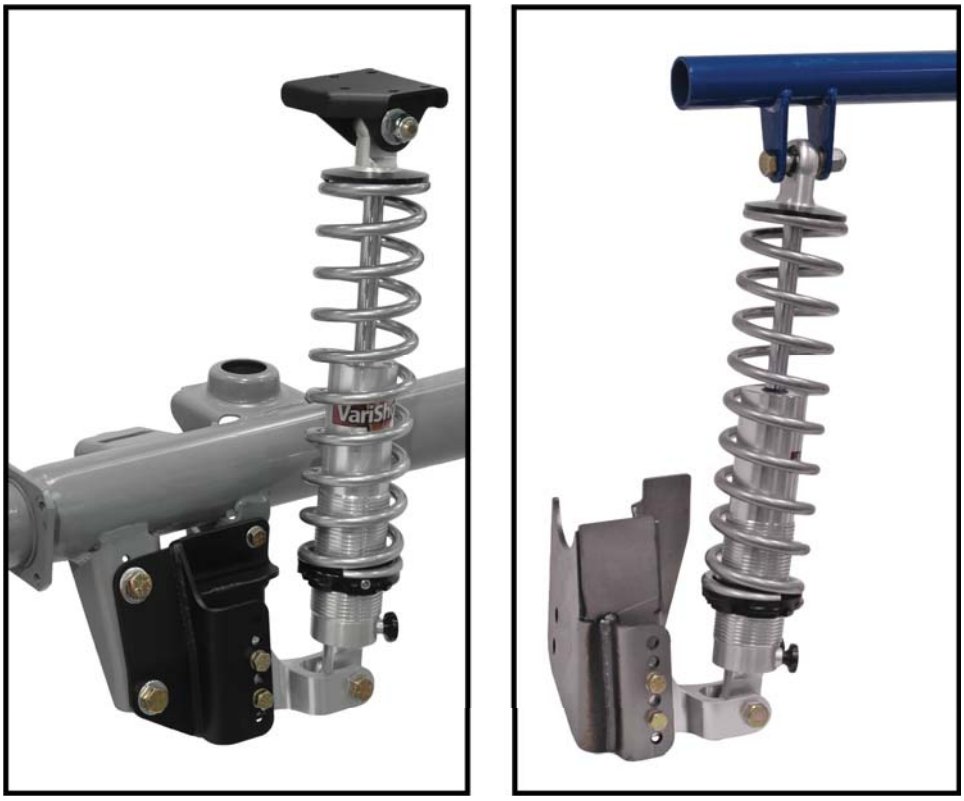
READ ALL INSTRUCTIONS COMPLETELY AND THOROUGHLY UNDERSTAND THEM BEFORE DOING ANYTHING.
CALL CHASSISWORKS TECH SUPPORT (916) 388-0288 IF YOU NEED ASSISTANCE.

INSTALLATION GUIDE

CHRIS ALSTON'S Chassisworks
THE HOME OF HIGHER TECHNOLOGY

5824-A10

VariShock™ Rear Coil-Over Conversion
1964-72 GM A-Body



Description:

VariShock rear bolt-on or weld-on coil-over conversion, lower adjustable axle bracket with billet-aluminum or steel clevis shock mount, upper shock mount or crossmember, VariShock coil-overs, VariSprings and mounting hardware.

Applications:

'64-72 GM A-Body (Century, Chevelle, Cutlass, El Camino, F85, GTO, LeMans, Malibu, Monte Carlo, Regal, and Skylark)

PARTS LIST

5824-A10 - '64-72 A-Body Rear Coil-Over Conversion

You will receive one or more of the items listed in each of the option categories.

OPTION - SHOCKS

1 pair	VAS 11011-515	Factory-valved VariShcok coil-over, COM-8 mounting eyes, 5.15" travel
1 pair	VAS 11111-515	Single-adjustable VariShcok coil-over, COM-8 mounting eyes, 5.15" travel
1 pair	VAS 11211-515	Double-adjustable VariShcok coil-over, COM-8 mounting eyes, 5.15" travel
2	VAS 11411-50	4-Way adj. VariShcok remote-reservoir coil-over, COM-8 mount eyes, 5.15" travel
1	VAS 1A1B838-5	Single-adjustable VariShcok coil-over, pivot-ball mounting eyes, 5.15" travel
1	VAS 1A2B838-5	Double-adjustable VariShcok coil-over, pivot-ball mounting eyes, 5.15" travel

OPTION - SPRINGS AND HARDWARE

1 pair	VAS 21-12XXX	12" long x 2.5" ID coil over spring (110 to 400 lb/in)
1 pair	VAS 21-10200	10" long x 2.5" ID coil over spring, 110 lb/in (for remote-reservoir shock)
1	VAS 508-105	Spacer set 1" com-8 to 1-1/4" wide mount (for COM-8 mount eyes)
1	VAS 517-RS-F	Flat surface silo-style reservoir mount (for remote-reservoir shock)

OPTION - UPPER MOUNT

Bolt-In Upper Shock Mount Set - 7950-5824A10-1		
2	3100-050F2.50Y	Bolt 1/2-20 x 2-1/2" hex head, Grade 8, yellow zinc
8	3101-031-18C	Locknut 5/16-18 nylon insert, plated
2	3101-050-20C	Locknut 1/2-20 nylon insert, plated
8	3103-031C1.00	Socket head cap screw 5/16-18 x 1"
16	3157-031S-C	Washer 5/16" flat SAE
4	3157-050S-C	Washer 1/2" flat SAE
1	7961-013	Upper coil-over mount, passenger side
1	7961-014	Upper coil-over mount, driver side

Weld-In Upper Shock Crossmember - 6267		
4	2101	Suspension mount tab, 1/2" hole
2	3100-050F2.50Y	Bolt 1/2-20 x 2-1/2" hex head Grade 8, yellow zinc
2	3101-050-20C	Locknut 1/2-20 nylon insert, clear zinc
1	E26.134-048.000	Steel tube 1-5/8" x .134" HREW

OPTION - LOWER MOUNT

Steel Clevis Set - 300-0216		
1	7972-2923	Mount driver-side, .58” offset
1	7972-2924	Mount psgr-side, .58” offset
1	7972-2925	Aluminum spacer
1	7972-2940	Mount driver-side, 1.25” offset
1	7972-2941	Mount psgr-side, 1.25” offset
4	3100-038F2.00Y	Bolt, 3/8-24 x 2” hex head
2	3100-050F2.75Y	Bolt, 1/2-20 x 2-3/4” hex head
4	3101-038-24C	Locknut, 3/8-24 nylon insert
2	3101-050-20C	Locknut, 1/2-20 nylon insert
8	3109-038-S-2-Y	Aircraft washer, 3/8” small OD
4	3109-050-S-2-Y	Aircraft washer, 1/2” small OD

