

Title (en)  
ENGINE UNIT

Title (de)  
MOTOREINHEIT

Title (fr)  
UNITÉ DE MOTEUR

Publication  
**EP 3626956 A4 20200520 (EN)**

Application  
**EP 18802296 A 20180511**

Priority  
• JP 2017096369 A 20170515  
• JP 2018018340 W 20180511

Abstract (en)  
[origin: EP3626956A1] Provided is an intake-pipe fuel injection four-stroke engine unit capable of enhancing startability of an engine 10 in which a high-load region TH and a low-load region TL are present in four strokes. The engine unit includes: a four-stroke engine body 10 having the high-load region TH and the low-load region TL in four strokes; a permanent magnet starter motor 30 including a permanent magnet and configured to rotate a crank shaft 46; and an ECU 32 configured to control the permanent magnet starter motor 30. The rotation speed of the permanent magnet starter motor 30 is controlled based on a temperature of the four-stroke engine body 10 measured by an engine temperature sensor 28 such that an increase in the rotation speed of the crank shaft 46 is suppressed while the crank angle is in the low-load region TL and from when a fuel injection device 54 injects fuel to an intake passage 33a to when an intake valve 50 is closed.

IPC 8 full level  
**F02D 13/02** (2006.01); **F02D 13/08** (2006.01); **F02D 29/02** (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); **F02D 41/04** (2006.01); **F02D 41/34** (2006.01); **F02N 19/00** (2010.01)

CPC (source: EP)  
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Citation (search report)  
• [YA] US 2007079782 A1 20070412 - KASSNER UWE [DE], et al  
• [YA] US 2015083079 A1 20150326 - LI YONGHUA [US], et al  
• [A] EP 3051118 A1 20160803 - YAMAHA MOTOR CO LTD [JP]  
• See references of WO 2018212093A1

Designated contracting state (EPC)  
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Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**EP 3626956 A1 20200325**; **EP 3626956 A4 20200520**; **EP 3626956 B1 20210804**; BR 112019023949 A2 20200609;  
BR 112019023949 B1 20220628; JP WO2018212093 A1 20190627; WO 2018212093 A1 20181122

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**EP 18802296 A 20180511**; BR 112019023949 A 20180511; JP 2018018340 W 20180511; JP 2018566326 A 20180511