Pierce TAK-4 Independent Front Suspension

PROTECTION FROM EVERY ANGLE™

By John Phillips *Photography by John Lewis*

"Guys who drive fire trucks, you want 'em driving only as fast as the truck's weakest link," says Neil Lipski, Deputy Chief of the Milwaukee Fire Department. "You know, they get a feel for the steering, the brakes, the weight distribution. Then they drive within the limits of whichever behavior is worst. So in a truck with mediocre brakes, for instance, you're averaging maybe 28 mph en route, no matter how good the steering is. With TAK-4, all the capabilities are upped–steering, braking, ride, maneuverability. So now you're averaging, say, 35 mph. People chuckle at that, a difference of only seven mph. But for someone waiting in a burning building, it's quite a big deal."

That Lipski is a fan of TAK-4–Pierce Manufacturing's clever new independent front suspension (IFS)–is an understatement. The system was originally invented by parent company Oshkosh Truck Corporation for military and aircraft-rescue vehicles facing off-road duty. Turns out it deals just as effectively with more mundane impediments: neighborhood chuckholes, ruts, grooves, crowns, and corrugations.

The problem with straight-axle trucks is all too familiar. When a bump displaces one wheel, some of that energy inevitably travels the length of the axle and disrupts the "innocent" wheel as well. It means the truck's front wheels often don't return to the path they were following moments before. Drivers sometimes describe it as "dancing," "chattering," or "walking." No matter the description, it makes for vague steering, forcing a driver to anticipate, second-guess, and continuously correct.

With Pierce's TAK-4, however, the wheel that hits the pothole is allowed to deal with the disruption in isolation, leaving the rest of the suspension unmolested.

This isn't pie-in-the-sky theory, either. The improvement can be measured.

Pierce fitted a truck with an accelerometer that could register the relative violence of up-and-down motions within the cab. With a straight axle, the device recorded 0.51g. With TAK-4, the figure dwindled to 0.15g–a ride quality more than three times better.

"To test how the truck would handle, I drove it with the left wheel on the pavement and the right wheel on the berm," says Lipski. "When you do that with TAK-4, the vehicle is far more subdued, stable, and unstressed from a control standpoint. My gut feeling is that it's 80-percent better than a straight-axle layout, not just in terms of ride but also steering predictability."

Although he enjoys both the cushy new ride and obvious safety benefits, Lipski says his original goal was simply to make life more endurable for delicate on-board components. "All those modern computer systems worried me most," he says. "But a harsh ride eventually damages everything, from portable ladders all the way down to lightbulb filaments."

Part of TAK-4's ride improvement derives from ten inches of suspension travel, versus only five to six inches with a straight axle. With a ride so improved, it's no longer necessary to slow precipitously for railroad tracks, speed bumps, and run-off dips. Steering control is easier to maintain, in part because the driver isn't jostled as much, adding a measure of safety. "And on rough terrain," he adds, "my confidence is way up– you know, climbing curbs, on gravel access roads, getting to the back of an involved residence."

