

Copyright © 1997 Mitchell International
Wednesday, March 24, 1999 11:51PM

Application	Specification
Warmer Than 0°F (-18°C)	GL-5/SAE 90W

DIFFERENTIAL

Article Text (p. 2)

1993 Mazda 929

For Techdoc Ltd.

Copyright © 1997 Mitchell International

Wednesday, March 24, 1999 11:51PM

Cooler Than 0°F (-18°C) GL-5/SAE 80W

(1) - Fill to lower edge of filler plug hole.

AA

TROUBLE SHOOTING

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

REMOVAL & INSTALLATION

DIFFERENTIAL ASSEMBLY

Removal

1) Raise and support vehicle. Remove wheel and tire assembly. Drain differential. Remove exhaust pipe. Mark drive shaft flange for reassembly reference and remove drive shaft from differential carrier. Remove upper and lower lateral links. Mark and disconnect CV joint drive axles from differential assembly, and support aside.

2) Support differential assembly and remove differential-to-chassis mounting bolts. Remove differential from vehicle. Remove differential carrier-to-housing bolts. Remove differential carrier.

Installation

To install, reverse removal procedure. Apply sealant to carrier mating flange. Align marks made during removal. Refill differential with lubricant. Tighten all nuts and bolts to specification. See TORQUE SPECIFICATIONS TABLE at the end of this article.

OVERHAUL

DIFFERENTIAL

NOTE: Mark positions of all components before disassembly.

NOTE: Overhaul of Limited Slip Differential unit (if equipped) is not recommended. Replace if defective. Overhaul procedures listed below are for Standard type only.

Disassembly

1) Remove drive axle output shafts from carrier. Mount carrier in Differential Carrier Hanger (49-M005-561). Mark side bearing caps for reassembly reference. Remove adjuster lock plates (if equipped). See Fig. 1.

2) Loosen side bearing cap bolts and slightly back off adjusters. Remove side bearing caps. Remove differential assembly from carrier. Mark side bearing races for reassembly reference. Remove adjusters and side bearing races from differential.

3) Remove drive pinion lock nut and washer. Remove companion

DIFFERENTIAL

Article Text (p. 3)

1993 Mazda 929

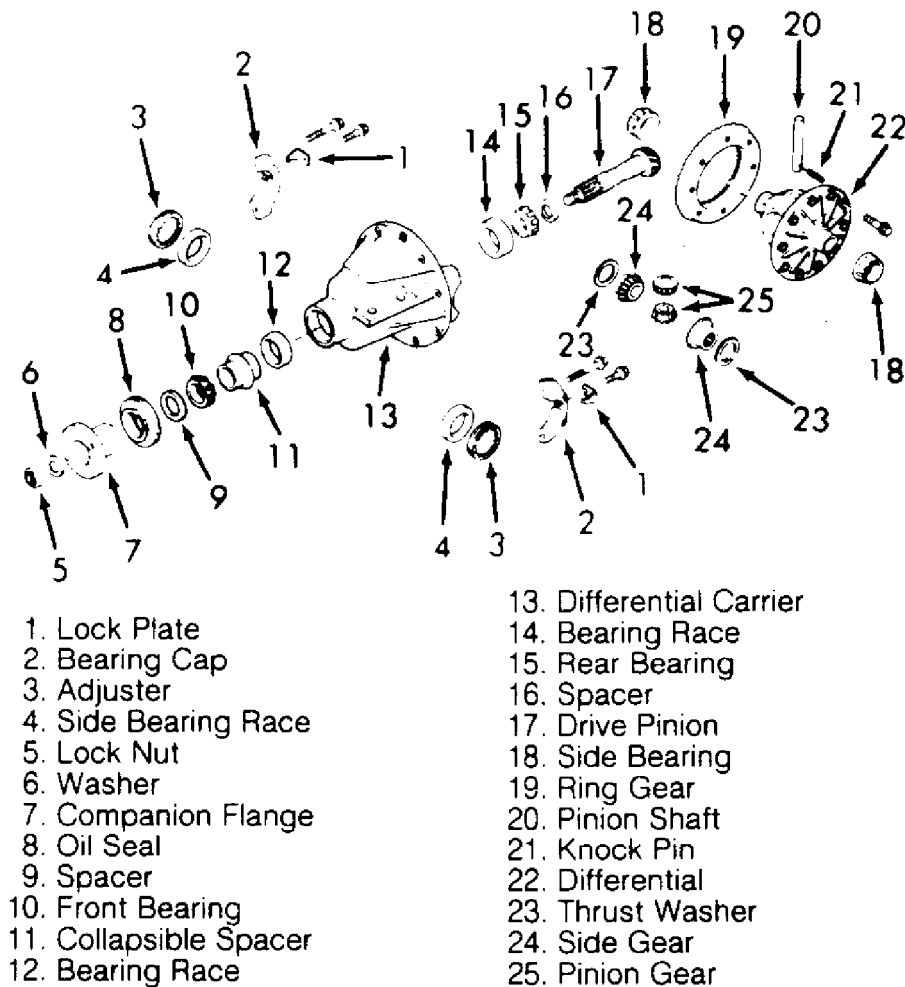
For Techdoc Ltd.

