

(19)



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11)

**EP 1 703 097 A1**

(12)

**EUROPEAN PATENT APPLICATION**

(43) Date of publication:

**20.09.2006 Bulletin 2006/38**

(51) Int Cl.:

**F01N 3/28 (2006.01)**

(21) Application number: **06003561.5**

(22) Date of filing: **22.02.2006**

(84) Designated Contracting States:

**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR  
HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI  
SK TR**

Designated Extension States:

**AL BA HR MK YU**

(30) Priority: **25.02.2005 IT MI20050059 U**

(71) Applicant: **LINEA O.G. JOLLY S.a.s.**

**20070 Cerro al Lambro MI (IT)**

(72) Inventor: **Orlandi, Mauro**

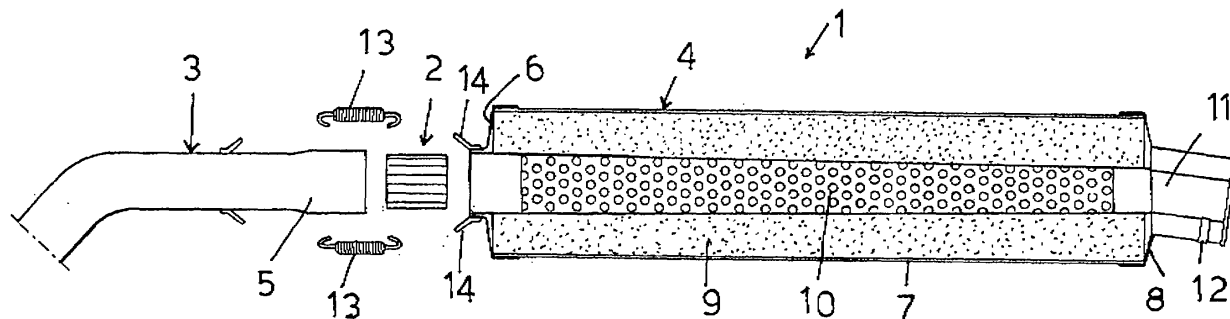
**20098 San Giuliano Milanese  
Milano (IT)**

(74) Representative: **Cicogna, Franco**

**Ufficio Internazionale Brevetti  
Dott.Prof. Franco Cicogna  
Via Visconti di Modrone, 14/A  
20122 Milano (IT)**

(54) **Exhaust system for motorcycles and the like**

(57) An exhaust system (1), particularly for motorcycles and the like, is characterized in that it comprises a catalytic element (2) removably arranged between an exhaust manifold (3) and a silencer (4).



**FIG 1**

**EP 1 703 097 A1**

**Description****BACKGROUND OF THE INVENTION**

- 5 **[0001]** The present invention relates to an exhausting system construction, specifically designed for motorcycles and the like.
- [0002]** As is known, motorcycle exhausting systems conventionally comprise one or more end-pieces comprising the silencer device, and being associated with a manifold coupled to the engine exhausting means.
- 10 **[0003]** With the introduction on the market of catalytic exhausting systems, motorcycles including box-like catalytic mufflers, of a type like that used in cars, have been also constructed.
- [0004]** However, the most part of existing motorcycles and a lot of new motorcycle models, comprise conventional cylindric end-pieces, arranged at the sides of the motorcycle rear wheel.
- [0005]** Cylindric catalytic end-pieces are very expensive and, likewise to existing catalytic systems, they must be periodically replaced, as the catalyzer effect has been exhausted.
- 15 **[0006]** Another drawback is that in a case of damaging, such as due to a fall, the overall catalytic end-piece must be replaced, with a consequent very high cost.

