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**Datasheet for the decision  
of 21 September 2012**

**Case Number:** T 1533/09 - 3.2.01

**Application Number:** 02736394.4

**Publication Number:** 1392540

**IPC:** B60K 20/02, G05G 1/04

**Language of the proceedings:** EN

**Title of invention:**  
Gear shift lever unit for a motor vehicle

**Patentee:**  
VOLVO LASTVAGNAR AB

**Opponent:**  
ZF Friedrichshafen AG

**Headword:**  
-

**Relevant legal provisions (EPC 1973):**  
EPC Art. 56

**Keyword:**  
"Inventive step (yes)"

**Decisions cited:**  
-

**Catchword:**  
-



Case Number: T 1533/09 - 3.2.01

**DECISION**  
of the Technical Board of Appeal 3.2.01  
of 21 September 2012

**Appellant:** ZF Friedrichshafen AG  
(Opponent) Graf-von-Soden-Platz 1  
D-88046 Friedrichshafen (DE)

**Respondent:** VOLVO LASTVAGNAR AB  
(Patent Proprietor) S-405 08 Göteborg (SE)

**Representative:** Ekström, Nils  
Volvo Technology Corporation  
Corporate Patents 06820, M1.7  
S-405 08 Göteborg (SE)

**Decision under appeal:** Interlocutory decision of the Opposition  
Division of the European Patent Office posted  
13 May 2009 concerning maintenance of European  
patent No. 1392540 in amended form.

**Composition of the Board:**

**Chairman:** G. Pricolo  
**Members:** Y. Lemblé  
S. Hoffmann

## Summary of Facts and Submissions

I. The Opponents' appeal is directed against the interlocutory decision of the Opposition Division posted 15 May 2009 and according to which, account being taken of the amendments made by the Patent Proprietors during the opposition proceedings, European patent No. 1 392 540 and the invention to which it related were found to meet the requirements of the EPC.

II. In its decision, the Opposition Division held that the subject-matter of the amended claims met the requirements of novelty and of inventive step having regard, inter alia, to the following prior art documents

D1: DE-A-30 48 093,

D2: DE-A-2 247 222,

D4: WO-A-00/58 646.

III. In the oral proceedings, held on 21 September 2012, the Appellants requested that the decision under appeal be set aside and that the European patent be revoked.

The Respondents (Patent Proprietors) requested that the appeal be dismissed.

IV. The wording of claim 1 as maintained by the Opposition Division in its interlocutory decision is as follows:

A gear shift unit (1) for electronic transmission control in motor vehicles,

- comprising a gear shift lever housing (4) and a gear shift lever (5) moveable in relation to the gear shift lever housing (4),
- the gear shift lever being pivotable about a main pivot axis (6) of the gear shift lever (5) within an active position range containing a neutral position and active gear shift positions,
- the gear shift unit furthermore comprising a locking unit (10,12,15,16) which is designed to assume
  - a first locked position in which the gear shift lever (5) is prevented from passing said neutral position and
  - a second opened position in which the gear shift lever (5) is allowed to pass the neutral position;wherein in the first locked position the locking unit (10,12,15,16) is designed to retain the gear shift lever (5) in the neutral position and in the second open position to allow the gear shift lever (5) to leave the neutral position

characterised in that

for said active gear shift positions no locking elements are provided so that the neutral position is freely accessible from said active gear shift-positions solely by pivoting said gear shift lever (5) about said main pivot axis (6) without deactivating locking elements.

V. The Appellants' submission can be summarised as follows:

Claim 1 had been delimited with respect to document D4 which disclosed the nearest prior art. It could be noted that parts of claim 1 were formulated in very general functional terms ("designed to retain the gear shift lever in the neutral ... to leave the neutral position"), a fact that should to be taken into account

when judging inventive step. The gear shift unit of document D4 had a locking unit (spring 4, guide member 8 and notches R,N,D1,D2) which, in a first lock position, was able to retain the gear shift lever 3 not only in the neutral position "N" but also in others active gear shift positions R,D1,D2. By means of an actuator 7 the locking unit could be brought to a second opened position in which the guide member 8 was released from the respective notches R,N,D1,D2, thus allowing the gear shift lever to leave the respective gear shift position (see D4: figure 1).

As correctly mentioned by the Opposition Division in its decision, the subject-matter of claim 1 differed from that of D4 by the feature of the characterizing part of the claim, namely that no locking elements were provided for the active gear shift positions so that the neutral position was freely accessible from said active gear shift positions solely by pivoting said gear shift lever about said main pivot axis without deactivating locking elements.

This distinguishing feature solved the problem of reducing the necessary driver actions to operate the gear shift unit and especially allowed the driver to rapidly and simply shift the lever to the neutral position.