Copyright © 1997 Mitchell International

Wednesday, March 24, 1999 11:51PM

flange using Puller (49-0839-425C). Remove oil seal, spacer, front bearing and collapsible spacer from carrier. Remove drive pinion, spacer and rear bearing assembly from carrier. Remove bearing races using a drift and hammer in slots provided on inner lip (as necessary).

4) Remove ring gear retaining bolts. Separate ring gear from differential case. Mark side bearings for reassembly reference. Using Puller (49-0839-425C), remove side bearings from differential case. Remove knock pin. Remove pinion shaft, pinion gears, thrust washers, side gears, and thrust block (if equipped). See Fig. 1.



90E09856

Fig. 1: Exploded View Of Standard Differential & Carrier Assembly
Courtesy of Mazda Motors Corp.

DIFFERENTIAL

Article Text (p. 4)

1993 Mazda 929

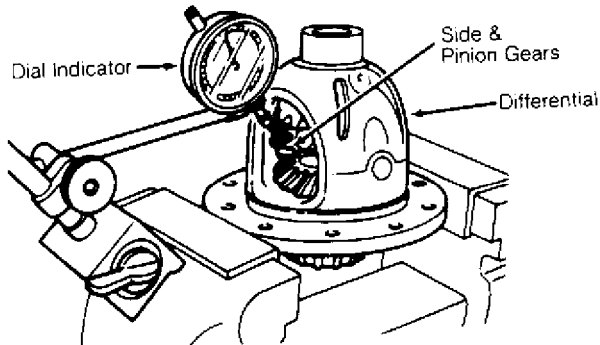
For Techdoc Ltd.

Copyright © 1997 Mitchell International

Wednesday, March 24, 1999 11:51PM

Reassembly & Adjustment

1) Install thrust block (if equipped), side gears, thrust washers, pinion gears, pinion shaft and knock pin. Stake knock pin. Position dial indicator against pinion gear. See Fig. 2. Secure one side gear.



91B01528

Fig. 2: Measuring Side Gear & Pinion Gear Backlash
Courtesy of Mazda Motors Corp.

2) Check side gear and pinion gear backlash. If backlash exceeds .004" (.10 mm), replace thrust washers. See THRUST WASHER SPECIFICATIONS table. Noting marks made during disassembly, press side bearings onto differential assembly using Bearing Installer (49-F401-337A, 49-G030-338 or 49-UB71-525) and Body (49-F401-331). Apply locking compound to rear face of ring gear. Install ring gear and tighten ring gear retaining bolts to 51-61 ft. lbs. (69-83 N.m).

THRUST WASHER SPECIFICATIONS TABLE

AA

Identifying Mark	Thickness - In. (mm)
------------------	----------------------

00787 (2.000)
---------	---------------

050807 (2.050)
----------	---------------

10827 (2.100)
---------	---------------

150846 (2.150)
----------	---------------

20866 (2.200)
---------	---------------

AA

3) Using Bearing Installer Set (49-F027-0A1) and press, install drive pinion bearing races in differential carrier.

4) Put original spacer, rear bearing and Collar (49-H027-001) on Dummy Drive Pinion (49-8531-565). See Fig. 3. Secure collar with "O" ring. Install assembly into differential carrier.