Billet Aluminum Clevis Set - 300-0106		
1	1477-D	Shock mount, driver-side
1	1477-P	Shock mount, passenger-side
4	3100-038F2.00Y	Bolt, 3/8-24 x 2” hex head
2	3100-050F2.75Y	Bolt, 1/2-20 x 2-3/4” hex head
4	3101-038-24C	Locknut, 3/8-24 nylon insert
2	3101-050-20C	Locknut, 1/2-20 nylon insert
8	3109-038-S-2-Y	Aircraft washer, 3/8” small OD

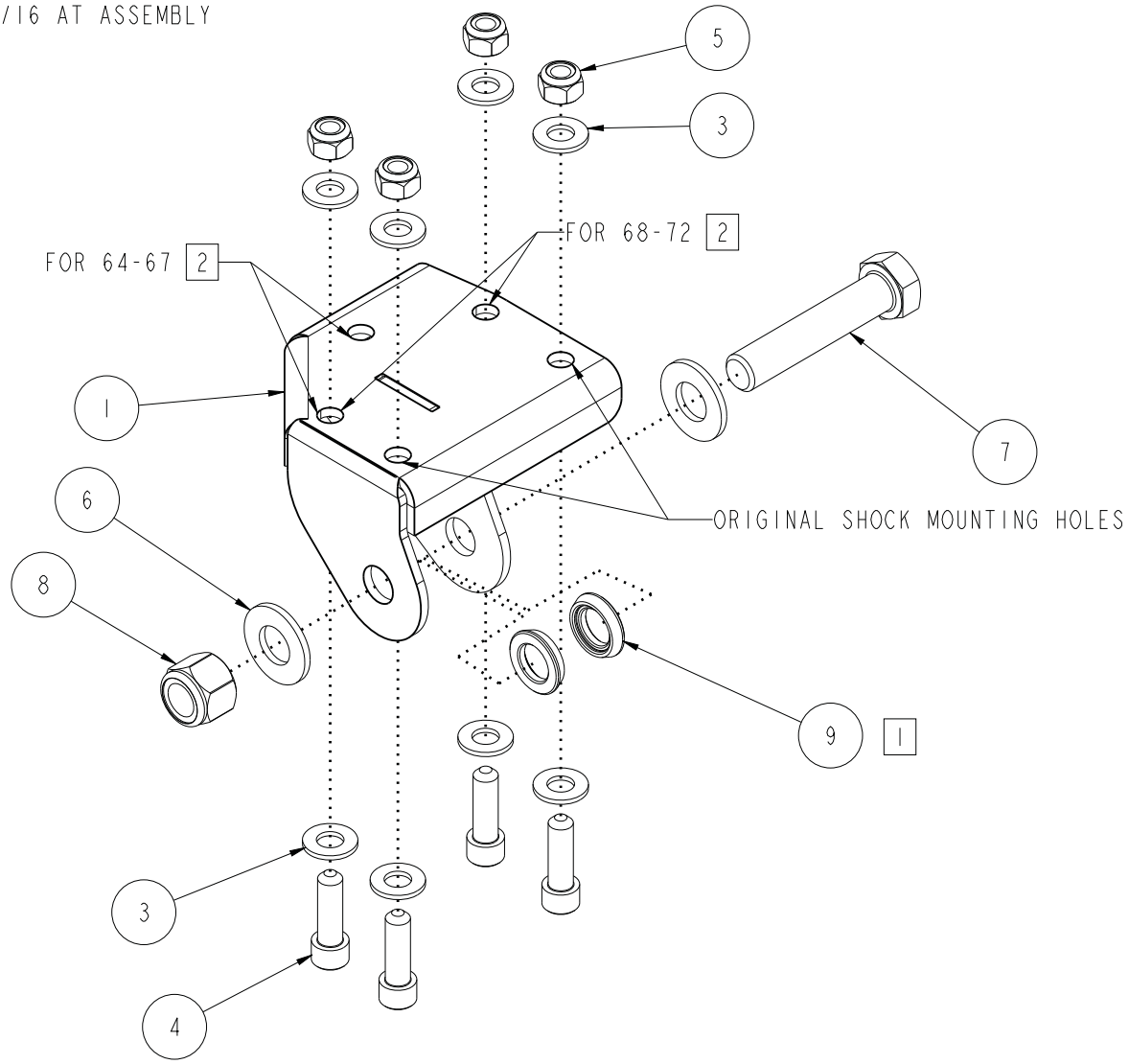
OPTION - AXLE BRACKETS

Bolt-On Axle Brackets - 7950-5824A10-2		
6	3100-031C1.00Y	Bolt 5/16-18 x 1” hex head, Grade 8, yellow zinc
4	3100-050C1.25Y	Bolt 1/2-13 x 1-1/4” hex head, Grade 8, yellow zinc
2	3100-050C4.25Y	Bolt 1/2-13 x 4-1/4” hex head, Grade 8, yellow zinc
6	3101-031-18C	Locknut 5/16-18 nylon insert, clear zinc
6	3101-050-13C	Locknut 1/2-13 nylon insert, clear zinc
12	3157-031S-C	Washer 5/16” flat SAE, clear zinc
12	3157-050F-C	Washer 1/2” fender, clear zinc
12	3157-050S-C	Washer 1/2” flat SAE, clear zinc
1	7961-007	Axle bracket weldment, passenger side
1	7961-008	Axle bracket weldment, driver side
2	7961-020	Axle bracket support

Weld-On Axle Brackets		
1	7961-018	Mild-steel axle bracket weldment, driver side
1	7961-019	Mild-steel axle bracket weldment, passenger side
1	7961-024	4130 steel axle bracket weldment, driver side
1	7961-025	4130 steel axle bracket weldment, passenger side

ITEM	QTY	PART NO.	DESCRIPTION
1	1	7961-014	UPPER SHOCK MOUNT, DRIVER, COILOVER CONVERSION, 64-72 GM A-BODY
2	1	7961-013	UPPER SHOCK MOUNT, PSGR, COILOVER CONVERSION, 64-72 GM A-BODY
3	16	3157-031S-C	WASHER, 5/16 SAE, ZINC PLATED, 11/32 ID x 7/8 OD x 1/16 THICK
4	8	3103-031C1.00C	SOCKET HEAD CAP SCREW, 5/16-18 x 1, CLEAR ZINC
5	8	3101-031-18C	LOCKNUT 5/16-18, GRADE 5, NYLON INSERT, CLEAR ZINC
6	4	3157-050S-C	WASHER, 1/2 SAE, ZINC PLATED, 1/2 ID x 1 1/16 OD x 3/32 THICK
7	2	3100-050F2.50Y	HEX BOLT, 1/2-20 x 2 1/2, GRADE 8, YELLOW ZINC
8	2	3101-050-20C	LOCKNUT, 1/2-20, GRADE 5, NYLON INSERT, CLEAR ZINC
9	4	7955-093-125	SPACER, ∅1/2 BORE x .125 LONG, ∅.85 OD x .175 OAL

