

AXLE SHAFTS - FRONT

Article Text

1992 Mitsubishi Mirage

For Dan's Transmission Service 10 Jefferson Place Fort Walton Beach FL 32548

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Monday, April 01, 2002 09:00AM

ARTICLE BEGINNING

1990-92 DRIVE AXLES

FWD Axle Shafts

Eclipse, Galant, Mirage, 3000GT

DESCRIPTION & OPERATION

Power from transaxle is transferred to driving wheels by 2 axle shafts. Both axle shafts use Constant Velocity (CV) joints at inner and outer ends. CV joints are enclosed in CV boots, and connected by an intermediate shaft. Intermediate shaft is splined on both ends.

Retaining rings retain intermediate shaft in the inner and outer CV joints. A retaining ring retains inner CV joint stub in differential side gear. Outer CV joint stub is splined into wheel hub, and secured by a spindle nut. Left axle has a dynamic damper to reduce vibration.

TROUBLE SHOOTING

DRIVE AXLE (FWD) TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	ACTION:
GREASE LEAKING	Ripped CV Boot	Replace Boot
CLICKING NOISE WHILE CORNERING ...	Dry/Worn CV Joints ..	Replace Outer CV Joints
CLUNK ON ACCELERATION	Dry/Worn CV Joints ..	Replace Inner CV Joints
	Worn Trans. Gears/ Bearings	Inspect Transmission
VIBRATION/SHUDDER ON ACCELERATION ...	Dry/Worn CV Joints	Replace CV Joints
	Alignment Out	Check Alignment
	Incorrect Spring Height ...	Check Spring Height
SQUEALING OR HUMMING	Dry/Worn CV Joints ...	Lube/Replace CV Joints
	Faulty Wheel Bearing ...	Replace Wheel Bearing

REMOVAL

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CAUTION: DO NOT place vehicle weight on hub assembly with axle shaft removed.

Removal (All Models)

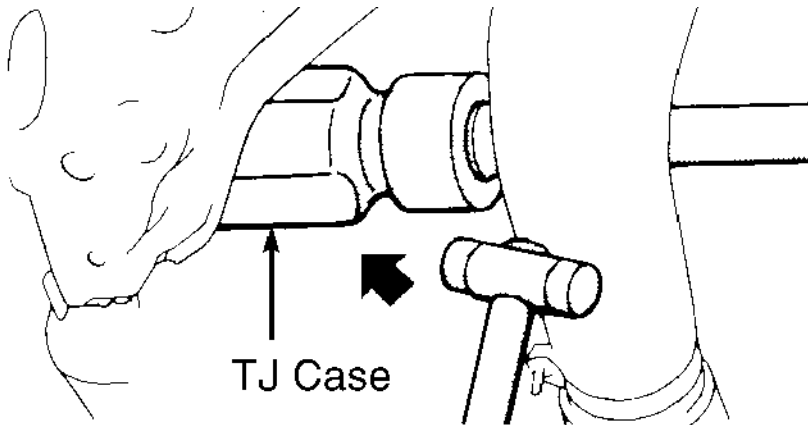
1) Remove cotter pin, and loosen axle shaft nut with brakes applied. Raise and support vehicle. Remove front wheels. Remove axle shaft nut and washer. Remove brake caliper assembly, and support with wire. Support control arm.

2) Remove speed sensor and/or height sensor (if equipped). Remove nut, and separate ball joint from control arm. Disconnect tie rod end from steering knuckle. Disconnect stabilizer bar and strut bar from control arm (if equipped).

3) Attach puller to hub and press axle shaft from hub. Swing hub and steering knuckle assembly aside. On left axles without intermediate shaft, pry axle shafts from transaxle using pry bar. DO NOT damage oil seals.

4) On left axles with intermediate shaft, place screwdriver between center bearing and axle shaft. Pry axle shaft from center bearing. Remove center bearing bolts. Place pry bar between transaxle case and intermediate shaft. Pry intermediate shaft from transaxle.

5) On Eclipse, Galant, and 3000GT 4WD models, (left axle with intermediate shaft), remove center bearing bolts. Using soft-faced hammer, tap lightly on Tripod Joint (TJ) case, and remove axle shaft from transaxle. See Fig. 1.



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Fig. 1: Removing Left Axle Shaft (Eclipse, Galant & 3000GT 4WD)
Courtesy of Mitsubishi Motor Sales of America.

