

ZF's AS Tronic Transmission Moves into High Gear

by Larry Plachno

The ZF AS Tronic transmission has achieved remarkable popularity among over-the-road coaches in the United States and Canada in the past few months. This MCI J4500 is equipped with the AS Tronic transmission and operates for Lakefront Lines based out of the Cleveland area. Lakefront is the largest private coach operator of AS Tronic transmissions and will have 90 coaches with this transmission in service by the end of 2005. MCI.



One of the hottest topics in the intercity coach industry right now is ZF's AS Tronic transmission. Introduced in 2003, it was first seen in new coach deliveries in early 2004 and subsequently has tremendously increased in popularity. Three major coach manufacturers now offer this transmission on their new coaches, in some cases with a range of engine choices.

A simplistic way of describing the AS Tronic is that it is a blend of traditional tried-and-true engineering with modern technology that could not have been developed even a few years ago. While competitors attempted to automate traditional manual transmissions somewhat unsuccessfully in the past, ZF designed a fully automated manual transmission from the ground up with all of the mechanical and electronic components internalized in the housing. In addition to being substantially lighter than a powershift automatic transmission, the AS Tronic transmission could also select vari-

ous gears non-sequentially based on road conditions, load and speed.

Originally used and proven in Europe, ZF brought a modified version of the AS Tronic to the United States where it has met with very high acceptance. The American intercity coach industry is traditionally conservative and rarely moves into new products quickly. Its acceptance of the AS Tronic transmission is noteworthy. In not much more than a year from the first commercial installation in early 2004, the industry embraced the AS Tronic so quickly that approximately half of all new seated intercity coaches were being equipped with this transmission. [For additional details, see the April, 2004 issue of NATIONAL BUS TRADER.]

Several readers have asked us for current information on the AS Tronic and its acceptance in the industry. Following is some of the information we have found.

New Seated Coaches

As of early 2005, three of the major intercity coach manufacturers are offering the AS Tronic transmission on their new coaches. MCI offers both the Detroit Diesel Series 60 and the Caterpillar C13 engines as powertrain combinations with the AS Tronic. The AS Tronic is now available in the entire MCI product line including the D, E, G and J models.

Prevost Car offers the AS Tronic in both its XL II model as well as in its H model. However, it is only available in seated coaches at this time. Prevost conversion shells continue to be built with the traditional powershift transmission.

ABC and Van Hool offer the most diverse power train combinations. New Van Hool coaches can be ordered with Detroit Diesel, Cummins or Caterpillar engines and with either a powershift transmission or the ZF AS Tronic. ABC mentioned that this satis-

fies any possible customer powertrain request.

Unlike MCI and Prevost who offer the original Americanized 10-speed version of the AS Tronic, ABC and Van Hool are installing a 12-speed version in their new coaches. The people at ABC indicate that their 12-speed version offers smoother operation in the low gears.

In addition, the ABC/Van Hool version of the AS Tronic is also equipped with the ZF intarder rather than use an engine brake. The ZF intarder is an output retarder with six different programmable settings which will allow up to 2400 ft. lbs. of braking torque.

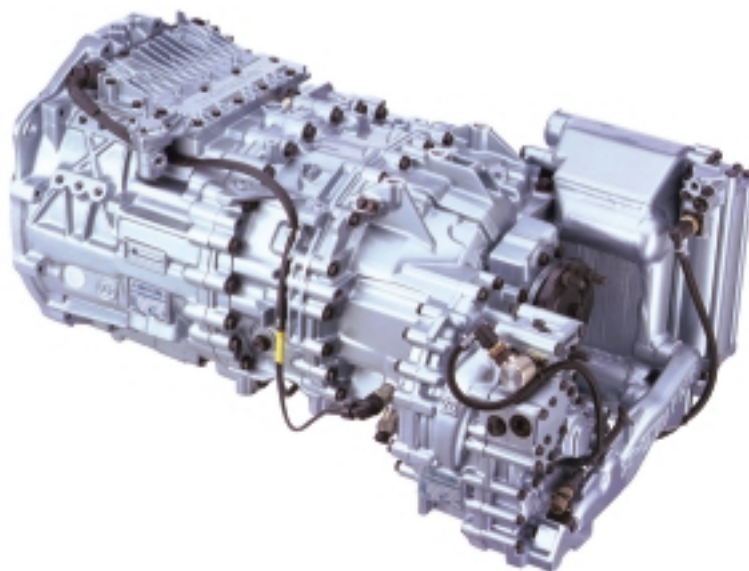
Operating Experience

In general, we have heard that the AS Tronic became available at the right time. Because of the new 2004 EPA regulations, operators discovered that the 2004 engines were less fuel efficient. Many who purchased the AS Tronic on their new coaches indicated that the fuel efficiency of the AS Tronic offset the reduced fuel efficiency of the new engines so they at least remained even.