[1] OPTIONAL, USE WITH COM-8 SHOCKS
[2] DRILL 5/16 AT ASSEMBLY



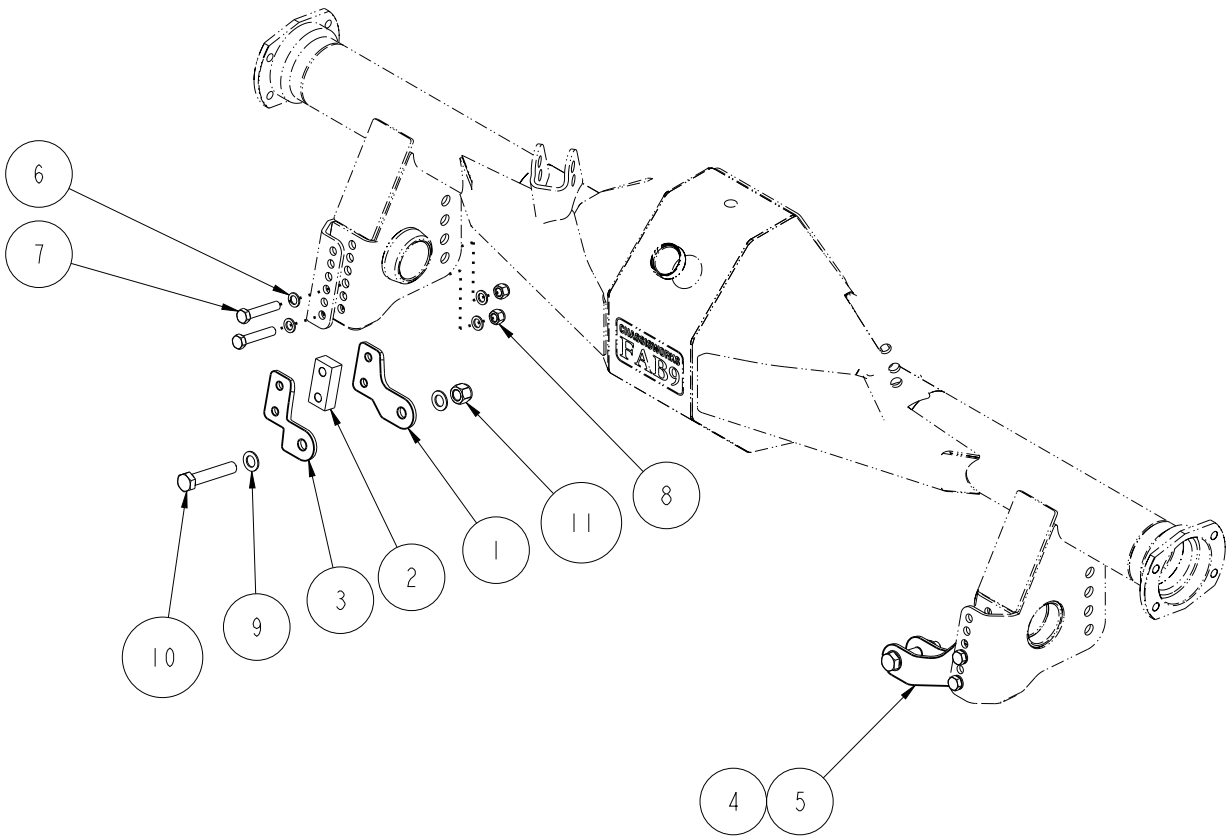
DESCRIPTION
COILOVER CONVERSION, BOLT-IN, UPPER CHASSIS MOUNT, 1964-72 GM A BODY

Chris Alston's CHASSISWORKS INC.
8661 YOUNGER CREEK DRIVE
SACRAMENTO, CA 95828
(916) 388-0288 FAX 388-0295

PART NO. 5824-A10-1

3/22/10 | DWG: 7951-5824A10-1

ITEM	QTY	PART NO.	DESCRIPTION
1	1	7972-2923	SHOCK MOUNT, gBAR, DRIVER, ADJUSTABLE, .58 OFFSET
2	2	7972-2925	SPACER, SHOCK MOUNT, gBAR, 5/8 THICK
3	1	7972-2940	SHOCK MOUNT, gBAR, DRIVER, ADJUSTABLE, 1.25 OFSET
4	1	7972-2924	SHOCK MOUNT, gBAR, PASSENGER, ADJUSTABLE, .58 OFFSET
5	1	7972-2941	SHOCK MOUNT, gBAR, PASSENGER, ADJUSTABLE, 1.25 OFFSET
6	8	3109-038-S-2-Y	AIRCRAFT WASHER 3/8 x .062 THICK
7	4	3100-038F2.00Y	HEX BOLT, 3/8-24 x 2, GRADE 8, YELLOW ZINC
8	4	3101-038-24C	LOCKNUT, 3/8-24, GRADE 5, NYLON INSERT, CLEAR ZINC
9	4	3109-050-S-2-Y	AIRCRAFT WASHER 1/2 x .062 THICK
10	2	3100-050F2.75Y	HEX BOLT, 1/2-20 x 2 3/4, GRADE 8, YELLOW ZINC
11	2	3101-050-20C	LOCKNUT, 1/2-20, GRADE 5, NYLON INSERT, CLEAR ZINC



