

Drive Train



DRIVE LINE

The Stingray driveline consists of the driveshaft, differential carrier, and axle driveshafts. The driveshaft is of conventional tubular design with a universal joint at each end. The differential is mounted directly to a suspension crossmember. Power is transmitted to the wheels through universal-joined axle driveshafts. The 1984 Corvette uses two types of drive shafts, one made from aluminum and the other from steel. Each shaft is installed in the conventional manner.

Driveshaft and Universal Joints

REMOVAL AND INSTALLATION

NOTE: Follow steps 1, 5, 6, 7, and 8 to remove the driveshaft from 1980 and later Corvettes. During installation, torque the bearing strap fasteners to 15ft. lbs.

1. Jack the car to a convenient working height and support with jackstands.

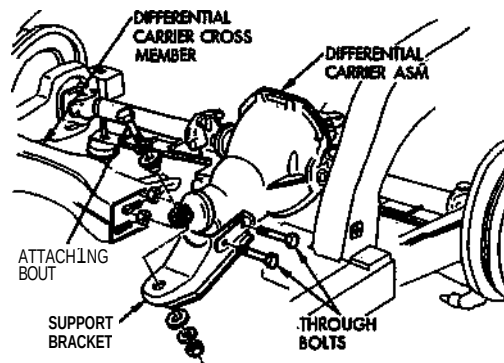
2. Wedge a block of wood between the top of the differential carrier and the car floor to keep the carrier from twisting on its rubber mounts when the front support bracket is disconnected.

3. Loosen and remove the carrier support-bracket front bolt. Remove the two rubber biscuits and large washer. Discard and replace the rubber biscuits if they show any deterioration.

4. Remove the two side bolts or front thru-bolt on later models from the carrier support bracket. Loosen, but do not remove, the rear thru-bolt and swivel the bracket down and away.

5. Mark the driveshaft so that it may be reinstalled in its original position. Remove the U-bolts from both ends of the driveshaft.

6. Push the front yoke into the transmis-



1963-79 differential and axle driveshaft mounting (later models similar)

sion and remove the driveshaft by pulling it down and to the rear.

7. Check the universal joints and replace damaged or worn units. Grease both universal joints before reinstalling them.

8. Install the driveshaft and attach to the transmission yoke and carrier flange.

9. Install the front bolt biscuits and flat washer and raise the bracket to the crossmember.

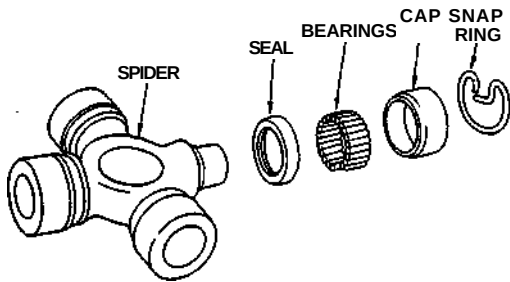
NOTE: At this point it may be necessary to install a jack under the carrier. This will aid in lining up the side-bracket bolt holes and compressing the rubber biscuits.

10. Install the front crossmember bolt and nut. Install the side bolts. Front bolt torque is 30 ft. lbs. Torque the two side bolts to 45-55 and the long thru-bolt to 40-60 ft. lbs.

NOTE: The carrier support bracket bolts frequently work loose, causing vibration and rear axle hop. Periodic torquing of these four bolts will eliminate this problem.

UNIVERSAL JOINT OVERHAUL

Except for early Stingrays, Corvettes are equipped with lubed-for-life universal joints without grease fittings. Whenever universal



Typical universal joint assembly

joints are removed from the car, they should be checked and regreased.

1. Remove the joints from the driveshaft. These can sometimes be tapped out, but stubborn joints must be pressed out.
2. Remove the bearing cups and seals, being careful not to lose any rollers.
3. Inspect the cups and trunnion ends for damage or wear. Ensure that all bearing rollers are present. Replace the rubber seals.
4. Clean the cups and rollers. Repack the cup with grease and reassemble the joint.

