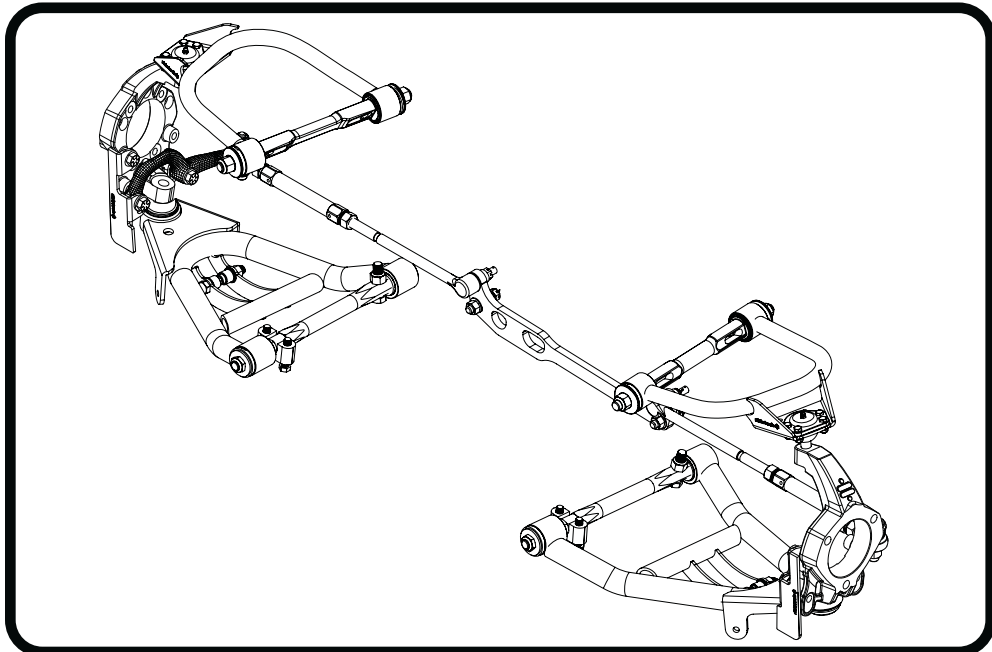


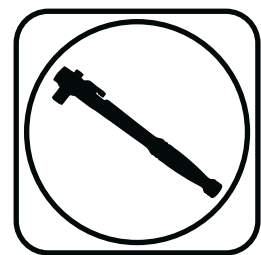


Part # 11539598

1963-1967/1968-1981 C2/C3 Corvette Front TruTurn System



Recommended Tools



C2/C3 Corvette Front TruTurn System

Installation Instructions

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Page 14-15.....	Steering Arm Installation
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Page 18.....	Final Steps

The OEM Front Brakes will not work with this kit.
(See Page 7 for details)

