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**Datasheet for the decision  
of 2 February 2021**

**Case Number:** T 2781/17 - 3.2.08

**Application Number:** 11305763.2

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**IPC:** F16C27/04, F01D25/12,  
F04D25/02, F04D29/059,  
F02C6/12, F01D25/16, F16C19/18,  
F16C37/00

**Language of the proceedings:** EN

**Title of invention:**  
Turbocharger, notably for a combustion engine

**Patent Proprietor:**  
Aktiebolaget SKF

**Opponent:**  
BorgWarner, Inc.

**Headword:**

**Relevant legal provisions:**  
EPC Art. 54, 56, 84, 123(2), 123(3), 100(c)  
RPBA Art. 12(4)  
RPBA 2020 Art. 13(2)

**Keyword:**

Novelty - main request (no)

Inventive step - auxiliary request (yes)

Claims - clarity - auxiliary request (yes)

Amendments - allowable (yes)

Late-filed request - submitted with the statement of grounds  
of appeal

Late-filed evidence - submitted shortly before oral  
proceedings

**Decisions cited:**

G 0010/91, G 0007/93, G 0003/14

**Catchword:**



**Beschwerdekammern**  
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Case Number: T 2781/17 - 3.2.08

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.08**  
**of 2 February 2021**

**Appellant:** Aktiebolaget SKF  
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**Decision under appeal:** **Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
17 October 2017 concerning maintenance of the  
European Patent No. 2535609 in amended form.**

**Composition of the Board:**

**Chairman** C. Herberhold  
**Members:** M. Foulger  
P. Schmitz

## **Summary of Facts and Submissions**

- I. With the decision dated 17 October 2017, the opposition division found that the patent, and the invention to which it related, according to then valid 4th auxiliary request met the requirements of the EPC.
- II. The patent proprietor and the opponent filed appeals against this decision.
- III. The appellant (opponent) requested that the decision under appeal be set aside and that the patent be revoked. Additionally they requested that all auxiliary requests with the exception of auxiliary requests 5 and 9 not be admitted into the procedure.
- IV. The appellant (patent proprietor) requested that the decision under appeal be set aside and that the opposition be rejected, or in the alternative that the patent be maintained in amended form according to one of auxiliary requests 1-14, 3a, 6a, 13a, 14a filed on 28 June 2018, or auxiliary requests 3b, 3c, 4a, 9a, 11a, 11b and 12a as filed with the letter of 16 April 2020. Furthermore they requested that the novelty attack based on document D4 not be admitted, that documents D3a and D5 not be admitted and that the opposition ground under Article 100(c) EPC not be admitted into the procedure.
- V. Oral proceedings took place before the Board by means of video-conference on 2 February 2021.
- VI. The following documents are relevant for this decision:  
D1: DE 10 2009 009 128 A1  
D3: US 8,668,432 B

D3A: WO 2009/130124 A1

D4: EP 2 500 544 A1

VII. Claim 1 according to the main request (patent as granted) reads as follows:

"Turbocharger comprising a shaft (14), a housing (12), and a turbine wheel (20) and a compressor wheel (22) mounted onto the shaft, the housing comprising at least a longitudinal cooling channel (52) through which a flow of cooling fluid can pass, the turbocharger further comprising only one rolling bearing (18) disposed between the shaft and the housing and comprising an inner ring (26), an outer ring (28) mounted into a bore (16) of the housing and at least one row of rolling elements (30) disposed between the rings, the cooling channel (52) extending axially along at least the entire length of the outer ring (28), **characterized in that** an annular space (66) is defined between the bore (16) of the housing and an outer surface (28a) of the outer ring which is mounted directly into said bore, the housing comprising passage means (68, 70) communicating with the cooling channel and opening into said space."

Claim 1 according to the first auxiliary request is based on claim 1 as granted, the characterizing portion being amended as follows:

"an annular space (66) is defined between the bore (16) of the housing and ~~an~~ the entire outer surface (28a) of the outer ring which is mounted directly into said bore..."

VIII. The appellant (opponent) argued essentially as follows:

i) Admission of the ground of opposition according to Article 100(c) EPC into the appeal proceedings

The opposition division had decided in an arbitrary manner not to admit this ground of opposition into the proceedings. Moreover, their decision was self-contradictory because the terms "mounted directly" were construed as meaning "mounted into a bore with an annular gap between", i.e. without the requirement of being directly mounted. This decision should therefore be set aside and this ground of opposition admitted into the appeal proceedings.

ii) Main request - Novelty

D1 disclosed all features of claim 1. In particular, D1 showed an annular space defined between the bore of the housing and an outer surface of the bearing outer ring.

