

Title (en)  
PUMP DEVICE

Title (de)  
PUMPVORRICHTUNG

Title (fr)  
DISPOSITIF DE POMPE

Publication  
**EP 3306094 A4 20190116 (EN)**

Application  
**EP 16803367 A 20160601**

Priority  
• JP 2015112566 A 20150602  
• JP 2016066137 W 20160601

Abstract (en)  
[origin: EP3306094A1] A pump device includes: a main pump (101) and a sub pump (102) that supply hydraulic oil to the hydraulic device (23); and a switching valve (40) that switches so as to supply the hydraulic oil discharged from the sub pump (102) to the hydraulic device (23), or to return the hydraulic oil discharged from the sub pump (102) to the suction side. The main pump (101) and the sub pump (102) each include: a rotor (2) connected to a common drive shaft (1), a discharge port (9) into which the hydraulic oil discharged from a pump chamber (7) is led, and a groove-shaped discharge-side notch formed from an opening edge of the discharge port (9) toward a direction opposite to a rotation direction of the rotor (2). The switching valve (40) switches according to a rotation speed of the drive shaft (1). At least one discharge-side notch (9b) of the sub pump (102) is formed so that a resistance applied to the flow of the hydraulic oil passing therethrough is greater than that of the discharge-side notch (9b) of the main pump (101).

IPC 8 full level  
**F04C 11/00** (2006.01); **F01C 21/08** (2006.01); **F01C 21/10** (2006.01); **F04C 2/344** (2006.01); **F04C 14/02** (2006.01); **F04C 14/26** (2006.01); **F04C 15/00** (2006.01); **F04C 15/06** (2006.01)

CPC (source: EP US)  
**F04C 2/344** (2013.01 - US); **F04C 2/3446** (2013.01 - EP US); **F04C 11/00** (2013.01 - US); **F04C 11/001** (2013.01 - EP US); **F04C 14/02** (2013.01 - EP US); **F04C 14/26** (2013.01 - EP US); **F04C 15/0049** (2013.01 - EP US); **F04C 15/06** (2013.01 - EP US); **F01C 21/0863** (2013.01 - EP US); **F01C 21/108** (2013.01 - EP US); **F04C 2270/12** (2013.01 - EP US); **F04C 2270/13** (2013.01 - EP US)

Citation (search report)  
• [X] US 2013052073 A1 20130228 - ISHIHAMA HIROYUKI [JP], et al  
• [A] JP 2010014101 A 20100121 - KAYABA INDUSTRY CO LTD  
• See references of WO 2016194933A1

Designated contracting state (EPC)  
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DOCDB simple family (publication)  
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**EP 16803367 A 20160601**; CN 201680032273 A 20160601; JP 2015112566 A 20150602; JP 2016066137 W 20160601; US 201615578437 A 20160601