ridetech

INSTALLATION INSTRUCTIONS

Part # 11539598

Front TruTurn Coil-Over System Hub Spindles

1963-1982 Corvette

NOTE: The OEM front brakes are not compatible with this kit.

***Coil-Overs purchased separate**

www.ridetech.com
812.482.2932

Please Read And Understand All Instructions And Warnings Prior To The Installation Of This Product.

Congratulations on your new Ridetech product! It's an honor that you've selected the Ridetech brand to upgrade your ride. Our products are developed around quality and performance without compromise. We're confident you'll have many years (and miles) of pure driving enjoyment.
Thank you for choosing Ridetech!

Road Map

PRE-INSTALLATION NOTES

UPPER CONTROL ARMS BALL JOINT POSITION

Your new Ridetech upper control arms feature two ball joint positions designed to provide a wide range of camber adjustment for your intended driving style.

If you intend to do mostly street driving, the ball joints should be installed in the outer position (Figure A). The arms ship from Ridetech with the ball joints preinstalled in this position.

If you plan to track or autocross your vehicle and require more negative camber, the ball joints should be installed in the inner position (Figure B).

To change the ball joint position, remove the 1/4" nuts, washers and bolts. Remove the ball joint and rotate to the desired position. Reinstall the bolts, washers and nuts and torque to 9 ft-lbs.

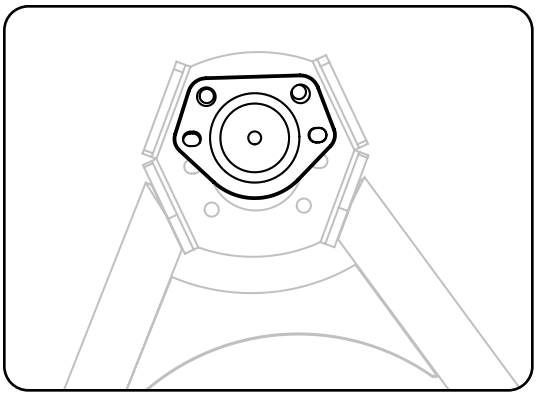


Figure A

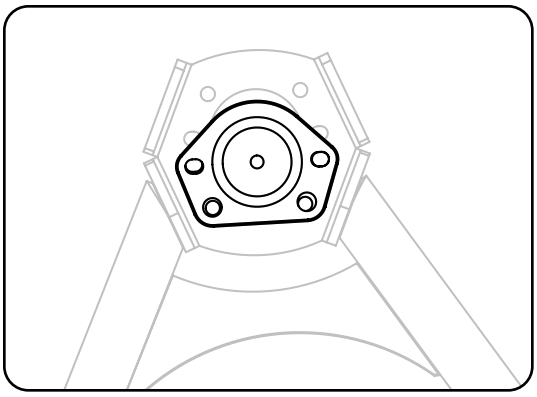


Figure B

COMPONENTS LISTING

Item #	Part #	Description	Qty
Upper Control Arms			
1	90001161	Driver Upper Control Arm (Shown)	1
-	90001163	Passenger Upper Control Arm	1
2	90000908	Upper Ball Joint - Proforged # 101-10015	2
3	90003375	Caster Adjustable Upper Control Arm Shaft	2
4	70011955	Caster Slug	4
5	70010759	Outer Delrin Bushing, 2" OD	4
6	70010827	Delrin Bushing, 1.75" OD	2
7	70010826	Delrin Bushing, 1.5" OD	2
8	90002737	Aluminum T-Washer	4
9	90003934	Washer; 1.70 OD	2
10	90003933	Washer; 1.45 OD	2
11	99622005	5/8 - 18 Thin Locknut	4
12	99251022	1/4-20 X 1" Hex Cap Screw, Black	8
13	99253012	1/4 SAE Flat Washer, Black	8
14	99252006	1/4-20 Nyloc Nut, Black	8
Lower Control Arms			
15	90001160	Lower Control Arm - Driver (Shown)	1
-	90001161	Lower Control Arm - Passenger	1
16	90000898	Lower Ball Joint - Proforged # 101-10013	2
17	90002179	Cross Shaft	2
18	70010759	Outer Delrin Bushing, 2" OD	2
19	70010827	Delrin Bushing, 1.75" OD	4
20	70010826	Delrin Bushing, 1.5" OD	2
21	99753005	3/4 SAE Flat Washer	4
22	90000677	Cross Shaft Clamp	2
23	90002062	Aluminum Spacer	4

COMPONENTS LISTING

Item #	Part #	Description	Qty
Steering Components			
24	70015750	Hub Spindle	2
25	90003535	Steering Arm Threaded Insert	4
26	90003000	Steering Arm	1
27	90002170	Drag link Adapter	1
28	90002652	Tie-Rod Adjuster	2
30	90003053	Inner Tie-Rod End	2
31	90009933	Drag link Adapter Stud	2
32	90009931	Outer Tie-Rod Stud	2
33	90001582	Outer Tie-Rod Heim End	2
34	99433002	7/16" Flat Washer (Optional)	2
35	99501026	1/2-13 X 2 1/4 HCS GR8	2
Caliper Brackets			
37	90003548	Caliper Bracket - Driver (Shown)	1
-	90003547	Caliper Bracket - Passenger	1
38	90003549	Caliper Bracket Spacer	4

