



**HYPERCO**

***Precision Suspension Components***



# "From LeMans to Mid-Ohio to Main Street

...HYPERCO provides the Performance Advantage. That's why HYPERCO suspension coils are the recognized leader among race teams worldwide.

*It's not just a list - it's a legacy of winning.*

**NASCAR NEXTEL CUP  
FORMULA ONE  
INDIANAPOLIS 500  
INDY CAR SERIES  
CHAMP CAR  
USAC MIDGETS  
DAYTONA 500  
SCCA TRANS-AM  
ALL JAPAN F-3000  
USAC SPRINT  
DAYTONA PROTOTYPES  
JAPAN GTCS  
SCORE OFF-ROAD  
NASCAR BUSCH SERIES  
EAST COAST DIRT MODIFIED  
DAYTONA 24 HOURS  
SEBRING 12 HOURS  
LUCAS SERIES  
NASCAR CRAFTSMAN TRUCK SERIES  
LEGEND CAR SERIES  
STEEDA MUSTANGS  
NHRA PRO STOCK  
UMP  
SHOW ME "100"  
BRICKYARD  
LE MANS 24 HOURS  
MONACO GRAND PRIX  
NAMARS MIDGET  
AMA ROAD RACING MOTORBIKES  
FORMULA ATLANTIC  
FIA RALLY  
WORLD 100  
ELDORA "DREAM"  
IMCA MODIFIED  
USAC SILVER CROWN  
MAZDA PRO SERIES**



reet U.S.A..."



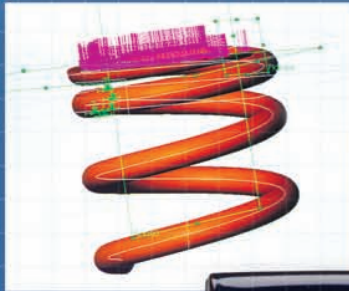
## *A History of Unrivaled Racing Success.*

Let's start with suspension coils on the winning car at **every** Indianapolis 500—since 1964. Beyond that, champions of Formula One, Champ Car, Indy Car, NASCAR, Endurance Sports Cars, Off-Road, Grass Roots Oval Track (dirt and asphalt), along with a wide variety of others, have benefited from the proven **Performance Advantage** found in every Hyperco product.

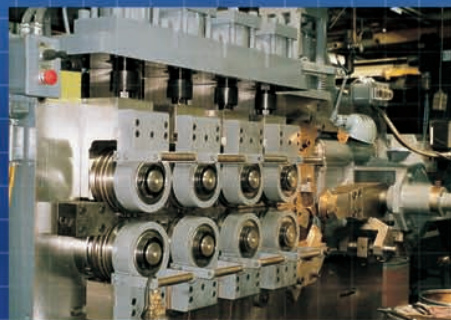
With today's racing environment more demanding than ever before, no one component can be less than perfect. The demands on suspension coils have reached a peak with today's modern suspension technology. Hyperco is the one manufacturer, known around the world, as the company that devotes the necessary resources and the one-to-one customer service needed to produce the optimum suspension coils that will meet the highest demands of today's winning race teams.

# Computer Designed. Track Tested.

Our team of specialists continually work to realize a component that is at its absolute state-of-the-art potential for every application and environment.



