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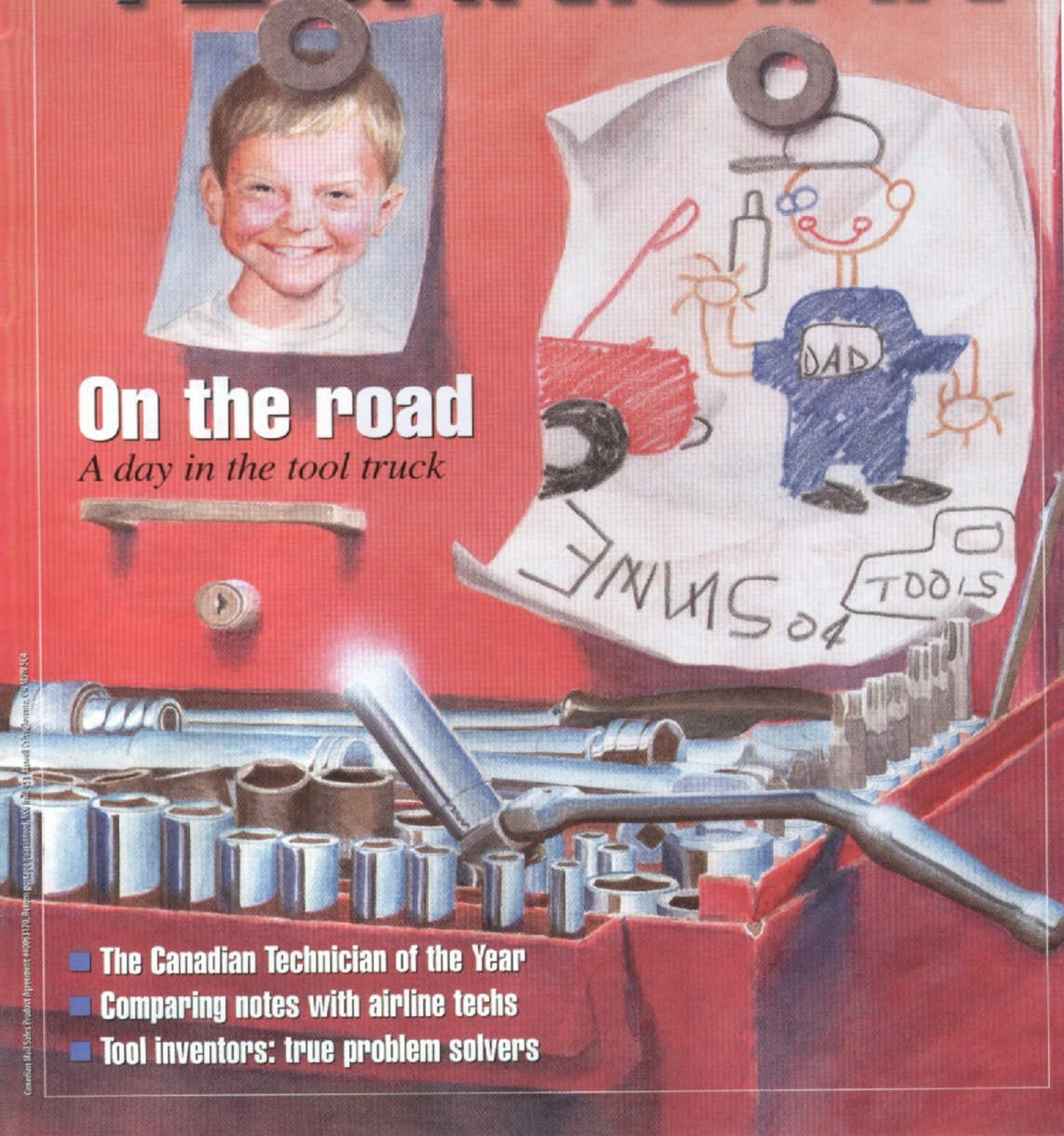

On the road

A day in the tool truck

- The Canadian Technician of the Year
- Comparing notes with airline techs
- Tool inventors: true problem solvers

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Noise, vibration, and harshness

It may mean something else to you but to a customer NVH stands for Not Very Happy!

