



LINE - LOCK

Northstar Chevelle Club Newsletter

Editor: Zman September 2009

SHOP TALK

In this article we will cover chassis components that are commonly interchanged. Most are A-frames, trailing arms, and rearends. Also included are steering components from other vehicles, chassis lines and years that will retrofit and function as original. NOTE: some of the data might be incomplete so member feedback is encouraged. Source "Inside 64 - 72 A-Bodies, Car Craft, March 1998".

REAR END HOUSINGS

From 1964-67, Chevelle rearends were manufactured by the Chevrolet Gear and Axle Division. The housing dimensions measure 56.5 inches, from flange to flange. Total measurement with the drums in place is 60.5 inches. The dimensions are similar to the 1967-69 Camaro, Firebird and 1968-74 X-cars and clones, except leaf springs were used. From 1968-72 rearend housings measure 58.5 inches from flange to flange. With brake drums in place, the total dimensions measure 62.5 inches. The dimensions are similar to the 1970-81 Camaro, Firebird and 1975-79 X-cars and clones, except leaf springs again were used. Internal components have a common characteristic to the housing used. 10 bolt pieces fit other 8.125" 10-bolt housings (the rearend used in Chevrolets) and 12-bolt pieces interchange with other 12-bolt housings (not ones from the Chevrolet pickup or Oldsmobile which have a 12 bolt cover and a 10 bolt gear, which measures 8.3"). This means that a positraction carrier will retrofit in place of a standard differential. Axle shafts are common to the housing used and, due to the usual characteristics like overall length and spline count, the shafts only interchange with the housings that are used. (e.g. 12 bolt shafts fit other 12-bolts, and 10 bolt shafts fit other 10-bolts.)

Rear spring mounting pads differ depending on which 1964-66 rearends used a flat pad with a hole drilled in the center. 1968-72 rearends have circular spring mounting pads, which are 3/4" higher than the early flat pad. 1967 was a transition year in which A-cars might have a 1964-66 style rearend, a 1968-72 rearend (which is wider, and commonly available), or a "hybrid" rearend, which will have the 58.5" width, but with the early spring mounting pad and trailing arm brackets. Rear upper control bushing eyes and their positioning will differ. 1968-72 rearend housings will have a 3/8" forward positioning, which is farther than the 1964-67 rearends. 1964 was the only year that the rearend bushings are small and any upper trailing arm (from any GM division) will fit 1964 rearend housings.

REAR TRAILING ARMS

The rear trailing arms (or control arms) consist of four arms that connect the rearend to the frame. The setup consists of two long and two short arms. The lower trailing arms used with sway bars are unique. The usual characteristics is that the arm is boxed and gusseted. The upper arms vary. There are two part numbers in the Chevrolet Parts Interchange Manual that separate 1964-67 from 1968-72 Chevilles and BOP A-Bodies. The lower arms are interchangeable (all years) and cars that did not have a sway bar can be modified to accommodate one. 1973-77 lower rear trailing arms will bolt in if using either 1973-77 rear anti-sway bars or 1977-96 B-car sway bars; common on vehicles like Cadillac limos and police-optional Caprice 9C1s. 201, 1965 Chevelle SS 396s (RPO Z-16) had unique lower arms, which is a one-year item.

Upper trailing arms of 1964-67 vintage, interchange. They are 1" shorter, which will not fit into 1968-72 A-cars, which have longer upper arms. When switching upper arms, care must be exercised since the pinion nose angle



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might be affected. According to *Inside '64 -- '72 A-Bodies*, there are 10 different rear upper control arms offered. Other characteristics include clearance bulges, common with 12-bolt differentials in A-cars, and adjustable upper arms, optioned on Oldsmobile A-cars (F-85, Cutlass). 442s had boxed upper arms, and this is a sought-after item in a restoration. On 1968-72 high-performance, 4-speed, A-cars, Monte Carlo's and Grand Prix's, there is a triangulation brace bracket that is standard. This stiffens the chassis. Tubular versions are available from Edelbrock and Hotchkis Performance. The trailing arms fit either side which means that the left upper arm will fit on the right, and vice versa.

FRONT CONTROL ARMS

Most control arms for the 1964-72 Chevelle interchange. However, the lower control arm used for the front suspension had distinct features. One version, produced from 1964-66, utilized 1.90" (1 5/16") diameter bushings. There are two arms used from 1967-72. They include the LCAs with round bushings, 1.625" diameter, commonly found on 1968 (all models) or 1969-72 vehicles like the Chevelle SS, Pontiac GTO, Oldsmobile 442, and Buick GSX. Most of the lower control arms used on the other A-cars had oval bushings. The lower arm bushings are located in the rear pivot area on both sides of the car. TRW or MOOG manuals call these the rear control arm bushings. All oval bushing arms are 1.90" and 1.625". Round bushing arms are 1.625" and manufactured 1.375" diameter front bushings. Lower arms interchange as an assembly, regardless of the spring diameter (that distinguishes 1964-67 and 1968-72 front springs). You can use a later arm on early models (1964-67) but use of a 1.90" lower arm on a later A-body is unknown. Note: lower arms

