



Technical Information... Technical Information...



AW55-50 Volvo Electronic Functions

Normal Shift Programs

Economy - Provides earliest possible upshifts/lockup for best economy. TCM adjusts oil pressure to provide smooth shifts/engagements.

Sport Mode - occurs if accelerator is pressed quickly & speed exceeds 31MPH. Shift points raise for best performance. Downshifts occur at lower RPM. When accelerator pedal moves less quickly, TCM resumes Economy Mode.

Extreme Mode - a.k.a. "kick-down." TCM selects lowest possible gear for vehicle speed when throttle is pressed to the floor.

Winter Mode - use "W" button on gear select. Warning lamp lights on instrument cluster. Trans starts in 3rd to provide max traction on slippery surfaces. Depending on gear, the following shift patterns can occur: D - Starts in 3rd, automatically shifts between 3rd, 4th, & 5th. 4 - Starts in 3rd, automatically shifts to 4th earlier than "Economy" & 5th is locked out. 3 - Starts in 3rd with no upshifts/downshifts.

L - Starts in 2nd with no upshifts/downshifts. **NOTE: At wide-open throttle, transaxle uses all gears for maximum performance.**

Catalytic Converter Start - Prevents converter lockup & delays 1-2 & 2-3 upshifts when engine is cold. **This is a normal function!**

Temperature Controlled Lock-up - if trans temp rises excessively due to heavy load w/high ambient temp conditions, torque converter clutch is applied to reduce heat generated by converter. If temp drops below 20C, (68F), lock-up is inhibited.

Slipping Lock-up - allows smoother lock-up & reduces vibration/noise. Computer maintains **50-200 RPM** torque converter clutch slip. The following must occur: Shifter must be in the D, 4, or 3. Trans must be in 3rd, 4th, or 5th. Trans input speed must be 1100 RPM or higher & throttle opening must be 35% or less. Engine coolant must reach certain temp. Trans oil temp must be at least 40C (104F), but not exceed 120C (248F). *Note: Friction properties of trans fluid are different than other fluids due to the large amount of converter clutch slip. Failure to use correct fluid will cause transmission damage & codes!*

Driving Uphill - TCM may change shift pattern slightly when driving uphill to reduce shift business.

Neutral Control - TCM disengages forward clutch (C1) @ stop w/brake to reduce load. Reduces vibration & improves fuel economy. When brake releases, C1 engages. The following must occur: Must be in D, 4 or 3. Won't work in *Winter Mode* or *Geartronic*. Trans oil temp must be over 10C (50F). Throttle position must be less than 3%. Brake must be pressed. Speed must be 0 MPH. Engine speed must be less than 1500 RPM. 2 second delay once stopped in D & a 5 second delay from N-D. **Function not available on all models.**

Shifting Using Geartronic

Trans remains in hydraulic "D". When shifter is on + or -, gear select module signals TCM to shift up/down. Instrument cluster changes from D to gear selected. Gear select module lights "M"/turns off other LED's. TCM determines if shift can occur & activates solenoids. TCM overrides driver's command under certain conditions. The following applies: Only 1st, 2nd, or 3rd can be chosen from stop. Trans won't upshift to 4th til 19MPH. Trans won't upshift to 5th til 25MPH. Automatic downshift occurs below certain speed if driver forgets. Manual upshift required after automatic downshift. Kick-down not available. TCM won't allow manual downshift if engine speed exceeds 6000 RPM. If trans temp gets too high, TCM selects correct gear for lockup. Converter lock-up only possible in 3rd, 4th, & 5th.

Resetting Adapts

Adaptive learn technology adjusts shift/line which controls feel of up/downshifts, neutral control function & garage shift engagements.

Performing adaptive learn procedure is necessary whenever trans is rebuilt/replaced, valve body is replaced or TCM is replaced. The TCM is always adapting, **but at an extremely slow rate. To quickly clear/relearn adapts, TCM must be placed into adaptation mode.**

Performing adaptive learn on a Volvo requires VADIS, (Volvo factory scanner), to put TCM in "Control Module Adaptation mode." Some vehicles don't have this function & will need to have TCM software reflashed so *Control Module Adaptation Mode* will work.

TCM won't go into Adaptation Mode unless trans oil temp is between 150F & 230F. TCM **won't** adapt in *Geartronic* or *Winter Mode*.

While TCM is in Adaptation Mode, orange triangle in instrument cluster will flash when adapt is complete for each particular shift. **To**

adapt upshifts: Use "D". Accelerate from stop @ light throttle (1400 RPM's) through to 4th, keep throttle steady. Stop & repeat until orange triangle flashes after each shift. Accelerate from stop through all 5gears @ throttle opening of 1800 RPM's, keep throttle steady.

Stop & repeat until orange triangle flashes after each shift. Accelerate through gears @ throttle opening of 2500 RPM's. Repeat until orange triangle flashes after each shift. **To adapt downshifts:** Use "D". Drive @ about 45 MPH in 5th, release throttle & lightly brake to stop. Repeat until orange triangle flashes after each downshift. **To adapt garage shifts:** With engine idling & brake pressed, shift to "N,"

wait 5 seconds, shift to "R", wait 5 seconds, shift to "N". Repeat until the orange triangle flashes. Repeat procedure for "D". **To Adapt**

Neutral Control: Drive 5 MPH in "D", slowly stop. Repeat until orange triangle flashes. With engine idling & brake pressed, move shifter to "D", wait 25 seconds for orange triangle to flash. This lets you know that TCM is ready to adapt. Once flash occurs, release

brake & allow vehicle to crawl forward. Repeat until orange triangle flashes after brake is released. **Not every Volvo has Neutral Control.**

Once adapts have been learned, turn off ignition & TCM exits Adaptation Mode. For more info see Volvo Bulletin # 43-27 for 2001 S60,

V70, V70VC, & XC90 2.5T. Other Volvos using AW55-50 trans, see Bulletin # 43-20. Other useful Volvo Bulletins: TNN 43-24 - info

about software upgrade to enable Adaptation Mode. TNN 43-37 - Upgraded servo parts. Volvo also has software upgrades to correct 2-3

flair, neutral control flair bang on engagement & 2-1 downshift thud.

"We Build Them So You Don't Have To."