

Title (en)  
Valve drive for internal combustion engine

Title (de)  
Ventilantrieb für ein Ventil eines Verbrennungsmotors

Title (fr)  
Actionneur de soupape de moteur à combustion interne

Publication  
**EP 1087109 A3 20020814 (DE)**

Application  
**EP 00120615 A 20000921**

Priority  
AT 161799 A 19990922

Abstract (en)  
[origin: EP1087109A2] The actuator has an auxiliary piston (ZK) and a main piston (HK) held apart by a spring (F). Pressurised oil gains access through a restrictor bore (B) in the auxiliary valve to the main piston to open the valve. On the closing stroke the oil is rapidly ejected through the feed pipe (L) until a stop (A) on the auxiliary valve reaches the cylinder and the main cylinder continues to move over the distance (As) forcing the oil at a slower rate through the restrictor

IPC 1-7  
**F01L 9/02**; **F01L 1/16**

IPC 8 full level  
**F01L 9/10** (2021.01); **F01L 1/16** (2006.01)

CPC (source: EP US)  
**F01L 9/10** (2021.01 - EP US)

Citation (search report)

- [A] CH 243908 A 19460815 - SCHWEIZERISCHE LOKOMOTIV [CH]
- [A] US 5275136 A 19940104 - SCHECHTER MICHAEL M [US], et al
- [A] DE 4411857 A1 19941110 - FORD WERKE AG [DE]
- [A] DE 19749302 A1 19990512 - BAYERISCHE MOTOREN WERKE AG [DE]
- [A] EP 0652355 A1 19950510 - NIIGATA ENGINEERING CO LTD [JP], et al
- [A] DE 4443169 A1 19960613 - DENS JUERGEN DIPL ING DIPL WIR [DE]
- [A] PATENT ABSTRACTS OF JAPAN vol. 010, no. 126 (M - 477) 10 May 1986 (1986-05-10)

Cited by  
DE102004018359B4; EP1270881A1; DE102006012067A1; ITBO20130057A1; DE102006012067B4; US6584885B2; WO03027449A1; DE102017113783A1; US10718237B2

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