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**Datasheet for the decision
of 1 April 2022**

Case Number: T 0200/20 - 3.2.01

Application Number: 12808452.2

Publication Number: 2794373

IPC: B60T13/66, B60T13/68,
B60T15/02, B60T8/32

Language of the proceedings: EN

Title of invention:

VALVE ASSEMBLY

Patent Proprietor:

Haldex Brake Products AB

Opponent:

Knorr-Bremse
Systeme für Nutzfahrzeuge GmbH

Headword:

Relevant legal provisions:

EPC Art. 54(1), 56

Keyword:

Novelty - (yes)
Inventive step - (yes)

Decisions cited:

T 0206/83, T 0748/91, T 0943/93, T 0464/94, T 1321/04,
T 0412/09, T 2397/11

Catchword:



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Case Number: T 0200/20 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 1 April 2022

Appellant: Knorr-Bremse
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted on 25 November 2019 rejecting the opposition filed against European patent No. 2794373 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman H. Geuss
Members: W. Marx
O. Loizou

Summary of Facts and Submissions

- I. The appeal is directed against the decision of the opposition division to reject the opposition against European patent No. 2 794 373.
- II. The appellant (opponent) relied on the following evidence filed during the opposition procedure:
- D1/D1a: US 7,389,795 B2 / US 2007/0186985 A1;
 - D2: US 2011/0297494 A1;
 - D10: EP 0 274 781 A2.
- III. In its decision the opposition division held that the patent as granted was not disclosed by documents D1/D1a and D10 and an inventive activity was, *inter alia*, implied with regard to a combination of D2 with the common general knowledge or with D10.
- IV. Oral proceedings by means of videoconference were held before the Board on 1 April 2022.

The appellant (opponent) requested that the decision under appeal be set aside and that the patent revoked.

The respondent (patent proprietor) requested that the appeal be dismissed (main request), or in the alternative, that the patent be maintained according to the first or second auxiliary request filed during the first instance proceedings.

- V. Claim 1 as granted (main request) reads (broken into a feature analysis adopted by the parties) as follows:
- M1.1 A valve assembly (110) comprising
 - M1.2 an inner housing (124) in which is provided a first port (112), a second port (114), and a

- third port (116),
- M1.3 there being located in the inner housing (124) a valve member assembly
- M1.3.1 which is movable between a first position in which the second port (114) is connected to the third port (116) whilst the first port (112) is closed,
- M1.3.2 a second position in which the first port (112) is connected to the second port (114) whilst the third port (116) is closed, and
- M1.3.3 a third position in which at least two of the first (112), second (114) and third (116) ports are closed,

characterised in that

- M1.4 the valve assembly (110) further comprises an outer housing (230) which is separate from and encloses at least part of the inner housing (124),
- M1.5 the outer housing (230) having a first port (234) and a second port (232),
- M1.6 the inner housing (124) and outer housing (230) each being provided with first mating parts, which engage to provide a substantially fluid tight seal between the inner housing (124) and the outer housing (230) whilst enclosing a conduit for fluid communication between the first port (112) of the inner housing (124) and the first port (234) of the outer housing (230), and
- M1.7 second mating parts, which engage to provide a substantially fluid tight seal between the inner housing (124) and the outer housing (230) whilst enclosing a conduit for fluid communication between the second port (114) of the inner housing (124) and the second port (232) of the outer housing (230).

