

# Complete Front End Suspension Rebuild, 1955-57— Part 1, Tear Down

by Randy Irwin

There is much more to performance than pure horsepower. Great performance comes from control and Classic Chevy International's Complete Front End Suspension Rebuild kits are the best way to achieve that control and handling. We will show you the proper procedure in completely rebuilding the front end of your Tri-five from tear down to build up. No matter if your Classic has standard steering, power steering or a 605 conversion the front end components are about the same and CCI offers a kit to fit your needs. Complete kits with all stock components or upgrade kits that include 2" drop front coil springs and polyurethane A-arm bushings. The coil springs have an 80lbs rating heavier than stock springs and not only do they lower the car by 2", but the heavier spring rating makes the car handle better than the rough ride of a cut coil spring. When these front ends are rebuilt correctly they are nice and tight and work great. And by changing the factory alignment specifications slightly you can really achieve great performance making the car handle as if it were on rails!

Our project car is all stock and has worn out upper and lower A-arm bushings, the lower A-arm bumpers are long gone and the tie rod ends are very loose (**photo #1**). We begin the tear down with the tie rods. The outer tie rod is the shorter one of the two tie rods. Many times they get switched around at alignment shops but still do the same job. The outer tie rod end connects to the steering arm which is bolted to the spindle. Our outer tie rod end was missing the grease boot (**photo #2**). To disconnect the tie rod end from the steering arm remove the cotter pin and nut, and then use a tie rod end pickle fork (**photo #3**). Once both outer tie rod ends have been disconnected from the steering arms, the drag assembly can be removed. First disconnect the drag link from the pitman arm on the drivers side. There is a screw in end cap on the end of the drag link that is held in place with a 1/8" cotter pin (**photo #4**). Remove the cotter pin and then use a large flat blade screw driver to unscrew the end cap (the end cap has right hand



## Parts Needed:

		Member
21-29	Front end rebuild kit non-power steering	\$513.50
21-130	Front end rebuild kit original power steering	640.95
21-132	Front end rebuild kit with 2" drop coil springs	553.95
30-46	GM chassis black, 1-gallon	45.95
49-331	Detail Gray, 13 oz. spray can	9.20

## Time Frame:

8 Hours

## Tools Needed:

Tie rod end pickle fork	
Coil spring compressor	Ball joint splitter
Hammer	Tie rod splitter
Jack stands	Screw driver
Floor jack	Chisel



Photo #2



Photo #1



Photo #3

threads) (**photo #5**). The end cap holds pressure on two seats, one on each side of the ball on the pitman arm. There is a spring and cap behind each seat and **photo #6** displays the order of how it is laid out in the end of the drag link. There is a dust shield and felt washer that keep “trash” out of the end of the drag link. With all the parts removed from the end of the drag link, the end of the drag link will lift off the ball of the pitman arm (**photo #7**). The idler arm is bolted to the passenger side of the frame with two carriage bolts. Once both bolts have been removed the drag link, tie rod ends and idler arm can be removed from the frame (**photo #8a & #8b**).

The next step of the tear down is to remove the A-arms from the frame, but first the shock absorber must be removed. The top



**Photo #7**



**Photo #4**



**Photo #8a**



**Photo #5**



**Photo #8b**



**Photo #6**



**Photo #9a**

stud of the shock mounts to the frame next to the upper A-arm shaft with a 9/16" nut, washer and grommet. The lower mount of the shock connects to the lower A-arm with two 5/16" x 1" bolts. With all the bolts and nuts removed the shock will drop out through the lower A-arm (**photo #9a, #9b & #9c**). A coil spring compressor **MUST** be used to take the load off the coil spring. Pass the compressor through the hole in the lower A-arm where the shock mounted, connect the upper and lower hooks of the compressor to the spring and tighten the tool until there is no load on the A-arms (**photo #10a & 10b**). Now that there is no load on the A-arms, remove the cotter pin from the upper ball joint and **ONLY loosen** the upper ball joint nut until it is flush with the end of the ball joint stud. Now use a ball joint splitter to separate the upper ball joint from the spindle making sure to *leave the nut on the ball joint* so when it separates from the spindle it does not fall apart. The combination of the lower A-arm, spindle and drum does have quite a bit of weight to it, so be careful not to just let it drop (**photo #11a & 11b**). Place a floor jack under the lower A-arm, remove the upper ball joint nut and then slowly lower the jack so the A-arm can be removed down away from the chassis (**photo #12**). The lower A-arm shaft is held to the bottom of the frame with four bolts, lock washers and nuts. The nuts and lock washers are on the bottom side of the A-arm shaft (**photo #13**). With all the nuts removed the lower A-arm assembly (spindle and drum) can be removed from the frame. Now with the lower A-arm gone, remove the cotter pin and nut from the lower ball joint and again use the ball joint



