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**D E C I S I O N**  
**of 4 April 2000**

**Case Number:** T 0567/96 - 3.2.1

**Application Number:** 91200987.5

**Publication Number:** 0502263

**IPC:** F16H 61/00

**Language of the proceedings:** EN

**Title of invention:**

Continuously variable transmission with an adjustable pump

**Patentee:**

Van Doorne's Transmissie B.V.

**Opponent:**

P.I.V. Antrieb Werner Reimers GmbH & Co. KG

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 54, 56, 83, 100(a), (b), (c), 123(3)

**Keyword:**

"Opposition grounds - insufficiency of disclosure (no) -  
extension of subject-matter (no)"

"Amendments - opposition proceedings (admissible)"

"Novelty (yes)"

"Inventive step (yes)"

**Decisions cited:**

-

**Catchword:**

-



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Boards of Appeal

Chambres de recours

Case Number: T 0567/96 - 3.2.1

**D E C I S I O N**  
**of the Technical Board of Appeal 3.2.1**  
**of 4 April 2000**

**Appellant:** Van Doorne's Transmissie B.V.  
(Proprietor of the patent) Dr. Hub van Doorneweg 120  
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**Representative:** van Westenbrugge, Andries  
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**Respondent:** P.I.V. Antrieb Werner Reimers GmbH & Co. KG  
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**Representative:** Lemcke, Rupert, Dipl.-Ing.  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 10 April 1996  
revoking European patent No. 0 502 263 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** F. A. Gumbel  
**Members:** F. J. Pröls  
V. Di Cerbo



## Summary of Facts and Submissions

- I. European patent No. 0 502 263 was granted on the basis of European patent application No. 91 200 987.5.
- II. The patent was opposed by the Respondent on the grounds that its subject-matter lacked novelty and inventive step with respect to the prior art (Article 100(a) EPC) particularly according to the documents (A2) DE-A-3 727 633 and (A3) DE-C-3 210 759, and that the European patent did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 100(b) EPC).
- III. The Opposition Division revoked the patent by the decision posted 10 April 1996 for reason of lack of novelty of the subject-matter of the claim 1 according to the main request then on file in view of document A3 and for reason of inadmissible extension beyond the content of the application as filed of the subject-matter of claim 1 according to the then auxiliary request.
- IV. The Appellants (Patentees) appealed against this decision on 18 June 1996, paying the fee on the same day. The Statement of Grounds was received on 7 August 1996.
- V. Following a communication of the Board pointing out that amendments in the claim and the description were necessary in order to meet the requirements of the EPC the Appellant filed amended documents (received on 16 June 1998) and, by letter of 6 March 2000, agreed to

amended columns 1 and 2 of the description.

VI. The Appellant requested the maintenance of the patent in amended form on the basis of the following documents:

- claims 1 to 19, submitted with letter of 15 June 1998,
- description columns 1, 2 submitted with letter of 15 June, and amended as agreed to with letter of 6 March 2000,
- description columns 3 to 7 submitted with letter of 15 June 1998,
- drawings, Figures 1 to 4 as granted.

The Respondent requested the appeal to be decided on the basis of the written documents on file.

Claim 1 now on file reads as follows:

"A continuously variable transmission provided with a primary pulley mounted on a primary shaft (1) and a secondary pulley mounted on a secondary shaft (7), both the primary pulley and the secondary pulley comprising a pair of discs (2, 3, 8, 9), at least one of said discs (3, 9) being axially movable by means of a hydraulic cylinder (5, 10) so as to adjust the transmission ratio, with a transmission means (14) passed over the pulleys, with a pump means (15; 31) for providing a fluid for said hydraulic cylinder, which pump means have a regulable delivery and consist of at

least two pump parts/poles, as well as control means (20; 44) to regulate the required pump delivery in dependence on the operating conditions of the transmission, said control means (44) comprising a control valve (39), which is disposed in a connecting line (40) between the inlet (34; 35) and outlet (36; 37) of at least one pump part/pole, characterized in that the control valve (39) is coupled to an on/off solenoid (45), so that the control valve (39) is closed to pressurise the outlet (36; 37) or opened to render the outlet (36; 37) pressureless."

### **Reasons for the Decision**

1. The appeal complies with Articles 106 to 108 and Rules 1(1) and 64 EPC; it is admissible.
2. *Formal allowability of the amendments (Article 100(c), 123(2) EPC)*
  - 2.1 Current claim 1 comprises the features of claims 1, 5, 6, 8, 21 and 22 as originally filed whereby the further additional feature "so that the control valve (39) is closed to pressurise the outlet (36; 37) or opened to render the outlet (36; 37) pressureless" can be derived from the original description page 8, lines 13 to 20 (EP-A-502 263, column 6, lines 46 to 54).

