



350 S. St. Charles St. Jasper, In. 47546

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[www.ridetech.com](http://www.ridetech.com)

**Part # 11160109**  
**67-69 GM "F" Body Complete CoilOver System**

**Front Components:**

1	11163509	Front Non-adjustable CoilOvers
1	11162899	Front Lower StrongArms
1	11163699	Front Upper StrongArms
1	11009300	RideTech Tall Spindles

**Rear Components:**

1	11167199	Rear AirBar – Bolt-on 4 Link
1	11166509	Rear Non Adjustable CoilOvers



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**Part # 11163509**  
**67-69 GM "F" Body Non-Adjustable Front CoilOvers**  
For Use w/ StrongArms and Tall Spindle

**Shock Assembly:**

2	24039999	3.6" stroke non adjustable shock
2	70008977	2.75" threaded stud top
2	90001994	.625" I.D. bearing
4	90001995	bearing snap ring

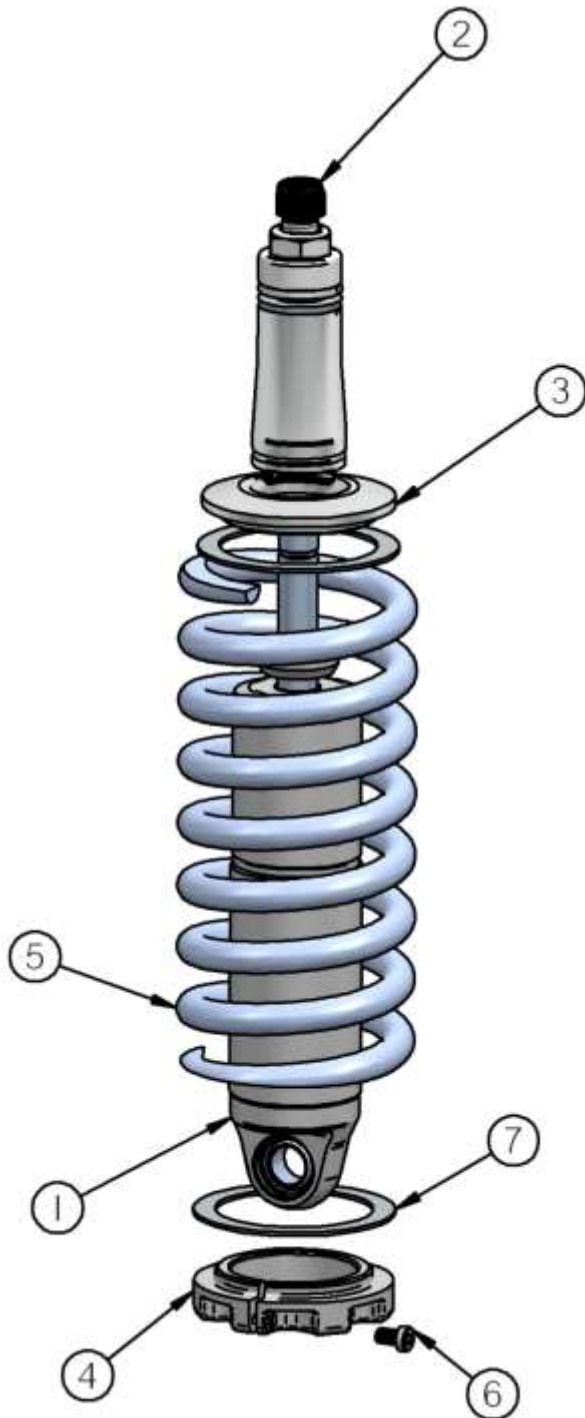
**Components:**

2	59080650	Coil spring – 8" long / 650 # rate
2	90002313	2.75" stud top base
2	90002222	Spring retainer kit (included upper and lower spring retainer, screw & clip)
2	90001902	Aluminum cap for Delrin ball
2	90001903	Delrin ball upper half
2	90001904	Delrin ball lower half
4	70010828	Delrin Spring Washer

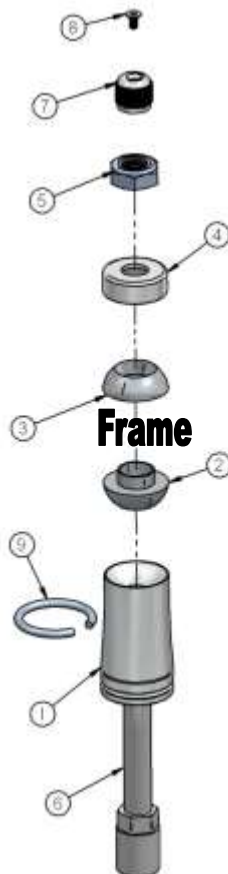
**Hardware:**

2	99562003	9/16" SAE Nylok jam nut	Stud top hardware
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# COILOver



1. Impact Forged, Monotube shock
2. Rebound adjustment knob (SA Only)
3. Upper coil spring retainer
4. Lower coil spring retainer
5. High tensile coil spring
6. Set screw
7. Delrin Spring Washer



1. Stud top base
2. Lower Delrin ball half
3. Upper Delrin ball half
4. Aluminum cap
5. 9/16" Nylok jam nut
6. Threaded stud
7. Adjustment knob (SA Only)
8. Screw
9. Snap ring

# COILOver



1. **Inspect the factory welds attaching the upper shock bracket to the frame. Re-weld if necessary.**

2. To allow the step in the lower Delrin ball half to slide into the factory shock hole, the hole will need to be drilled out to  $\frac{3}{4}$ ".