REAR AXLE

Axle Driveshaft

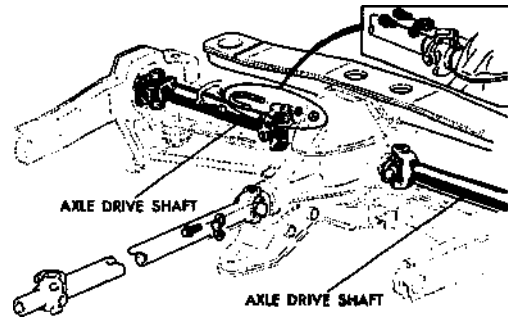
REMOVAL AND INSTALLATION

1979 and Earlier Models

1. Jack the rear of the car up and support with jackstands.
2. Disconnect the inside trunnion from the carrier yoke.
3. On the outer end, bend down the locktabs and wire-brush the bolts.
4. Scratch a mark on the camber adjusting cam and the bracket to permit realignment.
5. Loosen the camber adjustment nut and turn the cam so that the eccentric end points inward. Doing this will push the trailing arm out and give more room for driveshaft removal.
6. Remove the driveshaft, outside end first.
7. To install, position the inside end of the driveshaft in the carrier yoke and assemble U-bolts or clamp and bolts. Torque the bolts to 14-18 ft. lbs.

NOTE: When removing and installing both axle driveshafts, be certain to position the carrier side yokes so that the trunnion seats are at 90° angles to each other.

8. Install the outside end of the driveshaft into the spindle drive flange. Install the locks and bolts. Torque the bolts to 70-90 ft. lbs. and bend the locktabs up.



1963-79 axle driveshaft installation

9. Realign the camber adjusting cam and bracket. Torque the nut to 15-22 ft. lbs.

1980-82 Models

1. Raise the rear of the vehicle and support it safely with jacks stands.
2. Disconnect the inboard driveshaft trunnion from the side gear yoke. Remove the plastic shield.
3. Disconnect the shaft flange from the spindle drive flange.
4. Mark the camber adjusting cam and the mounting bracket so that their relationship will be properly maintained during assembly.
5. Loosen the camber adjusting nut. Rotate the adjusting cam so that the high point of the cam faces inward, which pushes the control arm outward. This will provide additional working clearance.
6. Remove the driveshaft, outboard end first. Install the driveshaft in the following manner:
7. Place the inboard driveshaft trunnion into the side gear yokes. For vehicles using U-bolts with 1.06" dia. bearing caps, torque the bolts to 15 ft. lbs; for U-joints with 1.13" dia. bearing caps, torque the bolts to 25 ft. lbs.
8. Rotate the yokes so that the trunnion seats are phased 90° apart.
9. Attach the outboard end of the driveshaft in the same manner as step 7.
10. Install the plastic shield. Align the marks made during step 4 and torque the camber adjusting cam bolt to 130 ft. lbs.

Drive Shaft Axle

REMOVAL AND INSTALLATION

1. Raise the vehicle and support it safely.
2. Disconnect leaf spring from the knuckle.
3. Disconnect tie rod end from the knuckle.

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Rear Axle Identification

NOTE: Axle identification is stamped on the differential carrier along with the date of manufacture.