VI. The appellant's submissions in as far as they are relevant to this decision may be summarised as follows:

The patent specification (claims, description) did not provide a clear definition or explicit support for what was meant by "housing". According to definitions given in dictionaries (see contested decision) a housing contained, covered or enclosed parts. Any structure fulfilling the requirements specified in claim 1 (features M1.2, M1.3, M1.4 to M1.7) had to be considered to be a "housing". No further requirements were derivable from the patent specification or relevant definitions, or from the common general knowledge, so claim 1 did not require a closed or fully enclosing housing, or a one-piece or self-supporting housing. A housing could combine several - even flexible - parts. The description did not imply a modular structure of the inner and outer housing (in the context of different brake systems), so the term "housing" had to be construed broadly. The relation between the outer housing and the inner housing was vaguely defined in claim 1 (see feature M1.4), which did not include essential limiting features regarding the housing configuration. Since no clear definition of an "inner" or "outer" housing was derivable from the patent specification, a wide interpretation had to be assumed. Claim 1 only required an outer housing which enclosed "at least part of" the inner housing, and both housings did not have to be completely separate. It was sufficient that in the assembled state of the valve assembly structural parts fulfilled the functional requirements of claim 1 for the corresponding housing parts, which were separate from each other when disassembling the valve assembly. It could be foreseen that a wall of the outer housing also enclosed the volume defined by the inner housing.

Novelty over D1/D1a

As found in the contested decision, features M1.1 to M1.3.3 were known from D1. The items 32 ("*sealing ring*") and 34 ("*valve seat formation*") defined a space or volume within the outer housing 12a, 12b, which was laterally limited by only a portion of housing wall 12a ("*first cylindrical side portion*"). The elements 12, 12a and 12b of the valve assembly 10 were formed as separate parts, as was clearly derivable from Figs. 2a to 2c. Defining separate volumes of the valve assembly 10, these parts met all functional characteristics as specified in claim 1 as granted, which did not require further features. Claim 1 did not require an element which was completely and exclusively assigned to the inner housing. The volume of this inner housing (formed by items 32, 34 and the side wall) was separate from the outer housing 12a, 12b ("*valve body*") and enclosed by the outer housing, see feature M1.4. Fig. 1 showed first, second and third ports (port 16 and passages in items 32, 34 to further ports 14, 18), and in fluid connections with these ports corresponding ports of the inner housing (but no reference signs in Figs. of D1).

Admissibility of document D10

The opposition division had exercised its discretion correctly when admitting D10 into the proceedings. D10 had been filed in reply to the preliminary opinion of the opposition division and was highly relevant.

Novelty over D10

Claim 1 did not relate to a brake modulator (comprising exhaust, build and hold positions) as disclosed in the

contested patent and did not include limitations in respect of function, position or ports, so it was very broad. Claim 1 merely defined the structural features of the valve assembly as well as its suitability for taking a first, second and third position, without limiting these position to (i) respective abutments or (ii) a specific control.

(i) "Positions" of the valve assembly were only defined in claim 1 by open or closed fluid connections between certain ports, so respective positions were already reached when respective fluid connections were opened or closed during movement of the valve member assembly. Granted claim 1 or the patent specification did not indicate that the defined positions had to be stable or permanent, or represented final positions of movement between abutting positions (i.e. discrete states of the valve assembly).

The contested decision found that D10 disclosed all the features of granted claim 1 except for feature M1.3.3. D10 showed ports according to feature M1.2, namely the inlet and outlet passages for fluid provided in the inner housing. Two main positions of the valve were described in D10. However, a third position was inevitably reached (as was clear from Fig. 3) in view of a relaxation of the elastic valve seat 36 when moving the valve member assembly between the first and second position. When the piston 33 started pushing the valve body 31 to the right side in Fig. 3 of D10, the valve sleeve 37 (under bias of the valve seat 36 mounted between valve sleeve 37 and inner housing 30) was also moving to the right side until the O-ring sealing 39 came into contact with a shoulder of the wall 38. The ports 42 and 46 were closed at that time, and only then a connection between ports 44 and 46 was

opened. Exhaust port 42 had to be closed first before allowing compressed air to flow from port 44 to port 46, since the technical purpose of D10 was to avoid all three ports to be open at the same time which would lead to a fall in pressure. Thus, D10 disclosed a short stop of airflow at a transitory position between the first position and the second position where none of the possible exhaust exits were open. Compressed air should go either to the right or left side of the valve assembly. This was clear from the relative dimensions shown in Fig. 3 in D10 and what was said in the description (col. 5, l. 33 to col. 6, l. 16) which represented an enabling disclosure. It was the only possibility regarding how the device in D10 worked (a small O-ring 39 was provided to close ports 42, 46, and a thick elastic valve seat 36 which was displaceable to move the valve sleeve 37 and had to travel further to open the valve seat 36), as understood by the skilled person. A ridge of the valve body 31, lifting off from the valve sleeve 37, opened a gap between both parts and established a connection between ports 44 and 46 so that port 44 was opened.