3. Assemble the CoilOver then place into the coil spring pocket w/ the stud and lower Delrin ball sticking through the factory shock hole.



4. Check clearance between the upper spring retainer and stud base with the factory coil spring retainer this area may need trimmed to get full shock movement.

5. Place the upper Delrin ball over stud, then the aluminum cap. Secure the assembly w/ the 9/16" Nylok jam nut.

6. Attach the bottom of the shock to the lower StrongArms using the spacers and hardware supplied w/ the arm.



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## **Part # 11162899**

### **67-69 GM "F" Body & 68-74 GM "X" Body Lower StrongArms For Use w/ Shockwave or CoilOver**

#### **Components:**

1	90000621	Driver side lower arm
1	90000622	Passenger side lower arm
2	90000898	Ball joint (includes boot, grease fitting, castle nut & cotter pin)
4	90000516	Inner bushing sleeve - .5" I.D. x .75" O.D. x 2.375" long
8	70010759	Delrin bushing half – 1.5" O.D.
4	90002062	Aluminum spacers – shock to lower arm

#### **Hardware:**

2	99501024	1/2"-13 x 3 1/4" Gr.5 bolt	Shockwave to lower arm
4	99501005	1/2"-13 x 3 1/2" Gr.5 bolt	Lower arm to frame
6	99502001	1/2"-13 Nylok Nut	Lower arm
2	99371010	3/8" x 5 1/2" USS bolt	Sway bar end link
4	99372002	3/8" USS Nylok Nut	Sway bar end link & Steering Stop
2	99371005	3/8" x 1 1/4" USS bolt	Steering stop



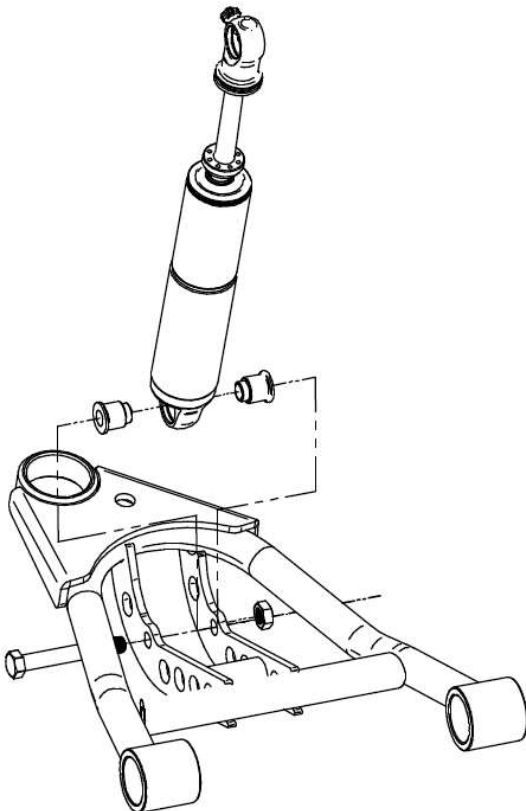


## Installation Instructions



1. After removing the factory lower control arm, clean the bushing mounting surfaces on the frame.
2. Fasten the lower arm to the frame with the  $\frac{1}{2}$ " x  $3\frac{1}{2}$ " bolts and Nylok nuts supplied.

**Note:** On some cars the frame brackets may be pinched and will need to be spread back apart to allow bushing to slide in.



3. Swing the lower StrongArm up to the Shockwave and secure with the  $\frac{1}{2}$ " x  $3\frac{1}{4}$ " bolt and Nylok nut, an aluminum spacer must be installed on each side of the bearing.
4. Slide the ball joint boot over the stud, then push the stud up through the spindle. Secure w/ the new castle nut and cotter pin supplied.
5. Grease the ball joints.
6. Lubricate lower arm bushings w/ Lithium grease.