**SUMMARY OF THE INVENTION**

- 20 **[0007]** Accordingly, the aim of the present invention is to provide such an exhausting system construction to be used in motorcycles and the like, overcoming the above mentioned drawbacks of the prior art.
- [0008]** Within the scope of the above mentioned aim, a main object of the invention is to provide such an exhausting system construction which can be used for a very broad range of exhausting systems, included those which are already existing on the market.
- 25 **[0009]** Another object of the present invention is to provide such an exhausting system construction which allows to restore the catalytic system, with a low cost.
- [0010]** According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by an exhausting system construction, particularly for motorcycles and the like, characterized in that it comprises a catalytic element which can be removably arranged
- 30 between an exhausting manifold and a silencer device.

**BRIEF DESCRIPTION OF THE DRAWINGS**

- 35 **[0011]** Further characteristics and advantages of the present invention will become more apparent hereinafter from the following detailed disclosure of a preferred, though not exclusive, embodiment of the invention, which is illustrated, by way of an indicative, but not limitative example, in the accompanying drawings, where:

- Figure 1 is a side elevation view, as longitudinally cross-sectioned, showing an exhausting system;
- Figure 2 is a longitudinal cross-sectional view, analogous to figure 1, but on an enlarged scale, showing in a more
- 40 detailed manner the catalytic device according to the invention;
- Figure 3 is a further longitudinal cross-sectioned side elevation view showing an exhausting system according to a further aspect of the invention;
- Figure 4 is yet another longitudinal cross-sectioned view, on an enlarged scale, showing in a more detailed manner the catalytic device according to the invention;
- 45 Figure 5 is yet another longitudinal cross-sectioned side elevation view showing an exhausting system according to a further aspect of the present invention; and
- Figure 6 is a further longitudinal cross-sectional view, on an enlarged scale, showing in a detailed manner the catalytic device of the exhausting system according to the invention.

50 **DESCRIPTION OF THE PREFERRED EMBODIMENTS**

- [0012]** with reference to the number references of the above mentioned figures, the exhausting system construction according to the present invention, which has been generally indicated by the reference number 1, comprises, as main components thereof, a catalytic element 2, which can be removably arranged between an exhausting manifold 3 and a
- 55 silencer device 4.
- [0013]** More specifically, the catalytic element 2 comprises a substantially cylindric body, including a plurality of concentric chambers, and having walls coated by a catalyzer, of a per-se known type.
- [0014]** In particular, the catalytic element 2 can be arranged at a cylindric end portion 5 of an exhausting manifold 3,

which can be in turn engaged in an inlet bottom element 6 of the silencer device 4.

[0015] Said silencer device 4 may be of any per se known type, and comprises an outer casing 7, coupled, at an end portion thereof, to the inlet bottom element 6 and, at the other end portion thereof, to an outlet bottom element 8.

[0016] Said inlet 6 and outlet 8 bottom elements operate as a support for a core element 10 comprising a perforated tube, ending with an unperforated outlet portion 11.

[0017] The core element 10 is locked by a locking rivet 12, coupling the outlet bottom 8 to the outlet portion 11 of said core element 10.

[0018] As shown, between said core element 10 and outer casing 7, a sound absorbing material 9, such as a glass wool material, is arranged.

[0019] The silencer device 4 is locked on the manifold 3 by locking means comprising, in this embodiment, pulling spring elements 13, having end portions attached to suitable attachment means 14 which are respectively welded on the manifold 3 and inlet bottom element 6 of the silencer device 4.

[0020] Figures 3 and 4 show an exhausting system construction 101, fully analogous to the exhausting system construction 1 shown in figures 1 and 2, but including different locking means for locking the silencer device 4 on the manifold 3.

[0021] Said locking means, in particular, comprise, in this embodiment, screws or rivets 113 designed for clamping therebetween bracket elements 114 respectively associated with the manifold 3 and the inlet bottom element 6 of the silencer device 4.

[0022] Figures 5 and 6 show an exhausting system construction 201, fully analogous to the construction 1 and 101 shown in the preceding figures, but including a probe element 215 which is an useful element for the operation of the electronic injection system.

[0023] It has been found that the invention fully achieves the intended aim and objects.

