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**Datasheet for the decision  
of 26 November 2013**

**Case Number:** T 2599/11 - 3.2.05

**Application Number:** 03762686.8

**Publication Number:** 1520130

**IPC:** F16K7/12

**Language of the proceedings:** EN

**Title of invention:**

Diaphragm valve and open/close element for said valve

**Patent Proprietor:**

Alberto Lodolo

**Opponent:**

OOVAL Valves Ltd.

**Headword:**

-

**Relevant legal provisions:**

RPBA Art. 12(4), 13  
EPC Art. 110, 123(2)  
EPC 1973 Art. 56

**Keyword:**

Admissibility of the appeal - yes  
Admittance of a request in appeal proceedings that was  
withdrawn in opposition proceedings; reinstating broader  
claims in appeal than the claims defended before the  
opposition division - yes (see reasons 2)  
Inventive step - yes

**Decisions cited:**

G 0009/91, G 0010/91, T 1705/07, T 0361/08

**Catchword:**

-



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Case Number: T 2599/11 - 3.2.05

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.05**  
**of 26 November 2013**

**Appellant:**  
(Patent Proprietor)

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**Representative:**

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**Respondent:**  
(Opponent)

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**Decision under appeal:**

**Decision of the opposition division of the  
European Patent Office posted on 17 November  
2011 revoking European patent No. 1520130  
pursuant to Article 101(3)(b) EPC.**

**Composition of the Board:**

**Chairman:** M. Poock  
**Members:** H. M. Schram  
M. J. Vogel

## Summary of Facts and Submissions

I. The appellant (patent proprietor) lodged on 19 December 2011 an appeal against the decision of the opposition division, posted on 17 November 2011, by which European patent No. 1 520 130 was revoked. The statement of grounds was filed on 27 March 2012.

The opposition division held that the subject-matter of claim 1 of the only request did not involve an inventive step (Articles 100(a) and 56 EPC 1973).

II. Oral proceedings were held before the board of appeal on 26 November 2013.

III. The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of auxiliary request Ib, filed with the letter of 18 June 2013, whereby the word "floor" in claim 1 is replaced by the word "flow" and the wording "diaphragm (5) having" is replaced by the wording "diaphragm (5) has"; and the description, col. 1 - 10, filed with the letter of 18 June 2013, col. 11, filed during the oral proceedings, and the drawings, fig. 1 - 21, as granted.

The respondent (opponent) requested that the appeal be rejected as inadmissible, or that the appeal be dismissed.

IV. In the course of the opposition and appeal proceedings the appellant filed different requests which can be summarized as follows:

The appellant's final and sole request made during the oral proceedings before the board of appeal is based on auxiliary request Ib filed on 18 June 2013 with two

minor linguistic amendments (see point III above). Claims 1 to 30 of auxiliary request Ib filed on 18 June 2013 correspond in substance to claims 1 to 20, 23 to 31, and 40 of the first auxiliary request filed with the statement of the grounds of appeal. Said claims of this first auxiliary request correspond in substance to claims 1 to 20, 23 to 31, and 39 of the request filed on 25 June 2010 in the opposition proceedings.

Claim 1 of the sole request in appeal proceedings therefore corresponds in substance to claim 1 of the request filed on 25 June 2010, on the basis of which the appellant defended its patent at the beginning of the oral proceedings before the opposition division (point 1.3 of the minutes of said oral proceedings). Since the opposition division held that the subject-matter of claim 1 of that request (denoted as request A in the minutes), which is a combination of claims 1 and 23 as granted, did not involve an inventive step, the patent proprietor was allowed to formulate new requests (see points 8 and 11 of the minutes) and request A was successively replaced by requests B, C, D and at the end by request E, which was the final and solely remaining request of the appellant in the opposition proceedings. Finally the opposition division held that the subject-matter of claim 1 of request E, which is a combination of claims 1, 23 and 26 as granted, did not involve an inventive step (see point I above), and took the contested decision to revoke the patent.

