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**Datasheet for the decision  
of 10 November 2021**

**Case Number:** T 1700/18 - 3.2.08

**Application Number:** 12722967.2

**Publication Number:** 2720648

**IPC:** A61F2/38

**Language of the proceedings:** EN

**Title of invention:**

FEMORAL COMPONENT FOR A KNEE PROSTHESIS WITH IMPROVED ARTICULAR CHARACTERISTICS

**Patent Proprietor:**

Zimmer, Inc.

**Opponent:**

Slingsby Partners LLP

**Headword:**

**Relevant legal provisions:**

EPC Art. 100(c), 123(2)

**Keyword:**

Amendments - intermediate generalisation - added subject-matter (yes)

**Decisions cited:**

**Catchword:**



**Beschwerdekammern**

**Boards of Appeal**

**Chambres de recours**

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Case Number: T 1700/18 - 3.2.08

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.08**  
**of 10 November 2021**

**Appellant:** Slingsby Partners LLP  
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**Representative:** Slingsby Partners LLP  
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**Respondent:** Zimmer, Inc.  
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**Representative:** Mays, Julie  
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**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 19 April 2018  
rejecting the opposition filed against European  
patent No. 2720648 pursuant to Article 101(2)  
EPC.**

**Composition of the Board:**

**Chairwoman** P. Acton  
**Members:** A. Björklund  
C. Schmidt

## Summary of Facts and Submissions

- I. The appeal was filed by the opponent (appellant) against the decision of the opposition division to reject the opposition against the patent in suit.
- II. The opposition division decided that the subject-matter of claim 1 as granted did not extend beyond the content of the application as filed, that the invention was sufficiently disclosed for it to be carried out by the skilled person, and that the subject-matter of claim 1 was new and involved an inventive step.
- III. Oral proceedings were held before the Board by videoconference on 10 November 2021.
- IV. At the end of the oral proceedings, the requests were as follows.

The appellant (opponent) requested that the decision under appeal be set aside and that the European patent No. 2720648 be revoked.

The respondent (patent proprietor) requested that the appeal be dismissed, i.e. that the patent be maintained as granted (main request), or that the patent be maintained on the basis of auxiliary request 4 or 5, filed with the reply to the appeal dated 14 January 2019.

- V. Claim 1 of the **main request** (patent as granted) reads:

A A posterior-stabilized femoral component  
(220) adapted to articulate with a tibial  
bearing component (240) in a knee prosthesis,  
B the tibial bearing component including a  
proximally extending spine (278), the femoral  
component comprising:  
C medial and lateral condyles (226, 224) shaped  
to articulate with the tibial bearing  
component through a range of motion, in which  
full extension corresponds to zero degrees  
flexion of the knee prosthesis and positive  
flexion corresponds to greater than zero  
degrees flexion of the knee prosthesis,  
D said medial and lateral condyles comprising  
inwardly facing condylar walls (238, 239)  
forming an intercondylar space (268)  
therebetween, said intercondylar space having  
a medial/lateral width ( $ML_T$ ); and  
E a femoral cam (276) spanning said  
intercondylar space to join said medial and  
lateral condyles to one another,  
F said femoral cam sized and positioned to  
engage the spine of the tibial bearing  
component in positive flexion through at  
least a portion of the range of motion,  
G said femoral cam having an articular surface  
comprising:  
H a central articular surface (282) that is one  
of cylindrical and convex across a medial/  
lateral extent of said central articular  
surface;  
I a convex medial transition surface (284M)  
flanking said central articular surface and  
disposed between said central articular  
surface and said medial condyle,

- J the convex medial transition surface ending at and tangent to a concave medial transition surface that is adjacent to the medial condyle; and
- K a convex lateral transition surface (284L) flanking said central articular surface and disposed between said central articular surface and said lateral condyle,
- L the convex lateral transition surface ending at and tangent to a concave lateral transition surface that is adjacent to the lateral condyle,
- M said central articular surface, said convex medial transition surface and said convex lateral transition surface cooperating to occupy from 80% to 91% of said medial/lateral width of said intercondylar space.

Claim 1 of **auxiliary request 4** differs from claim 1 of the main request in that the feature N has been added at the end:

"... so that surfaces which are broadly convex and/or cylindrical are presented to tissues and anatomical structures that surround the component in use, thereby maximizing surface area contact between femoral cam (276) and spine (278) during articulation."

Claim 1 of **auxiliary request 5** differs from claim 1 of the main request in that the feature N1 has been added at the end:

"... and the femoral component defining a femoral component coordinate system comprising: a component sagittal plane extending along a proximal/ distal direction and an anterior/posterior direction, the

component sagittal plane equidistant from said medial and lateral condylar walls (238, 239); and a component coronal plane extending along the proximal/ distal direction and a medial/lateral direction, the component coronal plane perpendicular to the component sagittal plane, wherein: at least one of said convex medial transition surface (284M) and said convex lateral transition surface (284L) comprising a coronal cross-sectional profile defining a curve having a radius (R4) of at least 6.5 mm."

- VI. The appellant's arguments relevant to the decision can be summarised as follows.

