

## C. Function of Selector Lever

**Note:** To emphasize the differences between the individual versions of the transmissions the pertinent modifications are *printed in italics*.

Transmission Type K4A 025, K4B 050	Transmission Type K4C 025, K4A 040
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### Selector Lever in Position "P" = Parking and Starting Position

In this position, the output shaft of the transmission is locked by means of a stop in the transmission housing, which will lock the rear axle to protect the vehicle against moving off unintentionally. This protection is required, because a hydraulic clutch has no mechanical connection between the engine and the rear axle.

The selector lever may be engaged in position "P" only when the vehicle is stopped. Also pull hand brake when the vehicle is parked.

The selector lever may be moved to position "P" both with the engine running or stopped. However, a hydraulic interlock has been installed to protect the transmission. This interlock makes any unintentional engagement of the selector lever in position "P" when driving forward ineffective as from a speed of approx. 10 km/h.

The engine can be started, while the selector lever is in this position.

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The engine can be started, while the selector lever is in this position.

### Selector Lever in Position "R" = Reverse Driving

The selector lever may be engaged to position "R" only when the vehicle is stopped. As a protection for forward driving as from a speed of approx. 10 km/h a hydraulic interlock becomes effective which makes the engagement of reverse speed impossible.

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**Selector Lever in Position “N” = Idling Speed and Starting Position**

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In this selector lever position there is no positive connection between the engine and the rear axle. With the brakes released, the vehicle can be freely moved (for example when towing off).

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At speeds above 50 km/h the selector lever may not be moved into position “N.”

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The engine can be started similar to position “P,” while the starter circuit is interrupted by the starter locking switch when in driving position R, 4, 3 and 2.

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**Selector Lever in Position “4” = Normal Driving**

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In this selector lever position, all the four forward speeds are automatically shifted in sequence. In almost all operational requirements, position “4” provides optimal driving and is therefore normally used for all driving on highways and in the city. While the hydraulic clutch operates steplessly, the transmission will be shifting under the influence of control members such as the *stepping pressure transmitter* and the *modulating pressure transmitter*, with their operation depending on the vehicle speed or the position of the accelerator pedal. This means that the shifting points can be influenced by the driver via the accelerator pedal; the more acceleration, the later will the transmission shift into the next higher gear. Upon deceleration, as long as the transmission is still engaged (for example in 3rd speed), the transmission will shift up into 4th speed.

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The accelerator pedal can be moved beyond the full throttle, which is indicated by a pressure point, into kickdown position.

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**Selector Lever in Position "4" = Normal Driving (ctd.)**

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In this kickdown position shifting up into the next gear step will occur only at the limit or end speed established for this gear step; while vice versa, for fast accelerating, kickdown permits fast shifting down during normal driving.

In this kickdown position, as well as full throttle, shifting up to the next speed will occur only at the limit or end speed; while vice versa, for fast accelerating, kickdown permits fast shifting down during normal driving.

*In a given speed range, shifting down is also possible by simple acceleration in the partial up to full throttle range.*

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**Shifting-up at Partial Throttle**

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When the selector lever is placed into position "4" with the vehicle stopped, the transmission is in 2nd speed.

*Under partial throttle, shifting-up from 2-3 and 3-4 will be earlier as compared with full throttle and kickdown (refer to Job No. 27-0). Note that partial throttle indicates the range between idling throttle and full throttle.*

When the selector lever is placed into position "4" with the vehicle stopped, the transmission is in 2nd speed.

*Upon acceleration, the transmission shifts down and moving off is therefore in first speed on principle. Under partial throttle shifting-up from 1-2, 2-3 and 3-4 will be earlier as compared with full throttle and kickdown (refer to Job No. 27-0). Note that partial throttle indicates the range between idling throttle and full throttle.*

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**Shifting-up at Full Throttle**

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*Full throttle also means starting in 2nd speed. Shifting-up from 2-3 and 3-4 is similar to Job No. 27-0.*

*The transmission operates as under partial throttle, but shifting up under full throttle and kickdown will occur each time at the top limit.*

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**Shifting-up at Kickdown**

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Moving the accelerator pedal into kickdown position permits energetic acceleration, since the transmission shifts back into first speed when starting. Following this shifting down under kickdown, first speed can be maintained under full throttle. Shifting-up from 1-2 with full throttle will be earlier than with kickdown (refer to Job No. 27-0). Therefore, 2nd speed can be exploited much higher with kickdown than with partial or full throttle. Shifting-up from 2-3 and 3-4 is similar to Job No. 27-0.

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### Shifting Down

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To prevent any shift fluctuations from the lower to the higher speed and vice versa, the hydraulic shifting system is arranged in such a manner that shifting down will occur at lower speeds than shifting up.

