

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/JP2018/043471

**A. CLASSIFICATION OF SUBJECT MATTER**

Int.Cl. B60W50/10 (2012.01) i

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl. B60W10/00-10/30, B60W30/00-50/16, G08G1/00-99/00, B62D6/00-6/10, B60T7/12-8/96

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Published examined utility model applications of Japan	1922-1996
Published unexamined utility model applications of Japan	1971-2019
Registered utility model specifications of Japan	1996-2019
Published registered utility model applications of Japan	1994-2019

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y A	JP 2017-102519 A (DENSO CORPORATION) 08 June 2017, abstract, paragraphs [0020], [0054]-[0059], [0067]-[0071], [0105], [0106], [0114], [0116]-[0118], fig. 3 & WO 2017/094316 A1	1-3, 7-12, 16 7-12, 14-15 4-6, 13
X Y A	JP 2009-113764 A (TOYOTA MOTOR CORPORATION) 28 May 2009, abstract, claim 1, paragraphs [0031], [0038], [0039], [0060], [0065], [0067], fig. 4, 8 (Family: none)	1, 7-9, 16 2-4, 7-12, 15 5-6, 13-14

Further documents are listed in the continuation of Box C.       See patent family annex.

* Special categories of cited documents:	
“A” document defining the general state of the art which is not considered to be of particular relevance	“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
“E” earlier application or patent but published on or after the international filing date	“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
“L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
“O” document referring to an oral disclosure, use, exhibition or other means	“&” document member of the same patent family
“P” document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 17.01.2019	Date of mailing of the international search report 29.01.2019
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Name and mailing address of the ISA/ Japan Patent Office 3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan	Authorized officer  Telephone No.
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2010-52717 A (NISSAN MOTOR CO., LTD.) 11 March 2010, paragraph [0082] & US 2010/0023218 A1, paragraphs [0132], [0133] & EP 2149486 A2	2-3
Y	JP 62-253549 A (MAZDA MOTOR CORP.) 05 November 1987, page 1, lower right column, line 19 to page 2, upper left column, line 3 (Family: none)	2, 4
X Y A	JP 2015-77863 A (TOYOTA MOTOR CORPORATION) 23 April 2015, claim 1, paragraphs [0031], [0053], fig. 8 & US 2015/0106007 A1, paragraphs [0043], [0065], fig. 8 & EP 2862768 A2 & CN 104554261 A	1, 7-9, 16 2, 5-9, 15 13-14
Y	JP 2011-196231 A (TOYOTA MOTOR CORPORATION) 06 October 2011, paragraph [0026] (Family: none)	2, 5
Y	JP 2008-68691 A (HATANAKA, Hiromi) 27 March 2008, paragraph [0004] (Family: none)	2, 6
Y A	JP 2018-172028 A (HONDA MOTOR CO., LTD.) 08 November 2018, paragraphs [0053], [0054], [0063] (Family: none)	7-9, 14 13
Y	JP 2015-103894 A (RENESAS ELECTRONICS CORP.) 04 June 2015, paragraph [0013], fig. 2, 10, 13 & US 2015/0145997 A1, paragraph [0013], fig. 2, 10, 13 & CN 104660980 A	15
A	JP 2009-280015 A (TOYOTA MOTOR CORPORATION) 03 December 2009, abstract, claims 1, 3-4 (Family: none)	1-16
A	JP 2016-199204 A (TOYOTA MOTOR CORPORATION) 01 December 2016, paragraph [0066] & US 2016/0304126 A1, paragraph [0071] & DE 102016106832 A1 & CN 106043306 A	1-16
A	JP 2017-206152 A (HONDA MOTOR CO., LTD.) 24 November 2017, paragraphs [0101]-[0107] & US 2017/0334454 A1, paragraphs [0128]-[0134] & CN 107444395 A	1-16
A	JP 2017-509523 A (BAYERISCHE MOTOREN WERKE AKTIENGESELLSCHAFT) 06 April 2017, claims 1, 6 & US 2016/0325758 A1, claims 1, 6 & WO 2015/106912 A2 & DE 102014200782 A1 & CN 105916751 A & KR 10-2016-0110371 A	1-16

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2018-134962 A (MAZDA MOTOR CORP.) 30 August 2018, claim 1, fig. 5 (Family: none)	5-6