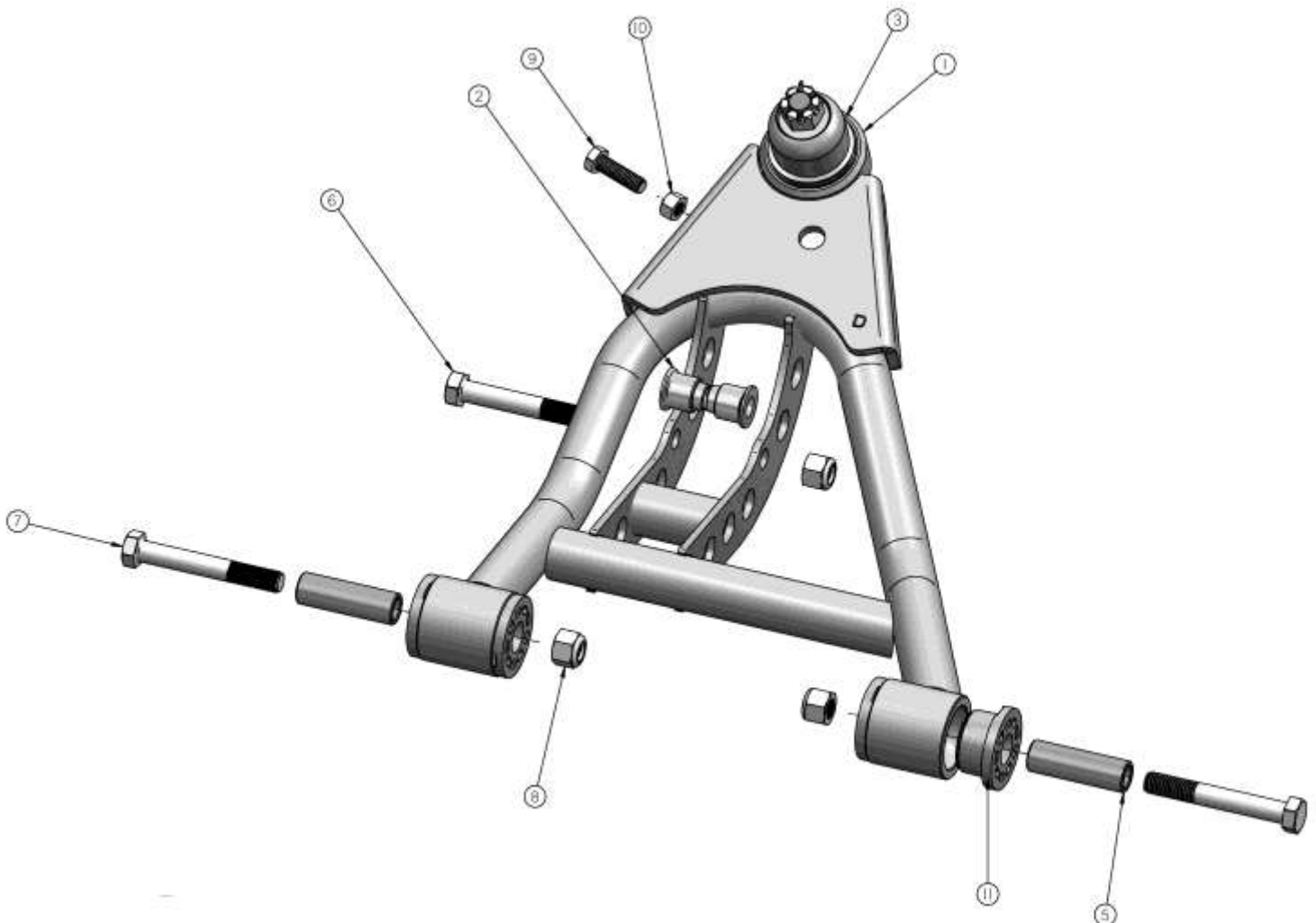
7. Screw a 3/8" x 1 1/4" bolt and nut into the hole in the side of the lower arm. This will act as an adjustable steering stop. After the wheel is install check wheel clearance all full lock and adjust as necessary.

8. If using factory style sway bar, shorten the sway bar end link spacer to 1 1/2" tall. New 3/8" x 5 1/2" bolts and Nylok nuts are supplied.

# STRONG ARMS™

by Air Ride Technologies

Item #	Description	Qty.
1.	Passenger side arm	1
1.	Driver side arm	1
2.	Aluminum bearing spacer	4
3.	Ball joint	2
5.	Inner bushing sleeve	4
6.	1/2"-13 x 3 1/4" bolt	2
7.	1/2"-13 x 3 1/2" bolt	4
8.	1/2"-13 Nylok nut	6
9.	3/8"-16 x 1 1/4" bolt	2
10.	3/8"-16 Nylok nut	2
11.	Delrin Bushing Half	8







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**Part # 11163699**

**67-69 GM "F" Body & 68-74 GM "X" Body Upper StrongArms**

**Components:**

1	90002390	Drivers side arm
1	90002391	Passenger side arm
2	90000908	Ball joint (includes boot, grease fitting, castle nut & cotter pin)
2	90000914	Caster Adjustable Cross shaft
2	70010826	Delrin Bushing – no ledge
2	70010827	Delrin Bushing – small ledge
4	70010759	Delrin Bushing – outer
4	70010883	Zero Offset Caster Slugs
2	90001083	Medium bump stop w/ hardware