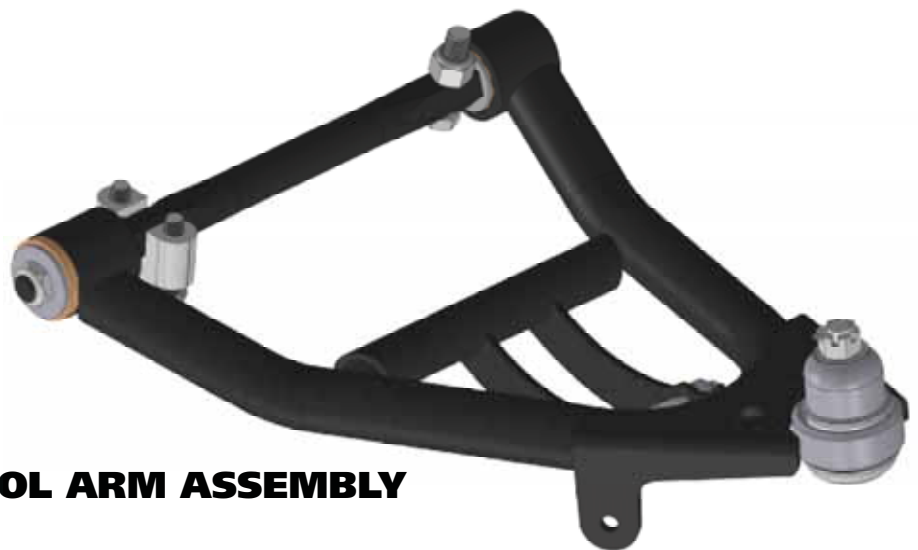


Major Components AssembledIn the box



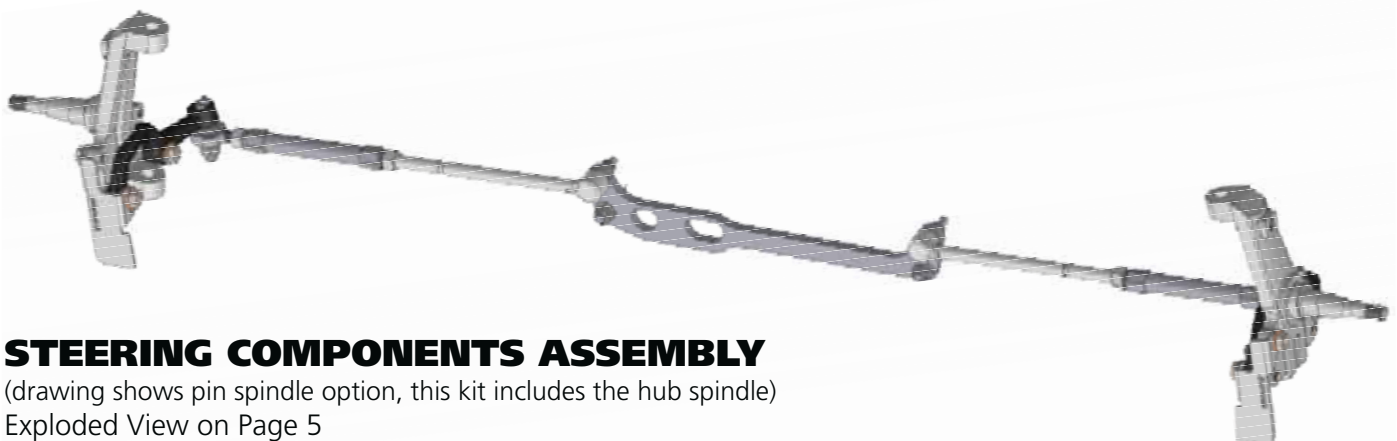
DRIVER UPPER CONTROL ARM ASSEMBLY

Exploded View on Page 3



DRIVER LOWER CONTROL ARM ASSEMBLY

Exploded View on Page 4



STEERING COMPONENTS ASSEMBLY

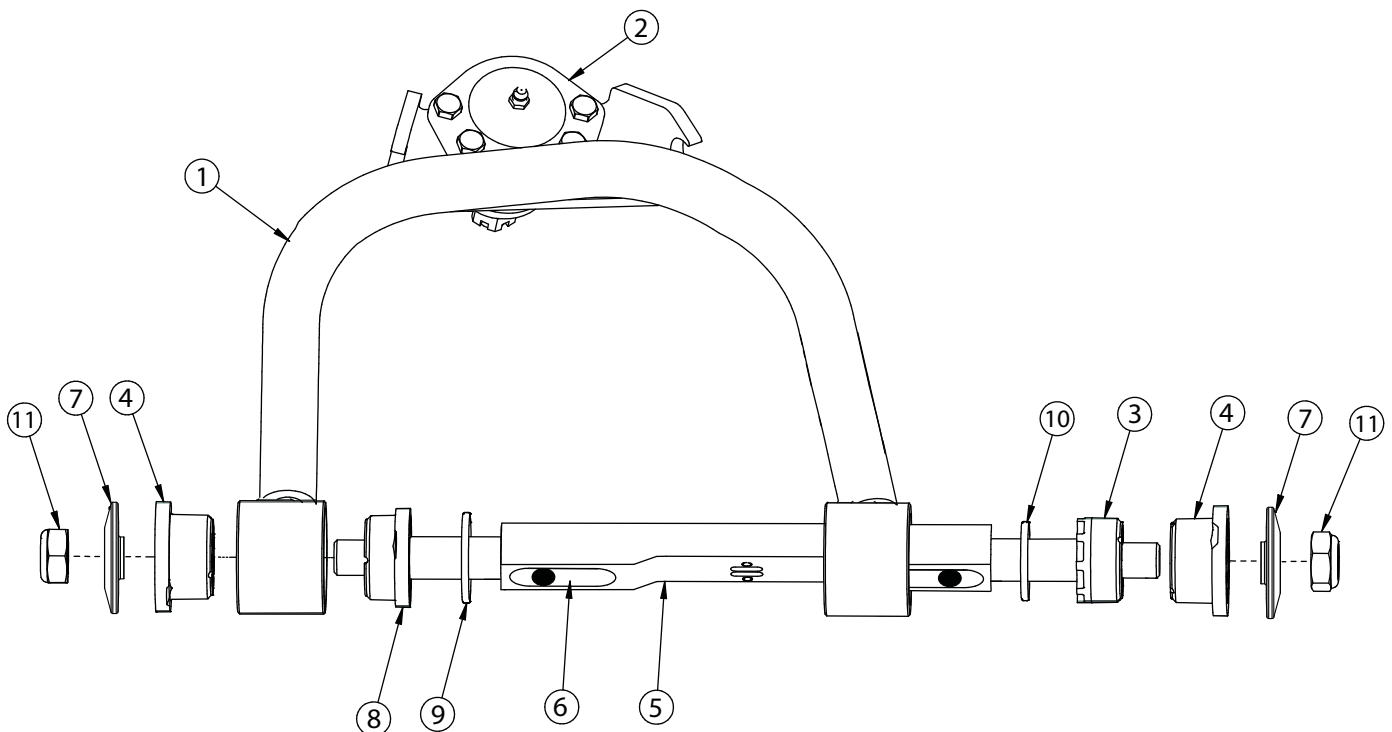
(drawing shows pin spindle option, this kit includes the hub spindle)
Exploded View on Page 5



Upper Control Arm ComponentsIn the box

Item #	Part Number	Description	QTY
1	90002161	Driver Upper Control Arm (Shown)	1
1	90002162	Passenger Upper Control Arm	1
2	90000908 Kit	Upper Ball joint Assembly - Proforged # 101-10015	2
3	70010826	Inner Delrin Bushing - No Ledge	2
4	70010759	Outer Delrin Bushing	4
5	90003375	Caster Adjustable Upper Control Arm Shaft	2
6	70011955	Caster Slug	4
7	90002737	T-Washer	4
8	70010827	Inner Delrin Bushing - with Ledge	2
9	99753007	3/4" x 1 3/4" Flat Washer	2
10	99753005	3/4" SAE Flat Washer	2
11	99622005	5/8 - 18 Thin Locknut	4

Driver Side Shown



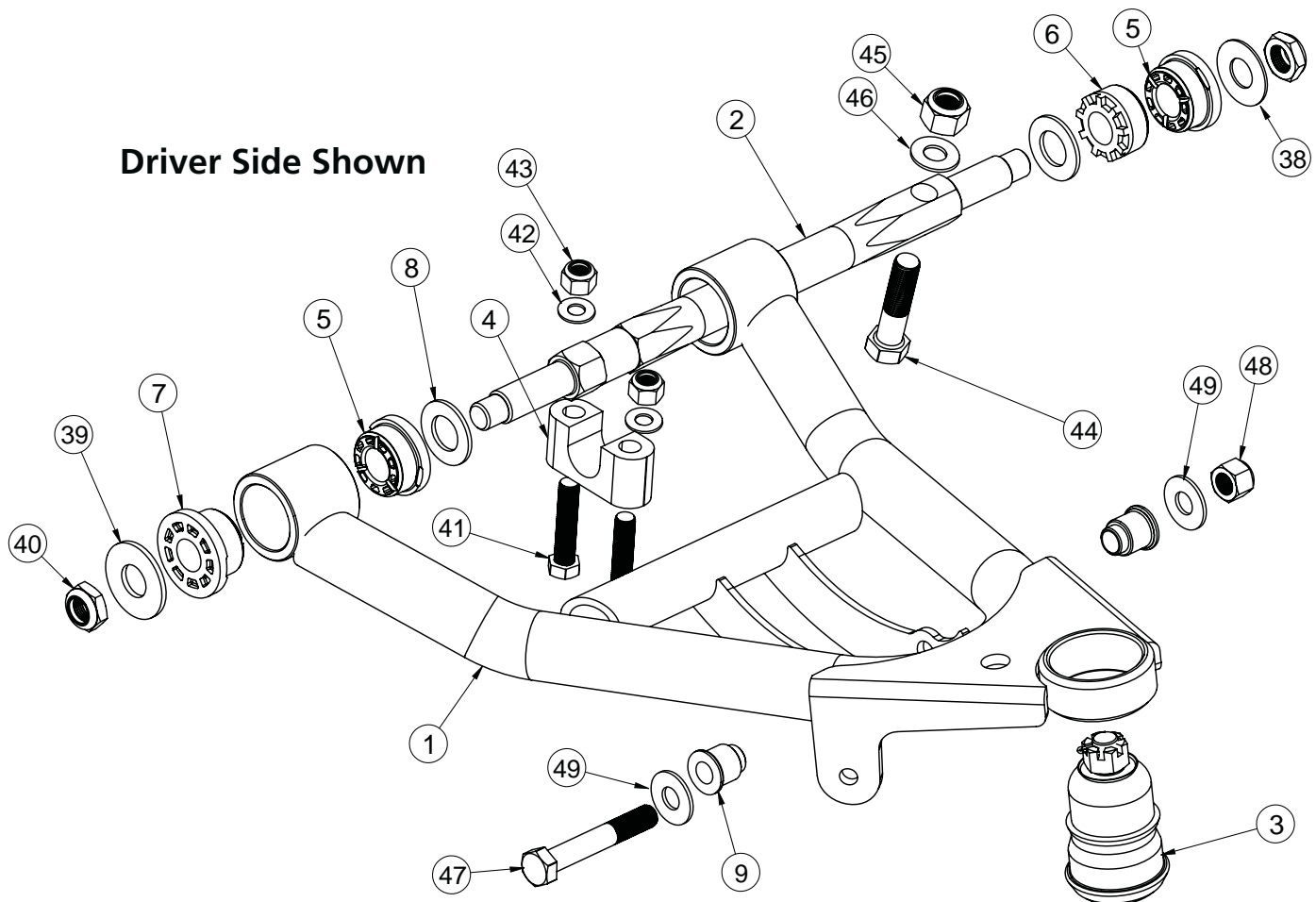
HARDWARE LISTED ON PAGE 7



Lower Control Arm ComponentsIn the box

Item #	Part Number	Description	QTY
10	90002159	Driver Lower Control Arm (Shown)	1
10	90002160	Passenger Lower Control Arm	1
11	90002179	Lower Control Arm Cross Shaft	2
12	90000898	Lower Ball joint Assembly - Proforged # 101-10013	2
13	90000677	Lower Cross Shaft Clamp	2
14	70010827	Delrin Bushing - with 1 3/4" Diameter Ledge	4
15	70010826	Delrin Bushing - no Ledge	2
16	70010759	Delrin Bushing - with 2" Diameter Ledge	2
17	99753005	Flat Washer	4
18	90002062	CoilOver Spacers	4

