

Title (en)  
ENGINE SYSTEM AND SADDLE-TYPE VEHICLE

Title (de)  
MOTORSYSTEM UND SATTELFahrzeug

Title (fr)  
SYSTÈME DE MOTEUR ET VÉHICULE DE TYPE À SELLE

Publication  
**EP 3173606 A1 20170531 (EN)**

Application  
**EP 14885071 A 20140723**

Priority  
JP 2014003879 W 20140723

Abstract (en)  
During start-up of an engine, a reverse rotation start-up operation of rotating a crankshaft in a forward direction is performed after rotation of the crankshaft in a reverse direction. In the operation, a fuel injection device injects fuel such that a fuel-air mixture is introduced into a combustion chamber from an intake passage through an intake port, at at least one of a time when the crankshaft is rotated in the reverse direction and a crank angle is in a start-up intake range and a time when the crankshaft is rotated in the forward direction and the crank angle is in the normal intake range, and an ignition device ignites the fuel-air mixture in the combustion chamber when the crank angle is in a start-up ignition range. An engine unit is controlled such that the operation is performed again, in a case in which a rotation state detected by a rotation state detector does not satisfy a predetermined start-up condition, when the crankshaft is rotated in the forward direction in the operation and before a piston reaches a first compression top dead center.

IPC 8 full level  
**F02D 29/02** (2006.01); **F02D 13/02** (2006.01); **F02D 41/06** (2006.01); **F02D 43/00** (2006.01); **F02D 45/00** (2006.01); **F02N 11/08** (2006.01); **F02P 5/15** (2006.01)

CPC (source: EP)  
**F02D 13/0215** (2013.01); **F02D 35/02** (2013.01); **F02D 41/062** (2013.01); **F02D 41/34** (2013.01); **F02D 43/00** (2013.01); **F02N 19/004** (2013.01); **F02N 19/005** (2013.01); **F02N 99/004** (2013.01); **F02N 99/008** (2013.01); **F02P 5/045** (2013.01); **F02P 5/1506** (2013.01); **F02D 2013/0292** (2013.01); **F02D 2041/001** (2013.01); **F02D 2200/101** (2013.01); **F02D 2250/06** (2013.01); **F02N 11/04** (2013.01); **F02N 2019/007** (2013.01)

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 3173606 A1 20170531**; **EP 3173606 A4 20180214**; TW 201604388 A 20160201; TW I615545 B 20180221; WO 2016013044 A1 20160128

DOCDB simple family (application)  
**EP 14885071 A 20140723**; JP 2014003879 W 20140723; TW 104122408 A 20150709