



SLOVENSKI STANDARD

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Dimensions and output series for rotating electrical machines - Part 2: Frame numbers 355 to 1000 and flange numbers 1180 to 2360

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Dimensions et séries de puissances des machines électriques tournantes - Partie 2: Désignation des carcasses entre 355 et 1000 et des brides entre 1180 et 2360

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**Dimensions et séries de puissances
des machines électriques tournantes**

**Partie 2:
Désignation des carcasses entre 355 et 1000 et
des brides entre 1180 et 2360**

(standards.iteh.ai)

**Dimensions and output series for rotating
electrical machines**

**Part 2:
Frame numbers 355 to 1000 and flange
numbers 1180 to 2360**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**DIMENSIONS AND OUTPUT SERIES FOR ROTATING
ELECTRICAL MACHINES**

Part 2: Frame numbers 355 to 1000 and flange numbers 1180 to 2 360

FOREWORD

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

This part of the International Standard IEC 72 has been prepared by Sub-committee 2B: Mounting dimensions and output series, of IEC Technical Committee No. 2: Rotating machinery.

It replaces IEC 72A published in 1970.

The text of this part is based on the following documents:

Six Months' Rule IEC 60072-2	Report on Voting
2B(CO)69	2B(CO)72

Full information on the voting for the approval of this part can be found in the Voting Report indicated in the above table.

The following publications are quoted in this part of IEC 72:

- IEC 34-8: 1972, Rotating electrical machines — Part 8: Terminal markings and direction of rotation of rotating machines.
- IEC 72-1: 1990, Dimensions and output series for rotating electrical machines — Part 1: Frame numbers 56 to 400 and flange numbers 55 to 1080.
- ISO 496: 1973, Driving and driven machines — Shaft heights.
- ISO 1101: 1983, Technical drawings — Geometrical tolerancing — Tolerancing of form, orientation, location and run-out — Generalities, definitions, symbols, indications on drawings.

INTRODUCTION

IEC 72-1 contains standard values for shaft-heights, fixing dimensions, shaft extensions, maximum permissible torques and outputs for machines with shaft-heights from 56 mm to 400 mm.

However, the variety of constructions and the wide range of applications for the large machines with shaft-heights above 315 mm have led to the establishment of a relatively large number of values for the dimensions in order to cover all possible constructions. Owing to this, the present part covers a wider range than IEC 72-1 within which, range values suitable for all designs or for a more detailed standardization can be chosen.

Thus, the mounting dimensions given in this part for shaft-heights 355 mm and 400 mm have been chosen from values given in IEC 72-1.

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DIMENSIONS AND OUTPUT SERIES FOR ROTATING ELECTRICAL MACHINES

Part 2: Frame numbers 355 to 1000 and flange numbers 1180 to 2 360

1 Scope

This part of IEC 72 relates to all kinds of rotating electrical machines with a horizontal shaft, and with any one of three specific types of foot mounting — i.e. machines with feet down, machines with feet up, and machines for which the bed-plate is an integral part — and with mounting flange for which the shaft height in the feet down version is between 355 mm and 1 000 mm and pitch circle diameter of fixing holes between 1 180 and 2 360 mm.

2 Letter-symbols for dimensions

The symbols defined below are illustrated by the dimensional sketches in clause 7.

- A* — distance between centre-lines of fixing holes (end view).
- AA* — width of the end of the foot (end view).
- AB* — overall dimension across the feet (end view).
- AC* — diameter of the machine.
- AD* — distance from the centre-line of the machine to extreme outside of the terminal box or other most salient part mounted on the side of the machine.
- B* — distance between the centre-lines of the fixing holes (side view).
- BA* — length of the foot (side view).
- BB* — overall dimension across the feet (side view).
- C* — distance from the shoulder on the shaft at D-end to the centre-line of the mounting holes in the nearest feet.
- CA* — distance from the shoulder on the shaft at N-end to the centre-line of the mounting holes in the nearest feet.
- D* — diameter of the shaft extension at D-end.
- DA* — diameter of the shaft extension at N-end.
- E* — length of the shaft extension from the shoulder at D-end.
- EA* — length of the shaft extension from the shoulder at N-end.
- F* — width of the keyway of shaft extension at D-end.
- FA* — width of the keyway of the shaft extension at N-end.
- G* — distance from the bottom of the keyway to the opposite surface of the shaft extension at D-end.
- GA* — distance from the top of the key to the opposite surface of the shaft extension at D-end.
- GB* — distance from the bottom of the keyway to the opposite surface of the shaft extension at N-end.
- GC* — distance from the top of the key to the opposite surface of the shaft extension at N-end.
- GD* — thickness of the key of the shaft extension at D-end.
- GE* — depth of the keyway at the crown of the shaft extension at D-end.

