

By Jim Gibson



# Two pedal DAF



Removing the clutch pedal from manual transmission trucks is becoming commonplace. DAF is one of the latest to join the two pedal push

**W**e had seen one of DAF Trucks Australia's CF85 430 prime movers fitted with a 12 speed ZF AS-Tronic transmission on the test track at the 'Trucks in Action' show in Victoria earlier this year. It was their fleet demonstration unit and we were able to track it down a few weeks later while under evaluation at DTM Business Logistics in Sydney.

"We already have some Volvos in the fleet fitted with their I-shift automated manual transmission and we were keen to compare the ZF system in the DAF," says Garry Newton, national fleet manager at DTM.

"The automated manual transmission system reduces wear and tear on the clutch and gears, it also reduces driver fatigue. I spent a day with one of our around-town prime mover drivers and gave up counting the gear changes after 3000. This type of transmission is also an advantage in the recruitment of less experienced drivers."

A fully automatic fluid drive transmission of the type used for garbage compaction etc. isn't efficient for general cartage duties, as a degree of driveline efficiency is lost through the fluid coupling and fuel economy is also reduced. However, the automated manual transmission suffers from neither of these traits. In fact it may improve fuel economy as it runs the engine in the optimum speed range.

ZF's AS-Tronic transmission is a twin

“I told ‘em I want the first one of these if they decide to buy one. I can’t believe how good it is to drive. The retarder is just unbelievable.”

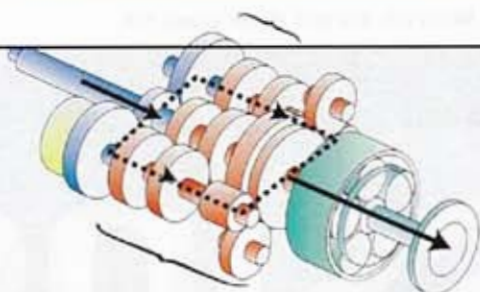
countershaft manual constant-mesh type with dog-gear engagement and a conventional dry-clutch system. However, the normal work done by your left foot and hand is automated by a computer system and sensors that control these functions. The load placed on the throttle by your right foot is analysed and the relevant information forwarded to a computer.

It sends the message to the transmission control unit as to which gear to select and then applies the appropriate clutch-feed in order to take-off smoothly and to make ratio changes when in motion.

## Integrated Retarder

The AS-Tronic 12-speed model hooked behind the DAF’s 430 horses has a 2500Nm input torque capacity and is spec’d to drag up to 44 tonnes. It’s also fitted with an integrated retarder, coded ZF-Intarder. The Intarder is actuated via a multi-functional wand on the steering column which has three ratcheted positions; each one increases the retardation effort to a maximum of 5200Nm. It’s hydrodynamic in its operation using fluid pressure against turbine blades at the rear of the transmission. It weighs just 69kgs.

To put the truck in motion when in automatic mode, there’s a control knob (left) similar to a headlight switch to dial up the desired direction, either ‘D’ or ‘R’. Each of these has a crawler position as



The AS-Tronic's internal drive path



well for use when backing or manoeuvring into tight spots. In this mode the revs will not exceed 1200, torque reduces and the clutch is controlled more sensitively.

So if you wish to move away normally, you dial the switch to select ‘D’ and simply depress the throttle (remember there’s no clutch pedal, only a stop and a go pedal) - the transmission then selects the desired gear for lift-off. Depending on the topography, it will then either progressively up-shift or skip-shift, again depending on the steepness of the path ahead. A display on the dash indicates the gear in which you’re travelling at the time.

There’s also a multi-function lever (below) that can be used to override the automatic gear selection process. It’s spring loaded to the left and if moved in that direction, puts the transmission into manual gear selection mode.

To manually select ratios you move this lever either forwards or backwards to up or down shift. There are two detents in each direction - one click selects the next corresponding ratio up or down, two clicks progresses the selection by two.

An ‘S’ function can be chosen when in manual mode by moving the sprung loaded lever to the right. This will search for the optimum gear for the task at hand. The display on the dash indicates the gear position each time there’s a change, but the number has an ‘M’ for manual shown beside it rather than an ‘A’ when in auto mode.

I shared the drive in the big DAF with Sid Reynolds long-term driver at DTM. He learned his trade on R190 Internationals of 1960s fame, with what were known as crash-boxes (non-synchromesh), when engaging gears was an art-form. This required



The Intarder operates from the rear of the transmission

an expert with precision timing to slide the gears into mesh along the main-shaft in the box without protest. He progressed to the ubiquitous constant-mesh Eaton-Fuller Roadranger. His present stick-shift is a Volvo FM580 with a synchromesh transmission. It’s called transmission evolution.

“I told ‘em I want the first one of these if they decide to buy one. I can’t believe how good it is to drive,” Reynolds said. “The retarder is just unbelievable. The only complaint I would have is that the shift is a little too hash when I’m pulling a loaded tanker, where you need a little more clutch control between gearshifts than this girl gives.”

## On the road

The drive through Sydney traffic with a tri-axle tautliner in tow was less stressful than usual as you had one less task to perform. The ZF Intarder is extremely efficient and must save on brake wear. The DAF’s automated shift skipped its way around the box as we headed for the M5 and our delivery point in Picton 60kms south of Sydney. Its manners on the motorway were what we expected, and with cruise control set all that was required was to point the truck in the right direction. What no autopilot I hear you say!

We tested the crawler function at our delivery point - controlling the truck on the throttle and brake pedals while reversing in this mode was a breeze.

DAF has now joined other European truck manufacturers offering a two pedal automated ride. Eaton is currently trialling their two pedal system called UltraShift in the US and it will be evaluated in Australia during the second quarter of this year. ☺

