

**INSTALLATION, ASSEMBLY & SERVICE INSTRUCTIONS
FOR
SINGLE & DOUBLE ADJUSTABLE ALUMINUM STRUTS**

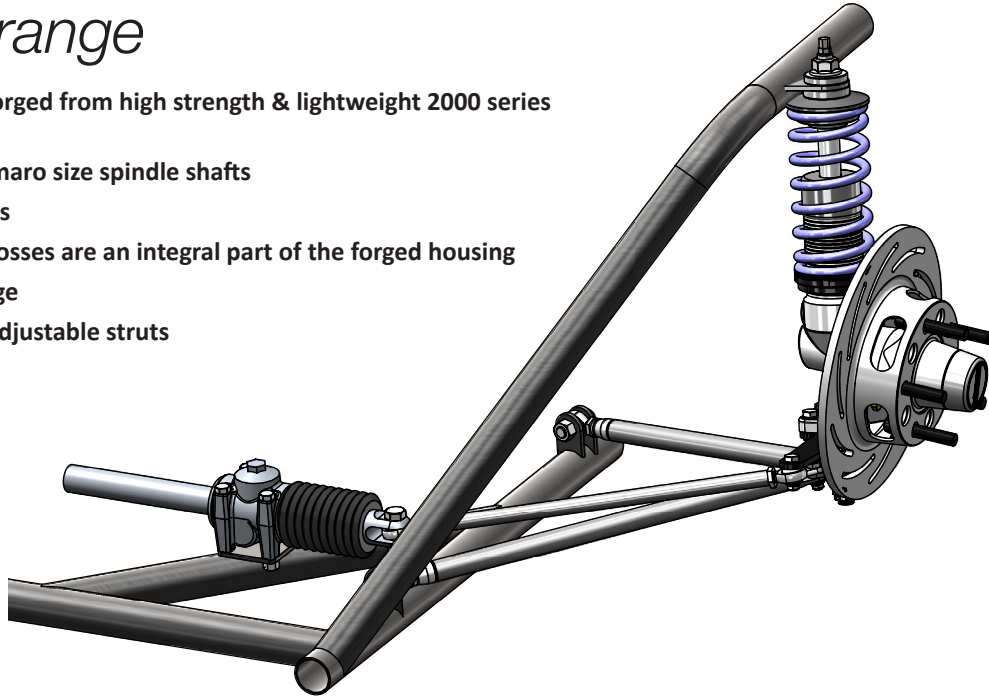
Reference Instructions

B1816 Single Piston Caliper Kit
B1825 Medium Duty 2-Piston Caliper
Strange Ultra & Directional Four Piston Caliper
Brake Kit Installation Instructions

Installation to be performed by a qualified technician.

RaceStrange

- Strut bodies are forged from high strength & lightweight 2000 series aluminum alloy
- Stainless steel Camaro size spindle shafts
- Steel steering arms
- Brake mounting bosses are an integral part of the forged housing
- Wide damper range
- Single or double adjustable struts



INTRODUCTION:

Strange Forged Aluminum Struts provide the basis for a lightweight front suspension that is popular for Pro Stock and all types of Sportsman class cars. Frame construction is simpler, suspension geometry is easily established, and header clearance is improved over conventional A-frame suspension. In addition, Strange Strut suspension systems offer a reduction in front vehicle weight. Compared to a lightweight tubular A-arm suspension, a savings of at least 15 lbs. can be expected.

BEFORE YOU BEGIN INSTALLATION:

Strange Engineering Aluminum struts and associated brakes are for DRAG RACING ONLY! The basic guidelines for strut geometry are covered, however, a professional and qualified chassis shop should perform the welding to ensure correct alignment of the front end and sufficient weld integrity. In addition, assembly should be performed by a professional & qualified mechanic. Read these instructions thoroughly and save for future reference. If after reading these installation instructions, you have any questions or comments, please do not hesitate to call us.