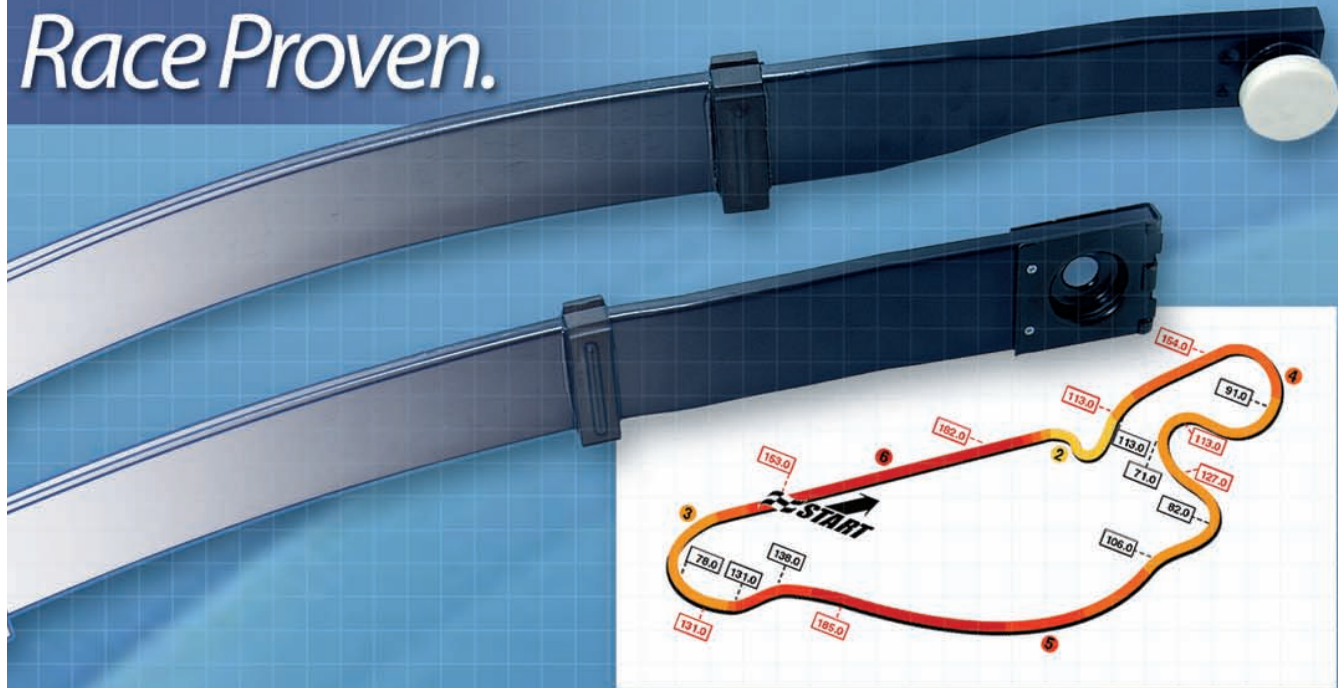
At Hyperco, our focus is always on innovation. Always researching. Always developing. Testing new ways to improve performance. In fact, we're not just coiling springs, we're engineering suspension coils, along with other components that ultimately offer racers our **Performance Advantage.**



*Hyperco is the worldwide leader in high performance suspension coils and related components.*

Computer Controlled Coiler

# Race Proven.



Hyperco's focus is on high performance suspension components. We recognize that the balance and the handling of any race car must be at its optimum for winning results. That's why we're dedicated to being the source, worldwide, for high performance suspension components. Customers can be assured we are not distracted by other products; trying to be all things to all people.

Our team of specialists continually work to realize a suspension component that is at its absolute state-of-the-art potential for every application and environment. We continue to combine the finest engineers and craftsmen with the latest manufacturing technology and metallurgy in the industry. We utilize the latest in design and performance simulation software, along with multi-axis rate and load testing equipment to measure overall dynamic performance.

What's more, Hyperco utilizes materials that are custom developed for the demands of the racing environment. We manufacture from materials including ultra high tensile chrome silicon, micro alloys, titanium, alloy steels, stainless steels, aluminum and advanced composites. Multiple inspection procedures, including magnaflux before and after manufacture, ensure our products are free from imperfections which undetected could lead to product failure.



This combination of design, engineering and manufacturing excellence has earned us the ability to offer the racing world consistent performance, innovative technology and product reliability. Hyperco also works with race teams on a one-on-one basis to develop custom and proprietary versions of all of our suspension components. As a result, more and more teams are benefiting from the Performance Advantage found only with Hyperco.

# High Travel Conventional

# Front Coil Springs

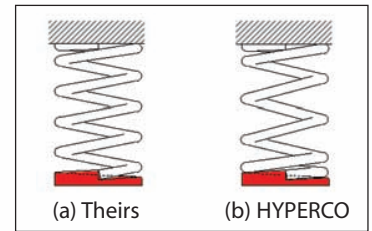


## The Closed End Advantage.

Racers continue to chase the configuration and spring rate of conventional front springs in order to get more suspension travel on the race track. With Hyperco's High-Travel Conventional Front Springs, we're bringing our closed-end NASCAR style front spring technology to the overall Hyperco Conventional front spring line.

