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**D E C I S I O N**  
**of 21 February 2001**

**Case Number:** T 0553/99 - 3.2.1

**Application Number:** 91916547.2

**Publication Number:** 0560773

**IPC:** B60K 37/04

**Language of the proceedings:** EN

**Title of invention:**

Reflection minimizing apparatus comprising a display unit of a vehicle dashboard

**Patentee:**

AB VOLVO

**Opponent:**

Mannesmann VDO AG

**Headword:**

Undisclosed limiting feature/MANNESMANN

**Relevant legal provisions:**

EPC Art. 56, 123(2), 123(3)

**Keyword:**

"Addition to a claim of an undisclosed feature limiting the scope of protection during examination proceedings"

"Conflict between Article 123(2) and (3) EPC solved by the addition of a further feature which is properly disclosed and renders the undisclosed feature inessential"

**Decisions cited:**

G 0001/93, T 0169/83

**Headnote:**

If a claim as granted contains an undisclosed, limiting feature in contravention of Article 123(2) EPC it can be maintained in the claim without violating Article 123(2) provided that a further limiting feature is added to the claim which further feature

- (i) is properly disclosed in the application as filed, and
- (ii) deprives the undisclosed feature of all technical contribution to the subject-matter of the claimed invention (following decision G 1/93 OJ EPO 1994, 541, point 2 of the order).



Case Number: T 0553/99 - 3.2.1

**D E C I S I O N**  
**of the Technical Board of Appeal 3.2.1**  
**of 21 February 2001**

**Appellant:** AB VOLVO  
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**Representative:** Harrison, Michael Charles  
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**Respondent:** Mannesmann VDO AG  
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**Representative:** Klein, Thomas, Dipl.-Ing. (FH)  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 29 April 1999  
revoking European patent No. 0 560 773 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** F. Gumbel  
**Members:** M. Ceyte  
J. van Moer

## Summary of Facts and Submissions

- I. The appellant is proprietor of European patent No. 0 560 773 (application No. 91 916 547.2).

Claim 1 as granted is as follows

"1. A reflection minimizing apparatus comprising a display unit (1) having a display surface (10) thereon, and a frame (21) arranged in a sunken position in the upper surface of a vehicle dashboard (2), said display unit (1) being arranged for use in a substantially vertical position, and a surface (20) being a low-reflection surface for minimizing reflections of incident light beams, said surface (20) being arranged both beneath and in front of said display surface (10) and extending at an acute angle thereto when said display unit (1) is arranged in its substantially vertical position, wherein said substantially vertical position of said display unit (1) is selected such that an imaginary axis extending perpendicularly to said display surface (10) is disposed to intersect a plane defined by said low reflection surface (20), and wherein said display unit (1) includes a bottom portion and a top portion and that said surface (20) comprises a front portion which is substantially adjacent to said bottom portion of the display unit (1)."

- II. The patent was opposed by the respondent (opponent) on the grounds of added subject-matter under 100(c) EPC, insufficiency of disclosure under Article 100(b) EPC and lack of patentability (Article 100(a) EPC).

The following state of the art was *inter alia* opposed:

D4: US-A-4 521 078

D5: GB-A-1 108 411

D6: US-A-3 728 007

D8: JP-A-62 101537 and the corresponding patent  
abstract M-632 16 October 1987, volume 11/No. 318

III. By its decision of revocation posted on 29 April 1999 the Opposition Division held that Claim 1 as granted (main request) did not comply with the requirement of Article 123(2) EPC and the subject-matter of claim 1 according to the auxiliary request was not inventive having regard to documents D6 and D8.

IV. On 20 May 1999 the appellant (patent proprietor) lodged an appeal against the decision, with the appeal fee being paid at the same time.

The statement of grounds of appeal was filed on 1 September 1999.