DESCRIPTION

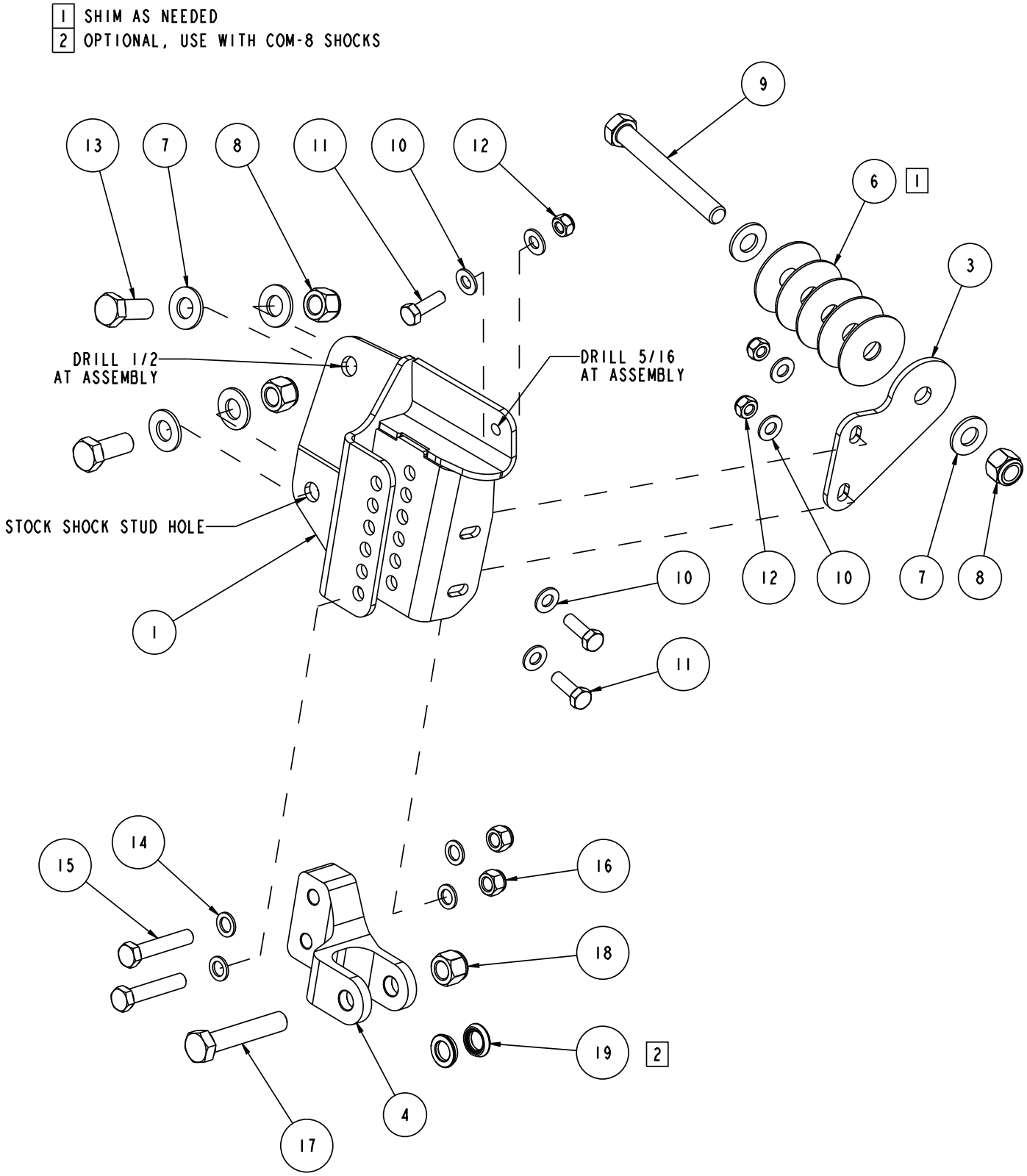
SHOCK MOUNT, gBAR, ADJUSTABLE, STEEL

Chris Alston's CHASSISWORKS INC.
8661 YOUNGER CREEK DRIVE
SACRAMENTO, CA 95828
(916) 388-0288 FAX 388-0295

PART NO. 300-0216

5/6/20 | DWG: 7951-3000216

DRIVER SIDE SHOWN



ITEM	QTY	PART NO.	DESCRIPTION
1	1	7961-008	COILOVER CONVERSION BRACKET, LOWER, DRIVER, 64-72 GM A-BODY
2	1	7961-007	COILOVER CONVERSION BRACKET, LOWER, PSGR, 64-72 GM A-BODY
3	2	7961-020	BRACKET 4, LOWER COILOVER, 64-72 GM A-BODY
4	1	1477-D	G-BAR STRAIGHT SHOCK MOUNT, DRIVER, ADJUSTABLE, OFFSET
5	1	1477-P	G-BAR STRAIGHT SHOCK MOUNT, PSGR, ADJUSTABLE, OFFSET
6	12	3157-050F-C	FENDER WASHER, 1/2 x 2 x 1/16 THICK, ZINC PLATED
7	12	3157-050S-C	WASHER, 1/2 SAE, ZINC PLATED, 1/2 ID x 1 1/16 OD x 3/32 THICK
8	6	3101-050-13C	LOCKNUT 1/2-13, GRADE 5, NYLON INSERT, CLEAR ZINC
9	2	3100-050C4.25Y	HEX BOLT, 1/2-13 x 4 1/4, GRADE 8, YELLOW ZINC
10	12	3157-031S-C	WASHER, 5/16 SAE, ZINC PLATED, 11/32 ID x 7/8 OD x 1/16 THICK
11	6	3100-031C1.00Y	HEX BOLT, 5/16-18 x 1, GRADE 8, YELLOW ZINC
12	6	3101-031-18C	LOCKNUT 5/16-18, GRADE 5, NYLON INSERT, CLEAR ZINC
13	4	3100-050C1.25Y	HEX BOLT, 1/2-13 x 1 1/4, GRADE 8, YELLOW ZINC
14	8	3109-038-S-2-Y	AIRCRAFT WASHER 3/8 x .062 THICK
15	4	3100-038F2.00Y	HEX BOLT, 3/8-24 x 2, GRADE 8, YELLOW ZINC
16	4	3101-038-24C	LOCKNUT, 3/8-24, GRADE 5, NYLON INSERT, CLEAR ZINC
17	2	3100-050F2.75Y	HEX BOLT, 1/2-20 x 2 3/4, GRADE 8, YELLOW ZINC
18	2	3101-050-20C	LOCKNUT, 1/2-20, GRADE 5, NYLON INSERT, CLEAR ZINC
19	4	7955-093-125	SPACER, ∅1/2 BORE x .125 LONG, ∅.85 OD x .175 OAL

DESCRIPTION: COILOVER CONVERSION, BOLT-IN, ADJUSTABLE LOWER MOUNT, 1964-72 GM A BODY

Chris Alston's CHASSISWORKS INC.
8661 YOUNGER CREEK DRIVE
SACRAMENTO, CA 95828
(916) 388-0288 FAX 388-0295

PART NO. 5824-A10-2

3/18/10 | DWG: 7951-5824A10-2

INSTRUCTIONS

1. Before starting measure the height of the rear wheel well opening from the ground on the driver and passenger sides. Record these dimensions.

   This measurement will be used as a reference to adjust the height of the lower billet shock mount and verify that the ride height is set correctly.

