

Title (en)
Capacity control valve for variable displacement compressor

Title (de)
Regelventil für einen Verdichter variabler Verdrängung

Title (fr)
Soupape de commande pour un compresseur à capacité variable

Publication
EP 1403516 A3 20090318 (EN)

Application
EP 03021486 A 20030923

Priority
JP 2002278764 A 20020925

Abstract (en)
[origin: EP1403516A2] A compact, low-cost capacity control valve 30 for a variable displacement compressor 1 is an integrated structure of first and at least second control valves 30A, 30B. The first control valve 30A, placed on a discharge passageway, functions as a variable orifice whose cross-sectional area can be set as desired by varying the power of a solenoid unit 30C. Part of refrigerant discharged at pressure PdH is supplied to the crank chamber 15, in which the pressure is Pc. The second control valve 30B controls the flow to the crank chamber 15 such that the differential pressure between upstream and downstream pressures PdH, PdL will be regulated at a specified level. This allows to reduce the size of the solenoid unit 30C because the first control valve 30A does not need a large force to yield a small differential pressure as required for the control operation. [origin: EP1403516A2] A first control valve (30A), a second control valve (30B), and a solenoid unit (30C) are integrally formed. The first solenoid valve sets the specific cross-sectional area of a refrigerant passageway that leads to a suction chamber or a discharge chamber of the variable displacement compressor. The solenoid unit actuates the first control valve according to variations in given external condition. The second control valve senses differential pressure developed across the first control valve and controls a flow rate of refrigerant supplied to or coming out of the crank chamber of the variable displacement compressor in such a way that differential pressure will be maintained at specified level.

IPC 8 full level
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CPC (source: EP US)
F04B 27/1804 (2013.01 - EP US); **F04B 49/225** (2013.01 - EP US); **F04B 2027/1813** (2013.01 - EP US); **F04B 2027/1827** (2013.01 - EP US); **F04B 2027/185** (2013.01 - EP US); **F04B 2027/1854** (2013.01 - EP US); **F04B 2027/1872** (2013.01 - EP US)

Citation (search report)
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• [A] EP 1067287 A1 20010110 - CALSONIC KANSEI CORP [JP]
• [A] US 6227812 B1 20010508 - KAWAGUCHI MASAHIRO [JP], et al
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GB2441490A; GB2441490B; US7540721B2; WO2007016486A1

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