[0024] In fact, the invention provides a motorcycle exhausting system construction allowing to fit exhausting system with either one or more silenced end-pieces, independent from the catalyzer device.

[0025] Moreover, the modular structure of the subject exhausting system construction provides a lot of functional advantages.

[0026] For example, it is possible to replace the catalyzer element without replacing the overall exhausting system, as the catalyzing effect is expired.

[0027] Thus, such a periodic operation, which is absolutely necessary to maintain the exhausting system in an efficient operating condition, mainly from an emission standpoint, is carried out in a very unexpensive manner.

[0028] Another advantage is that, in a case of a damaging of the end-piece, for example occurring in a road accident, said end-piece, which does not comprise the catalyzer proper, can be replaced in a manner which is much more unexpensive than the replacement of a conventional catalyzed exhausting end-piece.

[0029] In practicing the invention, the used materials, as well as the contingent size and shapes, can be any, depending on requirements.

## Claims

1. An exhausting system construction, for motorcycles and the like, **characterized in that** said exhausting system construction comprises a catalytic element which can be removably arranged between an exhausting manifold and a silencer device.

2. An exhausting system construction, according to claim 1, **characterized in that** said catalytic element comprises a substantially cylindric body, including a plurality of concentric chambers having chamber walls coated by a catalyzer.

3. An exhausting system construction, according to claim 1 or 2, **characterized in that** said catalytic element is adapted to be arranged in a cylindric end portion of the exhausting manifold, which can be in turn engaged in an inlet bottom element of the silencer device.

4. An exhausting system construction, according to one or more of the preceding claims, **characterized in that** said silencer device comprises an outer casing having an end portion which can be coupled to the inlet bottom element and having an opposite portion which can be coupled to an outlet bottom element.

5. An exhausting system construction, according to one or more of the preceding claims, **characterized in that** said inlet and outlet bottom elements operate as a support for a core element comprising a perforated tube, ending with an unperforated outlet portion.

6. An exhausting system construction, according to one or more of the preceding claims, **characterized in that** said

core element is locked by a locking rivet coupling said outlet bottom element to an outlet portion of said core element.

7. An exhausting system construction, according to one or more of the preceding claims, **characterized in that** between said core element and outer casing a sound absorbing material is arranged.

- 5 8. An exhausting system construction, according to one or more of the preceding claims, **characterized in that** said sound absorbing material, arranged between said core element and outer casing, comprises a glass wool material.

- 10 9. An exhausting system construction, according to one or more of the preceding claims, **characterized in that** said silencer device is locked on said exhausting manifold by locking means comprising pulling spring elements having end portions thereof clamped to welded attachment means, respectively welded on said exhausting manifold and said inlet bottom element of said silencer device.

- 15 10. An exhausting system construction, according to one or more of the preceding claims, **characterized in that** said silencer device is locked on said exhausting manifold by locking means comprising locking screws or rivets, adapted to clamp therebetween bracket elements respectively associated with said exhausting manifold and inlet bottom element of said silencer device.

- 20 11. An exhausting system construction, according to one or more of the preceding claims, **characterized in that** said exhausting system construction comprises a probe element for operating an electronic injection system.