Driver Side Shown

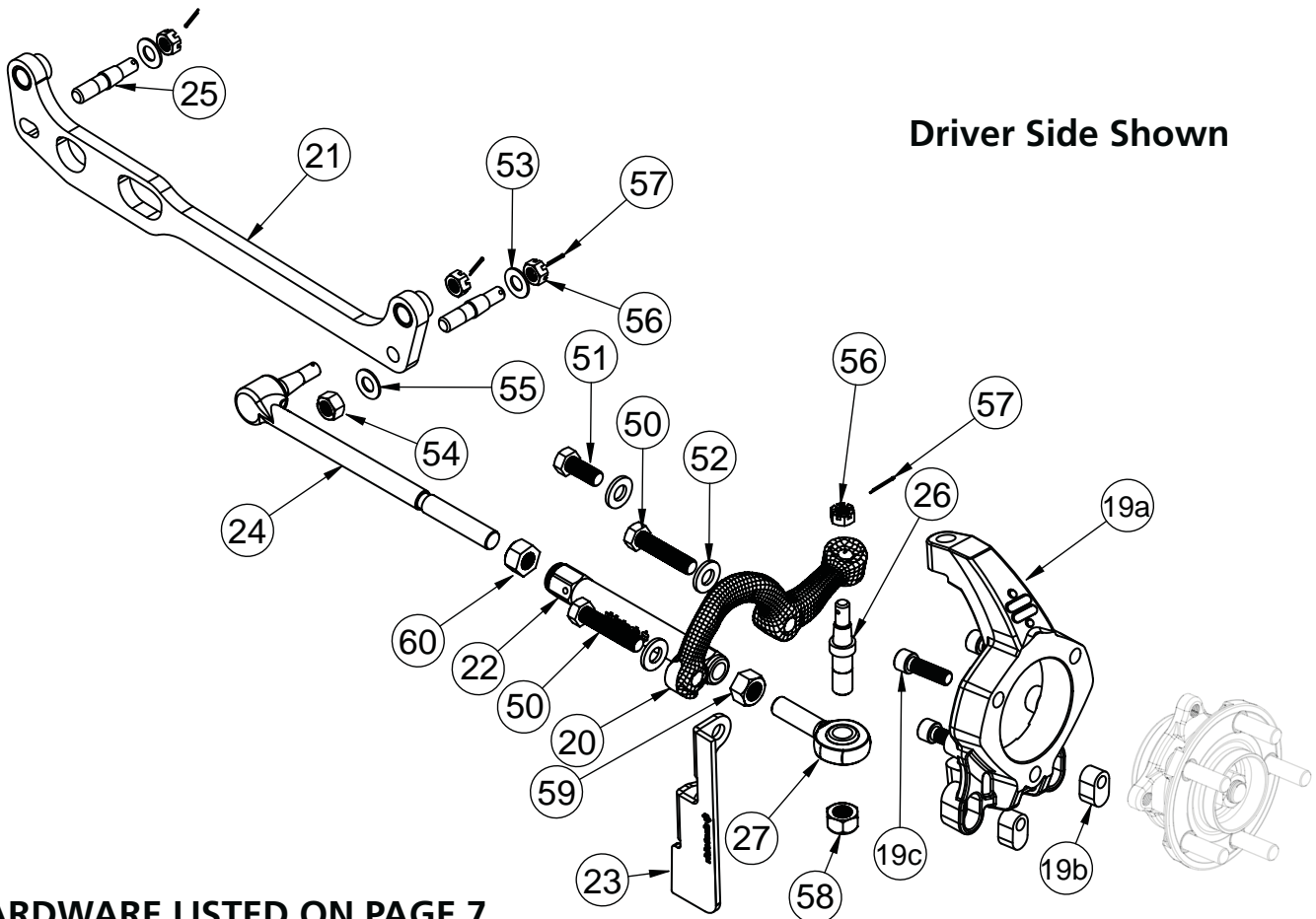


HARDWARE LISTED ON PAGE 7



TruTurn Steering ComponentsIn the box

Item #	Part Number	Description	QTY
19	11009312	Ridetech Hub Spindle Kit	1pr.
19a	70015750	Hub Spindle	2
19b	90003535	Steering Arm Threaded Insert	4
19c	99121020	M12-1.75 x 40mm SHCS	6
20	90002347	Driver Steering Arm	1
20	90002348	Passenger Steering Arm (not shown)	1
21	90002170	Draglink Adapter	1
22	90002652	Tie-Rod Adjuster	2
23	90003849	Driver Steering Stop	1
23	90003850	Passenger Steering Stop (not shown)	1
24	90003053	Inner Tie-Rod End	2
25	90009933	Draglink Adapter Stud	2
26	90009931	Outer Tie-Rod Stud	2
27	90001582	Outer Tie-Rod Heim End	2



HARDWARE LISTED ON PAGE 7



Caliper Brackets ComponentsIn the box

Item #	Part #	Description	QTY
28	90003548	Caliper Bracket - Driver	1
28	90003547	Caliper Bracket - Passenger (Not Shown)	1
29	90003549	Caliper Bracket Spacer	4