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### Shifting Down under Partial Throttle

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Shifting down from 4–3 and 3–2 is similar to Job No. 27–0. Shifting down from 2–1 is *not possible under partial throttle*.

Shifting down from 4–3 and 3–2 is similar to Job No. 27–0. Shifting down from 2–1 is *only possible under partial up to full throttle. At idle throttle, transmission remains in 2nd speed.*

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### Shifting Down under Full Throttle

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Shifting down will be from 4–3 and 3–2 (refer to Table in Job No. 27–0). *Shifting down from 2–1 is impossible also under full throttle.*

Shifting down will be from 4–3, 3–2 and 2–1 (refer to Table in Job No. 27–0).

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### Shifting Down under Kickdown

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Under kickdown shifting down will be from 4–3, 3–2 and 2–1 (refer to Table in Job No. 27–0).

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### Selector Lever in Position “3” = Driving on Average Grades and Slopes

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In this selector lever position 4th speed is no longer available. 3rd speed can therefore also be used as a braking speed.

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In selector lever position “3” *under partial throttle and full throttle moving off will be in 2nd speed. The speed limit of 2nd speed is higher under full throttle—refer to Job No. 27–0.*

In selector lever position “3,” *1st speed is also principally available for moving off. Shifting up from 1–2 and 2–3 at little partial throttle is similar to driving position “4.” At full throttle and kickdown shifting up from 2–3 is higher in driving position “3” than in driving position “4” (refer to Table in Job No. 27–0).*

Shifting down from 3–2 under kickdown is similar to Job No. 27–0.

Shifting down from 3–2 under kickdown, *full throttle and idle throttle is similar to Job No. 27–0, with a partial shifting down being possible between idle throttle and full throttle.*

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**Selector Lever in Position "3" = Driving on Average Grades and Slopes (ctd.)**

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*Otherwise, operation is similar to selector lever position "4."*

To prevent any racing of the engine, 3rd speed may be exploited in this selector lever position only up to a permissible max. speed (refer to Table in Job No. 27-0). The selector lever should therefore be changed from position "3" to "4" at this speed at the latest. In accordance with this limitation, a braking shift by changing the selector lever from position "4" to "3" is permitted only below the permissible max. speed for position "3."

*Shifting down from 2-1 corresponds to shifting down in lever position "4."*

To prevent any racing of the engine, 3rd speed may be exploited in this selector lever position only up to a permissible max. speed (refer to Table in Job No. 27-0). The selector lever should therefore be changed from position "3" to "4" at this speed at the latest. In accordance with this limitation, a braking shift by changing the selector lever from position "4" to "3" is permitted only below the permissible max. speed for position "3."

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**Selector Lever in Position "2" = Driving on Steep Mountain Roads, in Columns with Constant Stopping and Starting and with Trailers in the Mountains**

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In selector lever position "2" the transmission can be shifted up only to 2nd speed. 3rd and 4th speed are not available. This selector lever position is therefore mainly reserved for engine braking and driving across mountain roads. *In contrast to selector lever positions "4" and "3" for all accelerator pedal positions (partial throttle, full throttle and kickdown), only 1st gear is available for moving off. Under partial throttle the transmission will shift sooner into 2nd speed than under full throttle. The speed limit of 1st speed is the same for full throttle and kickdown. Shifting down from 2-1 under partial throttle and full throttle is in the same range, but under kickdown, shifting down will be sooner.*

On the other hand, the transmission will not shift back to 1st speed when the vehicle is coming to a stop or is braked in idling speed position of the accelerator pedal.

To prevent any racing of the engine, a permissible max. speed (refer to Table in Job No. 27-0) may not be exceeded in position "2." Braking shift from "3" or "4" to position "2" may be made only when the speed is less than the max. permissible speed for position "2."

In selector lever position "2" the transmission can be shifted up only to 2nd speed. 3rd and 4th speed are not available. This selector lever position is therefore mainly reserved for engine braking and driving across mountain roads. *1st speed is available for moving off. Shifting up from 1-2 is independent of the position of the accelerator pedal only as from a given speed. Shifting down from 2-1 occurs at different speeds under kickdown, full throttle and partial throttle (refer to Table in Job No. 27-0).*

On the other hand, the transmission will not shift back to 1st speed when the vehicle is coming to a stop or is braked in idling speed position of the accelerator pedal. *By moving the selector lever to position "3" and then back to position "2," 2nd speed can also be obtained below the shifting up point 1-2.*

To prevent any racing of the engine, a permissible max. speed (refer to Table in Job No. 27-0) may not be exceeded in position "2." Braking shift from "3" or "4" to position "2" may be made only when the speed is less than the max. permissible speed for position "2."