

MGB

DESCRIPTION

Rear axles are hypoid design with center line of pinion set below centerline of ring gear. The axle shafts can be serviced without removing axle from vehicle. All differential adjustments are performed using shims. No adjustment for axle shaft end play is necessary. A collapsible spacer is used on drive pinion shaft.

AXLE RATIO & IDENTIFICATION

Only one basic axle design is used on these models. To determine axle ratio, divide number of ring gear teeth by number of pinion gear teeth.

REMOVAL & INSTALLATION

AXLE SHAFTS & BEARINGS

Removal — 1) Raise rear of vehicle and support just ahead of spring shackles. Remove wheel, axle nut, collar and brake drum. Remove clevis pin from parking brake cable. Disconnect and plug brake line openings.

2) Remove brake back plate, then remove oil seal collar, bearing hub cap and oil seal from axle shaft. Remove axle shaft using suitable tool and press bearing from shaft.

Installation — To install, repack bearings with grease and reverse removal procedure. Use suitable tool to drift axle shaft into position. Lubricate and install new oil seal with lip facing inwards.

PINION FLANGE & SEAL

Removal — Raise and support vehicle; remove wheels and brake drums. Drain rear axle. Mark propeller shaft and pinion flange for reassembly reference and disconnect propeller shaft. Measure and record torque required to rotate pinion. Install pinion holding tool to prevent pinion from turning and remove flange retaining nut and washer. Remove pinion flange. Remove and discard oil seal.

Installation — 1) Grease edge and sealing lip of new oil seal and install seal flush with axle housing. Install pinion flange and washer. Gradually screw on retaining nut until resistance is felt. Rotate pinion to seat bearings and measure torque required to rotate pinion.

2) If reading obtained in step 1) is less than value recorded during removal, tighten nut very small amount, reseat bearings and recheck torque reading. Repeat this procedure until a reading equal to that at removal, but not less than 4-6 INCH lbs. (4-7 cmkg), is obtained. Continue installation in reverse of removal procedure.

CAUTION — *Preload build up is rapid, tighten nut with care. If a torque reading in excess of 6 INCH lbs. (7 cmkg) is exceeded, axle must be dismantled and a new collapsible spacer installed.*

AXLE ASSEMBLY

Removal — 1) Raise rear of vehicle and mark propeller shaft and flange for correct reassembly. Disconnect propeller shaft. Remove nuts and washers securing each end of rebound straps

to anchor pins on axle and remove straps. Disconnect parking brake at operating levers and remove cable clamp from housing. Support axle with jack and remove wheels. Disconnect roll bar brackets from axle.

2) Disconnect brake hose at battery box bracket. Lower jack until full weight of axle is on springs. Remove nuts and washers from exhaust system support brackets and disconnect brackets. Place support under exhaust system. Remove "U" bolts and mounting plates holding axle to spring and withdraw assembly from right hand side of car, rotating axle as necessary.

Installation — To install, reverse removal procedure.

OVERHAUL

DISASSEMBLY

1) Drain and remove axle from vehicle. Remove axle shafts and hubs. Remove differential cover and mark each differential bearing cap before removal for reassembly reference. Remove bolts and bearing caps. Before differential assembly can be removed from axle housing, housing must be stretched with stretcher (18G-131C). DO NOT stretch housing more than is absolutely necessary or housing may be damaged. Maximum stretch is .012" (.3 mm) or 9 flats of tool (18G-131C).

2) Pry differential assembly out of stretched housing using two pry bars, one on each side of housing. Do not damage case or apply leverage on stretcher tool. Release housing stretcher. Bend back locking tabs and remove ring gear bolts and ring gear. Drive out pinion shaft pin and remove shaft. Turn differential gears by hand until pinions are opposite opening in differential cage and remove pinions and thrust washers.

3) Remove differential gears and thrust washers. If necessary, remove differential inner bearing races. Before removing pinion, measure preload. If preload is zero, install new pinion bearings. Hold pinion flange and remove pinion nut and washer. Remove flange by tapping with soft hammer. Press out pinion; do not drive out. Remove front and rear bearing outer races from axle housing. Oil seal will come out with front bearing. Remove rear bearing inner race from pinion.