V. Oral proceedings were held on 21 February 2001.

The appellant requested that the decision under appeal be set aside and that the patent be maintained as granted, or in the alternative on the basis of the documents according to the first auxiliary request filed at the oral proceedings or on the basis of a main claim containing the features of the claims 1 and 2 of said first auxiliary request. As a further alternative it requested that the patent be maintained on the basis

of the auxiliary requests 2 and 3 filed with the statement of grounds of appeal, renumbered 3 and 4.

Claim 1 of the first auxiliary request is as follows:

"1. A reflection minimizing apparatus comprising a display unit (1) having a display surface (10) thereon, and a frame (21) arranged in a sunken position in the upper surface of a vehicle dashboard, said display unit (1) being arranged for use in a substantially vertical position and wherein said display surface (10) is downwardly angled with respect to the vertical by a small acute angle ( $\beta$ ), and a surface (20) being a low-reflection surface for minimizing reflections of incident light beams, said surface (20) being arranged both beneath and in front of said display surface (10) and extending at an acute angle thereto when said display unit (1) is arranged in its substantially vertical position, wherein said substantially vertical position of said display unit (1) is selected such that an imaginary axis extending perpendicularly to said display surface (10) is disposed to intersect a plane defined by said low reflection surface (20), and wherein said display unit (1) includes a bottom portion and a top portion and that said surface (20) comprises a front portion which is substantially adjacent to said bottom portion of the display unit (1)."

VI. As to the ground of added subject-matter, the appellant submitted that the aim of the expression "substantially vertical" is to describe a vertical position of the display unit or a small variation of the display unit about the absolutely vertical position and thus to describe the generally vertical orientation of the display unit. As would be observed in Figures 2 and 3

for example, the display unit is formed by a front display surface and a housing the rear surface of which is not straight but curved. Thus, the display unit cannot be accurately described in definite terms as being "vertical" or even slightly downwardly inclined, since this would only be (mathematically) correct if the rear and front surfaces were all straight and parallel. Thus the wording "substantially vertical" has been used to take account of these circumstances.

Therefore, in spite of the lack of an *expressis verbis* mention of the term "substantially vertical" there was a basis in the application as originally filed for this added feature, which therefore did not contravene Article 123(2) EPC.

Furthermore the appellant took the view that the subject-matter of claim 1 according to any request was novel and inventive having regard to the opposed prior art.

VII. The respondent (opponent) requested that the appeal be dismissed.

The objection under Article 100(c) EPC in respect of the term "substantially vertical" was maintained.

As to the ground of lack of inventive step, it took the view that document D6 disclosed the claimed device with the exception of "a frame arranged in a sunken position in the upper surface of a vehicle dashboard". This sunken position was however known from document D8. It contended that it was obvious to arrange the known device of document D6 in the sunken position disclosed in D8. Even if this latter prior art document showed a

projection means which projected an image onto a "reflecting surface", this reflecting surface could be considered as a display surface, since this was the surface on which an image appeared to the viewer.

It also contended that the claimed device was obvious in view of document D4 if combined with the teaching of document D8 and common general knowledge. To provide a low reflecting surface adjacent to a display surface, so as to avoid unwanted reflection was well known to the skilled person in this field and was thus common general knowledge. The display screen according to document D4 is intended to be mounted on a vehicle dashboard. Document D8 teaches how to arrange a display screen on the vehicle dashboard for the purpose of improving its legibility and reducing the mounting space. In view of this teaching it was obvious for the skilled person to arrange the display unit of document D4 as disclosed in document D8. Furthermore also in view of the teaching of document D5, it was readily apparent for a skilled person to dispose the low reflection surface at an acute angle relative to the display unit being in a substantially vertical position.

### **Reasons for the Decision**

1. The appeal is admissible.
2. *Main request: Article 123(2) EPC*

The feature "said display unit being arranged for use in a substantially vertical position" has been added to



the claim 1 during examination. The question to be examined is whether or not this added feature extends beyond the content of the application as originally filed and thus contravenes Article 123(2) EPC.