V. The documents referred to in the appeal proceedings included the following:

D1 US 4,214,604;

D2 US 2,880,961;

D3 GB-A 831,273;

D4 GB-A 321,892;

D8 US 5,632,465.

VI. Claim 1 of the sole request of the appellant reads as follows:

"1. A diaphragm valve (5), which comprises a valve body (1), consisting of an inlet sleeve (3) and an outlet sleeve (4), which have a curved shape and equal circular sections, and converge one into the other until they open into a fluid flow chamber, which contains the valve seat (106), substantially consisting of the flattened and slightly concave surface of the line (6) of intersection of the two sleeves (3, 4) on the opposed sides thereof, which chamber is divided into two parts with respect to a plane parallel to the plane tangent to the lower apex of the surface of the valve seat (106), one part whereof is integrated in the valve body (1), and is peripherally delimited by a clamping flange (101), and the other part consists of a bonnet (2) to be sealably secured onto said valve body (1), which bonnet has a coincident peripheral clamping flange (102), an open/close element consisting of an elastic diaphragm (5) being provided, made of rubber or the like, which has a peripheral sealing flange (105) to be clamped between the peripheral flanges (101, 102) of said two parts of the chamber, said flange (105) being connected to a central dome-shaped convex part (305) whose convexity is oriented, in an unstressed position, toward the valve seat (106), and means being provided, on the concave side of the diaphragm (5), facing toward the bonnet, to compress the diaphragm

against the surface of the valve seat (106) in such a manner that, when the diaphragm (5) is compressed against said surface (106), any fluid flow from the inlet sleeve (3) to the outlet sleeve (4) is prevented whereas, when the diaphragm (5) is lifted and deformed toward the bonnet (2), free fluid flow is allowed, the cross sections of the inlet sleeve (3) and the outlet sleeve (4), at the ends opening into the flow chamber, and at the valve seat (106), are flattened in the direction of flow, i.e. along the axis that joins the centers of the two inlet and outlet ends of the sleeves, opening into the flow chamber, and are elongated in a direction transverse to the direction of flow, particularly having a substantially elliptic shape, or anyway inscribable in a substantially rectangular peripheral clamping flange (101), and with the longer side disposed in a direction transverse to the direction of flow, characterized in that the peripheral flange (105) of the diaphragm (5) has a corresponding rectangular shape, inscribing the central convex portion (305) of the diaphragm (5), which consists of an element having the shape of a sector of an ellipsoid or similar, whose section plane is disposed in such a manner as to correspond with the flow chamber port, wherein the diaphragm valve is a hydraulically operated valve, means (203, 302) being provided for supplying a pressurized fluid, preferably the same fluid as supplied to the inlet sleeve (3) of the valve, between the bonnet part (2) and the dome (305) of the diaphragm (5), for the purpose of compressing the dome (305) against the valve seat (106) to close the valve, and means for discharging said pressurized fluid to open the valve."

VII. The arguments of the appellant, in writing and during the oral proceedings, can be summarized as follows:

The invention was directed to a hydraulically operated diaphragm valve. A problem of such valves was that the pressure in the pressure chamber could cause the diaphragm to bow out, see column 1, lines 24 to 30, of the patent in suit. The object of the invention was to provide a hydraulically operated diaphragm valve, whose diaphragm was prevented from bowing out. This problem was solved by the subject-matter of claim 1, in particular by flattening and elongating the cross-sections of the inlet sleeve and the outlet sleeve in the direction of flow and in the cross-direction of the flow, respectively, such that the flow chamber was peripherally delimited by a substantially rectangular clamping flange and the peripheral flange of the diaphragm had a corresponding rectangular shape, and by providing a diaphragm having approximately the shape of a sector of an ellipsoid.

Document D8 represented the closest prior art. This document disclosed a hydraulically operated diaphragm valve having a circular diaphragm. Document D3 disclosed a diaphragm valve manually operated by a hand wheel, see page 3, line 73 and Figure 6. Since the ballooning problem did not occur with manually operated diaphragm valves, the person skilled in the art would not look for a solution in document D3. The subject-matter of claim 1 of the sole request therefore involved an inventive step.