With traditionally designed, open-on-pitch front suspension coils, very little contact is made with the riser. This means very little of the end coil of the spring will deaden out during the early portion of spring deflection. This creates a very progressive spring rate through the initial stages of deflection. The closed-end design of Hyperco's High-Travel Conventional Front Springs directly impacts the number of active coils that deflect during spring compression.

The advantage? With our springs, it takes very little deflection for the coil to make full contact with the riser, thus the spring reaches its stabilized rate much sooner in the deflection. Static load is reached with less spring deflection, leaving more on-track dynamic travel. And more travel on the racetrack enables more aggressive and faster set-ups.



(a) Their spring with open end interacting with riser  
 (b) HYPERCO Spring with nearly closed end interacting with riser.

## TECH-TIPS

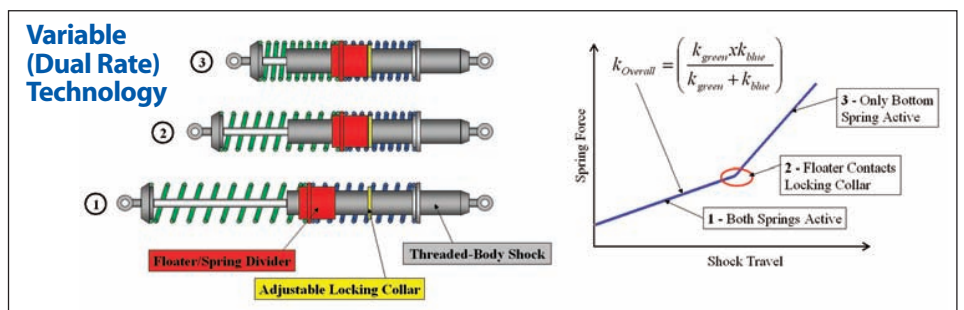
WHEN RATE TESTING CONVENTIONAL FRONT SPRINGS IT IS IMPORTANT TO ENSURE THE HELIX (RISE) IN THE RATE TESTER IS THE SAME AS THE HELIX IN THE LOWER CONTROL ARM OF THE RACE CAR.

FOR A COMPLETE LISTING OF HYPERCO TECH-TIPS VISIT OUR WEBSITE AT: [WWW.HYPERCOILS.COM](http://WWW.HYPERCOILS.COM)

## Our Stacked Dual Rate Spring System Package

### The Hyperco Difference? It's Tunable!

The Hyperco (stacked) dual rate spring system has a difference... it's tunable! A wide variety of racing categories have realized the winning advantage of Hyperco's adjustable dual rate spring system. The Hyperco stacked spring hardware (Floater/Spring Divider in conjunction with a ring on the shock body) manages deflection/rate. It lets you control the transition from a relatively soft combined/dual spring rate for optimum weight transfer and wheel movement, while also enabling you to tune the suspension at a higher secondary rate that provides for maximum compliance and wheel/tire loading.



Composite

# Leaf Springs



## Lighter. Stronger. Faster.

Hyperco Composite Leaf Springs are precision manufactured with an epoxy matrix composite material. Adapted from the aerospace industry, this material provides extraordinary strength that is 70% lighter than steel.

Molded to an exact true arch, the Hyperco CLS retains its shape for life. No need to put a car on jack stands ever again!

On the track, the CLS provides more side bite off the corners. It allows teams running leaf springs to be consistent race after race without having to constantly measure, monitor and change their springs for loss of arch/sagging.

Less weight and retention of the design arch combine to make the CLS a high performance/cost-effective alternative to steel leaf springs. The initial cost is a value based on the incredible service life.

**Leave the steel on the streets – hook-up with the Hyperco CLS performance advantage.**

## Performance-Tuned Corvette C3, C4, C5 & C6 Composite Leaf Springs

**NEW**

Hyperco performance-tuned Corvette Composite Leaf Springs enable the serious Corvette owner to enhance the suspension performance of their car.