2. Measure from the center of the axle to the fender lip. Record these measurements.

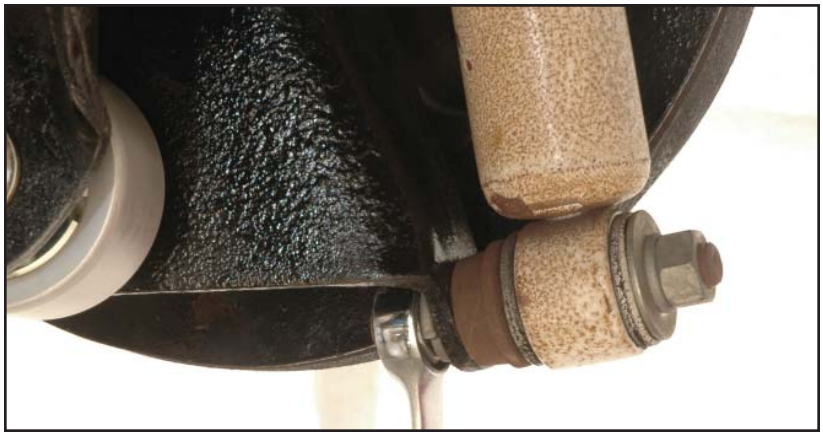
   It may be easier to accurately measure from the center of the axle to the ground. This measurement can be subtracted from the previous fender-lip to ground measurement to calculate the needed dimension.

   This information provides a reference point to correctly position rearend housing once the vehicle is off the ground and the wheels are removed.

3. Jack the car up and place two jack stands under the frame just in front of the lower control arm mounts. The car must be high enough to fully extend the shock to remove the OEM coil springs.
4. Remove the wheels and tires.
5. Keep the floor jack under the center on the rear end housing to hold it up while removing the shocks.

6. Remove the two bolts at the top eye of each factory shock.

7. Unbolt the cantilever pin at the factory lower shock eye.



8. Lower the rear end down until the coil springs are loose.

   NOTE: On 1964-67 models you will need to remove the bolt, washer and spacer used to position the spring on the housing mounting plate.

9. Remove the coil springs.

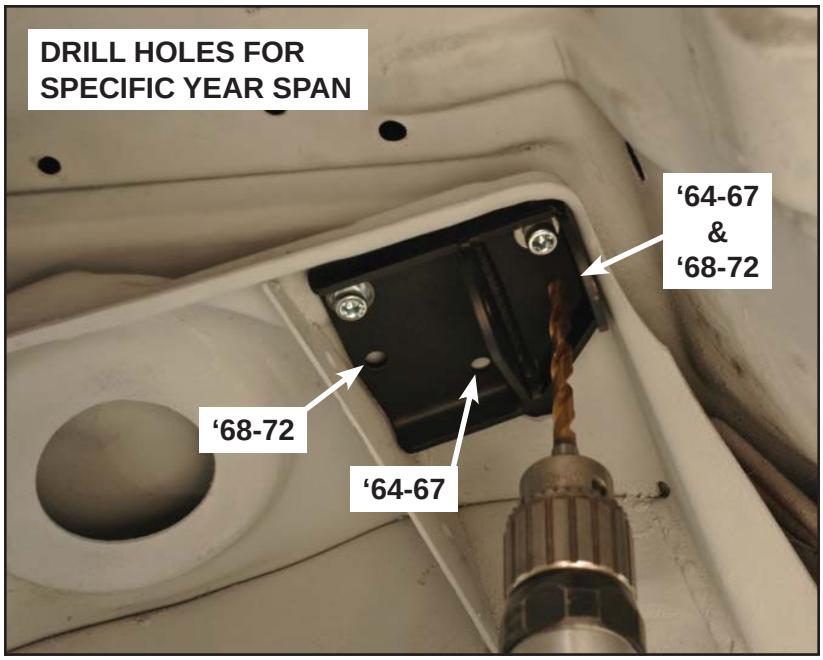
10. Place the upper shock mount into position, aligning it with the factory shock mounting holes.
    (Passenger side shown; use 7961-013)

11. Bolt the upper coil-over mount to the driver side OEM shock mount frame bracket using the 5/16-18 x 1” socket head cap screws, flat washers and locknuts supplied.

12. Tighten the two bolts installed in the factory shock mount holes before drilling the new holes.

13. Using the upper mount bracket as a guide, drill the two additional 5/16” diameter holes in the OEM shock mount bracket.

    NOTE: The required drilled holes are different for the 1964-67 and 1968-72 models.



14. Secure the upper mount with two additional 5/16-18 x 1” socket head cap screws, flat washers and locknuts.
15. The upper mount is complete. Repeat this procedure on the opposite side of the car.

16. Place jack stands under the rear end housing so it is in the ride height position. Use the measurements recorded early to position the housing at the correct height in relation to the wheel well opening.

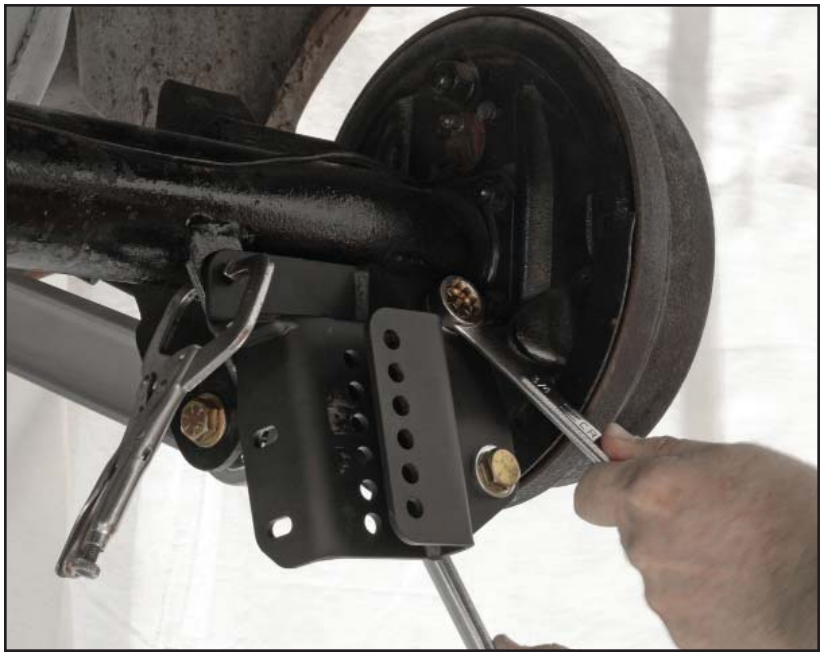
17. Using the 1/2-13 x 1-1/4” bolts, flat washers and locknuts supplied, bolt the lower coil-over mount to the lower shock bracket on the housing. The lower hole of the bolt-on bracket will align with the factory shock mounting hole.