The appellant alleged that in spite of the lack of an *expressis verbis* mention of the term "substantially vertical" there is a basis in the application as originally filed for this added feature. It relied upon two matters. First, Figure 1 shows that the display screen forms an acute angle  $\beta$  with the vertical, however in the description as filed it is said (see page 4 lines 31 to 33) that this acute angle  $\beta$  is formed "in the preferred case". The originally filed description (e.g. page 5 line 30) in fact discloses a variation of between  $\pm 30^\circ$  from the position shown in the figures. Thus it is clearly an implication that the position of the display unit can be substantially vertical, even if this location is not preferred.

Secondly, Figure 3 is a folded out position of the display unit shown in Figure 2 and thus not restricted to any implications of angle  $\beta$  of the display surface shown in Figure 1; and Figure 3 clearly teaches the substantially vertical position of the display unit.

The Board is unable to accept such reasoning:

It is true that the acute angle  $\beta$  is formed "in the preferred case", but that does not necessarily mean that in the non preferred case the display unit can be substantially vertical. The Figure 1 is a purely geometrical representation of the display unit and the depicted angle  $\beta$  is clearly very small. However, as stated at page 5 lines 30 of the description as filed,

a very small angle for the display unit is not essential and can be  $\pm 30^\circ$ . Thus the passage of the description relied upon by the appellant should more likely be construed as meaning that even if the acute angle  $\beta$  is preferably very small, it can also be broader that is to say in the range from  $+30^\circ$  to  $-30^\circ$ .

Furthermore, the originally filed application is wholly silent as to a vertical position of the display unit. On the contrary claim 7 as originally filed states that the display screen is "during deployment downwardly angled so that an acute  $\beta$  between said surface (10) and the vertical plane is formed" (emphasis added). If the display screen is inclined downwardly, it cannot occupy a substantially vertical position.

Figure 1 shows that the display screen of the display unit forms a small acute angle  $\beta$  with the vertical and is directed downwardly. It is not in dispute that Figure 3 is a purely schematic view in perspective of a "preferred embodiment of the invention in a folded out position". As will be observed, in this figure the display unit (1) is formed by a front display surface (10) and a frame unit, of which the frame rear surface is not straight but curved. When studying this schematic Figure, the skilled reader would not be able to distinguish whether the display unit is arranged in a substantially vertical position or is upwardly sloping as shown in Figure 1.

According to the case law of the boards of appeal, the addition of a feature from the drawings to a claim may be permissible provided that this feature is clearly, unmistakably and fully derivable from the drawings by the skilled person (see e.g. T 169/83 OJ EPO 1985,

193). From the foregoing, it is evident that the feature "substantially vertical" is not clearly, directly and unambiguously derivable from the purely schematic respectively perspective views of Figures 1 and 3. Thus contrary to the appellant's submissions, these figures do not teach the substantially vertical position of the display unit.

Therefore, in the Board's judgement, the added feature "substantially vertical" is supported neither by the description nor by the drawings as originally filed. Claim 1 as granted thus comprises subject-matter which has no basis in the application as originally filed and thus contravenes Article 123(2) EPC.

For these reasons the main request must fail.

3. *First auxiliary request: formal allowability*

Alternative claim 1 includes the same added undisclosed feature "said display unit being arranged for use in a substantially vertical position" as claim 1 as granted (main request). The question therefore arises as to whether the first auxiliary request must likewise fail on the ground of added subject-matter under Article 123(2) EPC.

The signification of the above quoted feature is to be assessed in the context of that claim 1 taking into consideration that the invention further requires "that the display surface (10) is downwardly angled with respect to the vertical by a small acute angle  $\beta$ ". Bearing in mind that the position of the display surface is now defined in claim 1, the skilled person when construing the text of this claim will realise

that it is clearly not essential that the display unit as such is arranged or not in a vertical position. What only matters is the position of its active part, that is of its display surface, not that of its housing. The skilled person will therefore necessarily consider the claimed vertical position of the display unit as completely inessential. This means that the feature in question does not provide a "technical contribution to the subject-matter of the claimed invention" within the meaning of the decision of the Enlarged Board of Appeal G 01/93 (OJ EPO 1994, 541 - Limiting feature/Advanced Semiconductor Products) point 2 of the Order.

