



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 10 7401

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 3 819 309 A (JACOBS J) 25 June 1974 (1974-06-25)	1	F04C18/344
Y	* column 2, line 32 - column 3, line 29; figures 1,3 *	2-8	
	* column 3, line 53 - column 3, line 60 *		
Y	US 2 312 655 A (LAUCK JOHN A) 2 March 1943 (1943-03-02)	2	
	* page 2, left-hand column, line 19 - page 2, left-hand column, line 24; figure 1 *		
Y	US 5 265 457 A (HAYASHI TETSUYA ET AL) 30 November 1993 (1993-11-30)	3,4	
	* column 1, line 42 - column 1, line 68; figure 1 *		
Y	WO 00 36303 A (MITSUBISHI ELECTRIC CORP) 22 June 2000 (2000-06-22)	5,8	
	- & EP 1 055 823 A (MITSUBISHI ELECTRIC CORP) 29 November 2000 (2000-11-29)		
	* column 2, line 15 - column 2, line 41; figures 3,7,9 *		TECHNICAL FIELDS SEARCHED (Int.Cl.7)
	* column 3, line 48 - column 4, line 24 *		F01C F04C
Y	US 5 667 372 A (SHIN CHANG-JOO ET AL) 16 September 1997 (1997-09-16)	6	
	* column 6, line 66 - column 7, line 25; figures 1,10A,10B *		
Y	US 5 954 489 A (KINOSHITA TAKASHI) 21 September 1999 (1999-09-21)	7	
	* column 4, line 66 - column 9, line 14; figures 1,7-9 *		
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 4 June 2003	Examiner Descoubes, P
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 82 (p04C01)



European Patent
Office

Application Number

EP 01 10 7401

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:



European Patent
Office

LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 01 10 7401

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. Claim : 1+2

Vane-type vacuum pump with restricted shaft axial movement made of different metals.

2. Claims: 1+3-4,6

Vane-type vacuum pump with restricted shaft axial movement fitted with an oil reservoir.

3. Claim : 1+5

Vane-type vacuum pump with restricted shaft axial movement, the rotor being integrally cast with the shaft.

4. Claim : 1+7

Vane-type vacuum pump with restricted shaft axial movement and a selected bearing portion length.

5. Claim : 1+8

Vane-type vacuum pump with restricted shaft axial movement and selected axial movement restriction flange dimensions.

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

EP 01 10 7401

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.

04-06-2003

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 3819309	A	25-06-1974	NONE		
US 2312655	A	02-03-1943	NONE		
US 5265457	A	30-11-1993	JP	2910123 B2	23-06-1999
			JP	3242490 A	29-10-1991
WO 0036303	A	22-06-2000	WO	0036303 A1	22-06-2000
			EP	1055823 A1	29-11-2000
			TW	414837 B	11-12-2000
US 5667372	A	16-09-1997	CN	1116690 A ,B	14-02-1996
US 5954489	A	21-09-1999	JP	10054382 A	24-02-1998
			FR	2752444 A1	20-02-1998