DISASSEMBLY & REASSEMBLY

NOTE: The following are possible types of Constant Velocity (CV) joints used on axle shaft: Birfield Joint (BJ), Double Offset Joint (DOJ), Rzeppa Joint (RJ) and Tripod Joint (TJ). Determine type of CV joint used prior to disassembly. See AXLE SHAFT SPECIFICATIONS table under INSTALLATION. Note type of boot and location prior to removal. See BAND & BOOT APPLICATION. Install a NEW retaining ring each time axle shaft is removed from transaxle.

BJ & RJ TYPE

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Disassembly

Note the type of boot and location prior to removal. Refer to BAND & BOOT IDENTIFICATION. DO NOT disassemble BJ or RJ type assemblies. Only CV boot may be replaced. To remove the boot, wrap splined area of axle shaft with tape. Remove band and boot.

Reassembly

Make sure the proper boot is installed. For boot and band identification, see BAND & BOOT IDENTIFICATION. Apply proper amount of grease to joint and inside of boot. See the AXLE SHAFT LUBRICATION SPECIFICATIONS table. Tighten bands on boots with axle shaft in straight position.

DOJ TYPE

Disassembly

1) Note type of boot and location prior to removal. Refer to BAND & BOOT IDENTIFICATION. Remove bands and boot from DOJ housing. See Fig. 2. Remove circlip and remove DOJ housing.

2) Place reference marks on axle shaft, DOJ inner race and DOJ outer race for reassembly reference. Remove snap ring. Remove DOJ cage, balls and DOJ inner race. Wrap splined area of axle shaft with tape, and remove boot.

Reassembly

1) To reassemble, reverse disassembly procedure. Ensure reference marks are aligned on DOJ inner race and axle shaft. Apply one half of proper amount of lubricant in balls and inner race, and other half in DOJ boot. See the AXLE SHAFT LUBRICATION SPECIFICATIONS table.

2) Install boot and bands. Tighten bands on boots with axle shaft in straight position. Position boots so that bands are positioned at specified distance between the bands and secure bands. See BAND INSTALLATION SPECIFICATIONS table.

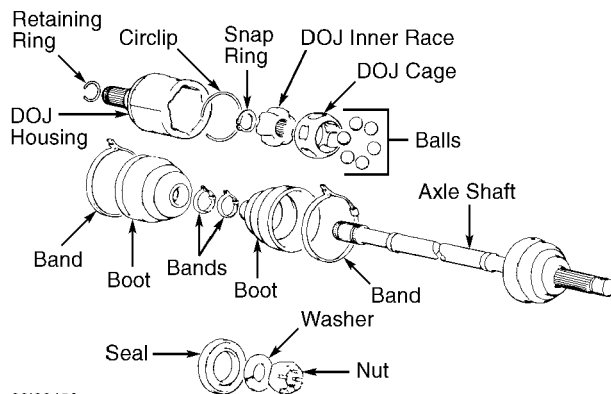


Fig. 2: Exploded View of DOJ Assembly
Courtesy of Chrysler Motors.

TJ TYPE

Disassembly

1) Note type of boot and location prior to removal. See BAND & BOOT APPLICATION. Remove bands and boot from TJ housing. See Fig. 3. Place reference mark on TJ case and spider assembly. Pull axle shaft

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and spider assembly from TJ case.

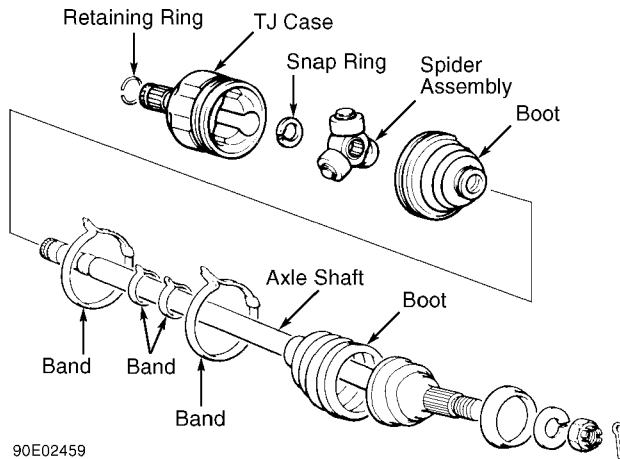


Fig. 3: Exploded View of TJ Assembly
Courtesy of Chrysler Motors.