HARDWARE

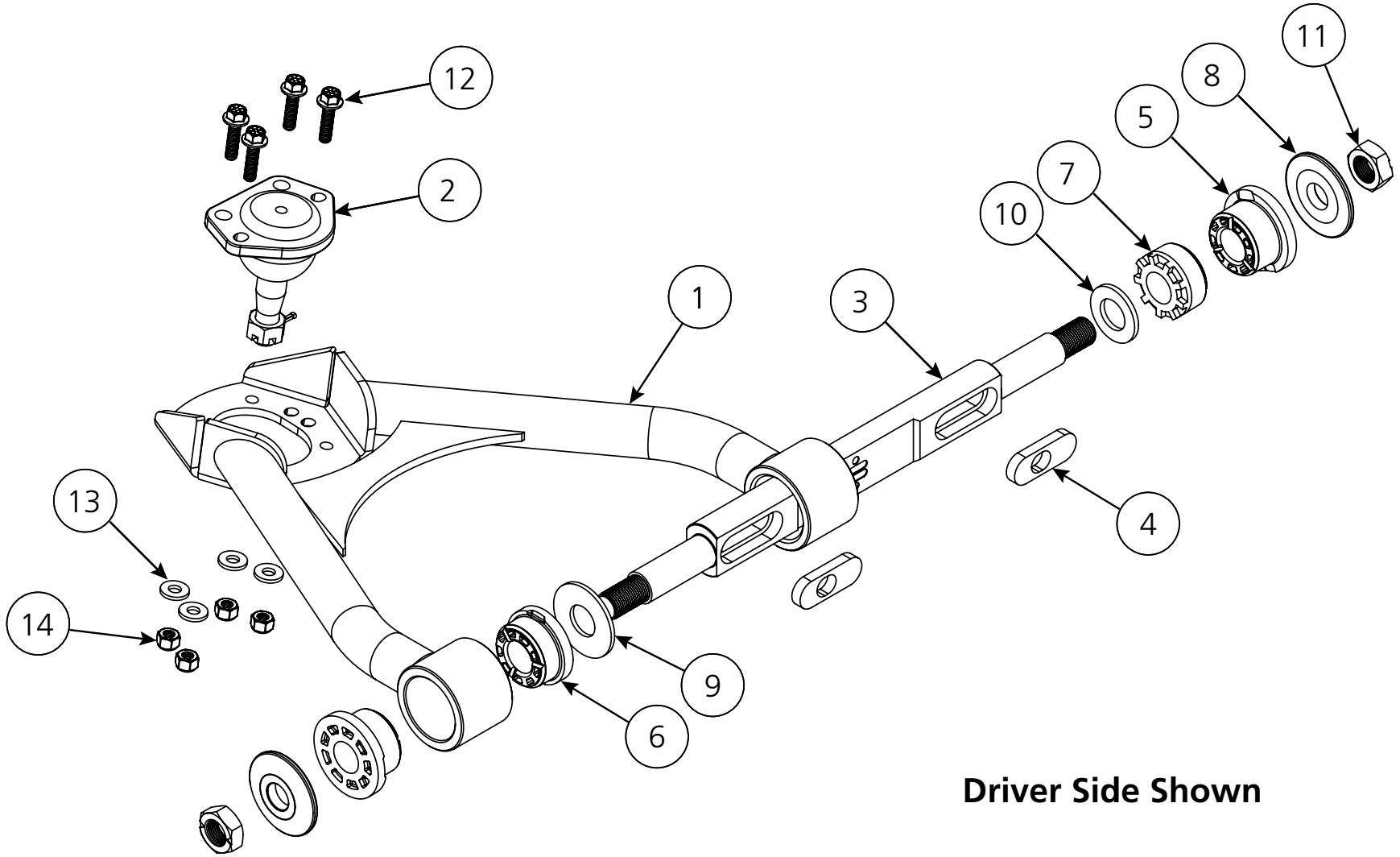
Hardware Kit: 99010098			
Item #	**Part #**	**Description**	**Qty**
UPPER CONTROL ARM TO FRAME			
-	99432010	7/16"-14 Nyloc Nut	4
-	99433004	7/16" USS Flat Washer	4
LOWER CROSS SHAFT TO CONTROL ARM			
41	72000257	1.5" OD Flat Washer	2
42	99163001	2.0" OD Flat Washer	2
43	99622005	5/8"-18 Top Lock Nut	4
LOWER CROSS SHAFT TO FRAME			
44	99431015	7/16"-20 x 2 1/4" Hex Bolt	4
45	99433005	7/16" SAE Flat Washer	4
46	99432007	7/16"-20" Nyloc Nut	4
47	99561001	9/16"-18 x 2 1/2" Hex Bolt	2
48	99562001	9/16"-18 Nyloc Nut	2
49	99566003	9/16" SAE Flat Washer	2
SHOCK TO LOWER CONTROL ARM			
50	99501005	1/2"-13 X 3 1/2" Hex Bolt	2
51	99502009	1/2"-13 Nyloc Nut	2
52	99503014	1/2" SAE Flat Washer	4
STEERING ARM TO SPINDLE			
-	99502005	1/2"-20 X 2" Hex Bolt (not used)	2
-	90002263	Red Loctite	1
DRAG LINK ADAPTER			
45	99433005	7/16" SAE Flat Washer	4
53	99502010	1/2"-20 Lock Nut	2
54	99503001	1/2" SAE Flat Washer	4
55	99432005	7/16"-20 Castle Nut	2
56	99952002	3/32" Cotter Pin	2
STEERING LINKAGE			
55	99432005	7/16"-20 Castle Nut	2
56	99952002	3/32" Cotter Pin	4
57	99622003	5/8"-18 Lock Nut	2
58	99800003	5/8"-18 LH Jam Nut	2
59	99800002	5/8"-18 RH Jam Nut	2
STEERING STOP ADJUSTMENT			
60	99371081	3/8"-16 x 1 1/4" Button-Head Screw	2
61	99373003	3/8" SAE Flat Washer	16
62	99373005	3/8" Split Lock Washer	2

HARDWARE

Hardware Kit: 99010230			
Item #	**Part #**	**Description**	**Qty**
Hub To Spindle			
39	99121020	M12-1.75 X 40 SHCS, BLACK	6
Steering Arm To Spindle			
35	99501026	1/2-13 X 2 1/4 HCS GR8	2
-	99501043	1/2-13 X 2 HCS GR8 (not used)	2
40	99503014	1/2 SAE FLAT WASHER GR8	4
	90002263	Red Loctite, 1ml Tube	1

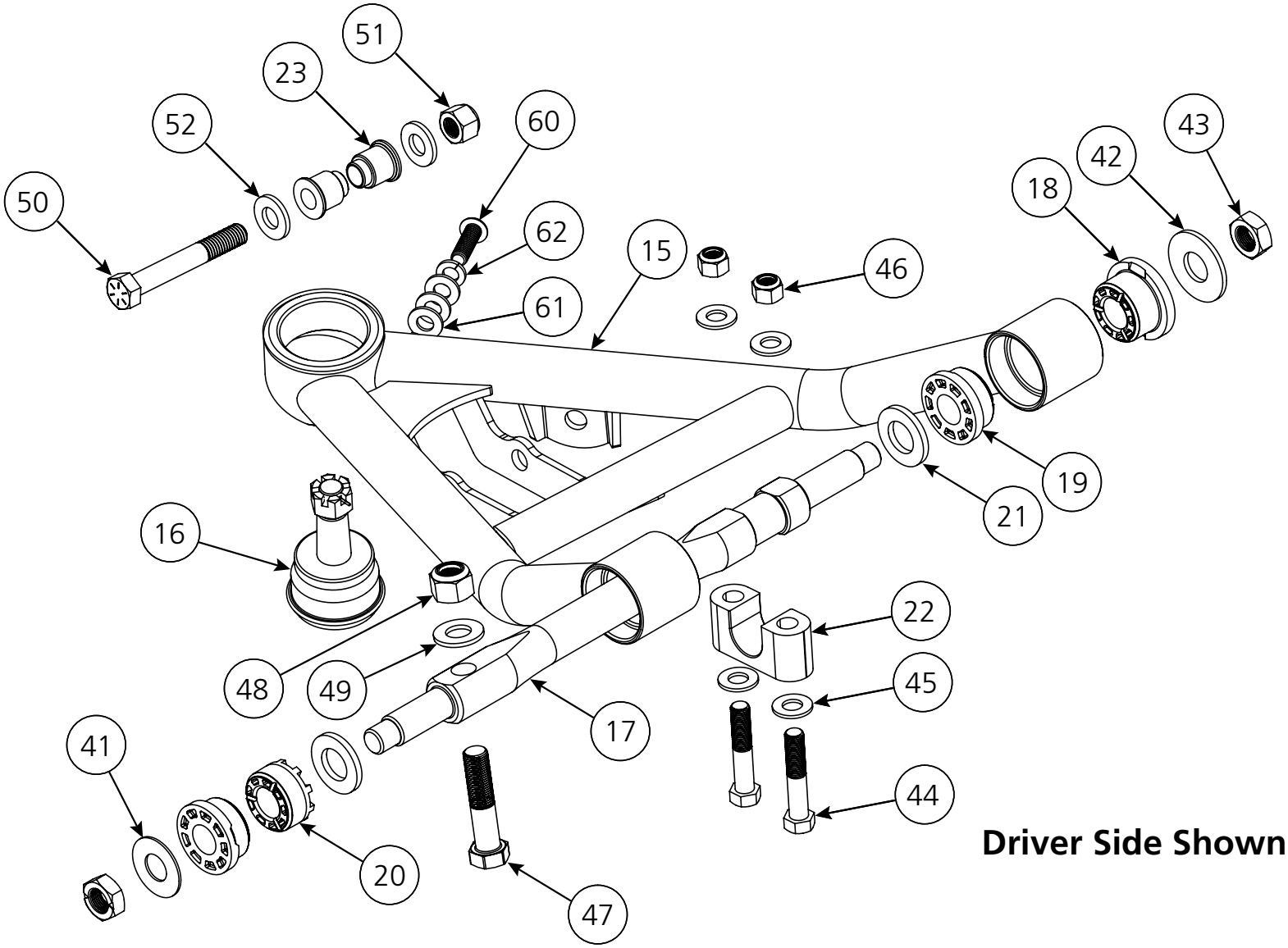
Hardware Kit: 99010239			
Item #	**Part #**	**Description**	**Qty**
Bracket To Caliper			
63	99141007	M14-2.0 x 45MM HEX HEAD	4
64	99143001	M14 Flat Washer; Grade 10.9	4
Bracket To Spindle			
65	99501062	1/2-13 X 1 1/4" HCS GR 8	2
40	99503014	1/2 SAE FLAT WASHER GR8	2
66	99501075	1/2-13 X 1 1/4" FHSCS GR8	4
67	99503017	1/2" MIL SPEC WASHER	6
Shim Pack			
68	99623005	5/8 MIL SPEC WASHER (THICKNESS 0.013-0.019)	8
69	99623006	5/8 MIL SPEC WASHER (THICKNESS 0.028 - 0.036)	8

