

DRIVE AXLE - REAR INTEGRAL

1994 Mitsubishi 3000GT

1994 Drive Axles - Differentials/Axle Shafts - Rear Integral
Stealth AWD, 3000GT AWD

DESCRIPTION

On All-Wheel Drive (AWD) models, the rear axle features an integral housing. Differential consists of hypoid reduction gears and straight bevel differential gears. Limited slip differential is available.

NOTE: Vehicle references in this article refer to AWD models only.

AXLE RATIO & IDENTIFICATION

Ratio is determined by dividing number of ring gear teeth by number of drive pinion teeth.

AXLE RATIO SPECIFICATIONS TABLE

Application	Ratio
Stealth & 3000GT	3.55:1

LUBRICATION

CAPACITY

Gear oil capacity is 2.4 pts. (1.1L).

FLUID TYPE

Use SAE 80W-90 API GL-5 hypoid gear oil. For limited slip differentials, add Hypoid Gear Oil Additive Friction Modifier (4318058). For temperatures less than -30°F (-34°C), use SAE 75W.

TROUBLE SHOOTING

NOTE: See TROUBLE SHOOTING - BASIC PROCEDURES article in the GENERAL TROUBLE SHOOTING section.

TESTING & PRE-INSPECTION

AXLE SHAFT END PLAY

1) Raise and support vehicle. Remove tire and wheel assembly. Remove caliper and disc rotor or brake drum. Using dial indicator, check axle shaft end play. End play should not exceed .031" (.78 mm).

2) If end play is not within specification, check torque of axle shaft nut. If torque is within specification, replace bearing. See TORQUE SPECIFICATIONS table.

AXLE BACKLASH

1) Raise and support rear axle. Place transaxle in Neutral. Apply parking brake. Rotate drive shaft clockwise. Place reference marks on drive shaft flange dust cover and differential housing.

2) Rotate drive shaft counterclockwise, and measure distance between reference marks. Differential must be removed and backlash adjusted if distance exceeds .2" (5 mm). See appropriate RING GEAR BACKLASH adjustment procedure under OVERHAUL.

LIMITED SLIP DIFFERENTIAL VISCOUS UNIT

1) Block front wheels. Place transaxle in Neutral. Release parking brake. Raise rear wheels off ground. Disconnect drive shaft from differential assembly.

2) Slowly turn one wheel counterclockwise. Observe direction of rotation on opposite wheel. Wheels should turn in same direction. If wheels rotate in opposite direction, differential must be removed and viscous unit replaced.

WHEEL BEARING ROTATING RESISTANCE

1) Remove axle shaft from companion flange. See AXLE SHAFTS under REMOVAL & INSTALLATION. On vehicles with rear disc brake, remove caliper assembly. On vehicles with rear drum brake, remove drum. On all models, attach a spring scale to hub bolt. Pull scale at right angle to hub bolt, and measure wheel bearing rotating resistance.

2) Rotating resistance should be 2.6 lbs. (1.2 kg) or less. If rotating resistance is greater than specification, check torque of axle shaft companion flange nut. If torque is within specification, replace bearing. See TORQUE SPECIFICATIONS table.

REMOVAL & INSTALLATION

AXLE SHAFTS

Removal

Raise and support vehicle. Remove rear wheels. Remove axle shaft companion flange retaining bolts. Using screwdriver, pry axle shaft from differential assembly. Remove oil seal from differential assembly (if necessary). Remove spindle nut. Using 2-jaw puller, press axle through hub. Remove axle.

CAUTION: Always replace circlip on inboard side of axle shaft.

Installation

Replace oil seal in differential as needed. Coat seal lip with grease. To complete installation, reverse removal procedure.

DIFFERENTIAL ASSEMBLY

Removal

1) Drain gear oil from differential housing. Remove axle shafts. See AXLE SHAFTS under REMOVAL & INSTALLATION. Place reference mark on drive shaft flange and pinion flange on differential for installation reference. Remove drive shaft.

2) Support differential assembly. Remove rear support bolts from cover on rear of differential assembly. Remove front support bolt located above differential assembly. Remove differential support member and dynamic damper (if equipped). Remove rear wheel oil pump from differential assembly (if equipped). Remove differential assembly. Remove vent plug (if equipped).

Installation

To install, reverse removal procedure. Apply semi-drying sealant to mating surfaces of cover and vent plug (if equipped). Fill differential when finished. See CAPACITY and FLUID TYPE under LUBRICATION.