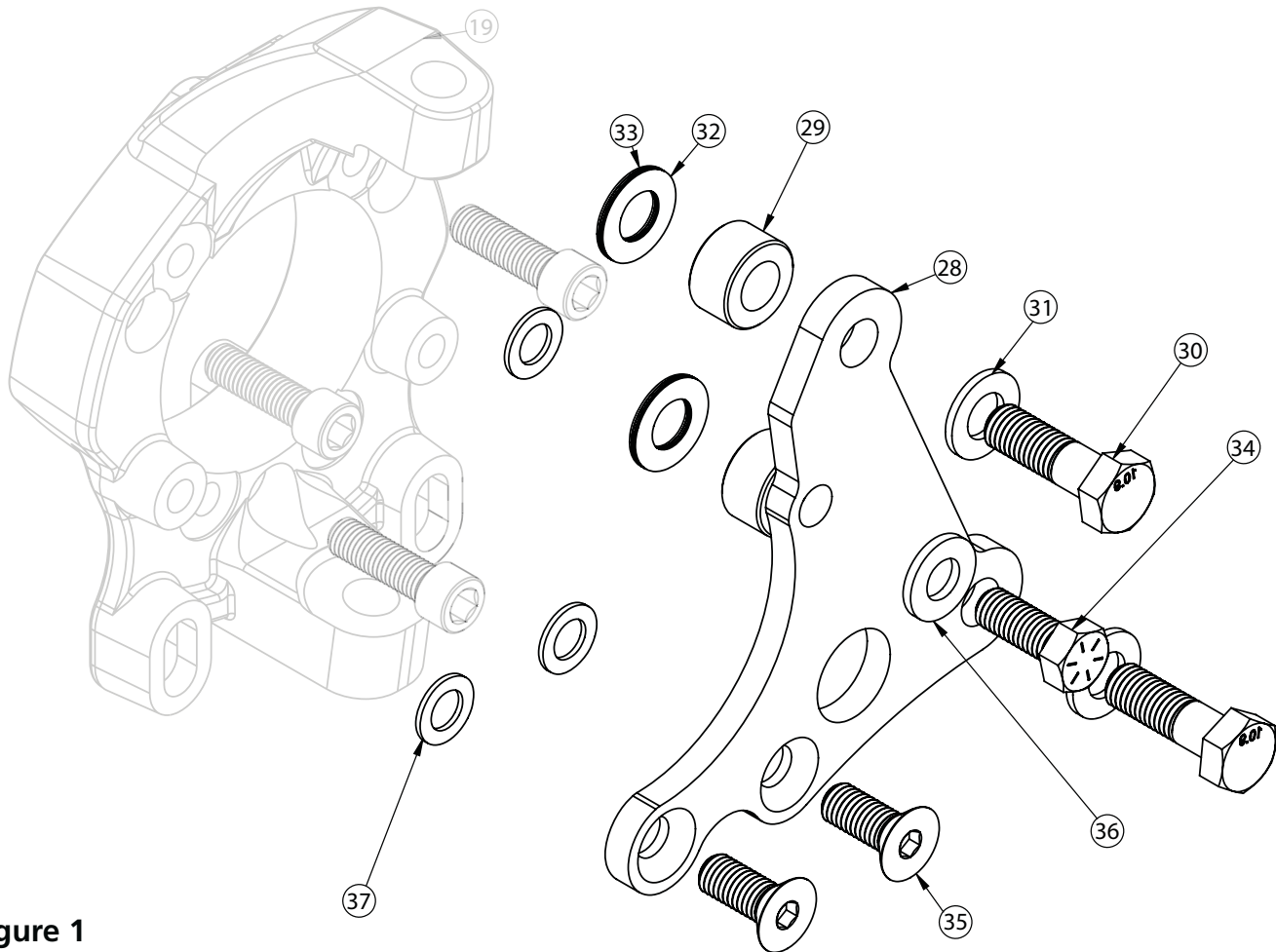


Figure 1

Hardware ListIn the box (Kit # 99010230)

Item #	Part Number	Description	QTY	Item #	Part Number	Description	QTY
BRACKET TO CALIPER				BRACKET TO SPINDLE			
30	99141007	M14-2.0 X 45mm Hex Bolt	4	34	99501062	1/2"-13 x 1 1/4" Hex Bolt	2
31	99143001	M14 Flat Washer	4	35	99501075	1/2"-13 x 1 1/4" FHSCS	4
SHIM PACK				36	99503014	1/2" SAE Flat Washer	2
32	99623005	Shim .016" thick, 5/8" ID	8	37	99503017	Shim .063" thick, 1/2" ID	12
33	99623006	Shim .032" thick, 5/8" ID	8				



Hardware Shown in DiagramsIn the box

ITEM #	Part Number	Description	QTY	ITEM #	Part Number	Description	QTY
UPPER CONTROL ARM TO FRAME				STEERING ARM TO SPINDLE			
	99432010	7/16"-14 Nylok Nut	4	50	99501026	1/2"-13 X 2 1/4" Hex Bolt	4
	99433004	7/16" USS Flat Washer	4	51	99501052	1/2"-13 x 1" Hex Bolt	2
LOWER CROSS SHAFT TO CONTROL ARM				52	99503014	1/2" SAE Flat Washer GR8	2
38	72000257	1.5" OD Flat Washer	2		90002263	Red Loctite	1
39	99163001	2.0" OD Flat Washer	2	DRAGLINK ADAPTER			
40	99622005	5/8"-18 Top Lock Nut	4	53	99433005	7/16" SAE Flat Washer	4
LOWER CROSS SHAFT TO FRAME				54	99502010	1/2"-20 Lock Nut	2
41	99431015	7/16"-20 x 2 1/4" Hex Bolt	4	55	99503001	1/2" SAE Flat Washer GR5	4
42	99433005	7/16" Flat Washer	8	56	99432005	7/16"-20 Castle Nut	2
43	99432007	7/16"-20" Nylok Nut	4	57	99952002	3/32" Cotter Pin	2
44	99561001	9/16"-18 x 2 1/2" Hex Bolt	2	STEERING LINKAGE			
45	99562001	9/16"-18 Nylok Nut	2	56	99432005	7/16"-20 Castle Nut	2
46	99566003	9/16" SAE Flat Washer	2	57	99952002	3/32" Cotter Pin	4
SHOCK TO LOWER CONTROL ARM				58	99622003	5/8"-18 Lock Nut	2
47	99501005	1/2"-13 X 3 1/2" Hex Bolt	2	59	99800003	5/8"-18 LH Jam Nut	2
48	99502009	1/2"-13 Nylok Nut	2	60	99980002	5/8"-18 RH Jam Nut	2
49	99503014	1/2" SAE Flat Washer	4				

Getting Started.....

Congratulations on your purchase of the Ridetech TruTurn System. This system has been designed to give your Corvette excellent handling along with a lifetime of enjoyment. Some key features of the TruTurn System: Ball joint angles have been optimized for the lowered ride height, Delrin bushings are used to eliminate bushing deflection along with providing free suspension movement through the entire travel. The geometry has been optimized for excellent handling, driveability and minimal bump steer. The Delrin bushings are made from a material that is self lubricating so no grease zerks are needed. Upper caster adjustable cross shaft is designed to allow you to run maximum caster angles with minimal shims.

Note: These control arms are designed for use with the Ridetech CoilOvers and the MuscleBar swaybar. **The factory shocks and springs or the factory sway bar will not fit these arms.**

These spindles are designed around OEM C5, & C6 Corvette brakes. Aftermarket brakes that are designed for these cars will also fit this spindle.

These spindles have are setup with multiple positions for the steering arm to help with bumpsteer. The instructions will give you a recommendation of what position to install the steering arms based off the vehicle you are installing them on.



Getting Started continued.....

These spindles are designed around 1997-2013 Corvette (C5/C6) or 2014-2019 Corvette (C7). C5 & C6 will have wheel speed sensors built into the bearing. C7 hubs are preferred, they are stronger and more cost effective as they don't have a wheel speed sensor (Moog 513378).

When assembling the Control Arms tighten the cross shaft nuts enough to create drag on the delrin bushings. The arm should still move through its travel by hand.

Lower Control Arm Installation

1. Remove the entire front suspension from the car leaving the OEM center draglink. Refer to a Factory Service Manual for the proper method. The control arms, spindles, and tie rods will all be replaced with the TruTurn package.

