par l'acheteur*

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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.

International Standard ISO 10347 was prepared by Technical Committee ISO/TC 60, *Gears*, Subcommittee SC 1, *Nomenclature and wormgearing*.

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International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
Internet iso@iso.ch

Printed in Switzerland

Worm gears — Geometry of worms — Name plates for worm gear units, centre distances, information to be supplied to gear manufacturer by the purchaser

1 Scope

This International Standard specifies requirements for name plates for worm gear units and recommendations for choice of their centre distances, as well as information to be supplied to the worm gear manufacturer so that suitable gears can be provided.

This International Standard is also applicable to open worm gear pairs with respect to the preferred centre distances to be used, information to be supplied to the manufacturer for machining and the required application information.

This International Standard is applicable to worm gears with centre distances up to 500 mm.

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2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 54:1996, *Cylindrical gears for general engineering and for heavy engineering — Modules*.

ISO 1122-2:1999, *Vocabulary of gear terms — Part 2: Definitions related to worm gear geometry*.

3 Worm gear units — Name plate

All gear units shall have a durable one piece or two piece name plate which is screwed, glued or rivetted to the gear box.

NOTE Glue should only be used if its durability is equal to that obtained by screws or rivets.

The information to be provided on the name plate shall include the following:

- maker's or supplier's name (identification),
- serial number,
- centre distance,
- ratio (may be expressed as input/output speeds),
- power reversing or not,

- maximum torque (N·m),
- lubricant recommendation.

If desired, further information may be added.

4 Worm gear units and worm gear pairs — Centre distance

Recommendations for centre distances are given in Table 1.

NOTE 1 The centre distance of a worm gear is of great importance with regard to its operating conditions.

Due to the method of generating profiles, any deviation of centre distance will entail a variation of contact pattern and therefore will detrimentally influence the meshing conditions.

Table 1

Dimensions in millimetres

25	100	200	315	400	500
32	125	225	355	450	
40	140	250			
50	160	280			
63	180				
80					

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NOTE 2 For small centre distances (up to and including 125 mm), the values are spaced according to the R10 series. For larger centre distances, the values have been spaced according to the R20 series.

NOTE 3 A standard worm gear unit, having input and output shafts at a standard centre distance, can be replaced by another standard unit without the need of extensive realignment. Dimensions of shaft ends and shaft heights are not specified in this International Standard for the following reasons:

- a) shaft ends need to be designed in accordance with transmissible torque, overhung load and shaft material properties. Also it may be necessary to replace couplings when it is found necessary to replace a gear unit;
- b) choice of shaft heights involves among other things consideration of requisite volume of lubricant, gear case heat transfer requirements and standard dimensions of electric motors in the speed ranges of interest to the designer/manufacturer of the gear units;
- c) standard ranges of modules or diameter quotients would not serve any useful purpose and, on the contrary, would impose unnecessary restrictions on designers.

5 Worm gear units and worm gear pairs — Information to be provided to the supplier/manufacturer

5.1 General

The manufacturer shall choose the flank type and the manufacturing and inspection means. He shall also supply the geometrical and dimensional data required.

NOTE The mechanical requirements given by the user can only be satisfied if the manufacturer is sure that the wheel and worm assembly is mounted appropriately and that especially lubrication, ventilation (heat transfer) and casing tolerances comply with the manufacturer's specifications.

5.1.1 Worm gear units

Information generally according to 5.2.1 should be entered on a diagram (see sample form in Figure 1).

5.1.2 Worm gear pairs

Unless otherwise specified, the choice of thread form, manufacture and inspection is at the manufacturer's discretion.

5.2 Information to be supplied

5.2.1 Operating conditions

It is recommended that the following information be given in the upper right-hand corner of the drawing:

- input power available (kW);
- driving machine: electric motor or internal combustion engine (number of cylinders, type of cycle);
- output power required (kW);
- driven machine (specify type);
- rotational speed, worm or wheel (r/min);
- reversing or not;
- speed increasing or speed reducing ratio (without particular specification, the relative tolerance is $\pm 2\%$);
- working position (see sample form in Figure 1);
- required working life;
- maximum output torque (N·m);
- service continuous or intermittent:
 - give details of intermittent cycles,
 - give details of any shock loads;
- environmental conditions;
- thermal factors (if required);
- specified lubricant (if required);
- method of lubrication (e.g. oil bath, forced feed);
- maximum noise level (if required).

