

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 096 140 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
05.11.2003 Bulletin 2003/45

(51) Int Cl.7: **F02P 19/00, F23Q 7/00,
G01L 23/22, G01L 23/10**

(43) Date of publication A2:
02.05.2001 Bulletin 2001/18

(21) Application number: **00123123.2**

(22) Date of filing: **25.10.2000**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventors:
• **Murai, Hiroyuki**
Kariya-city, Aichi-pref., 448-8661 (JP)
• **Hattori, Kouichi**
Kariya-city, Aichi-pref., 448-8661 (JP)

(30) Priority: **27.10.1999 JP 30581899**

(74) Representative:
Leson, Thomas Johannes Alois, Dipl.-Ing. et al
Patentanwälte
Tiedtke-Bühling-Kinne & Partner,
Bavariaring 4
80336 München (DE)

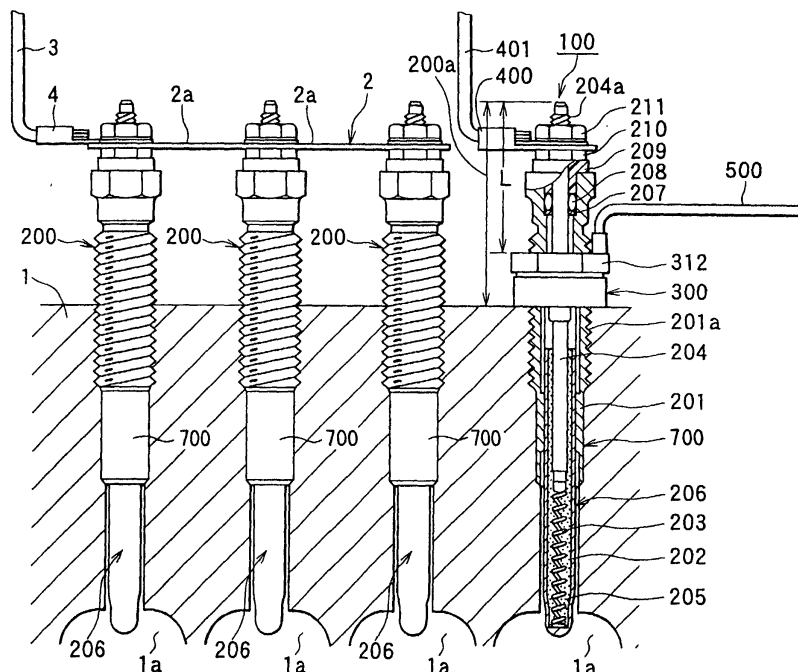
(71) Applicant: **Denso Corporation**
Kariya-city, Aichi-pref., 448-8661 (JP)

(54) **Attachment structure of glow plug**

(57) A first glow plug (100) and second through fourth glow plugs (200) are attached to an engine head (1). Each glow plug (100, 200) includes a plug body (700). The first glow plug (100) includes a pressure sensor (300), and is independently connected to a ring

crimp terminal (400), which is separated from other glow plugs (200). Thus, a mechanical vibration due to a connecting bar (2) deflection between the second through fourth glow plugs (200) does not influence the first glow plug (100) including the pressure sensor (300).

FIG. 1



EP 1 096 140 A3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 00 12 3123

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 4 227 403 A (DOOLEY DANIEL J ET AL) 14 October 1980 (1980-10-14) * figure 1 * * column 2, line 39-42 * * column 8, line 11-16 *	3,5	F02P19/00 F23Q7/00 G01L23/22 G01L23/10
Y	* column 6, line 16-53; claim 1 * ---	3	
Y	DE 746 666 C (VERSUCHSANSTALT FUER LUFTFAHRT) 16 August 1944 (1944-08-16) * page 2, line 103-106; figure 1 * ---	3	
A,P	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 12, 3 January 2001 (2001-01-03) -& JP 2000 240498 A (TOYOTA MOTOR CORP), 5 September 2000 (2000-09-05) * abstract; figure 9 * ---	1,2	
A	WO 97 09567 A (ATSUGI UNISIA CORP) 13 March 1997 (1997-03-13) * figure 1 * ---	3	
A,P	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 08, 6 October 2000 (2000-10-06) -& JP 2000 130752 A (NGK SPARK PLUG CO LTD), 12 May 2000 (2000-05-12) * abstract; figure 1 * -----	5	
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 20 December 2002	Examiner Ulivieri, E
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03/02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 12 3123

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on the European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

20-12-2002

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4227403	A	14-10-1980	CA 1135972 A1	23-11-1982
			EP 0013702 A1	06-08-1980

DE 746666	C	16-08-1944	NONE	

JP 2000240498	A	05-09-2000	NONE	

WO 9709567	A	13-03-1997	JP 3177819 B2	18-06-2001
			JP 9072811 A	18-03-1997
			DE 19680912 C2	05-04-2001
			DE 19680912 T0	16-10-1997
			WO 9709567 A1	13-03-1997

JP 2000130752	A	12-05-2000	NONE	