REASSEMBLY & ADJUSTMENT

Drive Pinion Depth — 1) Install bearing outer races in axle housing using suitable tools. Using a dummy pinion (18G-191H), install inner race of bearing on dummy and place in housing without collapsible spacer or oil seal. Install inner race of front bearing. Install pinion flange and tighten nut gradually until a bearing preload figure of 10-20 ft. lbs. (1.4-2.8 mkg) is obtained.

2) Clean dummy pinion head and position dial indicator foot on pinion head and zero indicator. Move indicator until foot of gauge rests on center of differential bearing bore and note indicator reading. Repeat this procedure on opposite bearing bore and average the two figures. The reading shown on indicator will be amount of correction necessary from a standard spacer of .208" (5.3 mm). If indicator reading is negative, reduce spacer thickness by this amount and vice versa.

Drive Axles

MGB (Cont.)

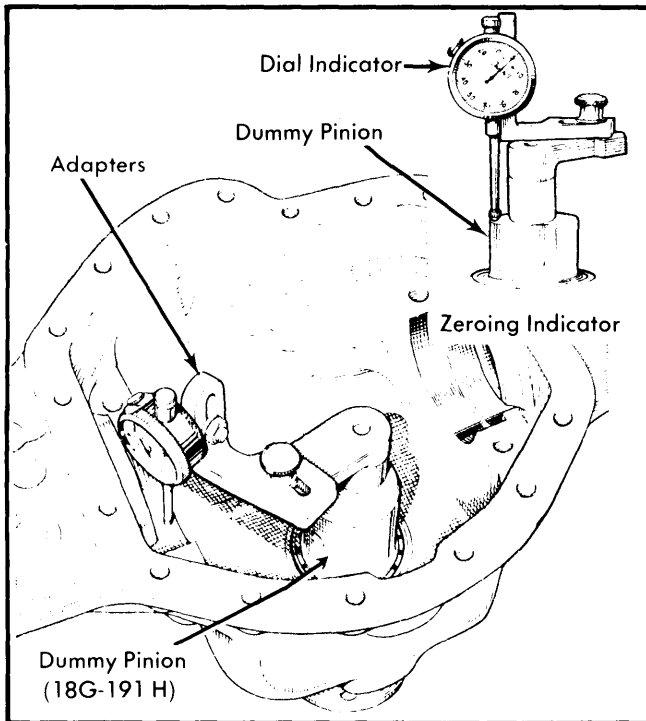


Fig. 1 Measuring Pinion Installed Depth

3) Allowance must also be made for pinion depth marked on pinion head in a rectangular bracket. If marking is positive, reduce washer thickness by equal amount and visa versa. A tolerance of .001" (.03 mm) is allowed in thickness of washer finally installed. Remove dummy pinion.

Pinion Bearing Preload – 1) Install washer of thickness calculated above under pinion head. Install pinion inner bearing race. Insert pinion into case and install collapsible spacer with small diameter towards shoulder of pinion head. Support head of pinion and press outer bearing onto pinion using care not to compress spacer. Grease edge and sealing lip of seal and install seal flush with axle housing. Install flange, washer and nut.

2) Tighten flange nut slowly until spacer starts to collapse. Rotate pinion to settle bearings and check pinion preload. Gradually tighten in very small amounts, checking preload between each tightening, until specified preload is obtained.

CAUTION – Bearing preload is rapid. If preload torque of 24 INCH lbs. (30 cmkg) is exceeded, pinion must be dismantled and a new collapsible spacer installed.

