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[PROVEN]

Haldex Performance Upgrade

Drifting in an R32 or Audi TT? You bet.

When Volkswagen first rolled the R32 in front of a bunch of journalists, I remember thinking it was far too cool to ever come to the U.S. I figured it would go the way of the Rallye Golf, a few cars making it Stateside via dubious paperwork, dark warehouses and stacks of cash. Fortunately, I was wrong.

VW's gamble on the R32 has paid off handsomely. Dealerships throughout the nation are selling every car in stock. That means there are nearly 5,000 R32s in North America, not a huge number but impressive nonetheless.

Most folks are very happy with the car. And they should be. Its 3.2-liter VR6, sophisticated suspension and all-wheel drive conspire to make it the best value in the sport compact segment.

If you're reading this, chances are you want an edge on fellow R32 owners. Neuspeed and Haldex can supply that edge. Actually, the edge is more like a Kbar tactical blade.

The AWD systems on the R32 and Audi TT are based on the Haldex LSC, a rather complicated bit of Swedish engineering. The Haldex LSC is comprised of a hydraulic pump, a wet multi-plate clutch and an electronically controlled throttle valve. The unit can be viewed as a hydraulic pump in which the housing and an annular piston are connected to one shaft and a

By Les Bidrawn Photos by the author



The Haldex/Neuspeed upgrade is a simple "remove and replace" deal. Five minutes and a 4mm hex wrench will transform your R32 or TT.

A special thanks to Eugene Lee and his superbly modified 2004 R32



By re-tuning the vehicle's AWD system, power is more aggressively directed to the rear wheels. The Haldex ECU continuously monitors throttle input and other vehicle sensors (temperature and slip) and transfers torque more quickly to the rear wheels. In fact, how quickly the torque is transferred is a direct function of how fast the driver pushes the throttle. The Haldex unit will actually anticipate and prepare for torque transfer before actual torque is delivered from the engine to the driveline.

"We don't have an exact figure regarding the power split between the front and rear," said Aaron Neumann. "However, it's important to remember the transmission will continue to operate normally during average driving.

"At cruising speeds, 90% of the engine's torque is going to the front wheels. As load increases gradually, the split will increase to 70/30, 60/40 and finally something like 44/56."

Ultimately, the power transferred to the rear wheels is the same as before; however, the transfer rate is much faster. And that's when the fun starts.

Like most VW products, the R32 will inherently understeer during a hard corner. That's the way Volkswagen wants it. The average driver feels things start to push and immediately lifts off the throttle, thus bringing the car back in line. With the Haldex performance upgrade, the car will tend to be more neutral with the throttle being

piston actuator is connected to the other. The two shafts are connected via the wet multi-plate clutch pack, normally unloaded and thus transferring no torque between the shafts. When both shafts are rotating at the same speed, there is no pumping action. When a speed difference occurs, the pumping starts immediately to generate oil flow. It's a piston pump, so there is a virtually instant reaction with no low-speed pumping loss. The oil flows to

a clutch piston, compressing the clutch pack and reducing the difference between the axles. The oil returns to the reservoir via a controllable valve, which adjusts the oil pressure and the force on the clutch package. In traction/high slip conditions, high pressure is delivered; in tight curves or at high speeds a much lower pressure is provided.

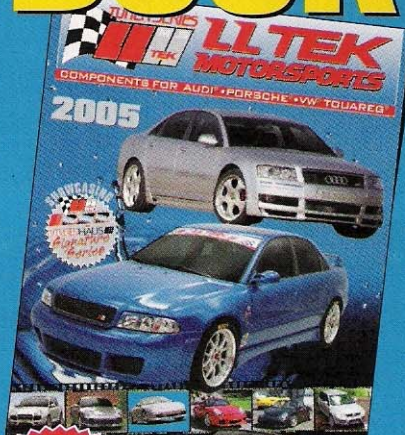
Every vehicle has its own requirement specification profile and sub profiles. This specification leads to

different calibrations of the Haldex LSC computer. The programming determines which set to use in the actual vehicle.

Whereas a Porsche C4S is a RWD vehicle converted to AWD, the R32 is a FWD vehicle converted to AWD. Ultimately, the R32's front wheels see most of the action. Until now.

During the annual SEMA Show in Las Vegas, Haldex Traction Systems approached Neuspeed and spoke of its plans for its vaunted technology.