EXPLODED VIEW
UPPER CONTROL ARM



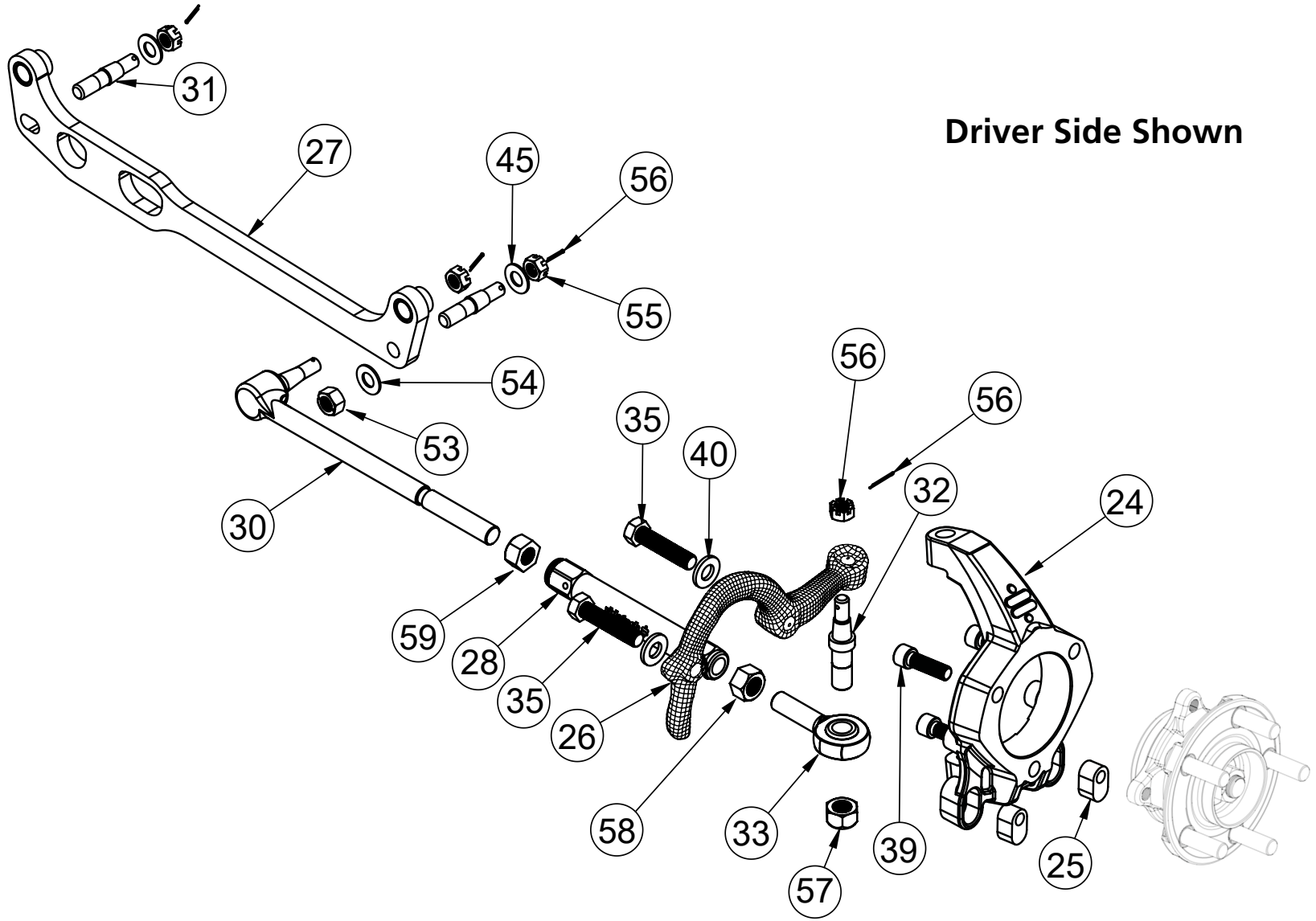
Driver Side Shown

EXPLODED VIEW
LOWER CONTROL ARM

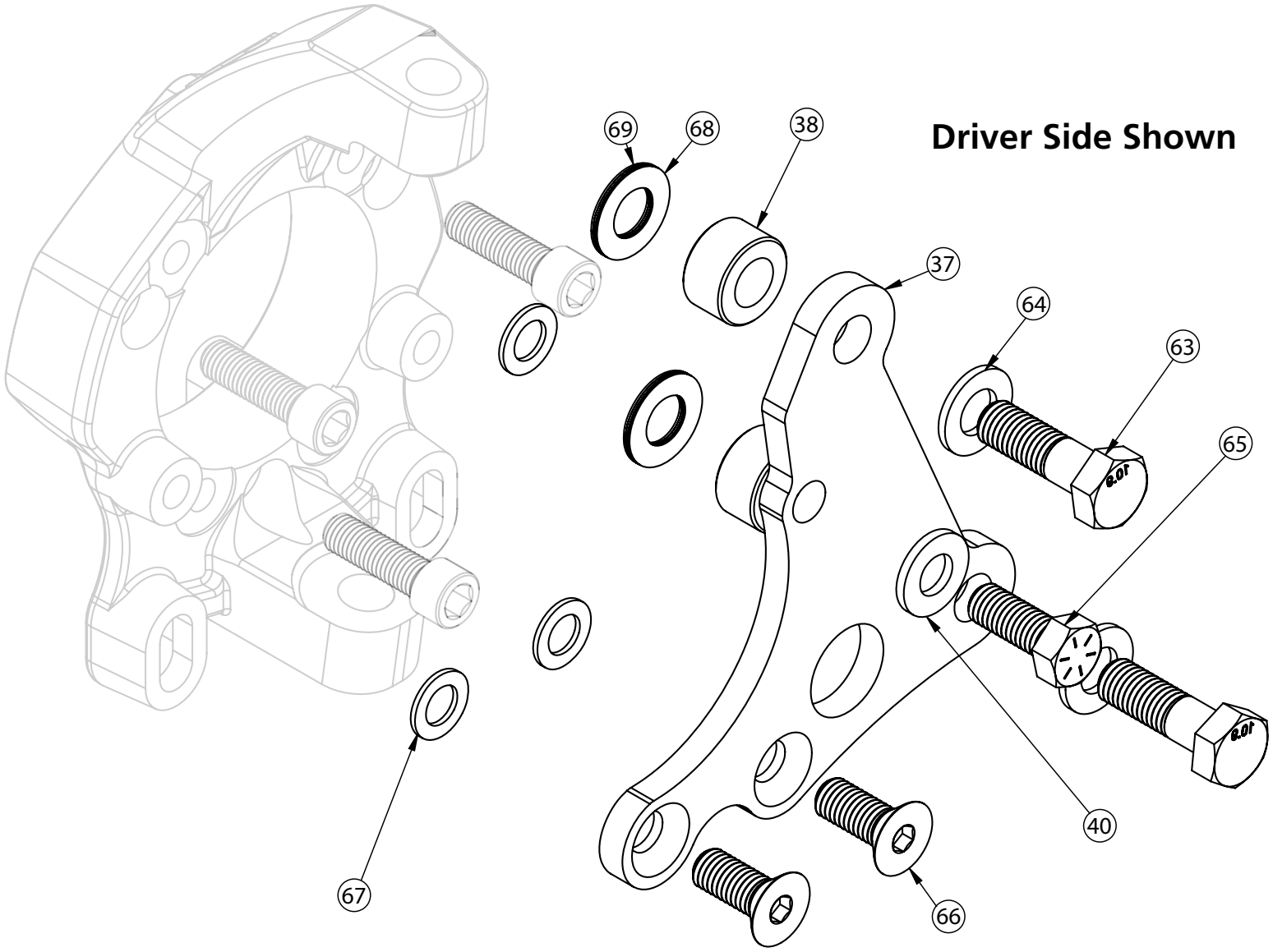


Driver Side Shown

EXPLODED VIEW
STEERING COMPONENTS



EXPLODED VIEW
CALIPER BRACKET



Caster Tutorial

Caster Defined:

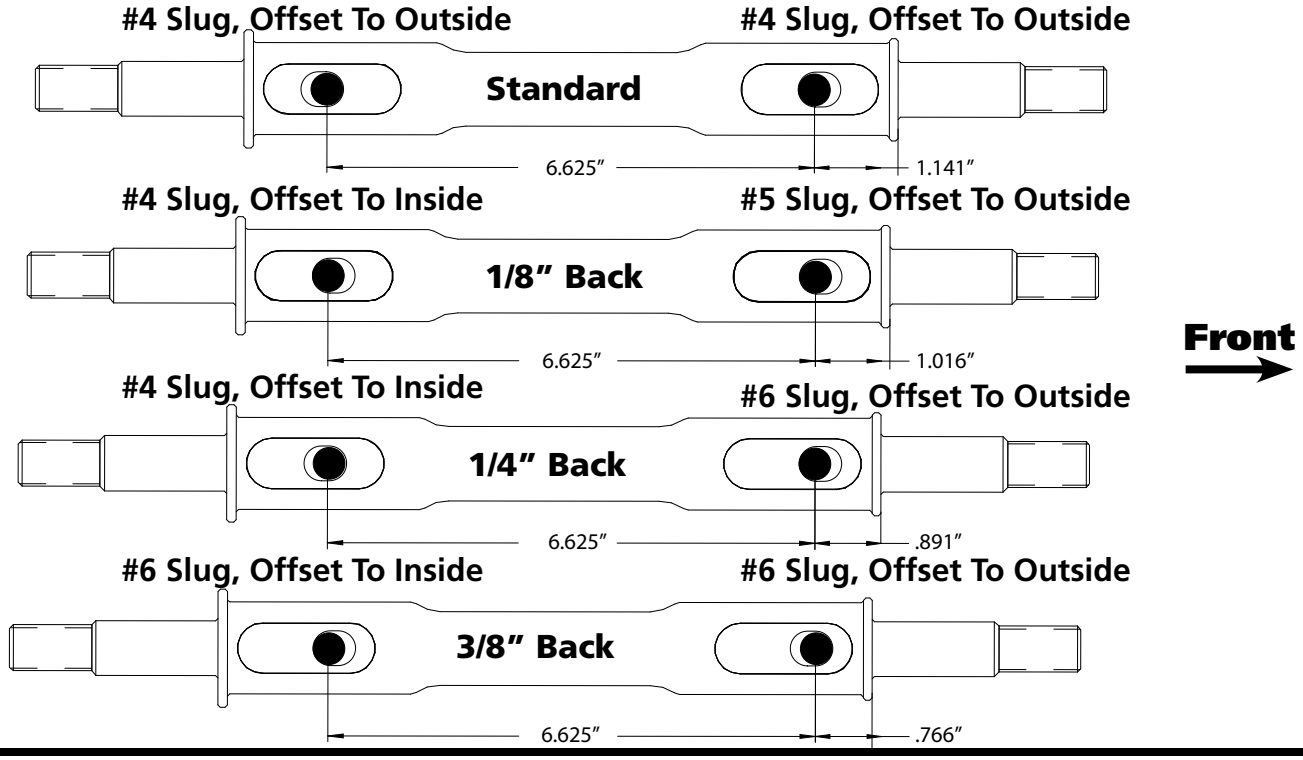
To understand caster, you need to picture an imaginary line that runs through the upper ball joint and extends through the lower ball joint. From the side view, the imaginary line will tilt forward or backward. The tilting of this imaginary line is defined as caster.

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

Positive caster provides directional stability in your vehicle. 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 will cause the vehicle to wander down the highway.

These StrongArms come equipped with a changeable caster slug setup. This allows you to add or remove caster from the front suspension. The caster slugs supplied in the kit are set up to be centered. 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 slugs listed below can be purchased from Ridetech or your Ridetech dealer. The slugs listed below will be stamped with a "4", "5" or "6".

Centered:	**70011955 (#4)** Supplied with control arms
1/8":	**70011954 (#5)** (2 required)
1/4":	**70011953 (#6)** (2 required)
3/8":	**70011953 (#6)** (4 required)

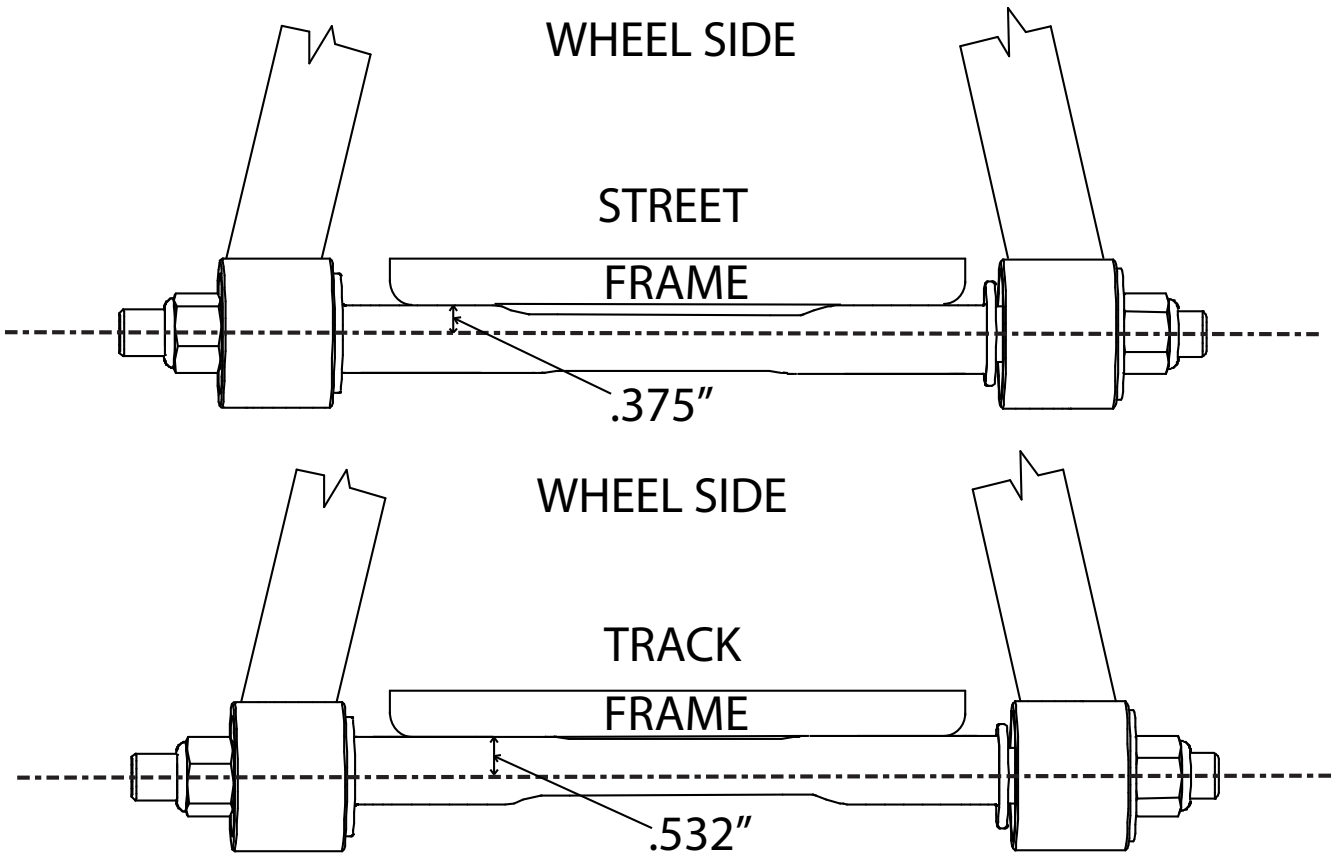


Cross Shaft Positioning

The cross shaft that is used in the upper control arms 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 the Icon faces, simply spin the cross shaft in the control arm.

If you are after a **Street Alignment** bolt the upper control arm to the frame mount with the arm offset to the outside of the car. The Ridetech Icon and Caster Slugs will be facing the wheel.