(ii) Moreover, it even seemed doubtful (as argued in the contested decision) that the third position as identified above merely concerned a transitory state, since this blocking state could be maintained for a longer time interval by controlling the valve accordingly. Claim 1 did not require a very stable or permanent third position. It was sufficient for this feature to be realised if a corresponding position existed and was practically achievable, e. g. by controlling the valve so that movement of the piston stopped at an "equilibrium position", as mentioned in the patent specification (paragraph [0060]). In D10, it was possible and reproducible to apply a constant

pressure (adjusted via conduit 47) to piston 33 so that a third position was reached and maintained, which provided a counter-force to compression spring 34 so that ports 24 and 46 were closed while the gap between parts 36 and 31 was still closed.

The contested decision considered port 44 to be a port in the inner housing, so what was discussed during the oral proceedings had been part of the proceedings.

Inventive step starting from D10

The valve known from D10 showed most of the features of claim 1, since claim 1 was not limited to a brake pressure modulator or a specific function of the ports. To arrive at the subject-matter of claim 1, the valve of D10 had to be suitable to assume a third position, i.e. the design of valve seat 36 and valve sleeve 37 had to be such that all three ports were closed. Assuming that D10 did not directly disclose such third position in which the valve member assembly could be moved, or not following the interpretation of a third position as an intermediate position, it was clear and obvious from Fig. 3 and the description that a third position was an improvement to the usability of the valve assembly, so it was obvious for the skilled person to provide the third position. Moreover, the purpose of D10 was to avoid compressed air leaving via drainage port 42. Therefore, it was at least obvious to configure the ways the seals in D10 were conceived so that in the course of a transition from the first to the second position there was a closed state, to avoid wasting compressed air and loss of pressure.

If not obvious already from D10 and its technical understanding, it was obvious from the clear teaching

of D2 to have a build, exhaust and hold position. The design of the valve of D2 was applicable without major modifications. In view of D2, the skilled person would also provide the third position as a working position.

Inventive step starting from D2

D2 disclosed a brake pressure modulator having three positions (build, exhaust, hold states) according to the preamble of granted claim 1, but did not show the characterising portion. When providing an outer housing according to feature M1.4, the remaining features of claim 1 (i.e. mating parts for a fluid tight sealing) resulted inevitably from such design. Inner and outer housings were within the customary practice of the person skilled in the art (having knowledge on basic strategies in designing valve assemblies), so it was a small step to provide the features of the outer housing in relation to the inner housing. An outer housing was already necessary because a valve as described in D2 would not be used without an additional outer housing, which the skilled person would provide in order to have a protective and stabilising structure. The skilled person could also take the distinguishing features from D1 or from D10, proving the common general knowledge. D1 showed that stability and functional security were improved when placing the valve of D2 within an outer housing. D10 disclosed an inner and outer housing and sealings as claimed.

Moreover, the skilled person - knowing the modulator of D2 - wanted to have it in a wide range of applications arising in pneumatic vehicles, and he knew different valves such as the valves of D1 and D10. Providing an outer housing as in D10 was favorable for different designs and vehicle contexts, such that it was obvious

for the skilled person and an easy step to apply the teaching of D10 to D2 (and clear to provide a sealing of ports when providing an inner valve in an outer housing).

VII. The respondent countered the appellant's arguments essentially as follows:

The patent solved, by providing a standardised inner housing and valve member assembly and an outer housing tailored to fit a particular type of braking system, the problem that different braking systems required different configurations of the modulator.

