


# TWO-FACE

## PART ONE: DAILY DRIVER, TRACK CAPABLE

TEXT AND PHOTOS BY JOEY LEH





To the truly hardcore, we applaud your dedication to outright speed. Although, for most enthusiasts, a 350dB exhaust isn't so great at the local drive-thru. Is it possible to build a car that can blaze track pavement AND still be soft enough for the hot date waiting back at home? That's where we come in.

Contrary to what many people believe, bigger isn't always better, and it is possible to build a comfortable street rocket. It just takes the right parts and the right mindset. If you just got some parts on your car and ponder incessantly about what advantage your hard earned dollars just achieved you, then an open track is just what you are waiting for. Street racing, and similar antics, will be one foot out the door after a true dose of on-track fever. What follows here is a multi-part series of articles that displays what kind of modifications it takes to build any car into a monster that feels at home on the track and the street.

#### STEP 1: FOUNDATION

Our first step is to choose a capable platform. We want something that has good power, fine cornering capability, superb driving manner, the ability to do it all-year round, and with a level of comfort. Popular choices include such cars as the Integra, Lancer Evo, any lightweight hybrid Honda, the Miata, or the 350Z. For our example, we chose a 2004 Subaru WRX wagon, because what's more real world than a fast wagon?

Due to the superbly large collection of American liability laws, the majority of factory cars are set up too soft and understeer far too much to have any real fun in. Under harsh driving conditions, garbage all-season tires just howl and slide as the front end struggles to maintain the driving line. Experiencing exactly this sort of behavior in our tester, our first course of action is to increase our overall grip level, slash understeer, and cut down braking distances. Magically, all these points can be addressed with one thing, the most fundamental point of any performance car-tires.

We draped on a set of 225/40/18 BF-Goodrich G-Force T/A KDW (Key features Dry and Wet) tires around bronze 18x7.5-inch Work Emotion CR Kai wheels. From a stock baseline of 0.85g on the skidpad and a 140 foot 60-0mph braking distance, our WRX stuck to the tune of 0.88g and grinded down in 126 feet with only a wheel/tire package upgrade. The ultimate all-year round tire (we don't see snow in Southern California), the KDW gave a huge increase in grip, and the wet weather capability means we won't ever have to worry about going easy in the rain. Although it's one step down from BF-Goodrich's super-sticky dry performance KD tire, we decided to test the KDW since many car enthusiasts aren't interested in keeping a set of winter tires mounted and taking up space in their respective garages.

The 18x7.5-inch Work Emotion's were chosen for their combination of strength and their ability to clear a bigger brake kit, should we decide to use one in the future. AKH Trading, the official North American distributors of Work Wheels, had two kinds of Emotions that would fit, a +42 offset and a +48 offset wheel (stock is +55, 16x6.5-inch). The lower offset would give us larger brake caliper clearance, but the lower offset also meant the wheel's outer face could possibly contact the inner fender during suspension compression. We decided to stick with the higher offset wheel, which correctly fit the car and cleared the fenders, although the rear fenders still required a rolling job as we could hear the 225-width tires slightly rubbing under very hard cornering.

# DOUBLE EDGE MACHINE



WE'VE BEEN DOWN SOME SERIOUS ROADS WITH WORK'S STRONG, LIGHTWEIGHT RIMS AND HAVE YET TO EXPERIENCE ANYTHING WRONG. THAT IS, ASIDE FROM A SHADY TIRE SHOP STEALING THE DECALS FOR THE CENTER OF THE WHEELS.

## STEP 2: GRIP, GRIP, GRIP

Although the BF-G tires helped immensely with the behavior and grip of the car, the WRX still had loads of camber-eating body roll. On a strut-equipped car such as the WRX or the Evo, the suspension design requires a large amount of initial negative camber (i.e. the tire tilts inwards) to perform, since the car leans on the outside tires through a turn and the camber curves for the tires on that side pushes towards positive. As a tire increases its positive camber, the top of the outside tire tips outwards, the tire's contact patch with the ground slims and grip decreases. The only solutions are to run large amounts of negative camber or to decrease body roll. Our solution: contact Whiteline Automotive.