CUSTOM VALVING:

Strange Struts have a wide range of adjustability; however, if you prefer to have a lighter or stiffer than normal strut valving, we can dyno and change the valving range. Dyno checking is also useful to ensure that older struts are performing properly and to obtain a better idea of how you have adjusted the struts. Contact Strange for pricing and/or additional information in regard to dyno checking and re-valving.

MAINTENANCE:

Regular maintenance would include a yearly inspection of wheel bearings and seals. Check the lower control arm ball assembly for excessive play. Look for any leakage of fluid where the shaft enters the strut body. With the strut at full extension, rock the shaft back and forth. The shaft is least supported in this position so wear would be most evident in this condition. Expect a little play, but anything seeming excessive should be sent in for inspection. Also, check all fasteners to be sure they are torqued to proper specifications.

VEHICLE TRANSPORT:

Limiting chassis movement while trailering is very important. An unsecured race car will experience the same mileage as the tow vehicle. A fifty mile drive to the track, and the car's struts have already experienced two hundred passes. The situation is even worse considering these are bumpy passes. Not securing the struts could drastically shorten the life of the internal components causing premature rebuilding.

INSTALLATION, ASSEMBLY & SERVICE INSTRUCTIONS FOR SINGLE & DOUBLE ADJUSTABLE ALUMINUM STRUTS

STRUT OPTIONS			
KIT PART #	STROKE (with bump stop installed)	ADJUSTABILITY	MOUNTING OPTIONS
S3502STRPR	2.00 in	Extension	Eye Mount
S3502DBL	2.00 in	Extension & Compression	Eye Mount
S3510STRPR	2.00 in	Extension	Stud Mount
S3510DBL	2.00 in	Extension & Compression	Stud Mount



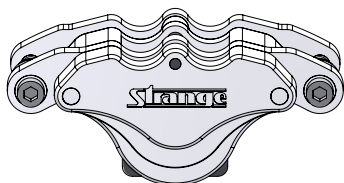
10" & 11" PRO RACE FRONT CARBON BRAKE KITS

are available for lightweight and heavy-duty brake kit options



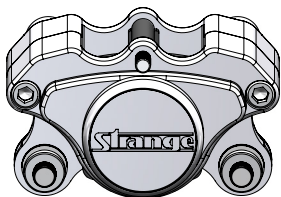
2-PIECE ROTOR KITS

are available for all brake kit options



Light Weight Brake Caliper Kit Option

- Single Piston Caliper
- Designed for spindle mount wheels utilizing integrated hub assembly
- Only one large nut holds the wheel to the strut. This system is used primarily in Pro Stock, Pro Modified, or Comp. Eliminator cars. It allows the strut to be mounted 11/16" closer to the wheel compared to the five lug hub mount type. Due to the limited size of the brakes, this system should only be used with vehicles deploying a parachute. Otherwise, premature pad wear and rotor warpage may occur.



Medium Duty Brake Caliper Kit Option

- 2 Piston Caliper
- Typically for five lug bolt-on style wheels
- Medium duty is recommended for vehicles weighing up to 2,600 lbs
- Typically 4.75" bolt circles
- 4.50" bolt circle hubs available upon request



Heavy Duty Brake Caliper Kit Option

- 4 Piston Caliper
- Typically for five lug bolt-on style wheels
- Heavy duty brakes are recommended for vehicles exceeding 2,600 lbs.
- Typically 4.75" bolt circles
- 4.50" bolt circle hubs available upon request

