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Fully-Adjustable Air-Spring Conversion with TrueCenter Pivot Socket Technology

Model	Year
Comet	1960-1967
	1971-1977
Cougar	1967-1973
Cyclone	1964-1971
Fairlane	1966-1971
Falcon	1960-1970
Maverick	1970-1977
Montego	1968-1971
Mustang	1964-1973
Ranchero	1960-1971
Torino	1968-1971

See application chart for expanded list

Shown with optional spindle, dropped pivot shaft, and QuickSet 2 VariShock Air-Spring.

Front VariShock Air-Spring Suspension

The TCP front air-spring suspension conversion is a fully adjustable suspension system that utilizes the key factory mounting locations to greatly simplify installation. With over 10 years of production, development and testing, the TCP suspension components comprise the most mature and refined front suspension system available for vintage Mustangs and other classic Fords; moving past our original design that others have copied. You can be assured of exact-fit installation, bind-free operation, effective and predictable suspension-tuning changes, with unmatched strength and performance. Our all-new, exclusive TrueCenter pivot sockets and tubular suspension components provide extremely precise control over the spindle's travel arc with linear resistance. Suspension geometry improvements include: lower center of gravity, higher roll center, reduced vehicle roll rate, quicker negative camber gain, increased compression travel, and correct axis and length of lower arm assembly when utilizing factory mounting positions. A brand new, Total Control exclusive, billet aluminum, offset-pivot-shaft option, enables precise relocation of the upper-control-arm pivot axis, for improved camber gain geometry without the need to drill holes or risk of error.

Five Main Goals of Our Suspension Conversion

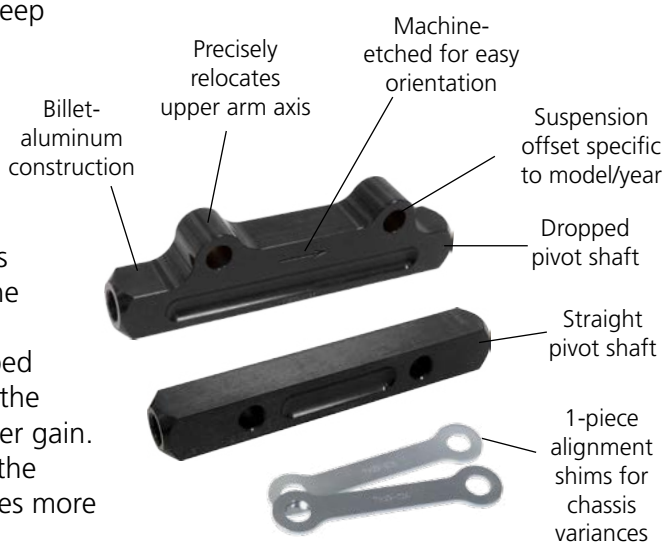
Our front coil-over suspension design focused on five main goals.

1. Keep the tires' contact patch flat on the road surface.
2. Maintain precise control of suspension travel arcs and spindle position.
3. Control wheel movement without a harsh ride.
4. Reduce the amount of body roll and pitch.
5. Provide adjustability for tuning purposes.

Our suspension achieves these goals to significantly improve performance without making extensive chassis modifications.

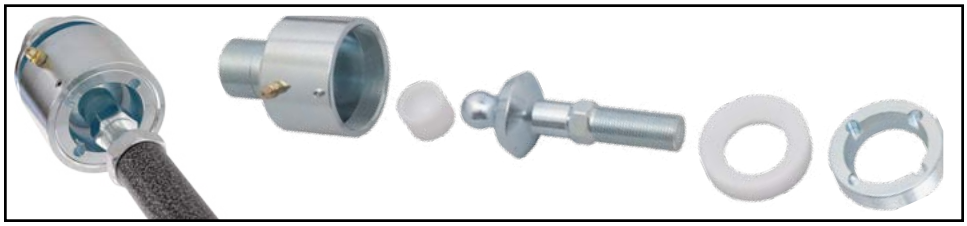
Optimize Tire Contact with Road

The most important job of a suspension system is to keep the tire contact patch flat on the road. Factory suspension geometry allows the tire's inside edge to lift as the suspension compresses and body rolls during cornering. This reduces the size of the tire contact area and available traction, most commonly realized as front end "push" or understeer. Our modified suspension geometry uses a relocated upper control arm pivot axis that causes the wheel to lean inward as the suspension compresses; known as "negative camber gain." An optional dropped pivot shaft, Mark II design eliminates the need to drill the shock tower to obtain the advantages of higher camber gain. This geometry offsets the effect of body roll, keeping the tire in better contact with the road surface and provides more available traction and cornering ability.



