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**Datasheet for the decision
of 30 April 2010**

Case Number: T 2030/07 - 3.4.02

Application Number: 96933640.3

Publication Number: 0809126

IPC: G02C 7/06

Language of the proceedings: EN

Title of invention:

Progressive spectacle lens with progressive surface and correction of astigmatism provided on the rear side of the lens

Patentee:

Seiko Epson Corporation

Opponent:

Essilor International (Comp. Générale d'Optique) SA
Rodenstock GmbH
Carl Zeiss AG

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56, 123(2)

Relevant legal provisions (EPC 1973):

-

Keyword:

-

Decisions cited:

T 0501/92, T 1763/06

Catchword:

-



Case Number: T 2030/07 - 3.4.02

D E C I S I O N
of the Technical Board of Appeal 3.4.02
of 30 April 2010

Appellant: Seiko Epson Corporation
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted 12 October 2007
revoking European patent No. 0809126 pursuant
to Article 102(1) EPC.**

Composition of the Board:

Chairman: A. G. Klein
Members: F. Maaswinkel
 D. S. Rogers

Summary of Facts and Submissions

- I. The appeal lies from the decision of the opposition division dated 12 October 2007 revoking European patent 0 809 126, since the subject-matter of the independent claims lacked novelty over the disclosure in document E1 (US-A-2,878,721). Against this decision the patent proprietor has lodged an appeal and requested that the decision under appeal be set aside and that the patent be maintained. Furthermore the appellant has filed an auxiliary request for oral proceedings.
- II. With the letter of 14 July 2008 opponent 4 requested that the appeal be dismissed.
- III. With its letter of 2 September 2008 opponent 1 requested that the appeal be dismissed as inadmissible or, otherwise, as non-allowable. Furthermore the opponent filed an auxiliary request for remittal of the case to the opposition division for consideration of the points not addressed in the Decision under appeal (the issue of novelty over further documents other than E1, the issue of inventive step, and the objection of lack of sufficient disclosure of the invention, in particular having regard to the parameter Cp).
- IV. In a letter of 4 September 2008 opponent 2 requested that the appeal be dismissed and subsidiarily that oral proceedings be held.
- V. In a further letter of 2 July 2009 the appellant filed three sets of auxiliary requests. Furthermore, according to point 4 of its submission, these requests "shall be accompanied by an additional, intermediate

auxiliary request in which the respective method claims are deleted".

- VI. In a summons pursuant to Rule 115(1) EPC sent on 29 January 2010 the board invited the parties to oral proceedings to take place on 30 April 2010.
- VII. In a letter dated 2 March 2010 opponent 4 filed further observations and requested that the auxiliary requests should be rejected as inadmissible.
- VIII. In a letter dated 30 March 2010 the appellant filed further submissions.
- IX. At the oral proceedings on 30 April 2010 the appellant requested as a Main Request that the decision under appeal be set aside and that the patent be maintained upon the basis of:
- 1) the claims in Annex I to the decision of the opposition division enclosed with a letter 12 October 2007; or
 - 2) Auxiliary Requests 1 to 3, with the additional three intermediate auxiliary requests with the method claims deleted, all enclosed with letter dated 2 July 2009.

The respondents (opponents) requested that the appeal be dismissed.

- X. The wording of claim 1 of the main request reads as follows:

"A progressive multifocal lens for correction of vision comprising a distance-vision and a near-vision region

having different refractive power, and a progressive region wherein the refractive power between these varies gradually,

characterized in that the curvature of the progressive refractive surface composing said distance-vision region, near vision-region, and progressive region is applied to the surface of the progressive multifocal lens on the side of the eye, said surface also having eye astigmatism correcting properties ".

Independent claim 1 of the first auxiliary request differs from claim 1 of the main request by the additional feature at the end of the claim:

", having the equivalent astigmatism correcting power as a conventional progressive multifocal lens having a progressive refractive surface on the side of the object and a toric surface on the side of the eye".

Independent claim 1 of the second auxiliary request differs from claim 1 of the main request by the additional feature at the end of the claim:

", having the equivalent astigmatism correcting power as a conventional progressive multifocal lens having a progressive refractive surface on the side of the object and a toric surface on the side of the eye, and the following relationship, represented in diopter units, exists among the vertex power P_s of said distance-vision region, the addition power P_a being the difference between the vertex power P_s of said distance-vision region and the vertex power of said near-vision region, and the refractive power P_b of the

surface of said progressive multifocal lens in the side of the object:

$$P_b > P_s + P_a \quad (C) \text{ " .}$$

Independent claim 1 of the third auxiliary request differs from claim 1 of the main request by the additional feature at the end of the claim:

", the value of Z in any point P(X,Y,Z) of said surface on the side of the eye is represented by the following equation using the approximate curvature Cp of said original progressive refractive surface, the curvature Cx of said original toric surface in the x direction, and the curvature Cy in the y direction,

$$Z = \frac{(C_p+C_x)X^2+(C_p+C_y)Y^2}{1+\sqrt{(1-(C_p+C_x)^2X^2-(C_p+C_y)^2Y^2)}} \quad (B)$$

where the values X, Y, and Z indicating the position of said point P represent the x, y, and z coordinates;

wherein the average curvature in the radial directions is used as the approximate curvature Cp of said original progressive refractive surface;

wherein the curvature Cp is calculated as the reciprocal of the circular radius passing through three points in the XY-plane perpendicular to the Z-axis of the lens, the three points being the center (0,0,0) of the lens or the internal vertex, any point P(X,Y,Z) on the original progressive refractive surface, and point P'(-X,-Y,Z) rotationally symmetric with point P and the internal vertex; and

wherein for any point on the original progressive surface being positioned at the internal vertex, the value of Z = 0 " .