### **C5 Series Available for both street and track –**

#### **The High Performance Street Series (HPS)**

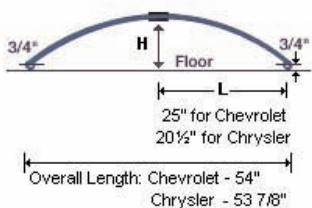
provides improved cornering ability, road feel and initial response while maintaining a quiet and comfortable ride. Ride height adjusters, equipped with Delron pads, offer a wide range of tuning options. This enables the C5 owner to set the look and handling of the car to their preference... mild to aggressive.

#### **The High Performance Track Series (HPT)**

offers the C5 owner a "race-ready" spring rate option for auto crossing, track days and competitive racing. The Delron pad-equipped height adjusters support a wide range of set up choices, enabling the car to be tuned for all out performance.

## TECHNICAL ASSISTANCE WITH HYPERCO PRODUCTS

### TECH-TIPS



**MEASURING LEAF SPRINGS.** TO MEASURE THE ARCH, PLACE THE SPRING ON A FLAT SURFACE WITH THE ARCH UP. MEASURE FROM THE FLOOR TO THE BOTTOM OF THE SPRING ("H" IN THE DIAGRAM), AND THEN SUBTRACT 3/4" FROM THE TOTAL LENGTH.

FOR CHRYSLER THE OVERALL LENGTH (EYE TO EYE) IS 53 7/8" AND THE PIN TO EYE LENGTH IS 20 1/2" ("L" IN DIAGRAM). FOR CHEVROLET, THE OVERALL LENGTH (EYE TO EYE) IS 54" AND THE PIN TO EYE LENGTH IS 25" ("L" IN DIAGRAM).

FOR A COMPLETE LISTING OF HYPERCO TECH-TIPS VISIT OUR WEBSITE AT: [WWW.HYPERCOILS.COM](http://WWW.HYPERCOILS.COM)



# Questions?

## Hyperco has the Answers.

installed height is rarely checked but can be the cause of many handling problems. As race teams at all levels start looking closer at what their suspension coils



are doing, the more apparent it becomes that it is highly critical to have springs that maintain their free length/installed height and provide accurate and consistent rates. Sure you can exchange a cheap spring for another spring of the same poor quality only to go through the same problems again. Hypercoils are designed and manufactured to provide extended service without losing free length (taking set). This is one of the reasons why Hypercoils have been on the winning cars at the Indy 500 for the past 42 years. The cars are running at top speeds of 230 mph at ride heights within a 1/4" of the track surface. Ride heights are measured and then set to within thousandths of an inch. These few thousandths of an inch can make the difference between qualifying and getting bumped – winning or losing. These are the standards to which all Hypercoils are manufactured. (We have had dirt Late Model racers tell us of instances when the low cost, lifetime guaranteed springs they were using lost free length / installed height of more than an inch).

### **Q. What makes Hypercoils better than the rest?**

**A.** Hypercoils are true high performance suspension coils. When deciding on which brand of springs to purchase, it is important to note that to the naked eye, all springs look very similar... it is only upon closer inspection and evaluation that differences become apparent. Hypercoils are a different product than other springs on the market. They are manufactured from the best... state-of-the-art... materials to precision tolerances. Optimum and custom wire sizes and materials are utilized to fully optimize every design. In addition to multiple inspections, Hyperco wire undergoes an exacting heat treat and shotpeening process to ensure accuracy and maximum durability. Hypercoils are accurate and consistent in their rate and most importantly... will not lose free length/installed height.

### **Q. I am not familiar with Hypercoils, who uses them?**

**A.** Hyperco started out as a supplier to Championship winning teams in Indy Car and Formula One Racing. The product line continues to evolve and now includes products relied upon by the top/championship winning teams in NASCAR, Indy Car, Champ Car, F-1, ASA, UMP, SCCA, ALMS, Grand American, IMCA, Renegade, D.I.R.T., Japanese F-3000, Lucas Series, USAC, ARCA, SCORE/HDRA, NHRA, etc. (Hyperco products are now available for all motorsports applications.)

