

With the All-Steer chassis in the "coordinated steer" mode, the front and rear wheels of the vehicle can turn in opposite directions which is said to decrease the turning radius of the chassis by nearly one-third

The New **ALL-STEER** **CHASSIS** from **Oshkosh**

This revolutionary motorhome foundation offers drivers of large coaches enhanced maneuverability when turning or handling the vehicle in tight spaces.

**By CAROL MAXWELL &
E.S. GURDJIAN, F76350**

Since 1917, Oshkosh Truck Corporation has been building rugged vehicles for both military and civilian use. During World War II, Oshkosh built trucks for specialized tasks that were used in places ranging from the frozen Arctic to the steamy South Pacific. Through the years the company's technology progressed, and it produced more specialized military and commercial vehicles to meet the demanding needs of its expanding customer base. Most recently, Oshkosh was praised by the Secretary of the Army for its Heavy Expanded Mobility Tactical Trucks, HEMTTs, used during the Persian Gulf War. Without these vehicles, the United States military could not have moved the massive numbers of troops and equipment to claim such an undisputed victory. Oshkosh Truck brings all of its cumulative knowledge and technology to its motorhome chassis production. The company's history of producing reliable vehicles is a valuable asset.

The newest Oshkosh offering is an outstanding innovative design called the "Oshkosh All-Steer," which is a computerized all-wheel steering system. The technology actually has been used for 40 years in rigorous

snow removal vehicles and current microprocessor technology has made it feasible for use in motorhomes. As its name implies, the new system makes it possible to use both the front and rear axles for steering. Steering is still accomplished via the steering wheel, but the driver can select the mode and monitor the selection through a continuous visual display mounted on the dash. The available modes are "conventional front wheel steer," "coordinated steer," and "crab steer."

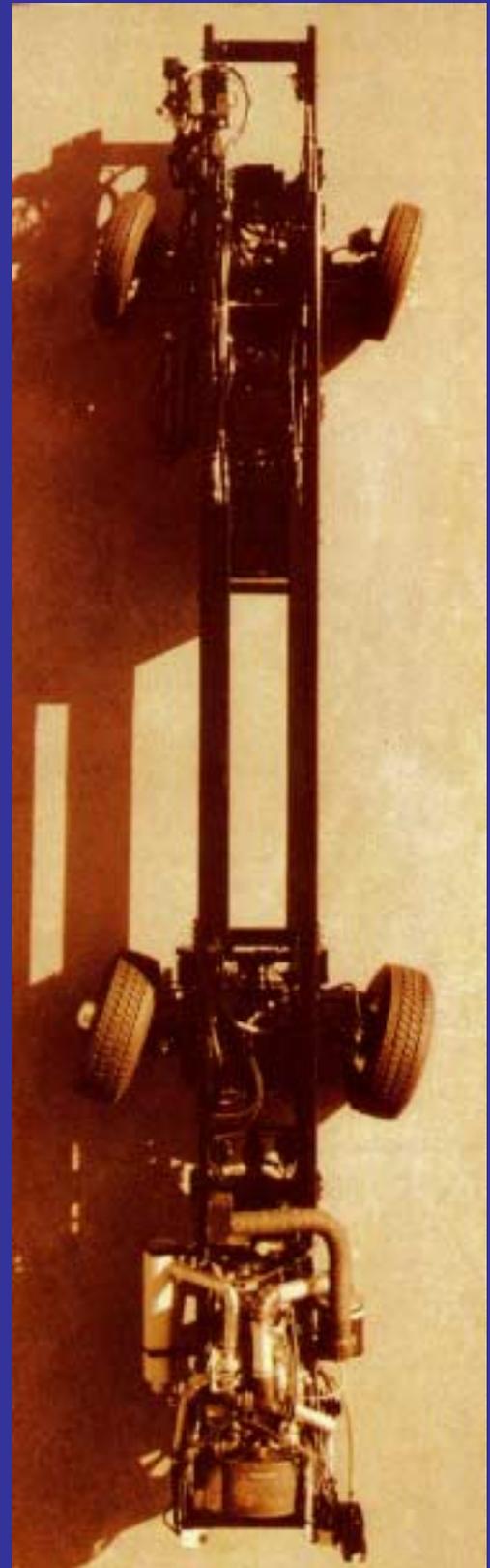
"Conventional steering" does not need much explanation; the principle is the same as when driving a car. The front wheels turn, and the rear wheels follow. The real difference - and the fun- comes into play with the other two modes. The "coordinated mode" allows the front and rear wheels to turn in opposite directions. This increases maneuverability and decreases the turning radius by nearly one-third. The "crab mode" allows both the front and rear wheels to turn in the same direction. The chassis can move almost sideways! This feature made parking a most unbelievable experience. Imagine maneuvering your coach into a campsite and then finding that you cannot extend your passenger side awning - no problem! Select "crab," turn the wheel to the right, and back up. When you are far enough to the left, select "conventional mode" and pull forward. It's a snap!