VIII. The arguments of the respondent, in writing and during the oral proceedings, can be summarized as follows:

The subject of the decision under appeal concerned the request of the appellant to maintain the patent in suit in amended form on the basis of claim 1 of said



request, which was substantially a combination of claims 1, 23 and 26 as granted and corresponded to the "plastic valve" embodiment shown in figures 14 to 20 of the patent in suit, which had no rectangular diaphragm flange. For that reason the term "rectangular" had been deleted from the feature "the peripheral flange (105) of the diaphragm (5) has a corresponding rectangular shape", cf claim 1 as granted.

The function of appeal proceedings was to give a judicial decision upon the correctness of a separate earlier decision taken by a department of the EPO (cf Case Law of the Boards of Appeal of the EPO, 5th edition 2006, VII.D.1). In the present case the appellant did not make a case why the decision at issue should be set aside and why the request considered therein should be allowed. Instead, the appellant filed with the statement of grounds of appeal inter alia a first auxiliary request, which corresponded to the set of claims filed during the opposition proceedings on 25 June 2010, which was withdrawn during the oral proceedings before the opposition division on 4 October 2010.

Reference was made in this respect to the decision T 361/08 of 3 December 2009, wherein it was stated: "According to Article 12(4) RPBA, the board has the discretionary power to hold inadmissible requests which could have been presented or were not admitted in the first instance proceedings. In the board's view this applies all the more to requests that were filed and subsequently withdrawn in the first instance proceedings, since such a course of events clearly shows that these requests could have been presented in the first instance proceedings", see point 13 of the Reasons. It followed from the above that the requests

of the appellant were inadmissible and that the appeal was to be rejected as inadmissible.

The alleged improvements of the invention, such as providing a diaphragm valve having a smaller size, lower weight and less space requirements than valves known from the prior art, applied to both mechanically and hydraulically operated diaphragm valves. This followed from eg column 8, lines 6 to 10 of the patent as granted, where it was stated that "the guiding principle of this invention also advantageously applies to mechanically operated valves using an opening/closing wheel" (cf also column 11, line 45). The specific type of actuation was just a matter of design choice, see eg document D4, page 1, lines 101 to 106, wherein it was stated that in a modified form of construction of the mechanically operated valve, the screw spindle and the backing member were dispensed with and that the valve was controlled instead by the action of fluid action (cf also page 4, lines 88 to 98). The person skilled in the art, starting from the valve having a circular diaphragm known from document D8, would have readily identified the problem, that such valves had large sizes and considerable space requirements, especially in the axial direction. This problem was effectively solved by document D3. This document disclosed a mechanically operated valve having a reduced size in the flow direction. It followed that the subject-matter of claim 1 of the sole request did not involve an inventive step.

## **Reasons for the Decision**

1. *Admissibility of the appeal, Article 110 and Rule 101(1) EPC*

- 1.1 With the statement setting out the grounds of appeal the appellant had filed a main request and first and second auxiliary requests, all broader in scope than the claims defended by the appellant before the opposition division.

The respondent has argued that these requests were inadmissible, since they were not subject of the decision under appeal, and that therefore the appeal was inadmissible.

However, whether the appeal is admissible or not, does not depend on the admissibility of these requests, but on the requirements Rule 101(1) EPC refers to.

- 1.2 Rule 101(1) EPC ("Rejection of the appeal as inadmissible") stipulates that if the appeal does not comply with Articles 106 to 108, Rule 97 or Rule 99, paragraph 1(b) or (c) or paragraph 2 EPC, the board of appeal shall reject it as inadmissible, unless any deficiency has been remedied before the relevant period under Article 108 EPC has expired.

The appeal concerns a decision of the opposition division (cf Article 106(1) EPC), by which the patent in suit was revoked. The appellant was therefore adversely affected by said decision, cf Article 107 EPC 1973. The appeal was filed within the time limit specified in Article 108 EPC, first and second sentence, and the time limit for filing the statement

of grounds appeal specified in Article 108 EPC, third sentence, was also met.