18. Align the top edge on the coil-over mount parallel to the axle tube, using a level as shown.

19. Tighten the 1/2” bolt securing the coil over bracket to the OEM shock mount.

20. Use a clamp to hold the mount in place while drilling a second mounting hole.
21. Using the mount as a guide drill a 1/2” diameter hole through the OEM bracket as shown.

22. Secure the mount to the housing bracket with a second 1/2-13 x 1-1/4” bolt, pair of flat washers, and locknut. Torque both bolts to 45 lb-ft.



23. Drill a 5/16”-diameter hole through the coil-over mount and housing bracket.

24. Secure the mount with a 5/16-18 x 1-1/4” bolt, flat washers and locknut. Torque to 25 lb-ft.

25. Remove the rear lower control arm bolts at the rear end housing bracket.

26. Slide the gusset bracket (7961-020) behind the lower coil-over mount and along side the lower control bracket on the housing.

27. Bolt the gusset to the coil-over mount bracket with two 5/16-18 x 1-1/4” bolts, flat washers and locknuts. DO NOT fully tighten the bolts at this time.
28. Use the 1/2” fender washers as shims to take up any space between the gusset and the control arm mount.

29. Insert the 1/2-13 x 4-1/4” hex bolt through the housing brackets and control arm.
30. Secure the assembly with a flat washer and 1/2” locknut. Torque to 45 lb-ft.

31. Tighten the 5/16” bolts and torque to 20 lb-ft.

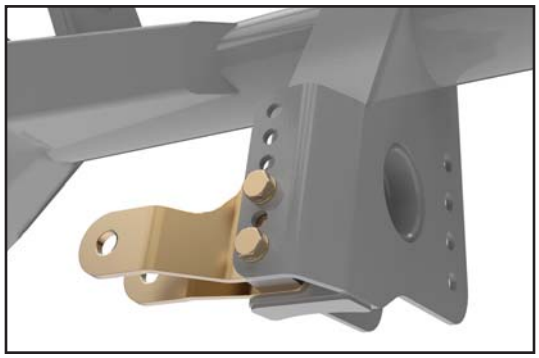
32. The lower coil-over mount is installed. Repeat this procedure on the opposite side of the car before installing the coil-over shock.

Before proceeding, the rearend housing must be positioned to match the center-of-axle to fender-lip measurment taken earlier.

33. Slide the billet shock mount into the coil-over mount as shown. Measure from the upper coil-over mount shock hole down 13-1/2”. This is the location of the billet shock mount hole at the shock’s center-of-travel height.
34. Move the billet mount to the closest position to the 13-1/2” length.

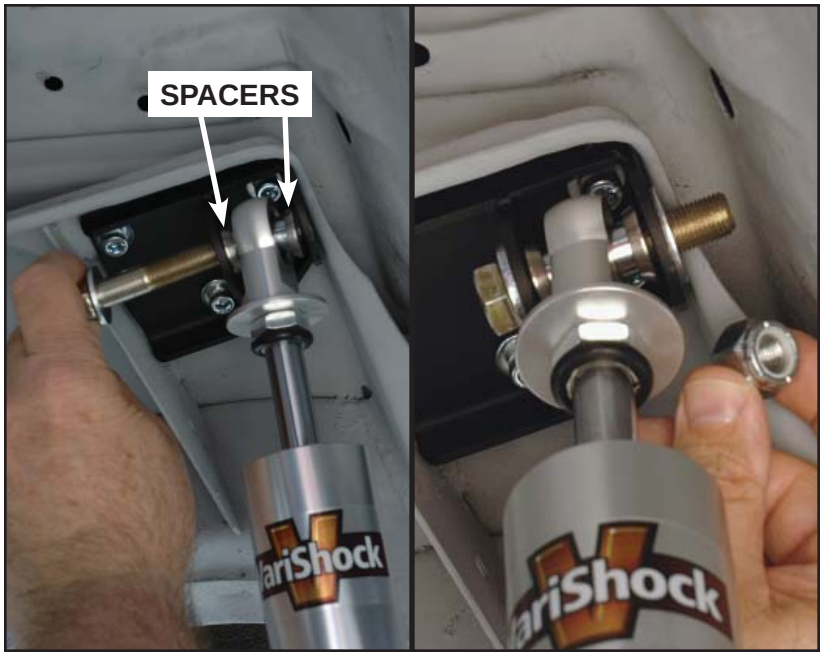
35. Secure the clevis mount with the 3/8” bolts, aircraft washers, and locknuts provided.
36. Tighten the bolts and torque to 35 lb.-ft.

STEEL ALUMINUM



37. Install the coil-over shock between the upper and lower mounts WITHOUT the coil spring installed.
38. Place one shock spacer on each side of the shock's COM bearing. The counterbore of each spacer will seat around the end of the bearing sleeve.

39. Slide a flat washer over the 1/2-20 x 2-1/2" hex bolt and insert it through the upper mount bracket, spacers, and shock bearing.
40. Place a second flat washer onto the bolt followed by a locknut.

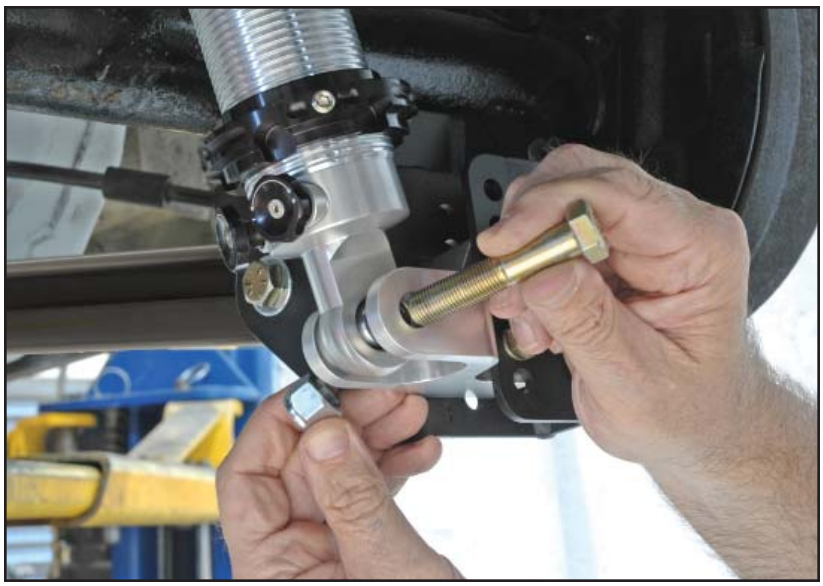


41. Tighten and torque to 55 lb-ft.

42. The upper mount and coil-over shock are installed.

43. Place one shock spacer on each side of the shock's COM bearing, and align with the billet lower shock mount.

44. Secure the lower eye of the shock using a 1/2" bolt and locknut.



45. Torque to 45 lb-ft.
46. Repeat the above on the opposite side of the vehicle.

47. Move the rear suspension through its complete range of shock travel, including full compression, full extension, and full roll in both directions. There should be at least 1” of clearance between the shock body and the axle tube at all points.