5) Install front bearing and collar on dummy drive pinion.

DIFFERENTIAL

Article Text (p. 5)

1993 Mazda 929

For Techdoc Ltd.

Copyright © 1997 Mitchell International

Wednesday, March 24, 1999 11:51PM

See COLLAR SELECTION table. Install companion flange, washer and original drive pinion lock nut. Tighten drive pinion lock nut so dummy drive pinion assembly can be turned by hand.

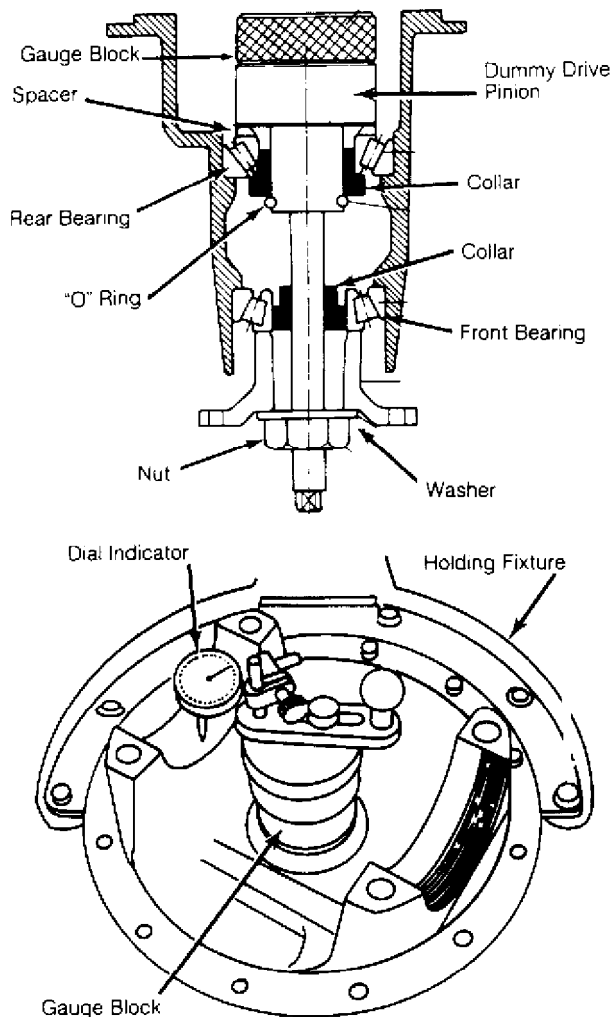
COLLAR SELECTION TABLE

AA

Application	Collar No.
-------------	------------

929	49-8531-568
-----------	-------------

AA



91J01532

Fig. 3: Checking Drive Pinion Installation & Position
Courtesy of Mazda Motors Corp.

6) Install dial indicator on Pinion Height Gauge (49-0727-

DIFFERENTIAL

Article Text (p. 6)

1993 Mazda 929

For Techdoc Ltd.

Copyright © 1997 Mitchell International

Wednesday, March 24, 1999 11:51PM

570). Place pinion height gauge on a flat surface and zero dial indicator. Position gauge block on top of dummy drive pinion assembly. See GAUGE BLOCK SELECTION table.

GAUGE BLOCK SELECTION TABLE

Application

Gauge Block No.

Rear Differential 49-0660-555

7) Place pinion height gauge on top of gauge block. Position dial indicator to measure distance to a point where side bearing sits. Measure lowest point. See Fig. 3. Measure both sides. Add both measurements together and divide by 2.

8) If result is not zero, replace pinion spacer. Spacers are available in a range of .1213-.1366" (3.080-3.470 mm) in .001" (.03 mm) increments. Remove dummy drive pinion. Press rear bearing on drive pinion.

9) Install drive pinion, spacer, front bearing, collapsible spacer and companion flange in differential carrier. DO NOT install pinion oil seal yet. DO NOT exceed one-ton force; collapsible spacer will be damaged.

10) Install washer and drive pinion lock nut. Temporarily tighten drive pinion lock nut. Turn companion flange by hand to seat bearing. Using torque wrench, tighten drive pinion lock nut to specification. See TORQUE SPECIFICATIONS TABLE at the end of this article. Check pinion bearing preload at drive pinion lock nut. See PINION PRELOAD SPECIFICATIONS table. If pinion bearing preload is not as specified, replace collapsible spacer and recheck preload.

