

Test Driving the New MCI J4500

ZF Axles, Bendix Air Disc Brakes and a Cinderella Story

by Larry Plachno



MCI recently improved their J4500 model with ZF axles and Bendix air disc brakes. Hence, we could not turn down the opportunity to take one of the new coaches out for a test drive. This photo of the test drive coach was taken in front of the new MCI facility on Oakton Street in Des Plaines, Illinois. We noted that the coach was so clean that the yellow bumper post and door frame was reflected on its side. NBT.

Most NATIONAL BUS TRADER readers are aware of the recent improvements to the MCI J4500 model including ZF axles and Bendix air disc brakes. MCI held Reliability Rally events around the country to provide information for coach owners and to showcase these new components. Hence, when the people at MCI asked whether we would like to take one of the new J4500 coaches with the ZF axles and Bendix brakes out for a test drive, we replied in the affirmative and set a date.

The number of improvements and enhancements MCI has provided to their J4500 model in recent years is fascinating. In spite of the fact that the J4500 has been the best selling motorcoach in our market for nearly 10 years, MCI continues to make changes almost annually to make it more attractive, safer and more economical to operate.

The J4500 is a bit of a Cinderella story. Introduced in 2001 as a more simply attired version of the E4500, it moved up to the top sales position in 2004. That is when the "fairy godparents" at MCI management and engineering began to enhance and improve it at regular intervals. It was soon recognized as worthy of royal attention, and the J4500 turned into a beautiful state-of-the-art coach – and without a pumpkin in sight.

In this case the sequel turned out to be much more popular than the original. Brent Maitland from MCI told us that operators that formerly purchased the E4500 have been switching over to the J4500. Astute operators will realize many of the E's styling cues from vertical rear fins, to elevated profile, present a much taller, more impressive entrance.

Recent Past Improvements

Just in the past two years the J4500 has gone through two rounds of improvements that are worth mentioning. In the November 2012 issue of NATIONAL BUS TRADER we took the new J4500 for 2013 for a test drive and a look at its new features. I should mention that by this time the J4500 already had the new wide ride suspension supported by Koni frequency selective dampening shock absorbers. My personal opinion is that this was one of the best improvements in ride and handling that I had ever seen.

By this time a number of safety features had already become standard equipment. These included electronic stability control, the SmartWave Tire Pressure Monitoring system, digital wheel end sensing, a smart steering wheel and the optional trailing axle. A

round of improvements fostered by customers and staff included emphasis on reduced corrosion and improved curb appeal.

Noteworthy was the new extrusion above the windows that gave the impression of height while keeping the J4500 low enough to fit into a 12-foot garage door. This design continued to a cleaner rear cap. The new daylight running lights and turn signals added a great deal to the appearance of the coach. There were also improvements in exterior lights, energy absorbing bumpers, HVAC brushless motors and a new multi-plex system.

When MCI introduced the new J4500 for 2014, they also announced another round of improvements. Overwhelmed by all these improvements in so short a period of time, our review and test drive article in the January 2014 issue of NATIONAL BUS TRADER was subtitled "What does a leader do for an encore?"

While the J4500 improvements for 2013 were mainly based around design and appearance, the 2014 improvements were more concentrated in areas equally important but not so obvious. The important ones included improved fuel economy, improved diagnostics, improved corrosion mitigation and improved suspension. What MCI was trying to do with many of these improvements is to reduce the cost of ownership and operation.

A major step forward was the MDSS, MCI Dynamic Suspension System that moved suspension up to the electronic level. The coach now had full rise front and rear and also needed less air to operate. Cummins provided an improved torque curve on their engine that improved fuel economy. Extra sensors improved onboard diagnostics, making the technician's job easier. Group leaders liked the new Media Center connection behind the driver's seat and we drivers liked the new driver's vent as standard equipment.



Other improvements worthy of note are the new parcel racks that hang down less and make the aisle more open as well as new passenger comfort modules under the parcel racks. NBT.

Current Improvements

While there are other improvements on the J4500, the two major items are moving to ZF axles and Bendix air disc brakes. Neither component is new to the market. There are people who claim that the "C" in MCI stands for "conservative," and that is certainly true in this case. Initial plans to move in this direction date as far back as 2007-2008.

