GENERAL MOTORS INTEGRAL HOUSING

Buick
Cadillac Seville
Chevrolet
Oldsmobile
Pontiac

DESCRIPTION

Semi-floating hypoid gear type with integral housing, with centerline of pinion set below centerline of ring gear. Differential is designed for use with an open drive line and coil or leaf springs. A removable steel cover, bolted to rear of housing, permits service of differential case without removing complete axle assembly from vehicle.

AXLE RATIO & IDENTIFICATION

Rear axle ratio, differential type, manufacturer and build date information is stamped on the forward side of the right axle tube except for "B" axles and Corvette. A tag giving this information is attached by a cover bolt at the seven o'clock position on "B" axles. Corvette axle information is stamped on bottom edge of differential carrier flange.

First two LETTERS indicate axle code, and third LETTER indicates manufacturer: "B" = Buick, "C" = Chevrolet Buffalo, "D" = Cadillac, "G" = Chevrolet Gear and Axle, "K" and "M" = G.M. of Canada, "O" = Oldsmobile, "P" = Pontiac, "W" = Chevrolet Warren.

Axle shafts on "B" types are retained by an outer retainer bolted to the brake backing plate and an inner retainer which is pressed against the inner bearing race. All other axles are retained in housing by "C" locks positioned in circular grooves near inner ends of axle shafts.

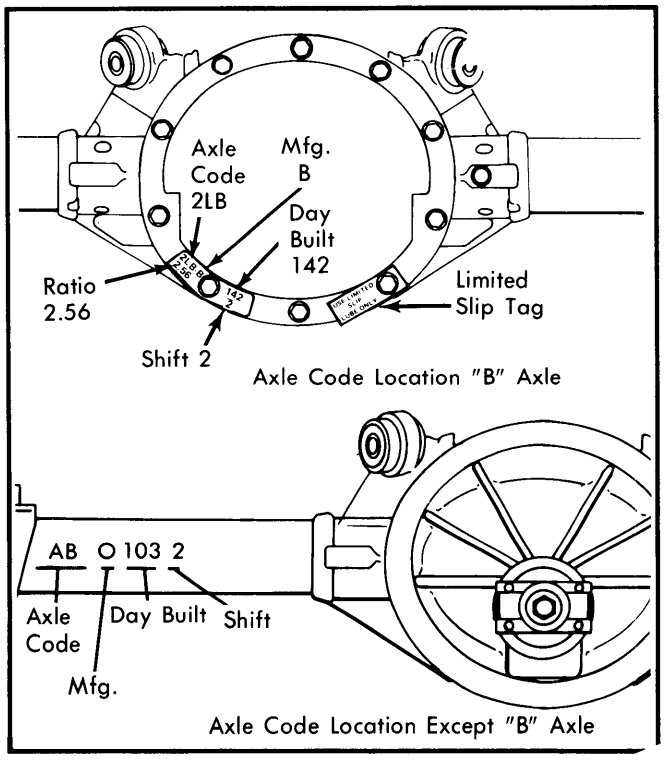


Fig. 1 Axle Ratio Code Location

Axle Ratio Identification

BUICK

Axle Ratio	Conventional	Positive Traction
2.29:1	AH, AT, GC, RA	BH
2.41:1	AJ, AZ, GF, KA, LA, TE, YC	BJ, BZ, KZ, NR, TV, YT
2.56:1	AA, AY, EB, FB, KB, RC	BA, BY, EY, FY, KY
2.73:1	AB, AX, GB, KC, LC, MS, RX, RD, WK, YE	BB, BX, KX, MV, NC, WX, YW
2.93:1	AG, ED, FD	EW, FW
3.08:1	AC, KF, LF, TC, WM, YJ	KU, NF, TX, WP, YY
3.23:1	AD, AU, FE, KG, LG, WK, YK	BD, FV, KT, NG, WZ, YZ

CADILLAC SEVILLE

Axle Ratio	Conventional	Positive Traction
2.24:1	MA	MB
2.56:1	ME	MD
3.08:1	MJ	MG

CHEVROLET

Axle Ratio	Conventional	Positive Traction
2.29:1	AH, RA	BH
2.41:1	AJ, AZ, FH, GF, LA, MN, PJ, TE	BJ, BZ, FZ, MZ, NR, PS, TV
2.56:1	AY, FB, GA, LB, MR, PH, TA, YD	BY, FY, MW, NB, PT, TZ, YU
2.73:1	AB, AL, AX, FC, GB, LC, MS, PA, RD, TB	BB, BL, BX, FX, MV NC PU, TY
2.93:1	AG, FD	BG, FW
3.08:1	AC, AV, BC, LF, MP, PC, TC, YJ	BU, MY, NF, PW, RF, TX, YY
3.23:1	AD, FE	BD, FV
3.42:1	PE	PY
3.73:1	PF	PZ

CHEVROLET CHEVETTE

Axle Ratio	Conventional	Positive Traction
3.70:1	QA, QB	.....
4.11:1	QC, QD	.....

CHEVROLET CORVETTE

Axle Ratio	Positive Traction
3.36-1	OM
3.55-1	OH
3.70-1	OJ

CHEVROLET MONZA

Axle Ratio	Conventional	Positive Traction
2.29:1	EA	EZ
2.56:1	EB	EY
2.73:1	EC	EX
2.93:1	ED	EW
3.08:1	EJ	ER

GENERAL MOTORS INTEGRAL HOUSING (Cont.)

