

**PATENT COOPERATION TREATY**

**TRANSLATION**

From the  
INTERNATIONAL SEARCHING AUTHORITY

**PCT**

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing (day/month/year)	<b>see form PCT/ISA/210</b>
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Applicant's or agent's file reference <b>005038-WO-PCT</b>	<b>FOR FURTHER ACTION</b> See paragraph 2 below
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International application No. <b>PCT/EP2013/076833</b>	International filing date (day/month/year) <b>17.12.2013</b>	Priority date (day/month/year) <b>18.01.2013</b>
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International Patent Classification (IPC) or both national classification and IPC  
**INV. G01D5/20**

Applicant  
**ZF FRIEDRICHSHAFEN AG**

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 or 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.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/EP	Date of completion of this opinion	Authorized officer
Facsimile No.		Telephone No.

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Box No. I Basis of this 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 43bis.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material
    - a sequence listing
    - table(s) related to the sequence listing
  - b. format of material
    - on paper
    - in electronic form
  - c. time of filing/furnishing
    - contained in the international application as filed
    - filed together with the international application in electronic form
    - furnished subsequently to this Authority for the purposes of search
4.  In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

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<b>Box No. V</b>	<b>Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</b>		
1. Statement			
Novelty (N)	Claims	1-13	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-13	NO
Industrial applicability (IA)	Claims	1-13	YES
	Claims		NO
2. Citations and explanations:			
1	Reference is made to the following documents:		
D1	DE 103 42 473 A1 (SICK AG [DE]) 4 May 2005 (2005-05-04)		
D2	DE 100 44 839 A1 (SIEMENS AG [DE]; SIEMENS AUTOMOTIVE SA [FR]) 5 April 2001 (2001-04-05)		
D3	DE 35 18 772 A1 (BOSCH GMBH ROBERT [DE]) 27 November 1986 (1986-11-27)		
D4	DE 103 22 447 A1 (BAYERISCHE MOTOREN WERKE AG [DE]) 9 December 2004 (2004-12-09)		
D5	DE 102 55 710 A1 (HELLA KG HUECK & CO [DE]) 9 June 2004 (2004-06-09)		
2	The present application fails to comply with the requirements of PCT Article 33(1) because the subject matter of claim 1 does not involve an inventive step (PCT Article 33(3)).		
	D1 is considered to be the prior art closest to the subject matter of claim 1 and discloses a coil arrangement, in particular for a position sensor, having a coil with a first and a second section which are electrically connected to one another		

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Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

and are arranged substantially coaxially with respect to one another, wherein the first section has a winding density which increases in the longitudinal direction of the coil arrangement and the second section has a winding density which decreases in the longitudinal direction of the coil arrangement.

The subject matter of claim 1 therefore differs from the teaching of D1 in that the claim defines two coaxially arranged coils, whereas D1 merely discloses coils with two sections which lie coaxially (figure 4, reference sign 39) or two coils which, although they disclose the opposite changes in the winding densities, are not coaxial (figure 2).

Therefore, the subject matter of claim 1 is novel (PCT Article 33(2)).

The distinctive feature "two coils instead of the sections" solves the following technical problem:

find an alternative construction for the design of the coil arrangement.

A person skilled in the art in the field of D1 faced with the stated technical problem would search the prior art for solutions and would come up with the idea - solely from D1: figure 2 - of forming the coil sections (left and right halves of the coil 11'), which are present in each of the

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two coils (11 and 11') in figure 4, in each case by the two coils from figure 2. With said obvious modification to the coil from figure 4, a person skilled in the art would arrive at the subject matter of claim 1 without exercising an inventive step. Therefore, claim 1 does not involve an inventive step (PCT Article 33(3)).

3 Claim 12 discloses a production method which additionally defines the coils as concentric. Such a design is already known from D3, see page 7, second paragraph. In addition, D2 discloses a coil design (figure 2) which shows two adjacent coils with oppositely changing winding densities, which suggests an arrangement as in figure 1 of the present application.

4 Dependent claims 2-11 and 13 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step since all of the features contained therein are either already known from documents D1-D5 or are suggested to a person skilled in the art from the teaching disclosed in said documents.

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**Box No. VIII**      **Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claim 13 erroneously refers to claim 1; it ought to be  
claim 12.