XI. *Relevant documents*

In its decision the opposition division had revoked the patent for lack of novelty over the disclosure in document E1 (US-A-2,878,721). Both during the written and the oral opposition and appeal proceedings the parties have cited some 43 documents and combinations of these for objections of lack of patentability. For the present decision only those documents relevant for the arguments of the parties and the reasoning of the decision will be referred to. These further documents are:

E10: DE-A-4 337 369

E11: DE-A-3 016 936

E22: EP-A-0 101 972

E38: "Eigenschaften innetorischer Brillengläser",
Reprint from the technical journal "der
Augenoptiker", issue 8/1979, Willy Schrickel
publishers, Düsseldorf.

XII. The arguments of the appellant may be summarised as follows:

The arguments of the opponents that the appeal is inadmissible are ill-founded. In point (1) of the letter of 12 December 2007 containing the notice of appeal the patent proprietor requested: "Reversal of the decision and maintaining the patent". As is clear from the decision, see point 1.15 of the Facts and Submissions, at the oral proceedings there had been only a single request left, on the basis of which the opposition division revoked the patent. This request contained the set of claims filed with the letter of 18 October 2004. Therefore the proprietor's request in the

notice of appeal relating to "reversal of the decision" clearly must be understood as implying "reversal of the decision to revoke the patent on the basis of the set of claims filed with the letter of 18 October 2004" and the second part of this sentence "maintaining the patent" as "maintaining the patent on the basis of this set of claims". In any case, since at the end of the oral proceedings this set of claims was the only request left, and on which request the decision was taken, there cannot be any sensible doubt about the content of the request filed with the notice of appeal. Consequently there is no contradiction between the request in the notice of appeal, to maintain the patent on the basis of the set of claims addressed in the decision, and the arguments in the grounds of appeal, since these relate to these claims, see, e.g. point 5, discussing the "eye astigmatism correcting properties" defined in claim 1; and point 13, which addresses "method claim 16" which relates to the claims before the opposition division and cannot relate to the granted patent claims, of which set claim 16 related to a dependent apparatus claim.

Claim 1 of the main request defines inter alia a progressive lens of the type having two distinct distance-vision and near-vision zones being connected by a progressive region. This is not the type of lens disclosed in document E1, since the embodiments in E1 show lenses which have no zones of constant power but rather a gradual change in power across the entire surface. In any case E1 does not describe a progressive multifocal lens for correction of vision in which the eye surface of the lens also has eye astigmatism correcting properties since throughout of the

description this document never mentions the correction of eye astigmatism in combination with a progressive surface. Only col. 2, lines 2 to 4 of E1 refers to a toroidal form adapted to compensate the imperfections of the eye. However, this refers to the front surface of the lens.

With respect to inventive step it is pointed out that it was not obvious to include correcting properties of a user's astigmatism into a lens surface shaped to obtain a progressive multifocal lens. A progressive multifocal lens also correcting undesired aberrations like lens astigmatism already leads to a highly complex geometry of the lens surface. This is evident from the disclosure of E1 which even subdivides the overall lens surface into individual regions in order to be best able to keep undesired lens astigmatism as low as possible. Concerning document E10, this does not teach to provide the progressive surface on the rear side of the lens (surface facing the eye of a potential user). Secondly, the astigmatism is corrected on the meridian line only, or strictly speaking, an infinitesimal strip along the meridian line, which follows from page 9, lines 14 to 17 or claim 10 of E10. This does not anticipate a surface having eye astigmatism correcting properties. It should be noted that the concept of correcting the astigmatism on the meridian line only is entirely different to the concept of correcting astigmatism on the whole surface of the lens. Finally, reference should be made to page 2, lines 25 to 31 of E10 in which reference is made to a prior art document. Here it is pointed out that the angular orientation of the astigmatism is either 0° or 90°. On page 2, line 23 of E10 it is taught that any angular orientation

deviating therefrom has to be realized by means of the second surface. This again reflects the understanding of a skilled person at the time the present invention was made. Combining the teaching of E10 with document E38 would not be contemplated by the skilled person because document E38 does not relate to a progressive lens but only discusses the specific advantages of the provision of a toroidal surface to correct eye astigmatism on the rear side of the lens. However, this cannot be considered as an indication to the skilled person to provide a toroidal surface for the correction of eye astigmatism in addition to a progressive surface on the rear side of the lens.

In the set of claims 1 to 19 according to the first auxiliary request, the main request has been supplemented by the last feature according to which the progressive refractive surface has the equivalent astigmatism correcting power as a conventional progressive multifocal lens having a progressive refractive surface on the side of the object and a toric surface on the side of the eye. This follows from col. 19, lines 11 to 16 of the published patent application. This auxiliary request is considered to be a clarification. In claim 1 according to the main request, it is already stated that it is the surface which has eye astigmatism correcting properties. However, in view of the fact that the opponents cite prior art according to which such correction is only performed on a linear scale or at least in small parts of the surface, claim 1 according to auxiliary request 1 now emphasizes the fact that it is the progressive surface which also has eye astigmatism correcting properties.