The notice of appeal contained the name of the appellant (cf Rule 99(1)(a) EPC), an indication of the decision impugned (cf Rule 99(1)(b) EPC), and a request defining the subject of the appeal (cf Rule 99(1)(c) EPC). Moreover, in the statement setting out the grounds of appeal the reasons for setting aside the decision impugned and the facts and evidence on which the appeal is based are indicated (cf Rule 99(2) EPC), see pages 1 to 26 of said statement. In particular, the appellant stated on page 17, last paragraph, that the decision under appeal is wrong when considering a document relating to a mechanical valve like document D3 for assessment of inventive step.

It follows from the above that the appeal complies with the relevant legal provisions listed in Rule 101(1) EPC and is therefore admissible.

2. *Admittance of the sole request of the appellant*

2.1 The sole request was filed after the statement of grounds of appeal. Therefore it has to be decided whether this request can be admitted into the proceedings according to the Rules of Procedure of the Boards of Appeal (RPBA).

2.2 In principle the statement of grounds of appeal shall contain a party's complete case which has to be taken into consideration by the board pursuant to Article 12(2) RPBA, if it does not hold facts, evidence or requests inadmissible which could have been presented or were not admitted in the first instance proceedings (Article 12(4) RPBA). Nevertheless, this does not mean

that amendments to a party's case are excluded from the appeal proceedings. Rather they are allowable under the requirements of Article 13(1) RPBA, namely under the discretion to be exercised by the board with respect to the complexity of new submissions, the current state of the proceedings and the need for procedural economy. Moreover Article 13(3) RPBA rules that amendments sought to be made after oral proceedings have been arranged shall not be admitted if they raise issues which the board or the other parties cannot reasonably be expected to deal with without adjournment of the oral proceedings.

2.2.1 The appellant's case was set out in the statement of grounds of appeal dated 27 March 2012 in which the patent was defended inter alia with a first auxiliary request. After having been filed its case, the appellant amended its first auxiliary request insofar as in claim 1 the word "flow" was replaced by "floor", the expression "characterized in that" was moved and claims 21, 22 and 32 to 39 were deleted (cf claims 1 to 30 of auxiliary request Ib filed on 18 June 2013). With the amendments mentioned in point III above, this request finally became the sole request in the appeal proceedings.

2.2.2 Exercising its discretion in line with the limits set out above the board considers that these amendments are marginal as they can be understood effortlessly and legally assessed. Furthermore there is no risk of misunderstanding of the amendments by the respondent and the board as well and moreover the amendments do not affect the substance of the claimed matter. Therefore it can reasonably be expected that all participants of the procedure are in a position to deal

with the amendments easily and without adjournment of the oral proceedings (Article 13(3) RPBA).

2.3 The admittance of the sole request into the appeal proceedings under Article 13(3) RPBA however, does not per se mean that there are no further hurdles to overcome with respect to its admissibility. Since pursuant to Article 12(4) RPBA it remains to decide whether this request has to be considered as inadmissible for the reason that it could have been presented or was not admitted in the first instance proceedings before the opposition division.

2.3.1 The board has no doubt that the sole request could have been filed already before the opposition division, because the arguments that were discussed in the appeal proceedings regarding inventive step were already raised with the respondent's notice of opposition. Apart from this the sole request's claims correspond in substance to claims 1 to 20, 23 to 31 and 39 of request A at stake in opposition proceedings, which was filed on 25 June 2010, but later withdrawn in the oral proceedings before the opposition division and subsequently substituted by requests B to E, on which the opposition division delivered at the end its decision. Nevertheless, the board exerted its discretion to admit the sole request of the appellant to the procedure for the following reasons:

2.3.2 The purpose of the opposition appeal proceedings is mainly to give the losing party the possibility of challenging the decision of the opposition division on its merits, cf decision G 9/91 (OJ EPO 1993, 408) and opinion G 10/91 (OJ EPO 1993, 420), point 18 of the reasons. This implies that appeal proceedings are not about bringing an entirely fresh case. Rather, the

decision of the board of appeal will in principle be taken on the basis of the subject of the dispute in the first instance proceedings. The appeal proceedings are thus largely determined by the factual and legal scope of the preceding opposition proceedings which in principle confines the parties range to amend the subject of dispute in second instance proceedings (T 1705/07, point 8.4 of the reasons).