ASSEMBLY & SERVICE INSTRUCTIONS FOR SINGLE & DOUBLE ADJUSTABLE ALUMINUM STRUTS

Common Components Between All Kits			
ITEM#	PART#	QTY	DESCRIPTION
1	F1282	10	3/8"-24 "Jet" Nut
2	S3400AC	2	Male Clevis Pin
3	S3400AD	1	L.H. Lower Control Arm End
4	S3400AE	1	R.H Lower Control Arm End
5	S3400H	2	Dorman Nut
6	S3400J	2	Stamped Retainer
7	S3400K	2	Dorman Key Washer
8	S3400L	4	3/32" x 1-1/4" Cotter Pin
9	S3400M	2	Thrust Bearing
10	S3400N	4	Thrust Bearing Race
11	S3400X	2	Spirolok
12	S3400Y	2	Lower control arm end spherical bearing
13	S3400Z	2	5/8"-18 Castle Nut
14	S3402B	2	Stainless Steel Strut Spindle
15	S3402C	2	Forged Strut Steering Arm
16	S3402D	2	Forged Strut Spring Seat
17	S3402E	2	Forged Strut Jam Nut
18	S3402F	2	Forged Strut Body
19	S3402G	2	Ball Joint Stud
20	S3402I	2	Steering Arm Washer
21	S3402L	4	Forged Strut Bushing
22	S3402M	2	Flanged Washer
23	S3402N	10	3/8" AN Washer
24	S3402P	2	Vinyl Strut Cap
25	S3402Q	10	3/8"-24 Airframe Bolt
26	S3600W	2	Compression bumper

All Aluminum Struts come from Strange Eng. with all internal components assembled and filled with shock oil. Some of the external components are also assembled for your convenience. Refer to fig's 1,2 & 3 for external component assembly.

⚠ DO NOT DISASSEMBLE INTERNAL COMPONENTS

All internal components are only serviceable by Strange Engineering

ITEM#	TORQUE SPEC (ft-lbs)
1	30-35
13	40-45
19*	60-70

* Apply BLUE LOCTITE to the ball joint threads before installing into the forged aluminum strut body

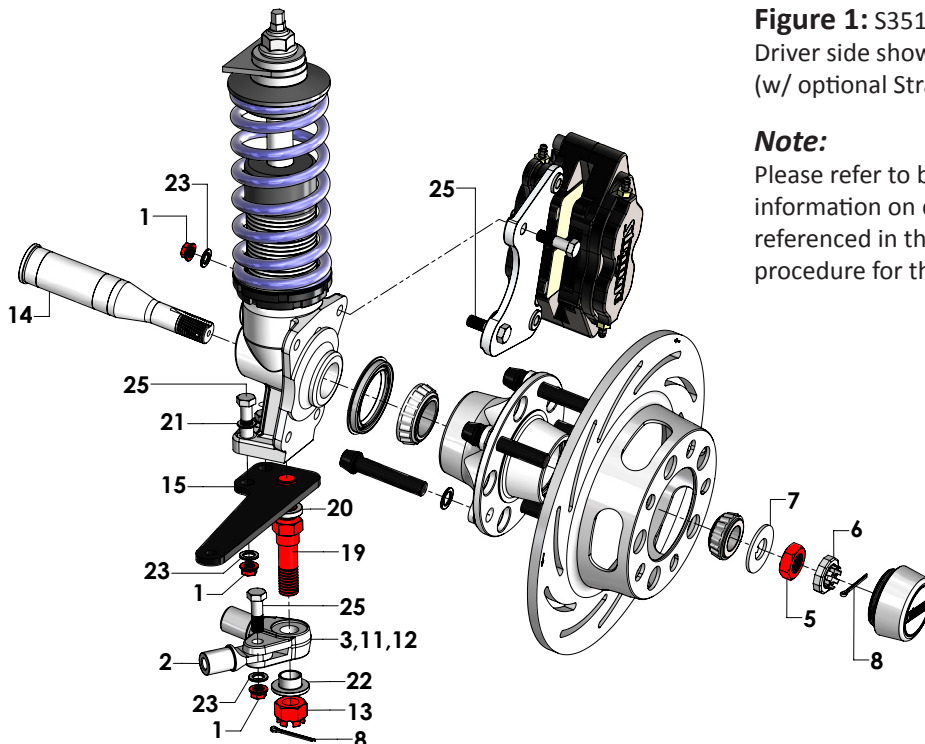


Figure 1: S3510STRPR
Driver side shown
(w/ optional Strange H.D. Brake Kit Option)