If a more aggressive **Track or Autocross** alignment is desired, bolt the control arm to the frame bracket with the arm offset to the inside of the car. The Ridetech Icon and Caster Slugs will be facing the engine.



Lower Control Arms

1. Raise the vehicle to a safe and comfortable working height.

2. Remove the entire front suspension from the car. Leave the OEM center drag link in place. The control arms, spindles, and tie rods will all be replaced.

Refer to the Factory Service Manual for the proper disassembly method.

3. Drill out the factory upper shock mounting hole to 3/4". A Unibit works well for this.

4. Position the new lower control arm at the original mounting location in the car. The control arms are marked "D" for Driver and "P" for Passenger. The ball joint pin should be pointing up and the sway bar mount is on the front side of the arm.
The mounting clamp will slide into the machined groove in the cross shaft.
Attach the arm to the frame using (1) 9/16" x 2 1/2" hex bolt, (1) 9/16" nyloc nut, (2) 7/16"x 2 1/4" hex bolts, and (2) 7/16" flat washers.
Torque the 9/16" bolt to **95 ft-lbs**.
Torque the 716" bolts to **70 ft-lbs**.

5. Install the cross shaft washer and 5/8" thin lock nut on each end of the cross shaft.
The front cross shaft thread uses (1) 2" OD flat washer and (1) 5/8" thin lock nut.
The rear cross shaft thread uses (1) 1 1/2" OD flat washer and (1) 5/8" thin lock nut.

NOTE: You only need to tighten the cross shaft nuts enough to create drag on the Delrin bushings. The arm should still move through its travel by hand.

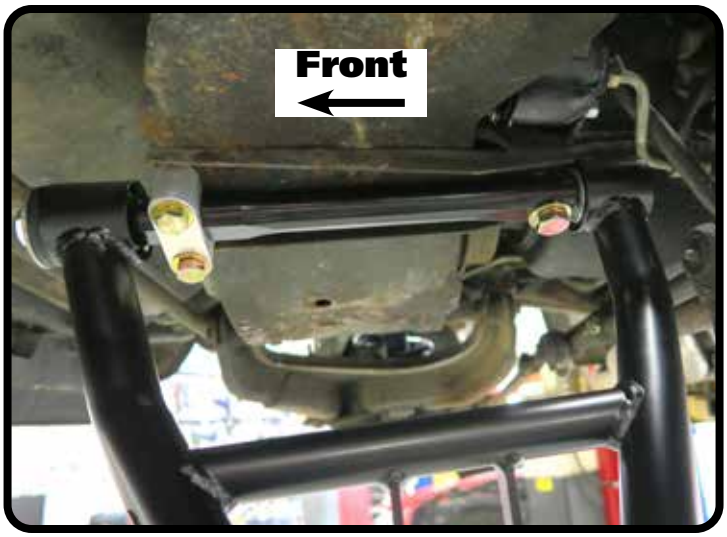


Figure 1

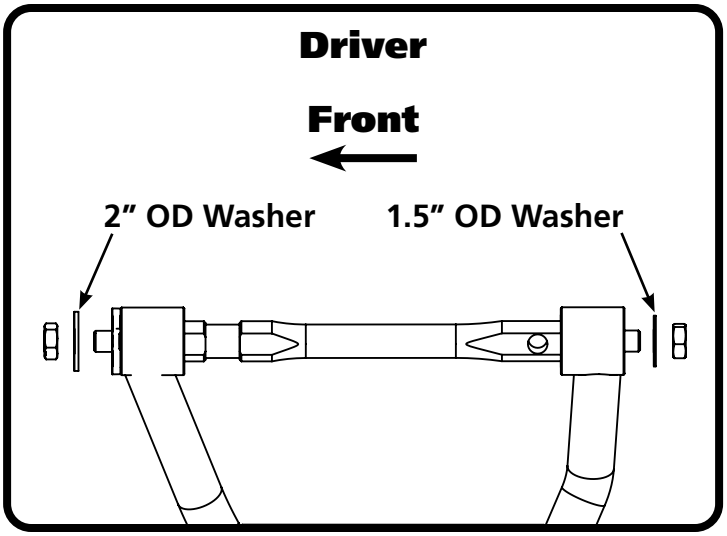


Figure 2

6. Install a T-Washer and 5/8"-18 Locknut on each end of the cross shaft (Figure 3).

Note: You may leave the 5/8" nuts hand tight for now. They will be easier to tighten once the arm is mounted on the car.

7. Rotate the cross shaft to the alignment position that best accommodates your driving style as outlined in "Cross Shaft Positioning" on page 13.

8. Insert the caster slugs into the recessed openings in the cross shaft (Figure 4).

NOTE: If you are using the optional offset caster slugs (purchased separately), they will be stamped with either "5" or "6". Refer to the illustration at the bottom of page 12 for the various caster slug configurations.

9. Install the arm onto the factory frame mount bolts. The offset position of the ball joint should be oriented toward the rear of the car (Figure 5).

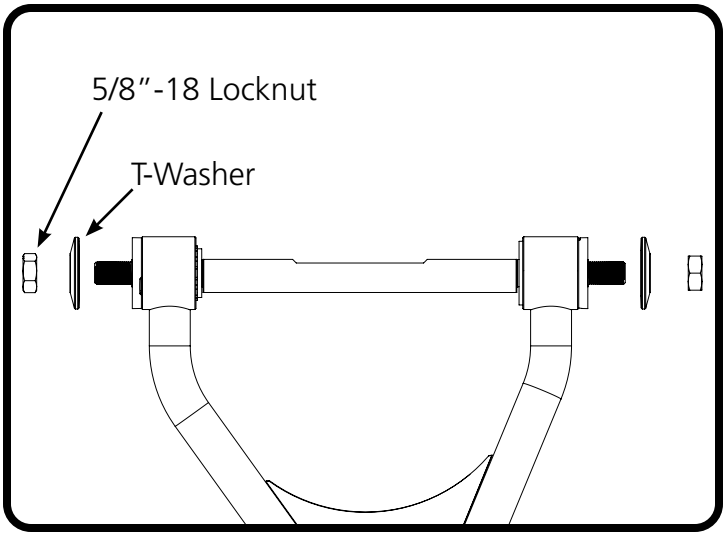


Figure 3

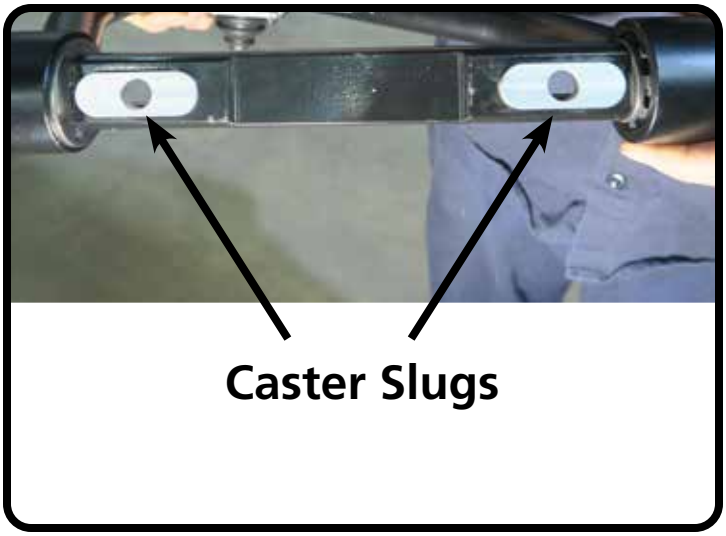


Figure 4

Figure 5

Upper Control Arms

10. Install a 7/16" USS Flat Washer on each mounting bolt, followed by a 7/16"-14 Nyloc nut (Figure 6).

Torque the mounting nuts to 50 ft-lbs.

11 After torquing the arm-mounting nuts, tighten the 5/8" nut on each end of the cross shaft (Figure 7).

NOTE: You only need to tighten the cross shaft nuts enough to create drag on the delrin bushings. The arm should still move through its travel by hand.

12. Install your coil-overs at this time. Refer to the coil-over instructions for assembly.

Once your coil-overs are installed, proceed to step 13 on the next page for Spindle/Hub Assembly.

