CHRYSLER CORPORATION

SERVICE MANUAL

1997 JEEP® WRANGLER

To order the special service tools used and illustrated, please refer to the instructions on inside back cover.

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FOREWORD

The information contained in this service manual has been prepared for the professional automotive technician involved in daily repair operations. This manual does not cover theory of operation, which is addressed in service training material. Information describing the operation and use of standard and optional equipment is included in the Owner's Manual provided with the vehicle.

Information in this manual is divided into groups. These groups contain general information, diagnosis, testing, adjustments, removal, installation, disassembly, and assembly procedures for the systems and components. To assist in locating a group title page, use the Group Tab Locator on the following page. The solid bar after the group title is aligned to a solid tab on the first page of each group. The first page of the group has a contents section that lists major topics within the group. If you are not sure which Group contains the information you need, look up the Component/System in the alphabetical index located in the rear of this manual.

A Service Manual Comment form is included at the rear of this manual. Use the form to provide Chrysler Corporation with your comments and suggestions.

Tightening torques are provided as a specific value throughout this manual. This value represents the midpoint of the acceptable engineering torque range for a given fastener application. These torque values are intended for use in service assembly and installation procedures using the correct OEM fasteners. When replacing fasteners, always use the same type (part number) fastener as removed.

Chrysler Corporation reserves the right to change testing procedures, specifications, diagnosis, repair methods, or vehicle wiring at any time without prior notice or incurring obligation.

GROUP TAB LOCATOR

INTRODUCTION

CONTENTS

GENERAL INFORMATION

VEHICLE IDENTIFICATION NUMBER

The Vehicle Identification Number (VIN) plate is located on the lower windshield fence near the left A-pillar. The VIN contains 17 characters that provide data concerning the vehicle. Refer to the VIN decoding chart to determine the identification of a vehicle.

The Vehicle Identification Number is also imprinted on the:

- Body Code Plate.
- Vehicle Safety Certification Label.
- Frame rail.

To protect the consumer from theft and possible fraud the manufacturer is required to include a Check Digit at the ninth position of the Vehicle Identification Number. The check digit is used by the manufacturer and government agencies to verify the authenticity of the vehicle and official documentation. The formula to use the check digit is not released to the general public.

VEHICLE IDENTIFICATION NUMBER DECODING CHART

POSITION	INTERPRETATION	CODE = DESCRIPTION
1	Country of Origin	1 = United States
2	Make	J = Jeep
3	Vehicle Type	4 = MPV
4	Gross Vehicle Weight Rating	E = 3001-4000 lbs. F = 4001-5000 lbs.
5	Vehicle Line	Y = Wrangler 4X4
6	Series	1 = Sport 2 = SE 4 = Sahara
7	Body Style	9 = Open Body
8	Engine	H = 2.5L Leaded-Gasoline P = 2.5L Unleaded-Gasoline S = 4.0L Unleaded-Gasoline V = 4.0L Leaded-Gasoline
9	Check Digit	
10	Model Year	V = 1997
11	Assembly Plant	P = Toledo #2
12 thru 17	Vehicle Build Sequence	

GENERAL INFORMATION (Continued)

VEHICLE SAFETY CERTIFICATION LABEL

A vehicle safety certification label (Fig. 1) is attached to every Chrysler Corporation vehicle. The label certifies that the vehicle conforms to all applicable Federal Motor Vehicle Safety Standards. The label also lists:

- Month and year of vehicle manufacture.
- Gross Vehicle Weight Rating (GVWR). The gross front and rear axle weight ratings (GAWR's) are based on a minimum rim size and maximum cold tire inflation pressure.
- Vehicle Identification Number (VIN).
- Type of vehicle.
- Type of rear wheels.
- Bar code.
- Month, Day and Hour (MDH) of final assembly.
- Paint and Trim codes.
- Country of origin.

The label is located on the driver-side door shutface.

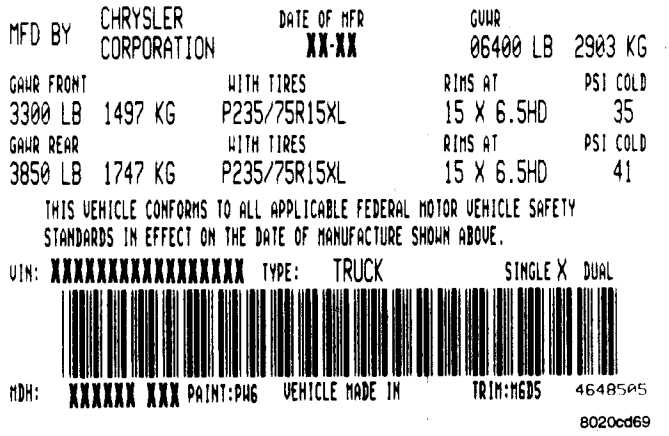


Fig. 1 Vehicle Safety Certification Label—Typical

BODY CODE PLATE

LOCATION AND DECODING

A metal body code plate is attached to the floor pan under the drivers seat (Fig. 2). Disengage the snaps attaching the carpet to the floor pan to read the information. There are seven lines of information on the body code plate. Lines 4, 5, 6, and 7 are not used to define service information. Information reads from left to right, starting with line 3 in the center of the plate to line 1 at the bottom of the plate (Fig. 3).

The last code imprinted on a vehicle code plate will be followed by the imprinted word END. When two vehicle code plates are required, the last available spaces on the first plate will be imprinted with the letters CTD (for continued).

When a second vehicle code plate is necessary, the first four spaces on each row will not be used because of the plate overlap.