Note:
Please refer to brake instructions for information on components not referenced in the figure and for the torque procedure for the spindle nut (5)

ASSEMBLY & SERVICE INSTRUCTIONS FOR SINGLE & DOUBLE ADJUSTABLE ALUMINUM STRUTS

Specific to S3502STRPR			
ITEM#	PART#	QTY	DESCRIPTION
27	S3400D	2	Top Spring Seat w/ Slot
28	S5000KU	2	Spherical Bearing
29	S3800X	2	Strut Top Mount
30	S5000L	4	Snap Ring

Specific to S3502DBL			
ITEM#	PART#	QTY	DESCRIPTION
27	S3400D	2	Top Spring Seat w/ Slot
28	S5000KU	2	Spherical Bearing
29	S3800X	2	Strut Top Mount
30	S5000L	4	Snap Ring
Not shown	S3402DBL	2	Strange Double Adjustable Strut Body
Not Shown	S3602E	2	Cap for Compression Adjuster
Not Shown	S3602F	2	Compression Adjuster Assembly

Figure 2: S3502STRPR

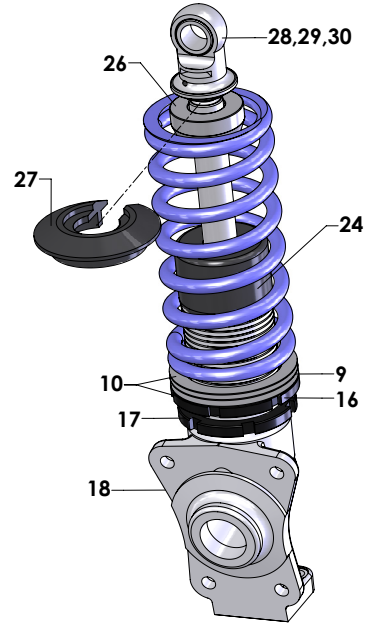
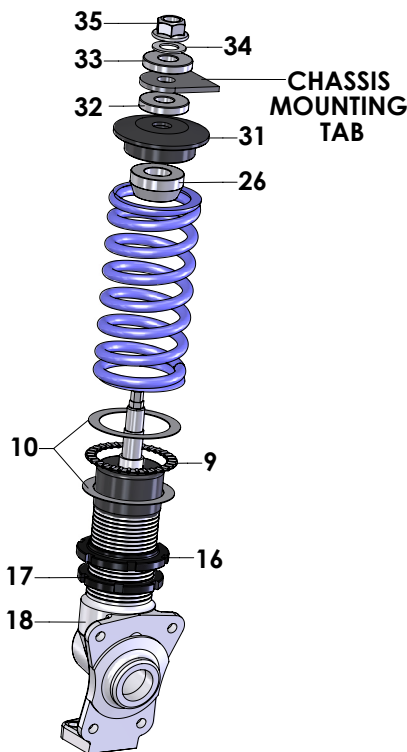


Figure 3: S3510STRPR



Tighten top nut (35) until polyurethane cushions (32,33) just begin to compress. This will allow strut to pivot slightly without binding or having a sloppy fit. **DO NOT USE AN IMPACT WRENCH TO TIGHTEN THE TOP NUT.** Damage to the adjuster or the internals may occur. The proper way to tighten the top nut is to thread the nut on as far as possible by hand, then hold the top of the piston rod with a 7/16" wrench and finish tightening the nut. **DO NOT HOLD ON THE ADJUSTER WHEN TIGHTENING THE NUT.**