2) Remove snap ring and pull spider assembly from axle shaft. Clean, but DO NOT disassemble spider assembly. Wrap splined area of axle shaft with tape, and remove boot. Dynamic damper (if equipped) and outer boots can be serviced at this time if necessary.

Reassembly

1) To reassemble, reverse disassembly procedure. Use a new snap ring to retain the spider assembly. Make sure the reference marks are aligned on spider assembly and TJ case. Using proper lubricant, apply half of the amount in TJ case and other half in TJ boot. Refer to the AXLE SHAFT LUBRICATION SPECIFICATIONS table.

2) Install boot and bands. Tighten bands on boots with axle shaft in straight position. Position boots so bands are positioned at specified distance between the bands and secure bands. Refer to the BAND INSTALLATION SPECIFICATIONS table.

NOTE: If dynamic damper was moved, reposition properly. See DYNAMIC DAMPER under INSTALLATION.

INTERMEDIATE SHAFT

Disassembly

On Eclipse, Galant and 3000GT 4WD models, press intermediate shaft and bearing assembly from TJ case with Intermediate Shaft Remover (MB991248 or MD998801). On all models, press out intermediate shaft from center bearing assembly with Bearing Puller (MB990810-01). Remove center bearing from bracket with Handle (MB990938-01) and Bearing Remover (MB990929-01). See Fig. 4.

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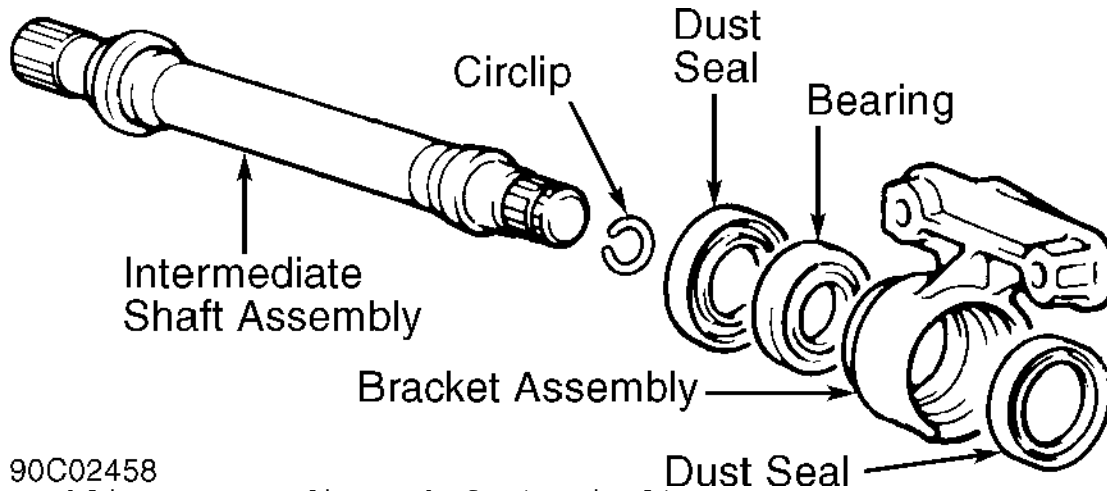
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Fig. 4: Assembling Intermediate Shaft (Typical)

Courtesy of Mitsubishi Motor Sales of America.

Reassembly

On Eclipse, Galant and 3000GT 4WD models, grease center bearing and inside center bearing bracket. On all models, press bearing into bearing bracket assembly with Handle (MB990938-01) and Bearing Installer (MB990932-01). Press dust seals into bearing with appropriate tools. See CENTER BEARING DUST SEAL INSTALLATION TOOL APPLICATION table. Lubricate assembly with grease. Press intermediate shaft into center bearing assembly.

CENTER BEARING DUST SEAL INSTALLATION TOOL APPLICATION

Application		Tool
Eclipse & Galant		
Inner Dust Seal	.....	Handle (MB990938-01) & Seal Installer (MB990933-01)
Outer Dust Seal	.....	Handle (MB990938-01) & Seal Installer (MB990931-01)
3000GT	.....	Seal Installer (MB990890-01)

BAND & BOOT IDENTIFICATION

Identification Number Locations

Band identification numbers are stamped on inside edge of band. See Fig. 5. Boot identification numbers are stamped on largest ridge of boot. See BAND & BOOT APPLICATION table.