Figure 6

Figure 7

Spindle/Hub Assembly

13. Position the Ridetech spindle onto the hub/bearing assembly and align the mounting holes in the hub/bearing assembly with the three counter-bored holes in the spindle (Figure 8).

NOTE: The hub assemblies are purchased separately. The ridetech spindle is designed to be used with C5/C6/C7 Corvette hubs. If you do not require a speed sensor, we recommend using C7 hubs. They are stronger and more cost effective. We used Moog 513378 hub assemblies.

14. Apply Loctite to (3) M12-1.75 x 40mm socket-head bolts from the 99010230 hardware kit (Figure 9).

15. Install the three socket-head bolts to attach the spindle to the hub (Figure 10).

Tighten the bolts and torque to **99 ft-lbs**.

Repeat for the other hub & spindle.

Figure 8

Figure 9

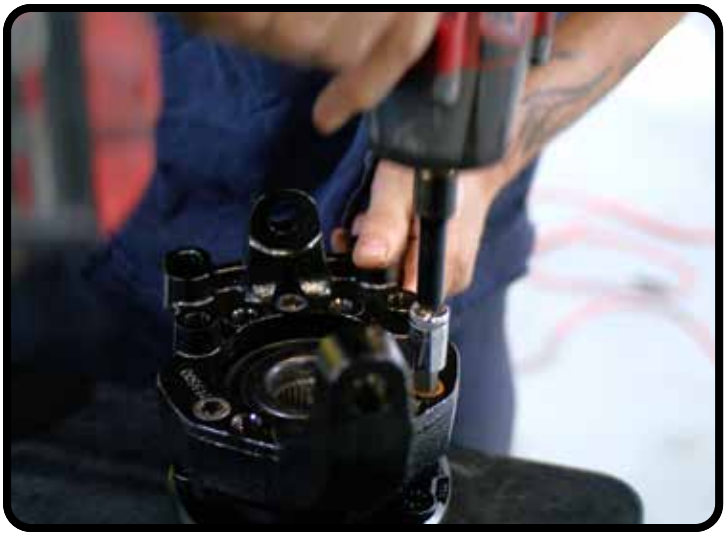


Figure 10

Caliper Brackets

NOTE: We recommend mocking up the brake assembly with clean, dry threads before applying loctite to any threads and torquing for final assembly. See steps 23-24 for installing the caliper mount.

16. Position the caliper bracket on the back side of the spindle. The raised boss on the spindle should align with the large hole in the bracket, and the countersunk holes on the bottom side of the bracket should align with the mounting holes in the spindle (Figure 11).

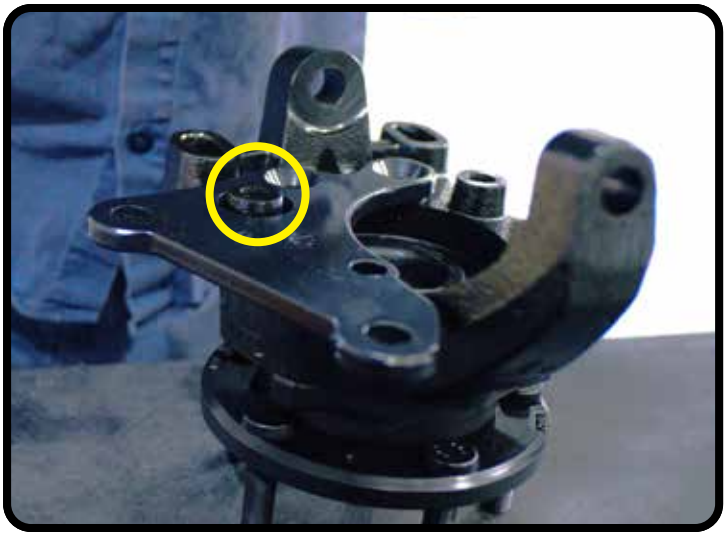


Figure 11

17. Insert a 1/2"-13 x 1.25" flat-head bolt into each of the countersunk holes on the bracket (Figure 12).

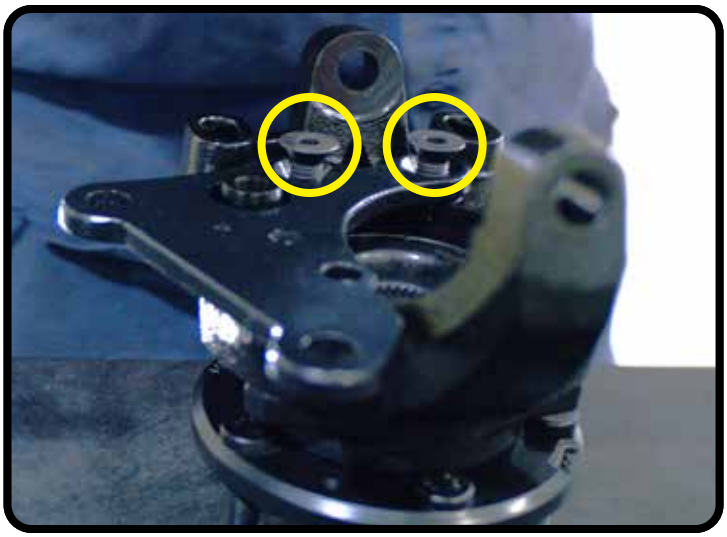


Figure 12

18. Insert a 1/2"-13 x 1.25" hex bolt into the upper mounting hole on the caliper bracket (Figure 13).

Torque the hardware to **75 ft-lbs**.

Repeat on the other spindle.

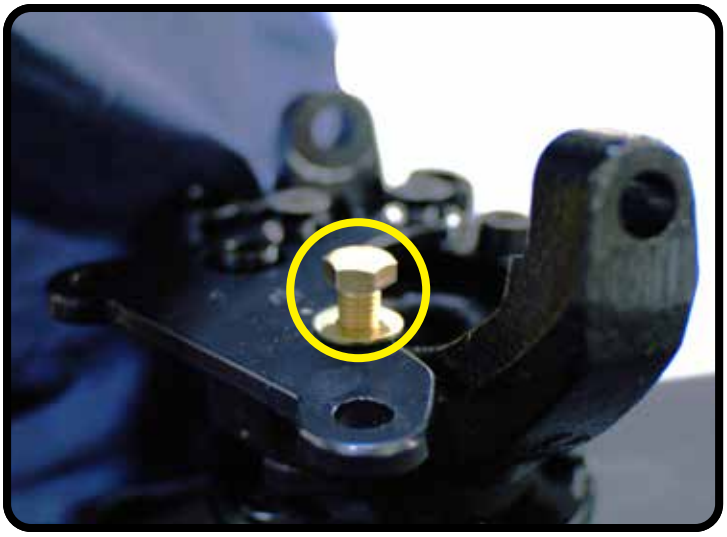


Figure 13

Spindle Installation

19. Position the spindle assembly onto the lower control arm ball joint (Figure 14).

Thread the castle nut onto the lower ball joint but do not tighten yet.

Figure 14

20. Pull the upper control arm down and insert the upper ball joint stud into the top of the spindle (Figure 15).

21. Thread the castle nut onto the upper ball joint and torque to **50 ft-lbs**.

Torque the lower ball joint nut to **65 ft-lbs**.

Figure 15

22. Install and bend the cotter pin for the upper and lower castle nuts (Figure 16).

If necessary, tighten the nut to line up the cotter pin holes.

Repeat steps 19-22 on the opposite side.

Figure 16

Caliper Mount

23. Install the brake rotor on the hub and temporarily secure with a couple of lug nuts (Figure 17).

Figure 17

24. Mount the brake caliper mount to the caliper bracket with (2) M14-2.0 x 45mm bolts and M14 washers. Insert a 90003549 spacer on each bolt, between the caliper bracket and the caliper mount (Figure 18). Torque to **125 ft-lbs**.

You can use feeler gauges to measure the distance between the caliper bracket and rotor to make sure the bracket is centered as much as possible (Figure 19).

