



(12) Patent specification

(10) SE 540 139 C2

(21) Patent application number:	1651031-5	(51) Int.Cl.:	
(45) Grant of patent:	2018-04-10	<b>F16H 63/50</b>	(2006.01)
(41) Available to the public:	2018-01-12	<b>F01L 1/34</b>	(2006.01)
(22) Filing date:	2016-07-11	<b>F01L 13/06</b>	(2006.01)
(24) Effective date:	2016-07-11	<b>F02D 13/04</b>	(2006.01)
(30) Priority data:	---	<b>F16H 61/21</b>	(2006.01)

- (73) Patentee: Scania CV AB, , 151 87 Södertälje SE  
 (72) Inventor: Niclas Gunnarsson, Huddinge SE  
 (74) Agent: Scania CV AB, , 151 87, Södertälje SE  
 (54) Title: Method for changing gear ratio in a gearbox of a vehicle  
 (56) Cited documents: WO 2015084243 A2 · US 20100286885 A1  
 (57) Abstract:

The invention relates to a method for changing gear ratio in a gearbox (4) of a vehicle (1). The method comprises the steps of: a) receiving a first signal (S1) that the gear ratio should be changed; b) calculating the braking torque that the internal combustion engine (2) should provide in order to reduce the rotational speed of the internal combustion engine (2) to a target rotational speed at which the internal combustion engine (2) should be running after the gear ratio has been changed; c) phase-shifting the at least one second camshaft (28) in relation to the crankshaft (16), so that the at least one second camshaft (28) is phase-shifted to a state, where the at least one exhaust valve (24) is controlled in such a way, that it is opened during the expansion stroke of the internal combustion engine (2) and closed during the exhaust stroke of the internal combustion engine (2); d) disconnecting the internal combustion engine (2) from the at least one driving wheel (6); e) opening and closing the at least one exhaust valve (24) with a decompression device in the transition area between an exhaust stroke and an inlet stroke and also between a compression stroke and an expansion stroke, when the piston (12) is at a top dead centre in the cylinder (10) in order to achieve enginebraking through compression in the cylinders (10) during the exhaust stroke and the compression stroke, and f) shifting gear in the gearbox (4). The invention also relates to a vehicle (1) comprising a gearbox (4) in which the gear ratio is changed by the method.