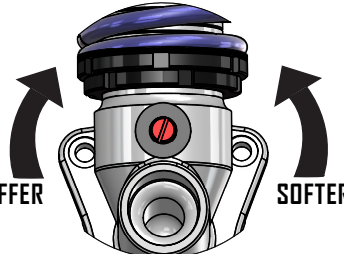
Specific to S3510STRPR			
ITEM#	PART#	QTY	DESCRIPTION
31	S3403B	2	Top Spring Retainer
32	S3403C	2	1.875" O.D. Plastic Spacer
33	S3403D	2	1.75" O.D. Plastic Spacer
34	S3403E	2	11/16" I.D. Flat Washer
35	S3403G	2	5/8"-18 Flanged Locknut

Specific to S3510DBL			
ITEM#	PART#	QTY	DESCRIPTION
31	S3403B	2	Top Spring Retainer
32	S3403C	2	1.875" O.D. Plastic Spacer
33	S3403D	2	1.75" O.D. Plastic Spacer
34	S3403E	2	11/16" I.D. Flat Washer
35	S3403G	2	5/8"-18 Flanged Locknut
Not Shown	S3402DBL	2	Forged Strut Body
Not Shown	S3602E	2	Cap
Not Shown	S3602F	2	Adjuster Assembly

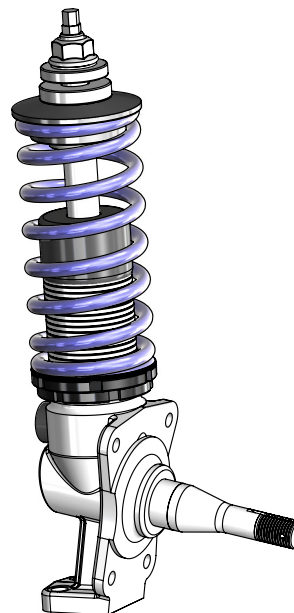
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FOR
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Figure 3: Strut Adjustments

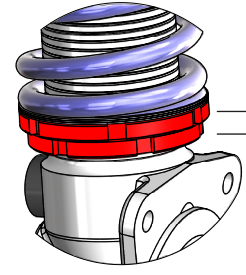
Compression Adjustment



- 13 Positions (12 "clicks")
- slotted screw driver to adjust
- not adjustable on single adjustable struts