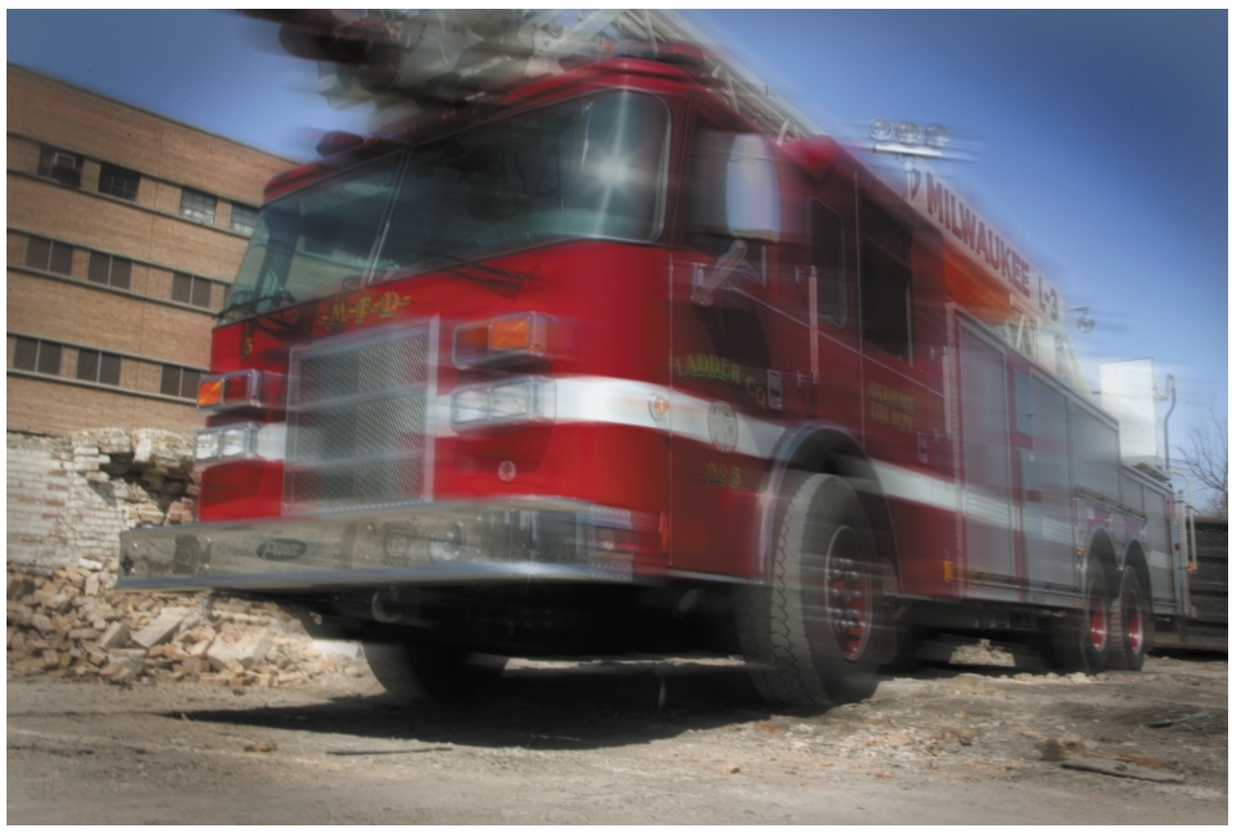
In part, Lipski is reacting to the lower spring rates possible with IFS. Stiff springs in any vehicle–including sports cars like Porsches and Vipers–contribute to driver fatigue. It's why long-distance race cars are fitted with the softest springs possible.

TAK-4 trucks don't yet ride like Cadillacs. More like SUVs. But it's nonetheless a boon for firefighters, who, during a run, already have their hands full–dodging civilian vehicles, sorting out directions, monitoring blaring radios.

Pierce's TAK-4 package also includes 17-inch brake rotors. With the larger swept area, as well as larger pads, a TAK-4-equipped pumper should go 100,000 miles with only two brake jobs, versus as many as a dozen for its straight-axle counterpart. More important, that same truck will stop 60 feet sooner from 60 mph. A 60-foot cushion is huge–occasionally the difference between an accident and a safe stop.

Maximum cramp angle for TAK-4 trucks is 45 degrees, as sharp as any in the business. And with the IFS, steering response is livelier, more confident at turn-in, with road textures more clearly telegraphed to the driver's fingers, informing him of available surface grip.

Today, 50 percent of Pierce fire trucks are TAK-4-equipped–558 units ordered, 330 shipped–making it the most popular technology the company has ever offered.



John has been writing about cars for 28 years, his work appearing in Conde Nast Traveler, Sports Illustrated, Maclean's, Harper's and other national magazines. He currently is an Editor at Large for Car and Driver magazine. John lives in rural Michigan, drives a used cop car, and has never been indicted, although he was asked to leave the town of Moose Factory, Ontario.