The additional feature according to the second auxiliary request corresponding to originally filed claim 15 and equation 6 serves to provide a progressive multifocal lens as a meniscus (col. 9, lines 4 to 8 of the published patent application). This has the advantage that the eyeglass lens fits the face of a user (col. 17, lines 53 to 57).

The subject matter of claim 1 according to the third auxiliary request is similar but not identical to a request already filed in the first instance proceedings. This former request referred to equation (5) as originally disclosed which gives the equation of the z-coordinates of the surface on the side of the eye. This composite equation describes a progressive multifocal lens having a more improved astigmatic aberration compared with a lens having simply added the z-coordinate of the original progressive refractive surface and the original toric surface which follow from the given prescription of a specific user. This is described e.g. in col. 23, lines 32 to 37 of the published patent application. In the first instance proceedings, the equation as such was already discussed. In this context, reference should be made to the minutes of the first instance proceedings, page 7, Section 4.4. In this paragraph, reference was made to the ambiguity of the parameter C_p . On page 9, Section 5 of the minutes, reference was also made to the "vague definition of the parameter C_p " which led the opposition division to the opinion that the surface disclosed in prior art document E1 could also be represented by equation (5) so that the subject matter of claim 1 of the third auxiliary request was

considered not to be novel. In order to show how the equation has to be used, the claim now includes a definition of its parameters. From the wording it now becomes clear that P is on the original refractive surface, whereas point P' is a virtual point with point symmetry to P (X,Y,Z) relative to the center or internal vertex (0,0,0) of the lens. From such three points, a radius of a circle touching all three points can be calculated and, accordingly, also the curvature which is the reciprocal of the radius. According to the original disclosure, the use of the composite equation achieves an astigmatic aberration equivalent to that of a conventional progressive multifocal lens with the different functions placed on the two sides of the lens (see Fig. 16; see col. 20, lines 17 to 25; col. 27, lines 12 to 16 of the published patent application). This equation is considered to be effective in composing all ranges of surfaces. It is especially effective where the progressive refractive surface has an addition Pa of 0.5 – 3.5dpt and the surface has a cylinder power C of 0.25 – 6.00dpt (see col. 23, lines 17 to 26 of the published patent application). It is important to note that claims 1 and 16 according to the third auxiliary request both clearly indicate that the equation gives the value of Z in any point P of the whole surface on the side of the eye. This equation is neither disclosed in any of the prior art documents nor rendered obvious from any of these documents.

XIII. The arguments of the respondents may be summarised as follows:

In its Notice of Appeal of 12 December 2007 the patent proprietor had requested "to maintain the patent" which

could only refer to the patent as granted. In the Statement of Grounds of Appeal of 21 February 2008 no new request was filed. Rather, in this letter, explicit reference was made to the claims as granted, see, e.g., page 3, item 3; page 4, item 6 of this letter. Therefore the only request of the patent proprietor includes the maintenance of the patent as granted. The statement of grounds of appeal is, however, not substantiated as required by Art. 108 and R. 99(2) EPC because in this statement the patent proprietor has not argued why the granted claims defining a progressive lens having a progressive region being applied on the side of the eye and having astigmatism correcting properties define patentable subject-matter. Instead all arguments developed in this letter concern exclusively a different version of the claims in which the progressive surface on the side of the eye has eye astigmatism correcting properties, which appears to correspond to the version discussed at the oral proceedings before the opposition division. Hence the request of the patent proprietor and its substantiation in the statement of grounds of appeal are contradictory and the requirements of Art. 108 and R. 99(2) EPC are not fulfilled. Therefore the provisions of Rule 101(1) are not met. Furthermore, should the patent proprietor have envisaged to defend the patent with the version of the claims forming the basis of the first instance decision such a version should have been submitted at the appeal stage; this follows from the procedural requirement of unambiguous declaration: indeed, according to the established Case Law, see Decision T 501/92, appeal proceedings are wholly separate and independent from the proceedings at first instance and any procedural request made at first instance

proceedings is not applicable to subsequent appeal proceedings and would have to be repeated if it was to remain procedurally effective.

With respect to the main request the opponents concur with the position of the opposition division in the decision under appeal that document E1, in particular the passage in col. 9, lines 28 to 54 discloses a progressive multifocal lens with all features of claim 1 of the main request, and therefore anticipates its subject-matter (Art. 52(1) and 54 EPC). The question, brought up in the Communication of the board of 29 January 2010, whether document E1 would disclose a progressive lens of the generic type of the lens defined in the preamble of in claim 1, i.e. a progressive lens having a distance-vision region, a near-vision region and a progressive region must, in the opinion of the opponents, be answered in the affirmative: document E1 constitutes a milestone in the development of progressive lenses and is, as such, frequently acknowledged as disclosing the basic principles of such lenses. In particular document E1 explains in col. 1, lines 49 to 70 that the starting point for that invention were the classical bifocal lenses with an upper sector for distance-vision and a lower sector for near-vision. In document E1 it is proposed to provide a lens having a dioptric power gradually increasing from the top of the lens to the bottom, i.e. a progressive lens within the definition of the preamble of claim 1. This distribution of dioptric power is, for instance, illustrated in Fig. 3 of E1. With respect to the distribution of optical power over the surface of a progressive lens it is noted that it would be an incorrect presumption that

every progressive lens would have two distinct zones with approximately constant power for distance and near vision connected with a distinct progressive zone: the nature of the transitions between the respective zones and the length of the progressive zone depends on the particular design of a progressive lens. These changes may be very gradual, for instance, in case of eyeglasses for use at a computer workstation where good vision at intermediate distances is required; or rather more steep transitions are needed if the lens is to be optimised for large distance and near viewing zones. Therefore document E1 discloses a progressive lens as defined in the preamble of claim 1 and the opponents fully agree with the opposition division that the disclosure in document E1 anticipates the subject-matter of claim 1 of the main request. In any case it is pointed out that during the opposition proceedings neither the patent proprietor, nor the opposition division, which is acknowledged to have a high level of technical expertise in the particular field of progressive lenses, raised this issue.