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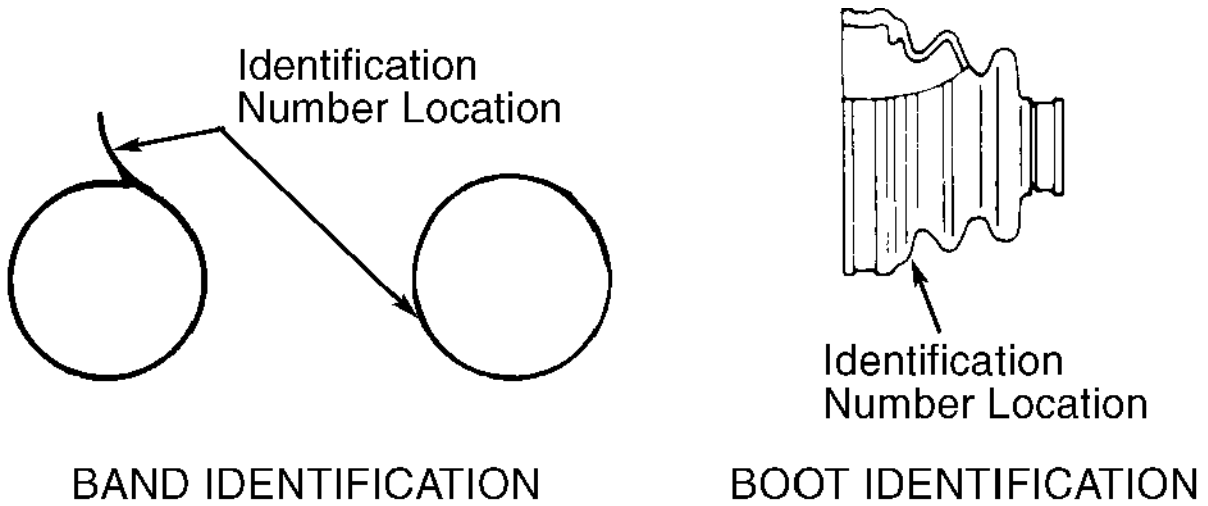
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Fig. 5: Locating Band & Boot Identification Numbers
Courtesy of Chrysler Motors.

BAND & BOOT APPLICATION TABLE

Application	Large Band	Small Band	Boot
Eclipse & Galant			
2WD			
TJ-BJ Type Axle			
1.8L Eclipse			
BJ	20-113	20-146	17-249 #BJ87L
TJ	20-110	20-146	17-261 #TJ87
2.0L Eclipse & Galant			
BJ	20-75	20-111	17-31 #BJ92L
TJ	20-12	20-111	17-55 #TJ92
TJ-RJ Type Axle (Galant Only)			
RJ	126	218	020
TJ	110	206	019
4WD			
BJ	20-113	20-146	17-249 #BJ87L
TJ	20-110	20-146	17-261 #TJ87
Mirage 1.5L			
BJ	20-113	20-146	17-249 #BJ87L
TJ	20-110	20-146	17-261 #TJ87
Mirage 1.6L			
DOJ-BJ Type Axle			
DOJ	20-110	20-111	17-258 #BJ87
BJ	20-113	20-111	17-249 #BJ87L
TJ-BJ Type Axle			
TJ	20-82	20-83	17-154 #TJ82
BJ	20-110	20-83	17-151 #BJ82L

3000GT

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SOHC					
BJ	20-75	20-72 (1)
TJ	20-75L	20-76 (1)
DOHC					
BJ	20-22	20-15 (1)
TJ	20-131L	20-72 (1)
4WD					
BJ	20-75	20-72 (1)
TJ	.....	20-131	.....	20-72	..... (1)

(1) - Boots and bands are packaged as a kit. Kits are broken down by type of joint. No specifications given by manufacturer.