Photo #10b



Photo #11a



Photo #11b



Photo #9b



Photo #9c



Photo #10a



Photo #12

splitter to disconnect the lower ball joint from the spindle (**photo #14**). The upper A-arms are held to the frame with two 7/16" studs with nuts and lock washer. There are also shims between the upper A-arm shaft and frame. The shims are used to align the front end, but it is not necessary to save them, the front end will have to be realigned when the job is completed (**photo #15a & 15b**). With the A-arms, coil springs and spindles removed the next step is the restoration of the A-arms and to replace the ball joints and bushings (**photo #16**).

The stock upper and lower ball joints were riveted in by the factory, so you will need a sharp chisel and hammer to cut the heads off the rivets and a punch to drive them out (**photo #17a & 17b**). The upper A-arm bushings are held in place with a large washer with a 3/8" bolt and lock washer (**photo #18**). There are several ways to remove the A-arm bushings, but we prefer to use an air gun hammer with a flat chisel. Mount the A-arm into a vise and drive the two bushings out. Now that the bushings have been removed the A-arm shaft can be separated from the A-arm (**photo #19a & 19b**). The lower ball joint had been replaced, so all we needed to do was to unbolt the six bolts and remove the ball joint. You can see the rubber for the lower A-arm bumper was long gone, the mounting plate for the bumper is bolted to the A-arm with a 3/8" nut (**photo #20a & 20b**). The A-arm bushings are held into the lower A-arms with a large washer, 7/16" bolt and lock washer just as the upper A-arms (**photo #21**). Again, using the air hammer and chisel drive the lower A-arm bushings out and remove the A-arm shafts (**photo #22a & #22b**). With



Photo #15b



Photo #16



Photo #13



Photo #14



Photo #17a



Photo #17b



Photo #15a



Photo #18



Photo #19a



Photo #19b



Photo #23



Photo #20a



Photo #20b



Photo #24a



Photo #21



Photo #24b



Photo #22a



Photo #22b

everything now removed from the A-arms we have nothing more than a big pile of worn out parts (**photo #23**).

We sent our A-arms and shafts out to be sand blasted and then the paint shop primmed them with an epoxy primer. The A-arms were then painted GM chassis black, **part #30-46** and the shafts were painted with Eastwood's Detail Gray, **part #49-331**. With everything cleaned up and looking as good as new, the tear down is complete and the reassembly can begin (**photo #24a & 24b**). Watch for Complete Front End Suspension Rebuild, 1955-57—Part 2, Reassembly in next month's issue of *Classic Chevy World*. ✓

# Complete Front End Suspension Rebuild, 1955-57 — Part 2, Build Up

by Randy Irwin

In part one (tear down) we completely disassembled the front end on our 1955 project car, restored the A-arms and are now ready to install the upper and lower ball joints along with the upper and lower A-arm bushings. This month we will walk you through the steps to restore the drag link and reassemble the complete front end. With everything new and tight up front, your car will handle like a dream.

## Time Frame:

8 hours

## Tools Needed:

Tie rod end pickle fork
Ball joint splitter
Coil spring compressor
Tie rod splitter
Hammer
Screw driver
Jack stands
Chisel
Floor jack

The left and right upper A-arm shafts are the same and we have glass beaded them and then painted them with Detail Gray paint, **part #49-331**. There is a casting on the outer side of the shaft that needs to be facing right side up (**photo #1a & 1b**). The upper A-arm bushings, **part #21-09** are a press fit. The best way to install them is to have a shop press them in using an A-arm bushing tool. This will keep from damaging the A-arm and distorting it (**photo #2**). The A-arm bushings are held in with a large washer and a bolt with a lock washer, which are included in the front suspension bolt kit, **part #34-73**. In this kit there are eight large washer, four with a 3/8" hole for the upper A-arms and four with a 7/16" hole for the lower A-arms. Be sure to leave the bolts loose at this time (**photo #3**).

