Section IV
CORVAIR AND CORVAIR 95 ALIGNMENT

INTRODUCTION

The Corvair and Corvair 95 light duty forward control (L.D.F.C.) steering linkages, steering gear, and suspension systems are fully covered in this section of the program. However, alignment measurement procedures are not provided as they are identical to those provided in the previous section for the conventional passenger car.

Complete alignment specifications are provided for all Corvair models and Corvair 95 (L.D.F.C.) models, and the location of the adjusting shims are illustrated and described.

STEERING LINKAGE

Corvair

The Corvair steering linkage (fig. 4-1) is of the forward mounted relay type and is very similar in design to that used in the conventional passenger car. The steering gear assembly with its pitman arm is mounted on the left side rail and the idler arm bracket is mounted on the right to support the relay rod. In turn, adjustable length tie rods connect the steering arms mounted on the rear of brake backing plate to the relay rod. Ball joints are used at all linkage connections. It should be noted that

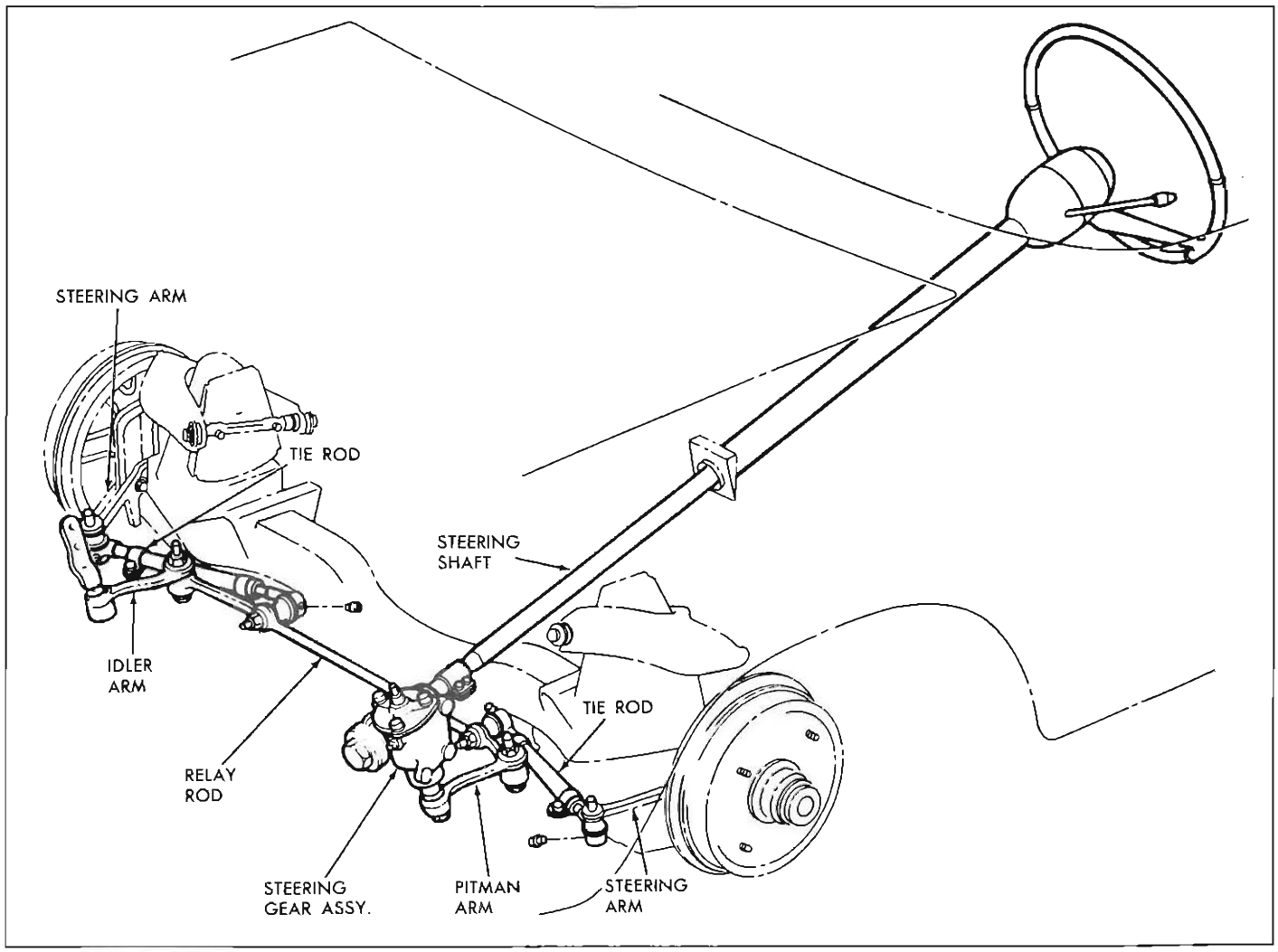

Fig. 4-1—Corvair Steering Linkage

the ball joint attachment between the pitman arm and relay rod is not adjustable on Corvairs as it is on passenger cars.