AXLE SHAFT LUBRICATION SPECIFICATIONS TABLE

Application	Ozs. (g)
Eclipse	
BJ Boot	
2WD	
1.8L	3.4 (95)
2.0L	3.9 (110)
4WD	3.4 (95)
TJ Boot	
1.8L	3.7 (105)
2.0L	4.2 (120)
4WD	3.7 (105)
Galant	
BJ Boot	
2WD	3.9 (110)
4WD	3.2 (90)
RJ Boot	4.2 (120)
TJ Boot	
2WD (SOHC)	4.2 (120)
2WD (DOHC)	4.5 (128)
4WD	3.9 (110)
Mirage	
BJ Boot	
1.5L	2.7-3.4 (75-95)
1.6L	3.0-3.7 (85-105)
DOJ Boot	3.0-3.7 (85-105)
RJ Boot	2.7-3.4 (75-95)
TJ Boot	
TJ-RJ Type Axle	4.1-4.8 (115-135)
TJ-BJ Type Axle	
1.5L	3.0-3.7 (85-105)
1.5L	3.4-4.1 (96-115)
3000GT	
BJ Boot	
SOHC & 4WD	4.8 (135)
DOHC	5.1 (145)
TJ Boot	

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SOHC	5.3 (151)
DOHC & 4WD	5.6 (160)

- (1) - Apply same amount of grease as removed. No specification available from manufacturer.

BAND INSTALLATION SPECIFICATIONS TABLE

Application	Distance Between Bands	
	In. (mm)	
Eclipse (TJ Boot)		
Left Axle Shaft		
2WD		
1.8L	2.83-3.07	(72.0-78.0)
2.0L	3.03-3.27	(77.0-83.0)
4WD	3.23-3.47	(82.0-88.0)
Right Axle Shaft		
2WD		
1.8L	3.23-3.47	(82.0-88.0)
2.0L	3.03-3.27	(77.0-83.0)
4WD	3.23-3.47	(82.0-88.0)
Galant (TJ Boot)		
Left Axle Shaft		
2WD (SOHC)	3.11-3.35	(79.0-85.0)
2WD (DOHC)	3.03-3.27	(77.0-83.0)
4WD	3.23-3.47	(82.0-88.0)
Right Axle Shaft		
2WD (SOHC)	3.23-3.47	(82.0-88.0)
2WD (DOHC)	3.03-3.27	(77.0-83.0)
4WD	3.23-3.47	(82.0-88.0)
Mirage		
TJ Boot		
Left Axle Shaft		
TJ-RJ Type	3.03-3.27	(77.0-83.0)
TJ-BJ Type (1.5L)	3.23-3.47	(82.0-88.0)
TJ-BJ Type (1.6L)	3.03-3.27	(77.0-83.0)
Right Axle Shaft		
TJ-RJ Type	3.23-3.47	(82.0-88.0)
TJ-BJ Type (1.5L)	3.42-3.66	(87.0-93.0)
TJ-BJ Type (1.6L)	3.23-3.47	(82.0-88.0)
DOJ Boot	3.03-3.27	(77.0-83.0)
3000GT		
(TJ Boot)	3.23-3.47	(82.0-88.0)

INSTALLATION

FWD AXLE SHAFT

Installation (All Models)

Position dynamic damper properly on axle shaft (if equipped).

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See DYNAMIC DAMPER. To complete installation, reverse removal procedure. On all models, when installing axle shaft nut, washer must be installed with chamfered edge (raised side) toward axle shaft nut. Tighten axle shaft nut to specification. See TORQUE SPECIFICATIONS table at end of article.

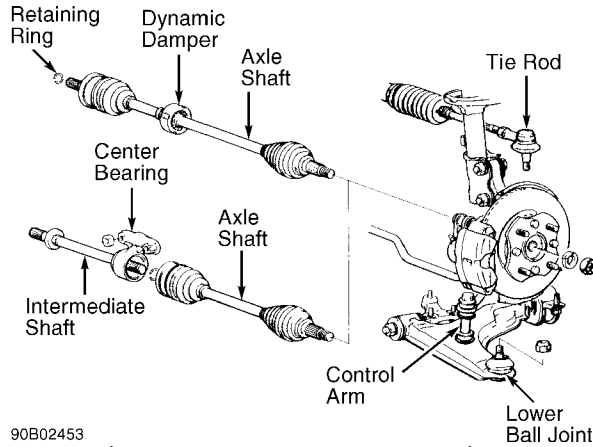


Fig. 6: Installing Axle Shafts (Typical)
Courtesy of Chrysler Motors.

