

Dick Morch, Test Driver  
Max Todd, Interior Evaluator



## The FMC Motor Coach

*A 29-footer with a chassis so unique and comfort features so refined that it's in a class by itself.*

**WE'VE BEEN** excited about FMC's entry into the motor-home market for months now. We've studied their announcements, eagerly eyed their photos and poured over their prototype. Finally, after 10 months of anticipation, we got the chance to run thorough, controlled tests with the 2900R.

Dick flew out to California so that he and Max could team their talents for this test. Together they toured FMC's San Jose facilities and conversed with their engineers. Max remarked on this introduction to FMC's approach to motor-home construction: "Not since leaving the aircraft and missile industry have I seen such thorough and completely documented engineering of a product." His enthusiasm continued throughout the 2900R test, resulting in the comment: "In our more than a decade of motor-coach testing, we consider it to

be the most desirable coach we have ever driven."

As is common knowledge by now, FMC came to the RV field when they projected a cutback in government contracts. Foreseeing a decline in the demand for military vehicles, a new market had to be found to offset that loss of business. Well, much research showed them that the best way to go was the RV field. The 2900R, therefore, is just the first of what we hope will be a broad product line by FMC.

One of the carry-overs from the military trade, other than a gigantic amount of experience, was the rear-suspension engineering for the 2900R. The design was taken from an amphibious assault vehicle. It seems that the folks at this billion-dollar corporation spend more time putting nuts and bolts together than working with words. It must be admitted that the name 2900R is lacking something

in the pizzazz department, but the assault vehicle that donated its suspension had the even-less rhythmical name of LVTPX12. I guess, though, that this won't pose much of a problem; so few people seem to be writing poems about amphibious craft these days.

While the name may not flow smoothly, the suspension makes sure that the passengers do. What that ill-titled assault vehicle offered was independently suspended rear wheels with a very heavy torsion bar to firmly smooth the ride. This torsion bar is encased in a steel tube and is adjustable, to permit the alignment of the rear wheels. And, like the front suspension, everything in the rear is mounted in rubber to keep vibration to a minimum.

The front suspension employs a 10-leaf transverse spring, and the ball joints are lubed for life. FMC has



achieved a fine combination of firmness and road-flattening ability with their suspension. Even though this 29-foot vehicle weighs in at over six tons, it has a ride characteristic that has more in common with an auto than a high-GVW motor home. It's not uncommon for big chassis to be suspended in such a way as to provide a comfortable high-speed ride, but at city-street speeds they tend to be a little rough. FMC, however, is smooth and secure at both high and low speeds.

The chassis that rides this well-planned suspension is beefier than any that Dick had seen. Framed with a surprisingly strong alloy—about twice the tensile strength of that standardly used in a motor-home chassis—the 2900R should outlast any modern-day automobile. And the chassis is further fortified with angle and channel-steel crossmembers in the center section, plus tubular and box-steel members at both ends.

When the chassis is ready for its sidewall framing of welded aluminum, FMC has an interesting process for fixing the one-piece fiberglass upper-half body shell to its frame. While the shell is still in its mold, the frame is lowered into it, and while it continues to be held, the two are glassed together and polyurethane foam is sprayed in. This is left to harden before the shell is removed from the mold.

With the upper body shell affixed, the frame is bolted to the coach, the rest of the exterior fiberglass skin applied and inner wall installed. The wiring is also put in at this point. All wires and controls running through the floor are in conduit, and in some areas this is loomed into the skin with glass fiber.

Powering this well-sprung mass of metal and glass is Chrysler's 440-cubic-inch industrial V8, mounted at the very back of the coach. The engine develops 225 hp, and at 75 mph there was no feeling that it was being strained. In our 1000 miles of testing in the mountains of northern California we averaged 6½ mpg, which we felt was quite acceptable.

Keeping the temperature down on the big powerplant seems to be no problem. Twenty-five quarts of cool-

## BUYER INFORMATION

Model: 1973 FMC 2900R  
 Manufacturer: FMC Corporation, Recreational Vehicles Division, P.O. Box 664, Santa Clara, CA 95052  
 Price: \$29,500 base; \$29,500 as tested  
 Prices listed above are suggested retail FOB factory and do not include charges, if any, for delivery, dealer preparation, licensing, or state and local taxes.  
 Warranty: 12-month/12,000-mile warranty of workmanship and materials; appliances, batteries, tires, etc. warrantied by their respective manufacturers.  
 RVI Code Deviations: number of deviations from ANSI Standard A119.2  
 Plumbing ..... 0  
 Electrical and wiring ..... 0  
 Gas lines and appliances ..... 0

