

Title (en)

VALVE OPENING TIME PHASING DEVICE FOR INTERNAL COMBUSTION ENGINE

Title (de)

VORRICHTUNG ZUR VARIABLEN EINSTELLUNG DER STEUERZEITEN VON GASWECHSELVENTILEN EINER BRENNKRAFTMASCHINE

Title (fr)

DISPOSITIF DE DEPHASAGE D'OUVERTURE DE SOUPAPES POUR MOTEUR A COMBUSTION INTERNE

Publication

**EP 2478189 B1 20131106 (DE)**

Application

**EP 10745609 A 20100823**

Priority

- DE 102009042202 A 20090918
- EP 2010062212 W 20100823

Abstract (en)

[origin: WO2011032805A1] The invention relates to a device (11) for variably adjusting the control times of gas exchange valves (9, 10) of an internal combustion engine (1) having a hydraulic phase adjustment device (12) and at least one volume accumulator (31), wherein the phase adjustment device (12) can be brought into driving connection with a crankshaft (2) and a camshaft (6, 7) and at least one early adjustment chamber (24) and at least one late adjustment chamber (25) which can be supplied with pressure mediums via pressure medium lines (26a, b, p, v), or from which pressure mediums can be drained. A phase position of the camshaft (6, 7) can be adjusted relative to the crankshaft (2) in the direction of early control times by supplying pressure mediums to the early adjustment chamber (24) while simultaneously draining pressure mediums from the late adjustment chamber (25), wherein a phase position of the camshaft (6, 7) can be adjusted relative to the crankshaft (2) in the direction of late control times by supplying pressure mediums to the late adjustment chamber (25) while simultaneously draining pressure mediums from the early adjustment chamber (24), wherein pressure mediums can be supplied to the volume accumulator(s) (31) during operation of the internal combustion engine (1).

IPC 8 full level

**F01L 1/344 (2006.01)**

CPC (source: EP KR US)

**F01L 1/047** (2013.01 - KR); **F01L 1/344** (2013.01 - EP KR US); **F01L 1/34409** (2013.01 - EP KR US); **F01L 1/3442** (2013.01 - EP KR US);  
**F01L 2001/0475** (2013.01 - EP US); **F01L 2001/34426** (2013.01 - EP US); **F01L 2001/34433** (2013.01 - EP US);  
**F01L 2001/34446** (2013.01 - EP US)

Cited by

DE102015204040A1; DE102015204040B4; DE102017102810A1; DE102017102810B4; DE102015209304A1; WO2016141929A1;  
US10352206B2

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 SE SI SK SM TR

DOCDB simple family (publication)

**WO 2011032805 A1 20110324**; BR 112012005958 A2 20200114; CN 102549241 A 20120704; CN 102549241 B 20140611;  
DE 102009042202 A1 20110414; EP 2478189 A1 20120725; EP 2478189 B1 20131106; IN 553DEN2012 A 20150612;  
JP 2013505388 A 20130214; JP 5579271 B2 20140827; KR 101632097 B1 20160620; KR 20120068868 A 20120627;  
RU 2012115466 A 20131027; US 2012111295 A1 20120510; US 8763574 B2 20140701

DOCDB simple family (application)

**EP 2010062212 W 20100823**; BR 112012005958 A 20100823; CN 201080041402 A 20100823; DE 102009042202 A 20090918;  
EP 10745609 A 20100823; IN 553DEN2012 A 20120119; JP 2012529190 A 20100823; KR 20127006916 A 20100823;  
RU 2012115466 A 20100823; US 201013386217 A 20100823