may differ; replacement or factory mismatches are common. Thus keep this in mind when locating the correct lower arm for your restoration project. The only problem with oval bushings is that the existing bushing cans will have to be reused. Aftermarket companies that use solid or Del-A-Lum (a Global West product) bushings as replacements, might require locating a set of round bushing lower arms, either a 1.90" or 1.625". Upper control arms, for Chevrolet Chevelles and El Caminos, had crossshafts that used bolts to secure the cup washer to the bushing. BOP A-Bodies used crossshafts with threaded ends and locknuts. Due to the possibility of frame spread, MOOG or TRW manufactures an offset control arm shaft that allows the camber angles to be corrected via OEM specs.

FRONT SPRINGS

Springs vary with application and chassis packages with one important note. 1968-72 A-cars have a different front spring diameter when compared those from a 1964-67 model ("Knuckle Sandwich", Hot Rod, June 1987). 1969 springs are based on computerized data results concerning chassis packages and body styles. The spring rates do vary depending on whether a softer or stiffer ride is preferred. Note: 1964-67 front springs can be found on 1967-69 Camaros and 1968-74 Novas. 1968-72 A-body front springs are used on 1968-70 BOP full size cars. In all cases, the spring rates again will differ depending on ride quality desired.

REAR SPRINGS

Data that is true for front springs applies to the rear springs as well. 1964-67 rearends have provisions for bolting on the spring to the pad. Another difference is that 1964-67 springs are pigtailed on one end only. 1968-72 rearends use a cup, and is flanged to hold the spring in place.



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FRAMES

The A-body frame, unique to the Chevelle and their BOP counterparts, is a unique design which has been used by other auto manufacturers. Since the late 50s, GM used an X-frame design that had little concern for side impacts. This design was used on full size cars (like the Impala) and this utilized a three-link rear suspension that had two long lower control arms and a third link. Ford Motor Company had a frame design that was far more superior to the GM design with the side frame rails positioned outward. The entire frame, if looking underneath a 1960-64 Galaxie 500, is a modified ladder frame. Leaf springs were used at the rear. This design was the foundation for the perimeter frame which came later.

The perimeter frame, which was an improvement of the ladder frame, utilized an independent front suspension. This was a major design change for the A-car. A full, rectangular, perimeter frame placed an emphasis on safety (like side impact collisions). Another design feature was the use of four trailing arms and coil springs. This resulted in a softer ride over a leaf sprung car or truck. The year following the introduction of the GM A-body, other manufacturers (like Ford) incorporated this design. All full sized GM's (except the Buick Riviera) used the new design.

The four-link trailing arm suspension (from the GM A-car) was also incorporated on 1978-present Ford FOX-platform vehicles and the 1985-97 Ford Aerostar minivan. Also the 1979-present Ford full-size vehicles (LTD, Crown Vic, Grand Marquis, and Town Car) had the GM-patented 4-link incorporated in their production vehicles. Note: the rear trailing arms are different on the upper links and they are bolted to the axleshaft. This is common with 1965-70 GM full size vehicles and 1965-79

FoMoCo full size and 1972-79 FoMoCo intermediates.

Since the GM, A-car line was aimed at a different audience, the midsize came into play for buyers not desiring a full size car or a compact. 1964-67 A-bodies used the same frame design but different models and body styles utilized various body mounting methods. All frames had a 115 inch wheelbase which is similar to the 1955-57 Chevrolet. 1968-72 frames had two different wheelbases, a 116 and 112 inch wheelbase. Sedans, station wagons, and utilities (like the El Camino) used a 116 inch frame. The frame is interchangeable, except that the sedan had non-boxed rails. The hardtop and convertibles used a 112 inch wheelbase version and all models (except for Pontiac 455 powered hardtops and convertibles) interchange. The convertible utilized a boxed design for added strength. 1969-72 Grand Prix's and 1970 Monte Carlo's used a modified hardtop frame. The only design difference is that the front wheels were moved four inches forward from the traditional position on the other vehicles (hardtops and convertibles). The engine and transmission position remained in the same place but resulted in the combo positioned behind the front wheels. The frame's wheelbase dimensions measures 116 inches and this frame design is exclusive to the Grand Prix or Monte Carlo. The 1969-72 Grand Prix was designated as a "G" body by the Fisher Body division but A-car suspension components are used. The Monte Carlo was designated as the "A-Special" series; the official use of the G-car designation introduced in 1982. Today, only the Ford Motor Company still manufactures full perimeter framed cars. GM phased out production of the traditional, full perimeter, rear wheel drive family sedans, hearses, and limousines in 1996. It seems that everyone was drawn to the SUV, front wheel drive cars which GM implemented to boost sales. -Zman