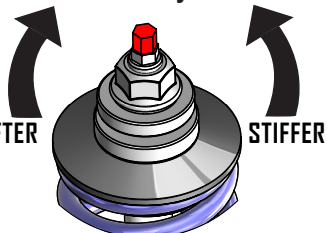


Ride Height Adjustment



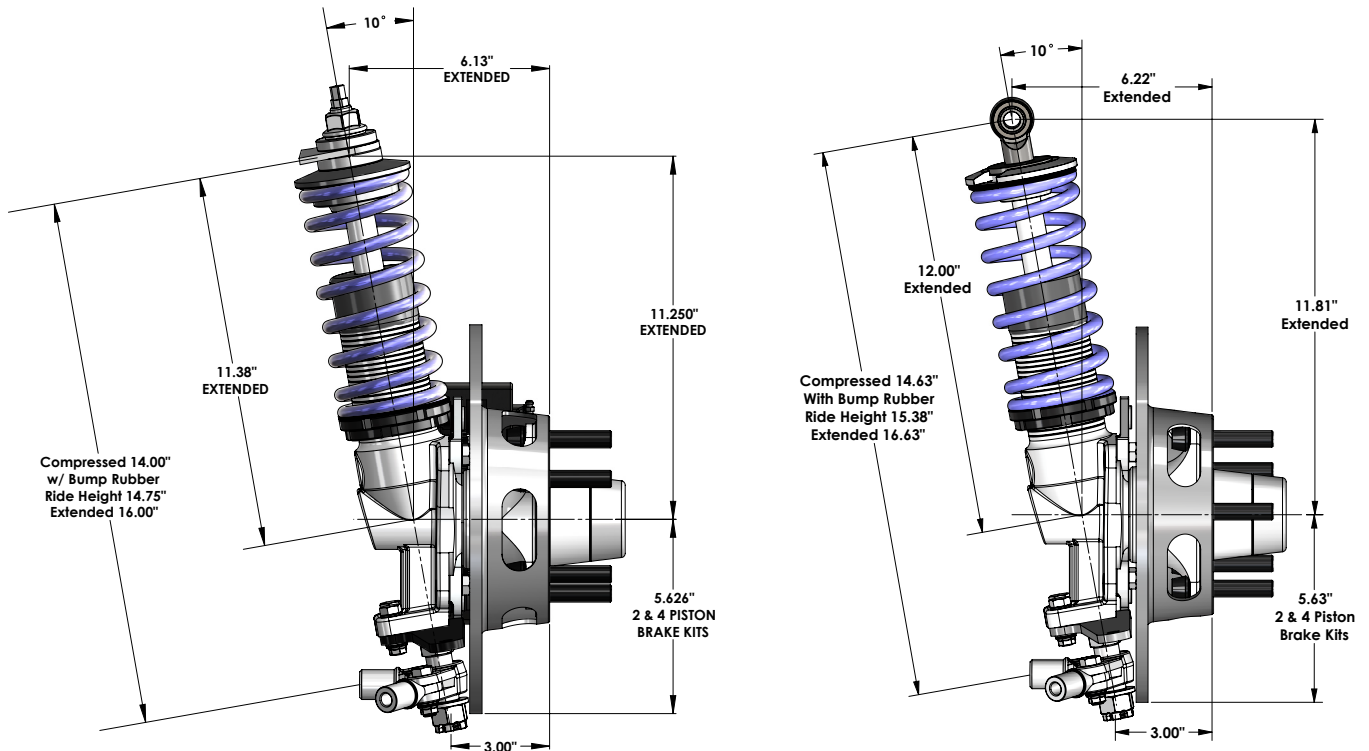
Adjuster
Jam Nut

Extension Adjustment



- $\frac{3}{8}$ " Hex Knob
- no "clicks"
- 2- $\frac{1}{2}$ Turns Maximum
- **Do not force adjuster**

Figure 4: Strut Dimensions Stud Mount & Eye Mount



ASSEMBLY & SERVICE INSTRUCTIONS FOR SINGLE & DOUBLE ADJUSTABLE ALUMINUM STRUTS

WELDING

The tube adapters and control arm tubes are manufactured from 4130 chromoly steel. The only welding method we recommend is TIG welding.



WARNING - IT IS NOT RECOMMENDED TO USE STRUT AS A WELDING FIXTURE SERIOUS INTERNAL DAMAGE MAY OCCUR.

If no other option is available be sure to attach the ground clamp to the chassis as close as possible to the area being welded. Before final welding the front end should be mocked up by tack welding the assembly together. Install the strut without the spring and bump rubber and fully extend and compress to ensure that there is not any binding with any of the rod ends or spherical bearings. Once proper alignment is verified completely weld all mounts and lower control arms by plug welding and by welding 360 deg. around tube.

FRONT END GEOMETRY

Suggested parameters: **Caster** 6°-10°

Toe in 1/16" total measured at the wheels

Camber 0°

Kingpin angle 10° (built into the strut)