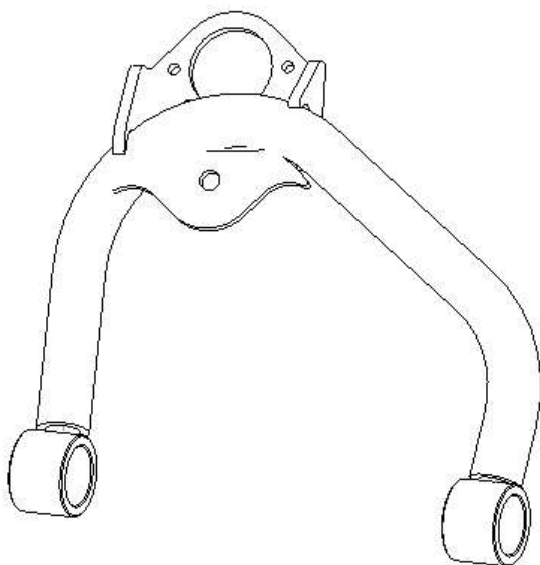
**Hardware:**

4	99163001	Stainless Washer	Cross shaft to bushing
4	99622005	5/8" SAE crimp locking nuts	Cross shaft to bushing

## Installation Instructions



**Driver Side Top View**



1. On some cars, to remove the upper control arm you must remove the bolts, which are pressed into the frame. We made this slide hammer adapter (a nut with a piece of angle iron welded to it) to aid in removing the bolts.

2. Fasten the upper arm to the frame using the factory hardware. Reinstall the current alignment shims, but **vehicle must be realigned**. This arm was designed with an extra 2 degrees of positive caster with the centered caster slugs. Additional caster slugs are available if more or less caster is desired. By changing the caster slugs you can achieve the caster setting you are wanting without having to run a lot of shims. Caster is explained on the next page.

3. Drop ball joint down through upper arm. Slide ball joint boot over stud, then place boot retainer over the boot. Clamp assembly tight w/ the hardware supplied.

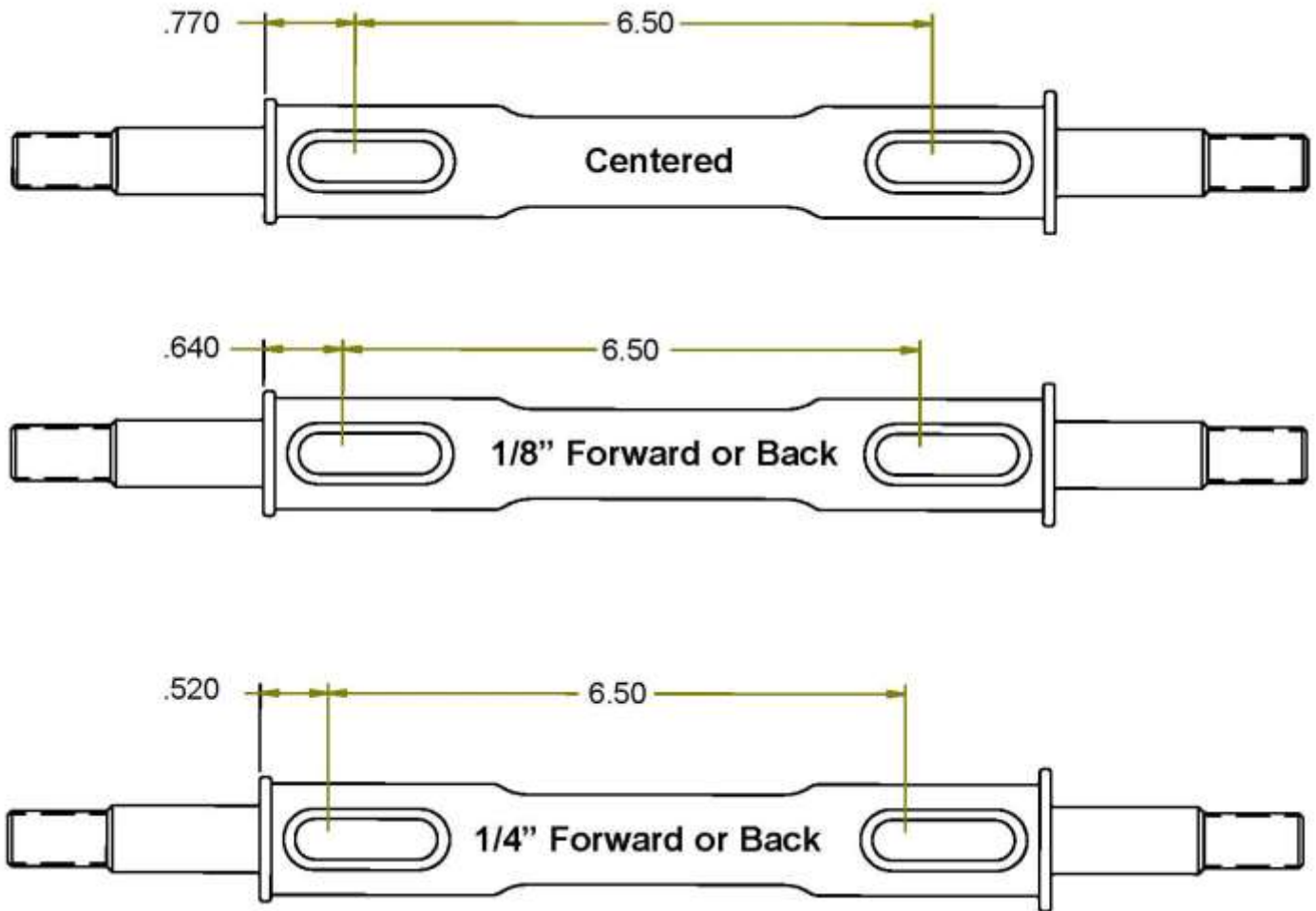
4. Fasten the ball joint to the spindle w/ the new castle nut and cotter pin supplied.

