

From the INTERNATIONAL SEARCHING AUTHORITY

To:

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference 366408		Date of mailing (day/month/year) 13 September 2017
International application No. PCT/EP2017/067536		International filing date (day/month/year) 12 July 2017
International Patent Classification (IPC) or both national classification and IPC F04C 2/18(2006.01)i; F04C 15/00(2006.01)n		Priority date (day/month/year) 26 July 2016
Applicant ROBERT BOSCH GMBH		

FOR FURTHER ACTION
See paragraph 2 below

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/	Date of completion of this opinion	Authorized officer
--------------------------------------	------------------------------------	--------------------

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/EP2017/067536

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - the international application in the language in which it was filed.
 - a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a)).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - a. forming part of the international application as filed:
 - in the form of an Annex C/ST.25 text file.
 - on paper or in the form of an image file.
 - b. furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. furnished subsequent to the international filing date for the purposes of international search only:
 - in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).
 - on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).
4. In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/EP2017/067536**Box No. VII Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

See Supplemental Box

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/EP2017/067536

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Box V**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

- [1] Reference is made to the following documents:

D1	US 2016/123390 A1 (KOVACH BRANDON T [US] ET AL) 5 May 2016 (2016-05-05)
D2	DE 10 2013 202917 A1 (BOSCH GMBH ROBERT [DE]) 28 August 2014 (2014-08-28)
D3	JP H08 121350 A (SHIMADZU CORP) 14 May 1996 (1996-05-14)
D4	WO 2015/040985 A1 (DAIKIN IND LTD) 26 March 2015 (2015-03-26); & EP 3 048 303 A1 (DAIKIN IND LTD [JP]) 27 July 2016 (2016-07-27)
D5	EP 2 657 525 A2 (BOSCH GMBH ROBERT [DE]) 30 October 2013 (2013-10-30)

- [2] The present application does not meet the requirements of PCT Article 33(2) because the subject matter of claim 1 is not novel.

D1 discloses:

an external gear pump (figures 1 and 2) having a pump housing (12), wherein an inlet (14), an outlet (16) and a working chamber (figure 1) are configured in the pump housing (12), wherein a first gearwheel (18) which is arranged on a first shaft (32) and a second gearwheel (20) which is arranged on a second shaft (33) are arranged so as to mesh with one another in the working chamber, wherein the first shaft (32) is mounted in a first bearing bore (bearing bore in the bearing body 35) and in a second bearing bore (bearing bore in the bearing body 34), wherein the second shaft (33) is mounted in a third bearing bore (bearing bore in the bearing body 37) and in a fourth bearing bore (bearing bore in the bearing body 36), wherein working medium can be delivered from the inlet (14) to the outlet (16) during operation of the external gear pump (paragraph [0027]), wherein the working medium has a first pressure level (11) in the inlet (14) and a higher second pressure level (11h) in the outlet (16), characterized in that the four bearing bores are connected hydraulically to the second pressure level (paragraph [0035], 140, 240, 340, 440, paragraph [0076]).

- [3] The present application does not meet the requirements of PCT Article 33(2) because the subject matter of claim 1 is not novel.

D3 likewise discloses all the features of claim 1, see the abstract and the figures, in particular reference signs M1, M2.

- [4] The present application does not meet the requirements of PCT Article 33(2) because the subject matter of claim 1 is not novel.

Like D1 and D3, D4 also discloses all the features of claim 1, see paragraphs [0002] - [0007] and figures 6-8 in EP3048303.

- [5] Dependent claims 2-10 do not contain any features which, in combination with the features of any claim to which they refer back, meet the requirements of the PCT in respect of novelty and/or inventive step.

- [6] Claim 2: the subject matter of claim 2 is disclosed in D1, see figures 1 and 2;

Claim 3: an external gear pump according to claim 3 having a bearing plate instead of two separate bearing bodies is known to a person skilled in the art, for example from D5, see figure 2;

Claim 4: an external gear pump according to claim 4 having bearing bushes in the bearing bores is known to a person skilled in the art, for example from D2, reference sign 61;

Claim 5: see claims 3 and 4.

Supplemental Box

Claims 6 and 7: D1 discloses connecting bores according to claims 6 and 7, see figures 3A, 3B, 4A and 4B, reference signs 148, 248, 348, 448;

Claims 8-10: D2 discloses a gear pump in accordance with the preamble of claim 1 (see abstract, figure 1 and paragraph [0020]), which gear pump has an axial field seal (62) which delimits pressure regions. It would therefore be obvious to a person skilled in the art to apply these features to like effect in an external gear pump according to D1 and thereby arrive at an external gear pump according to claims 8-10.

Box VII**Certain defects in the international application**

- [7] Contrary to the requirements of PCT Rule 5.1(a)(ii), the description does not cite D1, D2, D3 and D4 or indicate the relevant prior art disclosed therein.