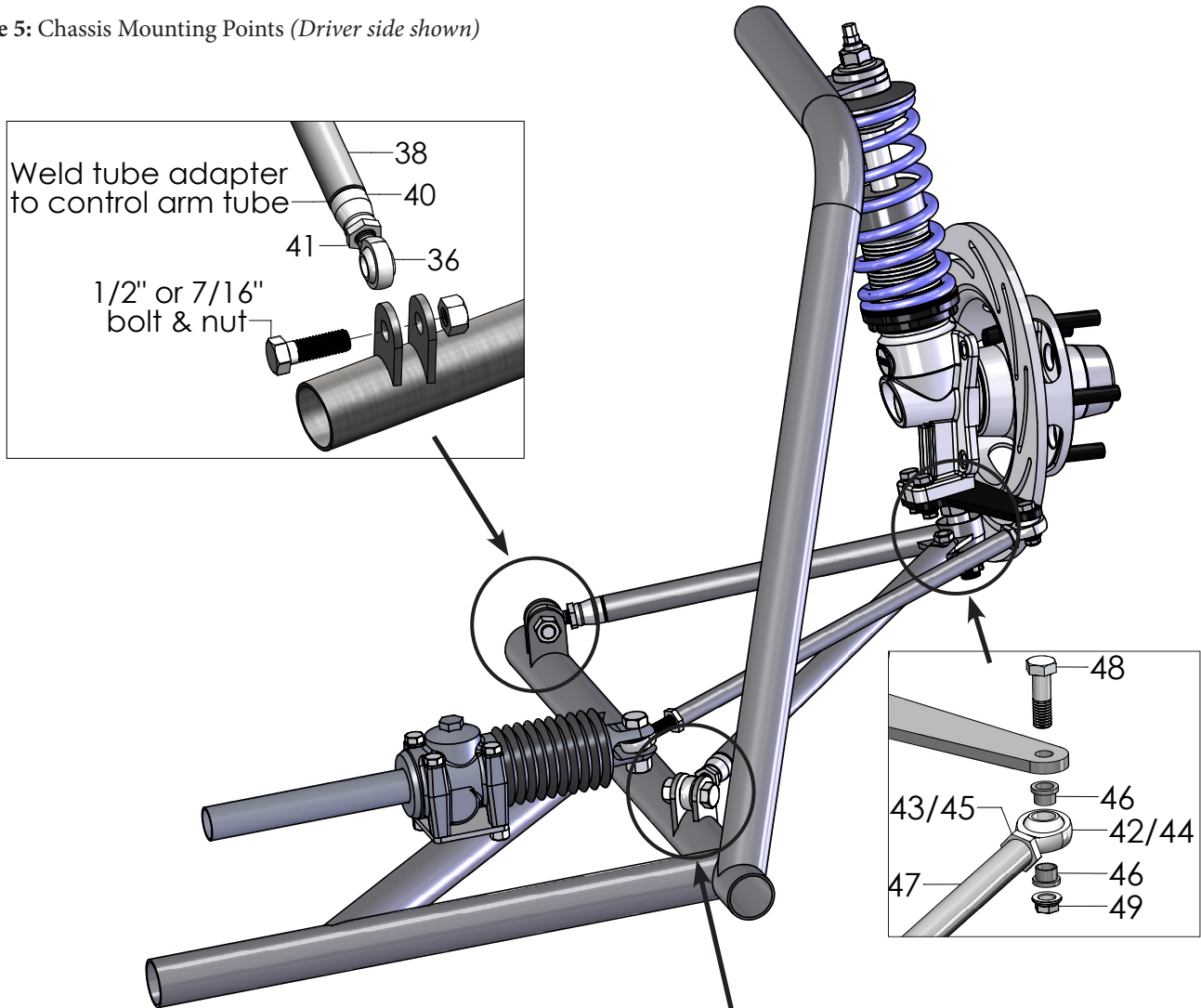
- When setting up the top mounting location on the chassis the strut should be at ride height using the information in Figure #4. For example, both the stud mount and the eye mount strut have 2" of stroke, therefore to set them at ride height they should be fully compressed and then extended by 3/4".
- There is a left hand (3) and a right hand (4) lower control arm end. Place the end assemblies on a flat surface with the solid weld end angled upward. The solid weld ends go to the rear of the vehicle, the pivoting ends to the front.
- The mounting points on the frame for the lower control arms are as follows. The rear lower control arm should NEVER be attached to the frame in-line or in front of the strut spindle shaft. It should be mounted as far towards the back of the vehicle as practical or approximately 1-3/4" behind the strut spindle shaft. When viewed from the front of the car, the rear lower control arm should angle 5 deg. (+/-5 deg.) down going from the strut towards the center of the car.
- The mounting point for the front lower control arm should be about 14" in front of and 1/4" lower than the rear lower control arm mounting point. Both front and rear lower control arms can be cut to adjust installed length depending on geometry required, frame design, track width, etc.
- When mounting the steering rack it should be positioned so that the steering tie rods are parallel to the plane of the lower control arms. This will provide for the minimum amount of bump steer. The rod end connected to the strut steering arm may mounted to the top or bottom of the steering arm to help accomplish this. Check to be sure that wheel clearance is not a problem.
- The optional tie rod kit is furnished with two pieces of 5/8" O.D. x 0.120" wall x 12" long 4130 chromoly tubing to be used for the tie rod. It can be cut to the desired length and then must be tapped with a 7/16"-20 RH thread in one end and a 7/16"-20 LH thread in the opposite end.