The novelty attack based on D4 should be admitted into the appeal proceedings. With respect to the discussion of inventive step, D4 was indisputably in the proceedings and it would, in any case, be necessary to examine which features of the claim were known from this document.

D4 disclosed a turbine shaft supported by a bearing portion which included a bearing holder and a pair of ball bearings (paragraph [0042]). Thus, the arrangement of D4 had only one rolling bearing. The patent specifically did not exclude arrangements with more than one row of rolling elements or more than one race.

Thus, the subject-matter of claim 1 was not new with respect to either D1 or D4.

iii) Admission of the first auxiliary request into the appeal proceedings

This request could have been presented in the proceedings before the opposition division. By presenting the request now, the appellant (patent proprietor) had avoided a decision by the opposition division on this request. Hence, this request should not be admitted.

iv) Articles 84, 123(2) and 123(3) EPC

a) The amended claim was not clear. The "entire" outer surface was not defined and could for example include the lateral outer surfaces of the outer ring of the bearing.

b) The added feature was also not disclosed in the application as filed. The application merely described the cooling fluid being in contact with the entire length of the bearing outer ring. Thus, the requirements of Article 123(2) EPC were not fulfilled.

c) Moreover, the amended claims infringed Article 123(3) EPC because of the contradiction between the phrase "mounted directly" and the new requirement that the annular space should extend the "entire outer surface" of the bearing outer ring, which essentially deprived the granted claim feature "mounted directly" of its original limiting effect.

v) Admission of D3A into the appeal proceedings

D3A simply contained the same information as in D3, which was in the proceedings, thus D3A did not represent a change in the appellant (opponent)'s case.

vi) Inventive step

The subject-matter of claim 1 did not involve an inventive step with regard to the combination of the teachings of D1 and D4, D4 and D1, D4 and D3A.

Starting from D1 as closest prior art, the skilled person would seek to provide improved vibration dampening. The solution to this problem was already proposed in D4 in which an annular space with a damping oil layer was provided.

Starting from D4 as closest prior art, the objective technical problem was to simplify the mounting of the bearings. The solution to this problem was shown in D1 or D3A where an arrangement with a single bearing which could be mounted as a single unit was shown. The skilled person would immediately recognise that the bearing of D1 was easier to mount than the arrangement of D4.

Hence, the subject-matter of claim 1 did not involve an inventive step.

IX. The appellant (patent proprietor) argued essentially as follows:

i) Admission of the ground of opposition according to Article 100(c) EPC into the appeal proceedings

The opposition division decided not to admit this ground of opposition according to the correct principles, i.e. its lack of *prima facie* relevance. The Board should not overturn this discretionary decision.



ii) Main request - Novelty

D1 disclosed a bearing wherein the cooling fluid could only circulate a limited amount and certainly not along the length of the outer surface of the outer bearing ring as set out in the patent.

The novelty attack based on D4 should not be admitted into the proceedings as this was an amendment to the appellant (opponent)'s case. The subject-matter of claim 1 was new over D4 because D4 disclosed a "pair" of bearings. Thus, the requirement in the claim for "only one" bearing was not met.

The subject-matter of claim 1 was thus new.

iii) Admission of the first auxiliary request into the appeal proceedings

This request was filed with the statement setting out the grounds of appeal, i.e. at the earliest possible moment in appeal proceedings. It was filed as a legitimate reaction to the decision under appeal. It should therefore be admitted.

iv) Articles 84, 123(2) and 123(3) EPC

a) The amendment to the claim with the introduction of the word "entire" to qualify the surface of the outer bearing ring was in itself clear and did not introduce any new unclarity into the claim.

b) The amendment was disclosed on p. 7, l. 23 - 25 of the application as originally filed.

c) The amendment clearly limited the scope of the claim

because embodiments where the annular space only partly extended along the outer ring were excluded.

v) Admission of D3A into the appeal proceedings

This document was filed after the Board's invitation to oral proceedings and should not be admitted.

vi) Inventive step

D1 sought to improve the cooling of the space between the inner and outer rings, see paragraph [0008]. The skilled person would not divert cooling oil from this space to the exterior of the outer ring. Thus, the skilled person would not provide an annular space as shown in D4.