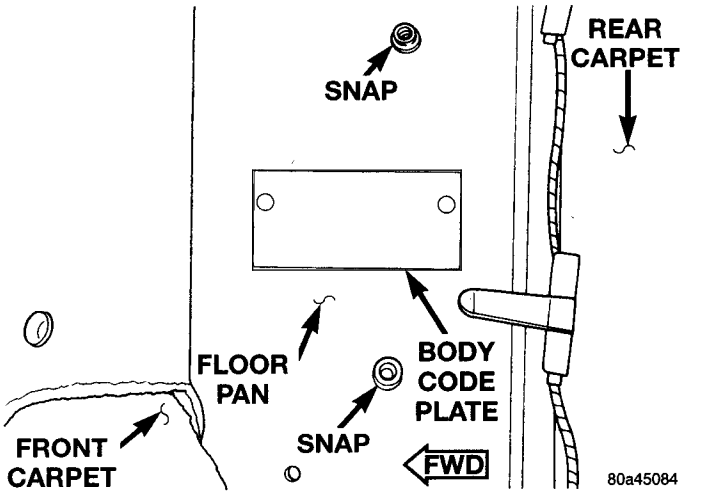


Fig. 2 Body Code Plate Location

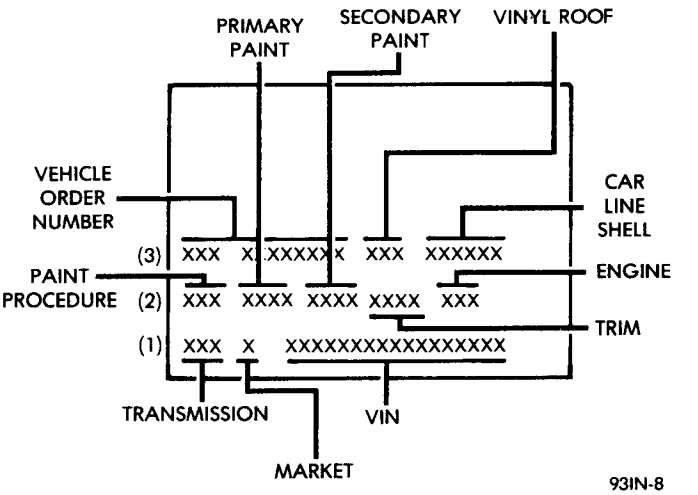


Fig. 3 Body Code Plate Decoding

BODY CODE PLATE—LINE 3

DIGITS 1 THROUGH 12

Vehicle Order Number

DIGITS 13, 14, AND 15

Open Space

DIGITS 16, 17, AND 18

Car Line Shell

- TJJ = Wrangler (LHD)
- TJU = Wrangler (RHD)

DIGIT 19

Price Class

- L = Wrangler (All)

DIGITS 20 AND 21

Body Type

- 77 = Wheel Base (93.4 in.)

GENERAL INFORMATION (Continued)

BODY CODE PLATE—LINE 2

DIGITS 1,2, AND 3
Paint Procedure

DIGIT 4
Open Space

DIGITS 5 THROUGH 8
Primary Paint
Refer to Group 23, Body for color codes.

DIGIT 9
Open Space

DIGITS 10 THROUGH 13
Secondary Paint

DIGIT 14
Open Space

DIGITS 15 THROUGH 18
Interior Trim Code

DIGIT 19
Open Space

DIGITS 20, 21, AND 22
Engine Code
- EPE = 2.5 L 4 cyl. MPI Gasoline
- ERH = 4.0L 6 cyl. MPI Gasoline

BODY CODE PLATE LINE 1

DIGITS 1, 2, AND 3
Transmission Codes
- DDQ = AX5 5–speed Manual
- DDO = AX15 5–speed Manual
- DGD = 30RH 3–speed Automatic
- DGG = 32RH 3–speed Automatic

DIGIT 4
Open Space

DIGIT 5
Market Code
- B = International
- C = Canada
- M = Mexico
- U = United States

DIGIT 6
Open Space

DIGITS 7 THROUGH 23
Vehicle Identification Number (VIN)
Refer to Vehicle Identification Number (VIN) paragraph for proper breakdown of VIN code.

VEHICLE DIMENSIONS

The vehicle dimension data charts list the exterior and interior dimensions. All dimensions are listed in inches and centimeters.

VEHICLE EXTERIOR DIMENSIONS

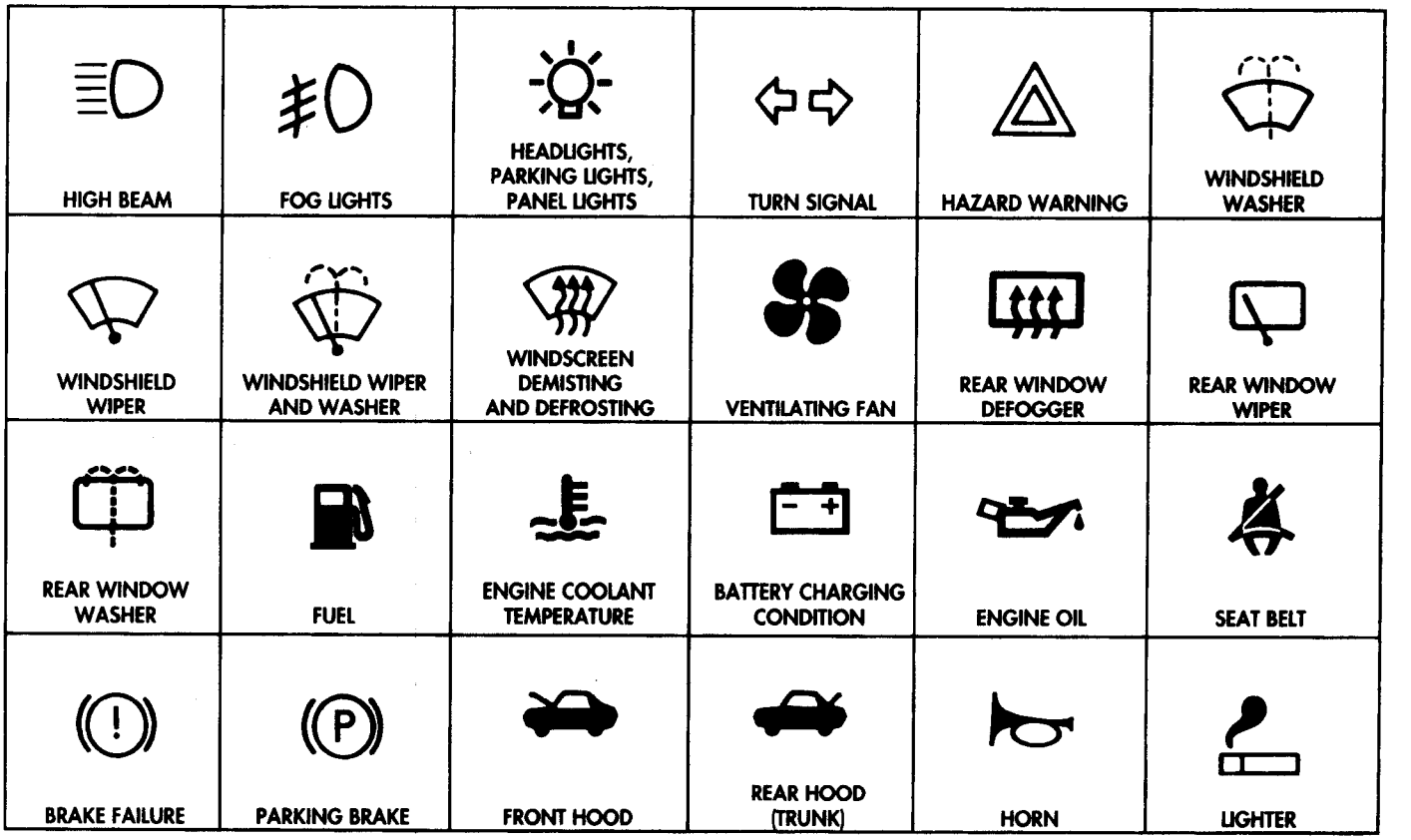
MODEL NAME	WHEEL BASE	TRACK FRONT	TRACK REAR	LENGTH	OVERALL WIDTH	HEIGHT
TJ-Wrangler	93.4 237.3	58.0 147.3	58.0 147.3	147.7 375.1	66.7 169.3	70.6 179.4

VEHICLE INTERIOR DIMENSIONS

HEAD FRONT/ REAR SOFT TOP	HEAD FRONT/ REAR HARD TOP	LEG FRONT / REAR	SHOULDER FRONT / REAR	HIP FRONT / REAR
42.3 / 40.2 107.5 / 102.2	40.9 / 39.1 103.8 / 99.4	41.0 / 36.4 104.1 / 92.4	51.9 / 57.3 131.9 / 145.5	51.1 / 43.5 129.7 / 110.5

GENERAL INFORMATION (Continued)

INTERNATIONAL CONTROL AND DISPLAY SYMBOLS



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INTERNATIONAL VEHICLE CONTROL AND DISPLAY SYMBOLS

The graphic symbols illustrated in the following chart are used to identify various instrument controls. The symbols correspond to the controls and displays that are located on the instrument panel.