25

30

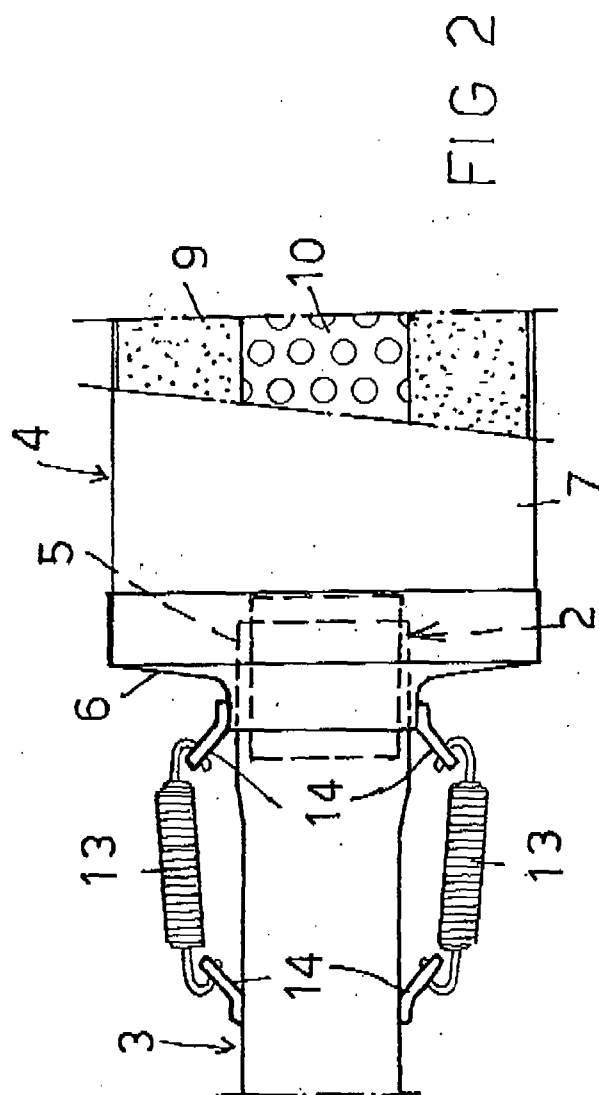
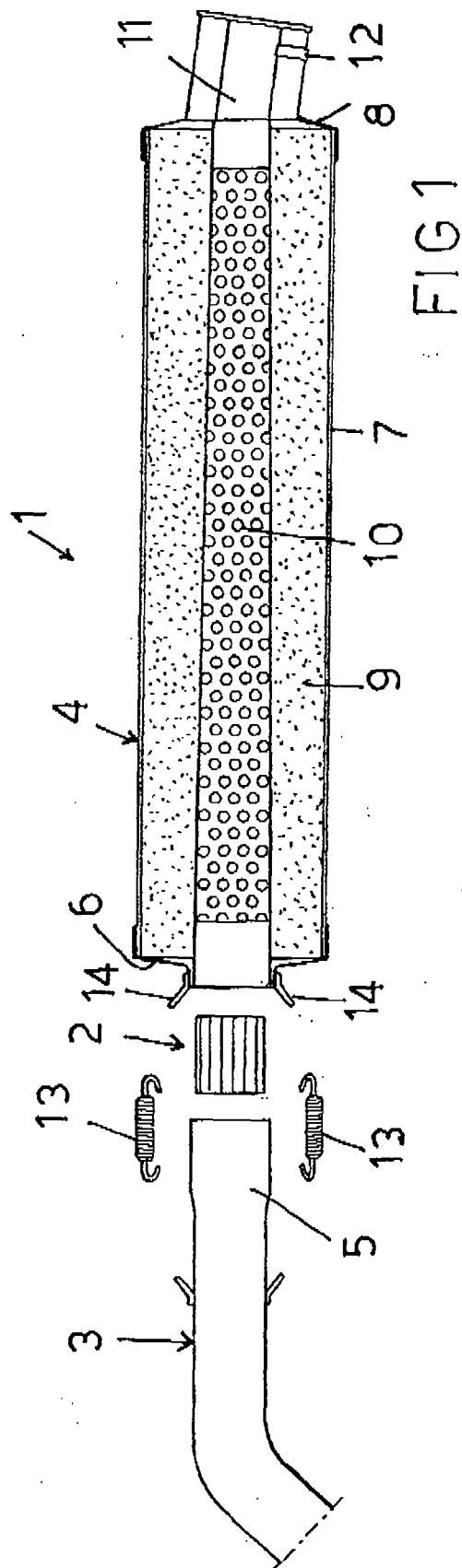
35