Precise Control of Suspension Travel Arcs and Spindle Position

A key to creating a stable and predictable handling vehicle is precisely controlling the spindle position. Soft rubber bushings and weak stamped components of the factory suspension do a poor job of this, allowing erratic handling during braking and cornering. The biggest improvement comes from deflection free TrueCenter pivot points, A TCP exclusive design. Incompressible polymer races are used at each chassis pivot to allow precise movement of the spindle along the correct path without the increasing resistance of rubber bushings. Control arms and strut rods are constructed from tubular steel to create deflection free rigid suspension components and further enhance accuracy.



Better Control Of Chassis Movement

A noticeable handling difference between 1960's and more modern vehicles is the amount of chassis movement, such as body roll, and brake dive. By relocating suspension mounting points and lowering ride height approximately two inches, the front roll center height is moved closer to the vehicle's center of gravity. A shorter distance between these two points allows the shocks, springs and anti-roll bar to better control chassis movement resulting in better handling.

Adjustability For Suspension Tuning

Adjustment of caster, camber, toe, ride height, shock valving, and a selection of spring rates enable fine tuning to meet the specific needs of your vehicle. Caster and camber are controlled by adjusting the upper arm, lower arm and strut rod to various lengths. The available setting range exceeds the limits of factory suspension allowing more aggressive alignment specs for high performance applications. Toe adjustment is made with our optionally available heavy-duty billet tie-rod adjuster sleeve. VariShocks feature single or dual 16-position adjustments, enabling a wide range of settings.

VariShock Air-Spring Shocks

To take full advantage of the factory mounting position, a complete custom shock absorber was developed by our sister company, VariShock. Installed height, travel, valving range and mounting configuration are built to our exact specifications, whereas other manufactures are forced to compromise with "off-the-shelf" products. QuickSet 1 single-adjustable shock is standard, offering 16 settings at which both bump and rebound are adjusted simultaneously. This offers a good compromise between the ultimate tuneability of the QuickSet 2 and affordability of the QuickSet 1. Optionally available is our double-adjustable QuickSet 2, which allows individual control of vehicle separation (rebound) and settling (bump) independent of each other. This gives the ability to tune your suspension for desired ride quality or specific track conditions for ultimate performance.

VariShock Air-Spring

To simplify installation a complete custom combination air-spring/shock-absorber was developed specifically for the application. Installed height, travel, valving range, and mounting configuration are built to our exact specifications. Variable shock valving gives you up to 256 different combinations of "instant adjustment" – without unbolting your VariShock! During five years of intense research and development every shortcoming of conventional racing shocks was successfully corrected. Designed from a clean sheet of paper, VariShock's QuickSet 2 combines sophisticated shock valving with all-new, American-made components. Never before have so much performance, repeatability, and adjustability been offered to vintage Mustangs and classic Fords.

The Truth About 16 vs. 24 Clicks

Don't be fooled by shocks offering more adjustment clicks. They are actually 1/2-click adjustments. The manufacturer merely added more detents to the mechanism without increasing the range of adjustment. This practice gives more clicks, but the adjustment is so slight that your vehicle will not respond to the change. A 16-position VariShock actually has a broader range of adjustable force with the added benefit of a more manageable number of adjustments to try.

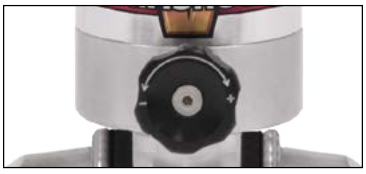
Double-Adjustable 16-Position Knobs

VariShock's double-adjustable design is also easier to tune: 256 different settings are attainable simply by rotating two fully accessible, 16-position knobs. All adjustments are made in seconds, without removing or unbolting the VariShock. One knob sets the bump (compression) range; the other sets rebound (extension). Both knobs are laser-etched with directional arrows and "plus/minus" symbols that clearly indicate which direction achieves the desired adjustment. Additional arrows etched into the QuickSet 2's base reveal which knob sets bump and which sets rebound.