To get a handle on actual operating experience with larger numbers of AS Tronic transmissions, we spoke with Tom Goebel of Lakefront Lines in the Cleveland area. Lakefront is the 15th largest intercity bus company in the nation. They not only have the largest number of AS Tronic coaches in service but also have substantial experience with them.

Tom said that Lakefront Lines is very pleased with the ZF AS Tronic transmission. The company recently placed an order for 23 more MCI J4500 coaches with AS Tronic transmissions for delivery in December. After they arrive, Lakefront will have 90 coaches in service with the AS Tronic transmission and only 14 older coaches remaining with the traditional powershift transmission. Lakefront was one of the first companies to operate the AS Tronic. Tom credits Skip Neff of MCI as being very helpful in smoothing out their transition to the AS Tronic.

Mike Mazzeo, the head of maintenance for Lakefront Lines, credited the AS Tronic with being "very reliable." He told us that now that Lakefront has many months of experience with the AS Tronic, they are finding numerous unexpected advantages to the ZF transmission. Among other things, Mike said that according to his calculations, the AS Tronic offers a 30 percent savings in diesel fuel usage over powershift transmissions while coaches are idling. He credits the fewer moving parts in the AS Tronic for this and indicates that this is a significant savings given the typical amount of idling done by the fleet.



Both MCI and Prevost offer the Americanized 10-speed version of the AS Tronic in their new coaches. New coaches from Van Hool with the AS Tronic transmission are coming with the 12-speed version shown here. Van Hool coaches also offer the ZF intarder rather than an engine brake. ZF.

Mike said that another unexpected advantage of the AS Tronic is less tire wear compared to buses equipped with a powershift transmission. He indicated that the difference in tire wear becomes more and more noticeable as time goes on. Mike suggests that the powershift transmission may

be harder on tires because of its constant power.

Another comment from Mike is that he is impressed with the modern computer technology. He said that in his opinion, the interaction between the AS Tronic and the Detroit Diesel engine is wonderful. In his

By the end of the year, Lakefront Lines will have 90 MCI J4500 coaches in service with the AS Tronic transmission. Only 14 older coaches will remain in the fleet with powershift transmissions. Lakefront has found numerous benefits of the AS Tronic transmission including reduced tire wear and more economical operation. MCI.



words "they talk to one another." This makes parts last longer and reduces the need for maintenance. Mike said that based on his experience, coaches equipped with the AS Tronic have reduced overall maintenance costs.

Conversions and Motorhomes

As of early 2005, the AS Tronic transmission has not yet been used in new conversion shells. However, it has started to make an impact in the high end motorhome market.

Newell Coach in Miami, Oklahoma is a builder of luxury high end motorhomes. The company builds about 40 units a year with several of the units going into the NASCAR and IndyCar circuits. With Newell owners asking for more performance, the engineers decided to move up to the Caterpillar C15 engine in 2004. Huge by even charter coach standards, the engine produces 625 horsepower. Newell had to give up the standard powershift transmission because it simply was inadequate to handle the power from this engine. This left the Newell engineers searching for a transmission that could not only handle the increased power but could also provide the shift quality necessary for customer applications.

As a result, Newell began to deliver its new units with the Cat C15 coupled to the ZF AS Tronic transmission. The Newell engineers were delighted with two features. One is that in spite of its ability to handle more torque, the AS Tronic weighed in at about 400 pounds lighter than the powershift transmission it replaced. The second advantage was that the new larger engine with the AS Tronic transmission provided the same fuel economy as the previous lower-powered engine and powershift transmission. Both came in at about six miles per gallon.