OLDSMOBILE

Axle Ratio	Conventional	Positive Traction
2.14:1	AK, RH	BK
2.29:1	AH, AT, EA, GC, RA, RT	BH, BT, EZ
2.41:1	AJ, AZ, FH, GF, KA, LA, RZ, TE, YC	BJ, BZ, FZ, KZ, NR, TV, YT
2.56:1	AA, AY, EB, FB, GA, KB, LB, RC, RY	BA, BY, EY, KY, NB, FY
2.73:1	AB, AX, EC, FC, GB, KC, LC, RD, RX, YE	BB, BX, EX, FX KX, NC, YW
2.93:1	AG, AW, ED, FD, RE, RW	BB, BW, EW, FW
3.08:1	AC, AV, EJ, FG, KF, LF, RF, RV, TC, YJ	BC, BV, ER, FT, KU, NF, TX, YY
3.23:1	AD, AU, EE, FE, KG, LG, RG, RU, YK	BD, BV, EV, FV, KT, NG, YZ
3.42:1	AE, FF	BE, FU

PONTIAC

Axle Ratio	Conventional	Positive Traction
2.14:1	AK, RH	BK
2.29:1	AH, AT, EA, GC, RA	BH, BT, EZ
2.41:1	AJ, AZ, GF, KJ, LA, PJ, RB, TE	BJ, BZ, KS, NR, PS, TV
2.56:1	AA, EB, FB, LB, PH, RC, YD	BA, EY, FY, NB, PT, YU
2.73:1	AB, AX, EC, KN, LC, RX, YE	BB, BX, EX, NC, YW
2.93:1	AG, ED	BG, EW, RG
3.08:1	EJ, MP, PC, TC, YJ	ER, MY, PW, TX, YY
3.23:1	AD, AU, EE, FE, LG, MQ, PD, YK	BD, BU, EV, FV, MX, NG, PP, PX, YZ
3.42:1	FF, PE	FU, PO, PY

REMOVAL & INSTALLATION

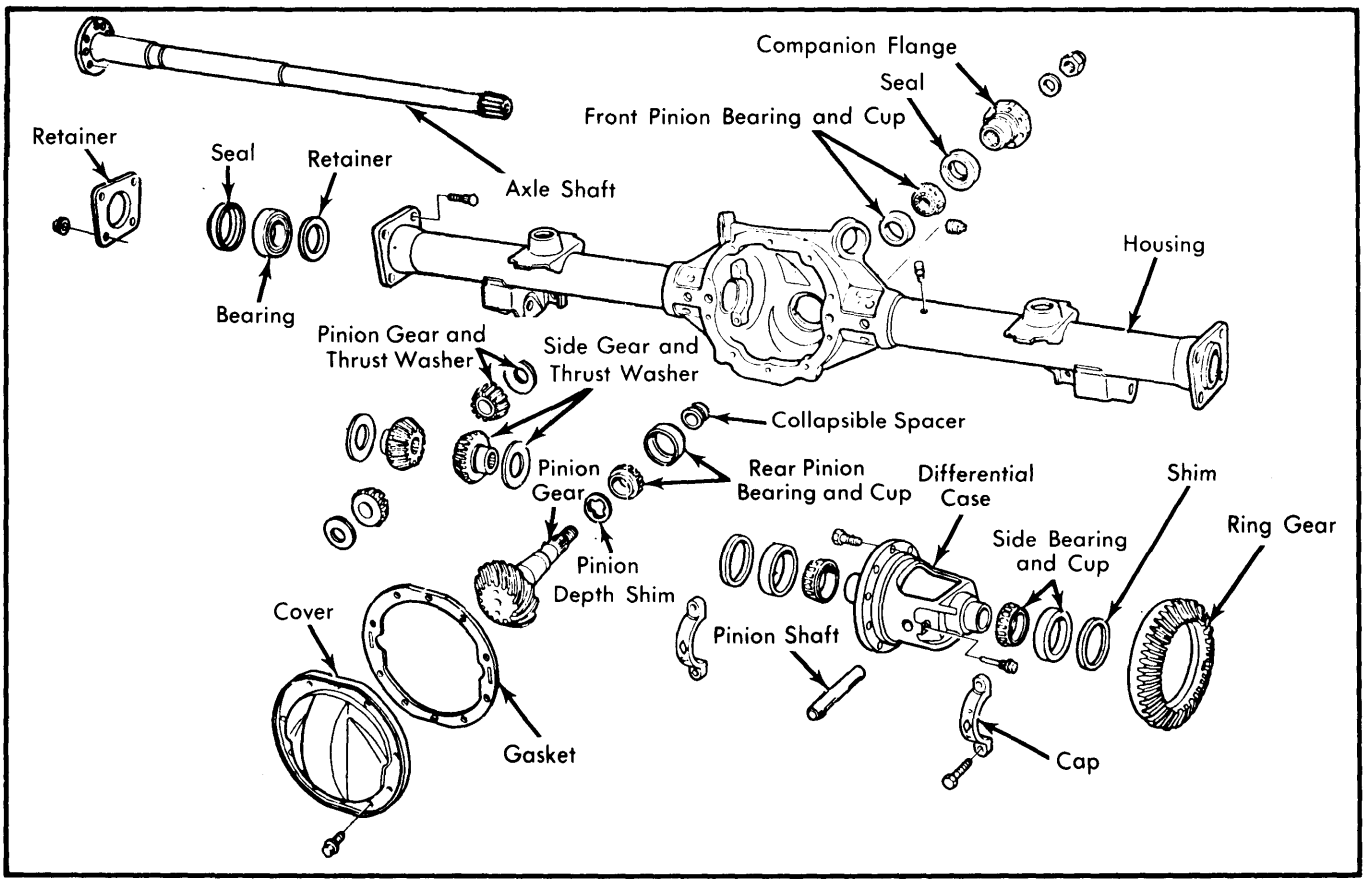
CORVETTE WHEEL SPINDLE & SUPPORT

See Corvette Rear in SUSPENSION Section.