In the present case there is also no doubt that the undisclosed feature in question merely limits the protection conferred by the patent by excluding protection for a display unit which is **not** "arranged for use in a substantially vertical position". The skilled person would not encounter difficulties in distinguishing reliably such reflection minimizing apparatuses with a substantially vertical display unit from those not having such substantially vertical display units which thus may not fall within the scope of protection of the claims.

In paragraph 1 of the order of the decision G 1/93 *supra*, the Enlarged Board of Appeal stated that if a granted claim contains an undisclosed feature that cannot be deleted because the protection conferred would be extended, the only possible solution consists in replacing the feature with another one, for which there is a basis in the application as filed, without contravening Article 123(2) EPC. However, in the view of the Enlarged Board of Appeal, "this may in practice turn out to be a rare case" (point 13 of the reasons).

Paragraph 2 of the order offers an alternative possibility provided that two conditions are met: the undisclosed feature must i) not provide a technical contribution to the claimed invention and ii) merely limit the protection conferred by the granted patent. Where these two conditions are fulfilled, then the feature in question is not to be considered as subject-matter which extends beyond the content of the application as filed within the meaning of Article 123(2) EPC, and the ground for opposition under Article 100(c) EPC therefore does not prejudice the maintenance of a European patent which includes such a feature.

As has been explained, with claim 1 according to the first auxiliary request, these two requirements are met. It follows that claim 1 containing the feature "said display unit being arranged in a substantially vertical position" can be maintained without violating Article 123(2) EPC. The feature in question being maintained in claim 1 there can be no violation of Article 123(3) EPC either.

3. *First auxiliary request: Novelty*

The Board is satisfied that the subject-matter of claim 1 is novel over the opposed prior art documents, which in fact was not contested by the respondent.

4. *First auxiliary request: Inventive step*

- 4.1 The patent in suit is concerned with a display unit for a vehicle having a display surface which is downwardly angled with respect to the vertical by a small angle (see Figure 1).

A display unit of this kind is disclosed in document D4 acknowledged in the introductory part of the patent in suit. It is stated there that if the display surface is inclined at an angle less than  $90^\circ$  to the longitudinal axis of the vehicle, the main part of the reflected light is in such a case reflected to a region which is lower than the observer's eye position. This known apparatus accordingly minimizes the majority of the direct reflections.

It is further stated that the display surface is located "on the instrument panel" of the vehicle. This means that the display unit is placed at the location where the instrument panel is located (i.e. on some part of the instrument panel and thus below the upper surface of the dashboard). This interpretation is also supported by the fact that column 2, lines 65 to 54 of D4 stated the windows are "relatively high up" in relation to the display unit, which they would not be if the display unit were on the upper surface of the dashboard.

According to the appellant's submissions a display unit of this kind suffers from the problem that there will be indirect reflections and that the low placement of the display unit will constitute for the driver a source of distraction, since the driver cannot keep his eyes on the road.

Consequently, starting from this prior art the technical problem to be solved by the present invention may be seen in providing a display unit for a vehicle, which both minimizes indirect reflections from the surroundings and reduces as far as possible driver's distraction.

This problem is in essence solved by the following features stated in claim 1:

- (i) A surface arranged both beneath and in front of the display surface is a low reflection surface.
- (ii) The frame of the display unit is arranged in the upper surface of the vehicle dashboard.
- (iii) The frame is arranged in a sunken position.

4.2 Document D6 describes in Figure 5 a display unit in the form of a reflective type crystal display panel from the top and bottom of which horizontally project top and bottom light baffling panels. Furthermore two planar light baffling side panels extend vertically from the sides of the display panel. The display panel is downwardly angled with respect to the vertical by an acute angle.