QuickSet 2
Double Adjustable

Double- or Single-Adjustable

Our double-adjustable QuickSet 2 allows you to control vehicle separation (rebound) and settling (bump) independent of each other. This allows you to tune your suspension to track conditions for ultimate performance. In the single-adjustable model you have 16 settings where both bump and rebound are adjusted simultaneously. This offers a good compromise between the ultimate tunability of the QuickSet 2 and affordability of the QuickSet 1.



QuickSet 1
Single Adjustable

Controlled Quality

Repeatability is unprecedented! By controlling the quality of the components, assembling them in-house, and dyno-testing every assembly, Chris Alston's Chassisworks can deliver a pair of VariShocks that perform virtually identically — throughout the entire range of travel. Whereas other brands in this price range rely on cheaper offshore or OEM parts, American-made VariShocks are engineered systems of premium components, all designed to meet your specific needs.

Revolutionary Adjustment Mechanism

A revolutionary adjustment mechanism, smaller than any previous design, allows our billet aluminum body to be both shorter and lighter. The shocks use deflective disk valving in the pistons to eliminate spring fatigue. Internal connections and return paths use a unique machined configuration and added seals to prevent bypassing. During low piston speeds the damping action of the shock is dominated by bypassing flows. VariShock eliminates the bypassing of internal leakage to give the shock repeatable control even at low piston speeds. Custom valving is also available.

Durability

In addition to consistent performance, durability is of utmost importance. Internal shaft seals specifically designed and manufactured for these shock absorbers produce a longer-lasting seal that helps keep dirt out of the shock absorber. Piston rods are made from 5/8" centerless-ground hard-chrome steel for wear resistance and long service life. VariShock models are even rebuildable in the event they get bent or damaged.

Spherical Stem Mount

Our free-pivoting, deflection-free mount allows precise suspension tuning by eliminating compliant rubber or urethane bushings. The VariShock-exclusive, spherical-stem assembly attaches the shock to the chassis at the factory mounting location. The swedged steel mount base effectively captures and houses the spherical bearing of the stem. An additional extension at the base lowers the upper spring seat for additional tire clearance. The stem mounts directly to the chassis and is secured by a 5/8" locknut. An integral hex at the top of the stem enables the stem to be securely held as the locknut is tightened during installation. An easily accessible zerk fitting mounted at the tip of the stem injects grease directly onto the bearing contact surfaces.

Double-Convoluted Air Spring

VariShock air-spring units use a series of air springs that were originally developed for extremely high-mileage service-vehicle applications. Borrowing technology from that segment of the industry enables us to provide you with an exceptionally reliable fiber-reinforced air spring that will last the life of the vehicle when properly installed. Our front suspension VariShock air-spring utilizes a ring reinforced, double-convoluted air spring specifically designed to carry the additional weight of the engine.

Billet Lower Crossbar

The lower cross-bar assembly replaces the factory spring perch and can be mounted directly to a TCP or factory upper control arm. A 1/2" stud and crush washer are used to thread the two billet crossbar halves together and apply the proper amount of bushing preload. To improve spring and shock absorber performance we chose a premium urethane that has much higher load capacity and longer service life than the poly bushings from other manufacturers. The lower cross-bar bushings have up to 350% more urethane material than common 1/2" shock eyes offered by other brands.

Shock Tower Adapter System

Ford/Mercury vehicles from 1960 to 1977 while very similar with respect to suspension design, have varying shock tower configurations and cannot share a common shock mount. Our exclusive shock tower adapter system is used to position the shock at the correct height for your specific vehicle and performance application. Three different adapters enable us to offer a stock or lowered ride-height option for most compact and intermediate sized Fords throughout the 1960s and '70s.

The upper mount utilizes the factory shock tower mounting holes and is a direct bolt-on for most applications. Some installations may require removal of the upper coil-spring seat, for which a spot-weld removal bit is supplied. Adapter plates mount on top of the shock tower with a steel reinforcement backup ring to sandwich the shock-tower sheet metal, helping to evenly distribute loads. Adapter mounts are black powder coated and can be fit with and optional polished-stainless-steel cap for a extremely clean and finished appearance.