Looking for a solution to this problem the skilled person would come across document D1 which also disclosed a gear shift unit for automatic transmission control in motor vehicles. This document mentioned on page 6, last paragraph and page 13, lines 13-21 that it was usual that the shifting from the "D" position to

the "2" position or vice versa was manually made without depressing the push button 30 mounted on the top of the shift lever, although that push button required to be depressed in order to move the shift lever from the position "N" or "2" to either position "R" or "1". Thus, document D1 taught the skilled man that a swift change between active shift positions did not necessarily require that a locking element be provided for each active gear shift position and that for specific shift positions however, as the need arose, a locking element could still be useful for safety reasons. Starting from the shift gear unit of document D4 as nearest prior art, the skilled man would therefore realize that the above mentioned problem could simply be solved by removing the notches corresponding to the shift positions D1, D2 in figure 1 of D4, for example by filling them with material thus obtaining a plain and smooth guiding slot, while keeping the lock element in the "Neutral" position. The skilled man was free to remove the locking notches of the gear shift unit of D4, since he knew that, even with a removed notch, the respective position could still be felt by the driver thanks to the detent mechanism 13. He would retain the locking notch "N" corresponding to the neutral position not only for safety reasons because he wanted to prevent an unintentional or accidental direct shift from the positive driving gear positions "D1" or "D2" into "R" (reverse gear position), but also for practical reasons: the skilled man would indeed recognize the need to "retain" the lever in "Neutral" ("retain" being here interpreted within the meaning of the claim, i.e. to lock), because a safe engaging of the guiding element 8 from the shifting slot into the tilting slot 10 (to the

park position "P") by axial displacement of the lever 5 necessitated that the lever 5 be locked in "Neutral".

Similar considerations led to the conclusion that the missing feature was readily derivable for the skilled man from a combined consideration of the documents D4 with D2, since document D2 also showed that shifting from the "N" position to the "2" position or vice versa was made without deactivating the locking element 13 with the push button 5 mounted on the top of the shift lever 3 (see figures 1-2 of D2).

- VI. The Respondents countered in essentially arguing that there was nothing in the prior art documents cited by the Appellants which would lead the skilled man to the subject-matter of claim 1 in an obvious manner. Starting from D4 as prior art, the technical problem had to be presented objectively and could be formulated as: to improve the manoeuvrability of the gear unit while keeping the necessary safety. The skilled man confronted with this problem, could not find in the documents D1 and D2 the elements which would led him in an obvious manner to the claimed solution. Claim 1 as maintained the Opposition Division met therefore the requirement of inventive step.

## **Reasons for the Decision**

1. Inventive step
  - 1.1 Claim 1 has been delimited with respect to prior art document D4, which discloses a gear shift unit for an electronic transmission control in motor vehicles

(page 5, third paragraph). This unit comprises a hollow selector lever 3 for selecting different gear ratios of the motor vehicle transmission. The lever is located in a housing and can be pivoted about a selector axis 2 within an active position range containing a neutral position N and active gear shift positions (R,D1,D2). A rod 5 in the selector lever can be displaced against the force of the spring 4. An actuating device 7 is accommodated in a gear shift knob 6 for axial displacement of the rod 5. Connected to the rod 5 is a guide member 8 which engages in a gear shifting gate 9. The rod 5, the spring 4, the guide member 8 and notches R,N,D1,D2 in the shifting gate 9 form a locking unit which is in a first locked position when the guide member 8 is spring biased in one of the multiple notches of the shifting gate 9, these notches forming, with the guide member 8, locking elements which define the selector lever positions which are allocated to the individual gears R,N,D1,D2. Axial displacement of the rod 5 to a second opened position by means of the actuating device 7 releases the guide member 8 from the notch of the respective gear shift position R,N,D1,D2 and allows the gear shift lever to leave that gear shift position.

Additionally, the guide member 8 can be displaced from the neutral position N by an axial displacement of the rod 5 into a tilting gate 10. To move the shift lever to the position corresponding to the tilted position (also park position) in the tilting gate, the actuating device 7 must be pressed with a stronger force to displace the rod 5 further, against another supplementary spring 14 so that the guide member 8 is



moved to enter into the tilting gate 10 (page 7, last paragraph).

- 1.2 The subject-matter of claim 1 differs from that of document D4 in that no locking elements are provided for the said active gear shift positions so that the neutral position is freely accessible from said active gear shift positions solely by pivoting said gear shift lever about said main pivot axis without deactivating locking elements.
  
- 1.3 As mentioned in the paragraphs [0005] and [0007] of the patent, the effect of this distinguishing feature is that the neutral position can be reached more rapidly from active gear positions, whereby unwanted or accidental engagement of some gears is still prevented. Owing to case law which requires that the formulation of the problem should not entail elements of the solution, the Board agrees with the Respondents that the objective technical problem can be formulated as follows: to improve the manoeuvrability of the gear unit while keeping the necessary safety. The question to decide upon is therefore whether or not it was obvious to a skilled person starting from the nearest prior art document D4 and faced with the above mentioned problem, to arrive at the gear shift unit as defined in independent claim 1 in the light of the further documents D1 or D2 cited by the Appellants.
  