FASTENER IDENTIFICATION

THREAD IDENTIFICATION

SAE and metric bolt/nut threads are not the same. The difference is described in the Thread Notation chart (Fig. 4).

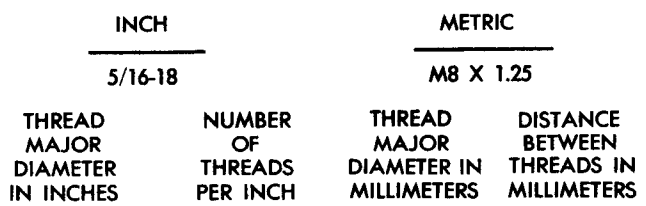

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Fig. 4 Thread Notation—SAE and Metric

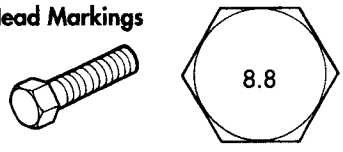
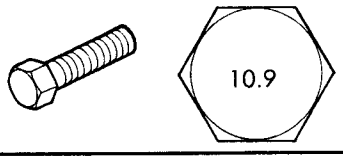
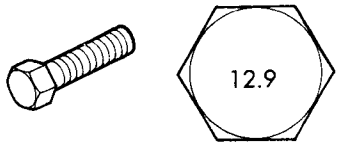
GRADE/CLASS IDENTIFICATION

The SAE bolt strength grades range from grade 2 to grade 8. The higher the grade number, the greater the bolt strength. Identification is determined by the line marks on the top of each bolt head. The actual bolt strength grade corresponds to the number of line marks plus 2. The most commonly used metric bolt strength classes are 9.8 and 12.9. The metric strength class identification number is imprinted on the head of the bolt. The higher the class number, the greater the bolt strength. Some metric nuts are imprinted with a single-digit strength class on the nut face. Refer to the Fastener Identification and Fastener Strength Charts.

GENERAL INFORMATION (Continued)

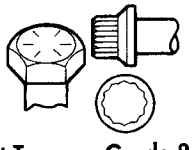
FASTENER IDENTIFICATION

Bolt Markings and Torque - Metric

Commercial Steel Class	8.8	10.9	12.9
Bolt Head Markings			

Body Size	Torque				Torque				Torque			
Diam.	Cast Iron		Aluminum		Cast Iron		Aluminum		Cast Iron		Aluminum	
mm	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb
6	9	5	7	4	14	9	11	7	14	9	11	7
7	14	9	11	7	18	14	14	11	23	18	18	14
8	25	18	18	14	32	23	25	18	36	27	28	21
10	40	30	30	25	60	45	45	35	70	50	55	40
12	70	55	55	40	105	75	80	60	125	95	100	75
14	115	85	90	65	160	120	125	95	195	145	150	110
16	180	130	140	100	240	175	190	135	290	210	220	165
18	230	170	180	135	320	240	250	185	400	290	310	230

Bolt Markings and Torque Values - U.S. Customary

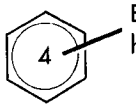
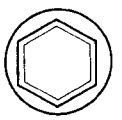
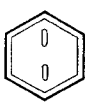
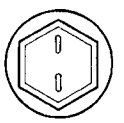
SAE Grade Number	5	8
Bolt Head Markings These are all SAE Grade 5 (3) line		 

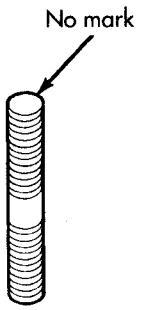
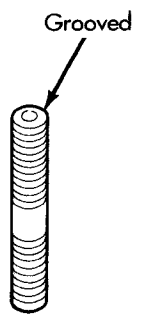
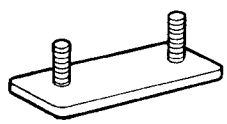
Body Size	Bolt Torque - Grade 5 Bolt				Bolt Torque - Grade 8 Bolt			
	Cast Iron		Aluminum		Cast Iron		Aluminum	
	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb
1/4 - 20	9	7	8	6	15	11	12	9
- 28	12	9	9	7	18	13	14	10
5/16 - 18	20	15	16	12	30	22	24	18
- 24	23	17	19	14	33	24	25	19
3/8 - 16	40	30	25	20	55	40	40	30
- 24	40	30	35	25	60	45	45	35
7/16 - 14	60	45	45	35	90	65	65	50
- 20	65	50	55	40	95	70	75	55
1/2 - 13	95	70	75	55	130	95	100	75
- 20	100	75	80	60	150	110	120	90
9/16 - 12	135	100	110	80	190	140	150	110
- 18	150	110	115	85	210	155	170	125
5/8 - 11	180	135	150	110	255	190	205	150
- 18	210	155	160	120	290	215	230	170
3/4 - 10	325	240	255	190	460	340	365	270
- 16	365	270	285	210	515	380	410	300
7/8 - 9	490	360	380	280	745	550	600	440
- 14	530	390	420	310	825	610	660	490
1 - 8	720	530	570	420	1100	820	890	660
- 14	800	590	650	480	1200	890	960	710

GENERAL INFORMATION (Continued)

FASTENER STRENGTH

HOW TO DETERMINE BOLT STRENGTH

	Mark	Class
Hexagon head bolt	 Bolt head No. 4 — 4T; 5 — 5T; 6 — 6T; 7 — 7T; 8 — 8T; 9 — 9T; 10 — 10T; 11 — 11T	
	 No mark	4T
Hexagon flange bolt w/washer hexagon bolt	 No mark	4T
Hexagon head bolt	 Two protruding lines	5T
Hexagon flange bolt w/washer hexagon bolt	 Two protruding lines	6T
Hexagon head bolt	 Three protruding lines	7T
Hexagon head bolt	 Four protruding lines	8T

	Mark	Class
Stud bolt		4T
		6T
Welded bolt		4T

GENERAL INFORMATION (Continued)

FASTENER USAGE

WARNING: USE OF AN INCORRECT FASTENER MAY RESULT IN COMPONENT DAMAGE OR PERSONAL INJURY.