Present dependent claims 2 to 19 contain the features specified in original claims 23, 9 to 20 and 3 to 7.

The amendments made to the description in comparison

with that originally filed consist essentially in an evaluation of the most relevant state of the art and an adaptation to the terms of current claim 1.

There is, therefore, no objection to the present documents under Article 123(2) EPC.

- 2.2 Since present claim 1 contains besides the above mentioned further additional feature, the complete teaching of claims 1 and 2 of the patent as granted it has been clearly restricted in its scope.

There is, therefore, also no objection to claim 1 under Article 123(3) EPC.

3. *Sufficiency of disclosure (Article 83, 100(b) EPC)*

The arguments of the opponent forwarded to support the opposition ground "insufficiency of disclosure" rather concern the question whether the subject-matter of the patent in suit offers a solution to the problem to be solved.

For the reasons set forth in paragraph 4 below the Board has no doubt that the patent in suit does disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art such that the problem underlying the invention can be solved.

4. *Nearest prior art; problem to be solved; subject-matter of the patent in suit*

The hydraulic control system according to



DE-C-3 210 759 (A3) as used to formulate the preamble of claim 1 of the patent in suit discloses a control valve 3 disposed in the connection line 6 between the inlet and the outlet of several pump poles I to IV and regulated (at 9) by the pressure difference derived from the pressure drop at restriction means 7, 8 in the connection line. This pressure drop results in an efficiency loss which should be avoided in the system claimed by the patent in suit.

The control valve 39 according to the subject-matter of claim 1 is regulated by an on/off solenoid 45 so that it is closed to pressurize the outlet for a pump pole or opened to render the outlet pressureless. Thereby the signals as delivered from the on/off solenoid replace the hydraulic pressure difference signals derived from the restriction means as known from document A3 thereby avoiding the above mentioned efficiency loss.

Therefore the claimed system clearly represents a solution to the problem set out in the introductory portion of the description of the patent in suit.

5. *Novelty*

The pressure and delivery control systems according to document A2 and A3 indisputably do not disclose any additional on/off solenoid for the regulation of the control valve as defined in current claim 1 of the patent in suit. The further prior art documents cited in the opposition procedure are less relevant than the above cited documents A3 and A4.

Thus, the subject-matter of claim 1 is novel.

6. *Inventive step*

6.1 The control system according to claim 1 of the patent in suit comprises a control valve regulated by the on/off solenoid and functions as a non throttling directional control valve having fixed end positions, in which it is closed to pressurize the outlet of the pump pole concerned or opened to render the outlet pressureless.

By way of contrast the control system according to document A2 reveals a variable flow control valve 9 (Figures 1 and 6) which does not only have completely open and fully closed end positions but also provides intermediate throttling positions (see the dotted line in the diagram according to Figure 1 of A2). Thus, the redundant flow of the delivery V4 + V5 of the pumps is throttled from the high delivery pressure level to the low reservoir pressure resulting in a considerable efficiency loss of the system.

6.2 As concerns the control system according to document A3 the control valve which is gradually shifted renders one or more of the outlets of the pump poles I to IV pressureless if low pressure or delivery is required in the CVT-connection line 6. Contrary to the claimed teaching of the patent in suit the control valve 3 is not regulated by an on/off solenoid but by the pressure difference derived from a pressure drop of restriction means in the CVT-connection line 6 as already mentioned in paragraph 4 above.

Neither A2 nor A3 contains any suggestion which could encourage the skilled person to depart from the respective prior art solutions with regard to the control valve employed and the manner of its control disclosed therein.

- 6.3 Accordingly the Board comes to the conclusion that the subject-matter of present claim 1 cannot be derived in an obvious manner from the state of the art and therefore involves an inventive step as required by Articles 52(1) and 56 EPC.

Thus, claim 1 together with its dependent claims 2 to 19 and the amended description and drawings can form the basis for 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 in the following version:

**Claims:** No. 1 to 19 filed with letter of 15 June 1998;

**Description:** columns 1, 2 filed with letter of 15 June 1998 and amended as agreed to with letter of 6 March 2000;

columns 3 to 7 filed with letter of  
15 June 1998;

**Drawings:** Figures 1 to 4 as granted.

The Registrar:

The Chairman:

S. Fabiani

F. Gumbel