D4 showed an arrangement with two bearings mounted in an intermediate sleeve. There was an annular gap between housing bore and the bearing outer ring. Oil was fed from this gap through holes in the bearing holder directly to the rolling bearings. This contrasted with the approach in D1 where oil was fed into a space between outer and inner rings to cool and lubricate the bearings. The person skilled in the art would thus not combine the teaching of the two documents.

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

## Reasons for the Decision

1. Admission of the ground of opposition according to Article 100(c) EPC into the appeal proceedings

The appellant (opponent) had substantiated this ground only after expiry of the 9 month opposition period. The opposition division did not admit this ground into the proceedings because it was not *prima facie* relevant.

According to G 10/91, OJ EPO 1993 420, Order point 3, fresh grounds for opposition may be considered in appeal proceedings only with the approval of the patentee. In the current case such approval was not forthcoming. Moreover, a Board may only set aside a discretionary decision of the opposition division if it concludes that they decided according to the wrong principles or in an unreasonable way and thus exceeded the proper limits of their discretion, see G 7/93, OJ EPO 1994, 775 and Case Law of the Boards of Appeal, 9th edition 2019 IV. C.4.5.2.

In the current case, the opposition division examined the *prima facie* relevance of the late-filed ground of opposition, i.e. the correct criterion, see impugned decision II.3. The objection that the opposition division did not seriously deal with this issue is not quite true as can be seen from the reasons given in their decision.

Moreover, the decision is not inherently self-contradictory. The opposition division dealt with two features of the patent: "directly mounted" and "direct contact". These features are not however synonymous as argued in the impugned decision (page 3, second

paragraph, last sentence), with the embodiment shown in Figures 3 and 4 of the patent consequently falling under the subject of claim 1. Therefore, there is no self-contradiction in the decision.

The Board thus sees no reason to set aside this discretionary decision.

Hence, the ground of opposition according to Article 100(c) EPC is not part of the appeal proceedings.

2. Main request - Novelty

2.1 With respect to D1

It is common ground that D1 discloses the preamble of claim 1.

D1, see Fig. 1, moreover discloses spaces from which canals 10 lead cooling oil to the ball bearings. The appellant (patent proprietor) argued however that these spaces were not annular spaces in the sense of the claim because they did not extend the length of the outer ring.

Claim 1 states that the annular space is defined between the bore of the housing and an outer surface of the outer ring. The claim does not, however, state what the axial limits of the annular space are, so even an axially limited space falls under the claim. Thus the appellant (proprietor)'s argument is not persuasive.

Hence, the subject-matter of claim 1 is known from D1.

2.2 Admittance of the novelty attack based on D4 into the appeal proceedings

This line of attack could have been presented in proceedings before the opposition division. Its admittance is thus within the Board's discretion (Article 12(4) RPBA 2007). Document D4 was dealt with in the impugned decision in the context of inventive step and is therefore indisputably in the appeal proceedings. It would also be, in any case, necessary to consider (in the context of examining inventive step) which features were known from D4. Consequently, the Board admitted this line of attack.

- 2.3 D4 discloses a turbocharger comprising a bearing assembly between the shaft and the housing. According to paragraph [0042] the turbine shaft is rotatably supported by a bearing portion that includes a bearing holder and a pair of ball bearings. Thus, the direct and unambiguous teaching of this passage is that there are two (i.e. a pair of) ball bearings.
- 2.4 The patent, paragraphs [0030] and [0031] indicates that the bearing of the invention may have several rows of rolling elements and also a plurality of inner rings and/or a plurality of outer rings. The argument that the bearing portion of D4 is a single bearing with multiple piece outer ring formed of the ball bearings and the holder is not convincing because a ring, in the sense of the patent cf. paragraph [0019], should have a concave internal profile adapted to the rolling elements. Moreover, the patent sought to avoid such an intermediate bearing housing, see patent [0006].
- 2.5 Hence, taking into consideration the literal disclosure of D4 and the knowledge of the skilled person leads to the conclusion that D4 discloses two bearings mounted in a holder. The bearings are then mounted indirectly

in the bore of the housing.

2.6 The subject-matter of claim 1 is therefore new in respect of D4.

3. First auxiliary request

3.1 Admittance of the first auxiliary request into the appeal proceedings

The first auxiliary request was filed at the earliest possible moment in appeal proceedings, i.e. with the statement setting out the grounds of appeal. According to Article 12(2) RPBA 2007 it forms part of the appeal proceedings. Moreover, it is a direct reaction to the impugned decision, cf. point 8.2 of the impugned decision.

The Board therefore admitted this request into the appeal proceedings.