DRIVE SHAFT

Removal & Installation

Place reference marks on drive shaft flange and pinion flange for installation reference. Remove drive shaft. To install, reverse removal procedure. Coat front yoke with oil before installation. Ensure reference marks align.

OVERHAUL

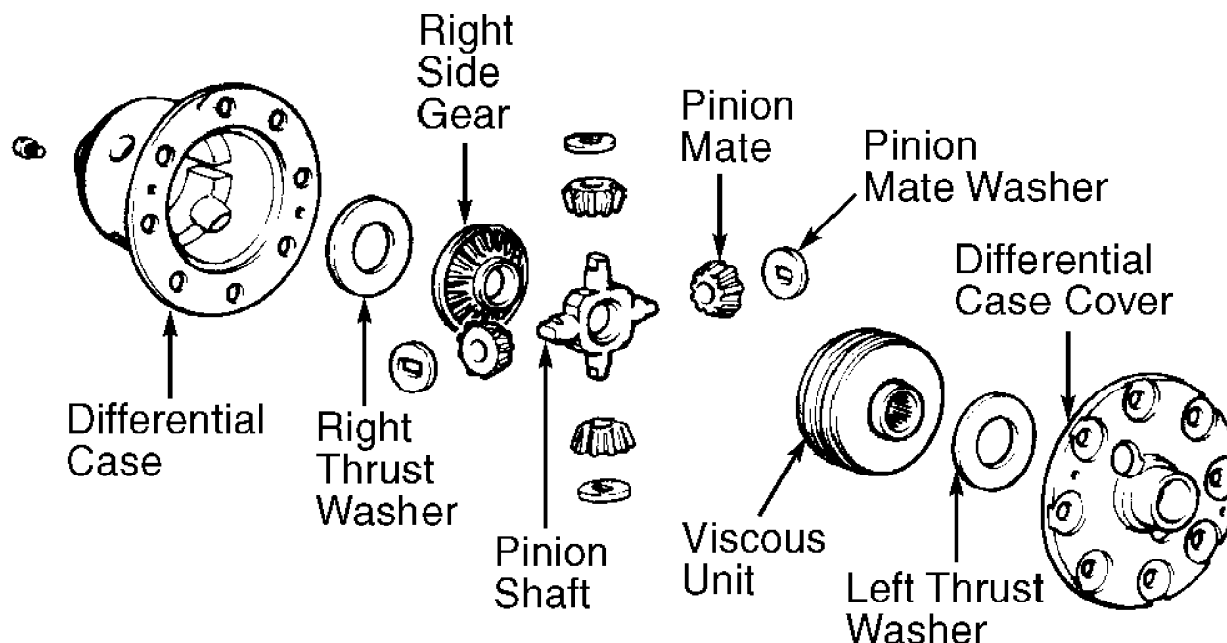
DIFFERENTIAL ASSEMBLY

Disassembly & Inspection

1) Remove side bearing snap rings. Using Side Bearing Nut Remover (MB991367) with Adapter (MB991385), remove side bearing lock nut. Use a press to remove side bearing outer races. Remove differential carrier assembly from differential housing.

2) Remove spring pin and 4-Wheel Steering (4WS) drive gear. Place alignment marks on ring gear and differential case. Loosen ring gear retaining bolts in diagonal sequence. Remove ring gear.

3) Remove screws and differential case cover. See Fig. 1. Mark left thrust washer and remove. Remove viscous unit. Remove pinion mate washers and pinion mates. Remove differential pinion shaft. Remove right side gear and thrust washer. Check components for unusual wear, heat damage or other damage. Replace if necessary.



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Fig. 1: Exploded View Of Limited Slip Differential
Courtesy of Mitsubishi Motor Sales of America.

NOTE: Thrust washers are of different thickness. Ensure thrust washers are installed in original position during reassembly.