The upper ball joint, **part #21-12** is bolted back into place with three 5/16" x 1" bolts with lock washers and nuts. The ball joint sits on the top side of the A-arm and the dust shield and retainer are on the bottom side. Torque the three bolts to 24 lbs. (**photo 4a & 4b & 4c**).

The lower A-arm shafts are different from passenger's to driver's side. There is an off set to the shaft that must be to the front of the A-arm and the flat side of the shaft must face up to



## Parts Needed:

		Member
34-73	Front suspension bolt kit	45.50 kt
49-331	Detail Gray paint, 13oz.	9.20 ea
21-09	Upper A-arm bushings (set of 4)	18.50 st
21-10	Lower A-arm bushings (set of 4)	24.95 st
21-11	Lower ball joint	53.50 ea
34-170	Idler arm mounting hardware	4.60 kt
53-56	Drag link cover and seal	5.55 st
21-12	Upper ball joint	50.95 ea
21-27	Lower A-arm bumper	7.35 ea
21-26	Upper A-arm bumper	3.70 ea
21-06	Idler arm	18.50 ea
21-05	Idler arm	9.20 ea
21-04	Inner tie-rod end	54.50 ea
21-04	Outer tie-rod end	28.95 ea
21-08	Tie-rod sleeve	30.50 ea



Photo #1b



Photo #1a



Photo #2



Photo #3



Photo #4a



Photo #7b



Photo #7c



Photo #4b



Photo #4c



Photo #8a

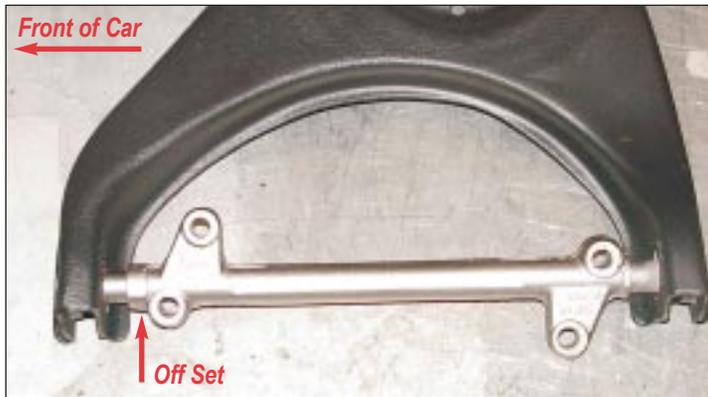


Photo #5



Photo #8b



Photo #6



Photo #7a

make contact with the bottom of the frame. **Photo #5** shows the passenger side A-arm and you can see the offset in the shaft is to the front. We also painted the shafts Detail Gray.

The lower A-arm bushings, **part #21-10** were pressed in with an A-arm tool. The bushings are held in with the large washer with the 7/16" hole and the 7/16" x 1 1/2" bolts and lock washers like the upper A-arms (**photo #6**). The lower ball joint, **part #21-11** bolts to the A-arm with six bolts with nuts and lock washers. Four from the top and two from the sides of the A-arm, torque these bolts to 24 lbs. The lower A-arm bumper, **part #21-27** bolts to the A-arm just to the inside of the ball joint with one 3/8" nut (**photo #7a & 7b & 7c**). The front suspension bolt kit comes with the bolts that hold the lower A-arms to the frame.

There are four short bolts and four long bolts. Match the length of the bolt to the boss on the A-arm shaft. The copper colored nuts and lock washers are for these bolts. Torque each bolts to 65 lbs.(**photo #8a & 8b**).

The upper A-arm is held to the frame with two knurled studs, lock washers and a nut that are supplied with the suspension bolt kit, **part #34-73**. Shims will be installed on these studs to set the front end alignment (**photo #9**).

Using the coil spring compressor install the spring into the spring pocket and raise the lower A-arm in to position with a floor jack (**photo #10**). Now attach the lower ball joint to the spindle with the castellated nut and cotter pin, torque the nut to 45 lbs. and install the cotter pin (**photo #11**). The upper A-arm bumper, **part #21-26** will snap into the 5/8" hole in the frame under the upper A-arm. This bumper will keep the upper A-arm from coming in contact with the frame (**photo #12**). Now connect the upper ball joint to the spindle, torque the castellated nut to 45 lbs. and install the cotter pin. The coil spring compressor can now be removed (**photo #13**). The outer steering arm bolts to the two lower holes on the spindle, the arm faces to the rear of the car.

We are installing our disc brake bracket kit, #20-28 on the project car (**photo #14a & 14b**).