Corvair 95 (L.D.F.C.)

The steering linkage (fig. 4-2) for the Greenbrier and Corvair 95 light-duty forward control vehicles is essentially like the Corvair steering linkage except for added components to adapt it to the forward control design. A drag link is added which transmits steering control rearward from the steering gear. Steering force is turned 90-degrees to actuate the relay rod by means of the relay arm which is mounted on the left side rail rearward of the steering gear. In a left turn, the pitman shaft swings forward which moves the relay arm clockwise thus pulling the relay rod and tie rods to the left to cause the turn. In a right

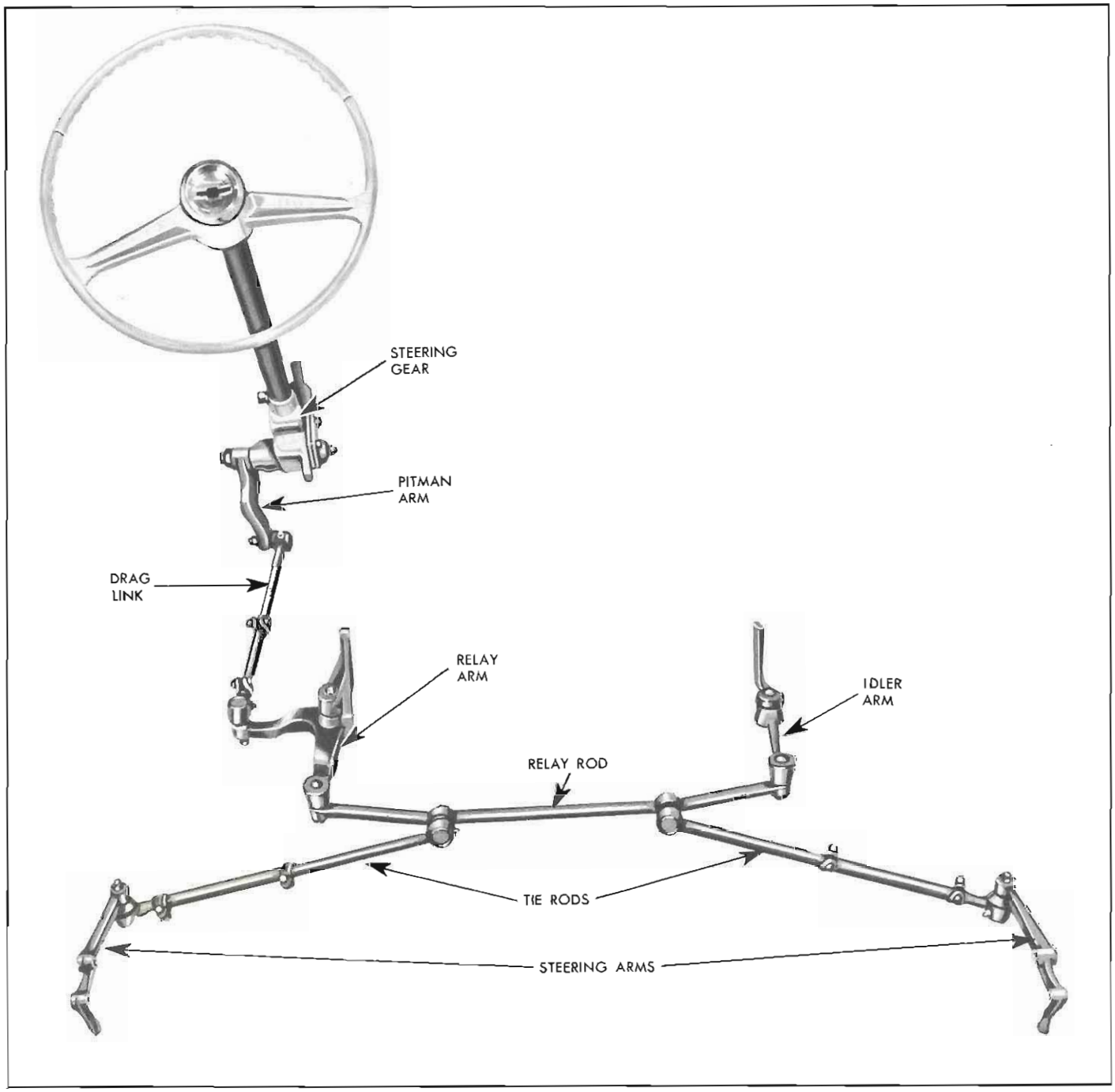

Fig. 4-2—Corvair 95 Steering Linkage

turn, the pitman shaft swings rearward which pivots the relay arm counterclockwise and the steering linkage moves to the right.

