

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

# PCT

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY  
(PCT Rule 43bis.1)**

To:

see form PCT/ISA/220

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/EP2018/052176

International filing date (day/month/year)  
29.01.2018

Priority date (day/month/year)  
30.01.2017

International Patent Classification (IPC) or both national classification and IPC  
INV. F02M47/02 F02M63/00

Applicant  
DELPHI TECHNOLOGIES IP LIMITED

**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 usually 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:



European Patent Office  
P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk - Pays Bas  
Tel. +31 70 340 - 2040  
Fax: +31 70 340 - 3016


Date of completion of this opinion

see form  
PCT/ISA/210

Authorized Officer

**Nobre Correia, S**

Telephone No. +31 70 340-0



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**Box No. I Basis of the opinion**

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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, 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 13ter.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 13ter.1(a)).
    - on paper or in the form of an image file (Rule 13ter.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:

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**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**

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1. Statement

Novelty (N)	Yes: Claims	<u>4-10, 12-18</u>
	No: Claims	<u>1-3, 11</u>
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-18</u>
Industrial applicability (IA)	Yes: Claims	<u>1-18</u>
	No: Claims	

2. Citations and explanations

see separate sheet

**Re Item V**

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

Reference is made to the following documents:

- D1 EP 1 612 398 A1 (FIAT RICERCHE [IT]) 4 January 2006 (2006-01-04)
- D2 WO 2016/058825 A1 (DELPHI INTERNAT OPERATIONS LUXEMBOURG S À R L [LU]) 21 April 2016 (2016-04-21)
- D3 US 2004/227018 A1 (SEELBACH KLAUS [US]) 18 November 2004 (2004-11-18)

- 1 The present application does not meet the criteria of Article 33(2) PCT, because the subject-matter of claim 1 is not new.

D1 discloses, *see the whole document*:

A control valve assembly of a fuel injector (1), said valve assembly comprising a first valve arrangement wherein a first valve spool (32) is guided in a first hydraulic bore (28) provided in a body (2) of the assembly, said spool (32) being adapted to move between a closed position wherein a shoulder face (37) of a head member (35) of said first spool (32) is in sealing contact against a first seating face (36) and, a fully open position wherein a distant end face of said head member (35) is in flush continuity with an under face (20) of the body of the valve assembly, the shoulder face (37) of the first spool being lifted away from said first seating face (36),

wherein the control valve assembly further comprises a first tubular sleeve (25) having a seating portion which end face defines said first seating face (36), the first sleeve (25) being fixed in the first hydraulic bore (28) and the first spool (32) extending through said sleeve (25).

- 2 Dependent claims 2-18 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.

- 2.1 The subject-matter of claims 2, 3 and 11 is shown in D1, *see the whole document*. The additional features of claims 4, 7 and 12 is shown in D2, *see page 8, l. 18 to page 10, line 27 and figures 3 and 4*. The additional features of claims 5, 6, 8 to 10 and 13 to 18 is shown in the combination of D1, D2 and D3, *regarding D3, see paragraphs [0026-0040] and figure 2*.