AXLE SHAFTS

Removal ("B" Type) – Remove wheels and brake drums. Then, remove nuts holding retainer to backing plate. Pull retainer clear of bolts and reinstall 2 lower nuts finger-tight to hold backing plate in position. Remove axle shaft using adapter and slide hammer.

NOTE – *When removing axle shaft from housing with 8½" ring gear, outer bearing race and inside retainer plate will remain in axle housing, and all other bearing parts will come out with shaft. This separation of bearing parts does not indicate bearing failure.*



Exploded View of Typical G. M. Rear Axle Assembly ("B" Type Shown)

GENERAL MOTORS INTEGRAL HOUSING (Cont.)

Installation – Apply a thin coat of wheel bearing grease in housing bearing recesses. Carefully install axle shaft and reverse removal procedure.

CAUTION – *Axle shafts are not interchangeable from side to side.*

Removal ("C" Lock Type) – Remove rear wheels and either brake drums or disc brake calipers and rotors. Drain lubricant from differential by removing cover. Remove pinion shaft lock screw and pinion shaft. Push axle shaft toward center of vehicle, remove "C" lock from button end of shaft, and carefully remove axle shaft from housing.

Installation – Reverse removal procedure and note the following: Axle shaft must be pushed outward after installing "C" lock to seat lock in counterbore of differential side gear.

Removal (Corvette Axle Drive Shaft) –1) Disconnect inboard driveshaft trunion from side gear yoke. Bend bolt lock tabs down and remove bolts securing shaft flange to spindle drive flange.

2) Scribe mark on camber adjusting cam and on mounting bracket. Loosen camber adjusting nut and rotate cam so high point of cam points inboard. Remove driveshaft by withdrawing outboard end first.

Installation – Place driveshaft inboard trunion into side gear yokes and assemble "U" bolts. Rotate yokes so trunion seats are 90° apart. Install outboard drive flange into spindle drive flange pilot, position lock over bolt holes and install bolts. Tighten bolts and rebend lock tabs. Realign scribe mark on camber adjusting cam with mark on bracket and tighten bolts.

COMPANION FLANGE & OIL SEAL

Removal (All Models, Exc. Chevette & Corvette) – Raise vehicle, then remove propeller shaft, marking parts for reassembly reference. Using an INCH lb. torque wrench, measure and record pinion bearing preload by rotating pinion shaft through several revolutions. Mark companion flange, nut and pinion shaft for reassembly reference, then remove nut using suitable tools. Remove washer, then use a suitable puller to remove flange. Pry oil seal out of housing using a screwdriver or hammer and chisel.

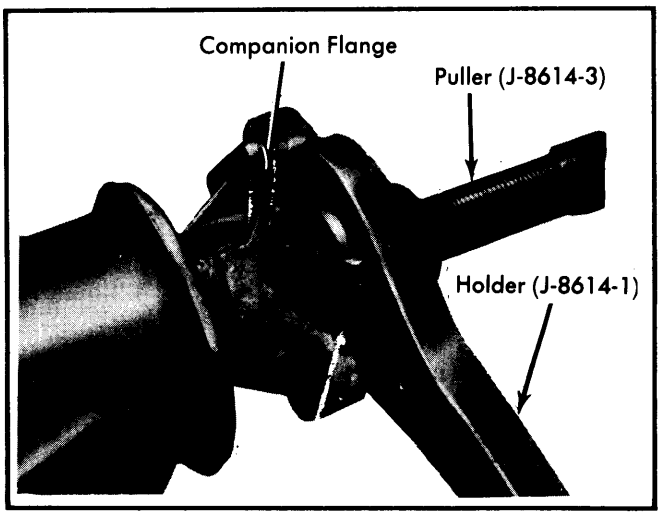


Fig. 3 Removal of Companion Flange

Installation – Pack seal lip cavity of new seal with lithium base extreme pressure lubricant, then install seal into housing until it seats against internal shoulder. Install companion flange, washer and nut, then tighten nut until all end play is removed. Continue tightening in small increments and checking preload until preload is 1-5 INCH lbs. more than recorded during disassembly. Install propeller shaft.

CAUTION – *Do not exceed original preload by more than 5 INCH lbs.*

Removal (Chevette) – **1)** Raise vehicle, then disconnect propeller shaft from companion flange and remove shaft from transmission.

NOTE – *As Chevette rear axle has an extension housing and an extension shaft coupled to front of axle housing, the companion flange is attached to forward end of extension shaft. Instead of companion flange, there is a drive coupling on end of pinion shaft. Axle housing oil seal contacts extension shaft instead of companion flange.*

2) Place a floor stand under front of rear axle housing. Support extension housing and disconnect center support bracket from underbody. Remove bolts attaching extension housing to axle housing and separate them, using a screwdriver if necessary. Pry oil seal out of housing with a screwdriver.