Type	Plant Identification
1963	
3-Speed (3.36 ratio)	CA
Positraction (3.08 ratio)	CJ
Positraction (3.36 ratio)	CB
Positraction (3.55 ratio)	CC
Positraction (3.70 ratio)	CD
Positraction (4.1 1 ratio)	CE
Positraction (4.56 ratio)	CF
4-Speed (3.08 ratio)	CZ
4-Speed (3.70 ratio)	CX
1964	
3-Speed (3.36 ratio)	CA
Positraction (3.08 ratio)	CJ
Positraction (3.36 ratio)	CB
Positraction (3.55 ratio)	CC
Positraction (3.70 ratio)	CD
Positraction (4.1 1 ratio)	CE
Positraction (4.56 ratio)	CF
4-Speed (3.08 ratio)	CZ
4-Speed (3.70 ratio)	CX
1965	
(3.36 ratio)	AK
Positraction (3.08 ratio)	AL
Positraction (3.36 ratio)	AM
Positraction (3.55 ratio)	AN
Positraction (3.70 ratio)	AO
Positraction (4.1 1 ratio)	AP
Positraction (4.56 ratio)	AO
(3.08 ratio)	AR
4-Speed (3.70 ratio)	AS
Positraction (3.08 ratio) "396"	AT
Positraction (3.36 ratio) "396"	AU
Positraction (3.55 ratio) "396"	AZ
Positraction (3.70 ratio)	FA
Positraction (4.1 1 ratio) "396"	FB
Positraction (4.56 ratio) "396"	FC
1966	
(3.36 ratio)	AK
Positraction (3.08 ratio)	AL
Positraction (3.36 ratio)	AM
Positraction (3.55 ratio)	AN
Positraction (3.70 ratio)	AO
Positraction (4.1 1 ratio)	AP
Positraction (3.08 ratio)	AR
4-Speed (3.70 ratio)	AS
Positraction (3.08 ratio) "396"	AT
Positraction (3.36 ratio) "396"	AU
Positraction (3.55 ratio) "396"	AZ
Positraction (3.70 ratio) "396"	FA
Positraction (4.1 1 ratio) "396"	FB
Positraction (4.56 ratio) "396"	FC
1967	
(3.36 ratio)	AK
Positraction (3.08 ratio)	AL
Positraction (3.36 ratio)	AM

Rear Axle Identification (cont.)

NOTE: Axle identification is stamped on the differential carrier along with the date of manufacture.

Type	Plant Identification
1967	
Positraction (3.55 ratio)	AN
Positraction (3.70 ratio)	AO
Positraction (4.11 ratio)	AP
4-Speed (3.70 ratio)	AS
Positraction (3.08 ratio) "427"	AT
Positraction (3.36 ratio) "427"	AU
Positraction (3.55 ratio) "427"	AZ
Positraction (3.70 ratio) "427"	FA
Positraction (4.11 ratio) "427"	FB
Positraction (4.56 ratio)	FC
1968	
(3.36 ratio)	AK
Positraction (3.08 ratio)	AL
Positraction (3.36 ratio)	AM
Positraction (3.55 ratio)	AN
Positraction (3.70 ratio)	AO
Positraction (4.11 ratio)	AP
(3.70 ratio)	AS
Positraction (3.08 ratio) (H.D.) .	AT
Positraction (3.36 ratio) (H.D.) .	AU
Positraction (3.08 ratio) (H.D.) .	AV
Positraction (3.08 ratio) (H.D.) .	AW
1969	
(3.36 ratio)	AK
Positraction (3.08 ratio)	AL
Positraction (3.36 ratio)	AM
Positraction (3.55 ratio)	AN
Positraction (3.70 ratio)	AQ
Positraction (4.11 ratio)	AP
(3.70 ratio)	AS
Positraction (3.08 ratio) (H.D.) .	AT
Positraction (3.36 ratio) (H.D.) .	AU
Positraction (3.08 ratio)	AV
Positraction (3.08 ratio) (H.D.) .	AW
Positraction (2.73 ratio) (H.D.) .	AY
Positraction (3.55 ratio) (H.D.) .	AZ
Positraction (3.70 ratio) (H.D.) .	FA
Positraction (4.11 ratio) (H.D.) .	FB
Positraction (4.56 ratio)	FC
1970	
(3.36 ratio)	CAK
Positraction (3.08 ratio)	CAL
Positraction (3.36 ratio)	CAM
Positraction (3.55 ratio)	CAN
Positraction (3.70 ratio) 350 H/Per.,	CAO
4-Speed Closed Ratio	CAP
Positraction (4.11 ratio)	
Positraction (3.70 ratio) 350 H/Per.,	CAS
4-Speed Closed Ratio	CAT
Positraction (3.08 ratio)	CAU
Positraction (3.36 ratio)	CAV
Positraction (3.08 ratio)	
Positraction (3.08 ratio) 4-speed	CAW
Automatic	CAY
Positraction (2.73 ratio)	