Novelty over D1/D1a

The inner housing according to feature M1.2 defined and enclosed a volume of some sort, since claim 1 required the valve member assembly to be located in the inner housing and three ports to enable flow of fluid in or out of the inner housing (see paragraphs [0023], [0027], [0064] and [0066]), which also suggested that the inner housing enclosed a volume and had walls.

The parts 32 and 34 of D1/D1a were simply two spaced annular parts and did not on their own constitute a housing. If the space between these two parts 32, 34 were to be considered the volume enclosed by the inner housing, the valve body 12 had also to be considered to be part of the inner housing. As such, the valve assembly illustrated in D1/D1a did not include a separate outer housing as required by feature M1.4 (and also clear from paragraphs [0009], [0018], [0072]). The parts 32, 34 assisted in defining chambers within the valve body 12 (i.e. the outer housing according to the

appellant) and did not form a housing which was separate from the outer housing.

Moreover, a gap (according to the appellant the space between the periphery of the sealing ring 32 and the outer periphery of the valve seat formation 34) between two otherwise unconnected parts did not constitute a port, which was provided as an aperture through the valve body 12 (i.e. the outer housing according to the appellant). Advancing an interpretation which made other parts of claim 1 nonsensical could not be a correct interpretation of the claim wording. The "inner housing" defined by the appellant did not include three ports at all, let alone the three ports 14, 16, 18 identified by the appellant. The exhaust port 18 extended from the valve body 12 (equivalent to the outer housing) between the membrane 20a of the first pressure response element 20 and the sealing ring 32 (see col. 5 in D1), and also the inlet port 14 of D1 was provided in the valve body 12. The appellant referred to the same ports 14, 16 in respect of feature M1.5 which was a feature of the outer housing. The same parts of the assembly could not simultaneously be parts of the separate inner and outer housings. If the valve body 12 was the inner housing, then D1/D1a did not disclose an outer housing at all.

Feature M1.3 required for a valve member (according to the appellant a combination of parts 22, 20 in D1) to be located in the inner housing, but D1 stated that the valve element device 20, 22 was mounted within the valve body 12 (i.e. the outer housing). Significantly, the portions of these parts which functioned as a valve member were located outside the space between the sealing ring 32 and the valve seat formation 34.

Late-filed document D10

Late-filed document D10, which was not *prima facie* relevant to the novelty of the patent, should not be admitted into the proceedings. Claim 1 required a three-position valve, whereas the valve assembly of D10 was clearly a two-position valve.

Novelty over D10

When assessing novelty, a direct and unambiguous (not a merely probable) disclosure was required (according to the established case law, see e.g. T 2397/11; see also T 943/93, T 464/94, according to which a hypothetical possibility or probability was not sufficient). Moreover, no special meaning had to be given to the term "position" (see T 1321/04). It was a well-known and normal term used in valve technology, meaning a discrete position in which a valve could be moved into and which could be maintained, whereas the appellant tried to apply a special meaning to a hypothetical position. There were significant doubts regarding not only the existence of a third port, but also the ability of assuming a third position. Moreover, there was no enabling disclosure for the fanciful notion of a third position. A feature was only novelty-destroying if it was reproducible.

The valve 26 of D10 was a 2-way control valve enabling fluid flow in two directions, i.e. a two-position valve (a first position in Fig. 4 biased by the spring 34; a second position effected by a pneumatic signal in the form of an over-pressure through the conduit 47) rather than a three-position valve. It was a hypothetical/transitory third position that was described by the appellant. A "position" of a valve was a well-known