Now we have the A-arms, springs, spindles and all the bumpers installed back on to our frame, we are ready to restore the steering linkage. The steering linkage is made up of the drag link, the idler arm and the inner and outer tie rod ends (**photo #15**). The idler arm has one bushing that is pressed in from the top, clamp the arm in a vise and using a air hammer or chisel drive



**Photo #12**



**Photo #13**



**Photo #9**



**Photo #14a**



**Photo #14b**



**Photo #10**



**Photo #11**



**Photo #15**



Photo #16a



Photo #16b



Photo #21



Photo #17



Photo #18

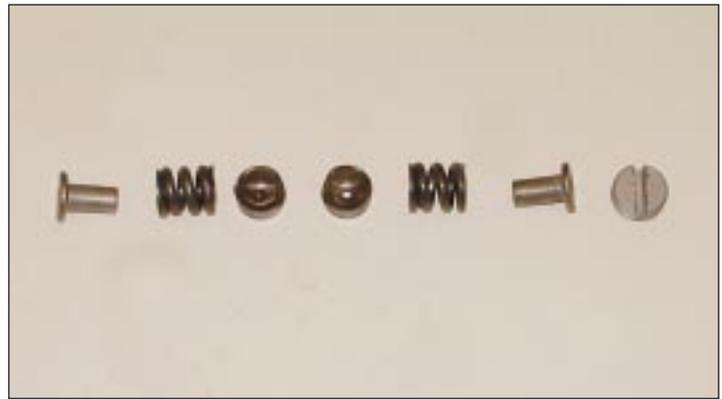


Photo #22



Photo #19a



Photo #19b



Photo #20

the bushing out (**photo #16a & 16b**). With the idler arm clean, press the new bushing, **part #21-06** into the idler arm. The bushing has a collar that stops the bushing from pressing in flush, it will protrude out about 1/2" (**photo #17**). Install the arm on the frame bracket and torque the castellated nut to 24 lbs. and install the cotter pin (**photo #18**). On the end of the drag link on the passenger side there is a bushing that can be driven out using an air hammer or chisel. The new bushing, **part #21-05** presses in from the top of the drag link (**photo #19a & 19b**). With the idler arm and drag link restored, attach the idler arm to the drag link and torque the castellated nut to 24 lbs and install the cotter pin (**photo #20**). The idler arm attaches to the passenger side of the frame with two carriage bolts from the idler arm mounting hardware kit, **part #34-170** (**photo #21**). On the driver's side the drag link attaches to the ball on the pitman arm. There are two spacers, two spring, two seats and an end cap. The seats will fit on each side of the ball on the pitman arm and the springs and spacers will keep pressure on the seats to hold the drag link to the pitman arm (**photo #22**). Slide the spacer in the end of the drag link first, then the spring, then the seat. Make sure to use a good quality grease on all moving parts (**photo #23a & 23b**). **Part #53-56** is the dust cover and seal that will fit over the end of the drag link and keep the trash out (**photo #24a & 24b**).

Next install the seat, spring and spacer into the outer end of the drag link, the end cap will screw into the end of the drag link flush and is held in place with a 1/8" cotter pin (**photo #25a &**



Photo #23a



Photo #23b



Photo #27



Photo #24a



Photo #24b



Photo #28



Photo #25a



Photo #25b

25b). The inner and outer tie rod ends and sleeves are the same left and right on a non-power steering car. The outer tie rod end is the shorter one and the inner one is the longer one. The tie rod sleeve has left hand and right hand threads, the inner tie rod end has right hand threads and the outer has left hand threads (**photo #26**) The inner tie rod end (the longer one) attaches to the front side of the drag link, torque the castellated nut to 24 lbs. and install the cotter pin (**photo #27**). The outer tie rod end (the shorter one) attaches to the outer steering arm on the spindle, torque this nut to 24 lbs also and install the cotter pin (**photo #28**).

With the front end rebuilt we will have a nice tight ride up front, the car will now need to go to the alignment shop to have the caster, camber and toe in set. Here are the alignment specifications for a stock front end as well as a 605 steering box and a rack and pinion unit.



Photo #26

	Caster	Camber	Toe In
Stock Steering Box	+1/2° to +1°	0° to -1°	1/8" to 3/16"
605 Power Steering Box or Rack & Pinion Unit	+2 1/2° to +3 1/2°	0° driver side -1/4 ° passenger side	1/8" to 3/16"

Good Luck! ✓