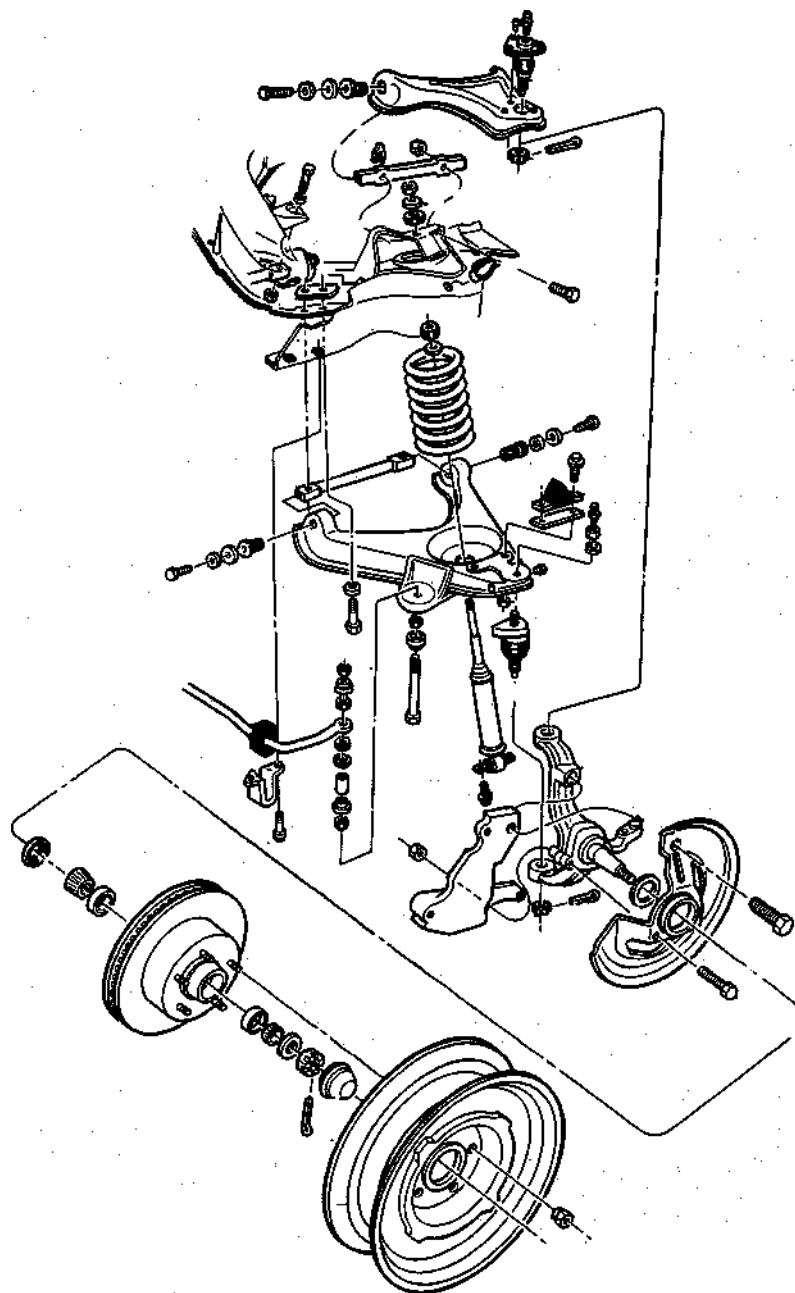
232 SUSPENSION AND STEERING

BOUNCE TEST

Each shock absorber can be tested by bouncing the corner of the vehicle until maximum up and down movement is obtained. Release the car. It should stop bouncing in one or two bounces. Compare both front corners or both rear corners but do not compare the front to the rear. If one corner bounces longer than the other it should be inspected for damage and possibly be replaced.

REMOVAL AND INSTALLATION

1. To remove, raise the vehicle and hold the upper stem of the shock absorber with an open-end wrench. This prevents the stem from turning and allows the removal of the retaining nut, washer, and rubber grommet.
2. Remove the two bolts that fasten the lower pivot point of the shock absorber to the lower control arm and slip the shock absorber free.



