

Title (en)
ENGINE, CYLINDER BODY MEMBER, AND VEHICLE

Title (de)
MOTOR, ZYLINDERKÖRPERELEMENT UND FAHRZEUG

Title (fr)
MOTEUR, CORPS DE CYLINDRE, ET VÉHICULE

Publication
EP 3263877 A4 20180502 (EN)

Application
EP 15883325 A 20151104

Priority
• JP 2015033025 A 20150223
• JP 2015081065 W 20151104

Abstract (en)
[origin: EP3263877A1] An object of the present teaching is to provide an engine that is able to suppress generation of scuffs at or near the top dead center more effectively. The present teaching provides an engine including a piston part and a cylinder body part with a sliding surface on which the piston part is slidable. The cylinder body part is made of an Al alloy with an Si content of 16% by mass or more. The cylinder body part includes Si primary crystal grains having an average crystal grain diameter of 8 μm or more and 50 μm or less, Si eutectic crystal grains having an average crystal grain diameter less than the average crystal grain diameter of the Si primary crystal grains, and an Al alloy base material. The sliding surface is configured such that, at least in an upper quarter region of the sliding surface, the Si primary crystal grains and the Al alloy base material are exposed so as to be contactable with the piston part, and a plurality of substantially parallel linear grooves are formed at a pitch greater than the average crystal grain diameter of the Si primary crystal grains so that the plurality of substantially parallel linear grooves have a portion that exists between adjacent ones of the Si primary crystal grains. The plurality of substantially parallel linear grooves have a depth equal to or more than one-third of an upper limit value of a diameter range of the Si eutectic crystal grains in a grain size distribution of Si crystal grains in the cylinder body part.

IPC 8 full level
F02F 1/00 (2006.01); **C22C 21/02** (2006.01); **C22F 1/00** (2006.01); **C22F 1/043** (2006.01); **F02F 1/20** (2006.01)

CPC (source: EP)
B22D 15/02 (2013.01); **B22D 21/007** (2013.01); **C22C 21/02** (2013.01); **C22F 1/043** (2013.01); **F02F 1/20** (2013.01)

Citation (search report)
• [Y] EP 2138695 A2 20091230 - YAMAHA MOTOR CO LTD [JP]
• [Y] US 5891273 A 19990406 - RUECKERT FRANZ [DE], et al
• [Y] JP 2002221077 A 20020809 - NISSAN MOTOR
• [Y] DE 10046360 A1 20020404 - GEHRING GMBH & CO MASCHF [DE]
• [Y] JP 2005273654 A 20051006 - YAMAHA MOTOR CO LTD
• [Y] JP 2010274386 A 20101209 - TOYOTA CENTRAL RES & DEV, et al
• See references of WO 2016136035A1

Cited by
EP4219929A4

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 3263877 A1 20180103; EP 3263877 A4 20180502; EP 3263877 B1 20190717; JP 2018059404 A 20180412; TW 201631257 A 20160901; TW I610022 B 20180101; WO 2016136035 A1 20160901

DOCDB simple family (application)
EP 15883325 A 20151104; JP 2015033025 A 20150223; JP 2015081065 W 20151104; TW 104140201 A 20151201