By Richard Goulet

Dealt with NVH lately?

No, it's not a deadly new disease. And it isn't a new federal department. Or a bank service charge.

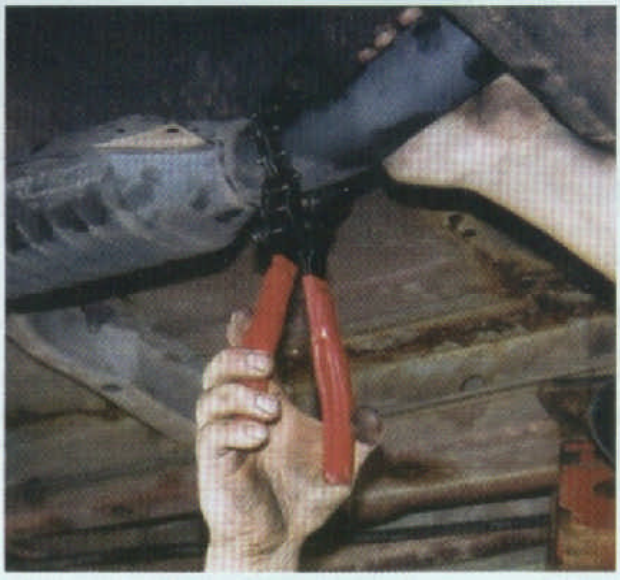
In fact, NVH is a term used mainly by engineers and technicians working on the OE side of the automotive business. It stands for noise, vibration and harshness – and the problems they pose are among the toughest to resolve in the automotive repair industry.

Technicians deal with them on a regular basis; although they might not refer to them as 'NVH.' They might just think of them as those unique customer complaints that are difficult to diagnose, time-consuming to fix, and nearly impossible to get properly paid for.

Noise complaints vary from whistles to hisses caused by, among other things, poor door and window sill seals, and restricted or misdirected air flow around the exterior mirrors and the front grille assembly. The difficult part of resolving this type of problem is in locating the noise's point of origin. The majority of wind-related noises are resolved with a seal replacement or slight adjustment to the mirror and grille assemblies, but in many instances the long-term prescription is to have the part responsible for the noise redesigned. Ideally a bulletin would then be issued, alerting service technicians about the specific problem and the proper repair.

Solving vibration related complaints, on the other hand, require patience and focus. The causes for a vibration problem range from wheels, tires, differential pinion angle, brake drums, rotors, and defective suspension parts such as a strut or shock assemblies. And the fixes could be anything from balancing tire and wheel assemblies, to replacing defective suspension parts, adjusting the pinion angle on the rear differential, and repairing or replacing a differential and its U-joints.

Harshness problems are among the most difficult customer complaints to resolve because they're subjective. What one customer considers a harsh ride may not be an issue for other drivers. Solving these types of complaints, requires driving the vehicle with the customer, so you can verify that a problem exists, and then developing a vehicle-specific solution. Most of the problems tend to be related to body insulators that are over-torqued, too soft, too hard, or just plain missing.



Weights were the NVH solution to the low-pitch groaning sounds from a mismatched exhaust system.

I worked on one NVH job which any technician who has worked on modified vehicles might relate to.

The customer complained of a droning noise whenever the vehicle was under heavy acceleration. Another technician isolated the condition to an exhaust-related problem and attempted to resolve it by replacing the exhaust system. Not only did it not solve the problem, but it left the customer even more dissatisfied. That's when I was called in to help.

I started by talking to the customer, and found out that the vehicle's engine had been replaced. The original 460 c.i.d. engine had been replaced with a 400 c.i.d. engine. The engine bolted right in – mounts, transmission, and exhaust. Armed with this information, I traced the noise to a mismatched exhaust system. Even though it bolted directly to the engine, its back-pressure and flow was not designed for this specific engine, causing a low-pitched groan.

