

Title (en)  
Pump having one inlet and two outlets

Title (de)  
Pumpe mit einem Einlass und zwei Auslässen

Title (fr)  
Pompe à une entrée et à deux sorties

Publication  
**EP 1403521 A1 20040331 (EN)**

Application  
**EP 03021749 A 20030925**

Priority  
JP 2002282002 A 20020926

Abstract (en)  
A pump (1) comprises one inlet (18), two outlets (12, 13), pump chamber (10) housing an impeller that is fixed to rotation shaft (14) of motor (M), and switch valve (2) for delivering fluid through one or the other of the two outlets in accordance with switching of the rotation direction of the impeller between forward and reverse. Pump comprises one inlet, two outlets, pump chamber housing an impeller that is fixed to rotation shaft of motor, and switch valve for delivering fluid through one or the other of the two outlets in accordance with switching of the rotation direction of the impeller between forward and reverse. The switch valve is disposed between the impeller and the two outlets. It includes a sector valve element (20), and valve lid portions (24, 25). The sector valve element can swing along with an arc circumference surface (21) facing a circumference surface of the impeller. The two valve lid portions are formed on both end surfaces (22, 23) of the valve element. The end surface closes the outlets in a manner to permit their open and close states. The part of a spiral flow of liquid generated through the rotation of the impeller affects the cylindrical circumference surface to perform switching operation of the switch valve.

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Citation (search report)  
• [X] DE 19745737 A1 19980507 - DAEWOO ELECTRONICS CO LTD [KR]  
• [X] WO 9927836 A1 19990610 - SAMSUNG ELECTRONICS CO LTD [KR], et al  
• [X] GB 817802 A 19590806 - GEN ELECTRIC  
• [X] DE 3442907 A1 19860605 - BOSCH GMBH ROBERT [DE]  
• [X] DE 4330507 C1 19941006 - GRUNDFOS AS [DK]  
• [A] US 4679983 A 19870714 - PIETRYK ERWIN [DE], et al

Cited by  
CN103277340A; CN111608792A; CN106958124A; CN106050681A; CN108138799A; EP4375512A1; EP3156662A1; CN107795517A; CN108138800A; CN107620739A; EP3376037A1; CN110418893A; WO2019219361A1; US11982279B2; US11073161B2; WO2018167031A1; WO2017063969A1; WO2018054238A1; WO2023146627A1

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