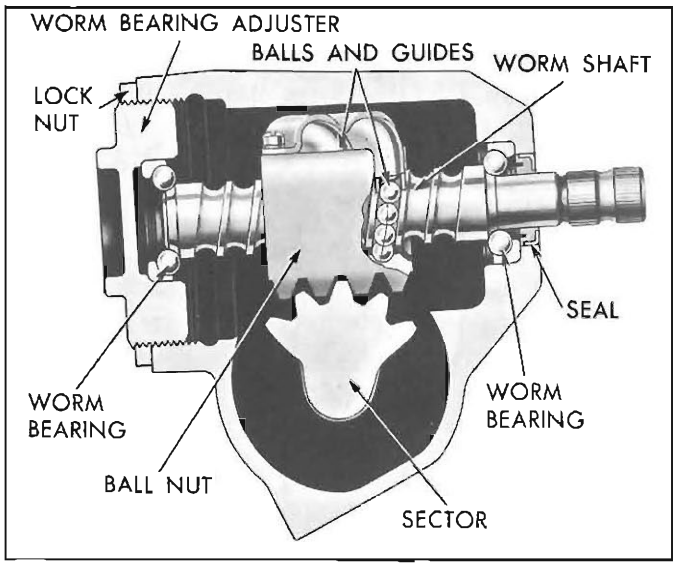

Fig. 4-3—Corvair Steering Gear—Cross Sectional View

STEERING GEAR

The steering gear assemblies (figs. 4-3 and 4-4) used in the Corvair and Corvair 95 models are of the recirculating ball type and are com-