- GF* — thickness of the key of the shaft extension at N-end.
GH — depth of the keyway at the crown of the shaft extension at N-end.
H — distance from the centre-line of the shaft to the bottom of the feet (basic dimension).
H' — distance from the centre-line of the shaft to the mounting surface — e.g. the bottom of the feet — in the feet-up version.
HA — thickness of the feet.
HC — distance from the top of the horizontal machine to the bottom of the feet.
HD — distance from the top of the lifting eye, the terminal box or other most salient part mounted on the top of the machine to the bottom of the feet.
HE — distance from the mounting surface to the lowest part of the machine in the feet-up version.
K — diameter of the holes or width of the slots in the feet of the machine.
L — overall length of the machine with a single shaft extension.
LA — thickness of the flange.
LB — distance from the mounting surface of the flange to the end of the machine.
LC — overall length of the machine when there is a shaft extension at N-end.
M — pitch circle diameter of the fixing holes.
N — diameter of the spigot.
P — outside diameter of the flange, or in the case of a non-circular outline twice the maximum radial dimension.
R — distance from the mounting surface of the flange to the shoulder on the shaft.
S — diameter of the fixing holes in the mounting flange or nominal diameter of the thread.
I — depth of the spigot.

NOTE — The designation of D and N-end of a machine is given in IEC 34-8.

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3 Designation of machines

3.1 Foot-mounted machines

Frame sizes and shaft extensions shall be designated in the following way, by using the dimensions *H*, *H'*, *A*, *B*, *C*, *D* and *E* in millimeters.

$H(A/B/C)D/E$ or $H/H' (A/B/C)D/E$

Example: 710 (1180/1800/280) 130/200

3.2 Flange-mounted machines

Flange and shaft extensions shall be designated in the following way, by using the dimensions *M*, *S*, *D* and *E* in millimeters, the number of holes and the prefix FF if the flange has a spigot or FD if it has no spigot, under following form:

FF *M* (number of holes/*S*) *D/E* for flange with spigot

FD *M* (number of holes/*S*) *D/E* for flange without spigot.

Example: FF 1500 (12/28) 130/200

3.3 Foot- and flange-mounted machines

Combine 3.1 and 3.2 as follows:

$H(A/B/C) FF M$ (number of holes/*S*) *D/E*.

4 Fixing dimensions

Recommended values for dimensions H , A , B and C are given in 4.1 to 4.4. In the tables, the values given in IEC 72-1 are printed in italics. Dimensions for mounting flanges are given in 4.5.

4.1 Shaft heights

The shaft-heights are taken from ISO 496.

4.1.1 Machines with the mounting surface of the feet below the lowest point of the frame (feet down):

355 400 450 500 560 630 710 800 900 1000

4.1.2 Machines with the mounting surface of the feet above the lowest point of the frame (feet up):

0 160 250 315 400 500 630 800

4.2 A dimensions

Values for A dimensions are given in table 1. They are taken from the R 40 series with the exception of the values 610 mm and 686 mm.

Table 1 — A dimensions

Dimensions in millimetres

H	Values for A												
355	450	475	500	530	560	610	630	670	710	750	800	850	900
400	500	530	560	600	630	686	710	750	800	850	900	950	1000
450	560	600	630	670	710	750	800	850	900	950	1000	1060	1120
500	630	670	710	750	800	850	900	950	1000	1060	1120	1180	1250
560	710	750	800	850	900	950	1000	1060	1120	1180	1250	1320	1400
630	800	850	900	950	1000	1060	1120	1180	1250	1320	1400	1500	1600
710	900	950	1000	1060	1120	1180	1250	1320	1400	1500	1600	1700	1800
800	1000	1060	1120	1180	1250	1320	1400	1500	1600	1700	1800	1900	2000
900	1120	1180	1250	1320	1400	1500	1600	1700	1800	1900	2000	2120	2240
1000	1250	1320	1400	1500	1600	1700	1800	1900	2000	2120	2240	2360	2500

NOTE — For machines with feet up, A dimensions should be chosen from the lines corresponding to the shaft height H that the machine would have had with feet down.

This normally corresponds to the Renard number equal or nearest higher to the distance from the shaft axis to the lowest point of the machine.