5. Tighten the cross shaft nuts enough to create drag on the delrin bushings, the arm should still move.

6. Lubricate the ball joint w/ standard grease.

# **STRONG**ARMS™

*by Air Ride Technologies*



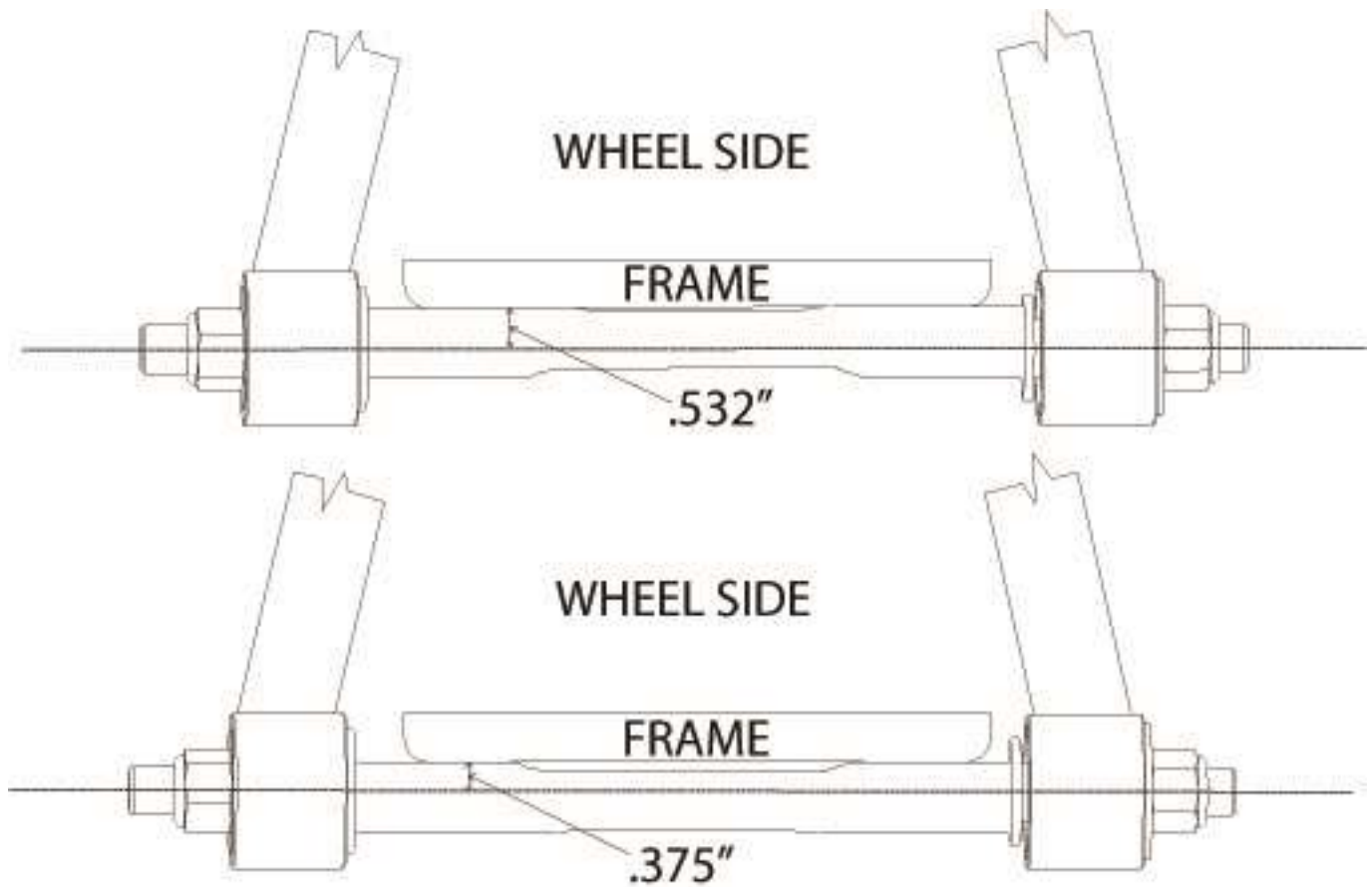
These Strong Arms come equipped with a changeable caster slug setup. This allows you to add or remove caster from the front suspension, if desired. The caster slugs that come in the kit are setup to put the control arm in the centered position, which is approximately 3 degrees of caster. The caster slugs allow you to add or remove caster without having to use a stack of shims. If more or less caster is desired, optional caster slugs can be purchased from your Ridetech dealer or Ridetech.