term of art, which indicated specific conditions which a valve could be placed in, which effected the selection of fluid communication routes through the valve. The skilled person would never consider the word "position" in relation to a valve to mean a transient or intermediary condition. Claim 1 of the patent said that the valve member assembly was "**moveable between**" a first position, a second position and a third position, thus clarifying that the positions were selected positions, in which the valve element device rested, to bring about certain conditions necessary for the correct functioning of the device, rather than a temporary condition which may or may not occur. Fig. 5 of D10 and the description (col. 7, line 34 to col. 8, line 35) showed how movement of the valve 26 was controlled. There was no option for this "intermediate" transitory position of valve 26, suggested by the appellant, to be selected or maintained in the same way as the positions of claim 1. Additionally, D10 did not clearly and unambiguously disclose the circumstances suggested by the appellant. The purpose of the third position was to cause a "hold" or "build" position. The implausible notion put forward by the appellant would be an undesirable effect in a switchover valve of the type disclosed in D10 which the skilled person would try to eliminate. Claim 1 clearly set out how the flow of fluid was in three positions, and the contested patent clearly explained the purpose of having three positions (paragraph [0002]: build, hold and exhaust state) being working positions (see paragraphs [0022], [0025], [0048], [0053] to [0063]). All three positions had to exist. Claim 1 was clear and not overly broad.

The appellant failed to present arguments that all three positions were achievable. D10 did not show an equilibrium position when opening one port after

closing another port. The skilled person would not understand from D10 that the valve worked as assumed by the appellant. The whole purpose of the invention was to have a standardised valve having these three states and providing an application specific outer housing, which was not the purpose of D10.

The appellant, in its written submissions, misunderstood what was to be considered as a third port, when referring to the gap between the valve sleeve 37 and chamber 30. The skilled person would never assume this to be a port, due to the fact that D10 showed a port 44 and claim 1 required that ports were provided in the inner housing.

The appellant presented a new argument when referring for the first time during the oral proceedings to port 44 as the third port.

Inventive step starting from D10

This line of argument had never been raised before and should therefore not be allowed for being late filed.

Starting from D10 it was not obvious - without any indication - to modify the diverter valve of D10, which moved fluid from one to another path (i.e. no modulator or three-way valve), to a three-position valve. The appellant had failed to show that the skilled person would try to achieve three positions in D10, or why he would provide a hold position, which was not needed for the purpose of the valve of D10.

Inventive step starting from D2

D2 did not disclose the characterising features of claim 1. The advantage of having an inner housing and

an outer housing was set out in paragraphs [0009] and [0086] of the patent. Nothing in D2 suggested solving the technical problem of simplifying and reducing the cost of manufacturing valve assemblies to be fitted in a variety of configurations of a braking system by providing an outer housing, i.e. making the valve of D2 capable of being suitable for standardisation. No evidence of knowledge had been provided that the skilled person would put an outer housing around an inner housing to provide a valve interchangeable for different applications. As a general rule, common general knowledge did not include patent literature (see T 206/83). D1 and D10 could not be considered to be a series of applications which provided a consistent picture that a particular technical procedure was generally known and belonged to the common general knowledge.

Even if the skilled person were to combine the teachings of D2 and D1/D1a, they would not arrive at the claimed invention, since neither D1/D1a nor D2 disclosed features M1.4 to M1.7.

There was also no motivation to modify D2 in view of D10, since both documents related to different valves (modulator valve in D2, diverter valve in D10). It was a matter of "could/would", and the skilled person would not combine D2 and D10. Starting from D2 the problem was to make the valve standard and insertable in different applications, but the skilled person would not look for diverter valves. Even if he would do so, he would not arrive at the subject-matter of claim 1, since D10 did not show all the features of claim 1.

