



(51) International Patent Classification:

**B60W 10/06** (2006.01) **B60W 30/18** (2012.01)  
**B60W 10/08** (2006.01) **B60W 50/00** (2006.01)  
**B60W 30/02** (2012.01) **B60W 20/00** (2006.01)  
**B60K 28/16** (2006.01)

(21) International Application Number:

PCT/EP2013/061857

(22) International Filing Date:

7 June 2013 (07.06.2013)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

1210059.0 7 June 2012 (07.06.2012) GB

(71) Applicant: **JAGUAR LAND ROVER LIMITED** [GB/GB]; Abbey Road, Whitley, Whitley, Coventy Warwickshire CV3 4LF (GB).

(72) Inventors: **BIRCH, John**; c/o Jaguar Land Rover, Patents Department W/1/073, Abbey Road, Whitley, Coventy Warwickshire CV34LF (GB). **DARNELL, Paul**; c/o Jaguar Land Rover, Patents W/1/073, Abbey Road, Whitley, Coventy Warwickshire CV34LF (GB). **RUDMAN, William**; c/o Jaguar Land Rover, Patents W/1/073, Abbey Road, Whitley, Coventy Warwickshire CV34LF (GB).

(74) Agents: **HOLMES, Matthew et al.**; Jaguar Land Rover, Patents Department W/1/073, Abbey Road, Whitley, Whitley, Coventy Warwickshire CV3 4LF (GB).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

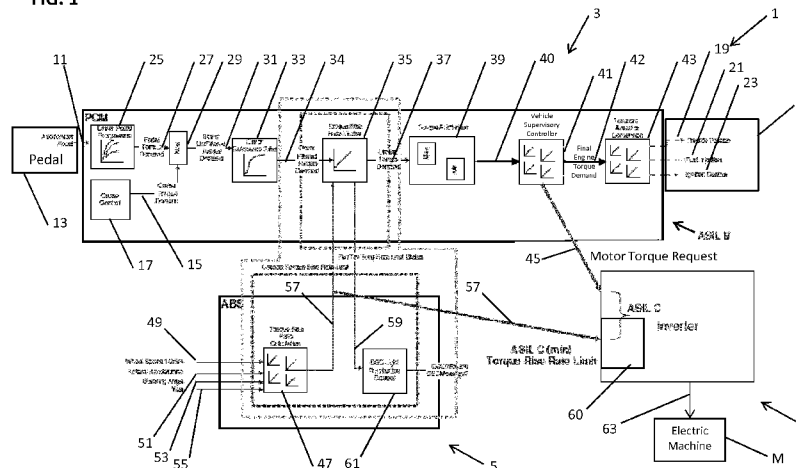
Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:  
30 January 2014

(54) Title: POWERTRAIN CONTROL SYSTEM AND METHOD

FIG. 1



(57) Abstract: The present invention relates to a powertrain control system (1) for a vehicle. The powertrain control system (1) includes a torque limit calculator (47) for generating a torque control signal based (57) on one or more vehicle operating parameters. A torque request module (43) is provided for generating a torque request signal (45) and a torque control module (7) controls the torque applied by the powertrain. The torque control module (7) is configured to receive the torque request signal (45) from the torque request module (43) and the torque control signal (57) from the torque limit calculator (47) and to control the torque applied by the powertrain in dependence on the torque request signal (45) and the torque control signal (57). The present invention also relates to a control system; and a method of operating a powertrain control system.

WO 2013/182704 A3

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP2013/061857

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1, 2, 4-8, 12-16

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

International application No PCT/EP2013/061857
---

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>				
INV. B60W10/06	B60W10/08	B60W30/02		
ADD. B60W50/00	B60W20/00	B60K28/16		
B60W30/18				
According to International Patent Classification (IPC) or to both national classification and IPC				
<b>B. FIELDS SEARCHED</b>				
Minimum documentation searched (classification system followed by classification symbols) B60W B60K B60T				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data				
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	US 2009/024263 A1 (SIMON JR ROBERT C [US] ET AL) 22 January 2009 (2009-01-22) paragraphs [0020] - [0036]; figures 1,2A the whole document	1,2,4-8, 12-16 4		
Y	----- EP 2 460 703 A1 (LAND ROVER [GB]) 6 June 2012 (2012-06-06) paragraphs [0008], [0009], [0026], [0045] - [0050] -----	4		
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <span style="margin-left: 100px;"><input checked="" type="checkbox"/> See patent family annex.</span>				
* Special categories of cited documents : <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </td> <td style="width: 50%; border: none; vertical-align: top;"> <p>"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</p> <p>"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</p> <p>"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</p> <p>"&amp;" document member of the same patent family</p> </td> </tr> </table>			<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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</p> <p>"&amp;" document member of the same patent family</p>
<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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</p> <p>"&amp;" document member of the same patent family</p>			
Date of the actual completion of the international search		Date of mailing of the international search report		
16 September 2013		09/12/2013		
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer  Plenk, Rupert		

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No  
PCT/EP2013/061857

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2009024263	A1	CN 101450629 A	10-06-2009
		DE 102008039574 A1	10-06-2009
		US 2009024263 A1	22-01-2009
-----			
EP 2460703	A1	CN 102529958 A	04-07-2012
		EP 2460703 A1	06-06-2012
		GB 2486072 A	06-06-2012
		GB 2486177 A	13-06-2012
		JP 2012116475 A	21-06-2012
		US 2012197506 A1	02-08-2012
-----			

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1, 2, 4-8, 12-16

torque limitation using a further module

---

2. claim: 3

different type of control system

---

3. claims: 9-11

inverter and integrity rating for a validity check

---