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Datasheet for the decision of 16 December 2010

Case Number: T 0229/09 - 3.2.08

Application Number: 00301766.2

Publication Number: 1033505

IPC: F16C 33/32

Language of the proceedings: EN

Title of invention:
Ceramic bearing ball

Patent Proprietor:
NGK Spark Plug Company Limited

Opponent:
Schaeffler KG

Headword:
-

Relevant legal provisions:
EPC Art. 56

Relevant legal provisions (EPC 1973):
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Keyword:
"Inventive step - no"

Decisions cited:
-

Catchword:
-

Case Number: T 0229/09 - 3.2.08

D E C I S I O N
of the Technical Board of Appeal 3.2.08
of 16 December 2010

Appellant: (Opponent)
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Respondent: (Patent Proprietor)
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Representative:
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Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 23 December 2008 rejecting the opposition filed against European patent No. 1033505 pursuant to Article 102(2) EPC 1973.

Composition of the Board:

Chairman: T. Kriner
Members: P. Acton
U. Tronser

Summary of Facts and Submissions

I. The appellant (opponent) filed a notice of appeal received at the EPO on 24 January 2009 against the opposition division's interlocutory decision posted on 23 December 2008 rejecting the opposition against European patent No. 1 033 505. The appeal fee was paid simultaneously and the statement of grounds was filed together with the notice of appeal.

II. Oral proceedings took place before the board of appeal on 16 December 2010. Though duly summoned to oral proceedings, the respondent (patent proprietor) did not attend, as announced with letter dated 11 October 2010.

The appellant requests that the decision under appeal be set aside and that the patent be revoked.

The respondent requested in the written proceedings that the appeal be dismissed.

III. Independent claim 1 as granted reads:

"A ceramic bearing ball (1) comprising a sphericity of not more than 0.08 µm and a surface roughness of not more than 0.012 µm characterised by a maximum surface pore size of 5 µm."

IV. The following documents are relevant for the present decision:

D1: US-A-5 485 331
D4: DIN Norm, EN ISO 8785, Oberflächen-unvollkommenheiten

V. The appellant's arguments can be summarised as follows:

D1 disclosed all features of claim 1 apart from the feature according to which the maximum surface pore size is 5 µm.

The skilled person would always try to reduce all kinds of surface defects of a bearing ball in order to reduce irregular bearing vibrations. Since pores were a kind of surface defect (see D4, page 4), it was obvious for the skilled person to try to minimize their size. Selecting specifically an upper value of 5 µm was an arbitrary selection which could not give rise to inventive step.

VI. The arguments submitted in writing by the respondent can be summarised as follows:

D1 did indeed describe all features of the preamble of claim 1, but it did not disclose the feature relating to the pore size. This feature was not an arbitrary selection since, as shown in examples 1 and 16 of table 1 of the patent in suit, the claimed pore size clearly improved the properties of the known ceramic bearing ball.

Moreover, it was the combination of sphericity, surface roughness and pore size which was the key to the invention. As could be derived from examples 12 to 14, a low pore size alone was not sufficient for achieving a satisfactory vibration characteristic of the bearing balls. However, there was no suggestion of combining a

certain sphericity with a certain surface roughness and pore size.

Furthermore, the skilled person was not motivated to try to improve the bearing balls disclosed in D1, and if at all could have chosen to do so in any one of a number of ways. Since, as shown in D4, a plurality of surface imperfections existed, the skilled person had no motivation to select the pores from among those imperfections and to minimise their size in order to prevent vibrations.

Therefore, the subject-matter of claim 1 involved an inventive step.

Reasons for the Decision

1. The appeal is admissible.

2. It is undisputed that D1 discloses (see in particular, Table B):

A ceramic bearing ball comprising a sphericity of not more than 0.08 µm (1 µ inch corresponding to 0.0254 µm) and a surface roughness of not more than 0.012 µm (0.1 µ inch corresponding to 0.00254 µm).

Starting from the bearing ball according to D1, the object underlying the claimed invention is to provide a ceramic bearing ball which is capable of preventing irregular vibrations of the bearing into which it is incorporated (see [0006]).

This object is achieved by allowing a maximum surface pore size of 5 µm.

Contrary to the respondent's arguments, the skilled person is motivated to reduce the vibration of the bearing balls according to D1. The further development and improvement of an object is a general goal of any designer and particularly the reduction of the vibration of a component is an aim he will always try to achieve since it leads to reduced wear, higher reliability and longer lifetime.

The skilled person is aware of the fact that all surface imperfections have a negative impact on the vibration behaviour of bearing balls. It is correct that there is a number of imperfections (see D4) he could try to reduce in order to solve the problem posed. However, since it is well known in the art that the pore size has an impact on the vibration, choosing to minimise this imperfection is merely one of several well-known options from which the skilled person could choose without the need for any inventive skill.

Moreover, while it is correct that a pore size of less than 5 µm alone will not solve the problem above, the skilled person starting from the bearing balls according to D1 and aiming at improving even further their vibration characteristics will not change the sphericity and the surface roughness which have already led to satisfactory results, but will try to reduce other negative factors.

As confirmed by the comparison of examples 1 and 16 of the patent in suit, a low pore size leads to a

reduction of the vibration of the bearing balls when mounted in a bearing. However, since these examples compare balls with 2 and 7 µm pore size respectively, they do not support the fact that the upper value 5 µm for the pore size leads to any particular effect. The other examples disclosed in the patent in suit do not show bearing balls with the same sphericity and surface roughness and hence cannot prove the relevance of the specific upper value of 5 µm either. Therefore, the choice of the specific upper value of 5 µm is arbitrary and cannot give rise to inventive step.

Consequently, the subject-matter of claim 1 does not involve an inventive step.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

V. Commare T. Kriner