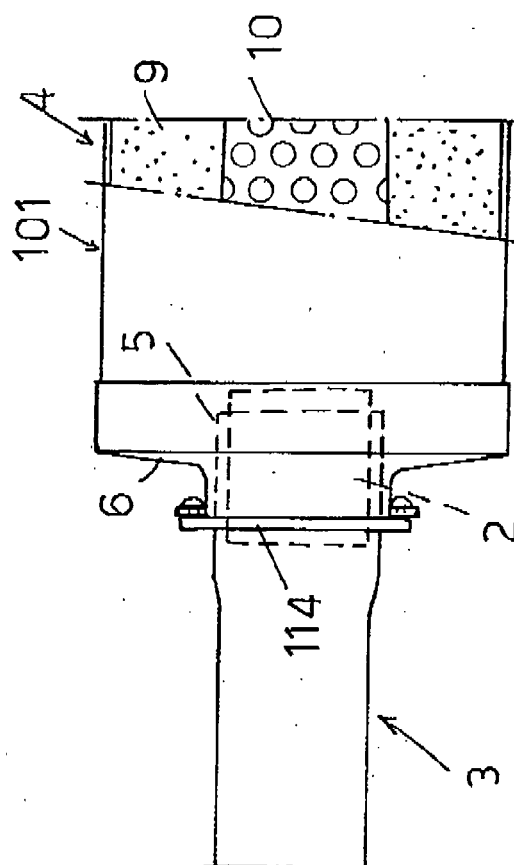
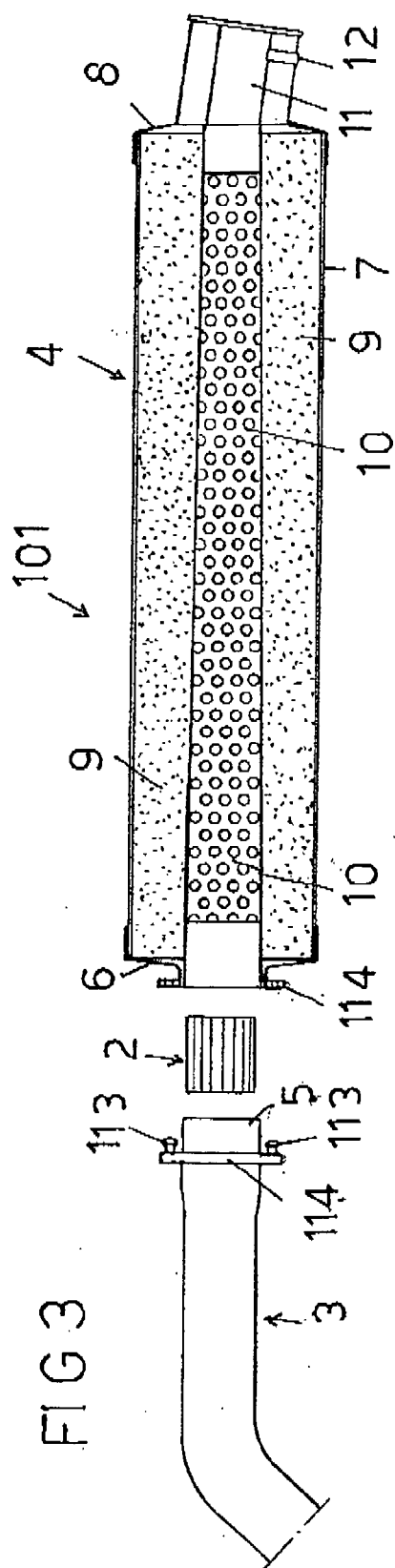
40