Polished-Billet-Stainless Cap (optional)

Zero Offset Adapter

- 1967-1973 Mustang (stock height)

1" Offset Adapter

- 1967-1973 Mustang (1" lowered)
- 1965-1966 Mustang (stock height)

2" Offset Adapter

- 1965-1966 Mustang (1" lowered)

Air Management Systems and Components

To enable complete operation of your VariShock air-spring suspension, we offer a variety of electronic control and compressor systems, as well as individual components from the industry's leading manufacturers.

Contact our technical sales staff for information.

Digital Height Controller

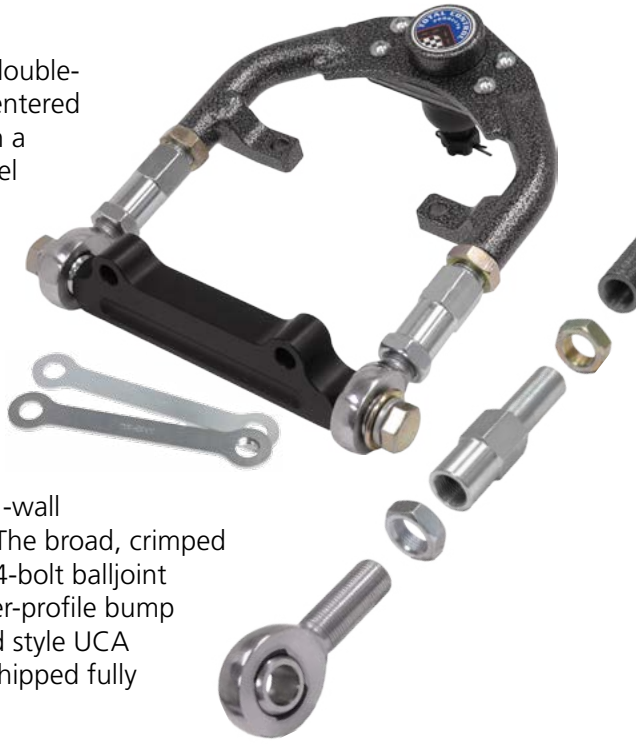
Offering complete control of your air suspension system, KP Components new DHC series control unit has your needs covered! The DHC systems offer the utmost in flexibility to flawlessly operate any air ride system on the road today! All DHC systems offer unlimited control of the air ride system through not only the 3 user selectable preset heights, but full manual control of the air system for minor changes. If you already have an existing switch box in your vehicle, this system will work in conjunction with it. This system also features the "Auto Raise" innovation which will instantly bring the vehicle to a safe driving height upon starting the vehicle! Handheld remote controls are also available to operate the vehicle's height for the absolute in convenience! The digital height controller utilizes proprietary sensors (4) to monitor the true vehicle height, regardless of cargo, fuel level, or pressure in the air bags. That way you are guaranteed to always have the vehicle raise to the same height everytime you press the button.

Core System Components

The main control arm components of the front coil-spring suspension system can be purchased as a "core system" for use with your existing coil spring and shock absorbers. Core components include: upper control arms, lower control arms, and strut rods.

Part Number	Description
TCP FACS-FD	Front control arm core system

Upper Control Arms



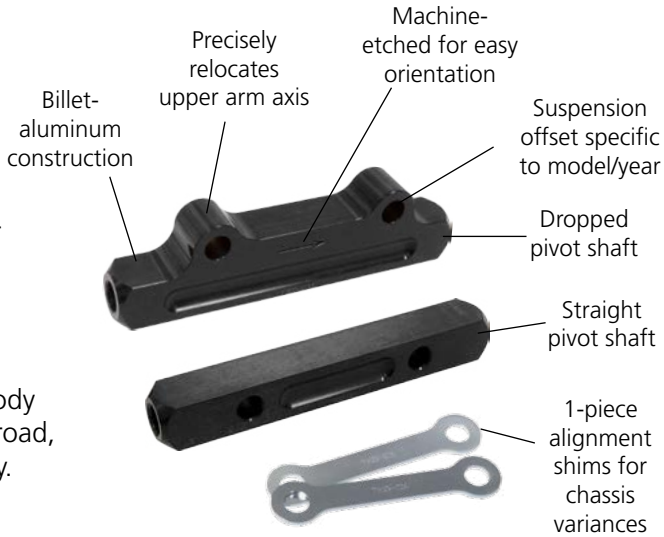
The most notable feature of our upper control arms is the double-adjustment couplers. Adjustment range is 1", with travel centered at the stock control-arm length. Caster can be varied within a 6-degree range and camber within 5-1/2 degrees. Alloy-steel rod ends feature low-friction, polymer-bearing races, eliminating deflection and the increasing resistance found with rubber and polyurethane bushings. New dropped pivot shaft, Mark II design eliminates the need to drill the shock tower to obtain the advantages of higher camber gain. Grade-8 fasteners secure the rod ends to the aluminum pivot shaft. The 1"-lowered mounting position improves negative camber gain and vehicle roll rate. Shim sets are provided to compensate for any major chassis variances. Each arm is constructed of 1x.156"-wall steel tubing with direct threads to the adjustment coupler. The broad, crimped end is robotic-spray-arc-welded to a ¼" steel bracket. The 4-bolt balljoint relocates the zerk fitting for easier access and allows a lower-profile bump cap to net a ¼" increase in suspension travel. New dropped style UCA and original straight crossbar UCA are available. Arms are shipped fully assembled and include all necessary mounting hardware.