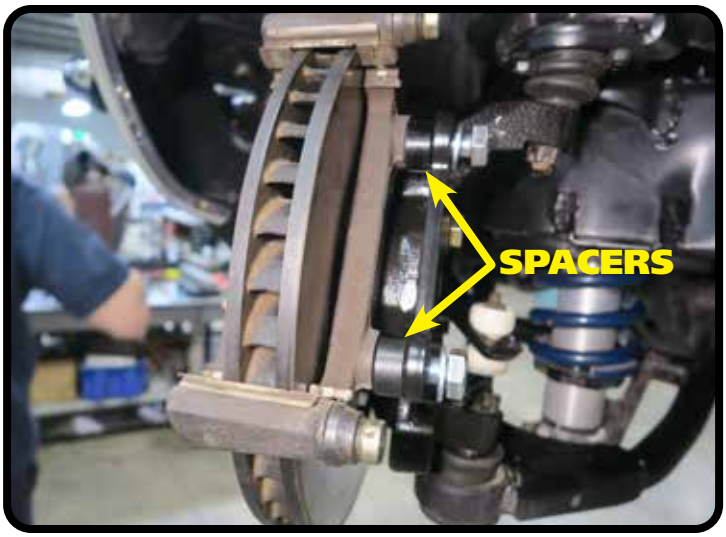


Figure 18

NOTE: This kit includes a set of shims to aid in centering the caliper mount on the rotor. The provided shims are in three different thicknesses (.016", .032", .063").

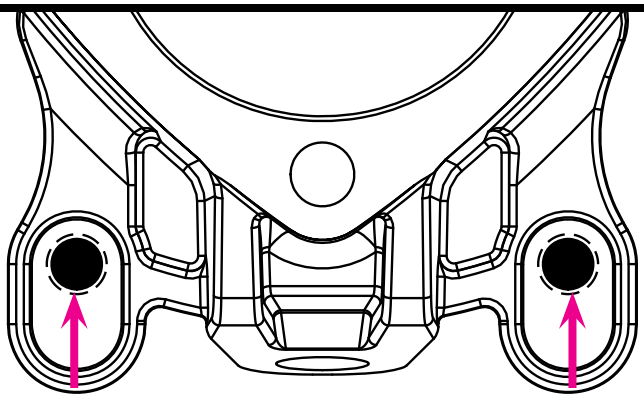
- To push the caliper mount outward, insert 5/8" shim washers between the caliper and the caliper bracket.

To pull the caliper mount inward, insert 1/2" shim washers on the bolts from steps 17 & 18, between the caliper bracket and the spindle.

Figure 19

Steering Arm Installation

25. The threaded steering arm inserts may be inserted in 2 different positions. For this application, we recommend the orientation shown in Figure 20.



THREADED INSERT ORIENTATION

Figure 20

26. Slide the threaded steering arm inserts into the spindle using the recommended orientation illustrated above.

Figure 21

27. Attach the steering arm to the spindle using two 1/2"-13 x 2 1/4" bolts and 1/2" SAE Flat Washers. See Figure 22.
Apply red loctite (supplied) to the bolts.
Torque to **80 ft-lbs**.
Verify that the bolts are sticking through the slugs.

28. Install the brake pads and caliper.

Repeat on the opposite side.

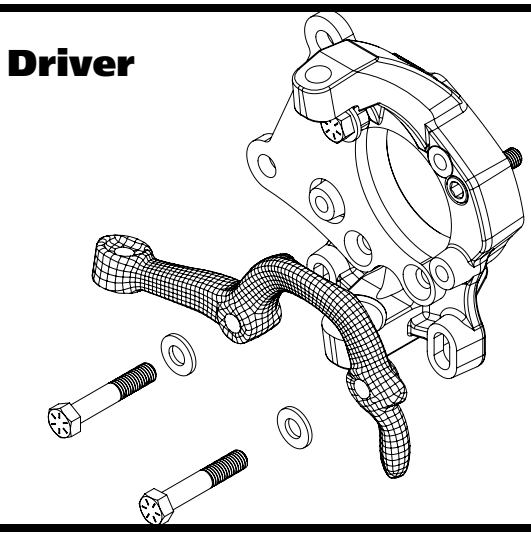


Figure 22

29. Insert the tapered end of the tie rod stud into the taper of the steering arm (Figure 23). Thread the 7/16" castle nut onto the stud. Torque to **35 ft-lbs.** If necessary, tighten to align the cotter pin hole with slot on castle nut. Install the cotter pin.

NOTE: The outer tie rod stud is the LARGER of the tapered studs in the kit.

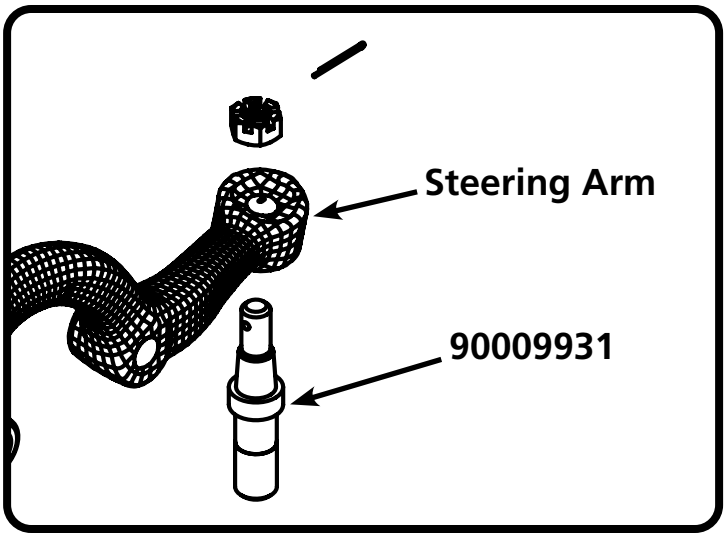


Figure 23

30. Install the tapered drag link stud (B) into the OEM inner tie-rod hole on the OEM drag link (A). Install a 7/16" Flat washer (C) onto the threads. Thread a 7/16" castle nut (D) onto the threads to hold it in place (Figure 24). **Do not tighten the castle nut yet.** It will be tightened after the drag link adapter is installed on the studs. Install the driver and passenger studs.

NOTE: Due to variances in thickness of the OEM drag link, it may be necessary to install another 7/16" flat washer under the castle nut for proper engagement of the cotter pin in the castle nut slot.

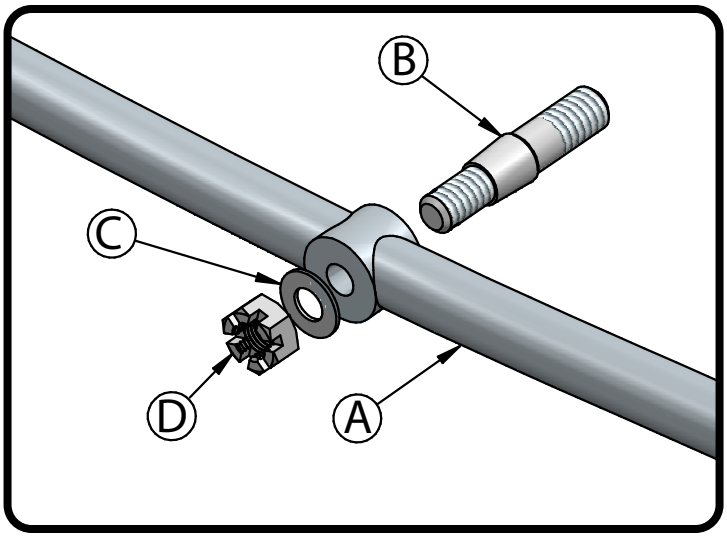


Figure 24

31. Slide a 1/2" washer (B) onto the drag link studs (A). Next, slide the drag link adapter (C) onto the studs (A). The adapter is positioned with the 2 clearance holes positioned to the passenger side, and the inner tie-rod mounting holes facing upward (Figure 25). Torque the two 7/16" castle nuts to **35 ft-lbs**, tighten to align the cotter pin hole and install the cotter pin. Install a 1/2" flat washer (D) and 1/2" locking nut (E) onto each of the studs and torque to **50 ft-lbs**.