Furthermore, with respect to the issue of inventive step, reference is made to document E10. This document discloses a lens of the type as defined in the preamble of claim 1. According to claim 1 of E10 this lens comprises at least ("wenigstens") a progressive surface, which therefore may be either the surface on the side of the eye, the surface on the side of the object, or both surfaces. In claim 2 of E10 it is defined that only one surface is a progressive surface, in which case the second surface may be designed in a conventional manner as the so-called prescription surface with a spherical or a toric effect, see page 2,

lines 45 to 47. Generally for correction of eye astigmatism the second surface is prescribed as a toric surface. However, claim 3 in combination with claim 4 of this document defines a different embodiment in which at least a part of the surface astigmatism serving corrective purposes is provided only by the surface astigmatism of the progressive surface, such that the second surface may always be a rotational symmetrical surface, see page 2, lines 48 to 51. Therefore according to this embodiment, at least the main part of the astigmatism serving a corrective purpose is supplied by the surface astigmatism of the progressive surface and the second surface does not contribute to correction of eye astigmatism, since it is a rotationally symmetric surface. Reference is also made to page 2, lines 39 to 43, disclosing that the surface astigmatism along the main line not only has a specific amount but also has a usually not constant axial position along the main line in such a manner that, allowing for oblique astigmatism, the resulting overall astigmatism of the bundle is practically constant along the main line after the surface of the spectacle lens facing the eye or is designed according to the physiological requirements both with regard to amount and axial position. This is also illustrated in Tables 1 to 5 showing embodiments with a constant amount (1.5dpt or 1dpt) and a constant axial position (0° resp. 180° ; 30° ; 45° ; 60° and 90°) of the surface astigmatism, from which it clearly follows that the applied astigmatism effect is for eye astigmatism correction. Therefore the only difference between the subject-matter of claim 1 and the lens in this embodiment of document E10 is that E10 does not explicitly disclose that the combined progressive and

astigmatism correcting surface is applied to the surface of the side of the eye. It is, however, well known in this technical field that, in a case of an eyeglass lens with one of its surfaces as a toric surface, it is highly preferable to select the inner surface (i.e. the surface on the side of the eye) as a toric surface, see document E38. For instance, Section 1.2 of this document discusses that the anamorphic distortion of a toric inner surface is reduced as compared to a lens in which the toric surface is at the object side. Furthermore the faceting and insertion into the eyeglass frame is easier for lenses with inner toric surfaces and these are aesthetically more pleasing, see Sections 2.1 and 2.2 of this document. In any case these advantages are also disclosed in document E11, page 12, lines 13 to 16; and E22, page 12, first paragraph. Therefore in selecting the progressive surface as the surface on the side of the eye as recommended in the prior art (E38, E11, or E22) the skilled person would, in designing the progressive multifocal lens in the embodiment of claims 3 and 4 of document E10, arrive at the subject-matter of claim 1 of the main request without an inventive step being involved. Finally, the argument of the patent proprietor in point 25 in the grounds of appeal that in document E10 the astigmatism is corrected on the meridian line only and that this is not comparable with providing an astigmatism correction over the entire surface is traversed. First, because of the astigmatism inherent to any progressive surface it is even theoretically impossible to obtain an astigmatism which is constant in amount and in axial position across the entire progressive surface, a complete correction at best being possible along the

meridian. Second, claim 3 of document E10 clearly defines that the prescribed surface astigmatism serving corrective purposes is provided only by the surface astigmatism of the progressive surface. Also in the Tables of E10 surfaces with different axial positions are disclosed, where for each surface a strip along the meridian is indicated: according to page 8, lines 59 to 62, if this strip has been determined, the remaining surface can be calculated in a known manner starting from the strip along the main meridian, for instance by using the coefficients Delta and Kh, see page 9, lines 1 to 20.

The added feature in claim 1 of the first auxiliary request is obscure since it makes a comparison with a "conventional" lens, however, without specifying any parameter. Hence the purported correction effect of the claimed lens is arbitrary and undetermined, which is why the claim does not clearly define the matter for which protection is sought (Art. 84 EPC). Furthermore the patent proprietor had indicated that the basis of disclosure for the additional feature was in col. 19, lines 11 to 16 of the published patent application. This is, however, not correct because the cited feature is a direct consequence ("Consequently") of applying equation (5) for the lens design, see, for instance, the reference to Figure 11, which shows the astigmatic aberration of the lens shown in Fig. 10, this lens being calculated according to "Embodiment 2", i.e. using equation (5). It follows that the added feature, as it does not include this equation, involves an intermediate generalization (Art. 123(2) EPC).

