

Title (en)

BALL-SCREW LIFT DEVICE FOR VARIABLE COMPRESSION-RATIO ENGINE

Title (de)

KUGELSPINDELHUBVORRICHTUNG FÜR MOTOR MIT VERÄNDERLICHEM VERDICHTUNGSVERHÄLTNIS

Title (fr)

DISPOSITIF DE LEVEE DE BILLE A VIS POUR MOTEUR A TAUX DE COMPRESSION VARIABLE

Publication

EP 2310651 A2 20110420 (FR)

Application

EP 09769465 A 20090626

Priority

- FR 2009000796 W 20090626
- FR 0803615 A 20080627
- US 7636408 P 20080627

Abstract (en)

[origin: WO2009156624A2] The ball-screw lift device for a variable compression-ratio engine comprising a double-acting hydraulic control actuator (8) comprising an upper chamber (121) and a lower chamber (122) and at least one actuator piston (13) connected to a control rack (7), comprises: at least two balls (401, 402) or shutters each resting on a seat (403, 404) and respectively closing off each end of a transfer port (405) connecting the upper chamber (121) of the control actuator (8) to the lower chamber (122), said balls (401, 402) acting like a non-return valve when held on their seat (403, 404) by a spring (408, 409) in order to allow the hydraulic fluid to pass in just one direction; and lift means (410) comprising at least one electric motor (480) designed to turn at least one screw (481, 482) allowing at least one ball (401, 402) to be lifted off or set down on its seat (403, 404).

IPC 8 full level

F02B 75/04 (2006.01); **F01B 9/04** (2006.01); **F02B 75/32** (2006.01); **F02D 15/02** (2006.01); **F16K 11/056** (2006.01); **F16K 11/10** (2006.01); **F16K 15/18** (2006.01); **F16K 31/124** (2006.01)

CPC (source: EP KR US)

F01B 9/04 (2013.01 - KR); **F02B 75/04** (2013.01 - KR); **F02B 75/048** (2013.01 - EP US); **F02B 75/32** (2013.01 - KR); **F02D 15/02** (2013.01 - KR); **F16K 11/056** (2013.01 - EP US); **F16K 11/105** (2013.01 - EP US); **F16K 15/1823** (2021.08 - EP US)

Citation (search report)

See references of WO 2009156624A2

Designated contracting state (EPC)

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 TR

Designated extension state (EPC)

AL BA RS

DOCDB simple family (publication)

WO 2009156624 A2 20091230; **WO 2009156624 A3 20100304**; AU 2009264043 A1 20091230; AU 2009264043 B2 20130328; CA 2727333 A1 20091230; CA 2727333 C 20151124; CN 102132021 A 20110720; CN 102132021 B 20130710; EP 2310651 A2 20110420; EP 3517756 A1 20190731; EP 3517756 B1 20210825; FR 2933141 A1 20100101; FR 2933141 B1 20111111; JP 2011525957 A 20110929; JP 5524960 B2 20140618; KR 101539484 B1 20150724; KR 20110036080 A 20110406; US 2010218745 A1 20100902; US 8439004 B2 20130514

DOCDB simple family (application)

FR 2009000796 W 20090626; AU 2009264043 A 20090626; CA 2727333 A 20090626; CN 200980133830 A 20090626; EP 09769465 A 20090626; EP 18159510 A 20090626; FR 0803615 A 20080627; JP 2011515529 A 20090626; KR 20117001902 A 20090626; US 68081409 A 20090626