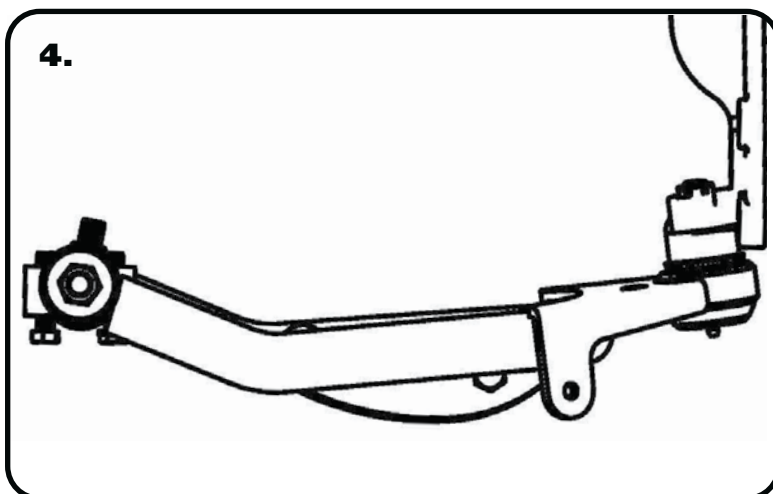
2. Drill the factory upper shock mounting hole to 3/4". This can be done easily with a Unibit.



3. Your new lower control arms utilize a clamp for the front 2 mounting holes. The clamp will slide into the machined groove in the cross shaft. Attach the Lower Control Arms to the frame using (1) 9/16" x 2 1/2" Hex Bolt, (1) 9/16" Nylok Nut, (2) 7/16" x 2 1/4" Hex Bolt, and (2) 7/16" Flat washer. Tighten the cross shaft mounting fasteners. Install the cross shaft washers and 5/8" Thin Lock Nuts on 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 washer and (1) 5/8" Thin Lock Nut. Tighten the cross shaft nuts enough to create drag on the Delrin bushings. The arm should still move up and down by hand.

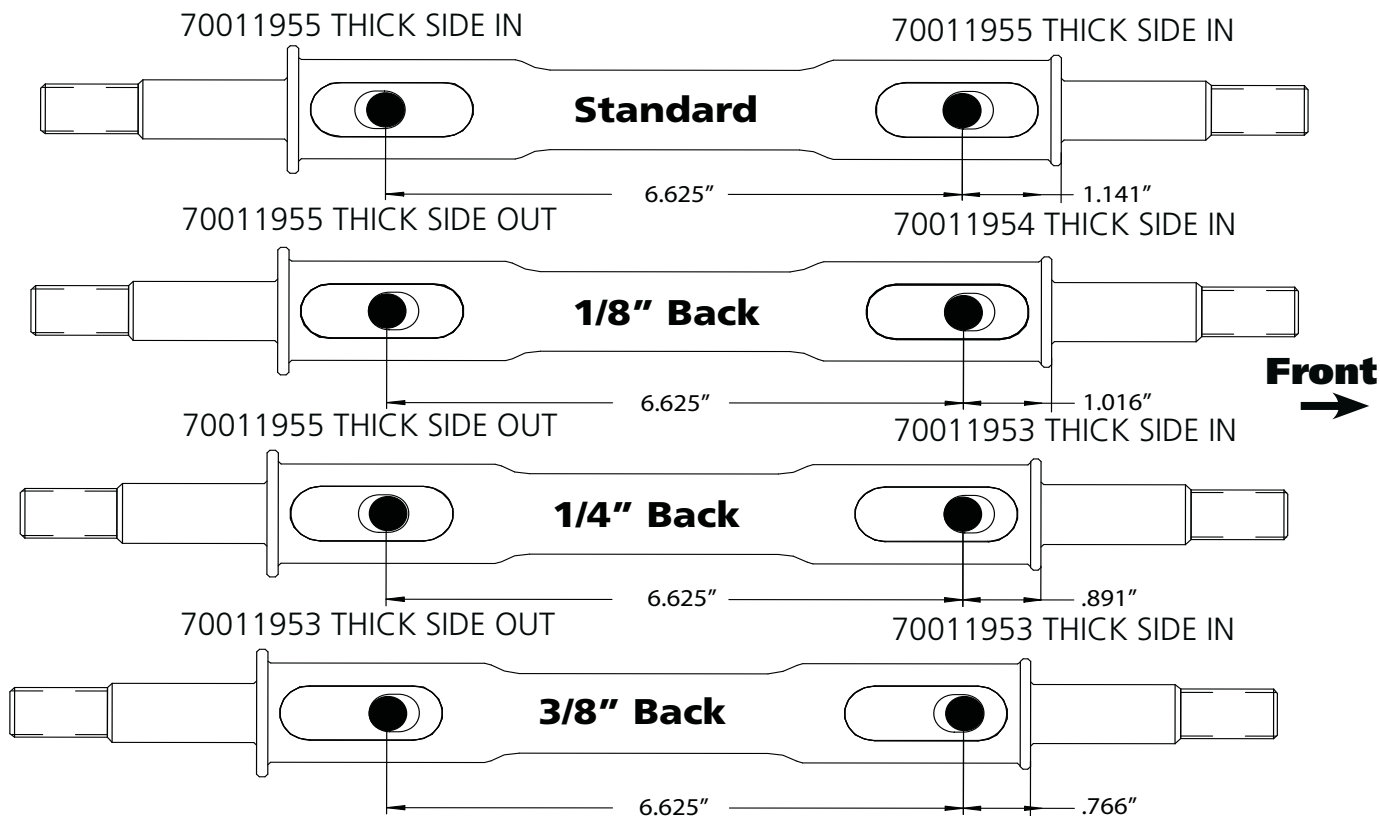
4. The control arms are marked "D" for Driver and "P" for Passenger. The ball joint pin points up and the sway bar mount is on the front side of the arm.

Install the CoilOvers at this time. Refer to the CoilOver instructions for Assembly.





Caster Explained



These StrongArms 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 supplied in the kit are setup 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 can be purchased from Ridetech or your Ridetech dealer. The diagram above will help you determine what caster slug you may need if trying to achieve more caster. It will also show you how to position the caster slug.

- STANDARD INCLUDED IN KIT = 70011955
- 1/8" = (2) 70011954
- 1/4" = (2) 70011953
- 3/8" = (4) 70011953

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.

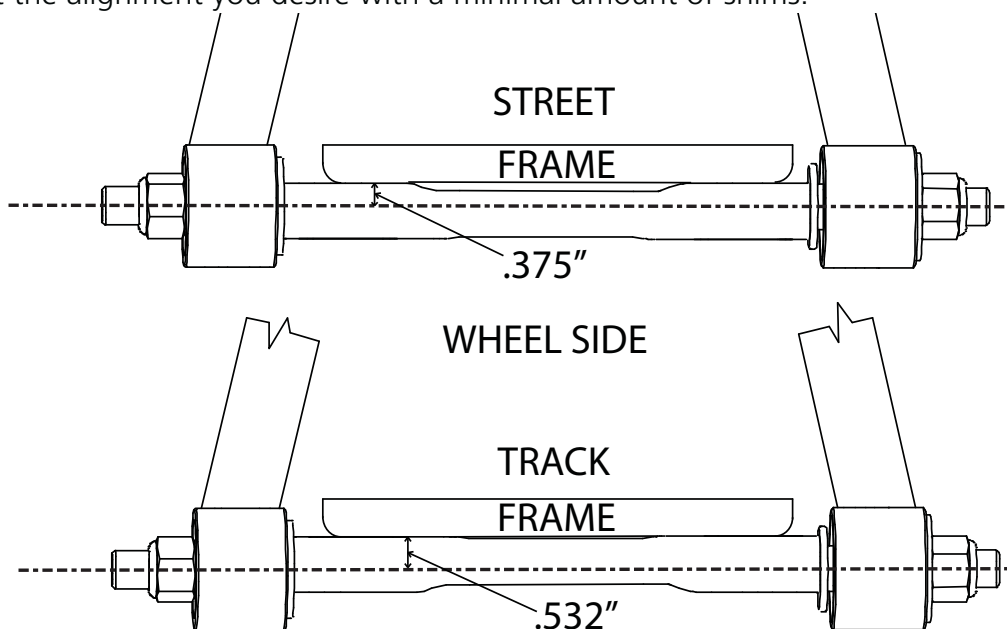
Caster is measured in degrees by using a caster gauge. If the imaginary line described above tilts towards the back of the vehicle at the top, then you have positive caster. If the imaginary line tilts forward then you have negative caster.