2.3.3 In this regard the respondent has submitted that the appellant was not allowed to file requests that were broader in scope than the request on which the decision was based, since the function of appeal proceedings is to give a judicial decision upon the correctness of the decision taken by the opposition division.

2.3.4 Contrary to the submissions of the respondent the present board is of the opinion that the purpose of the appeal proceedings as defined in G 9/91 and G 10/91 does not prevent the appellant from submissions and requests which after revocation of its patent by the opposition division revert to a more broadly worded version in appeal proceedings than the claims defended in opposition proceedings, if these broader claims do not amount to a completely fresh case.

2.4 Thus, with respect to Article 12(4) RPBA the board had to consider whether the non-filing of the sole request or the withdrawal of the similar request A in the opposition procedure prevented the opposition division from giving a reasoned decision on the critical issues, thereby compelling the board either to give a first ruling on these issues or to remit the case to the opposition division, cf Case Law of the Boards of Appeal of the EPO, 7th edition 2013, IV.E.4.3.2 c).

2.4.1 In this context the respondent referring to decision T 361/08 has argued that the first auxiliary request filed with the statement of grounds of appeal was to be rejected as inadmissible. In this decision (see point 13 of the reasons, last paragraph) the board stated that the fact alone that the main request in question was submitted and subsequently withdrawn in the first instance proceedings was a sufficient reason not to admit this request into appeal proceedings. The present board, however, does not subscribe to this general statement but it endorses the more restricted statement in the third paragraph of point 14, that it is not the patentee's right to revert to granted claims if these claims did not form a basis for the decision under appeal because the request comprising these claims was withdrawn in the first instance proceedings.

2.4.2 In the present case, claim 1 of the sole request did indeed form a basis for the opposition division's decision. As it is clear from the facts and submissions point IV, the opposition division decided on inventive step of auxiliary request E and revoked the patent after the broader requests A, filed on 25 June 2010, and B, C and D had successively been withdrawn in the course of the oral proceedings. Claim 1 of auxiliary request E is a combination of granted claims 1, 23 and 26, whereas claim 1 of the sole request in appeal proceedings is a combination of granted claims 1 and 23. Hence, it is broader than claim 1 on which the opposition division decided. However, this does not exclude the appellant from defending its patent on the basis of the sole request.

2.4.3 Since all features of claim 1 of the sole request are present in claim 1 of request E which formed the basis of the impugned decision and on which the opposition



division came to a negative finding of its subject-matter regarding inventive step, the opposition division has also expressed itself - at least implicitly - on the subject-matter present in the sole request. Therefore the board is of the opinion that the present case is neither a fresh case in the sense of G 9/91 and G 10/91 nor a case which Article 12(4) RPBA intends to avoid by granting the board the discretionary power not to admit requests which could have been presented in the first instance proceedings. Finally it should be noted that the critical issues in the opposition and the appeal proceedings were identical in so far as the question had to be answered whether the claimed subject-matter involves an inventive step in view of documents D8 and D3 or not.

2.4.4 In conclusion it is summarized that the sole request of the appellant does not bring an entirely fresh case and the decision of the board can be taken on the basis of the subject of dispute in the first instance proceedings. For these reasons the sole request was admitted into the proceedings.

3. *Allowability of the amendments*

Claim 1 of the sole request of the appellant differs from claim 1 as granted in that the word "floor" in claim 1 has been replaced by the word "flow", and in that the feature "wherein the diaphragm valve is a hydraulically operated valve, means (203, 302) being provided for supplying a pressurized fluid, preferably the same fluid as supplied to the inlet sleeve (3) of the valve, between the bonnet part (2) and the dome (305) of the diaphragm (5), for the purpose of compressing the dome (305) against the valve seat (106) to close the valve, and means for discharging said

pressurized fluid to open the valve" has been added at the end of the claim.