## LIVABILITY FEATURES

### APPLIANCES

8 cu. ft. Norcold 12/110v electric refrigerator  
 4-burner Wards Trav'ler Gourmet range w/power hood  
 eye-level oven  
 30,000-Btu Coleman furnace w/wall thermostat  
 2 Duo-Therm 110v air-conditioners  
 2 Lumadome roof vents  
 10 gallon Bowen water heater  
 Western Ogden water purifier  
 12v Coleman demand pump  
 6500w Onan generator  
 Thermasan waste-disposal system

### BATH:

Molded fiberglass tub/shower combination, Thetford Aqua Magic toilet, two medicine cabinets w/mirrored doors, three lights, one 110v outlet, vanity w/mirror, 12v roof vent.

### FLUID CAPACITIES

fresh water (demand system)..... 60 gal.  
 holding tank (septic)..... 65 gal.  
 holding tank (sinks) ..... 60 gal.  
 LP gas ..... 80 lbs.

### SLEEPING ACCOMMODATIONS

dinette conversion—76 x 43 x 5 in.  
 rear twins—80 x 36 x 5 and 80 x 25 x 5 in.

## GENERAL DATA

### CHASSIS

Type ..... FMC tubular  
 Wheelbase ..... 185 in.  
 GVWR ..... 14,500 lbs.  
 Brakes, front/rear ..... drum/drum  
 Engine: Chrysler industrial 440 c.i.d. V8 w/255 net hp @ 4000 rpm and 370 lbs. ft. net torque @ 3000 rpm  
 Auxiliary oil cooling ..... none  
 Suspension: front—independent w/transverse leaf spring; rear—independent w/torsion bar

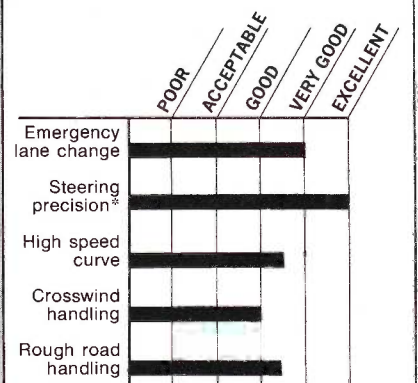
### EXTERIOR DIMENSIONS

Total length ..... 29 ft. 7 in.  
 Maximum width ..... 8 ft.  
 Maximum height ..... 8 ft. 8 in.

### WEIGHT

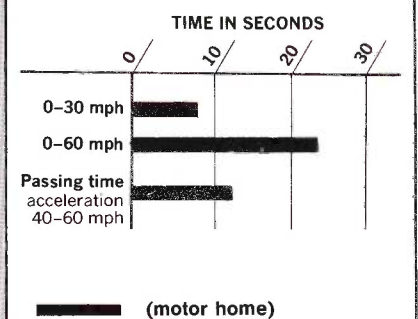
Total, as tested ..... 13,040 lbs.  
 Front axle—Rear axle ..... 4400—8640 lbs.  
 Left side—Right side ..... 6670—6370 lbs.

## STEERING AND HANDLING

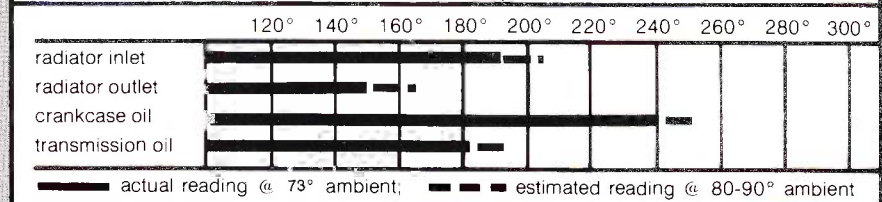


\*Amount of steering correction needed to maintain straight course.