Positive caster provides the 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



Camber Adjustment

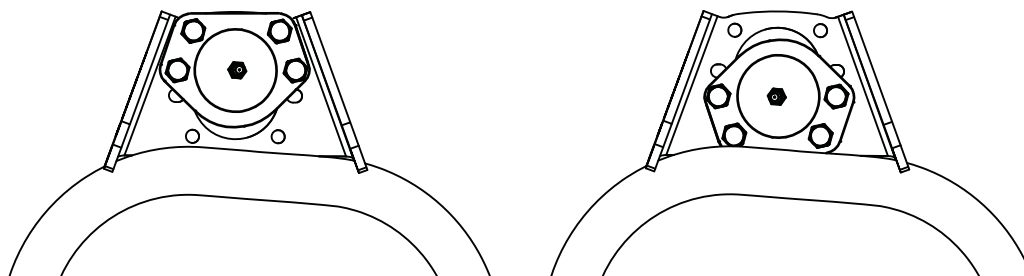
The upper control arms in this kit has 2 separate adjustments to help you get the camber setting you desire for your application. The upper cross shaft is offset and can be mounted in 2 different positions. Also, the upper ball joint can be bolted to the control arm in 2 different positions. The combination of the 2 will allow you to get the alignment you desire with a minimal amount of shims.



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.



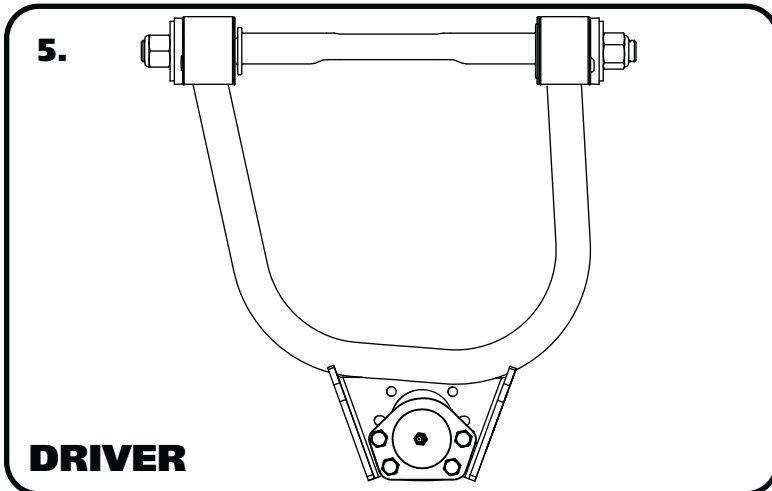
The ball joint can be bolted to the upper control arm in 2 different positions.

If you are after a **Street Alignment** bolt the ball joint to the control arm in the outer position.

If you are planning to run a lot of negative camber for **Track or Autocross**, bolt the ball joint to the control arm in the inner position.



Installing Upper Control Arm & Spindle

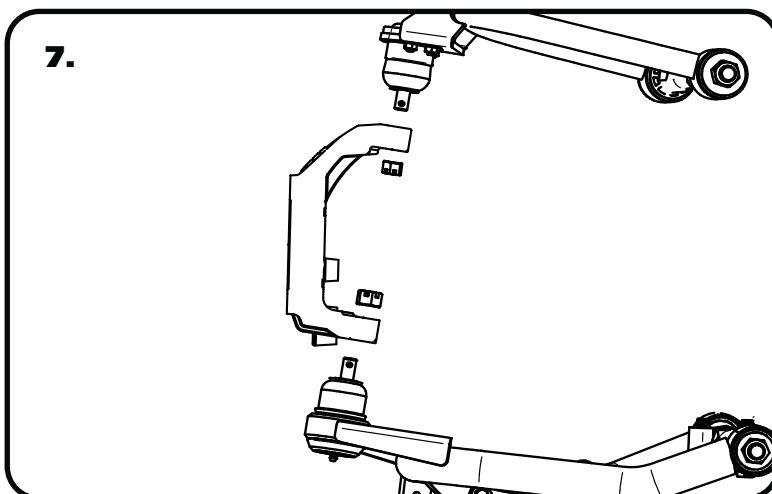


5. Install the ball joints into the upper control arm with the hardware supplied with the ball joint. Use the information on the previous page to help you determine which position will be the best for the alignment you desire. The upper ball joint goes in from the top side of the control arm. The gussets on the ball joint plate point up. Torque the hardware to 10 ftlbs. The Upper Control Arm is attached to the factory mount using factory hardware. The driver side arm is shown in Figure "5". The arrow on the cross shaft points to the front of the car. Pages 8 & 9 have information about caster and the caster slugs.



6. Bolt the upper control arm to the car using the previous pages to assist you with cross shaft orientation and caster slug location. Install (2) T-Washers and (2) 5/8" Thin Lock Nuts on each Cross shaft. Install the T-Washers with the SMALL RING TOWARD THE BUSHING. Tighten the cross shaft nuts enough to create drag on the delrin bushings. The arm should still move up and down by hand.

Note: The kit comes standard with centered Caster Slugs.



7. Attach the spindle to the control arms. The spindle is the same for driver and passenger.

Torque Specs:

Lower ball joint - 65 ftlbs and tighten to line up cotter pin.

Upper ball joint - 50 ftlbs and tighten to line up cotter pin.



Hub Bearing Installation



8. The Hub is attached to the spindle using (3) M12-1.75 x 40 SHCS. Apply RED Loctite to each of the mounting bolts. Insert them into the correct holes and Torque to 99 ftlbs.

Note: The steering arms will **NOT** get attached to the knuckle until the brakes are attached.

Caliper Bracket Installation

Caliper bracket and brake mounting will differ depending on the brake kit being used.

We recommend mocking up the brakes with clean dry threads before applying any loctite to the hardware.

The brake bracket kits include shims for mounting the caliper brackets and calipers. The caliper brackets will use 1/2" ID shims. The caliper spacers will use 5/8" ID shims.

The next steps will cover the installation of C5 OEM brakes on the Ridetech spindle. **Again, mock up the brake kits with clean dry threads before using any loctite on the hardware.** We are showing the installation of the caliper bracket with the spindle off the car so it can be shown clearly.



9. Lay a .062" thick, 1/2" ID shim on each of the caliper brackets (3) mounting holes.



Caliper Bracket Installation



10. The caliper brackets are side specific. They have a D & P stamped in them. Lay the correct side caliper bracket on top of the shims, aligning the mounting holes with the mounting holes of the bracket. The counter sunk holes should facing up.



11. Insert a 1/2"-13 x 1 1/4" flat head socket cap screw in each of the lower mounting holes. Install a 1/2" flat washer on a 1/2"-13 x 1 1/4" hex bolt and insert it in the upper mounting hole. Tighten the hardware to 75 ft-lbs.