Figure art, specifications and torque references in this Service Manual are identified in metric and SAE format.

During any maintenance or repair procedures, it is important to salvage all fasteners (nuts, bolts, etc.) for reassembly. If the fastener is not salvageable, a fastener of equivalent specification should be used.

METRIC SYSTEM

The metric system is based on quantities of one, ten, one hundred, one thousand and one million (Fig. 5).

The following chart will assist in converting metric units to equivalent English and SAE units, or vise versa.

Mega	-	(M) Million	Deci	-	(D) Tenth
Kilo	-	(K) Thousand	Centi	-	(C) Hundreth
			Milli	-	(m) Thousandth

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Fig. 5 Metric Prefixes

Refer to the Conversion Chart to convert torque values listed in metric Newton- meters (N·m). Also, use the chart to convert between millimeters (mm) and inches (in.)

TORQUE REFERENCES

Individual Torque Charts appear at the end of many Groups. Refer to the Standard Torque Specifications Chart for torque references not listed in the individual torque charts.

CONVERSION FORMULAS AND EQUIVALENT VALUES

Multiply	By	To Get	Multiply	By	To Get
in-lbs	x 0.11298	= Newton-Meters (N•m)	N•m	x 8.851	= in-lbs
ft-lbs	x 1.3558	= Newton-Meters (N•m)	N•m	x 0.7376	= ft-lbs
Inches Hg (60°F)	x 3.377	= Kilopascals (kPa)	kPa	x 0.2961	= Inches Hg
psi	x 6.895	= Kilopascals (kPa)	kPa	x 0.145	= psi
Inches	x 25.4	= Millimeters (mm)	mm	x 0.03937	= Inches
Feet	x 0.3048	= Meters (M)	M	x 3.281	= Feet
Yards	x 0.9144	= Meters (M)	M	x 1.0936	= Yards
Miles	x 1.6093	= Kilometers (Km)	Km	x 0.6214	= Miles
mph	x 1.6093	= Kilometers/Hr. (Km/h)	Km/h	x 0.6214	= mph
Feet/Sec.	x 0.3048	= Meters/Sec. (M/S)	M/S	x 3.281	= Feet/Sec.
Kilometers/Hr.	x 0.27778	= Meters/Sec. (M/S)	M/S	x 3.600	= Kilometers/Hr.
mph	x 0.4470	= Meters/Sec. (M/S)	M/S	x 2.237	= mph

COMMON METRIC EQUIVALENTS

1 Inch	= 25 Millimeters	1 Cubic Inch	= 16 Cubic Centimeters
1 Foot	= 0.3 Meter	1 Cubic Foot	= 0.03 Cubic Meter
1 Yard	= 0.9 Meter	1 Cubic Yard	= 0.8 Cubic Meter
1 Mile	= 1.6 Kilometers		

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GENERAL INFORMATION (Continued)

METRIC CONVERSION

in-lbs to N•m

in-lb	N•m	in-lb	N•m	in-lb	N•m	in-lb	N•m	in-lb	N•m
2	.2260	42	4.7453	82	9.2646	122	13.7839	162	18.3032
4	.4519	44	4.9713	84	9.4906	124	14.0099	164	18.5292
6	.6779	46	5.1972	86	9.7165	126	14.2359	166	18.7552
8	.9039	48	5.4232	88	9.9425	128	14.4618	168	18.9811
10	1.1298	50	5.6492	90	10.1685	130	14.6878	170	19.2071
12	1.3558	52	5.8751	92	10.3944	132	14.9138	172	19.4331
14	1.5818	54	6.1011	94	10.6204	134	15.1397	174	19.6590
16	1.8077	56	6.3270	96	10.8464	136	15.3657	176	19.8850
18	2.0337	58	6.5530	98	11.0723	138	15.5917	178	20.1110
20	2.2597	60	6.7790	100	11.2983	140	15.8176	180	20.3369
22	2.4856	62	7.0049	102	11.5243	142	16.0436	182	20.5629
24	2.7116	64	7.2309	104	11.7502	144	16.2696	184	20.7889
26	2.9376	66	7.4569	106	11.9762	146	16.4955	186	21.0148
28	3.1635	68	7.6828	108	12.2022	148	16.7215	188	21.2408
30	3.3895	70	7.9088	110	12.4281	150	16.9475	190	21.4668
32	3.6155	72	8.1348	112	12.6541	152	17.1734	192	21.6927
34	3.8414	74	8.3607	114	12.8801	154	17.3994	194	21.9187
36	4.0674	76	8.5867	116	13.1060	156	17.6253	196	22.1447
38	4.2934	78	8.8127	118	13.3320	158	17.8513	198	22.3706
40	4.5193	80	9.0386	120	13.5580	160	18.0773	200	22.5966

N•m to in-lbs

N•m	in-lb	N•m	in-lb	N•m	in-lb	N•m	in-lb	N•m	in-lb
.2	1.7702	4.2	37.1747	8.2	72.5792	12.2	107.9837	16.2	143.3882
.4	3.5404	4.4	38.9449	8.4	74.3494	12.4	109.7539	16.4	145.1584
.6	5.3107	4.6	40.7152	8.6	76.1197	12.6	111.5242	16.6	146.9287
.8	7.0809	4.8	42.4854	8.8	77.8899	12.8	113.2944	16.8	148.6989
1	8.8511	5	44.2556	9	79.6601	13	115.0646	17	150.4691
1.2	10.6213	5.2	46.0258	9.2	81.4303	13.2	116.8348	17.2	152.2393
1.4	12.3916	5.4	47.7961	9.4	83.2006	13.4	118.6051	17.4	154.0096
1.6	14.1618	5.6	49.5663	9.6	84.9708	13.6	120.3753	17.6	155.7798
1.8	15.9320	5.8	51.3365	9.8	86.7410	13.8	122.1455	17.8	157.5500
2	17.7022	6	53.1067	10	88.5112	14	123.9157	18	159.3202
2.2	19.4725	6.2	54.8770	10.2	90.2815	14.2	125.6860	18.5	163.7458
2.4	21.2427	6.4	56.6472	10.4	92.0517	14.4	127.4562	19	168.1714
2.6	23.0129	6.6	58.4174	10.6	93.8219	14.6	129.2264	19.5	172.5970
2.8	24.7831	6.8	60.1876	10.8	95.5921	14.8	130.9966	20	177.0225
3	26.5534	7	61.9579	11	97.3624	15	132.7669	20.5	181.4480
3.2	28.3236	7.2	63.7281	11.2	99.1326	15.2	134.5371	21	185.8736
3.4	30.0938	7.4	65.4983	11.4	100.9028	15.4	136.3073	22	194.7247
3.6	31.8640	7.6	67.2685	11.6	102.6730	15.6	138.0775	23	203.5759
3.8	33.6342	7.8	69.0388	11.8	104.4433	15.8	139.8478	24	212.4270
4	35.4045	8	70.8090	12	106.2135	16	141.6180	25	221.2781