Installation – Using suitable tool (J-25597), drive oil seal into axle housing. Making sure thrust washer is in place between extension shaft and pinion shaft, slide extension shaft over drive coupling and support front end with a floor stand. Install flange-to-axle housing bolts and connect center support bracket to underbody. Install propeller shaft, being sure thrust spring is in place. Remove floor stands and lower vehicle.

Removal (Corvette) – With wheels hanging freely, disconnect propeller shaft and remove. Disconnect axle drive shafts from carrier. Measure pinion bearing preload, then mark all parts for reassembly reference. Remove companion flange nut and washer, then drive flange off pinion using a brass drift and hammer. Pry oil seal out of carrier.

Installation – Pack cavity between seal lips of seal with lithium base extreme pressure lubricant, then install seal into carrier bore. Lubricate companion flange splines, then tap flange into place on pinion stem. Install washer and nut, then tighten nut until torque exceeds original preload by 1-5 INCH lbs.

CAUTION – *Do not exceed original preload by more than 5 INCH lbs.*

REAR AXLE ASSEMBLY

Removal (Buick) – **1)** Raise vehicle and support at frame on both sides. Place floor jack under center of axle housing and lift it until it just starts to raise housing.

GENERAL MOTORS INTEGRAL HOUSING (Cont.)

2) On Skyhawk, disconnect torque arm and tie rod from axle housing. Disconnect rear universal joint from pinion flange, marking parts for reassembly reference. Disconnect parking brake cables at equalizer. Remove brake line junction block bolt at axle housing and disconnect brake lines at junction block. On Century and Regal, disconnect brake line at wheel cylinder.

3) On coil spring equipped vehicles, disconnect shock absorbers at lower end and upper control arms at axle housing. Lower axle housing, remove springs, then disconnect lower control arms at axle housing and remove axle assembly from vehicle.

4) On vehicles with leaf springs, disconnect shock absorbers at lower end. Support vehicle on jack stands at frame in front and at rear of springs. Remove lower spring plate attaching nuts, front and rear spring attaching bolts, then remove axle assembly from vehicle.

Installation – Reverse removal procedure and note the following: On coil spring vehicles, control arm bolts must be tightened with suspension in normal load position.

Removal (Seville) – 1) Raise vehicle on a hoist and support axle so it may be raised or lowered. Raise axle assembly so all tension is removed from springs and disconnect rear leveling valve overtravel lever from link. Hold lever down in exhaust position to deflate shock absorbers.

2) Remove lower shock absorber nut and bolt and position shocks out of way. Disconnect parking brake cables at equalizer and at all cable clamps. Loosen spring front eye bushing-to-retaining bracket bolt. Remove spring front bracket attaching bolts.

3) Lower axle sufficiently to remove bolt and bracket. Remove "U" bolt and "T" bolts attaching lower spring plate to axle and stabilizer bar brackets. Remove upper and lower rubber spring pads and spring plate.

4) Support spring with jack stand and remove both nuts from rear shackle. Separate shackle and remove spring. Remove clip securing brake hose to body and disconnect hose from brake line. Remove stabilizer bar link nuts with retainers and bushings.

5) Mark propeller shaft for reassembly and disconnect from axle pinion flange. Hang propeller shaft aside, clear of rear axle. Lower rear axle and remove from vehicle.

Installation – Reverse removal procedure and note the following: While installing springs, loosely tighten all nuts and bolts. After completing installation, fully tighten nuts and bolts.

Removal (Chevrolet, Exc. Corvette) – 1) Raise vehicle and support at frame on both sides. Place floor jack under center of axle housing and lift it until it just starts to raise housing.

2) On Monza, disconnect torque arm from differential. On Chevette, disconnect stabilizer bar, tie rod and rear axle extension bracket.

CAUTION – *Support Chevette axle extension so it does not swing down rapidly when disconnected from body bracket.*

3) Disconnect rear universal joint from pinion flange, marking parts for reassembly reference. Disconnect parking brake cables and, on all except Chevette, disconnect rear brake hose