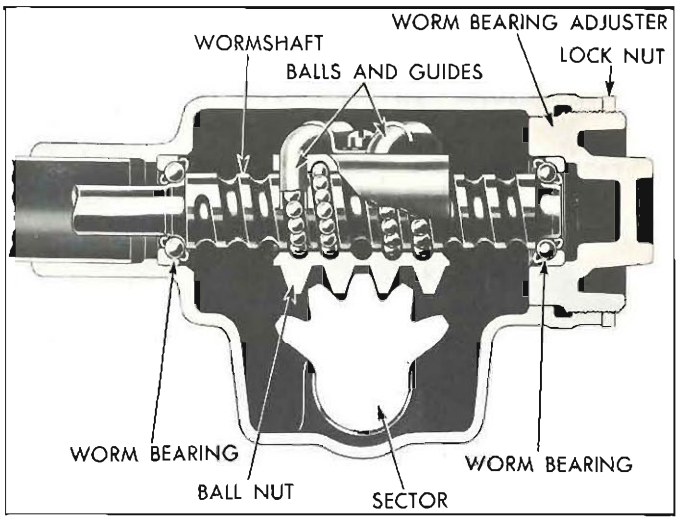

Fig. 4-4—Corvair 95 Steering Gear—Cross Sectional View

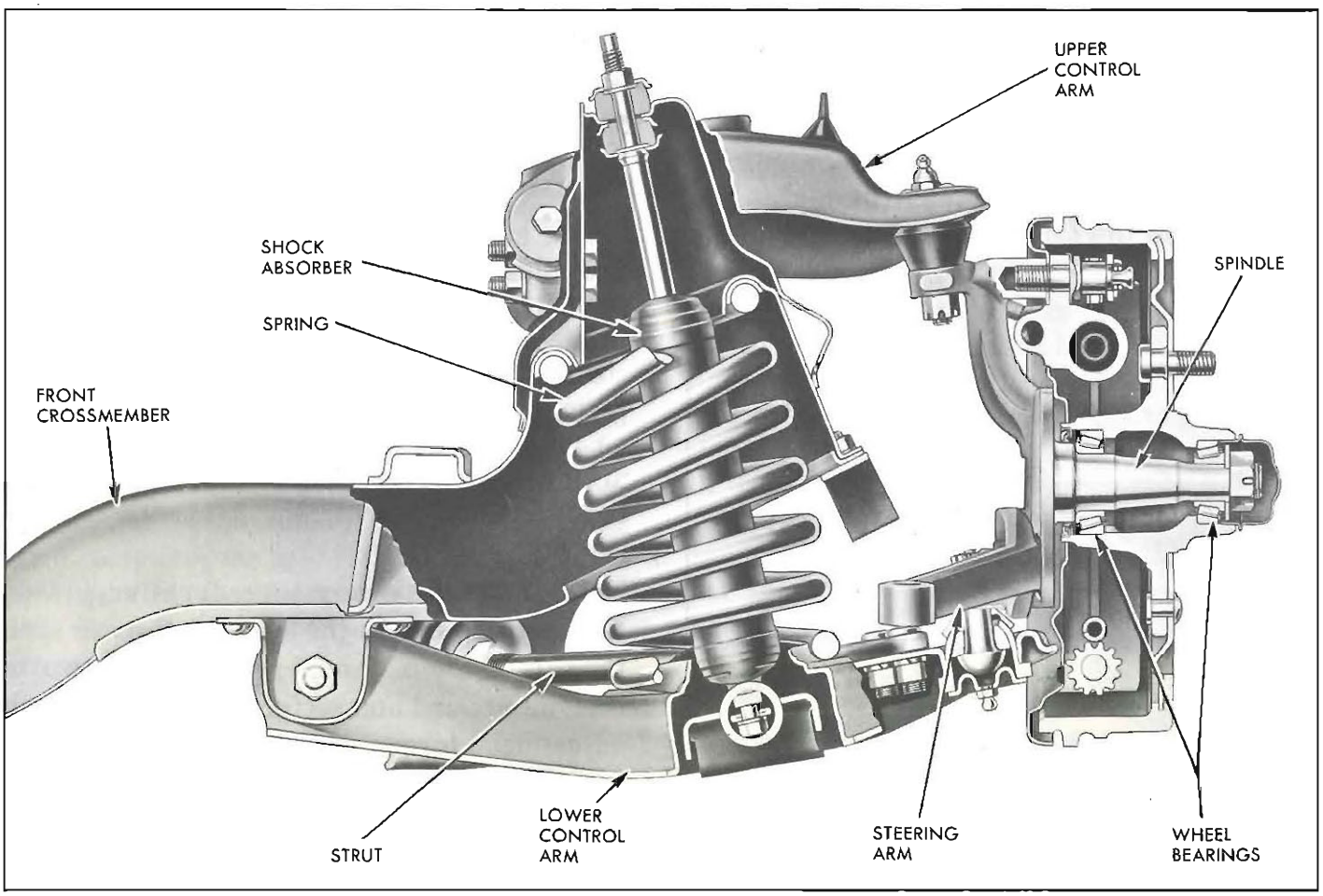

Fig. 4-5—Corvair Front Suspension—Cross Sectional View

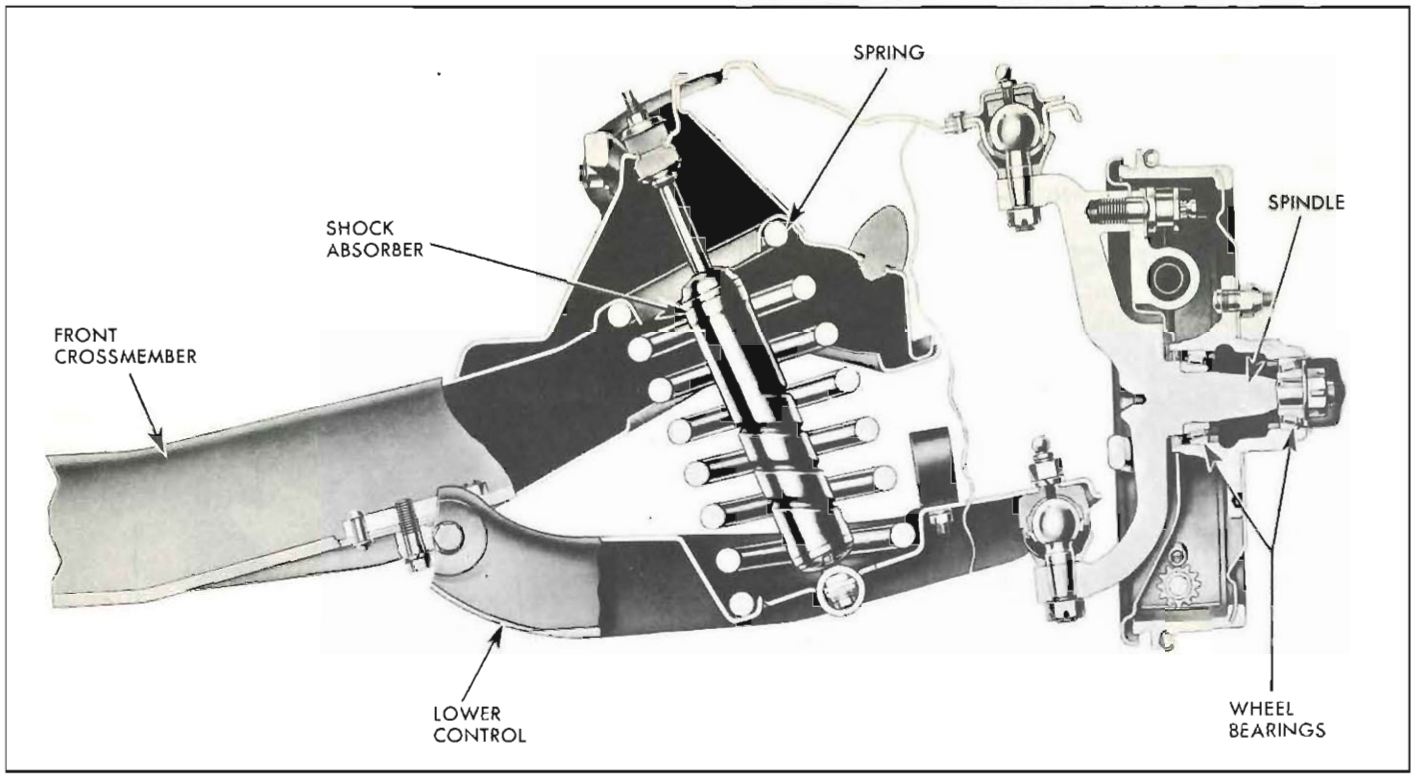

Fig. 4-6—Corvair 95 Front Suspension—Cross Sectional View

parable in construction to the unit used on the conventional passenger car.

An aluminum die cast steering gear housing is used on Corvairs whereas the housing is cast iron on the Corvair 95 units.

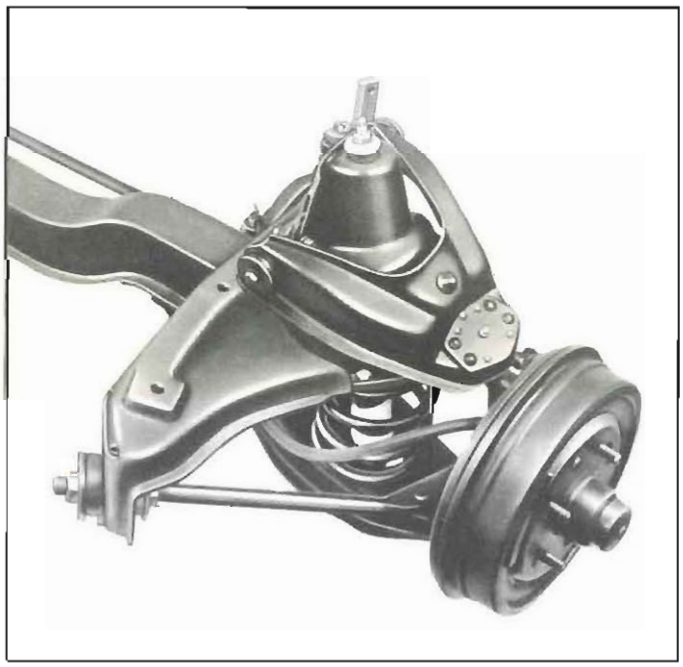

Fig. 4-7—Corvair Lower Control Arm and Strut

Steering gear ratio is 18.1-to-1 on Corvair and 20-to-1 for the Corvair 95.

Adjustments

Two adjustments are required for the Corvair or Corvair 95 steering gear (1) worm bearing preload and (2) gear lash adjustment. While steering problems such as hard or loose steering, road shock, and shimmy can result from an improperly adjusted steering gear, no readjustment of the gear should be made until after a careful check has been made of the wheel alignment, shock absorbers, and steering linkage.

NOTE: The following procedures supersede the instructions in the current Corvair and Corvair 95 Shop Manual relative to the worm bearing preload and sector gear-to-worm lash adjustment torque specifications for Corvair models. The previous torque specification was measured at the steering shaft whereas the new torque is measured at the rim of the steering wheel as are all other Chevrolet vehicles.

Worm Bearing Preload

With the lash adjuster screw backed-off several turns and the steering linkage disconnected from the pitman arm, adjust the worm bearing adjuster until the effort required to keep the steering wheel in motion is 7 to 11 ounces on Corvairs or Corvair 95 models as measured at the rim of the steering wheel with J-5178 scale. When proper adjustment is obtained, tighten the worm bearing adjuster lock nut.

