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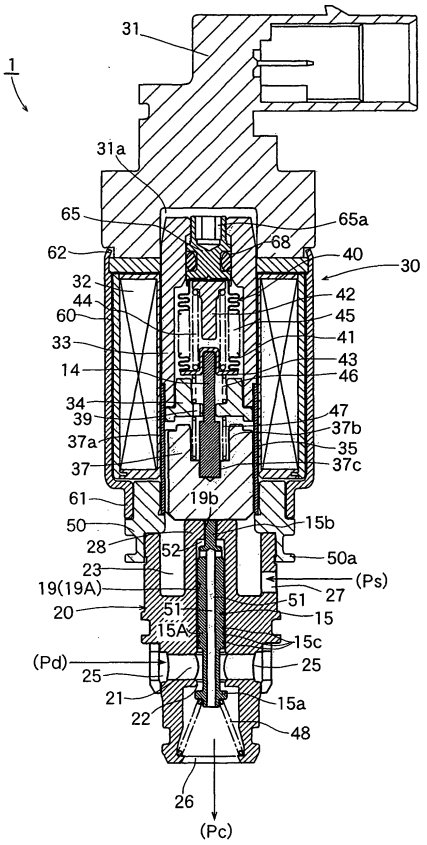
(54) **Control valve for variable capacity compressors**

(57) There is provided a control valve for a variable capacity compressor, which is applicable to a compressor of large capacity. This control valve comprises a valve main body (20) equipped with a valve rod (15) having a valve body (15a), with a valve chamber (21) having a guide hole (19) in which the valve rod is enabled to slide and a valve aperture (22) for the valve body, with a cooling medium inlet port (25) disposed on an upstream side of the valve aperture for introducing a cooling medium from the compressor, and with a cooling medium outlet port (26) disposed on a downstream side of the valve aperture and communicated with a crank chamber; an electromagnetic actuator (30) for driving the valve rod to move in the direction of opening or closing the valve aperture; and a pressure sensitive moving member (40) for driving the valve rod to move in response to a sucking pressure of the compressor; which is characterized in that a contracted hole portion is formed at an upper portion of the guide hole, that a diametrally reduced rod portion (15b) to be inserted into the contracted hole portion (19b) is formed at an upper portion of the valve rod, and that the valve rod is provided with an equalizing hole (51) for introducing a cooling medium pressure of the cooling medium outlet port into an equalizing pressure introducing chamber (52).

FIG. 1



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EUROPEAN SEARCH REPORT

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EP 06 00 7464

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 Y	EP 1 503 077 A2 (DELPHI TECH INC [US]) 2 February 2005 (2005-02-02) * paragraph [0005] - paragraph [0015]; figure 1 *	1,3 2,3	INV. F04B27/18
X Y	EP 0 992 684 A2 (TGK CO LTD [JP]) 12 April 2000 (2000-04-12) * paragraphs [0025] - [0027]; figure 6 *	1 2,3	
Y,D	EP 1 247 981 A2 (FUJIKOKI CORP [JP]) 9 October 2002 (2002-10-09) * paragraph [0105] - paragraph [0114]; figure 8 *	2,3	

TECHNICAL FIELDS SEARCHED (IPC)

F04B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	13 December 2010	Jurado Orenes, A

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13-12-2010

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1503077 A2	02-02-2005	US 2005025632 A1	03-02-2005
EP 0992684 A2	12-04-2000	US 6302656 B1	16-10-2001
EP 1247981 A2	09-10-2002	AT 390559 T	15-04-2008
		DE 60225747 T2	09-04-2009
		JP 2002303262 A	18-10-2002
		KR 20020079486 A	19-10-2002
		US 2002182087 A1	05-12-2002

EPO FORM P0459

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