Full Compression

Full Extension

Full Roll

48. Once the clearance is checked you can install the coil springs on the shocks using the VAS-200 spring compressor. Follow the instructions included with the compressor.
49. Re-install the coil-overs with springs and torque the bolts to 45 lb-ft.

VariShock Air Springs

Additional clearance checks are required when installing air springs.

- Clearance around the top of the shock for the port and for the air line to be safely routed around any exhaust components or moving parts.
- Clearance around the air bag, including the axle tube, brake/fuel lines, and exhaust.

50. With the weight on the coil-overs the center to center dimension on the shock should be 13-1/2” to 13-5/8”. Follow the information included with your shock to fine tune the coil-over ride height.
51. Set the car on the ground and check the distance from the center on the axle to the wheel well openings they should match the measurements recorded earlier.

    Do not adjust the spring seat to alter ride height more than 1/2”. Instead, changing the position of the lower billet shock mount should be used to make ride height adjustments of 1/2” or greater.

VERIFY RIDE HEIGHT (AIR SPRINGS)

After all suspension clearances have been checked and the shocks installed onto the vehicle, you must verify that the shocks rest at ride height within their allowable range of operation.

- The suspension must carry the full weight of the complete vehicle, including interior and passenger weight, with the wheels on the ground during measurement.
- Measure the length of the shock and compare to Air-Spring Shock Specifications chart to ensure you are within the Ride Height range. Air pressure will need to be adjusted until both shocks measure equal to each other and are at the correct length.

Air-Spring-Shock Ride-Height Specifications

Part Number	Mounting		**Total Travel**	Compressed **Length**[1]	Extended **Length**[1]	Ride Height*		**Port** Location	**Air-Bag Style**
	Upper	Lower				Min.	Max.		
VAS 131K2-515	Poly	Poly	5.00	11.56	16.56	13.56	14.56	Cap	4” Tapered Sleeve

* Shock length is the measured distance between centers of mounting eyes.

VERIFY RIDE HEIGHT (COIL-OVERS)

After all suspension clearances have been checked and the shocks installed onto the vehicle with the springs, you must verify that the shocks rest at ride height within their allowable range of operation.

- The suspension must carry the full weight of the complete vehicle, including interior and passenger weight, with the wheels on the ground during measurement.
- Measure the length of the shock and compare to Shock Specifications chart to ensure you are within the Ride Height range. Spring preload will need to be adjusted at the lower spring seat until both shocks measure equal to each other and are at the correct length.
- SUSPENSION MUST BE AT FULL EXTENSION AND THE VEHICLE SAFELY SUPPORTED WHILE ADJUSTING THE LOWER SPRING SEAT.
- With the vehicle weight carried by the suspension, it is easier to get an accurate measurement from the bottom of the upper spring seat to the center of the lower mounting bolt.
- DO NOT THREAD THE LOWER SPRING SEAT UPWARD MORE THAN 1/2” FROM IT’S LOWEST POSITION.
- If more than 1/2” of preload is needed to raise the vehicle into the correct ride height range, you must step up to a heavier spring rate. Failure to increase the spring rate will allow the spring to abruptly coil-bind before full shock compression, limit suspension travel, and damage the shock and related chassis and suspension components.

Coil-Over-Shock Ride-Height Specifications

Part Number	Mounting		Total Travel	Compressed Length*	Extended Length*	Ride Height*		Spring Length
	Upper	Lower				Min.	Max.	
VAS 11X11-515	COM-8	COM-8	5.15”	9.37”	14.52”	11.43”	12.46”	12”

* Shock length is measured from the top of the coil spring to the top surface of the lower crossbar tab. It is easiest to measure between these two points once the shock has been mounted to the vehicle.

Spring Selection Guidelines

A good spring rate baseline for passenger vehicles is 200 lb./in.

Differences that alter desired spring rate:

Weight Reduction -50 lbs

Road Race +50 lbs (better handling)

Drag Race -50 lbs (more stored energy)

Spring rate effects ride quality, ride height and roll rate characteristics. Differences in vehicles such as aluminum engine components, fiberglass body parts and chassis stiffening should be taken into consideration. Additional springs can be purchased for tuning purposes.

12” VariSprings

Rate (lb/in)	Part Number
110	VAS 21-12110
130	VAS 21-12130
150	VAS 21-12150
175	VAS 21-12175
200	VAS 21-12200
250	VAS 21-12250
300	VAS 21-12300
350	VAS 21-12350
400	VAS 21-12400

Determining Your Baseline Spring Rate

Determining the correct spring rate and correctly adjusting your suspension is very important to achieving the best possible and most reliable performance from your components. In fact, the vast majority of problems people experience with coil-over shocks can be attributed to using the wrong spring rate or incorrect adjustment of the shocks many settings.

What is the Baseline Spring Rate?

“Baseline spring rate” is defined as the pound-per-inch rate (lb/in) at which the spring supports the corner weight of the vehicle with the coil-over shock at the correct installed height without the need to preload the spring. Once the baseline spring rate has been established, the vehicles performance goals and further testing will reveal the correct final spring rate for each installation. Differences such as how the spring is mounted (installation motion ratio), vehicle weight reduction, chassis stiffening, specific performance application, and driver preference and skill level all have a bearing upon the correct final spring rate.

Where to Begin? (Initial Spring Rate)

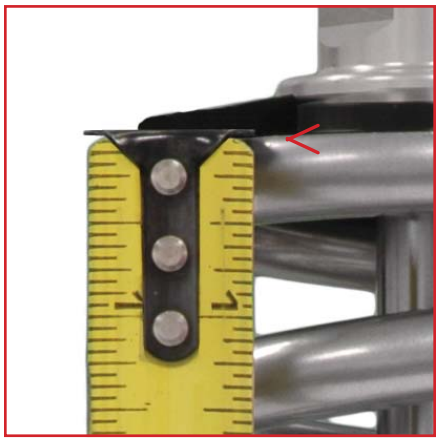
Based on our experience with vehicles and performance applications similar to your own, Chassisworks can recommended an “initial spring rate” to install on your vehicle, from which the correct baseline spring rate can be derived. In many cases our recommended initial spring rate will be the correct baseline spring rate. However, due to the sheer number of variables, it is impossible for our technical staff to predict the precise baseline spring rate for each and every installation scenario. To assist you in obtaining the correct spring rate, a second set of springs can be purchased at a discount.