Sector Gear Lash Adjustment

After worm bearing preload is adjusted, tighten the lash adjuster screw until the force required to turn the steering gear through its "hi-point" or straight ahead position is 1 to 1½ pounds on Corvair or Corvair 95 models. The torque requirements are measured at the rim of the steering wheel with a pull scale such as J-5178. When the desired adjustment is obtained, tighten the lash adjuster screw jam nut and reconnect the steering linkage to the pitman shaft.

FRONT SUSPENSION

All components of the front suspension are assembled as a unit to the front suspension crossmember on all Corvair and Corvair 95 vehicles (Figs. 4-5 and 4-6).

The suspension is independent for each wheel and of the S.L.A. type, very similar to that of the conventional Chevrolet passenger car.

On Corvair models, the lower control arm is a two-piece design (fig. 4-7). A relatively small steel stamping provides the spring seat and supports the vehicle weight. A bar-like strut completes the usual triangular shape and provides the necessary horizontal rigidity. This strut is adjustable in length and is used to provide caster adjustment on Corvairs.

The conventional stamped triangular lower control arms are used on Corvair 95 and Greenbrier models and caster and camber is adjusted by means of shims in the same manner as the conventional passenger car.

ALIGNMENT PROCEDURE AND SPECIFICATIONS

The measurement of alignment angles on Corvair or Corvair 95 vehicles is identical to the procedures provided in Section III. Complete alignment specifications are provided in the following chart and instructions are provided where the alignment procedures are different or unusual.

CAMBER AND CASTER ADJUSTMENT

Corvair

Camber Adjustment

This is the first adjustment to be performed on the front suspension. The camber adjustment is made by means of shims between the upper control arm inner shaft and the front crossmember (fig. 4-8). The camber shims are accessible via the fender opening. Although shims can be changed at either the front or rear attachment, it is important that the shimming be done equally so as to have no effect on caster. Adding shims at both front and rear of support shaft will decrease positive camber. The procedure for adjustment is to loosen the upper support shaft to crossmember bolts, add or remove shims (equally) as required and retighten the bolts. (It may be necessary to remove the wheel to secure these bolts.) Camber should be positive ½° ± ½° and should be within ¼-degree of opposite side.

CORVAIR AND CORVAIR 95 ALIGNMENT SPECIFICATIONS

ALIGNMENT ANGLE	CORVAIR	CORVAIR 95
Camber	½° ± ½°	¼° ± ¼°
Caster	2° + 0° — ½°	2½° ± ¼°
Ball Joint Inc.	7° ± ½°	7¼° ± ½°
Toe Out-on-Turns	20° Inner 18° Outer	23° Inner 20° Outer
Toe-in	¼" — ⅜" Total	1/16" — 3/16" Total

Caster Adjustment

Caster is adjusted by turning the two nuts at the rear of the strut rod (fig. 4-9). Lengthening this rod by turning the nuts increases caster, shortening this rod by turning the nuts decreases caster. Caster should be positive 2° + 0° — ½° and be within ¼-degree of opposite side.

NOTE: Due to manufacturing tolerances, it is possible to run out of threads on the strut rod or cause the front coil spring to be cocked in its seat and rub the spring tower. Only when this happens is it permissible to shim unevenly at upper control arm. However, if this is the case, camber must be rechecked.

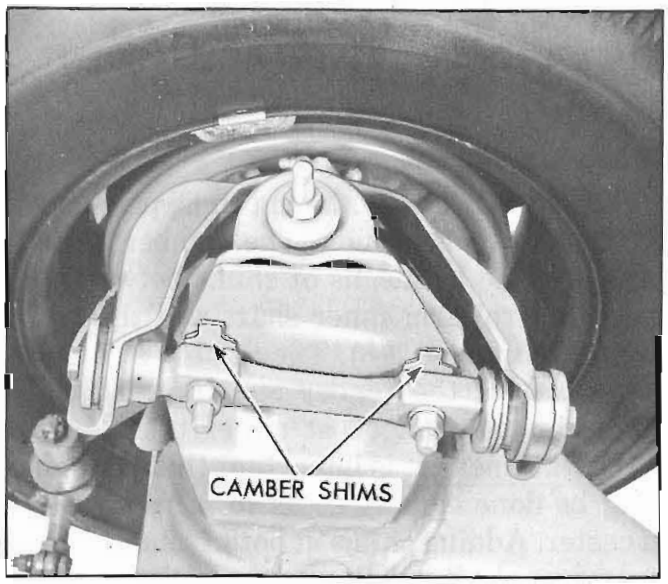

Fig. 4-8—Camber Shims—Corvair

Corvair 95

Caster and Camber Adjustment

The caster and camber adjustments are made by means of shims between the upper control arm inner support shaft and the support bracket attached to the frame side rail. (fig. 4-10). The shims are accessible via the front fender opening. On models equipped with the air heater, the air duct is routed very close to these shims on the right side of the vehicle but they are accessible if a flex socket is used on the bolts.