## **Caster Explained:**

To understand caster you need to picture an imaginary line that runs through the upper ball joint and extends through the lower ball joint. From the side view the imaginary line will tilt forward or backward. The tilting of this imaginary line is defined as caster.

Caster is measured in degrees by using a caster camber gauge. If the imaginary line described above tilts towards the back of the car, at the top, then you will have positive caster. If the imaginary line tilts forward then you would have negative caster.

Positive caster provides the directional stability in your car. Too much positive caster will make the steering effort difficult. Power steering will allow you to run more positive caster. Negative caster requires less steering effort but can cause the car to wander down the highway.



## Offset Upper Cross Shaft

The cross shaft that is used in the upper control arm is offset. The offset combined with the caster slug option allows you to achieve the alignment setting you desire with minimal shims. To change the direction that the Icon faces, simply spin the cross shaft in the control arm.

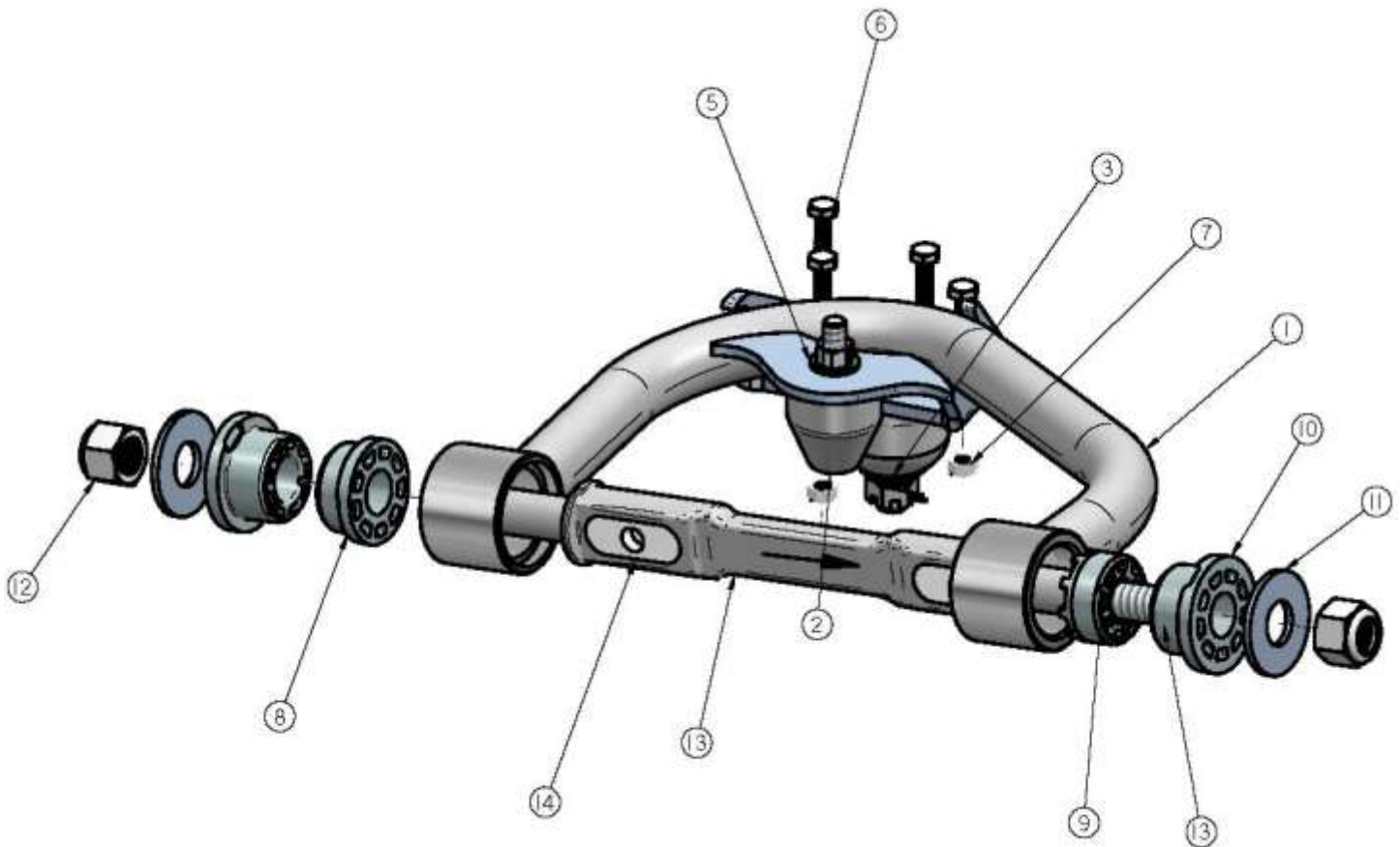
If you are after an aggressive **Track or Autocross Alignment**, bolt the control arm to the frame bracket with the arm offset to the inside of the car (like the top illustration). The Ridetech Icon will be facing the engine.