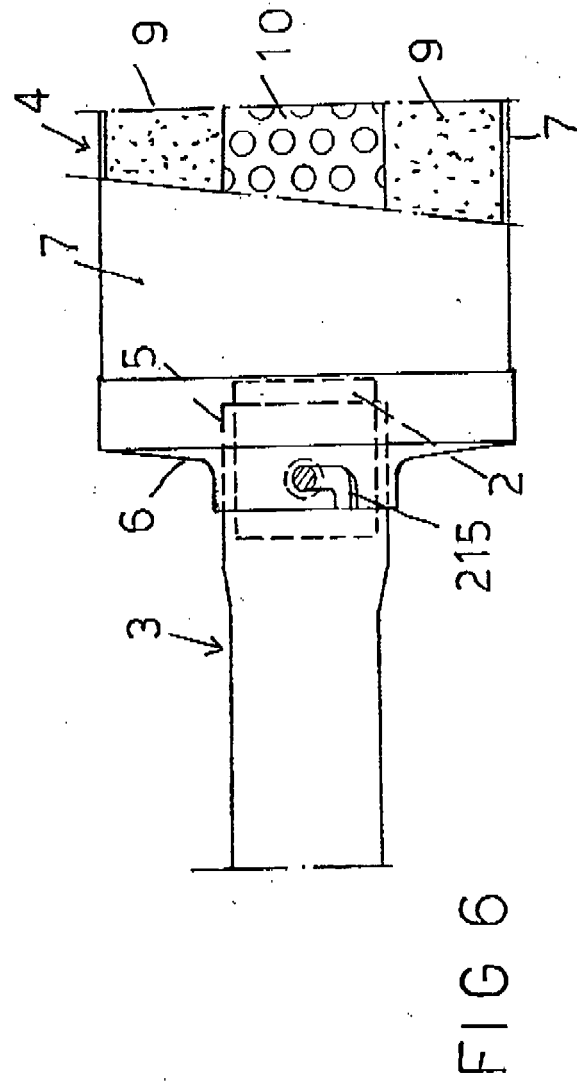
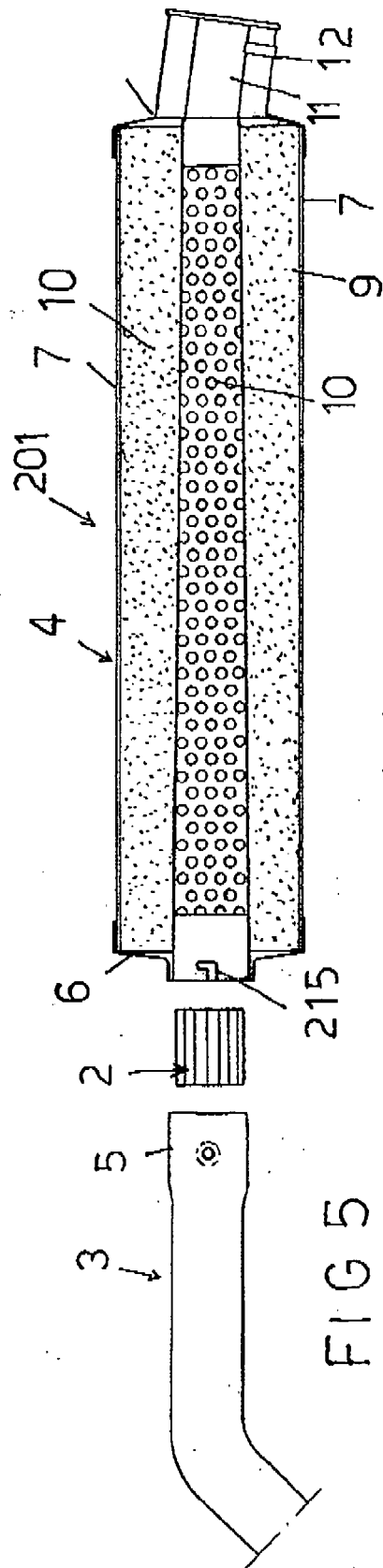
45