ft-lbs to N•m

ft-lb	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb	N•m
1	1.3558	21	28.4722	41	55.5885	61	82.7049	81	109.8212
2	2.7116	22	29.8280	42	56.9444	62	84.0607	82	111.1770
3	4.0675	23	31.1838	43	58.3002	63	85.4165	83	112.5328
4	5.4233	24	32.5396	44	59.6560	64	86.7723	84	113.8888
5	6.7791	25	33.8954	45	61.0118	65	88.1281	85	115.2446
6	8.1349	26	35.2513	46	62.3676	66	89.4840	86	116.6004
7	9.4907	27	36.6071	47	63.7234	67	90.8398	87	117.9562
8	10.8465	28	37.9629	48	65.0793	68	92.1956	88	119.3120
9	12.2024	29	39.3187	49	66.4351	69	93.5514	89	120.6678
10	13.5582	30	40.6745	50	67.7909	70	94.9073	90	122.0236
11	14.9140	31	42.0304	51	69.1467	71	96.2631	91	123.3794
12	16.2698	32	43.3862	52	70.5025	72	97.6189	92	124.7352
13	17.6256	33	44.7420	53	71.8583	73	98.9747	93	126.0910
14	18.9815	34	46.0978	54	73.2142	74	100.3316	94	127.4468
15	20.3373	35	47.4536	55	74.5700	75	101.6862	95	128.8026
16	21.6931	36	48.8094	56	75.9258	76	103.0422	96	130.1586
17	23.0489	37	50.1653	57	77.2816	77	104.3980	97	131.5144
18	24.4047	38	51.5211	58	78.6374	78	105.7538	98	132.8702
19	25.7605	39	52.8769	59	79.9933	79	107.1196	99	134.2260
20	27.1164	40	54.2327	60	81.3491	80	108.4654	100	135.5820

N•m to ft-lbs

N•m	ft-lb	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb
1	.7376	21	15.9888	41	30.2400	61	44.9913	81	59.7425
2	1.4751	22	16.2264	42	30.9776	62	45.7289	82	60.4801
3	2.2127	23	16.9639	43	31.7152	63	46.4664	83	61.2177
4	2.9502	24	17.7015	44	32.4527	64	47.2040	84	61.9552
5	3.6878	25	18.4391	45	33.1903	65	47.9415	85	62.6928
6	4.4254	26	19.1766	46	33.9279	66	48.6791	86	63.4303
7	5.1629	27	19.9142	47	34.6654	67	49.4167	87	64.1679
8	5.9005	28	20.6517	48	35.4030	68	50.1542	88	64.9545
9	6.6381	29	21.3893	49	36.1405	69	50.8918	89	65.6430
10	7.3756	30	22.1269	50	36.8781	70	51.6293	90	66.3806
11	8.1132	31	22.8644	51	37.6157	71	52.3669	91	67.1181
12	8.8507	32	23.6020	52	38.3532	72	53.1045	92	67.8557
13	9.5883	33	24.3395	53	39.0908	73	53.8420	93	68.5933
14	10.3259	34	25.0771	54	39.8284	74	54.5720	94	69.3308
15	11.0634	35	25.8147	55	40.5659	75	55.3172	95	70.0684
16	11.8010	36	26.5522	56	41.3035	76	56.0547	96	70.8060
17	12.5386	37	27.2898	57	42.0410	77	56.7923	97	71.5435
18	13.2761	38	28.0274	58	42.7786	78	57.5298	98	72.2811
19	14.0137	39	28.7649	59	43.5162	79	58.2674	99	73.0187
20	14.7512	40	29.5025	60	44.2537	80	59.0050	100	73.7562

in. to mm

in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
.01	.254	.21	5.334	.41	10.414	.61	15.494	.81	20.574
.02	.508	.22	5.588	.42	10.668	.62	15.748	.82	20.828
.03	.762	.23	5.842	.43	10.922	.63	16.002	.83	21.082
.04	1.016	.24	6.096	.44	11.176	.64	16.256	.84	21.336
.05	1.270	.25	6.350	.45	11.430	.65	16.510	.85	21.590
.06	1.524	.26	6.604	.46	11.684	.66	16.764	.86	21.844
.07	1.778	.27	6.858	.47	11.938	.67	17.018	.87	22.098
.08	2.032	.28	7.112	.48	12.192	.68	17.272	.88	22.352
.09	2.286	.29	7.366	.49	12.446	.69	17.526	.89	22.606
.10	2.540	.30	7.620	.50	12.700	.70	17.780	.90	22.860
.11	2.794	.31	7.874	.51	12.954	.71	18.034	.91	23.114
.12	3.048	.32	8.128	.52	13.208	.72	18.288	.92	23.368
.13	3.302	.33	8.382	.53	13.462	.73	18.542	.93	23.622
.14	3.556	.34	8.636	.54	13.716	.74	18.796	.94	23.876
.15	3.810	.35	8.890	.55	13.970	.75	19.050	.95	24.130
.16	4.064	.36	9.144	.56	14.224	.76	19.304	.96	24.384
.17	3.318	.37	9.398	.57	14.478	.77	19.558	.97	24.638
.18	4.572	.38	9.652	.58	14.732	.78	19.812	.98	24.892
.19	4.826	.39	9.906	.59	14.986	.79	20.066	.99	25.146
.20	5.080	.40	10.160	.60	15.240	.80	20.320	1.00	25.400

mm to in.

mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
.01	.00039	.21	.00827	.41	.01614	.61	.02402	.81	.03189
.02	.00079	.22	.00866	.42	.01654	.62	.02441	.82	.03228
.03	.00118	.23	.00906	.43	.01693	.63	.02480	.83	.03268
.04	.00157	.24	.00945	.44	.01732	.64	.02520	.84	.03307
.05	.00197	.25	.00984	.45	.01772	.65	.02559	.85	.03346
.06	.00236	.26	.01024	.46	.01811	.66	.02598	.86	.03386
.07	.00276	.27	.01063	.47	.01850	.67	.02638	.87	.03425
.08	.00315	.28	.01102	.48	.01890	.68	.02677	.88	.03465
.09	.00354	.29	.01142	.49	.01929	.69	.02717	.89	.03504
.10	.00394	.30	.01181	.50	.01969	.70	.02756	.90	.03543
.11	.00433	.31	.01220	.51	.02008	.71	.02795	.91	.03583
.12	.00472	.32	.01260	.52	.02047	.72	.02835	.92	.03622
.13	.00512	.33	.01299	.53	.02087	.73	.02874	.93	.03661
.14	.00551	.34	.01339	.54	.02126	.74	.02913	.94	.03701
.15	.00591	.35	.01378	.55	.02165	.75	.02953	.95	.03740
.16	.00630	.36	.01417	.56	.02205	.76	.02992	.96	.03780
.17	.00669	.37	.01457	.57	.02244	.77	.03032	.97	.03819
.18	.00709	.38	.01496	.58	.02283	.78	.03071	.98	.03858
.19	.00748	.39	.01535	.59	.02323	.79	.03110	.99	.03898
.20	.00787	.40	.01575	.60	.02362	.80	.03150	1.00	.03937