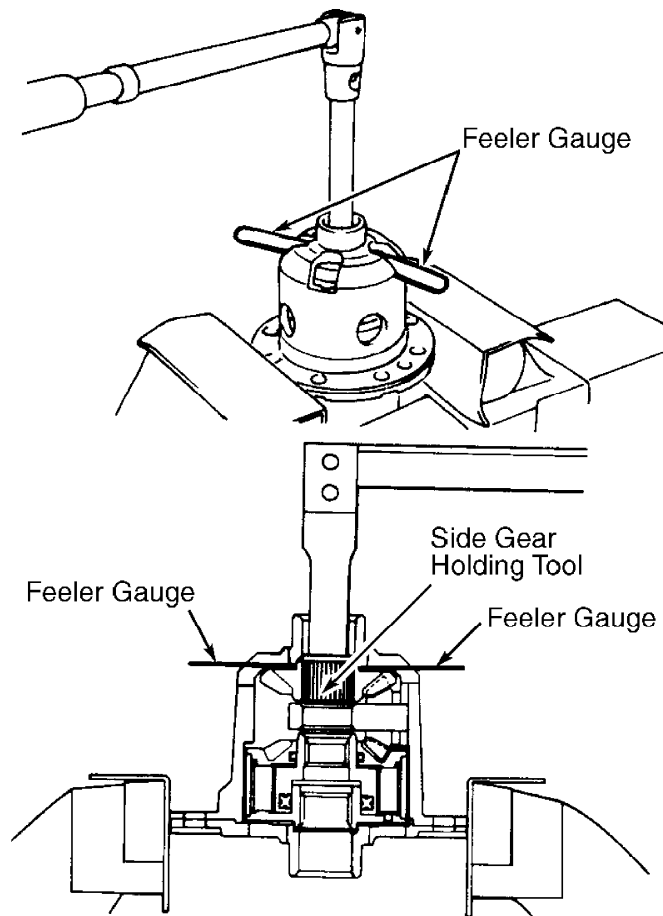
Reassembly

1) Ensure all LSD carrier assembly components are in good condition. If differential side gear and/or pinion mate gear need replacement, they must be replaced as matched set including viscous unit. Thoroughly clean all components in unleaded gasoline to remove oil and grease.

2) Reassemble differential unit, and temporarily secure cover with screws. Clamp differential case in a vise. Insert 2 feeler gauges of .0012" (.03 mm) thickness at opposite positions in differential case between case and right thrust washer. See Fig. 2.

CAUTION: DO NOT insert feeler gauge in oil groove of differential case.

3) Insert Side Gear Holder (MB991294) into spline part of differential side gear, and ensure side gear rotates. See Fig. 2. Replace .0012" (.03 mm) feeler gauges with .0035" (.09 mm) feeler gauges. Check if side gear rotates. If side gear no longer rotates, backlash of differential gear is normal. If side gear rotates, install a different size left thrust washer and retest.



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Fig. 2: Checking Limited Slip Differential Gear Backlash
Courtesy of Mitsubishi Motor Sales of America.

4) Tighten differential case halve screws to specification. See TORQUE SPECIFICATIONS table. Mount ring gear to carrier assembly.

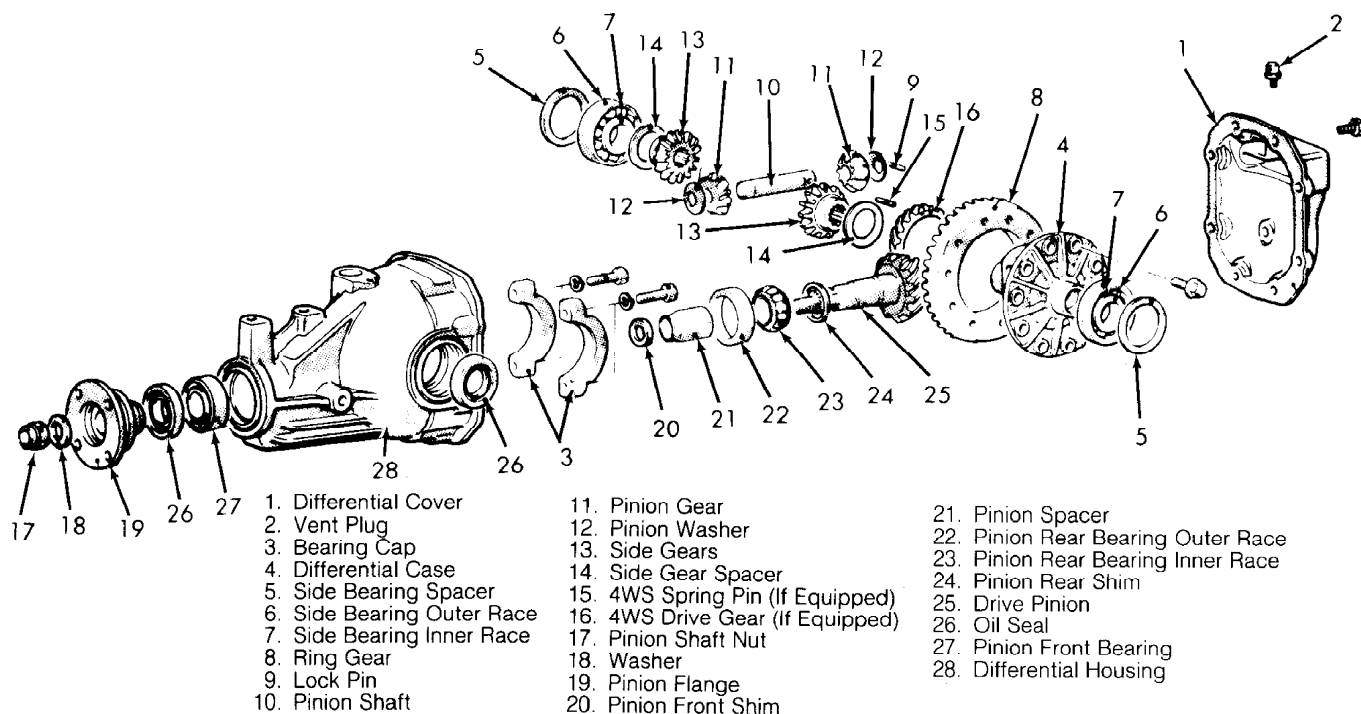
Ensure reference mark is aligned. Tighten bolts in crisscross sequence. Install spring pin and 4-Wheel Steering (4WS) drive gear (if applicable). Press on carrier assembly side bearings. Install carrier assembly in housing.