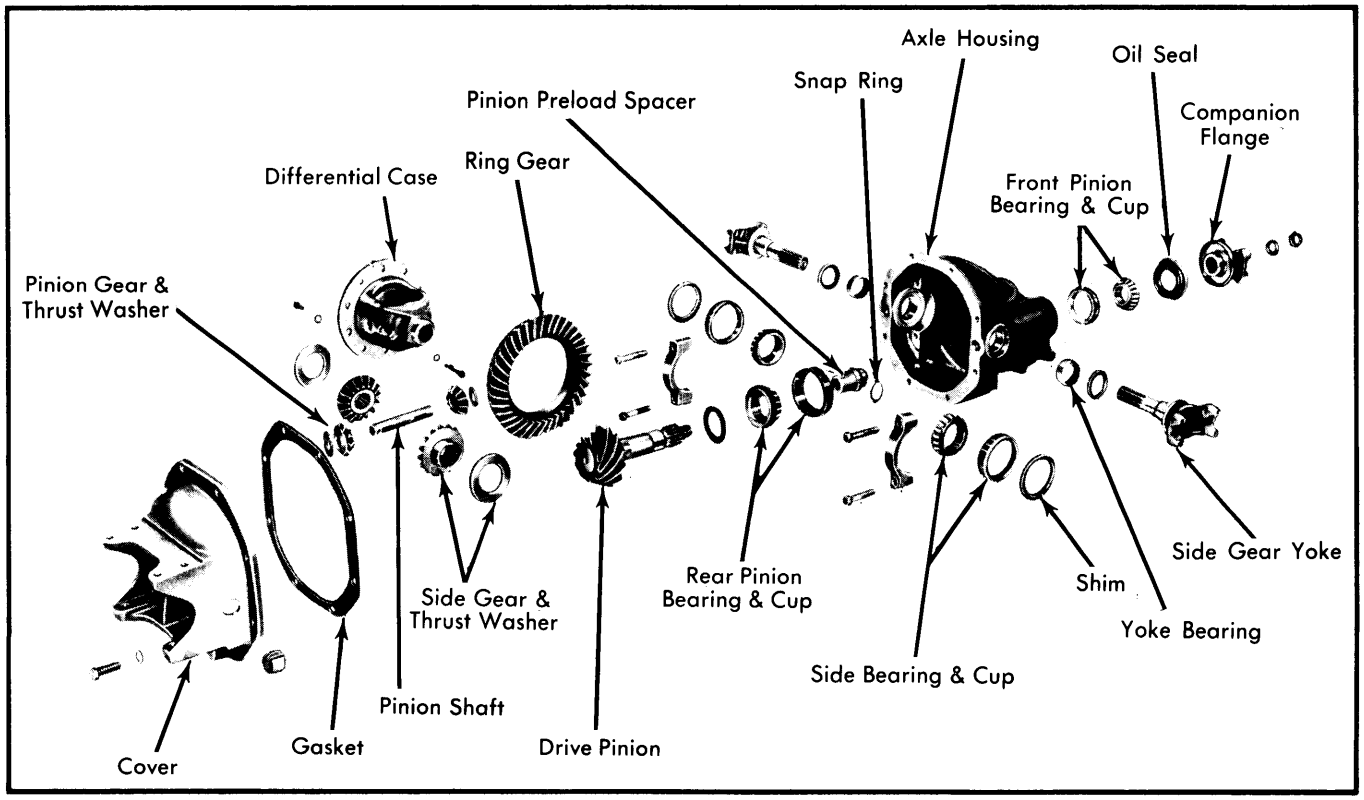


Fig. 4 Exploded View of Corvette Rear Axle Assembly

GENERAL MOTORS INTEGRAL HOUSING (Cont.)

at floor pan. On Chevette, disconnect brake lines from clips on axle tubes, remove axle shafts and brake backing plates (with shoes and brake lines attached), and wire backing plates to frame.

4) Disconnect shock absorbers. On coil spring models, disconnect upper control arms from axle and remove lower control arm pivot bolts. On leaf spring models, remove lower spring plate attaching nuts, front and rear spring attaching bolts and springs. Lower axle assembly out of vehicle.

Installation – Reverse removal procedure and note the following: To install leaf springs, connect springs at front attachment and attach lower spring plates; then, attach springs at rear shackle.

Removal (Corvette) – Raise vehicle; then, remove exhaust system from behind catalytic converter. Disconnect strut rod bracket from underside of carrier and lower bracket with strut rods attached. Disconnect driveshafts at carrier yokes and remove carrier front mounting bracket bolt. Remove propeller shaft. Loosen spring-to-carrier bolts; then, remove cover bolts and allow lubricant to drain. Remove carrier from vehicle.

Installation – 1) Insert two $\frac{1}{2}-13 \times 1\frac{1}{4}$" bolts (heads cut off and slotted at unthreaded ends) into two below-center carrier bolt holes, one on each side. Insert one $\frac{9}{16}-18 \times 1\frac{1}{4}$" bolt (head cut off and slotted at unthreaded end) into underside of carrier. These aligning studs aid in installation of carrier and strut rod bracket.

2) Install gasket and sealer to carrier and cover. Mount carrier to cover and install cover bolts; then, remove 2 aligning studs and install remaining cover bolts. Position strut rod bracket to carrier, install 3 bolts, remove aligning stud and install remaining bolt. Tighten spring to carrier bolts. Install propeller shaft, axle drive shafts and exhaust system.

Removal (Oldsmobile) – **1)** Raise and support vehicle at frame. Mark propeller shaft at pinion flange. Disconnect and support propeller shaft at rear. Disconnect shock absorbers from axle.

2) Disconnect lower control arms. Disconnect torque arm and tie rod on Starfire. On Omega, disconnect "U" bolts and spring shackles. Remove rear wheels, drums and axle shafts.

3) Disconnect parking brake cable at equalizer then remove bolt from brake line junction block at axle housing. Disconnect brake lines from axle housing clips and wheel cylinders, then remove backing plates. Disconnect upper control arms (except Starfire and Omega), lower axle housing and remove springs.

Installation – To install, reverse removal procedure.

Removal (Pontiac) – **1)** Raise and support vehicle at frame. Disconnect shock absorber at lower end. Mark rear universal joint and flange for proper reassembly; then, disconnect rear universal joint from flange. On Sunbird, disconnect upper control arm at differential end.

