

Title (en)

VALVE OPENING/CLOSING TIMING CONTROL DEVICE

Title (de)

VORRICHTUNG ZUR STEUERUNG DER VENTILÖFFNUNGS-/SCHLIESSZEIT

Title (fr)

DISPOSITIF DE COMMANDE DU CALAGE D'OUVERTURE/FERMETURE DE SOUPAPES

Publication

**EP 3032050 A4 20160907 (EN)**

Application

**EP 14835416 A 20140625**

Priority

- JP 2013165408 A 20130808
- JP 2014066855 W 20140625

Abstract (en)

[origin: EP3032050A1] A valve opening and closing timing control device being promptly movable to an intermediate lock phase includes a vane selectively moving a relative rotational phase of a driven-side rotary member to a driving-side rotary member between a retarded direction and an advance direction, the retarded direction where a volume within a retard chamber increases by an inflow of a fluid, the advance direction where a volume within an advance chamber increases by the inflow of the fluid, an intermediate lock mechanism being switchable between a lock state and an unlock state, the lock state where the relative rotational phase is locked at an intermediate locked phase by a fitting of a lock member that is provided at the driving-side rotary member into a recess that is provided at the driven-side rotary member, the unlocked state where the relative rotational phase is unlocked by a retraction of the lock member from the recess, and a phase control portion performing a control of a supply of the fluid to the retard chamber and a discharge of the fluid from the advance chamber, or a control of a discharge of the fluid from the retard chamber and a supply of the fluid to the advance chamber, in order for the lock member to reach the intermediate locked phase by reducing a travelling speed of the relative rotational phase from a reference phase to the intermediate locked phase to be slower than the travelling speed of the relative rotational phase to the reference phase when the intermediate lock mechanism is switched from the unlock state to the lock state.

IPC 8 full level

**F01L 1/344** (2006.01)

CPC (source: EP US)

**F01L 1/3442** (2013.01 - EP US); **F01L 1/0532** (2013.01 - EP US); **F01L 2001/3443** (2013.01 - EP US); **F01L 2001/34463** (2013.01 - EP US); **F01L 2001/34466** (2013.01 - EP US); **F01L 2001/34473** (2013.01 - EP US); **F01L 2001/34483** (2013.01 - EP US); **F01L 2250/02** (2013.01 - EP US); **F01L 2800/00** (2013.01 - EP US)

Citation (search report)

- [I] US 2010139592 A1 20100610 - TAKEMURA YUICHI [JP]
- [A] US 2010269772 A1 20101028 - TAKEMURA YUICHI [JP], et al
- [A] JP 2013019352 A 20130131 - AISIN SEIKI
- See references of WO 2015019735A1

Cited by

WO2019210510A1

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 3032050 A1 20160615**; **EP 3032050 A4 20160907**; **EP 3032050 B1 20190116**; CN 105392971 A 20160309; CN 105392971 B 20171222; JP 2015034501 A 20150219; JP 6036600 B2 20161130; US 2016169061 A1 20160616; WO 2015019735 A1 20150212

DOCDB simple family (application)

**EP 14835416 A 20140625**; CN 201480041229 A 20140625; JP 2013165408 A 20130808; JP 2014066855 W 20140625; US 201414910112 A 20140625