Retrofits

Several people have asked about retrofitting the AS Tronic transmission into an older coach. This can be somewhat problematic because of the need for the components to electronically interface. For example, most people will tell you that with a Detroit Diesel engine you need a Series 60 with DDEC IV or higher in order to retrofit an AS Tronic in place of a powershift transmission.

MCI is currently offering some AS Tronic retrofit options. If you would like to do the changeover yourself, MCI has retrofit kits available. These will work on models E4500 and J4500 equipped with a Series 60 DDEC IV or later engine. If you want the retrofit but do not want to do the work yourself, MCI's service centers will do it for you. MCI offers a two year warranty on this. Readers looking for a pre-owned coach with an AS Tronic transmission might note that MCI has



Marcello Machando and C.W. Newman of Express Transportation pose with one of their new Van Hool C2045 coaches at the ABC facility in Winter Garden, Florida. This new Van Hool was equipped with a CAT C-13 engine and the ZF AS Tronic transmission. Express Transportation is based in the Orlando, Florida area. ABC.



This photo shows a new Newell on the production line of Newell Coach in Miami, Oklahoma. Newell recently upgraded to the 625-horsepower Cat C-15 engine for more performance. Company engineers selected the AS Tronic transmission as being the best choice to handle the torque and provide the required shift quality. ZF PHOTO.

retrofitted the AS Tronic transmission in several pre-owned coaches and trade-ins prior to offering them for sale.

When contacted about retrofits, Prevost Car indicated that they are not offering retrofit kits but are dealing with each customer inquiry individually. ABC/Van Hool has indicated that retrofitting an AS Tronic transmission can be both expensive and problematic because of the required electronic communication between the various components. ABC is encouraging its customers to spec the AS Tronic transmission in new Van Hool coaches.

Some operators have asked us whether they can do AS Tronic retrofits in their own shop. The answer is a qualified yes. Doing the

mechanical exchange between the two transmissions is the easy part and should not take more than two days. The hard part is the electronic interface between the components. Experts tell me that you can go as far back as a DDEC III engine if you are willing to do some modifications. However, the DDEC IV engine or newer is highly preferred. Moreover, you need ABS to make everything work properly.

Wayne Eggan of Charter Bus Lines of B.C. in Delta, British Columbia retrofitted five AS Tronic transmissions in his own shop. This situation is somewhat different than most because the company primarily operates Prevost coaches with stick shift. Only

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five coaches in the fleet were equipped with powershift transmissions. Wayne said that they were successful with the retrofits but that he would not recommend a smaller shop doing this on their own.

Wayne mentioned that they now have about 200,000 miles on the AS Tronic transmissions and have found some unexpected advantages. The former stick shift drivers were very happy with the AS Tronic transmissions and Jake brakes. Charter Bus noticed high brake lining life with the ZF transmission. Wayne said that he accounts for this because his drivers are less likely to hold the bus standing with the brakes as they would with a powershift transmission. He also mentioned that a detailed analysis using the same bus and driver shows that the AS Tronic provided half a mile per gallon better fuel economy than the stick shifts. Wayne says that he is planning on ordering some new coaches with AS Tronic transmissions in the near future.

Transition Numbers

The acceptance of the AS Tronic transmission by the intercity bus industry has been remarkably meteoric. I cannot remember any instance where the industry



This brand new 45-foot Prevost XL II demonstrator was equipped with the ZF AS Tronic transmission. Prevost Car offers the AS Tronic transmission in its XL II model as well as in its H model. PREVOST CAR.

embraced a new major component so quickly.

It was in mid-2002 that the AS Tronic was first introduced into new coach production. A total of 54 new coaches were built with

the AS Tronic in that first year. Acceptance of the AS Tronic transmission increased substantially in 2004. In the first quarter of 2004, 14 new coaches were built with AS Tronic transmissions, which represented 5.5 percent of seated coach production. In the second quarter of 2004, the AS Tronic moved up to 16 percent of the seated coach market and then to 26.4 percent in the third quarter. With the fourth quarter of 2004, this figured increased to 39.2 percent.

The highest figure to date came in the first quarter of 2005 when the AS Tronic was installed in 48 percent of new seated intercity coaches. Because of increased sales of coaches to government agencies, the AS Tronic percentage dropped to 38.5 percent in the second quarter of 2005. However, with what order information is currently available, we expect to see the AS Tronic move beyond 50 percent of the seated intercity coach market by the end of 2005. □

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