2) Disconnect parking brake cables at equalizer. Disconnect rear brake hose at floor pan. On coil spring vehicles, remove upper and lower control arm bolts at housing. For leaf spring equipped vehicles, remove spring plate attaching bolts and shackles. Remove assembly from beneath vehicle.

Installation – Reverse removal procedure and note the following: Control arm and shock absorber fasteners must be in normal load position while tightening.

OVERHAUL

DISASSEMBLY

Corvette – 1) Remove side gear yoke snap rings and remove yokes. Mark differential bearing caps and housing for reassembly reference; then, remove caps and differential case from housing. Remove side bearing shims and mark for reassembly reference.

2) Check pinion bearing preload. No preload reading and a loose pinion assembly indicate bearings are worn. Remove companion flange nut, flange and seal. Remove pinion shaft and rear bearing; then, remove front pinion bearing. Remove side gear yoke seals and yoke bearings from housing.

NOTE – *For differential overhaul procedures, see Positive Traction Differentials in this section.*

All Models (Exc. Corvette) – 1) Remove axle shafts. Check ring gear-to-pinion backlash and pinion bearing preload. This will indicate gear or bearing wear or an error in backlash or preload setting. Mark differential bearing caps and housing for reassembly reference. Remove caps and pry differential case from housing. Remove cups and shims and keep with bearing caps for reassembly reference.

2) Remove differential pinion shaft, gears, and side gears with thrust washers keeping them in order for reassembly. Remove ring gear bolts *(Left Hand Threads)* and tap gear from case using soft drift and hammer.

NOTE – *For positive traction differential overhaul procedures, see Positive Traction Differentials in this section.*

3) Remove pinion nut and companion flange (drive coupling on Chevette), then remove pinion shaft and front bearing. If necessary, remove pinion bearing cups from housing using a brass drift. Press pinion shaft out of rear bearing and note thickness of pinion depth shim pack.

REASSEMBLY

PINION SHAFT & BEARINGS

Pinion Depth Adjustment – 1) Drive pinion rear bearing shim thickness, controlling pinion depth of mesh with ring gear, must be determined whenever a new axle housing, ring and pinion set, or pinion bearings and races are installed. Depth of mesh is determined by using suitable Pinion Setting Gauge tool set.

NOTE – *Checking procedure for different axles is the same; however, tool component combinations vary between axles. See Fig. 6 and Tool Application Tables for tool numbers and location of components used.*

2) If removed, install pinion bearing races, then install lubricated pinion bearings. Position gauge plate and rear pinion bearing pilot (if used) on preload stud, then install

GENERAL MOTORS INTEGRAL HOUSING (Cont.)

through far pinion bearing and through front pinion bearing and front pinion bearing pilot. Install hex nut until snug, then rotate bearings to insure proper seating. Hold preload stud stationary with a wrench on flats, then tighten hex nut until 20 INCH lbs. are required to rotate bearings.

3) Mount side bearing gauging discs on ends of arbor, then place arbor into carrier making sure discs are properly seated. Install side bearing caps and bolts, then tighten bolts to avoid movement. Position dial indicator on mounting post of arbor, with contact button resting on top surface of plunger. Preload dial indicator one-half revolution, then tighten in this position.

4) Place plunger onto gauging area of gauge plate. Rock plunger rod slowly back and forth across gauging area until dial indicator reads greatest deflection, then set indicator to zero. Repeat rocking action several times to verify setting. Once zero reading is obtained, swing plunger until it is removed from gauging area. Dial indicator will now read required pinion shim thickness for a "nominal pinion". Record this reading.

5) Check drive pinion for painted or stamped markings on pinion stem, or a stamped code number on small end of pinion gear. If marking is found to be a plus or minus number (for instance +2 or -5), add or subtract that many thousandths from indicator reading. This will then be thickness of rear pinion bearing shim pack.

NOTE – *If no markings are found on pinion, use dial indicator reading as shim thickness.*

6) Remove bearing caps and gauging tools from housing. Place selected shim pack on drive pinion. Install lubricated pinion bearing onto pinion shaft using a suitable press.