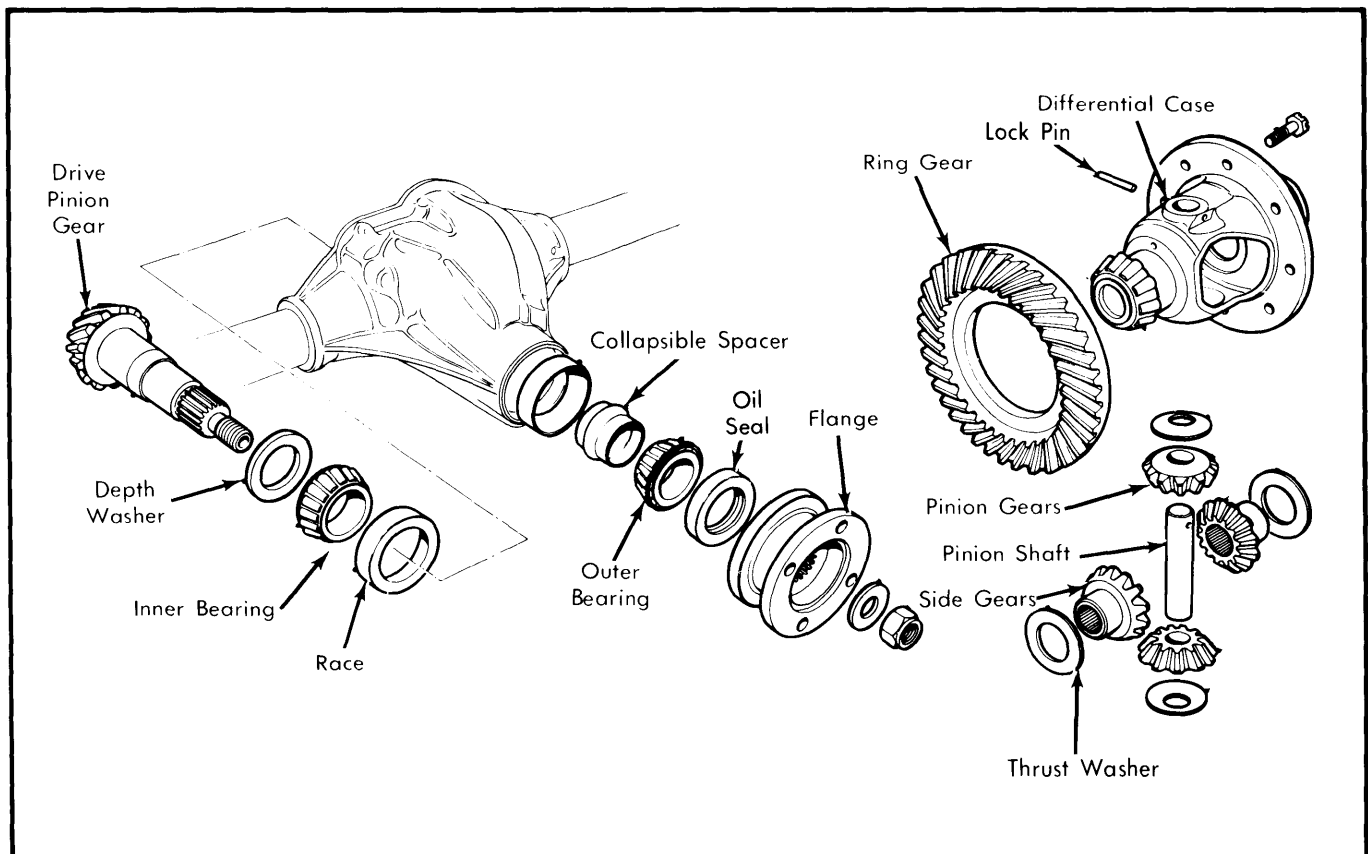


Fig. 2 Exploded View of MGB Drive Axle Assembly

MGB (Cont.)

Side Bearing Preload – 1) Assemble each inner and outer bearing race to differential assembly. Using ring gear setting tools (18G-191, 18G-191 F & 18G-191 J) place differential assembly onto jig and load ring gear assembly (see illustration). Spin unit to settle bearings. Standard measurement of bearing bores is 7.243" (183.98 mm). Any excess machined from bores will be marked "A" and "B" on axle casing. The "A" and "B" tolerances, added to standard measurement, will determine overall dimension. See example:

EXAMPLE:
 Differential case standard 7.243" (183.98 mm)
 PLUS value "A" stamped on case001" (.025 mm)
 PLUS value "B" stamped on case002" (.038 mm)
 Total distance between bores..... 7.246" (184.05 mm)

3) Subtract total width of differential assembly, as shown in step 2), from total distance between the bores, determined in step 1). To this value, add specified bearing preload value and divide the result by 2 to obtain shim thickness of equal values for both sides of assembly.

