

Power transmission elements

Grooved pulleys for narrow V-belts

Assignment of pulleys to electric motors

DIN
2211
Part 3Antriebs-elemente; Schmalkeilriemenscheiben;
Zuordnung zu elektrischen Motoren

Supersedes March 1974 edition.

In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.

The field of application of this standard is not otherwise covered in regional or international standards.

Dimensions in mm

1 Scope and field of application

The purpose of this standard is to assign to electric motors as specified in DIN 42 672 Part 1 and DIN 42 673 Part 1 one-piece grooved pulleys with in each case the smallest possible datum diameter, d_r , for narrow V-belts as specified in DIN 7753 Part 1. These pulleys have been dimensioned in accordance with the drive calculations described in DIN 7753 Part 2 and rated on the basis of the data supplied by the manufacturers. With the exception of the hub bore diameter, d_2 , the grooved pulleys listed in the following table comply with the specifications given in DIN 2211 Part 1. In some cases, the values of d_2 given in the present standard exceed the maximum values of d_2 specified in DIN 2211 Part 1 for mechanical engineering purposes.

The use of grooved pulleys with a smaller datum diameter or a wider face width, b_2 , than those dealt with in this standard shall be subject to agreement with the motor manufacturer.

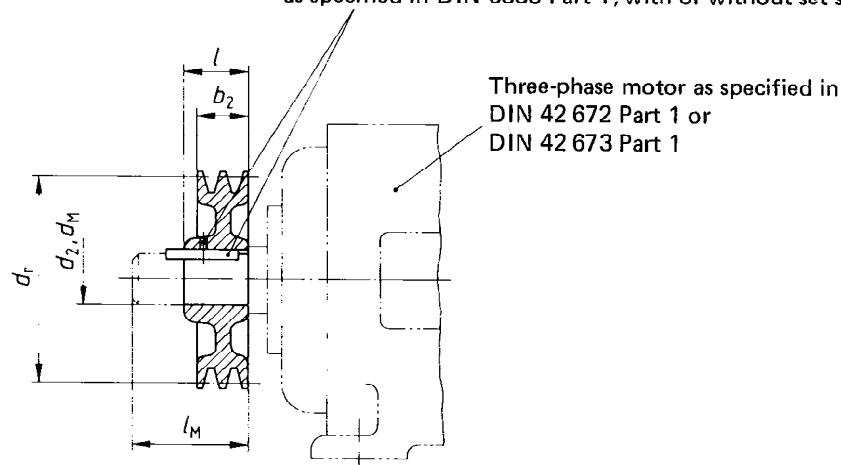
2 Dimensions, designation

Grooved pulleys for narrow V-belts are not required to conform to the pulley illustrated here; only the dimensions specified shall be complied with

The hub face which lies flush with the rim shall be mounted facing the motor.

For general tolerances, accuracy grade m as specified in DIN 7168 shall apply.

Locking and fastening of a grooved pulley by means of a key as specified in DIN 6885 Part 1, with or without set screw



Designation of a one-piece (1T) grooved pulley for narrow V-belts of SPZ profile, with a datum diameter, d_r , of 200 mm, number of grooves, z , of 3, and a hub bore diameter, d_2 , of 42 mm ¹⁾, with keyway as specified in DIN 6885 Part 1 (PN):

Pulley DIN 2211 – SPZ – 1T 200 × 3 × 42 PN

1) The required nominal value of d_2 is to be specified in the designation.

