Title (en)

CONTROL VALVE OF VARIABLE DISPLACEMENT COMPRESSOR

Title (de)

STEUERVENTIL FÜR KOMPRESSOR MIT VARIABLER VERDRÄNGUNG

Title (fr)

SOUPAPE DE COMMANDE DESTINEE A UN COMPRESSEUR A CYLINDREE VARIABLE

Publication

EP 1589223 B1 20190424 (EN)

Application

EP 04703930 A 20040121

Priority

- JP 2004000505 W 20040121
- JP 2003013890 A 20030122

Abstract (en)

[origin: EP1589223A1] In order to reduce the amount of refrigerant circulating within a variable displacement compressor to thereby improve compression efficiency, a control valve is configured to comprise a ball valve (11) for controlling the flow rate of refrigerant flowing from a discharge chamber to a crankcase, a spool valve (12) for controlling the flow rate of refrigerant flowing from the crankcase to a suction chamber, a diaphragm (13) for sensing suction pressure (Ps), and a solenoid for setting the suction pressure, wherein the spool valve (12) starts flow rate control after the ball valve (11) is fully closed or nearly fully closed, and the ball valve (11) starts flow rate control after the valve lift of the spool valve (12) is minimized or nearly minimized. As a result, a region is almost eliminated in which the ball valve (11) and the spool valve (12) are both open simultaneously during switching of flow rate control between the ball valve (11) and the spool valve (12), which makes it possible to minimize the flow rate of the refrigerant circulating within the compressor without contributing to a refrigerating operation, to thereby improve the efficiency of the compressor. <IMAGE>

IPC 8 full level

F04B 27/18 (2006.01)

CPC (source: EP KR US)

F04B 27/08 (2013.01 - KR); **F04B 27/1804** (2013.01 - EP US); **F04B 49/08** (2013.01 - KR); F04B 2027/1813 (2013.01 - EP US); F04B 2027/1827 (2013.01 - EP US); F04B 2027/1831 (2013.01 - EP US); F04B 2027/1854 (2013.01 - EP US); F04B 2027/1859 (2013.01 - EP US)

Designated contracting state (EPC)

DE FR

DOCDB simple family (publication)

EP 1589223 A1 20051026; **EP 1589223 A4 20110316**; **EP 1589223 B1 20190424**; CN 100396916 C 20080625; CN 1738971 A 20060222; JP 4547332 B2 20100922; JP WO2004065789 A1 20060518; KR 100984214 B1 20100928; KR 20050094868 A 20050928; US 2005254961 A1 20051117; WO 2004065789 A1 20040805

DOCDB simple family (application)

EP 04703930 A 20040121; CN 200480002486 A 20040121; JP 2004000505 W 20040121; JP 2005508109 A 20040121; KR 20057013414 A 20040121; US 18744105 A 20050720