

Title (en)

Electric motor-driven axial fan, especially for motor vehicle cooling fans.

Title (de)

Elektromotorisch angetriebener Axialventilator, insbesondere für Kraftfahrzeug-Kühlerventilatoren.

Title (fr)

Ventilateur axial entraîné par un moteur électrique, particulièrement pour des ventilateurs de refroidissement dans les voitures automobiles.

Publication

EP 0096255 A1 19831221 (DE)

Application

EP 83104922 A 19830518

Priority

DE 3220574 A 19820601

Abstract (en)

1. An electric motor-driven axial fan, without a guide wheel, in particular for motor vehicle cooling fans, comprising an impeller which is secured to the shaft end of a drive motor and has non twisted blades arranged on the outer periphery of its hub in a star-fashion at a constant setting angle β in the range of 16 degrees ... 24 degrees and which has both axially and radially extending ribs on the inner periphery of its cup-shaped hub, characterized by the following features : a) the length (1) of the distance between the front and rear blade edges lies in the range of 0.15 times to 0.18 times the outer diameter (D_2) of the impeller (2) ; b) the greatest blade thickness (d_{max}) on the rounded front edge of each blade (22) is smaller than or the same as 0.01 times the outer diameter (D_2) of the impeller (2), and the smallest blade thickness (d_{min}) is less than 0.5 times the greatest blade thickness ; c) the radius of curvature (R_{su}) at the underside of the blade is in the range between 0.35 times and 0.45 times the outer diameter (D_2) of the impeller (2), and the radius of curvature (R_{so}) at the upper side of the blade corresponds to the sum of the radius of curvature (R_{su}) at the upper side of the blade and the greatest blade thickness (d_{max}) ; d) between the ribs (214) which extend radially on the inner end face (212) of the hub (21), in the region of their radially inner ends, there are arranged ventilation openings (213) on the end face (212) of the hub (21).

Abstract (de)

Zur Minderung des Leistungsgewichtes des Axialventilators, insbesondere zur einfacheren Fertigung und Gewichtsverminderung des Laufrades sind unverwundene Schaufeln (22) mit einem Schaufelprofil vorgesehen, das insbesondere durch eine untere und eine obere Kreisbogenlinie: und eine Schaufellänge: gekennzeichnet ist: die übrigen Konstruktionsparameter liegen vorteilhafterweise jeweils in folgenden Bereichen: DN (Nabendurchmesser) = 0,3 ... 0,4 D_2 ; $d_{max} \leq 0,01 D_2$; $d_{min} < 1/2 d_{max}$. Zur besseren Kühlung des Elektro-Antriebsmotors sind an der Innenseite der Nabe (21) des Laufrades (2) gleichzeitig radial verlaufende Rippen (214) und in der Stirnseite der Nabe Lüftungsöffnungen (213) in der Nähe des Motorwellenendes (11) vorgesehen, derart daß die angesaugte Kühlluft zunächst radial beschleunigt und dann an der Innenseite der Nabe zum Antriebsmotor (1) hin axial umgelenkt wird.

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IPC 8 full level

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CPC (source: EP)

F04D 29/325 (2013.01); **F04D 29/384** (2013.01)

Citation (search report)

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