3.2 Articles 84, 123(2) and 123(3) EPC

3.2.1 Article 84 EPC

The amended claim may be examined for clarity insofar as the alleged lack of clarity is introduced by the amendments.

In the current case, the appellant (proprietor) has added "entire" to qualify the extent of the annular space. The appellant (opponent) argued that this meant that the "annular gap" could also extend along the lateral side of the outer ring.

This is not however persuasive because an "annular" gap

must, by definition, be a ring-formed annulus, i.e. it cannot turn the corner to go down the lateral side of the ring. Moreover, this alleged "unclarity" was always present in the claim - mentioning the "entire" surface has changed nothing in this respect.

Hence, insofar as they are to be examined (G3/14), the requirements of Article 84 EPC are fulfilled.

### 3.2.2 Article 123(2) EPC

The addition to claim 1, "entire", was not literally disclosed in the application as originally filed. However, p. 7, l. 23 - 25 of the application as filed states that "[t]he cooling fluid is in direct contact with the entire length of the outer surface 28a of the outer ring..." This directly implies that the annular gap, in which the cooling fluid flows, extends along the entire length of the outer surface - any other interpretation would mean that the cooling fluid was not in direct contact.

The requirements of Article 123(2) EPC are therefore met.

### 3.2.3 Article 123(3) EPC

The appellant (patent proprietor) has added "entire" in the claim such that the annular space (66) is defined between the bore of the housing and the entire outer surface of the outer ring. Thus, embodiments in which the annular space did not extend the entire length of the outer surface of the outer ring are now excluded from the scope of the claim. Given the interpretation of the feature "mounted directly into the bore" as not excluding the presence of an annular space filled with

fluid (see point 1 above) as disclosed in the Fig. 2/4 embodiment, the appellant (opponent)'s argument according to which the amendment would deprive the feature "mounted directly into said bore" of its technical meaning thereby extending the scope of protection is not convincing. The scope of the claim has been limited and hence Article 123(3) EPC is complied with.

### 3.3 Admittance of D3A into the appeal proceedings

D3A has essentially the same content as D3 albeit in the German language. As such, in this particular instance, the Board did not regard it as being a change in the appellant (opponent)'s case in the sense of Article 13(2) RPBA 2020 and admitted it into the proceedings.

### 3.4 Inventive step

#### 3.4.1 D1 as closest prior art

It is common ground that, in the turbocharger disclosed in D1, the annular space is not defined by the entire outer ring of the outer bearing.

According to the appellant (opponent), the problem to be solved is to improve the vibration dampening of the shaft.

D4 discloses that the annular space provides an oil film damper, see paragraph [0016].

The object of D1 is however to provide an oil flow to the rolling elements, see paragraph [0008]. The skilled person would not therefore consider solutions which



diverted cooling fluid from between the inner and outer rings. Thus, the solution proposed by the appellant (opponent) is indeed known from D4 but goes against the teaching of D1 and thus the skilled person would not modify the bearing of D1 in this manner.

The subject-matter of claim 1 involves an inventive step in view of D1 as closest prior art.

#### 3.4.2 D4 as closest prior art

As discussed above, the subject-matter of claim 1 differs from the disclosure of D4 in that there is only one bearing.

According to the appellant (opponent), the problem to be solved is to provide a bearing arrangement which is simpler to mount.

It is correct that D1 discloses an arrangement with only one bearing, see Fig. 1. The arrangement of D1 does not however have an annular space defined between the bore of the housing and the entire outer surface of the outer ring. Mounting the bearing of D1 in the arrangement of D4 would thus lead to there being no such annular space. Moreover, the bearing arrangement of D1 is designed such that oil is led to the space between inner and outer rings and thus teaches against the provision of such an annular gap between the bore and the entire outer surface of the outer ring.

Thus, the skilled person would not combine the teaching of D1 with that of D4 and even if they did so would not arrive at the subject-matter of claim 1.

Likewise the teaching of D3A is not compatible with

that of D4 because D3A does not disclose an annular gap extending along the entire surface of the outer ring. Thus, applying the bearing outer ring of D3A to the bearing arrangement of D4 would not result in the subject-matter of claim 1.

3.4.3 The subject-matter of claim 1 therefore involves an inventive step.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division with the order to maintain the patent on the basis of the following documents:
  - Claims 1 to 9 of auxiliary request 1 filed with letter of 28 June 2018,
  - Description as granted,
  - Drawings 1 to 4 as granted.

The Registrar:

The Chairman:



D. Magliano

C. Herberhold

Decision electronically authenticated