The teaching of D6 is thus clearly specific to a device requiring light baffling panels to reduce reflection, which are unsuitable for use with a vehicle dashboard display since they would themselves shield the display surface from view and impede the driver's view to the road. This means that the skilled person confronted with the problem of driver's distraction will not consider the teaching of document D6. However, even if he had thought combining the documents D4 and D6 he would not have arrived at the teaching of claim 1, since neither document D4 nor document D6 give any suggestion of a frame of a display unit which is arranged in a sunken position in the upper surface of a vehicle dashboard.

4.3 Document D8 relates to a device which operates by projecting a virtual image from a CRT onto a reflection unit having a display surface. In order to form a projected image on the display surface of the reflection unit, the image must pass through a transparent panel extending horizontally in the dashboard upper surface. Although the display unit is in an upper surface of a vehicle dashboard, its display surface is not designed to be downwardly angled to the vertical by a small acute angle. In D8 the position of the display surface required for viewing is between about 30° to 50° to the vertical, due to the manner of image formation. Moreover, even at an angle of 30° (position "A" depicted in Figure 3) the information visible on the display surface or screen would be barely discernable since only a minor part of the image is projected on it. Thus the display surface of the device according to D8 is clearly not intended nor suitable for being used in a substantially vertical position i.e. at a small acute angle to the vertical, as claimed in claim 1 since there would quite simply be no image produced in that position. Furthermore, there is also no means in D8 by which reflections would be minimised to avoid driver distraction. The display surface in D8 is necessarily of high brightness in order to give a visible virtual image. In conditions of high ambient (i.e. day time) the problem of reflections is exacerbated due to the bright surface of the display screen and due to the image projection method. Legibility is thus poor even in normal daytime conditions.

Moreover, there is no teaching in D8 to arrange a low reflection surface beneath and in front of the display surface.



For the foregoing reasons, the skilled person confronted with the problem of minimizing indirect reflections and that of reducing driver's distraction would have not considered the teaching of document D8, because these problems are by no means solved in this citation.

Anyway, the combination of the teachings of document D4 with those of D8 would not lead to the subject-matter of claim 1 because of lack of suggestion to feature (i).

4.4 As already stated, there is no teaching in document D6 other than maintaining a display unit surrounded by light baffles. These light baffles are entirely incompatible with a display unit mounted in the upper surface of a dashboard, since they would clearly restrict not only a view of the screen itself but also the driver's vision of the road. Although document D8 teaches that a CRT reflective screen can be placed in the upper surface of a vehicle dashboard it clearly excludes the possibility of having a low reflective surface adjacent its bottom portion, since a highly transparent surface is required in this document for projection from the CRT. It follows that the device disclosed in D8 is entirely incompatible with that of D6 and therefore D6 and D8 would not be combined by a skilled person to arrive at the claimed teaching.

4.5 Document D5 teaches that a display unit can be placed in a deep recess provided in a vehicle instrument panel and thus is surrounded by walls. These surrounding walls restrict the view of the display surface and the low placement of the display unit constitutes a source of distraction, since the driver cannot keep his eyes

on the road when looking at the display unit. This citation therefore does not add anything significant to the disclosure of document D4.

- 4.6 Summarizing, in the Board's judgement, the subject-matter of claim 1 according to the first auxiliary request also involves an inventive step (Article 56 EPC) so that the patent is to be maintained on the basis of this main claim.

Dependent claims 2 to 4 concern particular embodiments of the invention claimed in claim 1 and are likewise allowable.

5. The opposition grounds thus do not prejudice the maintenance of the patent in amended form.

## **Order**

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

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to maintain the patent with the following documents:

Claims 1 to 4 (first auxiliary request) and description submitted at the oral proceedings on 21 February 2001, drawings as granted.

The Registrar:

The Chairman:

S. Fabiani

F. Gumbel