Continued on pages 2 to 4

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Translation
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Surface-cooled three-phase motors as in DIN 42 673 Part 1				Grooved pulleys for narrow V-belts as in DIN 2211 Part 1, (dimensions as in DIN 2211 Part 1, except for d_2)				Internally cooled three-phase motors as in DIN 42 672 Part 1				
radial contact groove ball bearings	with cylindrical roller bearings	Rotational speed, in min^{-1}		Type of groove profile	d_1	z	b_2	d_2	l	Rotational speed, in min^{-1}		Dimensions of motor stub shaft $d_M \times l_M$
		3000	1500							1000	750	
Size		Power ratings, in kW, at 50 Hz		Dimensions of motor stub shaft $d_M \times l_M$		Power ratings, in kW, at 50 Hz		Dimensions of motor stub shaft $d_M \times l_M$		with radial contact groove ball bearings		
80	-	0,75	0,55	0,37	-	19 X 40	-	-	-	-	-	-
90 S	-	1,1	0,75	0,55	-	24 X 50	-	-	-	-	-	-
90 L	-	1,5	-	-	-	24 X 50	-	-	-	-	-	-
100 L	-	2,2	-	-	-	24 X 50	-	-	-	-	-	-
112 M	-	3	-	-	-	28 X 60	-	-	-	-	-	-
132 S	-	-	2,2	0,75	-	28 X 60	-	-	-	-	-	-
132 M	-	-	3	1,1	-	28 X 60	-	-	-	-	-	-
160 M	-	4	-	-	-	38 X 80	-	-	-	-	-	-
-	160 M	-	4	2,2	1,5	38 X 80	-	-	-	-	-	-
160 M	-	5,5	-	-	-	38 X 80	-	-	-	-	-	-
-	160 M	7,5	-	-	-	38 X 80	-	-	-	-	-	-
160 L	-	-	5,5	3	-	42 X 110	-	-	-	-	-	-
-	160 M	-	7,5	4	-	42 X 110	-	-	-	-	-	-
160 L	-	11	-	-	-	42 X 110	-	-	-	-	-	-
-	160 L	15	-	-	-	42 X 110	-	-	-	-	-	-
160 L	-	-	11	7,5	5,5	42 X 110	-	-	-	-	-	-
-	160 L	-	18,5	-	-	42 X 110	-	-	-	-	-	-
160 L	-	18,5	-	-	-	42 X 110	-	-	-	-	-	-
-	160 L	-	-	-	-	42 X 110	-	-	-	-	-	-
-	160 L	-	15	11	7,5	42 X 110	-	-	-	-	-	-
-	160 L	-	-	-	-	42 X 110	-	-	-	-	-	-

180 M	-	-	22	-	-	-	-	-	-	-	50	48 X 110	-	-	-	-	22	-	160 L	160 L
-	180 M	-	-	-	-	-	-	-	-	-	52	-	-	-	-	-	-	-	160 L	-
180 M	-	-	-	18,5	-	-	-	-	-	-	50	-	-	-	18,5	-	-	-	160 L	160 L
-	180 M	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-
180 L	-	-	-	-	11	15	22	-	-	-	60	-	-	-	-	-	-	-	-	180 M
-	180 L	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-
200 L	-	-	30	-	-	-	-	-	-	-	50	55 X 110	-	-	-	-	30	-	-	180 M
-	-	200 L	-	-	-	-	-	-	-	-	50	-	-	-	-	-	-	-	-	180 L
-	-	-	30	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-
200 L	-	-	-	18,5	15	18,5	30	-	-	-	60	-	-	-	-	-	-	-	-	180 L
-	-	200 L	-	22	18,5	22	-	-	-	-	65	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-
225 M	-	-	45	-	-	-	-	-	-	-	50	-	-	-	-	-	45	-	-	200 M
-	-	225 M	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-
225 S	-	-	-	37	-	-	18,5	-	-	-	60	-	-	-	-	-	-	-	-	200 M
-	-	225 S	-	-	-	-	-	-	-	-	65	-	-	-	-	-	-	-	-	-
225 M	-	-	-	45	30	22	-	-	-	-	60	60 X 140	-	22	30	45	-	-	-	200 L
-	-	225 M	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-
250 M	-	-	55	-	-	-	-	-	-	-	65	-	-	-	-	-	-	-	-	200 L
-	-	250 M	-	-	-	-	-	-	-	-	65	-	-	-	-	-	-	-	-	-
250 M	-	-	-	55	37	30	-	-	-	-	65	65 X 140	-	30	37	55	-	-	-	225 M
-	-	250 M	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-

d₂ corresponds to stub shaft diameter d_m of the motor concerned.