It's generally a good idea to stay with companies that have proven successes, and Whiteline has had loads of experience with numerous rally and performance vehicles. What we found interesting about Whiteline is

their massive catalog of complete suspension packages. Covering springs, sway bars, dampers, tower bars, and many other parts for such cars as S14's and Evo's. Whiteline manufactures literally every component you'll need, and you'll know that they were all designed to work with one another. Contrary to many JDM-spec suspensions, which run ungodly stiff springs to control roll and tune the overall balance, Whiteline specified the use of their stiff anti-sway bars and Sport Anti-Lift Kit (ALK). They use anti-sway bars to help control roll and behavior, letting the suspension articulate to maintain as much contact with the road as possible. The end result is a promised, smooth street ride and flat track cornering. Our WRX still maintains its stock spring/strut setup. Whiteline does offer a set of springs for our application, but we opted out of it in favor of a possible damper upgrade down the road.



THE KDW VS. YOUR AVERAGE ALL-SEASON TIRE. NOTICE THE HUGE DIFFERENCES IN TREAD BLOCKS AND WATER EVACUATION CHANNELS.

A quick stop at Wet Works Garage in Costa Mesa, Calif., and we were on our way with a beautiful fender job that didn't cut or crack any of the stock paint. The fenders were rolled the correct way: by first using a razor to cut into the undercoating just inside of the rear fender. Thus, when the inner fender edge was rolled back to clear the tire, the stock paint is not pulled along with the fender. A quick re-spray of undercoating to fill the gap along the fender edge, and we were on our way with more than enough rear clearance for our 225-width tires.



THE OFFSET BETWEEN THE WHITELINE ALK AND THE STOCK CONTROL ARM BUSHING IS OBVIOUS. OUR ALK CAME EQUIPPED WITH A URETHANE BUSHING VS. THE STOCK RUBBER MATERIAL.

Tuning for behavior and balance first, we found the results to be far from misleading. From the first time we blasted down a nearby freeway onramp, we knew we had transformed the car. With big help from Arnie Medel, Southern California field R&D expert for Whiteline, we tried out the WRX with only the ALK installed. By offsetting the rear bushing on the front control arms, the ALK added caster, eliminated anti-lift



TO INSTALL THE ALK, YOU NEED TO DROP THE STOCK FRONT SUBFRAME SUPPORT, PRY THE FRONT CONTROL ARM DOWN, CHANGE THE BUSHING FOR THE ALK, AND THEN USE THE SUPPLIED SPACERS TO KEEP THE SUBFRAME SUPPORT FROM CONTACTING ANYTHING. A LIFT REALLY HELPS HERE.

# DOUBLE EDGE MACHINE

and anti-dive behavior, and laid waste to on-throttle understeer. There is still some understeer at the limit of cornering, but compared to stock, it's night and day. Remember too, we only have wheels, tires, and an ALK installed. Incredible stuff.

The next step was Whiteline's 22mm two-position adjustable front anti-roll bar (stock is 20mm) and 22-24mm three-position adjustable rear anti-roll bar (stock is 17mm). With the rear bar set to the middle hole (235% stiffer over stock) and the front bar set to the first hole (46% stiffer over stock), we headed back to the on-ramp. Wheels, tires, two bars, an ALK, an eye-ball alignment, and we're going nuts. The balance of the car is perfect, and the grip level now is incredible. The on-ramp entrance sign says 25mph, but we approach at more than double that, unsure if the car will stick. The Subaru doesn't even complain. The tiniest bit of understeer rears its ugly head, but careful control of the right pedal will determine how the ass sticks. Although there's now 0.90g of available grip, we're sure that with a proper alignment, the car can post bigger numbers. But even in its present state, we've reached the point where the limiting factor on the street is the driver's sanity, not the car. We need a racetrack.



THE DIFFERENCE IN THICKNESS BETWEEN THE STOCK BAR AND THE WHITELINE BAR IS IMMEDIATELY OBVIOUS



TWO-POSITION ADJUSTABLE AND INCLUDES NEW URETHANE SWAYBAR BUSHINGS. WE SUBSTITUTED LONGER LASTING BLUE MARINE GREASE INSTEAD OF THE INCLUDED WHITE LITHIUM GREASE.



THREE-POSITION ADJUSTABLE REAR BAR, WITH THE STOCK BAR MOUNTS AND ENDLINKS. WE HEAR THE '04+ REAR MOUNTS ARE FAR MORE RESISTANT TO RIPPING THAN THE '02-03 PIECES, BUT ONLY TIME WILL TELL.

## HOTBOX

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