12. Install the rotor on the hub. Thread some lug nuts on the threads of the hub to hold the rotor tight on the hub.



Caliper Bracket Installation



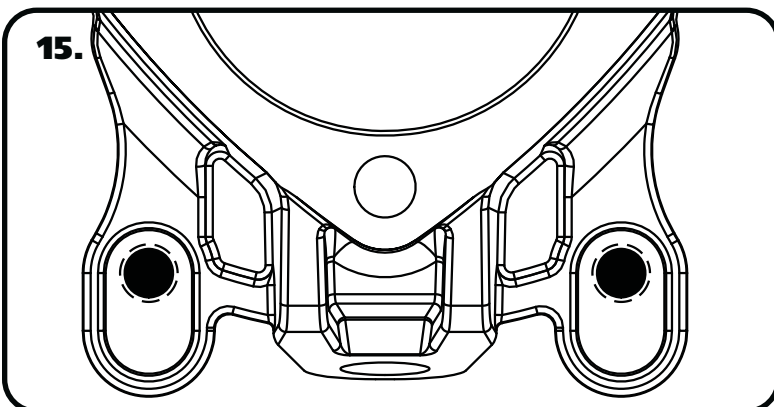
13. The kit includes spacers that will be installed between the caliper bracket and caliper mount. Install a M14 flat washer on each of (2) M14-2.0 x 45mm hex bolts. Insert the bolts through the caliper bracket, installing a spacer on each bolt. Line the caliper mount up with the hardware and thread in the bolts.



14. 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. If the caliper mount is tighter on the back side, put shims on the caliper bracket/spindle. If the caliper bracket is tighter on the front side, put shims between the caliper bracket/caliper mount. After you are happy with the fitment, the hardware will need to red loctite and torqued. Torque the 1/2" bracket to spindle hardware to 95 ft-lbs. Torque the M14 hardware to 125 ft-lbs.

Note: If you are installing aftermarket brakes, refer to the brake kit instructions for measuring the caliper placement.

Steering Arm Installation



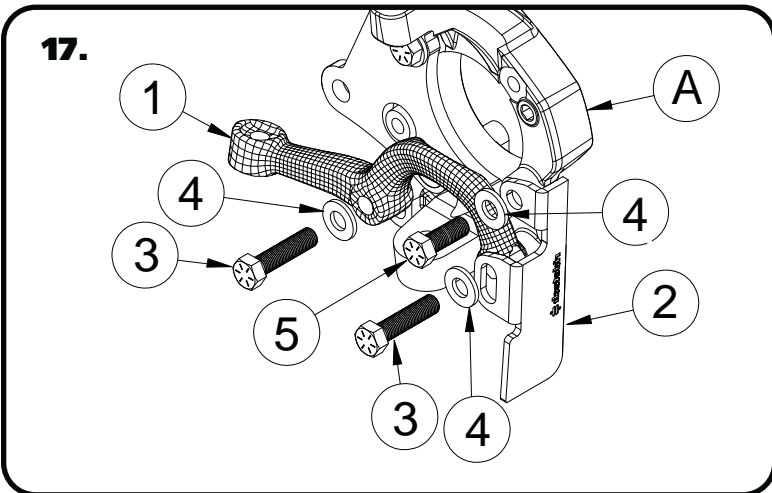
15. The threaded steering arm inserts can be mounted in 2 different positions. **Image 15** illustrates the correct position for the installation on your vehicle. This position is what we determined to be the best with Ridetech suspension.



Steering Arm Installation



16. Insert the steering arm inserts into the spindle using the correct orientation from the details above.



17. Attach Steering Arm(1) and Steering Stop(2) to Spindle(A). The Steering Arm and Stop are attached to the spindle using [2] 1/2"-13 x 2 1/4"(3) & [1] 1/2"-13 x 1"(5) hex bolts and [3] 1/2" SAE Flat Washers(4). The Steering Arm is positioned with the Tie Rod End pointing to the rear of the car and toward the engine. The Steering Stop is attached to the front mounting bolt of the steering arm and also attaches to the inner surface of the spindle in the top hole. Use the 1/2"-13 x 2 1/4" bolts with a flat washer in the steering arm. The 1/2"-13 x 1" bolt with a washer, attaches the top of the steering stop to the inner surface of the spindle. Use Red Loctite (Supplied in the Kit) on the bolts and torque to 80 ftlbs. Verify that the bolts are sticking through the slugs.

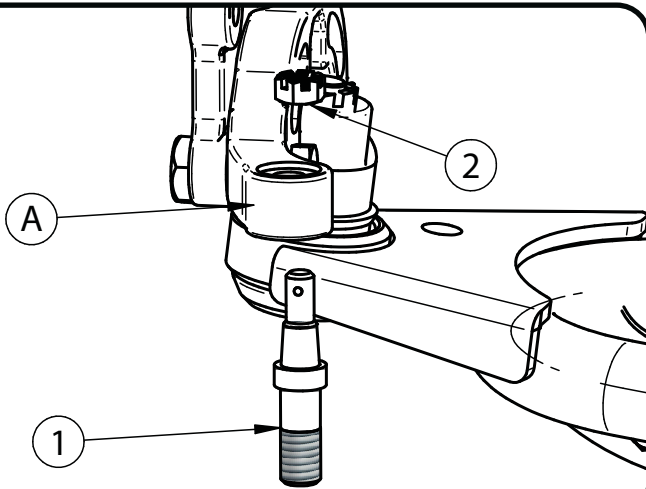


18. Install the brake pads and caliper.



Installing TruTurn System

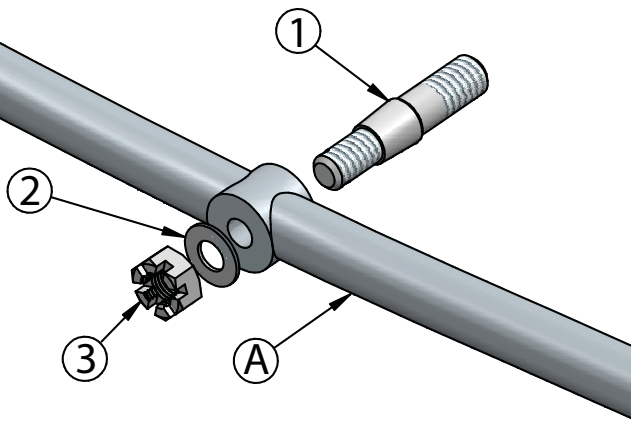
19.



19. Install Outer Tie Rod Stud into Steering Arm using a 7/16" Castle Nut and 3/32" Cotter Pin. Insert the Tapered end of the Tie Rod Stud into the Taper of the arm. Thread the 7/16" Castle nut on the stud. Torque to 35 ftlbs and then tighten to align Cotter Pin hole with slot on Castle Nut. Install Cotter Pin.

Note: The Outer Tie Rod Stud is the LARGER of the tapered studs in the kit.