Reasons for the Decision

1. The subject-matter of granted claim 1 is new with regard to document D1/D1a or D10 (Article 54 (1) EPC).
- 1.1 The Board agrees with the contested decision, that D1/D1a discloses (see e.g. Fig. 1) a valve assembly (10) according to feature M1.1 comprising a housing (12a, 12b) in which is provided a first port (14), a second port (16), and a third port (18), there being located in the housing a valve member assembly (20, 22) which is movable between a first position, a second position, and a third position as specified in features M1.3.1 to M1.3.3. Since D1/D1a fails to show an inner housing and a separate outer housing enclosing at least part of the inner housing, features M1.4 to M1.7 are not shown and also features M1.2 and M1.3 to the extent that they refer to an inner housing.
- 1.1.1 The Board cannot see that an inner housing formed solely by the two annular parts 32, 34 in D1/D1a shows all the three ports as required by feature M1.2. When looking at Fig. 1 of D1/D1a with the eyes of the person skilled in the art and only considering the *sealing ring 32* and the *valve seat formation 34*, these two parts are simply two spaced annular parts which do not by themselves constitute a housing as specified in claim 1. Admittedly, the term "housing" is not limited to e.g. a fully enclosing or one-piece housing and has to be construed broadly. However, in the context of claim 1 the term "housing" requires ports for the inner and the outer housing, i.e. it specifies a housing to be a structural part having wall portions in which apertures or ports are provided. Even following the appellant that the annular apertures in parts 32, 34

should be considered as ports, D1/D1a fails to show at least a third port formed in a wall portion of the housing, since a gap between the two unconnected parts 32, 34 does not constitute a port. Contrary to the appellant's assertion, the inner housing and the outer housing according to claim 1 do not only specify functional characteristics of e.g. containing, covering or enclosing parts, and the two housings do not merely require two separate volumes of the valve assembly fulfilling such functional characteristics.

- 1.1.2 Moreover, feature M1.4 defines a relation between both housings, namely that *"the valve assembly further comprises an outer housing which is separate from and encloses at least part of the inner housing"*. A valve assembly in which an outer housing encloses part of an inner housing specifies the assembled state of the valve assembly. It follows therefrom that also the requirement of an outer housing which is separate from the inner housing specifies structural parts in the assembled state, i.e. not only when disassembling the valve assembly. In view of this additional definition given in claim 1 itself, the Board does not agree with the appellant's argument that both housings need not to be completely separate in the assembled state and that a wall of the outer housing could also enclose a volume defined by the inner housing. The valve body 12 shown in D1/D1a in Fig. 1, which comprises first and second cylindrical portions 12a and 12b, might be considered to represent an outer housing, as acknowledged by the appellant. However, when relying on a part of this outer housing (namely a portion of the side wall of the valve body 12) to define a structure which encloses a volume and might be considered to form the inner housing, the outer housing is not separate from the inner housing as required by feature M1.4 of claim 1.

- 1.1.3 Thus, the Board concludes that novelty of the subject-matter of claim 1 over D1/D1a has to be acknowledged.
- 1.2 The Board concurs with the contested decision (see point 4 of the grounds) that document D10 discloses all the features of granted claim 1 except feature M1.3.3 which specifies a third position. In particular, Fig. 3 of D10 shows an outer housing (3) having a first port (28) and a second port (1), and the outer housing is separate from an inner housing (30) in which is provided a first port (42), a second port (46) and a third port (44). A valve member assembly (valve body 31, valve seat 36, valve sleeve 37, O-ring 39) is located in the inner housing (30) and movable between a first position (when the rod 33 is moved to the right in Fig. 3) and a second position (shown in Fig. 3) as specified in claim 1. D10 also shows first and second mating parts according to features M1.6 and M1.7 (see Fig. 3: sealing parts between inner and outer housing).
- 1.2.1 The appellant argued that a third position according to feature M1.3.3 was inevitably reached when moving the valve member assembly between the second position as shown in Fig. 3 (in which compressed air is delivered from port 25 to drying tower 2) and the first position when moving piston 33 to the right (compressed air is delivered from port 25 to drying tower 1), since no stable or permanent final position was required for the third position. Admittedly, the positions according to claim 1 are defined by ports being closed or connected to each other, without limiting these positions to respective abutments or a specific control. However, claim 1 also requires (see feature M1.3.1) a valve assembly which is **"movable between"** a first position, a second position, and a third position. If not clear

already from the term "position" (of the valve member assembly) itself, this clarifies that a "position" according to claim 1 does not only mean a merely hypothetical or transitory position, but a discrete or selected position in which the valve member assembly can be moved into and rests, and which can be maintained.

