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V8 Vantage Sportshift Driving Guide

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The V8 Vantage incorporates a 6-speed Sportshift automated manual transmission.

There are two driving modes for V8 Vantage Sportshift.

The first is **"Paddle Shift Mode"**

This is the mode where the driver will make gear shifts by using the paddles.

The expectation when using this mode is that the driver will make the gearshifts at the appropriate time according to their driving style but within the safe working parameters of the engine.

The second is **"Auto Drive Mode"**

This is the mode where the gearbox Transmission Control Unit (TCU) will make automated gearshifts.

The expectation when using this mode is that the TCU will change gear at the appropriate time according to speed, throttle position and driving style and in doing so, keeping the driver in the most appropriate gear at all times.

Automated Manual Transmission

The transmission fitted to the V8 Vantage Sportshift is not sequential. With a sequential gearbox, the driver has to follow the sequence of gears, e.g. to change from 5^{th} to 2^{nd} the driver will need to select 4^{th} 3^{rd} and then 2^{nd}. This type of gearbox is fitted to some race cars and motor bikes.

With an automated manual transmission the driver can select any gear, e.g. change directly from 5^{th} to 2^{nd} without selecting any intermediate gears. Note that the target gear has to be within the safe working parameters of the engine. If not, the TCU will select the most appropriate gear.

Clutch Bedding-In

In order to optimise clutch durability, it is prudent to refrain from using maximum throttle applications during the first 1,000 miles (1,600km) to enable the clutch plate surfaces to bed-in.

Operating a V8 Vantage Sportshift Car

Entering The Car

When the driver's door is opened, a pump can be heard running. This pump is pressurising the hydraulic system so that when the ignition is activated, a gear selection can be made instantly.

Starting The Engine

The car has to be in Neutral before the engine can be started which can be selected by pressing and releasing the "N" button or pulling and releasing both "+" and "-" paddles simultaneously.

However, a feature of the V8 Vantage Sportshift is that the TCU will select neutral when the control unit is fully inserted into the docking station prior to cranking the engine.

There will be a slight delay when using this method because the steering lock has to disengage and the TCU has to select neutral before cranking the engine. When Neutral has been selected the LED will be illuminated.

Note that the brake pedal has to be applied for any of the above functions to operate.

The sound of the gear selection will be heard at the rear of the car because the gearbox and differential units are mounted within a single housing in this location. This combined unit is known as a transaxle.

When starting the engine from cold, it is beneficial to allow it to idle in neutral for 10 seconds before selecting a gear. This will allow the TCU to update its settings for the "bite" point of the clutch.

The TCU actually closes the clutch whilst the car is in neutral and senses when the propshaft starts to turns. This allows the system to compensate for clutch wear.

Paddle Shift Mode

Gear selections are made by pulling and releasing the appropriate "+" or "-" paddle according to which gear is required. The gear selected will appear in the Gear Position Indicator Display (GPID), which is located centrally between the speedometer and tachometer, and the left-hand message centre.

"Sport" is the normal default mode when turning on the ignition. The word "SPORT" appears in the left-hand message centre. The speed of the gearshifts is proportional to the speed of the car and the throttle opening.

There is no automated up-shift in Sport mode. As the revs increase the indicated gear in the GPID will change from white to flashing red at 6,650 rpm and reach a soft-cut rev limiter at 7,300 rpm.

Comfort mode is selected by pushing and releasing the "COMFORT" button. The LED will illuminate and the word "SPORT" will be extinguished from the left-hand message centre.

As in Sport, the speed of the gear shifts is proportional to the speed of the car and the throttle opening but with the same input parameters, they will be slower than those in "Sport" mode.

This mode will give a more comfortable gearshift which is particularly relevant when driving in an urban environment.

There is an automated up-shift in this mode. As the revs increase the indicated gear in the GPID will change from white to flashing red at 6,650 rpm and an automated up-shift will occur at 7,100 rpm should the driver not make an up-shift by use of the "+" paddle.

Note, for the first 1,250 miles of the engine life (2,000 km) the gear indicator will change from white to flashing red at 5,650 rpm.

In both Sport and Comfort, if the driver fails to down-shift by use of the "-" paddle, there will be an automated down-shift at 1100 rpm.

Multiple gear shifts can be made by pulling and releasing the appropriate paddle quickly the relevant number of times to reach the target gear. The target gear will be selected provided it is within the safe working parameters of the engine. If the target gear is outside the safe working parameters, the TCU will select the most appropriate gear.

To obtain the fastest possible up-shifts the following parameters are required:

a) be in “Sport” mode
b) be over 5,500 rpm
c) have over 80% throttle opening.