GENERAL INFORMATION (Continued)

TORQUE SPECIFICATIONS

SPECIFIED TORQUE FOR STANDARD BOLTS

Class	Diameter mm	Pitch mm	Specified torque					
			Hexagon head bolt			Hexagon flange bolt		
			N•m	kgf-cm	ft-lbf	N•m	kgf-cm	ft-lbf
4T	6	1	5	55	48 in.-lbf	6	60	52 in.-lbf
	8	1.25	12.5	130	9	14	145	10
	10	1.25	26	260	19	29	290	21
	12	1.25	47	480	35	53	540	39
	14	1.5	74	760	55	84	850	61
	16	1.5	115	1,150	83	—	—	—
5T	6	1	6.5	65	56 in.-lbf	7.5	75	65 in.-lbf
	8	1.25	15.5	160	12	17.5	175	13
	10	1.25	32	330	24	36	360	26
	12	1.25	59	600	43	65	670	48
	14	1.5	91	930	67	100	1,050	76
	16	1.5	140	1,400	101	—	—	—
6T	6	1	8	80	69 in.-lbf	9	90	78 in.-lbf
	8	1.25	19	195	14	21	210	15
	10	1.25	39	400	29	44	440	32
	12	1.25	71	730	53	80	810	59
	14	1.5	110	1,100	80	125	1,250	90
	16	1.5	170	1,750	127	—	—	—
7T	6	1	10.5	110	8	12	120	9
	8	1.25	25	260	19	28	290	21
	10	1.25	52	530	38	58	590	43
	12	1.25	95	970	70	105	1,050	76
	14	1.5	145	1,500	108	165	1,700	123
	16	1.5	230	2,300	166	—	—	—
8T	8	1.25	29	300	22	33	330	24
	10	1.25	61	620	45	68	690	50
	12	1.25	110	1,100	80	120	1,250	90
9T	8	1.25	34	340	25	37	380	27
	10	1.25	70	710	51	78	790	57
	12	1.25	125	1,300	94	140	1,450	105
10T	8	1.25	38	390	28	42	430	31
	10	1.25	78	800	58	88	890	64
	12	1.25	140	1,450	105	155	1,600	116
11T	8	1.25	42	430	31	47	480	35
	10	1.25	87	890	64	97	990	72
	12	1.25	155	1,600	116	175	1,800	130

LUBRICATION AND MAINTENANCE

CONTENTS

GENERAL INFORMATION

INDEX

GENERAL INFORMATION

INTRODUCTION

Service and maintenance procedures for components and systems listed in Schedule—A or B can be found by using the Group Tab Locator index at the front of this manual. If it is not clear which group contains the information needed, refer to the index at the back of this manual.

There are two maintenance schedules that show proper service based on the conditions that the vehicle is subjected to.

Schedule—**A**, lists scheduled maintenance to be performed when the vehicle is used for general transportation.

Schedule—**B**, lists maintenance intervals for vehicles that are operated under the conditions listed at the beginning of the Maintenance Schedule section.

Use the schedule that best describes your driving conditions.

Where time and mileage are listed, follow the interval that occurs first.

PARTS AND LUBRICANT RECOMMENDATIONS

When service is required, Chrysler Corporation recommends that only Mopar® brand parts, lubricants and chemicals be used. Mopar provides the best engineered products for servicing Chrysler Corporation vehicles.

INTERNATIONAL SYMBOLS

Chrysler Corporation uses international symbols to identify engine compartment lubricant and fluid inspection and fill locations (Fig. 1).

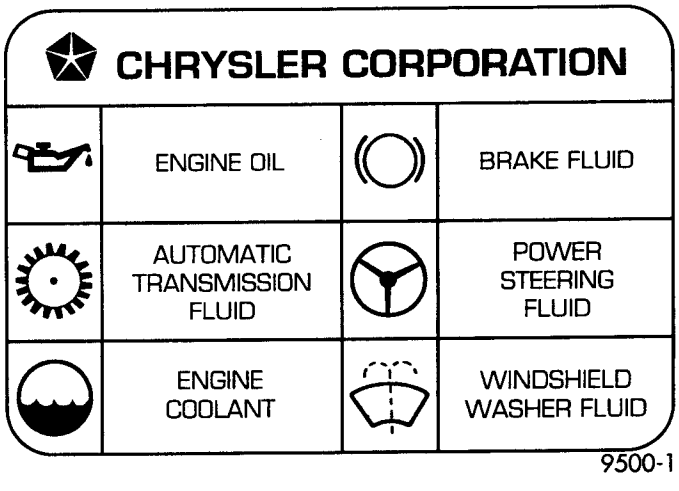


Fig. 1 International Symbols

GENERAL INFORMATION (Continued)

CLASSIFICATION OF LUBRICANTS

Only lubricants that are endorsed by the following organization should be used to service a Chrysler Corporation vehicle.

- Society of Automotive Engineers (SAE)
- American Petroleum Institute (API) (Fig. 2)
- National Lubricating Grease Institute (NLGI) (Fig. 3)

9400-9

Fig. 2 API Symbol

ENGINE OIL

SAE GRADE RATING INDICATES ENGINE OIL VISCOSITY

An SAE viscosity grade is used to specify the viscosity of engine oil. SAE 30 specifies a single viscosity engine oil. Engine oils also have multiple viscosities. These are specified with a dual SAE viscosity grade which indicates the cold-to-hot temperature viscosity range.

- SAE 30 = single grade engine oil.
- SAE 10W-30 = multiple grade engine oil.

API QUALITY CLASSIFICATION

The API Service Grade specifies the type of performance the engine oil is intended to provide. The API Service Grade specifications also apply to energy conserving engine oils.

Use engine oil that is API Service Grade Certified or an oil that conforms to the API Service Grade SH or SH/CD. MOPAR engine oils conform to all of these service grades.

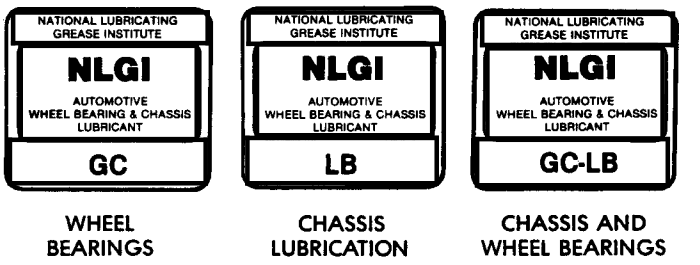
Refer to Group 9, Engine for engine oil specification.