- 1.4 The gear shift unit of D4 is a tiltable gear shift unit for electronic transmission control which is compact and ergonomic to afford good cab comfort (page 2, second paragraph). The safety concept of this gear unit relies on performing an intentional selection combined

with individual locks of the gear shift positions, using notches R,N,D1,D2 and a guide member 8 which cooperate to retain the lever in the selected gear position until the driver purposely chooses to change to a new gear position for which he has to deactivate the individual lock (page 2, line 17 to page 3, line 4): this prevents erroneous operation from the side of the driver as well as inadvertent and/or accidental engagement of the gear shift lever.

1.5 Document D1 refers to a gear shift unit for selecting the driving range P,R,N,D,2,1 of an automatic transmission. Looking at figures 1 and 3 of document D1, the shift lever 20 can indeed be handled to be moved from the position "D" or the position "2" toward the position "N" without depressing the push button 30 for deactivating the pin 38 engaging the cam surface 44. Moving the shift lever from the position "N", "D" or "2" to either position "R" or "1" requires depressing of the push button 30 (D1: page 13, lines 21-24). To move the shift lever to the position corresponding to the park position "P", the push button 30 must be depressed with stronger force, so that the pin 38 can pass over the most projected cam surface 48 and will be trapped into the recess 46.

1.6 Document D2 also refers to a gear shift unit for selecting the driving range of an automatic transmission. A lever 3 located in a housing and can be pivoted about a selector axis 8 within an active position range containing a neutral position N and active gear shift positions (R,D,2,1). A rod 14 in the selector lever can be displaced against the force of a spring 22. An actuating knob 5 is accommodated in a

gear shift handle 4 for axial displacement of the rod 14. Connected to the rod 5 is a locking pin 13 which engages in a gear shifting gate 12. The spring 22, the locking pin 13 and notches of the shifting gate 12 form a locking unit. The object of the device of D2 is to prevent an inadvertent or accidental shifting operation from a forward range D,2,1 to the reverse travel range R (page 2, second paragraph). This is achieved by conforming the gear shifting gate 12 such that shifting to reverse range R can only occur after actuation of the actuating knob 5 to permit the locking pin 13 to pass over the projection 38 between the shift gear positions N and R (see Fig. 1 and claim 1 of D2).

- 1.7 In the Board's judgment, if the skilled man inspired by the teaching of D1 or D2 wanted to improve the manoeuvrability (i.e. to reduce the number of necessary driver actions when operating the gear shift unit) of the gear unit of D4, he would only find indications suggesting to give up the concept of individual locks for the selected gear, thus dispensing with the individual notches altogether, and to replace them with the cams portions of D1 or D2. For reasons of safety, he would keep the features which materially prevent an unintentional or accidental direct shift from the positive driving gear positions "D1" or "D2" into "R" (reverse gear position) as taught by D1 and D2, namely the radially extending step section 60 between N and R shown in Fig. 3 of D1 or the projections 38 and 39 between N and R shown in Fig. 1 of D2. However, neither document D1 nor document D2 suggests him to "retain the gear shift lever in the neutral position" as claimed in claim 1. In this respect, the Board agrees with the view taken by the Opposition Division (see the Note on

page 7 of the appealed decision according to which the expression implies that without deactivating locking elements, e.g. by pressing a button, the shift lever may not leave the neutral position to be shifted to any other gear shift position including forward and reverse gear positions).

1.8 Concerning the argument of the Appellants that the skilled man would retain the locking notch "N" corresponding to the neutral position for safety reasons because he wanted to prevent an unintentional or accidental direct shift from the positive driving gear positions "D1" or "D2" into "R" (reverse gear position), the Board notes that this problem is already solved in D1 or D2. As mentioned above, both devices of document D1 and of document D2 prevent an inadvertent or accidental shifting operation from a forward range D,2,1 or from Neutral N to the reverse travel range R. There is no hint in D1, D2 or even in D4 that a single notch provided only at the Neutral position would prevent the gear shift lever from passing the neutral position when it is swiftly swung to Reverse.

1.9 The Board also examined the argument of the Appellants that in D4 a safe engaging of the guiding element 8 from the shifting slot into the tilting slot 10 (to the park position "P") by axial displacement of the lever 5 necessitated that the lever 5 be locked in "Neutral". As a matter of fact, in document D1 engagement over the most projecting cam surface 48 (into the parking slot "P") occurs from the position "R" (and not from the neutral position "N"), no lock being provided in that position. In document D2 engagement into a deeper slot to the parking position "P" occurs also from the

position "R" and there is also no lock provided in that position. Concerning the gear unit of document D4, it can also be noted that there is no clear indication in D4 that "Neutral" must be the gear position to start with when engaging the guiding element 8 into the tilting slot 10. On the contrary, D4 suggests that engagement into the tilting slot could occur from any gear position (see page, 4, line 12-14 and characterizing part of claim 1: "aus wenigstens einer Wählhebelstellung heraus").

2. The Board concludes from the above that the subject-matter of claim 1 as maintained by the Opposition Division in its interlocutory decision involves an inventive step.

## **Order**

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

The Appeal is dismissed.

The registrar

The Chairman

A. Vottner

G. Pricolo