EXAMPLE:
 Total distance between bores..... 7.246" (184.05 mm)
 MINUS total differential assembly..... 6.980" (177.30 mm)
 Result..... .266" (6.75 mm)
 PLUS bearing preload004" (.102 mm)
 Total shim thickness270" (6.86 mm)
 Divided by 2 ÷ 2
 Shims each side135" (3.43 mm)

Backlash Adjustment – 1) Correct figure for backlash to be used with any particular ring and pinion is etched on rear face of ring gear. INCREASE shim thickness on opposite side of ring gear by this amount and DECREASE shim thickness on ring gear side by same amount. See example:

EXAMPLE:
 Calculated shim thickness135" (3.43 mm)
 MINUS backlash value008" (.203 mm)
 Ring gear side shims127" (3.23 mm)
 Calculated shim thickness135" (3.43 mm)
 PLUS backlash value..... .008" (.203 mm)
 Shim thickness opposite ring gear143" (3.62 mm)

2) Install differential in axle housing. Replace bearing caps and tighten bolts. Set up dial indicator to accurately measure backlash of ring gear. If backlash is not at value etched on ring gear, move shims from side to side to obtain correct value. A movement of .002" (.051 mm) shim thickness from one side of differential to the other will produce a variation in backlash of about .002" (.051 mm). Ensure absolute cleanliness during above operation to ensure accuracy. Continue installation in reverse of removal procedure.

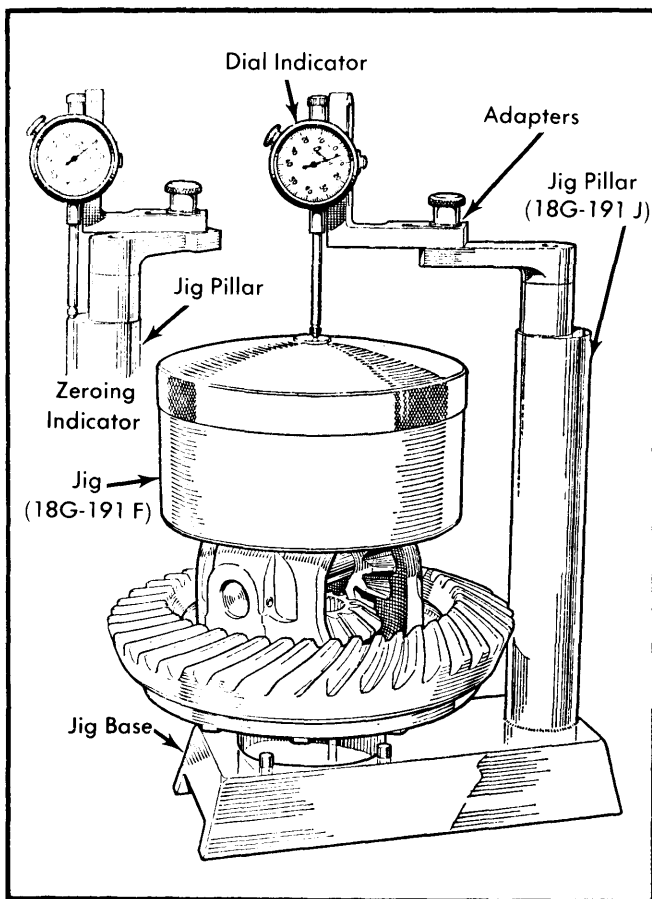


Fig. 3 Measuring Differential Side Bearing Preload

NOTE – Pillar is standard height of differential assembly or 6.972" (177.10 mm) high.

2) Clean head of jig pillar and place dial indicator on pillar head. Spin differential to settle bearings and move arm of dial indicator to machined face of jig and take a reading. Add this variation to the standard height to obtain total width of differential assembly. For example:

EXAMPLE:
 Differential assembly standard 6.972" (177.10 mm)
 PLUS indicator reading..... .008" (.203 mm)
 Total differential assembly..... 6.980" (177.30 mm)

AXLE ASSEMBLY SPECIFICATIONS

Application	Specification
Pinion Bearing Preload	
New	14-24 INCH lbs. (16-28 cmkg)
Side Bearing Preload004" (.102 mm)
Differential Case Standard	7.243" (183.98 mm)
Differential Assembly Standard	6.972" (177.10 mm)
Oil Seal Change (Rotating Torque)	
Minimum	4-6 INCH lbs. (4-7 cmkg)
Maximum	①

① – If preload exceeds 24 INCH lbs., disassembly is required and a new collapsible spacer must be installed.

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (mkg)
Ring Gear-to-Carrier	60-65 (8.3-9.0)
Differential Bearing Cap	53 (7.2)
Pinion Bearing Nut	
NEW Spacer Only	135-140 (18.7-19.4)
Axle Bearing Retaining Nut	150 (20.7)