As a safety feature, the system is locked into the conventional mode at higher speeds. The reason for this is quite obvious. In addition, if you are maneuvering at low speed and then take off into traffic and forget to change modes, the computer will automatically return the system to the conventional mode.

It seems to us that current trends are for bigger motorhomes. In our own experience, each of our past two coaches has been bigger than the one previous. This new steering system may bring motorhomers the best of both worlds - added space along with the maneuverability of a smaller coach. Maybe we will be able to make it up the "Going to the Sun Road" once again.

The All-Steer has single wheels on the rear axle. These wheels use 425/65R 22.5 tires, whose load range rating exceeds that of the usual dual wheels found on conventional drive axles. Oshkosh modifies an Eaton RS 402 axle housing by cutting off the ends and welding on a flange at each cut end. The hardware from the flange outward is an Oshkosh proprietary ball-socket design. Steering is accomplished using a computer-controlled, hydraulically assisted assembly that is connected to the wheels with tie rods. The hydraulic pump and circuit for the rear steer are independent of the standard front wheel steering. A malfunction in the rear axle would not affect the dedicated standard steering. When the conventional steering mode is used, the rear axle is mechanically locked in place by a tapered pin in a conical hole. This type of locking device has excellent wear characteristics and maintains alignment through miles of use.

We drove the bare chassis around the Oshkosh Chassis Division parking lot. The plan is to have a motorhome body built on the chassis and then to proceed with rigorous testing. This commitment to testing is part of the philosophy that has kept Oshkosh Truck successful and



The "crab Mode" of the All Steer chassis makes it possible for the front and rear wheels to turn in the same direction, which can aid drivers attempting to maneuver the coach in tight spaces.

stable over the years. The All-Steer system will be available on the Oshkosh V-Line chassis in early 1995.

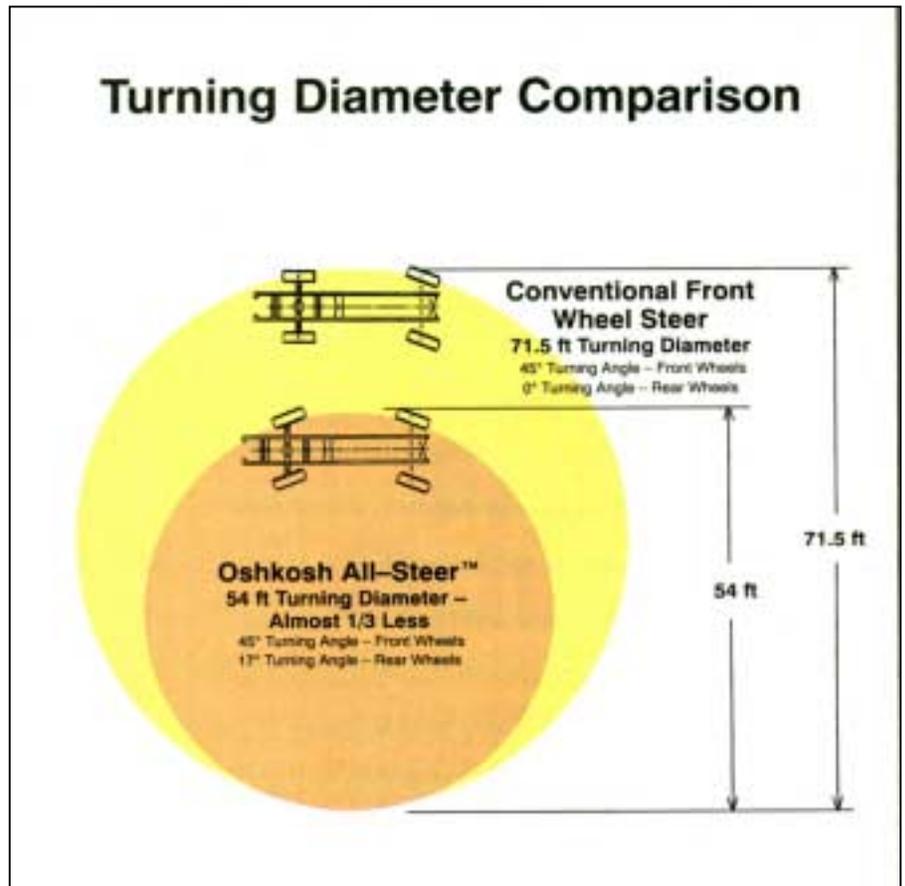
Motorhomes built on this chassis can range from 34 to 40 feet in length. The chassis is powered by a Cummins C8.3 turbocharged, aftercooled, 8.3-liter diesel engine, coupled with an Allison MD-3060 six-speed automatic transmission with lockup. It also has air brakes and an air suspension system. For further chassis specifications, please refer to the list at the end of this article.