*Main request*

Features J and L constituted unallowable intermediate generalisations of the disclosure in paragraphs [0135] and [0136]. These paragraphs disclosed that the convex medial/lateral transition region ended at and was tangential to a concave medial/lateral transition surface adjacent to the medial/lateral condyle in conjunction with a larger radius of curvature R4 of the convex transition surface and a smaller radius of curvature R5 of the concave transition surface and with a geometry where the radius R4 represented a significant and defined portion of the total medial/lateral width  $ML_T$  of the intercondylar space. These features had been omitted from features J and L. This represented an unallowable intermediate generalisation, especially since these geometrical relationships led to the effect of minimising the impact of the prosthesis on the adjacent soft tissue of the knee.

Feature M encompassed that the central articular surface together with the medial and lateral convex

transition surfaces were 80% of the  $ML_T$ . In such a case, if the central articular surface was circular and occupied 79% of the medial/lateral width of the intercondylar space, the convex transition surfaces would occupy just 1% of this width, while the concave transition surfaces would cover 20%. It was thus not implicit from feature M that the radius of the convex transition surface was larger than the radius of the concave transition surface as required by [0135] and [0136], nor that the radius of the convex-to-concave transition was large as required by [0008].

Therefore, even if incorrectly looking to paragraph [0008], features J and L had no basis in the application as filed.

*Auxiliary request 4*

The amendment made to claim 1 did not overcome the unallowable intermediate generalisation in features J and L since the radii of curvature of the convex and concave surfaces were not defined.

*Auxiliary request 5*

The added feature N1 did not overcome the issue of the unallowable intermediate generalisation of the main request since the radius of curvature R5 of the concave transition surfaces was still not defined, nor was the radius of curvature R4 of the convex transition surface defined in relation to the overall dimensions of the implant. Thus, the proportion of R4 to the medial/lateral width of the intercondylar space was not defined. Finally, feature N1 only defined the radius R4 for one of the convex transitional surfaces while in the embodiment shown in Figure 5C and described in



paragraphs [0135] and [0136], both convex transition surfaces had this radius.

VII. The respondent's arguments relevant to the decision can be summarised as follows.

*Main request*

The effect of the invention was to minimise the impact of the prosthesis on adjacent soft tissue of the knee. As disclosed in paragraph [0008] of the application as filed, this was a result of the articular surface being flanked by broad, large-radius convex-to-concave transitions to the adjacent medial and lateral femoral condyles. Figure 5C showed an embodiment of this geometry which was described in paragraphs [0135] and [0136] of the application as filed.

Feature M defined that the central articular surface, the convex medial transition surface and the convex lateral transition surface cooperated to occupy from 80% to 91% of the medial/lateral width of the intercondylar space. It followed that the radius of the convex surfaces was large and that of the concave surfaces was smaller. The required radii were thus implicitly defined in the claim and did not need to be defined explicitly.

Consequently, features J and L of claim 1 did not constitute an unallowable intermediate generalisation but had a basis in paragraphs [0008], [0135] and [0136] of the application as filed.

*Auxiliary request 4*

Feature N had a basis in paragraph [0137] of the application as filed. Furthermore, it defined that broadly convex and/or cylindrical surfaces were presented to tissue, which corresponded with the geometry disclosed in paragraph [0008] of the application as filed. Claim 1 of auxiliary request 4 thus had a basis in the application as filed.

*Auxiliary request 5*

The added feature came from granted claim 3 and encompassed that the radius of both the lateral and medial convex surfaces was 6.5 mm. Due to the limited size of a femoral cam, 6.5 mm was a large proportion, especially since the central articular surface and the convex lateral transition surfaces made up 80 to 91% of the width of the intercondylar space.

Furthermore, the 6.5 mm radius of curvature R4 of the convex transition surfaces was disclosed in paragraph [0135], and the radius of curvature R5 of the concave transition surfaces was not mentioned in this paragraph. Radii R4 and R5 were thus unrelated, and it was not necessary to add the radius of the concave transition surface R5 to the claim.

Claim 1 according to auxiliary request 5 did therefore not extend beyond the content of the application as filed.

## Reasons for the Decision

### 1. Main request

Features J and L concern the articular surface of the femoral cam of the claimed femoral component.

Feature J defines that "the convex medial lateral transition surface [is] ending at and tangent to a concave medial transition surface that is adjacent to the medial condyle". Feature L defines essentially the same arrangement for the lateral side of the femoral component.

- 1.1 According to the respondent, these features have a basis in paragraphs [0008], [0135] and [0136] of the application as filed.
- 1.2 As pointed out by the appellant, the features added in claim 1 are based on the embodiment in Figures 5A to 5C, which is described *inter alia* in paragraphs [0135] and [0136].
- 1.3 Paragraphs [0135] and [0136] form part of the description of the specific geometry of the articular surface of the femoral cam of the embodiment. This articular surface is disclosed to have convex and concave transition surfaces having radii of curvature R4 and R5, respectively, with specific values and relations to the medial/lateral width of the intercondylar space  $ML_T$ , where the wide radius of curvature R4 of the convex transitional surfaces is giving way to the tighter radius of curvature R5 of the concave transition surface.