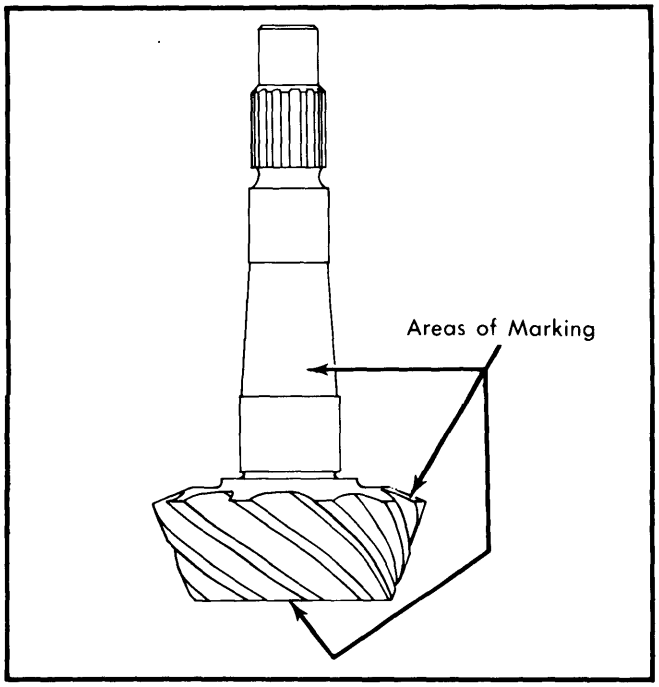


Fig. 5 Pinion Marking Locations

TOOL APPLICATION

NOTE – *See illustration for component location.*

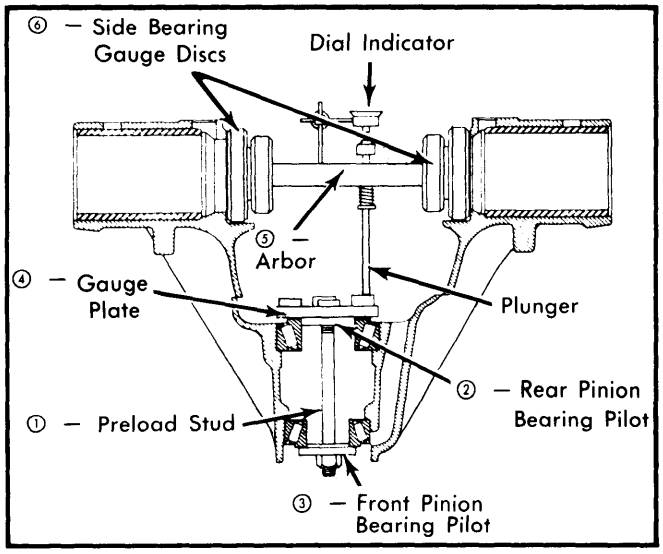


Fig. 6 Pinion Depth Gauge Set

Tool Location	Tool Part Number
Buick 7 ½" Ring Gear	
①	J-21777-43
②	J-21777-12 ("H" Series) J-21777-40 (Exc. "H")
③	J-21777-42
④	J-23597-11
⑤	J-23597-1
⑥	J-21777-45
Buick 8 ½" & 8¾" Ring Gear	
①	J-21777-43
②	J-21777-35
③	J-21777-42
④	J-21777-29
⑤	J-21777-1
⑥	J-21777-45
Cadillac Seville 8 ½" Ring Gear	
①	J-21777-43
②	J-21777-35
③	J-21777-42
④	J-21777-29
⑤	J-21777-1
⑥	(Small Step) J-21777-45

GENERAL MOTORS INTEGRAL HOUSING (Cont.)

Monza 6½" & 7½" Ring Gear

① J-21777-43
② ..... J-23597-13 (6½") J-23597-12 (7½")
③ J-23597-5
④ J-23597-11
⑤ J-23597-1
⑥ ..... J-23597-4 (6½") J-21777-45 (7½")

Chevrolet 7½" Ring Gear

① J-21777-43
② J-21777-40
③ J-21777-42
④ J-23597-11
⑤ J-23597-1
⑥ J-21777-45

Chevrolet 8½" & 8¾" Ring Gear

① J-21777-43
② J-21777-35
③ J-8619-12
④ J-21777-29
⑤ J-21777-1
⑥ J-21777-45

Corvette 8⅜" Ring Gear

① J-21777-43
② J-21777-35
③ J-21777-42
④ J-21777-36
⑤ J-21777-1
⑥ ..... (Large Step) J-21777-45

Tool Location **Tool Part Number**

Chevrolet Chevette

① J-21777-43
② ..... Not Used
③ J-23597-21
④ J-23597-20
⑤ J-23597-6
⑥ J-23597-4

Oldsmobile 7½" Ring Gear

① J-21777-43
② ..... J-21777-12 (Starfire) J-21777-40 (Exc. Starfire)
③ J-21777-42
④ J-23597-11
⑤ J-23597-1
⑥ J-21777-45

Oldsmobile 8½" & 8¾" Ring Gear

① J-21777-43
② J-21777-35
③ J-21777-42
④ ..... J-21777-21 (8½") J-21777-2 (8¾")
⑤ J-21777-1
⑥ ..... J-8619-10 (8½") J-21777-3 (8¾")

Pontiac 7½" Ring Gear

① J-21777-43
② ..... J-23597-12 (Sunbird) J-21777-40 (Exc. Sunbird)
③ J-8619-12
④ J-23597-11
⑤ J-23597-1
⑥ J-21777-45

Pontiac 8½" & 8¾" Ring Gear

① J-8619-13
② J-21777-35
③ J-8619-12
④ J-21777-29
⑤ J-21777-1
⑥ J-8619-10

Pinion Installation & Preload Adjustment – Install a new collapsible spacer over pinion stem, then position pinion in housing. While holding pinion forward, carefully drive front pinion bearing onto pinion shaft until a few threads are exposed. Install new oil seal, then drive coupling (Chevette) or companion flange (All Others), washer and nut, and tighten until end play is removed. Rotate pinion several times to seat bearings, then check preload using an INCH lb. torque wrench. Continue tightening nut and checking preload until proper preload is obtained (see specifications).

CAUTION – *Do not back off nut to lessen preload. If preload is exceeded, a new collapsible spacer must be installed and nut retightened until proper preload is obtained.*

Case Reassembly – Place ring gear onto case, install new bolts, then alternately tighten bolts to pull ring gear into position on case. Place side gear thrust washers over side gear hubs, then install assemblies into case in their original position. Install pinions and thrust washers into case, then install pinion shaft and lock bolt. Using suitable installing tools, install side bearings onto differential case.