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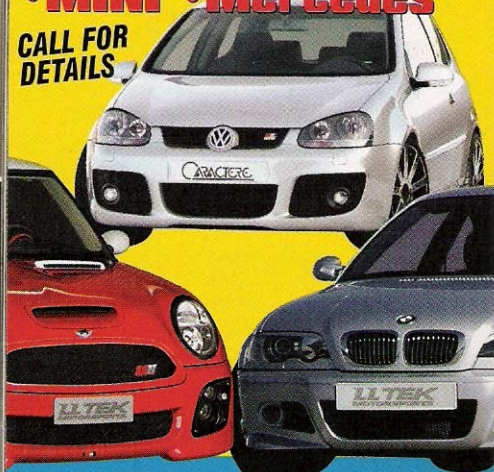
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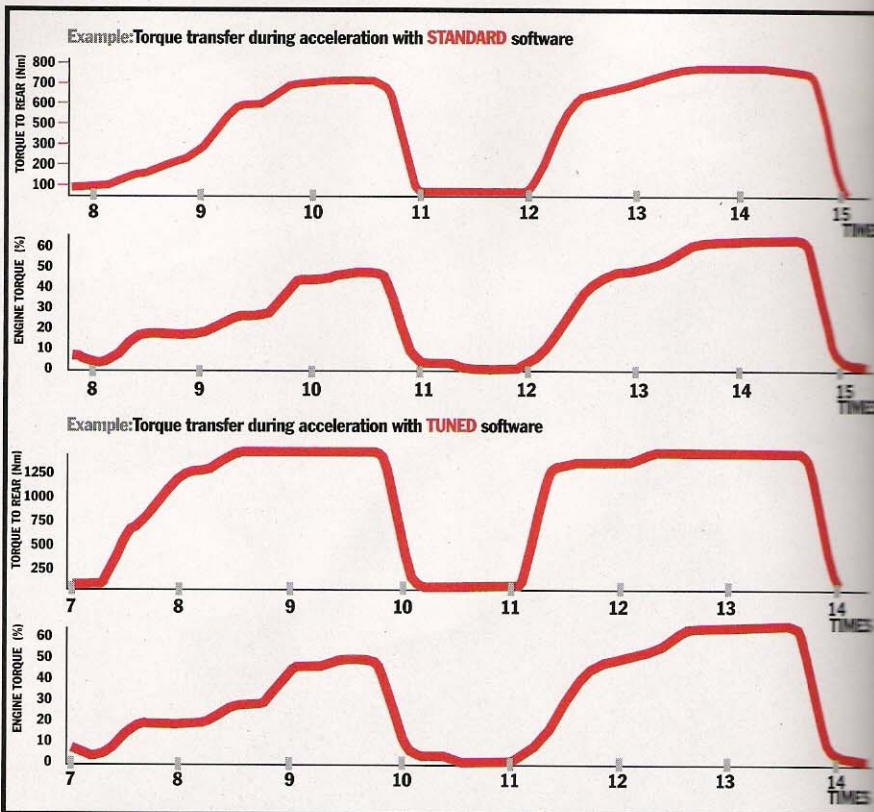
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Haldex Performance Upgrade



As seen here, the transfer of twist to the rear wheels happens much quicker with the new Haldex software. It translates to less understeer and more neutrality with a hint of power-on oversteer.

SoCal R32

On May 16, 2004, Daria Saidi (aka CHUNK85) arranged what would be the first of many "get togethers" (GTG) for R32 enthusiasts in Southern California. It drew 15 R32 owners out on a Sunday afternoon for a cruise up PCH and a spirited drive through the canyons. Afterwards, a mailing list was created to keep everyone up to date on the next GTG. With that, SoCal R32 was established.

The second GTG in Malibu drew 25 R32s, and the third took place at VF Engineering where a whopping 75 cars turned out. In December, SoCal R32 threw a charity event for Toys for Tots. Sixty R32s and more than 100 people donated toys and money.

In actuality, SoCal R32 membership is spread through the western states and some members drive many hours to be with like-minded R32 owners. There are no dues or monthly meetings, but rather a unique bond between folks that have shelled out some 30K for a VW Golf. In a way, it makes them the most hardcore of VW fans. Surprisingly, a good many SoCal R32 members are new to the Volkswagen scene. They purchased the car after first driving its com-

petition. There's a message about the R32's fundamental goodness in there somewhere.

SoCal R32 continues to grow as some 200 registered users log on and exchange tips and information. It's a labor of love—no one's getting paid to host or update the site. Remember that next time you go there.

SoCal R32 sponsors include: EuroMotive Tuning, Neuspeed, Tuning Technologies, North American Motorsports, GIAC, Exklusiv Motorsports, EuroCullen, 4Grounding, European Technologies, HPA Motorsports, EIP and Parts4VWs.



CONTACT www.socalr32.com

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the deciding directional factor. During ultra-hard launches (say, a 6000-rpm clutch drop), the weight and power transfer to the rear wheels makes this a no-brainer for quarter mile fans. You will be faster with an upgraded Haldex. Good fun? You bet. But be advised, it's a modification we'd recommend only to drivers with above average skill.

We recently hooked up with the crew from SoCal R32, a group of more than 200 R32 owners. On the freshly paved tarmac of Irwindale Speedway, Eugene Lee gamely offered up his

S OIL



pristine Deep Blue Pearl R32 for testing.

Just poking around, the car feels the same as a completely stock R32, which is to say damn good. On Irwindale's eighth-mile drag strip, the Haldex upgrade instantly made its presence known, yielding a brutally hard launch with nary a whiff of tire smoke. We hooked an equally prepped R32 to the new Vericom Performance Computer and recorded zero to 60 mph times of 6.0 seconds, nearly four-tenths faster than a previously tested stock car. So far so good.

On the road course, super-aggressive driving was rewarded with gorgeous tail-wagging drifts. It ain't the fastest way around a track but it's certainly more fun. Take more serious lines and the R32 becomes positively neutral—you decide where it goes with the throttle.

As stated before, the Haldex performance upgrade is best left to the experienced driver. Unless its capabilities are properly utilized, it's a waste of hardware. However, should you need more performance from your R32, the Haldex performance upgrade is an excellent place to start. ☞

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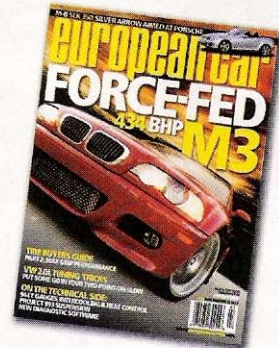
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