Claim 1 of the second auxiliary request includes the same feature and is therefore objectionable for the same reasons. In addition, the inequality between the vertex power of the distance region P_s , the addition power P_a and the refractive power of the surface on the side of the object P_b merely implies that the refractive power of the side of the surface on the side of the eye is larger than the total refractive power of the near vision region. For an eyeglass lens the inner surface is always concave and therefore has a negative refractive power, whereas the near vision region of a multifocal lens has a positive refractive power. The additional condition therefore merely implies that the lens is an eyeglass lens.

The equation (5) in claim 1 of the third auxiliary request for calculation of the z-component of the progressive surface is unclear for the following reasons. Firstly the concept of a "vertex" of a progressive surface is unclear, since such a surface does not have a symmetry point and similarly the "average curvature in the radial directions". Secondly, the determination of the value of C_p as disclosed in col. 8, lines 29 to 40 of the published patent application, by constructing a circular radius through a point $P(X,Y)$ on the original progressive surface, the vertex $(0,0,0)$ and a rotational-symmetric point $P'(-X,-Y)$ results in a value $C_p(X,Y)$ at point P which is identical to $C_p(-X,-Y)$ at point P' , since point P' lies diametrically opposite to point P . By applying this condition $C_p(X,Y) = C_p(-X,-Y)$ in equation (5) one finds $Z(X,Y) = Z(-X,-Y)$ which is a surface having point symmetry and which therefore cannot be a progressive surface. With respect to the arguments of the patent

proprietor that only point P is a point on the original progressive surface and that point P' was only a virtual point which was only used to define a circle through the vertex and point P it is noted that the original patent application does not provide any basis for this interpretation.

Accordingly, the appeal should be dismissed.

Reasons for the Decision

1. Admissibility of the appeal and further procedural matters

1.1 The opponents have objected that the appeal was inadmissible under Rule 101 EPC because it did not contain a statement defining the extent to which amendment or cancellation of the decision was requested, Rule 99(2) EPC. Furthermore since there was a contradiction between the request in the notice of appeal of 12 December 2007 and the reasoning in the statement of grounds of appeal of 21 February 2008 the appeal was not substantiated and the procedural situation was unclear. Therefore, according to the opponents, the appeal should be considered as inadmissible, because it did not meet the provisions of Rule 101(1) EPC.

1.2 The board does not concur with this position of the opponents. Rather, as pointed out by the proprietor, in its notice of appeal of 12 December 2007 the proprietor requested: "Reversal of the decision and maintaining the patent". Contrary to the perception of the

opponents, the board does not interpret this request as "maintaining the patent as granted". Instead the basis for the decision of the opposition division to revoke the patent was the set of claims filed with the letter of 18 October 2004 (see point 1.15 of the Section "Facts and Submissions" of the decision) which was the only remaining request, because the proprietor had withdrawn the auxiliary requests during the oral proceedings (see point 6 of the Minutes of the oral proceedings dated 15 October 2007). Accordingly reversal of the decision as requested would automatically lead to maintenance of the patent in the only version before the opposition division. Therefore the board finds that the notice of appeal complies with Rule 99(1) EPC.

- 1.3 Rule 99(2) EPC defines the requirements to be respected in the statement of grounds of appeal. These shall "indicate the reasons for setting aside the decision impugned, or the extent to which it is to be amended, and the facts and evidence on which the appeal is based". The board has no doubt that the patent proprietor in its letter containing the statement of grounds of appeal of 21 February 2008 has complied with these provisions.

The board in particular notes that the statement of the grounds of appeal comprises detailed reasons why the claims of the only request before the opposition division and the board should be considered allowable. The opponents' argument that it is not clear from the statement which claims, from those as granted and those before the opposition division, are meant by the appellant patentee is not convincing: these claims

differ only in that dependent claim 8 as granted has been deleted and in that the expression "astigmatism correcting properties" in the granted independent claims 1 and 17 explicitly refer to "eye astigmatism correcting properties" in the remaining independent claims 1 and 16 before the opposition division. As pointed out by the patentee, the statement of the grounds of appeal clearly address the contribution provided by the amended reference to "eye astigmatism" (see e.g. the title of part 3), and also refer to independent method claim 16, which is absent from the set of claims as granted (see e.g. point 13).

1.4 The opponents have made reference to Decision T 501/92 for supporting their view that a request made by the patent proprietor at the first instance opposition proceedings was not applicable at the appeal proceedings and therefore not procedurally effective if this request had not been filed anew. The board, however, finds that the situation in the present appeal case has little in common with the situation in the cited decision: in case T 501/92 the opposition division had rejected the opposition, not revoked the patent, the appeal had been filed by the opponent, not the patentee, and the patentee had not formulated any request whatsoever in his response to the opponent's statement of grounds of appeal.

1.5 It is concluded that the appeal is formally admissible.

1.6 In the written procedure the opponents had requested that the case be remitted to the first instance for consideration of the issues other than lack of novelty over document E1, and that the auxiliary requests filed

by the patentee not be admitted into the procedure in view of their late filing.

However all the issues relevant to the present decision have either been thoroughly discussed already in the opposition procedure and commented upon in the decision under appeal (see in particular the questions of insufficiency of the disclosure in respect of formula (5) in point 3.2 of the decision and of lack of inventive step in view of documents E10 and E28 considered in combination), or they result from amendments made by the patentee to his main request at an early stage of the appeal procedure (i. e. after receipt of the opponent's responses to its statement of the grounds of appeal and before the parties were summoned to oral proceedings before the board). These amendments were mainly with a view to clarifying the claimed subject-matter in an attempt to overcome the other parties' objections without introducing new issues which the other parties and the board could not reasonably have been expected to deal with in an adequate manner.