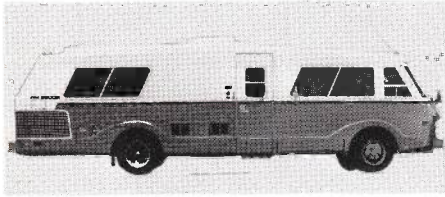
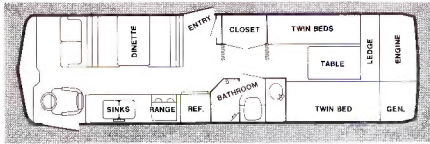
## ACCELERATION



## TEMPERATURES @ 55 MPH





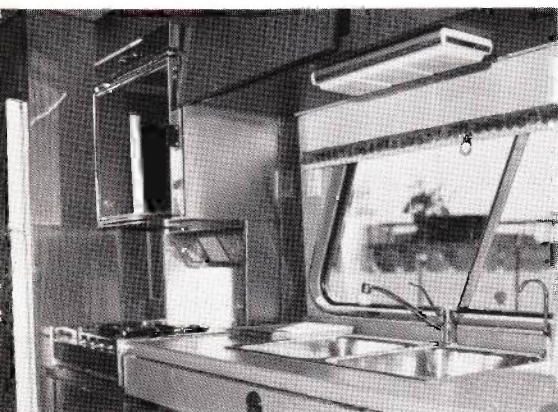


ant run through a radiator that offers 900 square inches of cooling area to the breeze. And a portion of this huge radiator, as on the modern-day automobile, is devoted to cooling the transmission oil.

There doesn't appear to be any need for auxiliary cooling on the 2900R. Cruising at a steady 70 mph we recorded a transmission-ump temperature of 202°, and a crankcase temperature of a pretty cool 261°.

The engine of this motor home is easily accessible through two doors. In fact, Dick noted that it would be easier to change plugs on the 2900R than on a car-mounted 440.

With the powerplant far from the driver, engine noise is negligible—so negligible that at 70 mph the pre-



Features like a water purifier, eye-level oven and bigger-than-usual refrigerator are standard appliances on the 2900R.

dominant sounds are the rushing wind and the whirr of the Michelin steel-belted radials which are standard on FMC.

As stated earlier, the 2900R offered a very good ride at both low speeds and high, and excellent steering precision. Dick says that almost all motor homes he has driven need constant steering correction when driven at highway speed. This one does not.

"As a matter of fact," Dick remarks, "as far as driving it straight down the road on a windless day, it probably drives as good or better than many high-priced automobiles."

In further driving tests Dick found that if anything, the 2900R was over-eager to go where it was pointed. Making two-second lane changes at 55 to 60 mph, he encountered a control problem. The difficulty was that the coach, once getting into the next lane, wanted to continue crossing even more lanes—an oversteer problem.

Luckily this problem was not difficult to deal with. It was soon learned that after getting from one lane to the other, a sharp steering correction made back toward the original lane would allow the coach to complete the maneuver with very good control. So soon did the steering correction become an unconscious part of his repertoire that Dick felt this steering characteristic would pose no problem to the owner.

Actually, the 2900R handled so well that we were somewhat surprised. What impressed us was that it could carry so much weight behind the rear axle and still be so controllable. The engine, Onan generator, LP gas and 60-gallon fuel tank were all behind the rear axle. Still, a good front-to-rear axle-weight ratio was maintained, with 4400 pounds forward and 8640 behind.

The 2900R even looks quick and agile, unlike many motor homes that appear almost as high as they are long and have the weight of roof-mounted air-conditioners pulling up the center of gravity. FMC has designed this coach to be just less than nine feet high, and the weight is kept close to the ground with skirt-mounted auxiliary air-conditioners.

A curious aspect of the road eval-

uation occurred in the brake-fade test.

We received our original test unit with 2600 miles on it, and were told by FMC's chief experimental mechanic that the brakes—drum-and-shoe—had been completely seated in. Certainly 2600 miles in this mountainous area should have burnished them well.

Though we would have been pleasantly surprised by a particularly good brake test—since in our experience, drums on high-GVW vehicles always heat too much to grip without fading—our original 2900R didn't show well at all. We ran our standard test, making five stops from 60 mph, decelerating at 15 feet-per-second-per-second—15 "decel." When we got to the fourth test stop of the series, the brakes would only hold 13 decels. We decided not to run our standard additional emergency-stop test—20 decels from 70 mph—at this time, but to wait until we had completed the remainder of our road evaluation so that the brakes could seat themselves further.

A thousand miles later we tried that fast stop from 70. This action showed us it was impossible to hold more than a 15-decel stop even at normal road speeds. Only when we slowed to about 30 mph did we get more than 15 decels. Then the decelerometer made its way up to slightly over 16. But pedal effort at this point climbed off our measurement scale, and was probably around 250 pounds . . . overwhelmingly excessive.

When we returned to FMC and described our disappointing results, it was explained to us that our unit had a minor design defect; in more recent models the brake-pedal-arm pin was located differently. They offered us a more recently manufactured coach with a properly placed pin.