GEAR LUBRICANTS

SAE ratings also apply to multiple grade gear lubricants. In addition, API classification defines the lubricants usage.

LUBRICANTS AND GREASES

Lubricating grease is rated for quality and usage by the NLGI. All approved products have the NLGI symbol (Fig. 3) on the label. At the bottom NLGI symbol is the usage and quality identification letters. Wheel bearing lubricant is identified by the letter "G". Chassis lubricant is identified by the latter "L". The letter following the usage letter indicates the quality of the lubricant. The following symbols indicate the highest quality.



9200-7

Fig. 3 NLGI Symbol

FLUID CAPACITIES

FUEL TANK

Standard. . . . . .56.8 L (15 gal.)
Optional. . . . . .71.9 L (19.0 gal.)

ENGINE OIL

2.5L. . . . . .3.8 L (4.0 qts.)
4.0L. . . . . .5.7 L (6.0 qts.)

COOLING SYSTEM

2.5L. . . . . .8.5 L (9.0 qts.)
4.0L. . . . . .9.9 L (10.5 qts.)

AUTOMATIC TRANSMISSION

Dry fill capacity*

32RH . . . . . .8.1 L (17.1pts.)
30RH. . . . . .6.6 L (14.0 pts.)

*Depending on type and size of internal cooler, length and inside diameter of cooler lines, or use of an auxiliary cooler, these figures may vary. Refer to Group 21, Transmission for proper fluid fill procedure.

MANUAL TRANSMISSION

AX5 . . . . . .3.2 L (3.3 qts.)
AX15 . . . . . .3.15 L (3.32 qts.)

TRANSFER CASE

COMMAND-TRAC 231 (Auto Trans). .1.0 L (2.2 pts.)
COMMAND-TRAC 231 (Man Trans) .1.5 L (3.25 pts.)

FRONT AXLE

MODEL 181. . . . . .1.65 L (3.76 pts.)

REAR AXLE

MODEL 216. . . . . .1.77 L (3.75 pts.)
MODEL 194. . . . . .1.6 L (3.5 pts.*)

* When equipped with TRAC-LOK, include 2 ounces of Friction Modifier Additive.

MAINTENANCE SCHEDULES

INDEX

GENERAL INFORMATION

INTRODUCTION

There are two maintenance schedules that show proper service intervals for TJ vehicles. Use the schedule that best describes the conditions the vehicle is operated under. When mileage and time is listed, follow the interval that occurs first.

Schedule-A lists all the scheduled maintenance to be performed under normal operating conditions.

Schedule-B is a schedule for vehicles that are usually operated under one or more of the following conditions:

- Frequent short trips driving less than 5 miles (8 km)
- Frequent driving in dusty conditions
- Frequent trailer towing
- Extensive idling
- More than 50% of your driving is at sustained high speeds during hot weather, above 90°F (32°C)
- Off road driving
- Desert operation

EMISSION CONTROL SYSTEM MAINTENANCE

The scheduled emission maintenance listed in **bold type** on the Maintenance Schedules, must be done at the mileage specified to assure the continued proper functioning of the emission control system. These, and all other maintenance services included in this manual, should be done to provide the best vehicle performance and reliability. More frequent maintenance may be needed for vehicles in severe operating conditions such as dusty areas and very short trip driving.

UNSCHEDULED INSPECTION

At Each Stop For Fuel

- Check engine oil level, add as required.
- Check windshield washer solvent and add if required.

Once A Month

- Check tire pressure and look for unusual wear or damage.
- Inspect battery and clean and tighten terminals as required. Check electrolyte level and add water as needed.
- Check fluid levels of coolant reservoir, power steering, brake master cylinder, and transmission and add as needed.
- Check all lights and all other electrical items for correct operation.

At Each Oil Change

- Inspect exhaust system.
- Inspect brake hoses.
- Rotate the tires at each oil change interval shown on Schedule—A (7,500 miles) or every other interval shown on Schedule—B (6,000 miles).
- Check coolant level, hoses, and clamps.
- Lubricate propeller shaft universal joints and slip splines (if equipped).
- Lubricate suspension ball joints.
- After completion of off-road (4WD) operation, the underside of the vehicle should be thoroughly inspected. Examine threaded fasteners for looseness.

SCHEDULE—A

7,500 Miles (12 000 km) or at 6 months

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.

15,000 Miles (24 000 km) or at 12 months

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.

22,500 Miles (36 000 km) or at 18 months

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Inspect brake linings.

30,000 Miles (48 000 km) or at 24 months

- Change engine oil.
- Replace engine oil filter.
- **Replace engine air cleaner element.**

GENERAL INFORMATION (Continued)

- **Replace spark plugs.**
- Inspect drive belts. Adjust as needed.
- Lubricate steering linkage.
- Drain and refill automatic transmission fluid.
- Drain and refill transfer case fluid.

37,500 Miles (60 000 km) or at 30 months

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Drain and refill manual transmission fluid.

45,000 Miles (72 000 km) or at 36 months

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Inspect brake linings.
- Flush and replace engine coolant at 36 months, regardless of mileage.

52,500 Miles (84 000 km) or at 42 months

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Flush and replace engine coolant if not done at 36 months.

60,000 Miles (96 000 km) or at 48 months

- Change engine oil.
- Replace engine oil filter.
- **Replace engine air cleaner element.**
- **Replace ignition cables.**
- **Replace spark plugs.**
- Inspect drive belts. Adjust as needed.
- Lubricate steering linkage.
- Drain and refill automatic transmission fluid.
- Drain and refill transfer case fluid.

67,500 Miles (108 000 km) or at 54 months

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Inspect brake linings.

75,000 Miles (120 000 km) or at 60 months

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Drain and refill manual transmission fluid.
- Flush and replace engine coolant if it has been 30,000 miles (48 000 km) or 24 months since last change.

82,500 Miles (132 000 km) or at 66 months

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Flush and replace engine coolant if it has been 30,000 miles (48 000 km) or 24 months since last change.

90,000 Miles (144 000 km) or at 72 months

- Change engine oil.
- Replace engine oil filter.
- **Replace engine air cleaner element.**
- **Replace spark plugs.**
- Inspect drive belts. Adjust as needed.
- Lubricate steering linkage.
- Drain and refill automatic transmission fluid.
- Drain and refill transfer case fluid.
- Inspect brake linings.

97,500 Miles (156 000 km) or at 78 months

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.

105,000 Miles (168 000 km) or at 84 months

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Flush and replace engine coolant if it has been 30,000 miles (48 000 km) or 24 months since last change.

112,500 Miles (180 000 km) or at 90 months

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Drain and refill manual transmission fluid.
- Inspect brake linings.
- Flush and replace engine coolant if it has been 30,000 miles (48 000 km) or 24 months since last change.

