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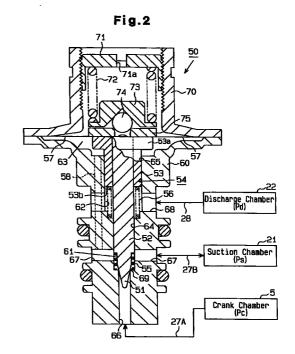
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(54) Control valve for variable displacement compressor

(57)A displacement control valve for controlling the amount of gas flowing through a bleed passage (27A, 27B) of a compressor to adjust pressure in a crank chamber (5) of the compressor. The control valve includes a housing (60), a pressure sensitive member, or diaphragm (57), which is arranged in the housing (60), and an actuator (54) extending from the diaphragm (57) and arranged in the housing (60). A valve body (51) is formed integrally with the distal end of the actuator (54). A pressure receiving body (53) is provided at the proximal end of the actuator (54). The diaphragm (57) drives the actuator (54) in accordance with a suction pressure. The pressure receiving body (53) urges the diaphragm (57) in a single direction in accordance with a discharge pressure. The diameter (or crosssectional are) of the actuator (54) decreases in a stepped-like manner in the axial direction. This simplifies manufacture and of the actuator (54) and facilitates assembly.





EUROPEAN SEARCH REPORT

Application Number EP 00 10 4151

	DOCUMENTS CONSID	ERED TO BE RELEV	ANT		
Category	Citation of document with i of relevant pass	ndication, where appropriate, ages		Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
D,Y	PATENT ABSTRACTS OF vol. 017, no. 362 (8 July 1993 (1993-6 & JP 05 052182 A (2 March 1993 (1993- * abstract *	(M-1441), 07-08) FAIHEIYO KOGYO KK)	12	-9, 2-14	F04B27/18
Y	US 4 702 677 A (TAM 27 October 1987 (19 * abstract * * column 3, line 10 * figures 1,2 *	987-10-27)	12	-9, ?-14	
A	DE 44 46 832 A (TOY WORKS) 29 June 1995 * abstract * * column 3, line 53 * figures 1,4-7 *	5 (1995-06-29)	12	6,8, 2,14	
A	PATENT ABSTRACTS OF vol. 018, no. 563 (27 October 1994 (19 -& JP 06 200875 A (LTD), 19 July 1994 * abstract *	M-1693), 94-10-27) TOYOTA AUTOM LOOM	11	5,8, ,13,14	TECHNICAL FIELDS SEARCHED (Int.Ct.7) F04B
	The present search report has l	peen drawn up for all claims			
	Place of search	Date of completion of the	search	T	Examiner
	THE HAGUE	20 November	2000	Ko1	by, L
X : parti Y : parti docu A : tech O : non-	ITEGORY OF CITED DOCUMENTS cularly relevant if taken alone cularly relevant if combined with another ment of the same category mological background written disclosure mediate document	T : theory E : earlier after ther D : docum L : docum	or principle und patent documer le filing date nent cited in the lent cited for oth	erlying the ir nt, but publis application er reasons	nvention hed on, or

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

EP 00 10 4151

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.

20-11-2000

Patent document cited in search repo		Publication Patent family date member(s)		Publication date
JP 05052182	Α	02-03-1993	JP 2567745 B	25-12-19
US 4702677	A	27-10-1987	JP 1797154 C JP 5002832 B JP 62206277 A DE 3707001 A KR 9005718 B	28-10-19 13-01-19 10-09-19 17-09-19 06-08-19
DE 4446832	Α	29-06-1995	JP 7189895 A KR 9705980 B US 5603610 A	28-07-19 22-04-19 18-02-19
JP 06200875	Α	19-07-1994	NONE	

FORM P0459

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