D10 does not disclose a selected position in which at least two of the three ports are closed, as required by feature M1.3.1. Only two complementary positions are described in D10, namely the rest position as shown in Fig. 3 in which the valve body 31 is held with an annular ridge in sealing contact with the left valve seat 36, and the opposite situation in which the valve body is in its right end position (see col. 5, l. 33 ff.). Moreover, D10 explicitly refers to the valve assembly as being a 2-way valve which is controlled to switch-over between its two positions (see e.g. col. 1, lines 25-28). According to the Board's understanding set out above, a hypothetical transitory position as argued by the appellant, i.e. while pushing the valve body 31 to the right side in Fig. 3 of D10, does not represent a "third position" falling under the wording of claim 1.

- 1.2.2 The appellant also argued that the valve of D10 fell under the wording of claim 1 because it was possible (via appropriate control) to reach - not only temporary, but for longer time intervals - a third position by applying a constant pressure (adjusted via conduit 47) to the piston 33 which provided a counterforce to compression spring 34 so that ports 24 and 46 were closed while the gap between parts 36 and 31 was still closed. On the one hand, such an alleged "equilibrium position" is not described in D10. On the

other hand, even on the assumption that an equilibrium position could be established in D10 by applying a constant pressure via conduit 47 to piston 33 such that the O-ring 39 of valve sleeve 37 just comes into contact with the guiding wall 38, thereby closing the connection between ports 42 and 46, it is not directly and unambiguously derivable from D10 that the valve body 31 would still have contact with valve seat 36, i.e. it cannot be excluded that a connection is already established between ports 44 and 46 before closing the connection between ports 42 and 46. Thus, a position would be reached in which not at least two ports are closed, contrary to what is required by feature 1.3.3. The circumstances suggested by the appellant in this respect, namely when arguing how a transitory third position would be reached, are not convincing.

According to the established case law of the Boards of Appeal, the schematic drawings in D10 alone cannot serve as a basis to infer (from relative dimensions) that such a position exists in which at least two ports are closed, as long as no supporting indications are given in the description or claims (see e.g. T 748/91 in this regard, point 2.1.1 of the Reasons). The mere allegation that the technical purpose of D10 was to avoid all three ports to be open at the same time, or that this was the only possibility how the device in D10 worked, is not supported by the disclosure of D10 and therefore not sufficient to prove that a third position according to feature M1.3.3 actually can exist in D10. Even following the appellant's argument that, due to a relaxation of the elastic valve seat 36 in D10, the valve sleeve 37 is moved rightwards in Fig. 3 in order to close the exhaust port 42 leading to atmosphere, the schematic drawing according to Fig. 3 of D10 does not allow to exclude that the distance the

valve sleeve 37 has to travel from the second position shown in Fig. 3 to the right (in order to close at least port 42) is shorter than the distance the elastic valve seat 36 needs to travel before the annular ridge of the valve body 31 is lifted off from valve seat 36. Thus, D10 does not disclose unambiguously that the exhaust port 42 is closed first before compressed air is allowed to flow from port 44 to port 46, as argued by the appellant.

1.2.3 The Board therefore comes to the conclusion that D10 fails to disclose a third position according to feature M1.3.3, since D10 neither shows a discrete selected position in which at least two ports are closed as required according to the wording of claim 1, nor directly and unambiguously that the valve assembly of D10 is suitable for being controlled to achieve a position in which at least two ports are closed.

1.2.4 In view of the above conclusion in favour of the respondent, the question whether the appellant by referring to port 44 as the third port (and not the gap between the valve sleeve 37 and chamber 30 in D10, as in its written submissions) put forward a new argument is irrelevant and can be left unanswered.