See DIN 2211 Part 1 for material, design and balancing.

Standards referred to

- DIN 2211 Part 1 Power transmission elements; grooved pulleys for narrow V-belts; dimensions, material
- DIN 6885 Part 1 Drive type fastenings without retainer; high style keys, keyways
- DIN 7168 Part 1 General tolerances; linear and angular dimensions
- DIN 7753 Part 1 Endless narrow V-belts for mechanical engineering; dimensions
- DIN 7753 Part 2 Endless narrow V-belts for mechanical engineering; calculation of drives, power ratings
- DIN 42 672 Part 1 Internally cooled three-phase motors with squirrel cage rotor; IM B 3 type with rolling bearings; mounting dimensions and outputs
- DIN 42 673 Part 1 Surface-cooled three-phase motors with squirrel cage rotor, IM B 3 type with rolling bearings; mounting dimensions and outputs

Previous editions

DIN 2211 Part 3: 03.74

Amendments

The following amendments have been made in comparison with the March 1974 edition.

- a) The standard is now under the direction of the *Deutsche Elektrotechnische Kommission* of DIN and VDE (DKE) (Electrical Engineering Standards Committee).
- b) The standard has been completely revised and adapted to DIN 2211 Part 1.
- c) Dimension d_2 has been specified as corresponding to the dimensions of the motor stub shaft.
- d) The scope of the standard has been limited to motors only up to size 250 M in the case of surface-cooled motors, and up to size 225 M in the case of internally cooled motors.
- e) The motors listed have been classified into those with radial contact groove ball bearings and motors with cylindrical roller bearings.
- f) The standard designation has been incorporated in the standard.

Explanatory notes

This standard has been prepared by DKE Subcommittee 311.1 *Elektrische Maschinen, Leistungen und Abmessungen*.

Experience has shown that an important criterion in selecting pulleys for driving motors is the diameter of the pulley; the smaller this diameter is, the smaller can the driven pulley be dimensioned. This criterion results in a revised assignment of pulleys to three-phase motors as specified in DIN 42 672 Part 1 and DIN 42 673 Part 1 and applies to the standard design of such motors provided with a radial contact groove ball bearing at the drive end, and for size 160 M and above to more powerful motors fitted with a cylindrical roller bearing of the same dimensions.

The following data, given in DIN 7753 Part 2 for guidance, were adopted for the dimensioning of grooved pulleys for narrow V-belts.

Belt performance: in accordance with belt manufacturers' 1982 data (power ratings approximately 20 % higher than specified in DIN 7753 Part 2, April 1976 edition).

Speed ratio: 1 : 3.

160° angle of belt wrap: corresponding to an angle correction factor $c_1 = 0,95$.

Light duty drive: corresponding to an operational correction factor $c_2 = 1,1$.

Centre distance: corresponding to a belt length correction factor $c_3 = 1,0$.

Force on shaft: corresponding to a pretensioning factor of about 2,0.

The selected number of belts shall be at least 95 % of the calculated number of belts.

Motor bearings on drive end: series 62 . . radial contact groove ball bearings or series NU 2 . . cylindrical roller bearings, corresponding to the next larger size of stub shaft diameter d_M .

Rated bearing service life L_{10} as specified in ISO 281 Part 1: not less than 16 000 working hours.

For both two pole and for four pole and multi-pole motors only one pulley size has been specified.

In some cases, dimensions of stub shafts of motors specified in DIN 42 672 Part 1 and DIN 42 673 Part 1 may occasionally differ for the same motor rating. For this reason, the hub bore diameters will be different for pulleys of identical ratings.

As the pulleys specified comply with DIN 2211 Part 1, the hub length is always shorter than the length of the stub shaft.

No pulleys have been included for sizes of surface-cooled motors above 250 M, and of internally cooled motors above 225 M, because for these motor sizes belt drives are generally designed to suit the individual application.

International Patent Classification

F 16 H 55/44

H 02 K 7/10