The important theme that runs through the product line is the years of experience in producing rugged and reliable products.

We spent several hours with Dean Schaper, Director of Marketing, and Mike Minnick, Supervising Engineer, during our visit to the chassis division of Oshkosh Truck in Gaffney, South Carolina. Along with the All-Steer, they also pointed out some notable features about their motorhome chassis. The important theme that runs through the product line is the years of experience in producing rugged and reliable products. Although Oshkosh is continually looking for improvements, they do not forget the "tried and true" principles that have held over the decades.

The list of Motorhome Chassis Features included with this article is a brief synopsis, but the best way to learn about a coach foundation is to visit the Oshkosh chassis display at FMCA conventions or rallies, or to visit the plant in Gaffney, South Carolina, and participate in a plant tour. Either approach will be met with a hearty welcome.

For further information contact: Oshkosh Truck Corporation, Chassis Division, 553 Hyatt St., Gaffney, SC, 29341; (803) 487-1700, ext. 704



ALL-STEER CHASSIS SPECIFICATIONS

Engine . . . Cummins C8.3 turbocharged, aftercooled; peak horsepower 300 at 2,400 rpm; peak torque 820 foot-pounds at 1,300 rpm

Transmission . . . Allison MD-3060 six-speed automatic with lockup. Gear ratios: first, 3.49:1; second, 1.86:1; third, 1.41:1; fourth, 1.00:1; fifth, .75:1; sixth, .65:1; reverse, 5.03:1

Vehicle ratings . . . front axle - 10,500 pounds; rear axle - 19,900 pounds; gross vehicle weight rating - 29,500 pounds; gross combination weight rating - 34,500 pounds

Wheelbase . . . 228 inches, 252 inches (optional), 276 inches (optional)

Front axle . . . Rockwell FD961, track width 79.61 inches

Rear axle . . . Oshkosh 19K All-Steer, drive ratio 5.13, track width 81.25 inches

Brakes . . . air brakes with auto slack adjusters; service, front - 15 by 4 inch drum-style S-cam;

service, rear - 16.5-by-7-inch drum-style (rear axle), spring-applied, air release

Cooling system . . . rear radiator; radiator core, 3 rows, 908 in² area; radiator type, cross flow; charge air cooler; cross flow; fan direct; transmission oil cooler, in tank

Electrical system . . . alternator, Delco 100 amp, Delco 160 amp optional; starting, Delco 41MT, 12 volt; battery (2) 950 cca at 0 degrees Fahrenheit, maintenance-free