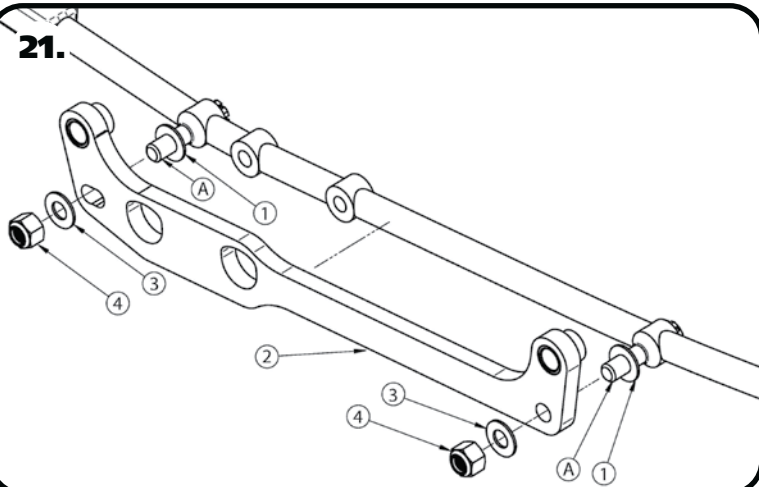
20.



20. Install a Tapered Draglink Stud (1) into the OEM Inner Tie-Rod Hole on the OEM Draglink (A). Install a 7/16" Flat washer(2) onto the threads. Thread a 7/16" Castle Nut (3) onto the threads to hold it in place. **Do Not Tighten Nut Yet.** It will be tightened after the Draglink Adapter is installed on the studs. Install driver and passenger studs.

Note: Due to variances in thickness of the OEM draglink, it may be necessary to install another 7/16" Flat Washer under the Castle Nut to engage to Cotter Pin into the Castle Nut properly.

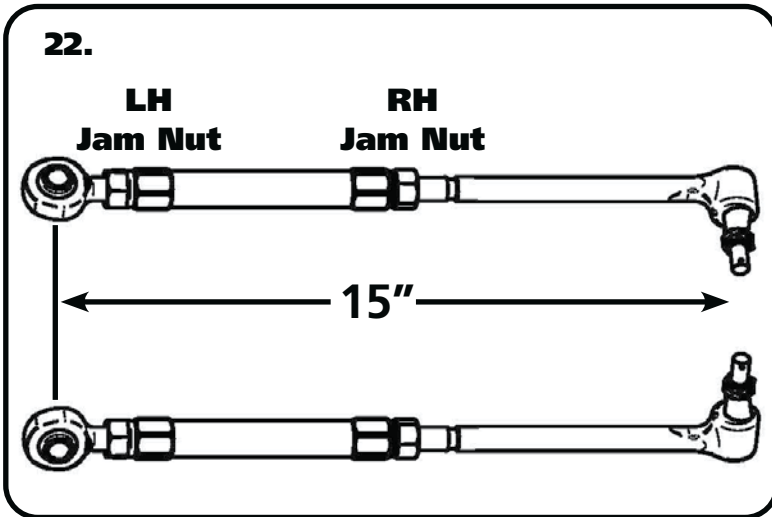
21.



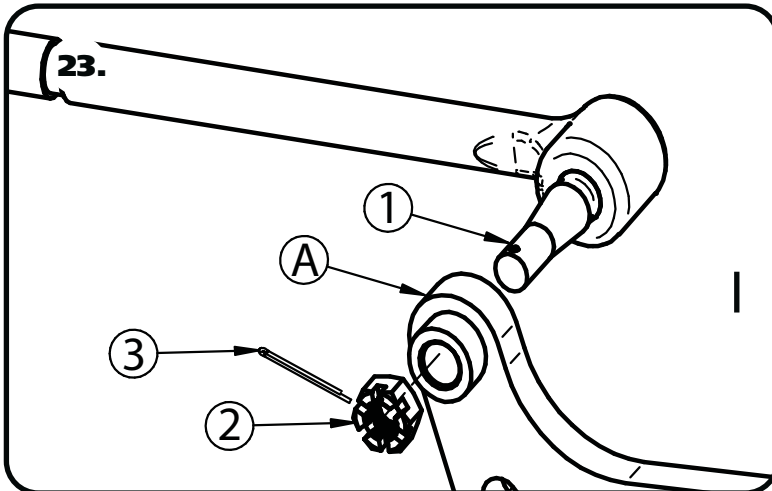
21. Slide a 1/2" Washer(1) onto the Draglink Studs(A). Next, slide the Draglink Adapter(2) onto the Studs(A). The Adapter is positioned with the 2 clearance holes to the Passenger side and the Inner Tie-Rod Mounting holes upward. Tighten the "2" 7/16" Castle Nuts to 35 ftlbs and then tighten to align the cotter pin hole. Install Cotter pin. Install the 1/2" Flat washer(3) and 1/2" Mechanical Locking Nuts(4) onto the Studs and Torque to 50 ftlbs.



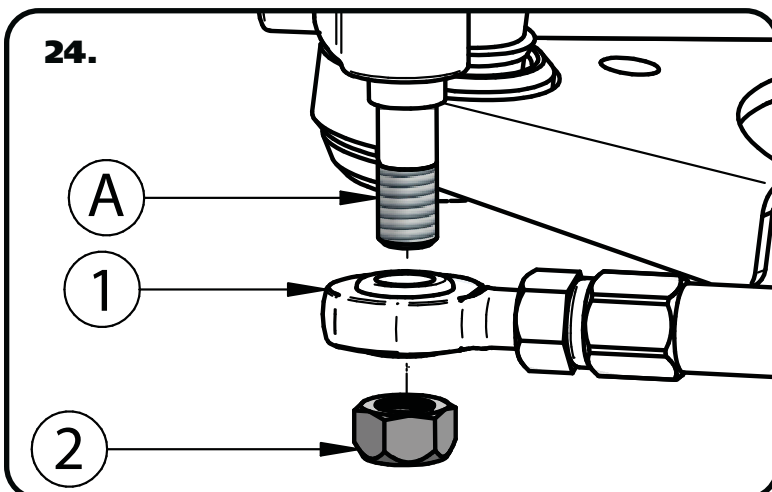
Installing TruTurn System



22. Assemble the Tie-Rod to a center to center length of 15" to start with, having equal amount of thread engagement on both ends. These aluminum adjusters have a left hand thread on one end and a right hand thread on the other. THERE IS A GROOVE CUT INTO THE END THAT HAS THE LEFT HAND THREADS. THE HEIM END IS LEFT HAND THREAD. Use anti-seize on the threads of the Tie Rod and Heim end before threading them into the adjuster. **FOR YOUR SAFETY, THE TIE ROD & HEIM NEED A MINIMUM 15/16" OF THREAD ENGAGEMENT INTO THE TIE ROD ADJUSTER.**



23. Insert the Inner Tie-Rod End(1) into the Draglink Adapter(A). Install the Castle Nut(2) supplied with the Tie-Rod End onto the threads. Torque Castle Nut to 35 ftlbs and tighten to align Cotter Pin hole. Install Cotter Pin(3).



24. Slide the Heim End(1) onto the Tie-Rod Stud(A). Next, thread the 5/8"-18 Mechanical Locking Nut(2) onto the Tie-Rod Stud. Torque nut to 100 ftlbs.



Final Steps

25. Tighten all fasteners. If you are going to install the Ridetech MuscleBar, now is a good time to do it.

26. **FINISH PLUMBING THE BRAKE SYSTEM AND BLEED THE SYSTEM.**

When assembling the control arms, tighten the cross shaft nuts enough to create drag on the delrin bushings. The arm should still move through its travel by hand.

Suggested Alignment Specs:

Camber: Street: -.5 degrees
Caster: Street: +3.0 to + 5.0 degrees
Toe: Street: 1/16" to 1/8" toe in