This new coach gave us a real surprise. Not only did we breeze through the five-stop test at 15 decels with negligible fade, we ran another five stops at 20 decels and still got only a tiny amount of slippage. Absolutely amazing! We were getting better results with drum brakes than we had ever gotten with discs!

Even the emergency stop from 70

couldn't faze those grabbers. With just 62 pounds of pedal effort they held that coach at 20 decels with no problem whatsoever. Well, by this time Dick was mighty curious as to what made the brakes on this coach so much more effective than those on the first one he had driven. It appeared to him there might be more differences between the two test units than the location of the pedal pin. And that was, indeed, the case.

To answer Dick's question, FMC explained that the brakes on the original test unit really hadn't been burnished properly. Then they described the seating-in method they had used on the second coach.

Burnishing was done by driving the 2900R to the top of a mountain road with about a six-percent incline. Coming down the mountainside at 50 mph, the brakes were applied to hold a six-fpsps deceleration to 35 mph. Then the coach was accelerated to 50 again and the process repeated.

On the way down the mountain this procedure was carried out 25 times. The driver who did the burnishing said by the time he got to the bottom, there was so much smoke coming from the coach that approaching traffic was pulling over, apparently convinced the motor home was on fire.

After giving the brakes a long-overdue chance to cool, he drove back up the mountain and did the whole operation again—and once more after *that* run.

FMC reported that a technical service representative for a large brake manufacturer had recommended this method of burnishing as a quick means of preparing this specific vehicle.

And that is where the curious aspect arises. The Society of Automotive Engineers, which prepares suggested standards and recommended evaluation procedures for the use of all automotive manufacturers and

component suppliers, has long published Procedure J-786 for brake-burnishing method. And the federal Department of Transportation in 1970 began the process of evolving an essentially similar standard into law. As it applies to vehicles of over 10,000 GVWR, this standard will become mandatory on September 1, 1975, and is currently identified as Docket 70-27, Notice #5. It has been thoroughly published, and calls for a procedure of 400 slowdowns (or "snubs") at 10 decels from 40 to 20 miles per hour, with a 1.5-mile interval between snubs. Four-hundred times 1.5 miles equals 600 miles or, putting it another way, 400 cooling periods during each of which a vehicle accelerating to a speed of 40 mph covers 1.5 miles. Either S.A.E. J-786 or D.O.T. 70-27 (to be Standard 105A) represent the only authoritative brake-burnishing procedures, and are the object of much study and awareness on the part of automotive engineers everywhere.

The purpose of carefully timed cooling periods is an important one. Brake-lining material is compounded with, among other things, resins whose function is to prolong brake-shoe life. Severe overheating of brake linings can bake out all the resins, and could produce soft, and thus highly effective but short-lived shoes.

We would be interested to learn what practical method the brake-manufacturer's representative then proposed as a follow-up procedure for restoring the long-life resins to the existing brake shoes after his "crash program" burnishing procedure. But the schedule limitations on our road-evaluation program made it impractical to pursue the matter further.

Under these circumstances, we turn our attention in our brake-test summary simply to a statement of opinion that the brake-pedal-arm relocation should be a definite improvement in terms of decreasing

pedal effort. We are also pleased to And the 180-amp-hour auxiliary battery stores plenty of juice to keep the many interior lights brilliant for a long while. Of course the Onan 6500-watt generator will keep things hot, or cold, or fully charged as long as there's gas in the tank.

Since the support systems are adequate for extended trips, FMC was careful to provide enough storage room for you to bring along plenty of clothing and equipment. There are 84 cubic feet of storage space inside the coach, and another 26 feet accessible from the outside, including an area large enough for fishing rods, skis and the like.

The bathroom and kitchen in this coach also offer all of the desirable conveniences for a lengthy vacation. Plenty of storage, light, work room and walk-around room are designed in. The bath, for instance, contains three lights and as many mirrors. And by using the privacy curtains, the bath, wardrobe and aisleway between the two can be sealed off to create a completely private dressing room, separating the front dinette from the rear bedroom.

The twin beds in back can be separated by a privacy curtain to form two small sleeping areas, or the beds can be scooped together to make a single queen size.

And during the day the rear of the coach can be used as a lounge. With the large game table between the twin beds you don't have to juggle your partially completed jig-saw puzzle in order to have a place to serve dinner. Or, using both the dinette and the game table, you could have two bridge games going at once.

All in all, with its inherent attributes like design integrity, high-quality craftsmanship, and fine handling, the FMC 2900R should represent a durable investment for those who want to ride the highway in luxurious, quiet comfort. #