If a **Street Alignment** is desired, bolt the control to the frame bracket with the arm offset to the outside of the car (like the bottom illustration). The Ridetech Icon will be facing the wheel.

# STRONG ARMS™

by Air Ride Technologies

Item #	Description	Qty.
1.	Passenger side arm	1
1.	Driver side arm ( <b>Shown</b> )	1
2.	Extension stop	2
3.	Ball joint	2
5.	3/8"-16 Nylok nut & washer	2
6.	1/4"-28 x 7/8" hex bolt	8
7.	1/4"-28 nut	8
8.	Inner Delrin bushing w/ledge	2
9.	Inner Delrin bushing no ledge	2
10.	Outer Delrin bushing	4
11.	Stainless washer	4
12.	5/8"-18 lock nut	4
13.	Caster Adjustable Cross shaft	2
14.	Caster Slug	4





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## **11009300 GM "A" & "F" Body Tall Spindles**

2 Tall Spindles

Hardware:

Lower steering arm bolts

(4) 1/2NFX 2 1/2" flathead socket head bolts with Nyloc nuts

Lower caliper bracket bolts

(2) 1/2NFX 2" flathead socket head bolts with Nyloc nuts (Wilwood and Baer Brake kits)

(2) 1/2NFX 2" Grade 8 hex head bolts (use with stock stamped 1/2" thick caliper brackets)



## **INSTRUCTIONS FOR Ridetech Tall SPINDLES**

These spindles will fit '67-69 Camaro, '64-'72 Chevelle, and '68-'74 Nova. They will provide a 2" drop, and are taller than stock to improve the car's cornering ability. The raised upper ball joint will cause the tires to lean into the corner, like a motorcycle, rather than outboard as the shorter stock spindles do. This camber action change also raises the roll center for less body roll, and transfer the car's center of gravity inboard in the turn as well. You will see an appreciable improvement in handling. Standard size anti sway bars will work well with those improvements, without the need for monster sway bars that can cause a harsh ride.

The spindles are modeled after stock disc brake spindles and will accept any disc brake set up designed for those. If your car came with drum brakes, be sure to swap to the appropriate disc brake master cylinder and valving. We have test fitted ECI, Wilwood, Baer, Aerospace, and stock GM kits. The only modification we discovered to be necessary was a small trim on the bottom of the stamped 1/4" steel caliper bracket that holds the caliper. It is an area that is not stressed and will not cause any loss of strength. There are variations among the various reproduction the shaft to be flipped in it's bushings for brackets, so the trim will be seen only on some of those.

Stock stamped control arms will accept these spindles, as will any aftermarket arms we have seen. Our own tubular control arms have the upper ball joint plates rotated slightly for better ball joint angles on lowered cars. We also set the ball joint 3/4" to the rear of the car to allow more aggressive positive caster settings, as well as to compensate for the normal forward rake seen on hot rods. The upper control arms shaft has a 3/16" offset, allowing the shaft to be rotated in it's bushings for a 3/8" net change in the upper arm's effective length. That design was pioneered by the MOOG company, as many stock autos suffer from a sagged cross member, making it difficult to obtain good alignment numbers. We suggest the alignment be done with 1/8" toe in, 1/2 degree positive camber, and 3 degrees positive caster with power steering, 2 degrees manual.

It is important to be sure you have the proper steering arms. Many cars were updated to disc brakes in the past by using disc brake and spindle assemblies from a donor car. However, the Chevelle steering arms are front steer, and the tie rod is roughly the same height as the lower ball joint. The Camaro and Nova arms are rear steer, with the outer tie rod end much lower than the ball joint. If the incorrect arms are used, the incorrect height tie rod end will cause major bump steer problems. Our testing of prototype versions of these spindles revealed that a small additional lowering of the mounting holes for the steering arms was necessary to remove the small amount of factory bumpsteer, and to account for the changes made by the taller spindle. We included that enhancement in the production version of your new dropped spindles.



Disassembly of the ball joints from the spindles can be eased by making the simple tool shown in the photo below. A pair of 1 ½" long bolts are threaded into a matching hex coupler. The ball joint cotter pins are removed, and the hex nuts loosened a couple turns. Place the tool between the ball joint studs, and turn a bolt to expand the tool, gently popping the ball joint studs loose. If your ball joint boots are torn, as often happens when a pickle fork is used to separate the ball joints, NAPA has replacements. The best way to remove the outer tie rod pivot is to loosen the hex nut, and then rap the steering arm boss with a hammer. Tie rod ends pullers are also available if you want to be more gentle on the parts. Do NOT hammer on the tie rod stud itself! Be sure to leave the shock absorber in place to control the spring and prevent it jumping out.