AXLE SHAFT SPECIFICATIONS TABLE

Application (1)	(2) Inner Joint	(2) Outer Joint	Length In. (mm)
Eclipse			
2WD			
1.8L			
Left	TJ	BJ	27.9 (709)
Right	TJ	BJ	14.5 (368)
2.0L (A/T Turbo)			
Left	TJ	BJ	27.6 (702)
Right	TJ	BJ	14.5 (368)
2.0L (All Others)			
Left	TJ	BJ	27.8 (706)
Right	TJ	BJ	14.4 (366)
4WD (A/T)			
Left	TJ	BJ	14.4 (366)
Right	TJ	BJ	14.6 (371)
4WD (M/T)			
Left	TJ	BJ	14.5 (368)
Right	TJ	BJ	14.5 (368)
Galant			
2WD			
SOHC			
Left	TJ	RJ	27.9 (709)
Right	TJ	RJ	14.5 (368)
DOHC			
Left	TJ	BJ	27.8 (706)
Right	TJ	BJ	14.4 (366)
4WD			
A/T			
Left	TJ	BJ	14.4 (366)

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Right	TJ	BJ	14.6 (371)
M/T						
Left	TJ	BJ	14.5 (368)
Right	TJ	BJ	14.5 (368)
Mirage						
1.5L						
Left	TJ	BJ or RJ	27.4 (696)
Right	.....	TJ	.....	BJ or RJ	.....	14.5 (368)
1.6L						
A/T						
Left	.....	TJ	.....	BJ	.....	27.2 (691)
Right	.....	TJ	.....	BJ	.....	14.3 (363)
M/T						
Left	.....	TJ	.....	BJ	.....	27.2 (691)
Right	.....	DOJ	.....	BJ	.....	14.1 (358)
3000GT						
SOHC (A/T)						
Left	.....	TJ	.....	BJ	.....	16.5 (419)
Right	.....	TJ	.....	BJ	.....	15.5 (394)
SOHC (M/T)						
Left	.....	TJ	.....	BJ	.....	16.5 (419)
Right	.....	TJ	.....	BJ	.....	16.0 (407)
DOHC (A/T)						
Left	.....	TJ	.....	BJ	.....	16.4 (417)
Right	.....	TJ	.....	BJ	.....	15.5 (394)
DOHC (M/T)						
Left	.....	TJ	.....	BJ	.....	16.4 (417)
Right	.....	TJ	.....	BJ	.....	15.9 (405)
4WD						
Left	.....	TJ	.....	BJ	.....	16.5 (419)
Right	.....	TJ	.....	BJ	.....	15.4 (391)

(1) - Right indicates passenger's side, and left indicates driver's side.

(2) - Type of CV joint used are identified by letters as follows:
BJ - Birfield Joint, DOJ - Double Offset Joint, RJ - Rzeppa Joint, and TJ - Tripod Joint.

DYNAMIC DAMPER

Dynamic damper must be properly positioned on axle shaft. Position damper so proper distance exists between damper and end of boot with axle shaft in a straight position. See Fig. 7. Distance must be within specification. See the DYNAMIC DAMPER INSTALLATION SPECIFICATIONS table.

DYNAMIC DAMPER INSTALLATION SPECIFICATIONS TABLE

Application	(1) Damper-To-Boot End Distance In. (mm)
Mirage	
1.5L 17.1-17.3 (434-439)

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1.6L 5.5-5.7 (140-145)

(1) - Ensure axle shaft is in straight position.

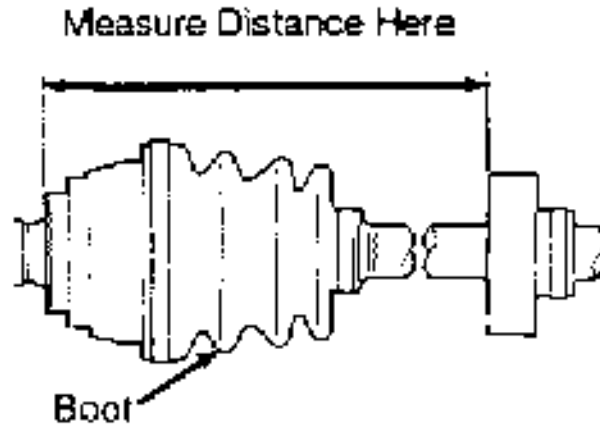


Fig. 7: Installing Dynamic Damper
Courtesy of Chrysler Motors.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
Axle Shaft Nut	145-188 (197-255)
Center Bearing Bracket Bolt	26-33 (36-46)
Control Arm Ball Joint Nut	43-53 (58-72)
Tie Rod Nut	17-25 (23-34)
Wheel Lug Nut	
Eclipse & 3000GT	87-101 (120-140)
All Others	65-80 (88-109)

END OF ARTICLE