Both components have been used on other buses for years and have been well proven. In addition to the past track record of these components, MCI put them through their paces at the Bosch Proving Grounds in New Carlisle, Indiana. MCI also put several pilot coaches in actual field tests with operators around the country testing the most



The test coach had wood-look flooring all the way down the aisle, on the front steps and on various trim pieces. This woodgrain look is increasingly popular on new MCI coaches. NBT.

extreme environments from high mileage, to extreme cold and dust.

The new ZF axles replace Meritor axles that were offered previously. Standard equipment on the J4500 will now be the ZF RL 80 E axle with independent front suspension. It separates steering forces from axle load forces and has the advantage of a high wheel cut for a better turning radius. The independent front suspension provides a smoother ride over bumps and offers better control in crosswinds.

ZF's A 132 will be used as the drive axle. It can be ordered with different axle ratios so you can lean towards more economy of operation if you would like. The tag axle on the J4500 will be the ZF RL 80 E Independent Tag. As some of our readers have pointed

Major improvements on the new J4500 include Bendix air disc brakes and new axles. The front axle is now a ZF RL 80 E with independent suspension. NBT.



A ZF A 132 is now used as the drive axle on the J4500 while a ZF RL 80 E independent tag with a trailing or casting feature is used on the tag axle. NBT.



out, this is not a “steerable” axle but actually more of a trailing or castering axle in that it follows the coach around a turn. This reduces wear on the tag tires and probably helps the turn in most situations.

For clarification, I should mention that MCI’s D models will also get a ZF front axle, but it will be a solid beam. The ZF independent tag is also optionally available on the D models.

Like the ZF axles, the Bendix ADB22X air disc brake has been around a long time. It offers several advantages including dual pistons to provide a more even distribution of braking force, a monoblock caliper design to keep debris out and a two-pin design between the caliper and the carrier to keep them parallel and slide freely. A nice advantage of these air disc brakes is that brake fade is much less a concern than with drum brakes. The reason for this is that on the disc brakes the rotor expands into the brake pads when it gets hot.

This Bendix-Knorr ADB22X system has been made in the United States since 2005. Due in part to the new Bendix brakes, MCI claims that the new coaches stop 42 feet shorter than today’s drum brakes from 60 miles per hour and 100 feet shorter from 70 miles per hour. Compared to the current disc brakes they stop slightly shorter with better brake feel.

A major feature of the new Bendix braking system is Wingman Active Cruise Braking. If you set cruise control, a radar sensor mounted on the front of the coach monitors up to 32 objects in front of you. If the vehicle ahead slows down and closes the distance between you, Wingman will automatically reduce the throttle on your coach, then progressively apply the Jake brake. If the distance keeps diminishing, it will apply your regular foundation brakes. If you are not in cruise mode, the Wingman system can still operate but it will only supply distance figures and a warning.



Brad Lamothe, MCI senior technical advisor engineering; Larry Plachno, editor and publisher of NATIONAL BUS TRADER and Brent Maitland, MCI vice president of sales and marketing, discuss the new features of the J4500 prior to the test drive. The photo was taken in front of MCI’s new facility on Oakton Street in Des Plaines, Illinois. PAT PLODZEEN / MCI.

Other improvements in the J4500 include the new MCI dynamic suspension system. It offers both front and rear raise and is more efficient in that it requires less air. Passengers will note the new parcel racks in the J4500 that hang down less and make the aisle more open. There are also new passenger comfort modules with air flow and reading light controls above the seats. Available on both the J4500 and D models is the Cummins ISX 12 engine that has a new Engine Control Module and offers a two percent better fuel economy over 2012.

The Test Drive

We started out from MCI’s new facility in Des Plaines, Illinois. Brad Lamothe, MCI

senior technical advisor, and Maitland, MCI VP of Marketing and Product Planning, took the time to introduce me to the new J4500 and its new features. We also spent a few minutes with the display above the dash for the new Wingman system.