### **Q. The springs I have been using have a lifetime guarantee, what more could I want?**

**A. A Lot!** Say you are leading a race and your handling goes away. In many instances when a race car's handling goes away, it is attributed to changing track conditions, wrong tire choice, overheating shocks, etc. A loss of suspension coil free length/

### **Q. My race car is not an Indy Car. I don't measure my chassis set-up within five or ten thousandths, so aren't other springs good enough?**

**A.** It is important to remember that the dominant chassis in all types of modern racing are designed and manufactured by professional race car builders. Because these chassis are for sale to all competitors, it makes it difficult to have a significant advantage in the chassis itself. Increasingly, the advantages are in the details and the components selected for the chassis. Suspension set-up/components is an area all top competitors and builders exploit as a performance advantage. To gain an edge, high quality, consistent suspension coils are essential.

### **Q. Aren't Hypercoils more expensive?**

**A.** Let's put cost into perspective. When you consider the total cost of using inferior springs; subpar performance, wasted tires, fuel, time, lost prize money, disenchanted sponsors, etc., those cheap springs have cost you dearly. Why jeopardize this investment to save a few dollars on a spring? Hypercoils provide a high value and help **make** your program money.

**Q. Is it normal for all springs to bow under load?**

**A.** Some brands of springs “bow” excessively under load causing them to make contact with the shock body. This contact not only affects the car’s corner weights but also puts additional heat into the shock through friction between the shock body and the coil. Some manufacturers have tried to put a band-aid on this problem by using a plastic sleeve to stop the bowing from wearing the shock body. This may stop the shock body from wearing, but anytime one of the coils rub the shock body/plastic sleeve, the effective spring rate goes up considerably, and the car’s handling changes. Another compromise “fix” some brands have resorted to is a barrel-type spring. While this design provides more clearance between shock and spring I.D., it often causes external clearance problems requiring changes to the chassis and will not deflect with a constant “linear” rate, adding another variable to your chassis set-up. It has also been declared illegal by some sanctioning bodies. Hypercoils are designed and manufactured to resist bowing under load.

**Q. My budget springs will lose free length for a while, then they seem to stabilize.**

**A.** Are you sure they have stabilized? When do you know they have stabilized? With the competition in every category of today’s racing, you cannot afford to waste time guessing what inferior springs are going to do. Unstable free lengths/installed heights will keep you from developing a consistent chassis setup and will put your team at risk for disqualification at ride height inspection. Hypercoils will not lose free length/installed height.

**Q. What is the proper method for checking rate with my portable checker?**

**A.** Unfortunately, we know of no portable checkers that will accurately measure rate with repeatability. The scales we use to test and calibrate springs weigh over 4000 lbs. This mass is required to ensure the spring is deflected with both ends remaining square and parallel through the entire travel. Measuring deflection accurately is another difficulty with portable checkers. The Hyperco scale will measure accurately to one thousandth of an inch. We have our own calibration weights which are certified by the National Bureau of Standards to be accurate to .001 percent.

**Q. Is it necessary to unload Hypercoils while the car is sitting in the pits or when traveling to and from the track in our transporter?**

**A.** No it is not necessary to jack the car up while in the pits, nor is it necessary to block the car up while it is being transported! Hypercoils are designed and manufactured from ultra high quality materials to withstand the rigors of motor racing conditions. It doesn’t matter if one coil is holding the entire car up in the pits. All our coils are designed to be able to be taken to solid without causing any damage. As long as the coil fitted is the correct

**Measure Your Springs Frequently!**

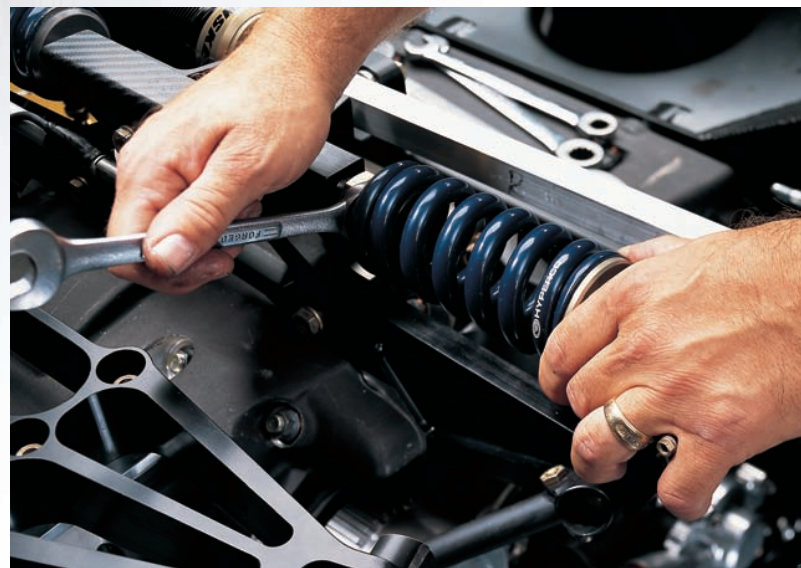
You’ll discover why teams are switching to