Taking Measurements

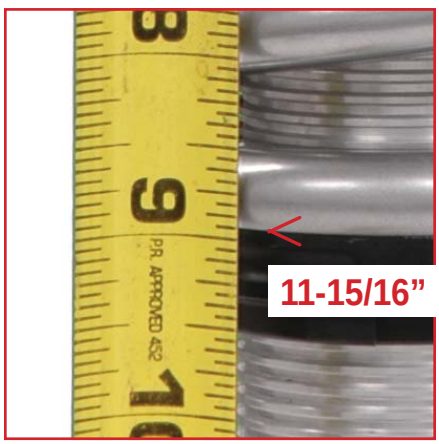
Chassisworks has developed a simple method to determine the correct baseline spring rate. This method requires installation of our initially recommended spring, followed by a couple quick measurements and some simple calculations. Before getting started, the vehicle must be 100% complete. This includes interior, glass, fluids, weight ballasts, and sand bags or free weights to substitute as the weight of the driver. At this point, the springs should already be installed on the shocks with NO PRELOAD and ready to go onto the vehicle. *Lower spring seats should be just tight enough to remove free play from the spring.*

1. Record the initial spring rate as value “R” in the calculation table that follows. Most VariSprings will have the rate printed directly on them.
2. With the shock fully extended, measure the installed free-length of the spring. At the upper-spring-seat slot, hook the end of the tape measure against the spring and measure, with one sixteenth-of-an-inch accuracy, the distance to the ground bottom edge of the spring. Record this dimension as value “F” in the calculation table that follows.

   NOTE: The measured length may differ slightly from the nominal spring length. In our example the 9” VariSpring actually measures 8-15/16” when correctly installed.
3. Install all shocks and springs onto the vehicle and lower it to the ground.



Hook the tape measure against the spring at the upper spring seat slot.



Measure the bottom end of the spring.

1. Verify that the springs are supporting the full weight of the vehicle. Any chassis or shock bump stops that are in contact must be temporarily removed. Make sure to replace bump stops when finished.
2. Measure the springs again at their newly collapsed installed height to within one sixteenth-of-an-inch accuracy from the same spring reference points used previously. Record this dimension as value “L” in the calculation table that follows.

Installed Height by Performance

When a shock is at installed length (ride height) a certain amount of travel is available in either direction. Depending upon performance application, shock travel will be reserved in different percentages for bump (shock compressing) and rebound (shock extending). Use the Reserved Shock Travel Percentage Guidelines and appropriate chart to determine the amount of bump travel required to collapse the shock to the correct installed length for your performance application. Record this dimension as value “T” in our calculations.

NOTE: In our example calculation, a handling performance application with a 4.25”-travel coil-over shock lists a “T” value of 2.13.

Perform the Calculations

Calculation Table

The leftmost column in the calculation table gives you a place to record your values. Use a pencil in case you make a mistake.

Record Values	Variable	Description
___ ___.___ ___	**F**	measured initial Free length of installed unloaded spring
___ ___.___ ___	**L**	measured Loaded spring compressed length
F - L	Answer 1	Subtract L from F
___ ___ ___ lb/in	**R**	initial spring Rate in pounds per inch
Answer 1 x R	Answer 2	Multiply Answer 1 by R
___ ___.___ ___	**T**	spring Travel to achieve desired ride height (from chart on pg. 13)
Answer 2 ÷ T	BASELINE SPRING RATE	Divide Answer 2 by T

Example:

Measured free length (F) 8-15/16” or 8.94

Minus measured loaded length (L) 6-1/2” or 6.50

8.94F - 6.50L = 2.44

Multiply that answer by the current spring rate 500 lb/in

2.44 x 500R = 1220

Divide that answer by the correct (T) value in chart

1220 ÷ 2.13T = 572.77B

Round the final answer up or down to a suitable spring rate.

$$\frac{(F - L)\,R}{T} = \textbf{Baseline Spring Rate}$$

Reserved Shock Travel Percentage Guidelines

Street Baseline: 60-percent Bump, 40-percent Rebound

Street vehicles require more available compression (bump) travel for improved ride quality and unexpected road hazards. At baseline ride height, the shock and spring should collapse 40-percent from their installed heights. This results in 40-percent of travel available for extension and 60-percent for compression travel.

Handling Baseline: 50-percent Bump, 50-percent Rebound

Handling performance applications are usually limited to smooth prepared road-course- or autocross tracks, therefore less compression travel is required. Suspension geometry or track conditions may require the travel percentages to be shifted to prevent topping- or bottoming-out the shock.

Drag Race Baseline: 40-percent Bump, 60-percent Rebound

Drag race vehicles generally require more extension (rebound) travel to help weight transfer, and because the drag strip is very flat, less compression travel is needed. The amount of extension travel available in the shock will drastically affect how the car works. At baseline ride height, the shock and spring should collapse 60-percent from their installed heights. This results in 60-percent of travel available for extension and 40-percent of compression travel.

Optionally, it is acceptable to adjust the shock's installed height to any length between the minimum and maximum spring-length value shown in the chart. This range allows you to adjust the vehicle ride height a small amount by using the threaded lower spring seat.

VariShock Coil-Over Shocks

Coil-Over Shock Travel	Street	Handling	Drag	Spring Free Length	Street	Handling	Drag
	60/40	50/50	40/60		Max.	Center	Min.
	(T) Spring Travel Used At Ride Height				*Installed Spring Length At Ride Height*		
5.15	2.06	2.58	3.09	12	9.94	9.43	8.91

WARRANTY NOTICE:
There are NO WARRANTIES, either expressed or implied. Neither the seller nor manufacturer will be liable for any loss, damage or injury, direct or indirect, arising from the use or inability to determine the appropriate use of any products. Before any attempt at installation, all drawings and/or instruction sheets should be completely reviewed to determine the suitability of the product for its intended use. In this connection, the user assumes all responsibility and risk. We reserve the right to change specification without notice. Further, Chris Alston's Chassisworks, Inc., makes **NO GUARANTEE** in reference to any specific class legality of any component. **ALL PRODUCTS ARE INTENDED FOR RACING AND OFF-ROAD USE AND MAY NOT BE LEGALLY USED ON THE HIGHWAY**. The products offered for sale are true race-car components and, in all cases, require some fabrication skill. **NO PRODUCT OR SERVICE IS DESIGNED OR INTENDED TO PREVENT INJURY OR DEATH**.

Chris Alston's Chassisworks
8661 Younger Creek Drive
Sacramento, CA 95828
Phone: 916-388-0288
Technical Support: sales@cachassisworks.com

CHRIS ALSTON'S Chassisworks
THE HOME OF HIGHER TECHNOLOGY