Accordingly, the board exercises its discretion under Article 111(1) EPC to exercise the powers of the department of first instance, rather than remitting the case to it, and also to admit the patentee's auxiliary requests.

2. *Main request*

2.1 *Amendments*

The claims of the main request are identical to those considered by the opposition division in its decision. There were no formal objections against the claims of this request.

2.2 *Novelty*

2.2.1 According to the opposition division in its decision the subject-matter of claim 1 was not novel over the disclosure in document E1. In particular it found in point 2.3.2 of the Reasons of the decision that E1 disclosed (col. 9, lines 28 to 54) "a progressive lens having on its rear surface (side of the eye when worn) a surface which is a mathematical superposition of a purely progressive surface and a toric surface...". Furthermore it considered that the optical power varied vertically "between -1dpt at its top area" which therefore in its opinion was "constituting a distance region" and "+1dpt at its bottom area" thereby "constituting a near vision region" (emphasis added).

2.2.2 With respect to this document E1, the board, in a communication annexed to the summons pursuant to Rule 115(1) EPC sent on 29 January 2010 had made the following observations:

"Concerning novelty, it will have to be discussed whether document E1 (and some other citations showing lenses with a continuously varying dioptric power) actually discloses a progressive lens comprising a

"distance-vision region", a "near-vision region" and a "progressive region" in the sense of the patent".

2.2.3 At the oral proceedings before the board, the opponents have argued that document E1 unquestionably discloses a progressive lens as defined in claim 1 and that, in any case, in such lenses the actual width of the distance-vision and near-vision zones and the smoothness of the transition in the progressive zone very much depends on the particular lens design. Furthermore the opposition division had identified in the lens of Fig. 3 in document E1 a top area considered to constitute a "distance vision region" and a bottom area constituting a "near vision region". This lens had a continuously varying optical power from +1.00dpt at the top to -1.00dpt at the bottom of the lens.

2.2.4 The board has reservations with respect to this interpretation of the features "distance-vision region" and "near-vision region" in the embodiment in Fig. 3 of E1. As is illustrated by the distribution of optical power in this Figure and following from the mathematical expression for the coordinate "z" in equations (12) and (13) of this document, the value of "z" and therefore the optical power along the line of symmetry or meridian $x=0$ is different for each value of "y" and there is no single point where the optical power is constant or at least approximately constant. In the opinion of the board such a functionality is irreconcilable with the concept of a "region" which implies that within such a region there is a point around which the optical power has approximately a stationary value (local maximum, respectively local minimum). Since at a larger distance of such a point

the optical power must change in each direction (decrease, respectively increase), such a functionality necessarily influences the design of a progressive lens comprising a distance-vision and a near-vision region. Since the power distribution of the lens shown in Fig. 3 of E1 does not show the above functionality this lens cannot be considered as disclosing a generic lens having the technical features of the preamble of claim 1. Instead, the lens design in document E1 follows a concept wherein along the entire vertical axis (meridian or $x=0$ line) the optical power gradually changes, in other words: the entire surface of the lens is a progressive region. This is also illustrated in the further embodiments in Figures 7, 11 and 15.

- 2.2.5 The board finds its reservations as to the opponent's assessment of the relevance of document E1 against the claimed progressive lens confirmed by a recent appeal case before the same board but in a different composition. In this earlier case T 1763/06, involving two of the parties of the present appeal, one of the cited documents, document GB-A-775,007 (*in that case being cited as "P3", the same document having been cited in the present appeal as "E13"*) had been considered during the first-instance proceedings as relevant to the subject-matter of the former independent claim. For this reason the patent proprietor had amended this claim by the further additional feature "...wherein by "progressive surface" is meant a continuous, aspheric surface having far and near vision zones and a zone of increasing dioptric power connecting the far and near vision zone". According to the patent proprietor this document P3 disclosed "a lens having aspheric surfaces and an

optical power gradually increasing along the vertical meridian plane but fails to disclose two progressive lens surfaces in the sense of the claimed invention"; furthermore "Document P3 is not appropriate as closest prior art because this document is not related to progressive lenses of the type considered in the patent".

Hence in point 5.3 of the Reasons of T 1763/06 the board found: "Document P3 discloses a lens having two aspheric surfaces each having an increasing optical power in the vertical meridian plane towards the bottom of the lens (claim 1) and the document proposes displacing or rotating one of the lens surfaces with respect to the other in order to introduce correction of the wearer's astigmatism (page 4, lines 23 to 42). However, although the lens disclosed in document P3 has a gradually increasing optical power and can therefore be qualified - as submitted by the opponent - as being functionally progressive and suitable for far and near vision, the document fails to disclose a lens having progressive addition surfaces as defined in claim 1 amended according to the present request; more particularly, the document fails to disclose lens surfaces each having functionally and structurally distinct and identifiable zones as claimed, i.e. a far and a near vision zone and a further zone of increasing dioptric power connecting the far and the near vision zones" (*emphasis added*).

2.2.6 For these reasons the board has considerable difficulties in identifying the features of the preamble of claim 1 in document E1. However, in the light of the nature of these appeal proceedings the

above issue is not decisive, and the board considers that no further discussion of this point is necessary.

