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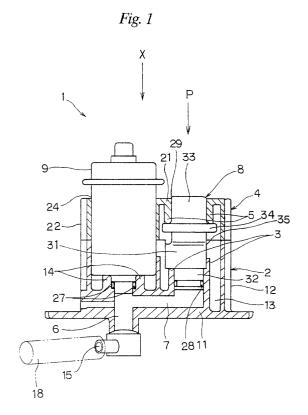
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(54) "Fuel pump module"

(57)A fuel pump module is provided which reduces the number of parts thereof and has strong resistance to vibrations caused by driving a vehicle. The fuel pump module, having a reservoir formed in an inner surface of a lower case, a fuel passage for guiding to an engine the fuel accommodated in the reservoir, a pressure regulator held in the lower case to regulate fuel pressure of the fuel flowing through the fuel passage, and an upper case capped on the lower case, comprises an installing portion provided on the inner surface of the lower case and inside the reservoir, and a pressing portion provided inside the upper case to project therefrom as corresponding to the installing portion. The pressure regulator is sandwiched between the installing portion and the pressing portion. The auxiliary passage for locking the installing portion to both of the fuel passage and the strainer for fuel cleaning is provided. Return fuel from the held and fixed pressure regulator is returned to the reservoir.





EUROPEAN SEARCH REPORT

Application Number EP 01 11 2717

Category	Citation of document with indication of relevant passages	on, where appropriate,	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.CI.7)		
X	EP 0 959 241 A (MITSUB 24 November 1999 (1999 * abstract * column 4, line 18 - figures 1-3 *	-11-24)	1-5, 15-17	F02M37/10		
A	EP 0 965 747 A (MITSUB 22 December 1999 (1999		1,2,5, 11, 15-17, 21-23			
	* abstract * * column 4, line 8 - co figures 1,2 *	olumn 5, line 11;	TALL YELL PRODUCTION			
A	US 5 649 514 A (OKADA 22 July 1997 (1997-07-2 * abstract *		1,2,6,7			
	* column 3, line 11 - of figures 1-4 *	column 4, line 54	;			
				TECHNICAL FIELDS SEARCHED (Int.Cl.7)		
				F02M		
	The present scarch report has been d	·				
	THE HAGUE	Date of completion of the search		ZOEST A.P.		
CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category		T : theory or pri E : earlier pater after the fillin D : document ci L : document ci	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			
A : technological background O : non-written disclosure P : intermediate document			& : member of the same patent family, corresponding document			

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Application Number

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CLAIMS INCURRING FEES					
The present European patent application comprised at the time of filing more than ten claims.					
Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):					
No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.					
LACK OF UNITY OF INVENTION					
The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:					
see sheet B					
All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.					
As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.					
Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:					
None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims: 1-7,9-11,15-17,19,21-23					



LACK OF UNITY OF INVENTION SHEET B

Application Number EP 01 11 2717

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-7,9-11,15-17,19,21-23

A fuel pump module with a pressure regulator sandwitched between an installing and a pressing portion.

2. Claims: 8,18,20,24

A fuel pump module with a conjunction cover for holding a fuel pump and a strainer.

3. Claims: 12,14

A fuel pump module with a two part welded strainer cover.

4. Claims: 13,25

A fuel pump module with a two part one-touch connected strainer cover.

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

EP 01 11 2717

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.

03-04-2002

	Patent document cited in search repo		Publication date		Patent family member(s)	Publication date
EP	0959241	A	24-11-1999	WO EP US	9925975 A1 0959241 A1 6065452 A	27-05-1999 24-11-1999 23-05-2000
EP	0965747	Α	22-12-1999	WO EP US	9930027 A1 0965747 A1 6142126 A	17-06-1999 22-12-1999 07-11-2000
US	5649514	A	22-07-1997	DEO JA A C C D D E W W W J J K U U U U	19581421 TO 9614506 A1 8210212 A 704754 B2 3815395 A 1147209 A 1145104 A ,B 19581549 TO 19581549 TO 19680164 TO 0754483 A1 9623966 A1 9623967 A1 9623569 A1 9623569 A1 9623969 A1 3256972 B2 3256973 B2 233022 B1 5900148 A 5782223 A 5785032 A	19-12-1996 17-05-1996 20-08-1996 06-05-1999 21-08-1997 12-03-1997 24-04-1997 17-04-1997 22-01-1997 08-08-1996 08-08-1996 08-08-1996 08-08-1996 18-02-2002 18-02-2002 18-02-2002 01-12-1999 04-05-1999 21-07-1998 28-07-1998

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82