The coach for the test drive did have the new interior. With the new parcel racks the coach offered a more open interior and the new passenger modules were obvious below the parcel racks. One nice feature about the test coach was wood pattern flooring, on the parcel racks and even on the driver’s side panel. It also had three-point seat belts and 110-volt outlets. Maitland indicated that the woodgrain flooring has become very popular on new MCI coaches.

Looking more and more like an airplane, the new passenger comfort modules include the usual reading light and vent controls but now add a seat belt light. NBT.



Here, Brad Lamothe and Brent Maitland from MCI explain the new Bendix Wingman system and dash display to your editor prior to the J4500 test drive. PAT PLODZEEN / MCI.



Our route took us along four-lane suburban business streets, expressway driving and a few two-lane suburban roads up into the north suburbs. Maitland knew the roads better than I did and kept us from getting lost. We never did find a bumpy road to really test the independent front suspension, but it did fine on the regular roadways.

I certainly could not fault the ride or suspension. When I first drove buses like the TDH4509 and the PD4103, they had leaf spring suspension. The PD4104 with its air ride was a major step forward. Many of us went through the swing and sway with the MC-8 and MC-9. I thought that moving to the 102-inch width coaches helped the suspension.

In my book, the single biggest improvement came when the J4500 moved to the wide ride suspension. I would suggest that all other things being equal, having suspension points further apart is a major advantage in ride and suspension. Hence, in my opinion, the J4500 already had a great suspension. At this point MCI is simply "tweaking" it for continued improvements.

Turning was impressive. With the new independent front suspension and trailing tag axle MCI claims a turning radius of 40 feet and 11 inches for the J4500 – less than its length. We did do some tighter turns during the test drive. I watched the back end in the right side mirror as we went around corners and was reasonably impressed. When we got back to Des Plaines, I did some small doughnuts on the front apron of the shop entrance and could see the remarkable turning radius. Those of you who need to get around tight corners in cities will like this coach.



The driver cockpit area on the J4500 continues to be practical and very workable. I particularly liked the convenient controls on the smart steering wheel and the convenient left side panel with the transmission buttons. The new Bendix Wingman display is the small white box to the right of the center post. NBT.

I had no problem with the brakes or braking system. We did not have any long hills to test for brake fade, but I certainly would have to admit that all brake applications were smooth and effective.

On the longer stretches on the interstate, I was able to test and use the Wingman system. The display was located above and on the left side of the dash where you could monitor the distance of the vehicle ahead. It does have several levels of sensitivity, but I

could see that it would not have much application in rush hour traffic where you would be afraid to set the cruise control.

Once you set the cruise control, Wingman starts monitoring the vehicles ahead of you and it puts readings on the display. On a couple of occasions we had cars slow down in front of us. Wingman then reduced throttle and put on the Jake brake. If the distance continued to close, it put on the regular brakes. On one occasion, a truck pulled abruptly in front of us and Wingman took immediate action. While it certainly is not a replacement for a driver, Wingman has obvious safety advantages.

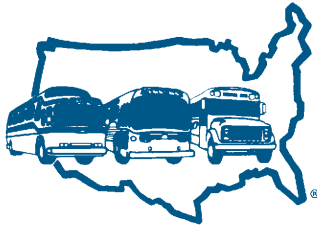
I also tried Wingman without cruise control. In this mode you get distances, lights and warnings in the display but Wingman takes no action. If you fail to take action yourself, Wingman will beep at you. This is probably how you would have to operate on city streets or in rush hour traffic.

The left side mirror was right up against the side of the coach and seemed to be too close. Maybe my legs are too short and I had the seat too far forward. However, I am sure that the mirror arm could be adjusted to be a little further from the bus.

In general, the new J4500 passed with flying colors. As I sometimes like to say, it is a coach that makes the driver look good. In the case of this new J4500 with the ZF independent front suspension, I would recommend it for any coach application but particularly for those of you who need to make sharp turns on city streets. □

Here is a closer look at the Bendix Wingman display. While using cruise control, the Wingman system maintains a safe distance from the vehicle ahead by reducing the throttle, applying the Jake brake and then applying the foundation brakes if necessary. With cruise control off, it still alerted the driver to conditions ahead. NBT.





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