2.2.7 For similar reasons the parties' arguments with respect to documents E3, E10, E35 and E36 which also had been cited to anticipate the subject-matter of claim 1 will not be recapitulated, since it has been found that this subject-matter is not patentable for lack of inventive step as discussed hereafter.

2.3 *Inventive step*

2.3.1 In contrast to document E1 document E10 clearly discloses a progressive multifocal lens within the meaning of claim 1 comprising a distance-vision region ("Fernteil") and a near-vision region ("Nahteil") having different refractive power, and a progressive region connecting these regions wherein the refractive power between these varies gradually, see page 2, lines 55 and 56.

2.3.2 Claim 2 of E10 defines that only one surface out of the two possible surfaces contributes to the power change which is therefore the progressive surface. According to page 2, lines 45 to 47 of the description of E10, the second surface can then be designed in a conventional manner as the so-called prescription surface with a spherical or a toric effect, i.e. in this case a correction, for instance for eye astigmatism, may be provided by giving the non-progressive surface the required toric shape with the correct astigmatism amount and axial position or orientation.

2.3.3 Claim 3 defines a further embodiment of the lens of claim 2 in which the progressive surface also provides the main part of the prescribed surface astigmatism serving corrective purposes. According to page 2, lines 48 to 50, this is a result of designing the main meridian, respectively the main line according to that invention. In this case, i.e. the case wherein the progressive surface includes the astigmatism correction for prescription purposes, the second surface may always be shaped as a rotational symmetrical surface, see page 2, line 51 and claim 4 of E10. Finally Tables 1 to 5 illustrate examples wherein the progressive surface includes a predetermined surface astigmatism (1dpt or 1.5dpt) and a number of axial positions or orientations (0°, 30°, 45°, 60°, and 90°). This additional predetermined astigmatism is clearly intended for eye astigmatism correction.

2.3.4 The subject-matter of claim 1 of the main request differs therefore from the progressive lens disclosed in document E10 in that the combined progressive and eye-astigmatism correcting surface is applied to the lens surface on the side of the eye, whereas E10 does not disclose a preferred surface, apart from the fact that in the embodiment of claims 3 and 4 only one of the lens surfaces is the progressive and eye astigmatism correcting surface.

2.3.5 Since every eyeglass lens only has two surfaces, an object oriented surface and an eye oriented surface, the technical problem related to the differing technical features in claim 1 and the prior art multifocal lens of document E10 may be seen as the

selection of one of the surfaces for the combined progressive and eye-astigmatism correcting surface.

2.3.6 The opponents have referred to document E38, which is related to the properties of eyeglass lenses with a toric surface on the side of the eye ("inner-toric"). According to this document, see the second page, central column, 1st paragraph, the difference in magnification between the principal meridians for inner-toric lenses is always smaller than for lenses with an outer toric surface. As a result (see Section 1.2 of E38) the anamorphic distortion of inner-toric lenses is smaller. Furthermore faceting of inner-toric glasses is easier because of their spherical front surfaces (Section 2.1) and equally their assembly in the eyeglass frame. Finally their aesthetic appearance may be more pleasing if reflections from the front surface occur (Section 2.2). In summary, for toric eyeglasses document E38 teaches a strong preference for selecting the inner surface of the eyeglass. Hence, the selection of the eyeglass surface on the side of the eye for the combined progressive and eye-astigmatism correcting surface appears to be obvious, as had been indicated by the opposition division in the decision under appeal (see point 3.5).

2.3.7 With respect to document E10 the patent proprietor has objected that the astigmatism is only corrected on an infinitesimal strip along the meridian line and that this document does not disclose a surface having eye astigmatism properties. However, on page 8, lines 59 to 62 of E10 it is disclosed "If this strip has been determined according to the present invention, the remaining surface can be calculated in an as such known

manner starting from the strip along the main meridian". Therefore document E10 clearly indicates the calculation of the entire surface, starting from the calculated values along the meridian.

2.3.8 The patent proprietor has also referred to page 2, line 23 of E10, where it is disclosed that for any angular orientation differing from 0° or 90° the correction would have to be applied on the second surface. However, to the understanding of the board this passage in lines 3 to 32 of E10 concerns the evaluation of the art prior to E10: indeed the invention is discussed starting on line 33 of this page. Furthermore, the results in Tables 1 to 5 clearly show, apart from the corrections at the orientation of 0° or 90° , also the results at the further axial positions or orientations at 30° , 45° and 60° .

2.3.9 Finally the proprietor has argued that document E38 does not relate to progressive lenses and that the skilled person designing this type of lens would not have contemplated consulting this document. The board concurs with the proprietor that E38 does not address progressive lenses, but disagrees with the proprietor's assessment that the skilled person would not have considered this document: as discussed in point 2.3.4 supra, document E10 does not express a preference which of the two lens surfaces is to be selected for the combined progressive and astigmatism correcting surface, therefore the skilled person is entirely free in his choice. Since, as a matter of course, the lens must be assembled in an eyeglass frame, the preferred lens surface for the toric surface is the inner one, as

discussed in E38 and other documents cited by the opponents.

2.3.10 It is concluded that the subject-matter of claim 1 of the main request does not involve an inventive step (Art. 52(1) and 56 EPC). Therefore this request is not allowable.