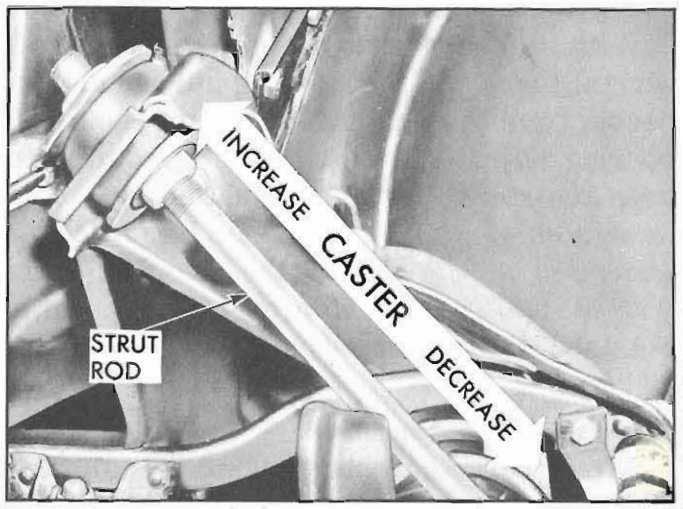

Fig. 4-9—Caster Adjustment—Corvair

Shims may be changed at either the front of the shaft or the rear of the shaft to change caster or at both points equally to change camber.

The addition of shims at the front bolt or removal of shims at the rear bolt will decrease positive caster. A 1/32" shim difference, one shim, will change caster ¼-degree. Adding one 1/32" shim at both front and rear of support will decrease positive camber ⅛-degree. Conversely, removing a 1/32" shim at both front and rear will increase positive camber ⅛-degree.

The procedure for adjustment is to loosen the upper support shaft-to-bracket bolts, add or remove shims as required and retighten the bolts.

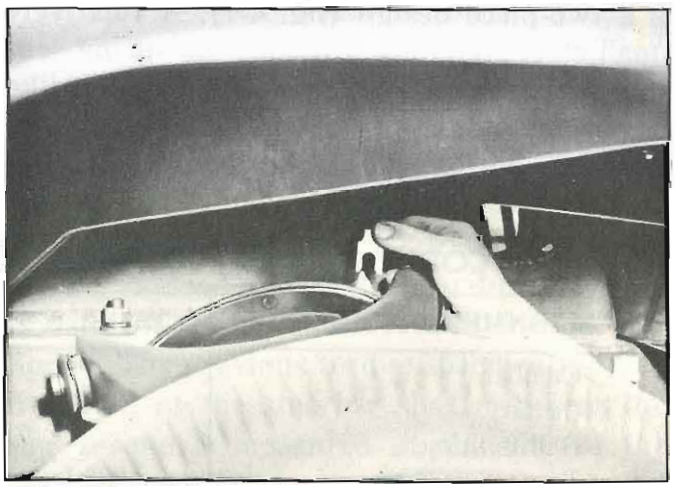

Fig. 4-10—Camber and Caster Shims—Corvair 95

Both caster and camber can be adjusted in one operation.

Caster should be $2\frac{1}{2}° \pm \frac{1}{4}°$ and camber should be $\frac{1}{4}° \pm \frac{1}{4}°$. Both sides of vehicle must be equal within $\frac{1}{2}$ degree.

Note that these adjustments must be made with vehicle standing at curb height; which means height of center of lower control arm pivot from floor ($9\frac{3}{4}'' \pm \frac{1}{8}''$) when vehicle has full capacity of fuel and oil, correct pressure in tires, nothing inside except standard items such as spare tire, jack, etc., and, of course, no passengers.

BALL JOINT INCLINATION AND TOE-OUT ON TURNS

As on the conventional passenger car, neither the ball joint inclination nor toe out-on-turn angles is adjustable on the Corvair or Corvair 95.

A bent spindle is indicated if the combined total of the vehicle's ball joint inclination and camber angles does not fall within combined range for these specifications.

Corvair Combined Angle

If a Corvair's combined angle total is not within 7 degrees to 9 degrees ($7° \pm \frac{1}{2}°$ and $\frac{1}{2}° \pm \frac{1}{2}° = 7\frac{1}{2}° \pm 1°$), the spindle on that side may be bent and should be replaced.

