

Title (en)  
HEAT PUMP

Title (de)  
WÄRMEPUMPE

Title (fr)  
POMPE À CHALEUR

Publication  
**EP 3705809 A4 20210106 (EN)**

Application  
**EP 18877203 A 20181108**

Priority  
• JP 2017215657 A 20171108  
• JP 2018041492 W 20181108

Abstract (en)  
[origin: EP3705809A1] Provided is a heat pump that includes: a low-stage compressor (3); a high-stage compressor (4) connected in series to a downstream side of the low-stage compressor (3); a condenser (5) connected to a downstream side of the high-stage compressor (4); expansion elements (6) each connected to a downstream side of the condenser (5); an evaporator (10) connected to downstream sides of the expansion elements (6); a second valve (18) and a third valve (19) allowing a refrigerant (R) to be selectively introduced into either the low-stage compressor (3) or the high-stage compressor (4) from the evaporator (10); a low-stage gas-liquid separator (21) installed at an inlet of the low-stage compressor (3) and configured to separate a liquid phase of the refrigerant (R) and to allow a gas phase to be introduced into the low-stage compressor (3); and a high-stage gas-liquid separator (22) installed at an inlet of the high-stage compressor (4) and configured to separate the liquid phase of the refrigerant (R) and to allow the gas phase to be introduced into the high-stage compressor (4).

IPC 8 full level  
**F25B 1/10** (2006.01); **F25B 1/00** (2006.01); **F25B 5/02** (2006.01); **F25B 43/00** (2006.01)

CPC (source: EP US)  
**F25B 1/10** (2013.01 - EP); **F25B 5/02** (2013.01 - EP US)

Citation (search report)  
• [X] JP H06257889 A 19940916 - MITSUBISHI ELECTRIC CORP  
• [A] JP H09145189 A 19970606 - SANYO ELECTRIC CO  
• See references of WO 2019093422A1

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**EP 3705809 A1 20200909; EP 3705809 A4 20210106**; CN 111316048 A 20200619; CN 111316048 B 20220114; JP 2019086237 A 20190606; JP 6916716 B2 20210811; WO 2019093422 A1 20190516

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