NOTE – *For positive traction differential overhaul procedures, see Positive Traction Differentials in this section.*

Side Gear Yoke Bearings and Seals (Corvette) – Using suitable tool (J-9773), drive bearing into carrier bore until fully seated. Install new seal in bore outboard of bearing.

NOTE – *Side bearing preload adjustment is to be made before pinion is installed. If pinion is installed, remove ring gear from case.*

Side Bearing Preload (All Exc. Corvette) – **1)** Measure thickness of original side bearing preload shims. Then, select a service spacer (.160" for 6½" and 7½" ring gear, .170" for 8½" and 8¾" ring gear) and service shims with a total thickness slightly less than the original shims. Install differential case in housing. Install service spacer between each bearing cup and housing with chamfered edge of spacer against housing. Install left bearing cap loosely so that differential case is free to move.

2) With left bearing race and spacer against housing, install both right and left service shims previously selected between

GENERAL MOTORS INTEGRAL HOUSING (Cont.)

right bearing race and service spacer. Insert progressively larger feeler gauges between right shim and service spacer until a noticeable drag is felt.

3) Remove carrier and install ring gear (if removed). Select two shims with a total thickness equal to that of service shims and feeler gauge and reinstall with carrier (equal thickness on each side of carrier). Adjust differential backlash, then preload differential bearings by replacing both shims with shims .004" (.008" total) thicker.

NOTE – *Do not attempt to reinstall the original production shims as they will break when tapped into place. Previously installed SERVICE shims may be re-used.*

Side Bearing Preload (Corvette) –1) Install differential assembly in housing with ring gear firmly against pinion. Insert suitable gauging tool (J-22779) between left bearing cup and carrier housing. While oscillating tool, turn adjusting nut clockwise until a noticeable drag is felt. Tighten tool lock bolt and remove tool.

2) Measure thickness of gauging tool in a minimum of 3 places, average readings and record result. Turn ring gear 90°, repeat measuring procedure and remeasure tool thickness.

SPECIFICATIONS

Application	Clearance or Torque
Pinion Bearing Preload①	
Buick (Exc. Skyhawk), Pontiac (Exc. Sunbird)	
New Bearings	20-25 INCH Lbs.
Used Bearings	10-15 INCH Lbs.
Cadillac Seville	
New Bearings	15-30 INCH Lbs.
Used Bearings	5-10 INCH Lbs.
Chevrolet (Exc. Corvette, Monza)	
New Bearings	15-30 INCH Lbs.
Used Bearings	5-10 INCH Lbs.
Corvette	
New Bearings	20-25 INCH Lbs.
Used Bearings	5-10 INCH Lbs.
Chevette	
New Bearings	15-25 INCH Lbs.
Used Bearings	5-10 INCH Lbs.
Oldsmobile	
New Bearings	24-32 INCH Lbs.
Used Bearings	8-12 INCH Lbs.
Monza, Skyhawk, Skylark, Sunbird	
New Bearings	10-25 INCH Lbs.
Used Bearings	8-12 INCH Lbs.
Side Bearing Preload	
All Models	②Slip Fit Plus .008"
Ring Gear Backlash	
Buick, Pontiac	.006-.008"
Chevrolet	.005-.008"
Oldsmobile	.005-.009"

① – Measured with new seal without ring gear installed.

② – Add .004" to each side to preload bearings (exc. Corvette). For Corvette: Add .008" to right side only.

3) To determine required thickness of service shim, subtract thickness of service spacer from the **higher** of the 2 averaged readings obtained in step **2)**. Install proper shim between service spacer and bearing, install left bearing cap and tighten bolts.

4) Remove right bearing cap and perform measuring procedure as given in steps **1)** and **2)**. Required thickness of service shim is determined as in step **3)**, but an additional .008" must be added to service shim size to obtain proper preload.

NOTE – *Do not attempt to reinstall the original production shims as they will break when tapped into place. Previously installed SERVICE shims may be re-used.*

5) Install proper shim between service spacer and bearing, install left bearing cap and tighten bolts.

Ring Gear & Pinion Backlash – Check backlash with a dial indicator mounted to axle housing at four locations around ring gear. Variation should not exceed .002". If backlash is not correct (see specifications), adjust side bearing shims as necessary. After all adjustments have been completed, tighten all bolts, then make a tooth contact pattern check to insure correct assembly.

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Ring Gear-to-Case Bolt	
Buick	80
Corvette	60
Cadillac, Chevrolet, Oldsmobile	90
Chevette	48
Monza	50
Pontiac	80
Bearing Cap Bolt	
Buick, Chevrolet, Pontiac	60
Cadillac	65
Chevette, Corvette, Monza, Oldsmobile	55
Pinion Shaft Lock Bolt	
Buick, Chevette	12
Cadillac, Corvette, Oldsmobile	20
Chevrolet	25
Monza	150 INCH lbs.
Pontiac	15
Housing Cover Bolts	
Buick, Cadillac, Pontiac	30
Chevette	22
Chevrolet	25
Corvette	50
Monza, Oldsmobile	20
Universal Joint Flange-to-Pinion Flange	
Buick, Pontiac	15
Cadillac, Chevrolet	70
Corvette	75
Oldsmobile	16
Corvette Axle Drive Shafts	
To Spindle	75
To Yoke	15
Universal Joint Flange-to-Companion Flange	
Chevette	16