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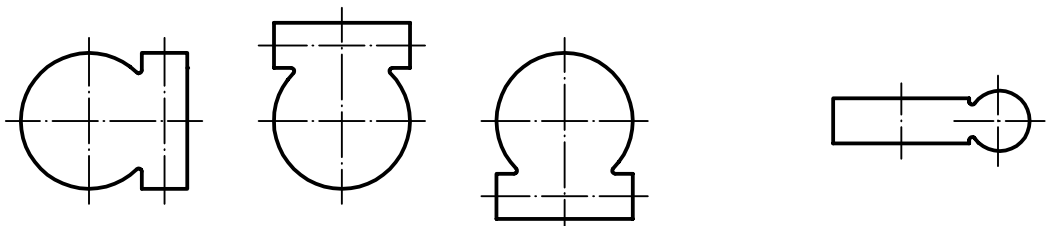
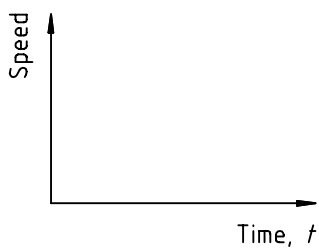
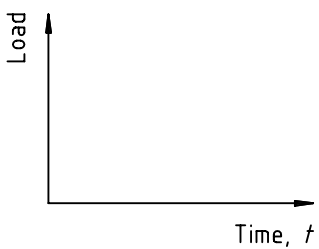
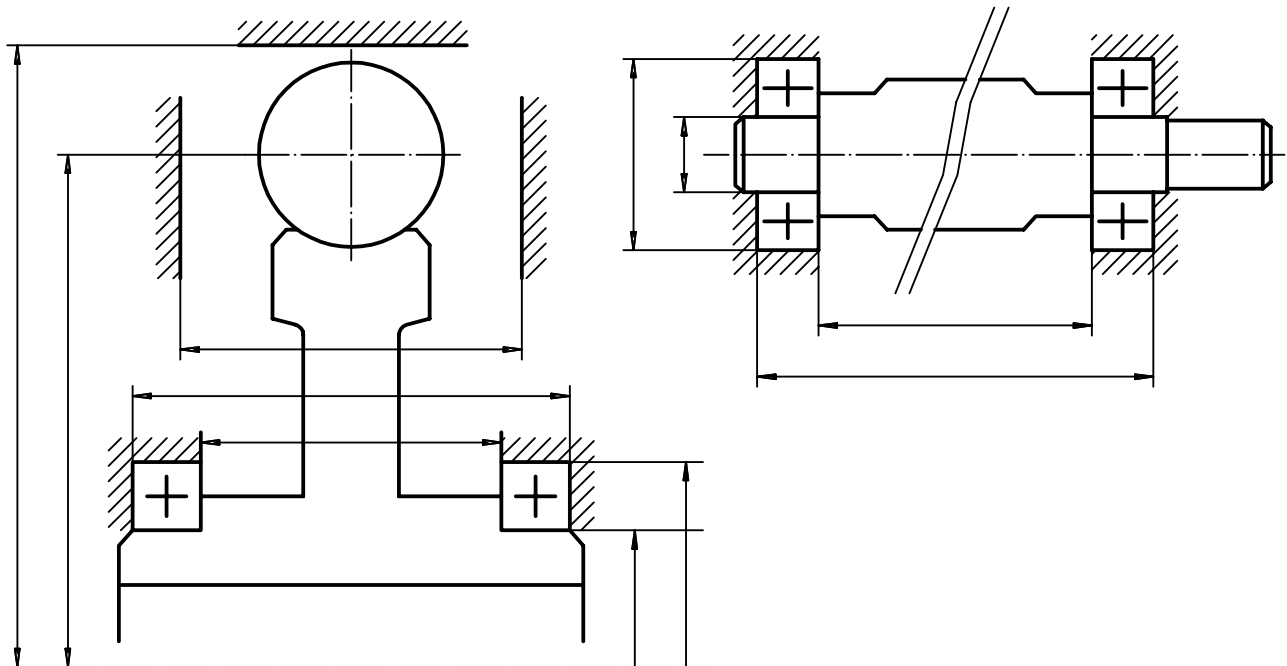
Power (kW):..... or nominal torque (N·m):..... and rotational frequency (r/min):..... Worm or worm wheel ¹⁾
Gear ratio for reducer: for an increaser: Tolerance (%):
Working position ¹⁾ <div style="text-align: center; margin: 10px 0;">  </div> Show the directions of the rotation of the worm and worm wheel by means of arrows.
Working life (h):
Maximum (peak) output torque (N·m): Continuous output torque (N·m):
Service: Continuous or intermittent ¹⁾ Give details of intermittent cycles Give details of any shock loads
Ambient conditions: Temperature (°C): Humidity (%): Airborne contaminants: Other:
Cycle of load (where data is available) <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div>
Particular observations: (e.g. number of cycles per hour, service factor, etc.)
1) Encircle the corresponding case.

Figure 1 — Sample form

5.2.2 Overall dimensions



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Figure 2 – Overall dimensions

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NOTE The overall dimensions of worm gear units are a function of the centre distance, location of the bearings and the outside diameter of the worm and wormwheel.

Figure 2 shall be supplied by the user in the case of special requirements for individual dimensions.

The manufacturer shall supply drawings of the worm and worm wheel. If changes or adjustments are required, these shall be subject to agreement between user and manufacturer.

The purchaser shall provide a diagram showing dimensional constraints on the gears to be supplied. Dimensions of any pre-machined bearing housings shall be shown, including tolerances and bearings spans and types when these details are already decided. In all cases, details of the bearings to be used shall be agreed with the gear manufacturer.

The manufacturer shall provide a drawing of the gears to be made showing dimensions and tolerances. Tolerances on bearing surfaces shall be agreed with the purchaser.

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