This geometry, including the radii, is indispensable for minimising the impact of the implant on surrounding soft tissue, which is the objective of the patent in suit (see [0005]). Thus, this geometry is inextricably linked to the concave/convex transition surfaces added in features J and L.

Contrary to the respondent's submission, it cannot be deduced from feature M that the radius of the convex transition surfaces is large and that of the concave transition surface is smaller. It is correct that feature M defines that the central articular surface and the convex medial and lateral transition surfaces occupy 80 to 91% of the medial/lateral width of the intercondylar space  $ML_T$ . However, feature M does not define how much of the width is occupied by the central articular surface - which according to feature H may be cylindrical and thus not have a radius across the medial/lateral extent - or how much of the width is occupied by the convex transition surfaces. As put forward by the appellant, the claim encompasses, for instance, that the central articular surface and the medial and lateral convex transition surfaces together occupy 80% of the medial/lateral width of the intercondylar space. If in such a case 79% of this medial/lateral width is occupied by the cylindrical central articular surface, only a very small portion of 1% of the medial/lateral width of the intercondylar space is left to the medial and lateral convex transition surfaces. In this case, the radius of the convex transition surfaces does not represent a significant portion of the total medial/lateral width of the intercondylar space as disclosed in paragraph [0135], fourth line from the bottom, nor is it necessarily larger than the radius of the concave

transition surfaces as disclosed in the first two lines of paragraph [0136].

Since the claim, in particular features J and L, does not define the radii of the convex and concave transition surfaces, the insertion of features J and L constitutes an unallowable intermediate generalisation of the disclosure of paragraphs [0135] and [0136] of the application as filed.

- 1.4 Paragraph [0008] discloses that one of the features which minimises the impact of the prosthesis on adjacent soft tissue is that the femoral cam has a generally cylindrical articular surface in which the articular surface is flanked at its medial and lateral ends by broad, large-radius convex-to-concave transitions to the adjacent medial and lateral femoral condyles.

But as set out above, neither features J and L, nor any other part of claim 1, defines the radius of the convex or concave transition surfaces. Consequently, neither do they disclose a large-radius convex-to-concave transition. Thus, also in view of the disclosure of paragraph [0008] of the application as filed, features J and L constitute unallowable intermediate generalisations.

- 1.5 The subject-matter of claim 1 of the main request thus extends beyond the content of the application as filed.

The ground for opposition under Article 100(c) thus prejudices the maintenance of the patent according to the main request.

2. Auxiliary request 4

Feature N does not define any of the radii of curvature of the convex and concave transitional surfaces.

Claim 1 of auxiliary request 4 therefore contains the same unallowable intermediate generalisations in features J and L as claim 1 of the main request.

It follows that claim 1 of this request extends beyond the content of the application as filed and is not allowable under Article 123(2) EPC.

3. Auxiliary request 5

Feature N1 has its basis in claim 3 of the patent as granted and the application as filed.

It defines that "...at least one of said convex medial transition surface and said convex lateral transition surface [is] comprising a coronal cross-sectional profile defining a curve having a radius (R4) of at least 6.5 mm".

While the respondent is correct that this definition encompasses that the radius of both the medial and the lateral convex transition surfaces is at least 6.5 mm, a femoral component where only one of the convex transition surfaces has a radius of curvature of 6.5 mm also falls within the scope of the claim. The radius of the other convex transition surface is thus not defined in feature N1. Furthermore, while the radius of one convex transition surface has been defined, no other dimension of the femoral component is defined in the claim. It is thus not possible to determine what portion of the total medial/lateral width  $ML_T$  of the

intercondylar space is represented by the radius R4 of at least 6.5 mm defined in feature N1. Consequently, the radius of curvature of the concave transition surfaces cannot be deduced from the features of the claim.

The respondent's argument that paragraph [0135] of the application as filed only discloses the radius of curvature of the convex transition surfaces R4 and that it was therefore unrelated to the radius of curvature of the concave transition surfaces R5 disclosed in paragraph [0136] is not convincing. What is decisive when extracting features from a specific embodiment, as with the insertion of features J and L, is the overall disclosure of this embodiment. Whether the embodiment is described in one or more figures or one or more paragraphs is not decisive. In the case at hand, both paragraphs [0135] and [0136] describe the same embodiment, and as set out for the main request, the radii of curvature of the convex and the concave transition surfaces are inextricably linked.

Since the radii of curvature of the lateral and medial convex and concave transition surfaces of features J and L are neither explicitly nor implicitly defined in claim 1 of auxiliary request 5, this claim contains the same unallowable intermediate generalisation as claim 1 of the main request.

It follows that claim 1 of this request extends beyond the content of the application as filed and is not allowable under Article 123(2) EPC.

**Order**

**For these reasons it is decided that:**

1. The decision under appeal is set aside.
2. The patent is revoked

The Registrar:

The Chairwoman:



C. Moser

P. Acton

Decision electronically authenticated