2. The subject-matter of claim 1 involves an inventive step over D10 as the closest prior art (Art. 56 EPC).

2.1 As set out above with regard to novelty, no clear indication is derivable from D10 which could support that a position (as an intermediate/temporary position, or as a position achievable by appropriate control) exists or could be reached in which at least two ports were closed simultaneously.

Therefore, the appellant's argument that it was obvious from Fig. 3 of D10 and the description that a third position was an improvement to the usability of the valve assembly of D10 and thus obvious for the skilled cannot be followed. The whole teaching of D10 is about a 2-way diverter valve having two discrete positions, i.e. a switch-over valve, so there is no incentive for the skilled person starting from D10 to achieve three positions at all. The Board cannot see that D10 is an appropriate starting document in order to achieve three positions of the valve assembly as required by claim 1 according to the Board's understanding (see above).

There is no indication in D10 that wasting of air via exhaust port 42 is considered to be a problem and should be avoided, as argued by the appellant. Thus, the skilled person is not prompted to think of configuring the seals in D10 in a way that a position exists in which all three ports are closed and that possibly could be reached by appropriate control of the pressure in conduit 47. Moreover, as argued already in respect of novelty, a transitory position is not considered to be a third position required by claim 1.

2.2 Admittedly, a three-position valve is known from D2 which provides for a hold position in which three ports are closed. However, the Board cannot follow the appellant's argument that the design of the brake modulator valve of D2 was applicable without major modifications to the valve of D10 which accomplishes the switch-over between two drying towers. The appellant has failed to demonstrate how the valve of D10, which is used in a different application and already shows a totally different design of the valve

member assembly than D2, would obviously be modified by the person skilled in the art in view of D2.

2.3 Since the appellant's inventive step attack starting from D10 did not succeed, the question raised by the respondent that this line of argument was late filed and should not be admitted can also be left unanswered.

3. The subject-matter of claim 1 involves an inventive step over D2 as the closest prior art (Art. 56 EPC).

3.1 Undisputedly, document D2 shows a (single) housing in which is located a valve member assembly according to the features of the preamble of claim 1. However, the Board cannot see that the skilled person would provide an outer housing which is separate from and encloses at least part of the inner housing, as required by feature M1.4. The mere knowledge of inner and outer housings does not yet lead the skilled person to provide an additional outer housing for the valve assembly known from D2. There is no indication in D2 that the housing known from D2 would need any additional protective or stabilising structure so that the skilled person would be prompted to provide an additional outer housing, as argued by the appellant.

The problem solved by this distinguishing feature is to make the valve of D2 suitable for standardisation, to be fitted in a variety of configurations of a braking system, as set out in the contested patent. Since nothing in D2 suggests solving this problem, the skilled person is also not prompted by D2 to provide an interchangeable valve to be used for different applications, i.e. to provide the solution of claim 1. The Board concurs with the respondent that a series of

applications was needed to prove that a particular technical procedure was generally known (see T 412/09)), so documents D1 and D10 cannot prove the common general knowledge in this respect, simply because D1/D1a already fails to show an outer housing which is separate from an inner housing as set out already further above.

- 3.2 As D1/D1a does not disclose an outer housing separate from an inner housing, a combination of D2 with D1/D1a cannot lead to the subject-matter of claim 1.
- 3.3 There is also no motivation for the skilled person to modify the brake modulator valve of D2 - in view of the problem posed - knowing the diverter valve of D10. Providing an outer housing might be favorable for different designs and the implementation in different vehicles, as argued by the appellant. However, the outer housing as disclosed in D10 is not meant for such purposes. Therefore, the Board cannot see that the skilled person is prompted by D10 to apply its teaching to D2 and would foresee an additional outer housing. Moreover, as already explained above in respect of a combination of D10 with D2, the design of the valve member assembly in both documents is completely different so that it is not an obvious and easy step to apply the teaching of D10 to D2.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



A. Vottner

H. Geuss

Decision electronically authenticated