Benefits to Lower Mounting Position

Lowering the mounting position of the upper control arm to our specifications has two distinct advantages over the stock position; camber gain and roll center height.

Stock Position: Many auto manufacturers design the front suspension of their vehicles to introduce positive camber during hard cornering. As the body rolls and suspension compresses, the top of the wheel is pushed outward, lifting the inside edge of the tire contact patch. The smaller contact area reduces front end traction allowing the front end to push toward the outside of the turn. A vehicle tuned to understeer is less likely to spin-out but at the cost of cornering ability and driver satisfaction.

Lowered Position: The lower mounting position at the shock tower places the upper arm at an inclined angle which draws the top of the wheel inward as the suspension compresses. This is known as negative camber gain and the improved geometry now keeps the tire in better contact with the road. The inclined angle of the upper control arm also moves the roll center of the front suspension upward, closer to the center of gravity of the vehicle. The closer these two points (roll center and center of gravity) are together, the more effective the stabilizer bar and springs are at controlling the vehicles tendency to roll when cornering. Reduced body roll also helps to keep the tire in better contact with the road, increasing traction and greatly improving cornering ability.



Part Number	Description
OPTION	Dropped Pivot Shaft, ea.

Optional Upper Arm Drill Jig Lowering Template

Each drill jig is marked to show correct orientation and simply bolts to the factory mounting location. Heavy gauge material is used to securely guide the full size drill bit so you only drill once for each hole.

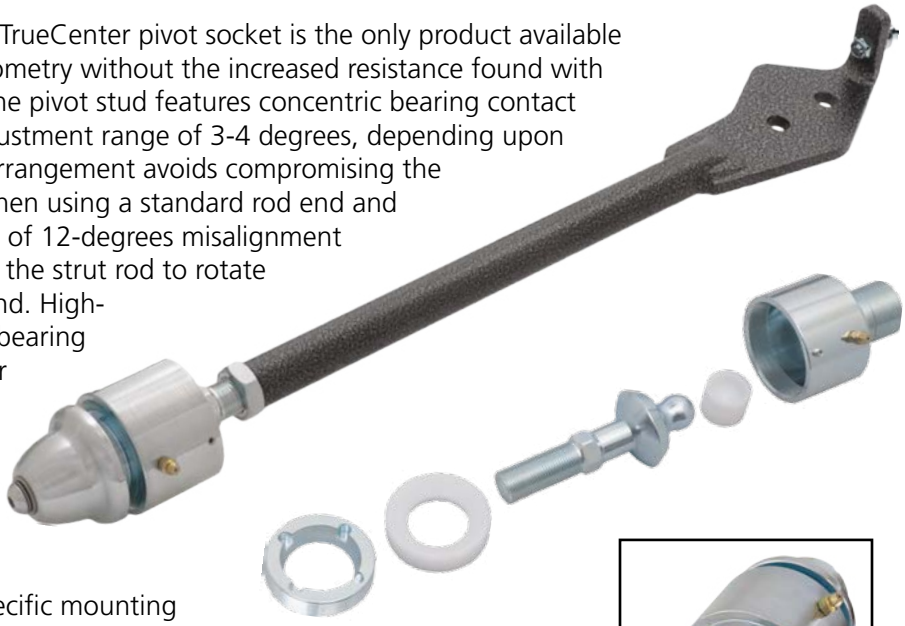
Part Number	Description
TCP TOOL-01	3.75" Drill Jig
TCP TOOL-02	4.75" Drill Jig