PINION PRELOAD SPECIFICATIONS TABLE

Application

INCH Lbs. (N.m)

929 11.3-15.6 (1.3-1.8)

11) Remove drive pinion lock nut, washer and companion flange. Install pinion oil seal. Lubricate oil seal lip with differential oil. Install companion flange and washer. Install NEW drive pinion lock nut and tighten it to specification. See TORQUE SPECIFICATIONS TABLE at the end of this article. Recheck pinion bearing preload. Lubricate end of companion flange with grease.

12) Position differential assembly into differential carrier. Install side bearing adjusters. Position side bearing caps. Align marks made during disassembly. Install side bearing cap bolts and hand-tighten bolts.

13) Tighten side bearing adjusters equally until adjusters contact bearing races. Mark ring gear in 4 locations, 90 degrees apart. Position dial indicator against ring gear to check ring gear backlash.

DIFFERENTIAL

Article Text (p. 7)

1993 Mazda 929

For Techdoc Ltd.

Copyright © 1997 Mitchell International

Wednesday, March 24, 1999 11:51PM

14) Check backlash at all 4 locations. Tighten side bearing adjusters equally until backlash is .0035-.0043" (.09-.11 mm). Minimum backlash at any point is .002" (.05 mm). Difference between minimum and maximum backlash should not exceed .0028" (.07 mm).

15) To set differential bearing preload, tighten adjusters equally until distance between measuring points on carrier bearing caps is within specification. See Fig. 4. See DIFFERENTIAL CARRIER DIMENSIONS table.

16) Ensure backlash did not change when preload was set. Tighten side bearing cap bolts to specification. See TORQUE SPECIFICATIONS TABLE at the end of this article. Check ring gear tooth patterns. See GEAR TOOTH CONTACT PATTERNS article in GENERAL INFORMATION.

17) To complete reassembly, reverse disassembly procedure. Tighten all nuts and bolts to specification. See TORQUE SPECIFICATIONS TABLE at the end of this article.

DIFFERENTIAL CARRIER DIMENSIONS TABLE

AA

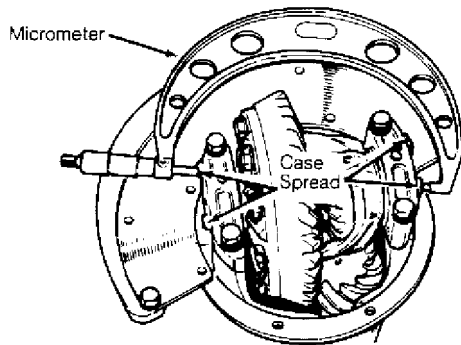
Application (1)	In. (mm)
-----------------	----------

929	(2)
-----------	-----

(1) - See illustration for measuring point. See Fig. 4.

(2) - Information is not available from manufacturer.

AA



MEASURING CASE SPREAD

Fig. 4: Measuring Carrier Case Spread

Courtesy of Mazda Motors Corp.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

AA

Application	Ft. Lbs. (N.m)
-------------	----------------

Differential Carrier Bearings Cap Bolts ...	54-79 (73-107)
---	----------------

Differential Carrier-To-Housing Bolts	27-38 (37-52)
---	---------------

Differential-To-Chassis	
-------------------------	--

DIFFERENTIAL
Article Text (p. 8)

1993 Mazda 929

For Techdoc Ltd.

Copyright © 1997 Mitchell International
Wednesday, March 24, 1999 11:51PM

Front Hanger Bolt	61-76 (83-103)
Rear Mount Bolt	65-87 (88-118)
Drive Axle Inner CV Joint Flange Nuts	40-47 (54-64)
Drive Pinion Lock Nut	94-210 (127-284)
Drive Shaft Companion Flange Nuts	36-43 (49-58)
Exhaust Pipe Mount Nuts	27-38 (37-52)
Filler Plug	29-40 (39-54)
Lateral Link Nuts	69-86 (94-117)
Ring Gear Retaining Bolts	51-61 (69-83)
Wheel Lug Nuts	65-87 (88-118)

AA

END OF ARTICLE