These amendments are based on claims 1 and 23 of the application as filed (published version). Since claim 1 of the sole request has been limited to a hydraulically operated valve, the description has been amended accordingly.

Consequently, the sole request is formally allowable, Article 123 EPC.

4. *Ground for opposition under Article 100(a) EPC 1973 in combination with Article 56 EPC 1973*
- 4.1 Claim 1 of the sole request relates to a hydraulically operated diaphragm valve. Hydraulically operated valves known from the prior art have the drawback that the pressure in the pressure chamber between the bonnet part and the diaphragm may cause the diaphragm to bow out, in particular in the downstream portion where no counterbalancing pressure is provided, a phenomenon known as the ballooning effect, see paragraph [0004], in particular column 1, lines 24 to 30, of the patent in suit.
- 4.2 The technical problem objectively solved by the subject-matter of claim 1 of the sole request may be defined as providing, by using simple and inexpensive means, a hydraulically operated diaphragm valve, whose diaphragm is not subjected to any abnormal deformation and consequent early wear and/or malfunctioning during use, cf paragraph [0005] of the patent in suit.
- 4.3 Document D8, which represents the closest state of the art, discloses a hydraulically operated diaphragm valve

having a circular diaphragm. There is no hint or suggestion in this document D8 to the person skilled in the art to replace the circular by an elliptical diaphragm "with the longer side disposed in a direction transverse to the direction of flow", as required by claim 1 of the sole request.

- 4.4 Document D3 discloses a diaphragm valve manually operated by a hand wheel, see page 3, line 73 and Figure 6. The diaphragm has a corresponding rectangular shape, see page 3, lines 107 to 111 and Figure 7. At the right hand side of Figure 13, just below the reference numeral 35, a lock screw is shown, which seems to close off an opening in the bonnet 27 giving access to the chamber within hollow threaded sleeve. There is no disclosure in the passage on page 4, lines 76 to 99 describing Figure 13 that said opening can be used to operate the valve hydraulically, as argued by the respondent.

Documents D1 and D2 also disclose diaphragm valves manually operated by a hand wheel. The valves shown in figure 5 of document D1 and figures 1 and 2 of document D2 are flattened in the axial direction.

Since the ballooning problem does not occur with manually operated diaphragm valves, the person skilled in the art has no motivation to look for a solution for that problem in documents D1 to D3.

- 4.5 Document D4 describes a diaphragm valve, whereby diaphragm 6 is manually actuated by a hand wheel 18 connected to a screw spindle 17 and a backing member 13 engaging the diaphragm 6, see Figures 1 and 3. A modified form of construction is described whereby the screw spindle and backing member for actuating the

diaphragm are dispensed with and the valve is controlled by fluid pressure, cf page 1, line 101 to page 2, line 24, and page 4, lines 88 to 104. However, document D4 does not disclose in- and outlet sleeves having cross sections that are flattened in the direction of flow and elongated in cross direction.

- 4.6 In the judgment of the Board, it was thus not obvious to the person skilled in the art, starting from document D8, and taking into account documents D1 to D4, to arrive at the subject-matter of claim 1 of the sole request.

Its subject-matter therefore involves an inventive step.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to maintain the patent on the basis of the following documents:
  - claims 1 - 30, filed as auxiliary request Ib with the letter of 18 June 2013, whereby the word "floor" in claim 1 is replaced by the word "flow" and the wording "diaphragm (5) having" is replaced by the wording "diaphragm (5) has";
  - description, col. 1 to 10, filed with the letter of 18 June 2013, col. 11, filed during the oral proceedings;
  - drawings, fig. 1 to 21, p. 20 to 36 of the patent as granted.

The Registrar:

The Chairman:



D. Meyfarth

M. Poock

Decision electronically authenticated