TrueCenter Lower Control Arms

Our TrueCenter pivot socket lower control arms improve suspension geometry by precisely controlling the balljoint travel arc. A spherical bearing with high-strength polymer races, create a deflection free, low friction pivot point, capable of safely handling caster settings beyond the ability of rubber or polyurethane bushings. The spherical bearing is 80% larger in diameter than our previous rod end and specifically matches the chassis mount eliminating any need for additional spacers. Bearing preload is maintained with a threaded retaining ring and is secured by a locking set screw. A lubrication zerk fitting is easily accessible at the bottom of the housing. The 1-1/4" shank socket housing and 1-1/8 x .156" wall steel tubes meet at a high strength overlapping robotic spray-arc welded joint. Balljoint plates and mid-plates, made from ¼" steel, eliminate deflection at the spindle and OEM-positioned anti-roll bar attachment points. Premium quality, screw-in balljoints are used and can be replaced as necessary. Arms are shipped fully assembled and include grade 8 mounting hardware.

TrueCenter Strut Rods

Our adjustable length strut rods with TrueCenter pivot socket is the only product available that maintains correct suspension geometry without the increased resistance found with rubber and polyurethane bushings. The pivot stud features concentric bearing contact surfaces, 13/16" hex and a caster adjustment range of 3-4 degrees, depending upon application. This unique concentric arrangement avoids compromising the suspension geometry; unavoidable when using a standard rod end and clevis mounting method. A maximum of 12-degrees misalignment is possible in any direction and allows the strut rod to rotate beyond the limits of a standard rod end. High-strength, non-compressible, polymer bearing races create a low friction pivot center with zero deflection and can be lubricated through the easily accessible zerk fitting. The threaded retaining ring maintains preload on the pivot assembly and is secured with a locking set screw. Steel housings have vehicle specific mounting bosses and feature a knurled mounting surface for spin-free installation. A common ½" square drive is used to install the backup nut with a button head 'jam' fastener securing the assembly at the factory mounting location. Each strut rod is constructed of 1 x .156" wall steel tubing with direct threads to the pivot stud. A broad crimped end is robotic spray-arc welded to a 5/16" steel control arm adapter plate with integral steering stop. Adapter plate holes are slotted to achieve the correct mounting angle as caster adjustments are made.



Front Control Arm "Core System"

Part Number	Description
TCP FACS-FD	Front Control Arm Core System Includes: upper control arms, lower control arms, and strut rods

Front VariShock Air-Spring Suspension

Part Number	Description
TCP FASS-FD	Front Air-Spring Suspension Includes: upper control arms, lower control arms, strut rods, air-spring shocks, and upper mounts

Applications

Make	Model	Year
Ford	Fairlane	1966-1967
		1968-1971
	Falcon	1960-1963[1]
		1964-1965[1]
		1966-1967
		1968-1970
	Maverick	1970-1977
	Mustang	1964-1966[1]
		1967
		1968-1973[2]
	Ranchero	1960-1963[1]
		1964-1965[1]
		1966-1967
		1968-1971
	Torino	1968-1971
Mercury	Comet	1960-1963[1]
		1964-1965[1]
		1966-1967
		1971-1977
	Cougar	1967
		1968-1973
	Cyclone	1964-1965
		1966-1967
		1968-1971
	Montego	1968-1971

1 - Must upgrade to V8 spindle
2 - Excludes Boss 429

Options

Description
Upgrade to QuickSet 2, double-adjustable shocks
Upgrade to dropped pivot-shafts
Add drill-jig (for use with standard pivot shaft)
Eccentric Eliminators

Notes:

Related Products

VariShock Air-Spring Equipped AirBar® Systems

The AirBar® system enables instant ride-height and ride-quality adjustment. AirBar® is packaged with the patented VariShock Air-Spring, in single- or double-adjustable versions. When fully deflated, the vehicle rests 5-6" inches below stock ride height and can be raised to driving height at the push of a button. A RidePro™ compressor system (available separately) is required for operation. A detailed product datasheet is available through our online document library at www.totalcontrolproducts.com.

All prices subject to change. Current pricing available at www.totalcontrolproducts.com.

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