50

55









European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 06 00 3561

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	GB 1 563 338 A (HONDA GIKEN KOGYO KK) 26 March 1980 (1980-03-26) * page 1, line 6 - page 1, line 36; figures 1-3 *	1-3,9	INV. F01N3/28
X	US 5 373 119 A (SUZUKI ET AL) 13 December 1994 (1994-12-13) * column 1, line 53 - column 1, line 68 * * column 2, line 46 - column 3, line 43; figures 1,3 *	1,3-5	
X	US 5 139 107 A (NAGAI ET AL) 18 August 1992 (1992-08-18) * column 1, line 62 - column 2, line 19; figures 1,3 *	1	
A	EP 1 094 207 A (OMG AG & CO. KG) 25 April 2001 (2001-04-25) * abstract *	1	
A	DE 40 40 721 A1 (HERBERT TUNNER "SEBRING"-AUSPUFFANLAGEN, KOEFLACH, AT) 4 July 1991 (1991-07-04) * column 3, line 46 - column 4, line 58; figures 1,2 *	1	TECHNICAL FIELDS SEARCHED (IPC) F01N
A	US 6 200 538 B1 (BRÜCK ROLF ET AL) 13 March 2001 (2001-03-13) * column 3, line 52 - column 4, line 32; figures 1,2 *	1,9	
A	GB 1 360 702 A (PORSCHE AG DR ING) 17 July 1974 (1974-07-17) * page 2, line 74 - page 2, line 97; figure 3 *	1,6	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 1 June 2006	Examiner Tatus, W
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			

2  
EPO FORM 1503 03.82 (P04C01)





European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 06 00 3561

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 09, 30 September 1997 (1997-09-30) & JP 09 137711 A (CALSONIC CORP), 27 May 1997 (1997-05-27) * abstract; figure 1 *	1,7,8	
A	PATENT ABSTRACTS OF JAPAN vol. 007, no. 275 (M-261), 8 December 1983 (1983-12-08) & JP 58 152115 A (HONDA GIKEN KOGYO KK), 9 September 1983 (1983-09-09) * abstract *	1,11	
			TECHNICAL FIELDS SEARCHED (IPC)
The present search report has been drawn up for all claims			
Place of search <b>Munich</b>		Date of completion of the search <b>1 June 2006</b>	Examiner <b>Tatus, W</b>
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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 ..... &amp; : member of the same patent family, corresponding document</p>			

2  
EPO FORM 1503 03/82 (P04C01)

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

EP 06 00 3561

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.

01-06-2006

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 1563338	A	26-03-1980	DE 2635725 A1	03-03-1977
			FR 2321591 A1	18-03-1977
			JP 52024616 A	24-02-1977
			JP 56001452 B	13-01-1981
			JP 1106548 C	30-07-1982
			JP 53037227 A	06-04-1978
			JP 56050092 B	26-11-1981
			JP 58108224 U	23-07-1983
			JP 59013292 Y2	20-04-1984
-----				
US 5373119	A	13-12-1994	NONE	
-----				
US 5139107	A	18-08-1992	NONE	
-----				
EP 1094207	A	25-04-2001	AT 240453 T	15-05-2003
			BR 0004906 A	29-05-2001
			CN 1308181 A	15-08-2001
			DE 69907912 D1	18-06-2003
			DE 69907912 T2	13-05-2004
			ES 2198831 T3	01-02-2004
			ID 27692 A	26-04-2001
			TW 496468 Y	21-07-2002
-----				
DE 4040721	A1	04-07-1991	NONE	
-----				
US 6200538	B1	13-03-2001	DE 19724964 A1	17-12-1998
			EP 0884460 A2	16-12-1998
			JP 11013463 A	19-01-1999
-----				
GB 1360702	A	17-07-1974	DE 2111865 A1	14-09-1972
			FR 2129376 A5	27-10-1972
			IT 943957 B	10-04-1973
			JP 50025098 B	21-08-1975
			US 3749199 A	31-07-1973
-----				
JP 09137711	A	27-05-1997	NONE	
-----				
JP 58152115	A	09-09-1983	NONE	
-----				