The Comfort setting can be de-selected at any time by pressing and releasing the “COMFORT” button. On the later 4.7 litre cars, if Comfort is selected when the ignition is turned off, Comfort will remain selected when the ignition is next turned on.

When driving with firmer throttle applications, a smoother up-shift can be achieved by slightly easing off the throttle for the length of time it takes the TCU to change gear and then progressively re-applying the throttle. This technique will require practice, but once achieved, will lead to a highly rewarding driving experience.

Auto Drive Mode

This mode is selected by pressing and releasing the “D” button on the centre stack and the LED will illuminate. The letter “D” will show in the GPID and the relevant gear will be shown in the left hand message centre, i.e. “D1” “D2” etc.

This mode can be selected whilst stationary or when driving in Paddle Shift mode.

Sport is the normal default mode when in Auto Drive and the word “SPORT” will appear in the left hand message centre.

The point at which automated up and down gear shifts are made is infinitely variable according to speed, throttle position and driving style.

Comfort is selected by pushing and releasing the “COMFORT” button. The LED will illuminate and the word “SPORT” will be extinguished from the left-hand message centre.

This mode will give a more comfortable gearshift which is particularly relevant when driving in slow moving traffic or an urban environment.

As in Sport mode, the point at which automated up or down gear shifts are made is infinitely variable according to speed, throttle position and driving style but with the same input parameters, they will be slower and at lower engine speeds than those in Sport mode.

The Comfort setting can be selected or de-selected at any time by pressing and releasing the "COMFORT" button. On the later 4.7 litre cars, if Comfort is selected when the ignition is turned off, Comfort will remain selected when the ignition is next turned on.

However, in both Sport and Comfort, the maximum revs that can be obtained before an automated up-shift occurs are 7,100 rpm.

To induce an automated downshift for rapid acceleration, a lower gear can be selected by pressing the throttle pedal firmly. With full throttle applied (kick-down), the TCU will select the lowest gear available relative to the road speed of the car.

Automated downshifts can also be made with lesser throttle applications but the target gear may not be as low as if it were induced by kick-down.

The use of the brake pedal will change the automated down-shift point in proportion with the rate of deceleration.

Additionally, both the up-shift and downshift points will change if the system detects an incline (by measuring engine torque and road speed), so that the vehicle is always in the most appropriate gear and the engine remains at the most responsive rpm.

In Auto Drive Mode the TCU will up-shift to the highest available gear relative to the speed of the car. However, there can be short delay if the driver is lifting off the throttle from high rpm. This is to protect the driver who is driving spiritedly and about to enter a corner or apply the brakes by preventing the TCU making an unnecessary up-shift.

The Auto Drive mode can also detect when the car is in, or exiting a corner and will prevent an up-shift to maintain car stability.

To obtain the fastest possible up-shifts in "D" mode, the following parameters are required:

a) have Sport selected
b) be over 5,500 rpm
c) have over 80% throttle opening.

Auto Drive mode can be de-selected by pulling and releasing either paddle whilst driving. This mode is also de-selected when the ignition is turned off.

Reverse

Reverse is selected whilst stationary with the brake pedal applied from either neutral, paddle shift 1st or "D1" by pressing and releasing the "R" button. The LED will illuminate and a single audible warning tone will sound.

We would recommend that whenever possible, the driver gains some momentum in reverse before applying steering lock. This reduces friction from the front tyres, which in turn, reduces clutch slip.

Centre Stack Buttons

When using the centre stack buttons, the relevant LED will illuminate once the request has been met. For example, the "COMFORT" and "D" button LED's will illuminate immediately as this is an electronic request to the TCU whereas the "R" and "N" button LED's will be delayed until the action of selecting reverse or neutral has been made.

Likewise, the GPID will display the selected gear once the action of the gear selection has been made.

Crawl Function

The V8 Vantage Sportshift has a Crawl function which occurs when the car is in either 1st or Reverse, the foot brake and hand-brake is released and no throttle input is made.

This function is of benefit when making slow speed manoeuvres. The car will crawl forward in 1st gear up to 6mph (10kph) and backwards in Reverse up to 4mph (6kph). The clutch is fully closed at 6mph (10kph).

These speeds will be marginally higher during the cold-start period because the engine idle speed is higher.

This function occurs in both Paddle Shift and Auto Drive modes.

There will be a variance in the time the car takes to start to move in Crawl because this function works by slightly raising the engine rpm and closing the clutch to slowly accelerate the car up to the pre-defined speed. The amount of engine torque available is capped by the engine rpm being at only 1,000rpm.

If the car does not move, or moves very slowly, then apply a throttle input.

