

'MODULAR' PARTS

Users should be allowed to swap out parts that go bad. During a repair, all the important parts of the device or object should be accessible, removable and replaceable—without damaging the part itself or the rest of the machine. That's what it means to make parts "modular."

Car tires, for example, are modular. You can change a tire on the side of the highway.

However, your car's A pillars aren't modular. To replace one of them, you would have to replace the car's entire frame, which would require you to begin by removing every other part of the car. Not a side-of-the-



road repair!

The principle of modularity is simple, but designs throw lots of obstacles in the way, such as the use of adhesives that require finish-damaging solvents to dissolve and fragile connectors with pins that tend to bend.

The only reasonable excuse for a nonmodular part is if it's unimportant or virtually bulletproof. Our teardown engineer, Jeff Suovanen, says, "The more critical a part is to device function, or the more likely it is to fail at some point, the more important modularity and serviceability become, even at the cost of a little added complexity or material."