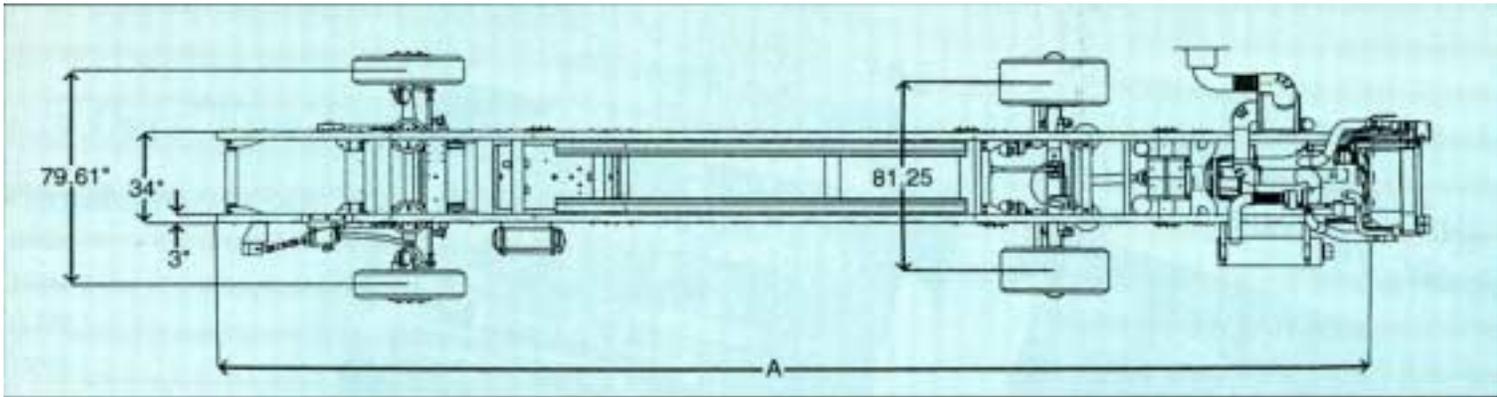
Frame . . . straight frame rail construction; maximum frame section - 9 by 3 by .25 inches

Fuel tank capacity . . . 150 gallons

Steering system . . . Sheppard M100 gear; 10,500-pound rating; ratio 16.8:1; Vickers pump; Douglas tilt and telescopic column optional

Suspension . . . front - air suspension; rear - air suspension

Tires . . . front - Michelin radials 275/80R22.5; rear - Michelin radials 425/65R22.5



Wheels . . . front - 22.5 x 7.5 inches with 10 bolt, 11.25-inch-diameter bolt center; rear - 22.5 x 12.25

Instrumentation . . . speedometer with odometer, tachometer, engine oil pressure, water temperature, voltmeter, transmission temperature, fuel level, dual air gauge

Standard features . . . air filter restriction indicator, cruise control, remote-mounted fuel/water separator, push-button shift control, air-conditioning compressor

Options . . . antilock braking system, air-conditioning condenser with plumbing, backup alarm, battery separator, Bilstein shocks, four chrome hub caps and nut covers, fuel fill provision with cap, heater hose assembly to front of chassis, engine exhaust brake, in-block engine heater, polished aluminum wheels, spare tire and wheel options, 16-04 18-inch VIP steering wheel

Motorhome Chassis Features

- Three-point nodal engine mount, as recommended by Cummins, using metalastic fluid-filled mounts. These are especially effective in dampening low-frequency vibrations.
- Uses a flex pipe on the exhaust system to accommodate engine movement.
- Special air intake plenum. When air breaks over a sharp surface, moisture and large particles are removed, thus prolonging filter life.
- All service points are accessible from the rear.
- The rear radiator has several advantages over a side radiator. It has a much simpler, more reliable fan drive system, and it creates a vacuum rather than a pressurized state under the bed. This vacuum helps to keep the sleeping quarters cooler and less susceptible to contamination by engine fumes. In addition, changing the belts is only a 20-minute procedure.
- Wiring, fuel lines, and air hoses are routed through raceways with individual channels along the length of the chassis. Cushion clips, rather than nylon tie straps, are used to secure these items wherever they are subject to vibration; nylon tie straps can become brittle and break.
- All Oshkosh chassis are delivered with the Allison shallow oil pan option. The lowest part of the chassis behind the rear axle is the bumper rather than the transmission oil pan or the radiator. This is important when maneuvering across steep driveways, speed bumps, or uneven terrain.
- The raised rail is bolted to the standard rail with coupler plates. Oshkosh engineers note that it is not welded, because welds can experience stress cracks.
- Nine-inch frame rails combined with heavy-duty tubular cross members provide torsional rigidity
- The front axle is equipped with air suspension and an anti-sway bar. It also provides a full 45-degree front wheel cut.
- There is a right-angle gear box between the steering column and the steering gear. This allows positioning of the steering gear to create "0" bump steer. The drag link will follow the arc of the suspension when you hit a bump.