Front suspension—exploded view

The displacement contributes to the directional sense. Combined with $+3^\circ$ caster, spindle offset gives an effect similar to higher caster without the poor responsiveness.

Coil Springs

REMOVAL AND INSTALLATION

CAUTION: Great care should be exercised when removing springs, as the compressed force of a coil spring is potentially very dangerous.

1. Support the car so that the control arms hang loosely.
2. Remove the wheel and tire, stabilizer bar, and shock absorber.
3. Loosen the lower ball joint-to-steering knuckle nut and the two, lower control arms, cross-shaft bushing bolts.
4. Wrap a safety chain around the lower arm and the coil spring.
5. Install a floor jack under the spring and slightly compress the spring.
6. Disconnect the lower ball joint from the steering knuckle.
7. Very slowly and carefully, lower the control arm and release the spring. It may be necessary to pry the spring out of the tower.
8. To install, position the spring on the control arm and jack up the arm.
9. Install the ball joint on the steering knuckle, and remaining components in a reverse order.

Transverse Leaf Spring

REMOVAL AND INSTALLATION

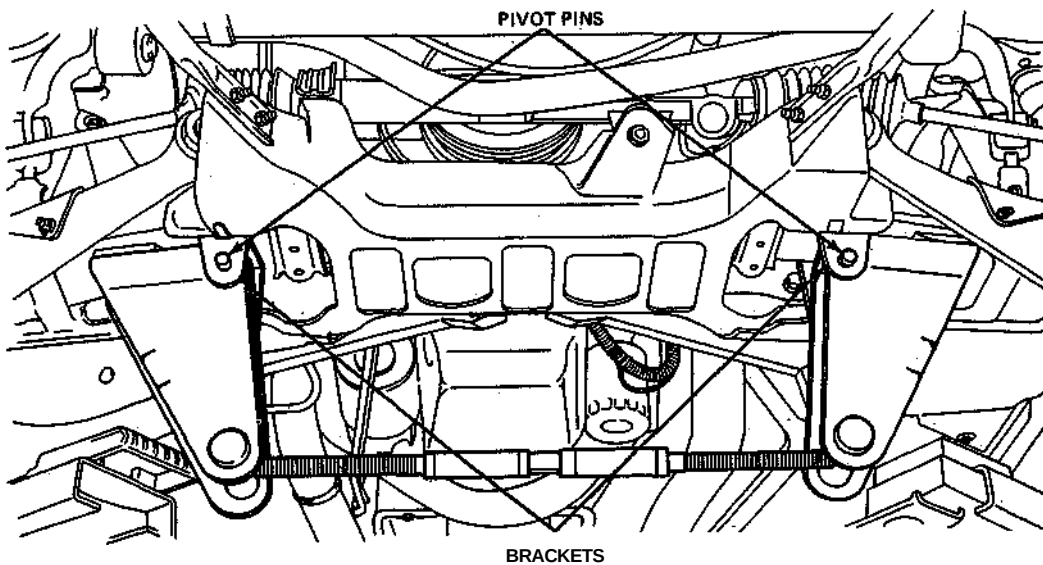
1. Raise the vehicle and support it safely.
2. Remove the wheel and tire assemblies.
3. Remove both spring protectors.
4. Install spring compressing tool J-33432, or equivalent.
5. Disconnect the lower ball joints with tool J-33436-9, or equivalent.
6. Compress the leaf spring tool.
7. Remove the shock mounting bracket to lower control arm attaching bolts.
8. Remove the spring mounting bolts.
9. Release and remove leaf spring compressor.

10. Install the spring by reversing the removal procedure. Torque all nuts and bolts to specifications, and check the front end alignment.

NOTE: During removal and installation of transverse spring take care to prevent damage. Handle compressed spring carefully to avoid possible injury.

Shock Absorbers

Corvette Stingray shock absorbers are the sealed, hydraulic type with no provision for adding fluid or making adjustments. They should be replaced when evidence of faulty operation is discovered. Replace any leaking shock absorber.



Transverse leaf spring removal requires the use of a spring compressor as shown. The pivot pins are removable so that the bracket may be placed over the top of the spring. See text for OEM tool numbers