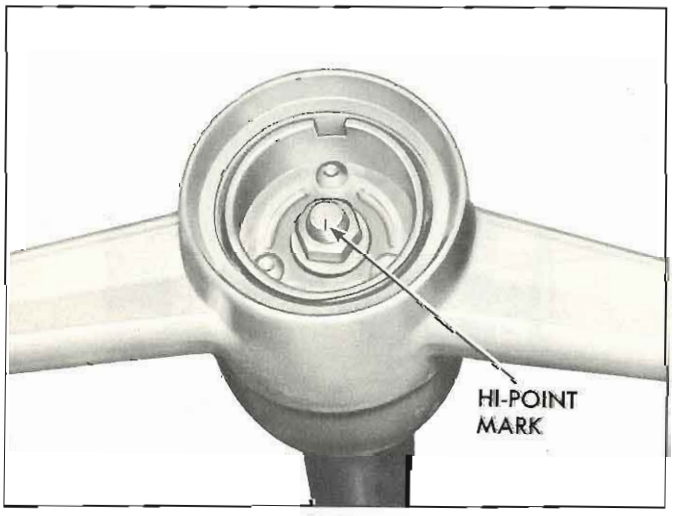

Fig. 4-11—Corvair Steering Hi-Point Mark

Corvair 95 Combined Angle

If the Corvair 95 combined angle total is not within $6\frac{3}{4}$ degrees to $8\frac{1}{4}$ degrees ($7\frac{1}{4}° \pm \frac{1}{2}°$ and $\frac{1}{4}° \pm \frac{1}{4}° = 7\frac{1}{2}° \pm \frac{3}{4}°$), the spindle on that side may be bent and should be replaced.

TOE-IN ADJUSTMENT

Corvair

Toe-in, which should be $\frac{1}{4}''$ to $\frac{3}{8}''$ total on Corvair models, is adjusted in the same manner as described previously for the passenger car.

It should be noted that the steering high point marks are to be set to the 6 o'clock position because the steering gear and shaft marks are visible only from beneath the car.

Corvair 95

Corvair 95 toe-in should be adjusted to $\frac{1}{16}''$-$\frac{3}{16}''$ total toe-in. Because of the forward control steering linkage design, the procedure described below should be followed to check the drag link length prior to toe-in adjustment:

1. Remove the horn button and turn the steering wheel to straight ahead position. The mark on the steering shaft beneath

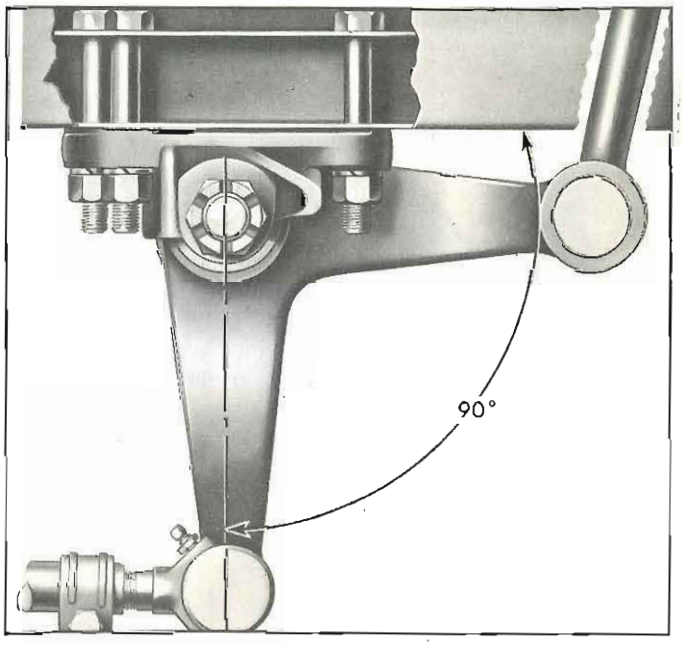

Fig. 4-12—Angle of Relay Arm-to-Frame

the horn button should be in exactly the 6 o'clock position when the wheels are straight (fig. 4-11). It should be noted that the steering shaft high point mark beneath the horn button is the only reference mark on the Corvair 95 steering shaft and gear as the shaft is not visible from beneath the vehicle as it is on Corvair models.

2. Without altering either the front wheel or steering wheel position, check the relationship between the forward lever of the relay arm (fig. 4-12) and the frame side rail. If the drag link is properly adjusted, the forward lever of the relay arm (which points to the left front wheel) will be 90 degrees from the frame side rail. If it is not, loosen the clamps on the drag link and lengthen or shorten the drag link as required.

From this point on, toe-in adjustment procedures are the same as for any other vehicle and steering wheel centering should be accomplished after road testing by altering only the tie rod lengths; no further adjustment of the drag link is required nor should be made.