

Title (en)

Variable valve timing control apparatus

Title (de)

Vorrichtung zur Regelung der variablen Ventilsteuerzeit

Title (fr)

Appareil de contrôle de la synchronisation d'une soupape variable

Publication

EP 2428656 B1 20150805 (EN)

Application

EP 11179376 A 20110830

Priority

JP 2010203234 A 20100910

Abstract (en)

[origin: EP2428656A1] A variable valve timing control apparatus, includes a housing (1) rotating in synchronization with a drive shaft (C) of an internal combustion engine (E), an inner rotor (2) arranged coaxially with the housing (1) and rotatable relative to the housing (1), a driven shaft (5, 101), an intermediate member (6) arranged between the inner rotor (2) and the driven shaft (5) and rotating in synchronization with the inner rotor (2) and the driven shaft (5), a first hydraulic fluid passage (43, 73), an inner room (43b, 73b) formed between the driven shaft (5) and the inner rotor (2) and constituting a portion of the first hydraulic fluid passage (43, 73), a second hydraulic fluid passage (44, 74), a passage (44b, 74b) formed in the intermediate member (6) and constituting a portion of the second hydraulic fluid passage (44, 74), and a contact portion (A, B) at which an axial surface of the intermediate member (6) is entirely in contact with the inner rotor (2) between the first hydraulic fluid passage (43) and the second hydraulic fluid passage (44).

IPC 8 full level

F01L 1/344 (2006.01)

CPC (source: EP US)

F01L 1/3442 (2013.01 - EP US); **F01L 2001/34433** (2013.01 - EP US); **F01L 2001/34483** (2013.01 - EP US); **F01L 2301/00** (2020.05 - EP US)

Cited by

EP2843201A1; EP2843202A1; EP2894304A4; EP3051081A4; CN105745405A; EP3075971A4; US10107150B2; US9267401B2; WO2015090298A1; US9447710B2

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DOCDB simple family (publication)

EP 2428656 A1 20120314; **EP 2428656 B1 20150805**; CN 102400728 A 20120404; CN 102400728 B 20150513; JP 2012057578 A 20120322; JP 5585832 B2 20140910; US 2012060779 A1 20120315

DOCDB simple family (application)

EP 11179376 A 20110830; CN 201110268518 A 20110906; JP 2010203234 A 20100910; US 201113217486 A 20110825