5) Install side bearing outer races and bearing nuts. Tighten side bearing lock nut until nut just contacts race. Bearing races should be seated against bearing with zero preload.

6) Lock drive pinion in place. Using dial indicator, check ring gear backlash at heel of ring gear tooth. Measure at 4 locations of ring gear. See RING GEAR BACKLASH SPECIFICATIONS table.

7) If backlash is not within specification, change side bearing lock nut preload by loosening one bearing lock nut while tightening the opposite lock nut an equal amount until backlash is correct.

8) To adjust carrier side bearing preload, tighten both lock nuts half the distance between adjacent lock nut holes using side bearing nut remover. Install snap rings. Check gear tooth contact pattern. See GEAR TOOTH CONTACT PATTERNS article in GENERAL INFORMATION.



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Fig. 3: Differential Assembly (Stealth & 3000GT Similar)
Courtesy of Mitsubishi Motor Sales of America.

PINION & SIDE GEAR BACKLASH SPECIFICATIONS TABLE

Application	In. (mm)
Standard003 (.08)
Wear Limit008 (.20)

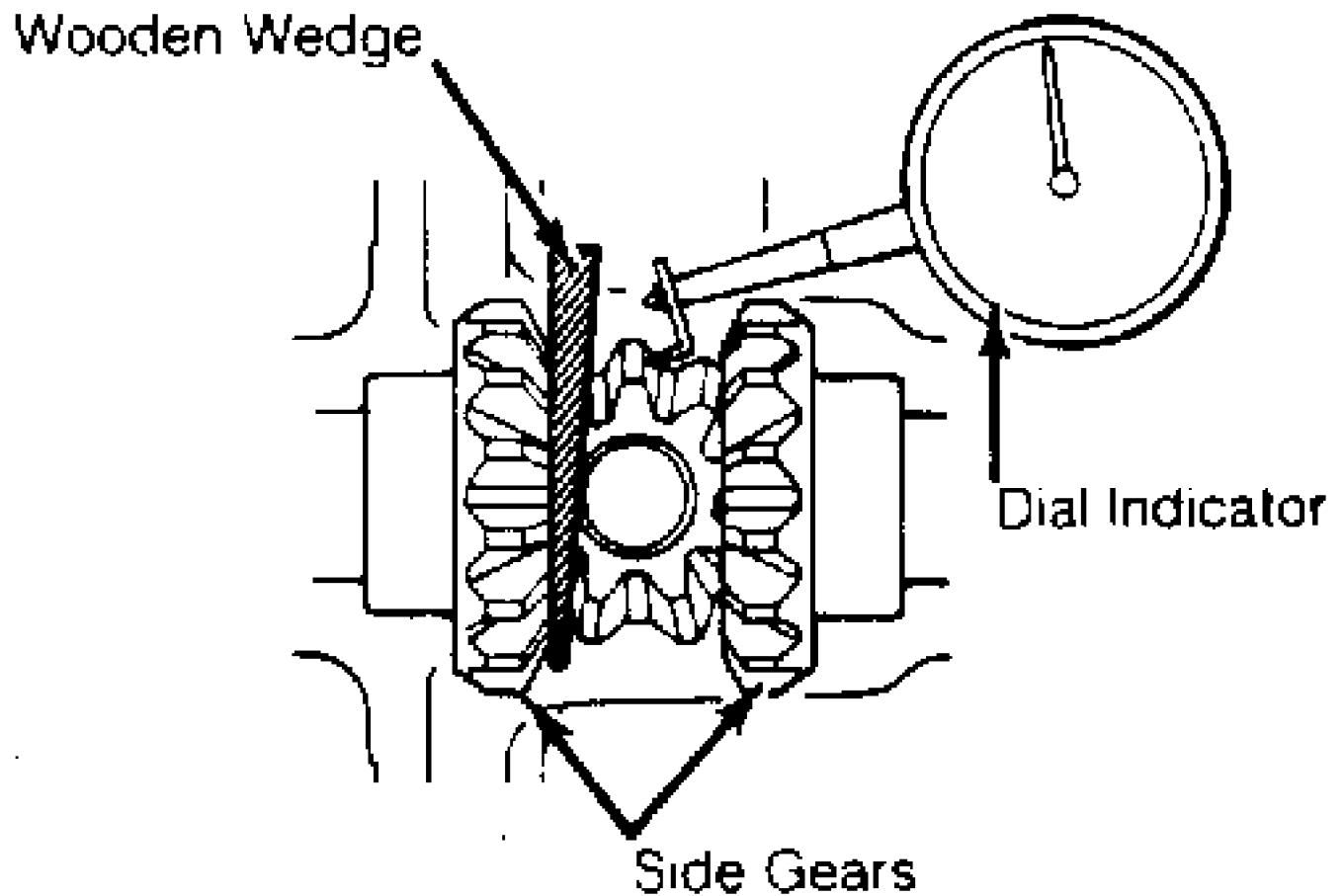


Fig. 4: Checking Pinion & Side Gear Backlash
Courtesy of Mitsubishi Motor Sales of America.