Optional Lower Control Arm Kits:			
		▪ S3420 - 7/16 I.D. Rod Ends	▪ S3421 - 1/2" I.D. Rod Ends
ITEM#	PART#	QTY	DESCRIPTION
36	R2108	4	1/2"-20 x 1/2" Bore Rod End - RH (included in S3421)
Not shown	R2207	4	1/2"-20 x 7/16" Bore Rod End - RH (included in S3420)
37	S3752A	2	7/8" dia. x 0.058" wall -18" long Tube
38	S3752B	2	1" dia. x 0.058" - 12" long Tube
39	S3752C	2	Tube adapter 1/2"-20 x 7/8"
40	S3752D	2	Tube adapter 1/2"-20 x 1"
41	S3752E	4	1/2"-20 Jam Nut RH

Optional Steering Tie-Rod Kit: S3447			
ITEM#	PART#	QTY	DESCRIPTION
42	R2107	2	7/16"-20 x 7/16" Bore Rod End - RH
43	S3434B	2	7/16"-20 Jam Nut RH
44	R2105	2	7/16"-20 x 7/16" Bore Rod End - LH
45	S3434D	2	7/16"-20 Jam Nut LH
46	S3434C	4	7/16" OD x 3/8" ID Bushing
47	S3434A	2	5/8 OD x 0.120" wall x 12" Tie Rod
48	B1301G	2	3/8"-24 x 1-1/2" long steering arm bolt
49	F1282	2	3/8"-24 "Jet" Nut

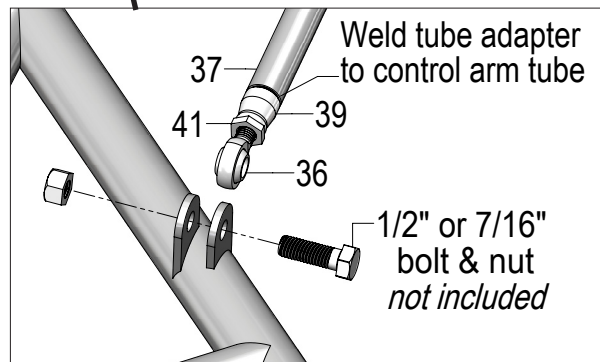
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Figure 5: Chassis Mounting Points (Driver side shown)



Warning- Racing is hazardous
Strange Engineering struts are for
legal drag racing only!

Disclaimer of Warranty – Strange Engineering reserves the right to make changes in design and to add to or improve on its product without incurring any obligation to install the same on products previously manufactured. Purchasers using Strange Engineering racing components and equipment, any and all inventory services, purchasers acknowledge that due to the differing conditions and circumstances under which all equipment and parts are installed and used, purchasers are not relying on Strange Engineering Co. skill or judgement to select or furnish the proper part or equipment. Purchasers expressly affirm they are relying upon their own skill or judgement to select and purchase suitable goods. Strange Engineering Co. makes no warranties whatsoever, expressed or implied, oral or written, to purchasers. There is no warranty of merchantability made to purchasers. Strange Engineering Co., further excludes any implied warranty of fitness with respect to racing and equipment, any and all inventory and service.



Forged Aluminum Struts Force vs. Velocity