If you remove the calipers but leave the hoses attached, supporting them to avoid stressing the hoses, you won't even need to rebleed the brakes!

Reattach the new spindle, being sure to get the castle nuts tight, and install new cotter pins. Attach the steering arms into the lower holes in the spindles using the 4 supplied 1/2NFx2 1/2" long flathead bolts and Nyloc nuts supplied. The 1/2NFx 2" long flat head bolts and nyloc nuts we supply are for use with Wilwood and Baer brake kit lower bracket bolts. The 1/2NFx2" hex head bolts are used with stock caliper brackets. Reassemble your disc brakes as well. Now would be a good time to clean and grease the bearings.

BEFORE you try moving the car, pump the brakes to reset the pads to the rotors. Rebleed if necessary. Have the alignment shop set the car with 1/2 degree positive camber, 2-3 degrees positive caster, and 1/8" toe in. We're sure you'll be amazed at the difference in handling!



**Note:** If using a factory style stamped caliper bracket, the bracket may need to be trimmed. The dust shield may also need to be modified.



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**Part # 11166509**  
**67-69 GM "F" Body Non-Adjustable Rear CoilOvers**  
**For Use w/ AirBar**

**Shock Assembly:**

- |   |          |                                |
|---|----------|--------------------------------|
| 2 | 24059999 | 5" stroke non adjustable shock |
| 2 | 90002021 | 1.7" eyelet – non adjustable   |
| 4 | 90001994 | .625" I.D. bearing             |
| 8 | 90001995 | bearing snap ring              |

**Components:**

- |   |          |  |
|---|----------|--|
| 2 | 59120200 | Coil spring – 12" long / 200 # rate  |
| 2 | 90002222 | Spring retainer kit (included upper and lower spring retainer, screw & clip) |
| 4 | 90002043 | Aluminum bearing spacer - .5" I.D.   |
| 4 | 70010828 | Delrin Spring Washer   |

**Ride Height**

We have designed most cars to have a ride height of about 2" lower than factory. To achieve the best ride quality & handling, the shock absorber needs to be at 40-60% overall travel when the car is at ride height. This will ensure that the shock will not bottom out or top out over even the largest bumps. Measuring the shock can be difficult, especially on some front suspensions. Measuring overall wheel travel is just as effective and can be much easier. Most cars will have 4-6" of overall wheel travel. One easy way to determine where you are at in wheel travel is to take a measurement from the fender lip (center of the wheel) to the ground. Then lift the car by the frame until the wheel is just touching the ground, re-measure. This will indicate how far you are from full extension of the shock. A minimum of 1.5" of extension travel (at the wheel) is needed to ensure that the shock does not top out. If you are more than 3" from full extension of the shock then you are in danger of bottoming out the shock absorber.

**Adjusting Spring Height**

When assembling the CoilOver, screw the spring retainer tight up to the spring (0 preload). After entire weight of car is on the wheels, jounce the suspension and roll the car forward and backward to alleviate suspension bind.

- If the car is too high w/ 0 preload then a smaller rate spring is required. Although threading the spring retainer down would lower the car, this could allow the spring to fall out of its seat when lifting the car by the frame.
- If the car is too low w/ 0 preload, then preload can then be added by threading the spring retainer up to achieve ride height. On 2.6" - 4" stroke shocks, up to 1.5" of preload is acceptable. On 5-7" stroke shocks, up to 2.5" of preload is acceptable. If more preload is needed to achieve ride height a stiffer spring rate is required. Too much preload may lead to coil bind, causing ride quality to suffer.

# ridetech

Air Ride Technologies

## COIL-OVER

### In the box.....

Thank you for purchasing our product. In the box you will find the following components.

- 1- billet aluminum mono tube shock (241xx901)
- 1- Upper spring seat
- 1- Lower adjuster nut
- 1- Upper spring seat clip (90002057)
- 1- set of 5/8"-1/2" bearing spacer kit (90002044)
- 1- Delrin Washer set of 2 (70010828)



### Assembly...



First using the supplied lower adjuster nut (90002222) thread the nut onto the shock from the bottom side as seen in figure 1



Next install delrin washers then coil spring over the top of the shock as seen in figure 2



Before the upper spring mount can be installed screw the adjuster knob on the upper eye mount to the firmest setting (clockwise) as seen in figure 3.



Slide the Delrin washer over the spring. Next slide the upper spring mount (90002222) over eyelet as seen in figure 4.



Install upper spring mount retainer clip (90002057) into the groove on the upper eyelet as seen in figure 5. Then reinstall adjuster to complete assembly.



The included set of bearing spacers (90002044) are used to adapt the coil-overs to just about any application. The supplied spacers allow the coil-overs to accept 5/8" or 1/2" bolts.