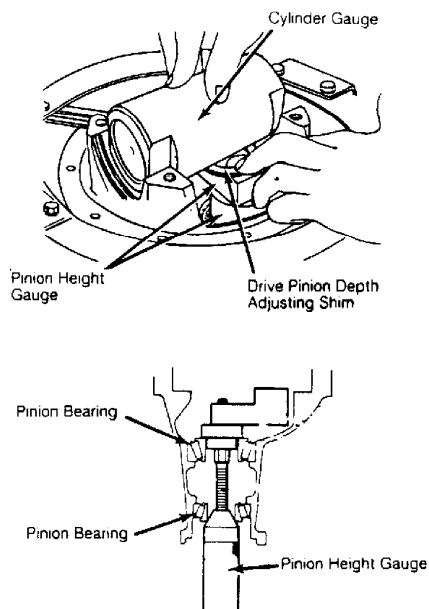


Fig. 5: Setting Pinion Depth (Typical)
Courtesy of Mitsubishi Motor Sales of America.

PINION ROTATING TORQUE TABLE

Application	INCH Lbs. (N.m)
Without Oil Seal	
New Bearing (No Lubrication)	3-4 (0.4-0.5)
New Or Used Bearing (With Lubrication) ...	1-2 (0.2-0.3)

RING GEAR BACKLASH SPECIFICATIONS TABLE

Application	In. (mm)
All Models004-.006 (.10-.15)

Ring Gear Runout
Using dial indicator, measure runout at back side of ring gear. Runout must be within .002" (.05 mm). If runout is excessive, change ring gear-to-differential case mounting position. Recheck runout.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
Axle Shaft Installation Nut	
Non-Turbo	137 (186)
Turbo	188-217 (255-294)
Brake Assembly Installation Bolt	36-43 (49-58)
Cover Bolt	26 (35)
Differential Assembly Support Bolt	65 (88)
Differential Assembly-To-Drive Shaft Bolt ..	22-25 (30-34)
Differential Crossmember-To-Frame Bolt	65 (88)
Drain Plug	43-50 (58-68)
Drive Shaft-To-Axle Shaft	
Companion Flange Bolt	40-47 (54-64)
Filler Plug	36 (49)
Pinion Flange Nut	137 (186)
Rear Oil Pump Bolt	17 (23)
Ring Gear Bolt	58-65 (79-88)
	INCH Lbs. (N.m)
Speed Sensor Bolt (If Equipped)	108 (12)