This "Crawl" function will work on a level surface and to some extent on a very shallow incline. However, on a shallow incline the car will tend to roll back before the Crawl function takes over and the car moves forward. On steeper inclines the Crawl function cannot hold the car stationary, much less move it forward and the car will roll backwards.
With this in mind, we would recommend that on any kind of incline, the handbrake should be applied to hold the weight of the car until a suitable throttle input can be made to move the car away from standstill.

Gear selection From Stationary

To select either 1st or Reverse whilst stationary, the driver must have the footbrake applied. However, when the car has been brought to a halt, should a subsequent gearshift is made within 1.5 seconds; the footbrake does not have to be applied.

Accidental Gear Selection Whilst Driving

Whilst driving in a forward direction, neutral could be accidentally selected either by pressing the "N" button or pulling and releasing both paddles simultaneously.

If the "-"paddle is subsequently pulled and released, there will be no gear selection and the car will remain coasting in neutral.
If the "+" paddle is pulled and released the TCU will select the most appropriate gear according to the speed of the vehicle. If the "D" button is selected, then again the TCU will select the most appropriate gear according to the speed of the vehicle.

Whilst driving forward and the "R" button is accidently selected, there will be no action.

Door Safety Interface

In some circumstances a driver may wish to manoeuvre the car at slow speeds from standstill with the door open.

To achieve this, with the driver's door closed, select the required gear (1st or Reverse) with the footbrake applied. Then open the drivers' door keeping the foot brake applied.

With the door open, release the footbrake and gently apply pressure to the throttle pedal and the car will move in the relevant direction. With the door open, if no pressure is detected on either the throttle or brake pedal, after three seconds, the TCU will select neutral.

Parking

The normal car status when the ignition is turned off is for the TCU to select 1st gear.

When parking on an "uphill" slope, turn the wheels towards the centre of the road and turn the ignition off in the normal manner.

To leave the car in reverse, select "R" and turn the ignition off. If parking on a "downhill" slope, turn the wheels towards the kerb.

To leave the car in Neutral (for towing or pushing) quickly pull and release both paddles simultaneously twice (an audible warning tone will sound and a relevant message will display in the right hand message centre) and turn the ignition off.

The gear selected at ignition off will be engaged when the ignition is subsequently turned on.

Launch Control

To obtain the fastest possible acceleration away from standstill, the following parameters are required:

Transmission in "Sport" Paddle Shift Mode
Traction Control turned off (hold the DSC button for four seconds)
1st gear selected
Greater than 90% throttle applied in less than 0.5 seconds.

If these parameters are met the system will raise the engine rpm to 5,000rpm and close the clutch.

If these parameters are maintained the system will make an automated up-shift from 1st to 2nd and 2nd to 3rd at 7,100rpm. The remaining up-shifts will be made at 7,300rpm.

NOTE. Careful consideration needs to be given before using this technique because to de-activate Traction Control, DSC has been de-activated. Launch control is only optimised in high road grip situations. If the grip levels are reduced then arguably normal acceleration would be quicker because Traction Control is active.

Clutch Warnings

As with any manual car, excessive demands can be placed on the clutch by holding the car on an incline with a light throttle input (or the Crawl function is holding the car) or moving in very slow moving traffic in too high a gear.

When driving in extremely slow conditions, especially on an incline, consideration should be given to self-selecting 1st gear to reduce clutch slip.

In the unlikely event of the clutch overheating, there is a two stage warning system.

Stage 1
An amber warning light will illuminate and a single audible warning tone will sound. The message "Clutch Overheat Brake or Pull Away" will be displayed in the right hand message centre.

The driver should reduce the demand on the clutch by either increasing demand on the throttle (provided there is space to accelerate into) which will close the clutch or release the throttle pedal and apply the brake pedal which will open the clutch.

Both of these actions will remove the clutch-slip which has caused the clutch over heating.

Should clutch overheat be recognised whilst the transmission is in "Crawl" mode, "Crawl" will be progressively disabled. When the clutch temperature has reduced to an acceptable level, "Crawl" will be reinstated.

If the demand on the clutch is not reduced and the clutch temperature continues to rise, the second stage of clutch overheat strategy will be implemented.

Stage 2
The amber warning light will illuminate and a slow repeating audible warning tone will sound. The car will start a rocking motion by opening and closing the clutch.

The message "Clutch Protect Mode" and "Shift Comfort Reduced" will be displayed as a rolling message in the right hand message centre until the clutch temperature returns to normal operating temperatures.

During this period gearshifts and moving off performance will be degraded to allow the clutch to cool.

The driver should reduce demand on the clutch as recommended in stage 1.

Maximum speed in each gear (Paddle Shift Sport Mode)

1^{st} = 47mph (75kph)
2^{nd} = 75mph (120kph)
3^{rd} = 104mph (166kph)
4^{th} = 130mph (208kph)
5^{th} = 160mph (256kph)
6^{th} = 180mph (288kph)