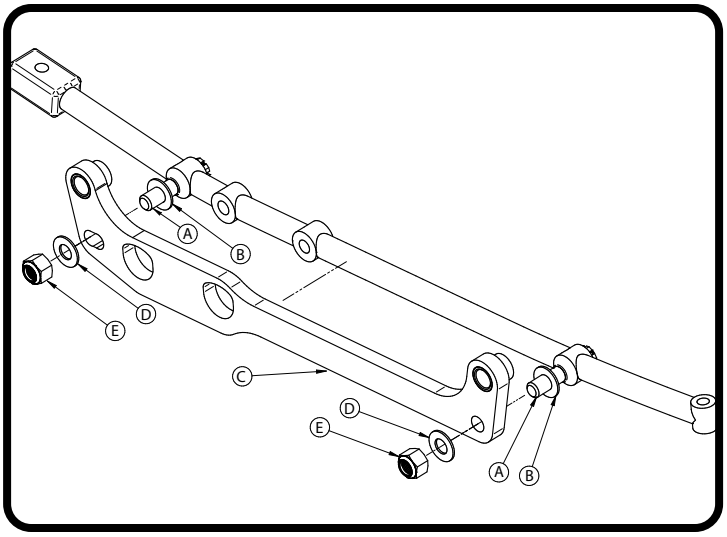


Figure 25

32. Assemble the tie rods as illustrated in Figure 26. We recommend starting with a center-to-center length of 15", with an equal amount of thread engagement at both ends.

Use the sight holes at each end of the tie rod adjusters to ensure you have sufficient thread engagement (Figure 27). You should be able to see at least one or two threads in the "window" for adequate engagement.

The tie rod adjuster has both left-hand and right-hand threads. The grooved end of the adjuster has the left-hand threads (Figure 27). Apply anti-seize to the threads at each end of the tie rod adjuster.

33. Insert the inner tie-rod end (A) into the drag link adapter (B). Install the castle nut (C) supplied with the tie-rod end onto the threads. Torque the castle nut to **35 ft-lbs**, tighten to align the cotter pin hole, and install the cotter pin (D). See Figure 28.

34. Slide the Heim end (B) onto the tie-rod stud (A). Next, thread the 5/8"-18 mechanical locking nut (C) onto the tie-rod stud (Figure 29). Torque the nut to **100 ft-lbs**.

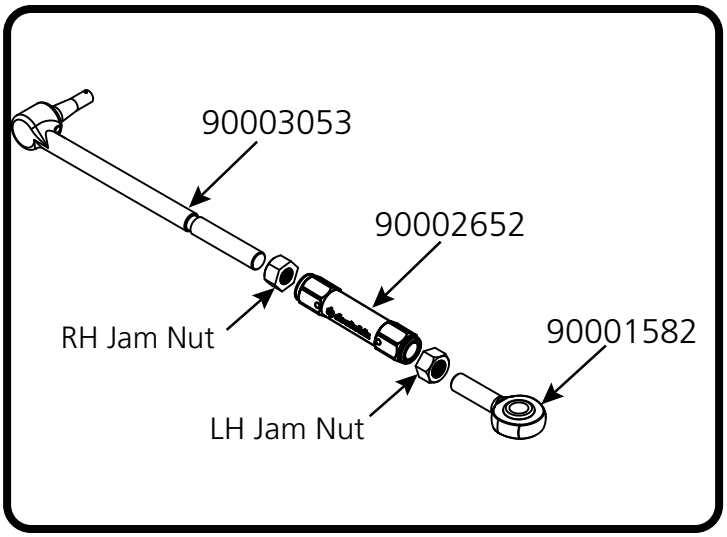


Figure 26

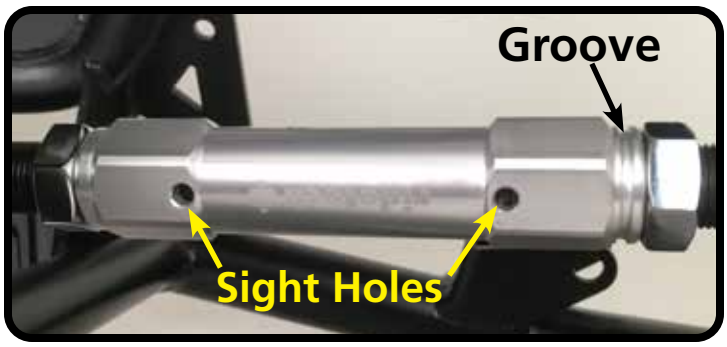


Figure 27

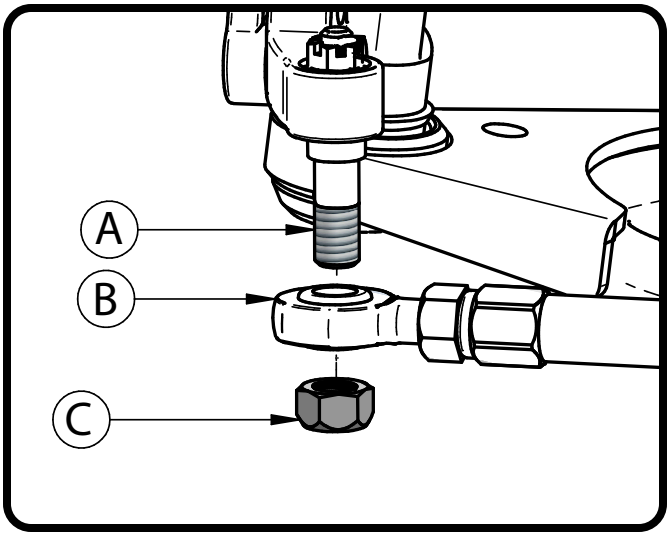


Figure 29

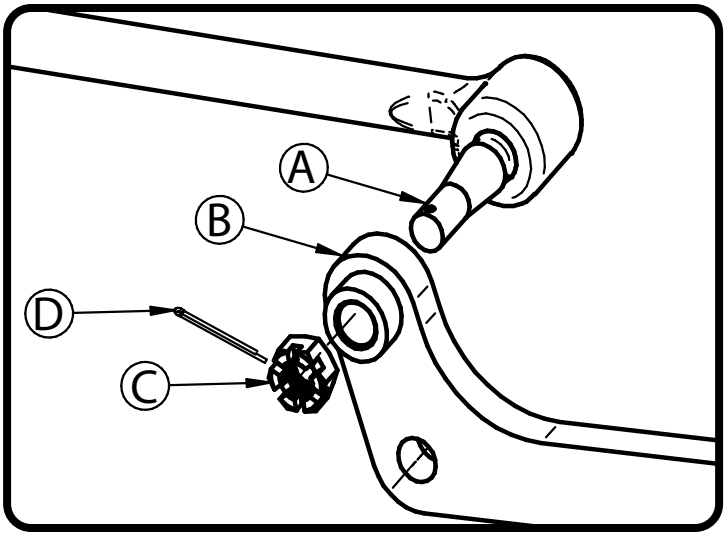


Figure 28

35. Ensure all fasteners are properly tightened. If you are going to be installing a Ridetech Musclebar, now is a good time to do so.

36. Finish plumbing and bleeding the brake system.

37. Have the vehicle aligned. Recommended alignment specs are listed below.

Suggested Alignment Specs For Street Driving

Camber: -.5 Degrees

Caster: +3.0 to +5.0 Degrees

Toe: 1/16" to 1/8" Toe In

TORQUE SPECIFICATIONS	
LOCATION	**TORQUE**
Lower Control Arm Rear Mounting Bolt	95 ft-lbs
Lower Control Arm Front Mounting Bolts	70 ft-lbs
Upper Control Arm Mounting Nuts	50 ft-lbs
Hub To Spindle Socket-Head Bolts	99 ft-lbs
Caliper Bracket Flat-Head and Hex Bolts	75 ft-lbs
Upper Ball Joint Castle Nut	50 ft-lbs
Lower Ball Joint Castle Nut	65 ft-lbs
Caliper Mount Bolts	125 ft-lbs
Steering Arm Bolts	80 ft-lbs
Steering Arm Tie Rod Stud Castle Nuts	35 ft-lbs
Drag link Stud Castle Nuts	35 ft-lbs
Drag link Adapter Mounting Nuts	50 ft-lbs
Inner Tie Rod End Castle Nuts	35 ft-lbs
Steering Arm Tie Rod Stud To Heim End	100 ft-lbs