The problem was easy to repair. We just added weight to the exhaust and tailpipe of the system – approximately 50 lbs worth, bolted on by muffler clamps. It wasn't a pretty sight, but it offset the drone caused by the mismatched exhaust system and led to a satisfied customer. But we couldn't do it until we understood the complete history of the problem.

The exhaust situation I've just described isn't an unusual one, it's just misunderstood. Very few technicians have been trained to diagnose and solve NVH problems. And if they're getting the repair brief from a service advisor instead of directly from the customer, it's easy to see why NVH complaints are especially difficult to understand, diagnose and resolve.

Richard Goulet has worked in many facets of the repair and service industry for more than 30 years.

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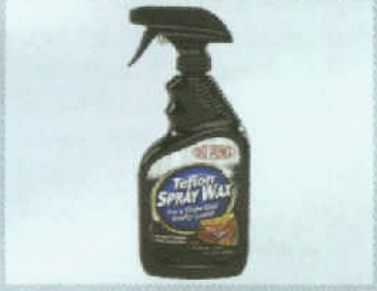

Tenneco's new waxes feature the benefits of Teflon

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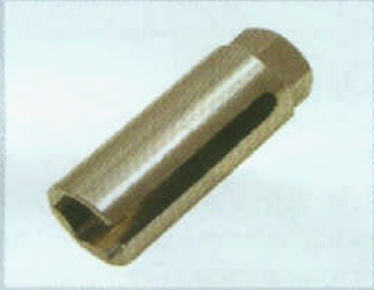

NTK O2 Sensor Socket offers easy installation/removal.

Adding on the additives

By Rick Cogbill

Some technicians say if the manufacturer doesn't recommend it, you shouldn't need it.

In a perfect world that might be true, but we all know how far from perfect the automotive world really is. Stuff happens, and when it does, additives and chemicals may have a vital role to play.

Take, for example, the early GM diesels that required a special cooling system additive to stop head gasket leaks. Maybe I'm wrong, but I don't believe the engineers planned for that in the design stage.

Engines and their related components wear, accumulate deposits, and suffer from neglect. When a rocker ball socket starts squeaking on a GM product, you could strip it down and clean/replace parts as required. Or you could do what shop foreman Ray Marshall does at Bob Brown GM in Penticton, B.C. – add a can of Lubricity, an acid-based lubricant from the ACDelco line that does wonders for annoying valve train noise.

Gerry Pieters of Thunder Alley Transmissions, also in Penticton, maintains that no additive can repair worn parts; the key for him is to maintain good parts in a serviceable state. That's why they add a can of LubeGard (made by International Lubricants Inc.) to every rebuilt automatic transmission that leaves their shop and Lucas Oil Stabilizer to every manual gearbox and diff.

It's common for many shops to automatically add a bottle of fuel conditioner to the gas tank at every tune-up. Though the brands may vary the purpose is the same: to keep the injectors and fuel systems from building up gum and varnish deposits. At Penticton Ironman Subaru, a bottle of Forté Fuel System Cleaner is added during a fuel filter change (every 24,000 km), and the techs there are adamant that owners who follow this routine have very little fuel pump problems compared to those who don't.

It seems that everyone who uses additives has found their own favorite brand. Richard Haverkamp, owner of Haverkamp Motorwerks in Penticton relies on Liqui Moly products for his Volkswagen customers. The high-mileage engines benefit from a bottle of MoS2 Engine Treatment to quiet the lifters, and the Diesel Purge effectively cleans the injectors and pump.

Richard Goulet, of Specialty Sales & Marketing, says the new Titan line of chemicals features a new product to uniquely attack varnish and carbon deposits in the fuel systems. "It's a three-part system," he explains, beginning with an additive in the fuel tank to clean everything from the fuel lines up to the injector pintle, a spray to clean out the air intake system, and a more aggressive cleaner added through a vacuum port on the intake manifold to clean deposits on the valves themselves.

He recommends using chemicals to fix known problems like carbon and varnish deposits in fuel systems, particularly in the valves, that will make cleaning fuel systems easier, less costly, and offer better results.