3. *First auxiliary request*

3.1 Claim 1 of this request includes the additional feature that the lens has the equivalent astigmatism correcting power as a conventional progressive multifocal lens having a progressive refractive surface on the side of the object and a toric surface on the side of the eye. The patent proprietor has referred to the passage in col. 19, lines 11 to 16 of the published patent application as the basis of its disclosure. The opponents have objected that this passage reflects the result of calculating the progressive multifocal lens using equation (5) as explained in the preceding paragraphs of "Embodiment 2" (col. 18) which also follows from the reference made to Figures 11 and 10, illustrating the results of this calculation. In other words, by including the new feature in claim 1 without simultaneously including the corresponding equation the amendment introduces an intermediate generalisation. Indeed it appears that according to the original patent application an "equivalent" performance of a progressive lens comprising a toric surface on the side of the eye is only disclosed by using the algorithm of equation (5): indeed Figure 18 illustrates that the "equivalent" astigmatism distribution of the conventional lens shown in Figure 29 (*curve #31 in*

Fig. 18) is only obtained for a progressive lens 10, obtained by using equation (5) (*curve #32 in Fig. 18*) and that "simply adding" the coordinates of the original toric surface to the coordinates of the original progressive surface does not provide a stable astigmatism correction (*curve #33 in Fig. 18*).

3.2 Therefore the amendment in claim 1 of the first auxiliary request is not admissible under Art. 123(2) EPC because it contains subject-matter that extends beyond the content of the application as filed.

4. *Second auxiliary request*

4.1 Claim 1 of the second auxiliary request includes the same objected to expression as claim 1 of the first auxiliary request and is therefore also not admissible under Art. 123(2) EPC.

5. *Third auxiliary request*

5.1 Claim 1 of this request includes the equation labelled (B) in the claim, respectively (5) in the description, used for calculating the height or coordinate Z on the combined progressive and astigmatism correcting surface on the side of the eye. In its submissions the patent proprietor has asserted that the opposition division had considered the prior claim unclear because of the definition of the parameter C_p in that claim being vague and ambiguous and that, in order to overcome this objection, in the present claim the definition of this parameter from the description had been introduced. The opponents have repeated their former objections that the concepts of "vertex" in a progressive lens surface,

and of "average curvature in the radial directions" were unclear and that a determination of the curvature C_p by a construction through the points P , P' and the centre $(0,0,0)$ would yield a point-symmetric surface which cannot be a progressive surface. To this point the proprietor has explained that only the point P was a point on the original progressive surface, whereas the point P' was a virtual point with point symmetry to the point P relative to the centre $(0,0,0)$ and that this point P' was only used for constructing a circle through these points representing the reciprocal of the curvature sought. The opponents have contested that the original patent application discloses such information about the point P' .

5.2 The patent proprietor has also referred to the Minutes of the oral proceedings before the opposition division. Points 4.6 and 4.7 of these Minutes reflect the respective views of the patent proprietor (*point P' being only a virtual point*) and the opponents (*there being no basis for this hypothesis in the original disclosure*) which illustrates that this issue is decisive for the understanding of the evaluation of equation (B) in claim 1 according to the third auxiliary request.

5.3 The board observes that in the original claims this equation (B) had been the subject of claims 13 (*apparatus claim*) and 20 (*method claim*). The further features in the present claim relating to the calculation of the approximate curvature C_p ("*wherein the average curvature ..., the value of $Z=0$* ") have been added in claim 1 of the third auxiliary request filed with the letter of 2 July 2009. The basis for these

additional features appears to be in col. 8, lines 24 to 40 of the published patent application. Indeed, this passage appears to be the only basis of disclosure. In this respect in col. 8, lines 24 and 25 it is recited: "Curvature C_p is the approximate curvature at any point $P(X,Y,Z)$...". In lines 29 and 30 of col. 8, it is disclosed: "In the present example the average curvature of the radial direction is used as the approximate curvature C_p ...". This sentence continues "...and the reciprocals of the circular radius passing through the three points in the xy plane perpendicular to the z axis (passing through the centre of the lens or the internal vertex $(0,0,0)$), including any point $p(X,Y,Z)$ on the original refractive surface, the point $p'(-X,-Y,Z)$ rotationally symmetric with point p and the internal vertex are used". Therefore a circular radius passing through the three cited points "is used" for the calculation of the average curvature of the radial direction. The definition of point $P(X,Y,Z)$ as being a point "on the original refractive surface" appears unambiguous. However, point $p'(-X,-Y,Z)$ is only characterised to be "rotationally symmetric with point P ", which is confirmed by the negative coordinate values for X and Y . There is no information whatsoever, whether this is also a point "on the original progressive surface" or any other point.

- 5.4 The board concurs with the opponents that, in case the point P' would also be a point on the original progressive refractive surface, the approximate curvature C_p in point P would have the same value as in point P' and exhibit a point symmetry, which, for a progressive surface, is not possible. Hence, in order to make sense of the passage in column 8, the skilled

person would probably understand that point P' should not be a point on the original progressive refractive surface. However, this passage does not give any further indications about the position and function value of this point P'. Also, in spite of the fact that this objection had been discussed already at the oral proceedings before the opposition division, during the appeal proceedings the appellant did not provide any further proofs or support in the patent application documents which could have clarified this question.

- 5.5 Therefore the board finds that the features added in claim 1 of the auxiliary request introduce unclear subject-matter, contrary to the provisions of Article 84 EPC. For this reason this claim is not allowable.
6. Since the independent apparatus claims of all requests on file are not allowable, none of the requests is allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

M. Kiehl

A. G. Klein