**HYPERCOILS**

length and is not being slammed/hammered coil-bound, as might happen if the car gets airborne and bounces on one corner, hitting curbs, etc., our coils will not take a set. We still often see racers who unload their coils while sitting in the pits or at the shop. If a spring takes a set while sitting in the pits or at your shop or in transport... it is not suitable for racing.

**Q. What is rate overlap?**

**A.** Rate overlap can occur when the manufacturing tolerance is over one half of the rate change. For example, say you desire a rate change from 475# to 500#. If the manufacturing tolerance is plus or minus three percent (as some manufacturer’s coil-overs are), there is a very real possibility that you will not be making the change you desired. You could be taking out a 489# rate and installing a 485# rate! Why? Because  $475\# \times 103\% = 489\#$  and  $500\# \times 97\% = 485\#$ . Worse yet, you could be taking out a 461# and replacing it with a 515#. When a car’s handling did not improve or maybe even got worse, what would be the next step? This is an even bigger problem with Conventional type springs. At Hyperco we invest a considerable amount of time and money ensuring that the spring rates we offer are accurate and consistent. Even though our guaranteed tolerance is plus or minus two percent, Hypercoils are generally well within one percent, and we do not offer rates that could overlap. Hypercoils are purchased and relied upon by the top teams in all forms of motor racing... even though many of them could have other brands supplied to them free of charge!



# Hydraulic Load-Centering

## Spring Perch Hardware



### Hyperco... Engineering that's Second to None.

*Optimum race car suspension components must be designed for consistent performance, an infinite fatigue life and absolute minimum weight.*

*At Hyperco, we look at every aspect of design.*

- Is it as light as possible?*
- Is it the optimal design that can be produced?*

*As we search for the answers to these questions, we continuously research and develop materials and techniques to further our product line.*

*Through our research and development efforts, we've designed a collection of new and innovative components. They are designed, tested and manufactured with the same attention to detail that has made our other products winners on the racetrack—ensuring that these components also provide a **Performance Advantage**.*

### Off-Track Innovation Equals On-Track Breakthroughs.

In racing, tire grip and low wear rate, are critical for maximum performance. Unfortunately, one of the common characteristics of coil springs is that they do not naturally distribute their load evenly around the face of their end coils thus generating a lateral load. The lateral force creates a bending load in the shock absorber, significantly increasing its friction; the result is lower tire grip and increased wear.

The Hyperco/ICP Hydraulic Load Centering Spring Perches substantially improve performance by allowing the spring forces to remain centered on the damper. By precise shaping of the sealing wall of both the perch and cylinder body, the perch can freely tilt as needed to evenly distribute the load over the face of the perch. The result, a reduction of bending load on the shock absorber of up to 96% along with an enhancement in mechanical grip at the tire.

Racing teams in Formula One, Champ Car, Indy Car, and Trans Am, along with Formula Atlantic, Midgets, Dirt & Pavement Late Models, Motorcycles... etc., benefit from the winning performance of the Hyperco/ICP Hydraulic Load-Centering Spring Perch components. Available for all popular shock absorber brands/applications.

## TECH-TIPS

HYPERCO/ICP HYDRAULIC (LOAD CENTERING) SPRING PERCHES SHOULD BE INSTALLED AT BOTH ENDS OF THE SPRING WHEN RUNNING FREE LENGTHS OF 10" OR LESS. FOR FREE LENGTHS ABOVE 10" IT IS ADVISABLE TO RUN THEM ON ONLY ONE END.