120,000 Miles (192 000 km) or at 96 months

- Change engine oil.
- Replace engine oil filter.
- **Replace engine air cleaner element.**
- **Replace ignition cables.**
- **Replace spark plugs.**
- Inspect drive belts. Adjust as needed.
- Lubricate steering linkage.
- Drain and refill automatic transmission fluid.
- Drain and refill transfer case fluid.

Inspection and service should also be performed any time a malfunction is observed or suspected.

SCHEDULE—B

3,000 Miles (4 800 km)

- Change engine oil.
- Replace engine oil filter.

GENERAL INFORMATION (Continued)

6,000 Miles (9 600 km)
- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.

9,000 Miles (14 400 km)
- Change engine oil.
- Replace engine oil filter.

12,000 Miles (19 200 km)
- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Drain and refill automatic transmission fluid.
- Drain and refill front and rear axles.*
- Inspect brake linings.

15,000 Miles (24 000 km)
- Change engine oil.
- Replace engine oil filter.
- **Inspect engine air cleaner element, replace as necessary.**

18,000 miles (29 000 km)
- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Drain and refill manual transmission fluid.

21,000 Miles (34 000 km)
- Change engine oil.
- Replace engine oil filter.

24,000 Miles (38 000 km)
- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Drain and refill automatic transmission fluid.
- Drain and refill front and rear axles.*
- Inspect brake linings.

27,000 Miles (43 000 km)
- Change engine oil.
- Replace engine oil filter.

30,000 Miles 48 000 km)
- Change engine oil.
- Replace engine oil filter.
- **Replace engine air cleaner element.**
- **Replace spark plugs.**
- Inspect drive belts. Adjust as needed.
- Lubricate steering linkage.
- Drain and refill transfer case fluid.

33,000 Miles (53 000 km)
- Change engine oil.
- Replace engine oil filter.

36,000 Miles (58 000 km)
- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Drain and refill manual transmission fluid.
- Drain and refill automatic transmission fluid.
- Drain and refill front and rear axles.*
- Inspect brake linings.

39,000 Miles (62 000 km)
- Change engine oil.
- Replace engine oil filter.

42,000 Miles (67 000 km)
- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.

45,000 Miles (72 000 km)
- Change engine oil.
- Replace engine oil filter.
- **Inspect engine air cleaner element, replace as necessary.**

48,000 Miles (77 000 km)
- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Drain and refill automatic transmission fluid.
- Drain and refill front and rear axles.*
- Inspect brake linings.

51,000 Miles (82 000 km)
- Change engine oil.
- Replace engine oil filter.
- Flush and replace engine coolant.

54,000 miles (86 400 km)
- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Drain and refill manual transmission fluid.

57,000 Miles (91 000 km)
- Change engine oil.
- Replace engine oil filter.

60,000 Miles (96 000 km)
- Change engine oil.
- Replace engine oil filter.
- **Replace engine air cleaner element.**
- **Replace ignition cables.**
- **Replace spark plugs.**
- Inspect drive belts. Adjust as needed.
- Lubricate steering linkage.
- Drain and refill automatic transmission fluid.
- Drain and refill transfer case fluid.

GENERAL INFORMATION (Continued)

- Drain and refill front and rear axles.*
- Inspect brake linings.

63,000 Miles (102 000 km)

- Change engine oil.
- Replace engine oil filter.

66,000 miles (105 600 km)

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.

69,000 Miles (110 000 km)

- Change engine oil.
- Replace engine oil filter.

72,000 Miles (115 200 km)

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Drain and refill manual transmission fluid.
- Drain and refill automatic transmission fluid.
- Drain and refill front and rear axles.*
- Inspect brake linings.

75,000 Miles (120 000 km)

- Change engine oil.
- Replace engine oil filter.
- **Inspect engine air filter, replace as necessary.**

78,000 Miles (125 000 km)

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.

81,000 Miles (130 000 km)

- Change engine oil.
- Replace engine oil filter.
- Flush and replace engine coolant.

84,000 Miles (134 400 km)

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Drain and refill automatic transmission fluid.
- Drain and refill front and rear axles.*
- Inspect brake linings.

87,000 Miles (140 000 km)

- Change engine oil.
- Replace engine oil filter.

90,000 Miles (144 000 km)

- Change engine oil.
- Replace engine oil filter.
- **Replace engine air cleaner element.**
- **Replace spark plugs.**
- Inspect drive belts. Adjust as needed.
- Lubricate steering linkage.
- Drain and refill manual transmission fluid.
- Drain and refill transfer case fluid.

93,000 Miles (149 000 km)

- Change engine oil.
- Replace engine oil filter.

96,000 Miles (154 000 km)

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Drain and refill automatic transmission fluid.
- Drain and refill front and rear axles.*
- Inspect brake linings.

99,000 Miles (158 000 km)

- Change engine oil.
- Replace engine oil filter.

102,000 Miles (163 000 km)

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.

105,000 Miles (168 000 km)

- Change engine oil.
- Replace engine oil filter.
- **Inspect engine air cleaner element, replace as necessary.**

108,000 Miles (172 800 km)

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.
- Drain and refill manual transmission fluid.
- Drain and refill automatic transmission fluid.
- Drain and refill front and rear axles.*
- Inspect brake linings.

111,000 Miles (177 600 km)

- Change engine oil.
- Replace engine oil filter.
- Flush and replace engine coolant.

114,000 Miles (182 400 km)

- Change engine oil.
- Replace engine oil filter.
- Lubricate steering linkage.

117,000 Miles (187 200 km)

- Change engine oil.
- Replace engine oil filter.

GENERAL INFORMATION (Continued)

120,000 Miles (192 000 km)

- Change engine oil.
- Replace engine oil filter.
- **Replace engine air cleaner element.**
- **Replace ignition cables.**
- **Replace spark plugs.**
- Inspect drive belts. Adjust as needed.
- Lubricate steering linkage.
- Drain and refill automatic transmission fluid.
- Drain and refill transfer case fluid.
- Drain and refill front and rear axles.*
- Inspect brake linings.

*Off-highway operation, trailer towing, taxi, limousine, bus, snow plowing, or other types of commercial service or prolonged operation with heavy loading, especially in hot weather, require front and rear axle service indicated with a * in Schedule—B. Perform these services if the vehicle is operated under these conditions.

JUMP STARTING, HOISTING AND TOWING

INDEX

SERVICE PROCEDURES

JUMP STARTING PROCEDURE

WARNING: REVIEW ALL SAFETY PRECAUTIONS AND WARNINGS IN GROUP 8A, BATTERY/STARTING/CHARGING SYSTEMS DIAGNOSTICS.

DO NOT JUMP START A FROZEN BATTERY, PERSONAL INJURY CAN RESULT.

DO NOT JUMP START WHEN BATTERY INDICATOR DOT IS YELLOW OR BRIGHT COLOR. BATTERY CAN EXPLODE.

DO NOT ALLOW JUMPER CABLE CLAMPS TO TOUCH EACH OTHER WHEN CONNECTED TO A BOOSTER SOURCE.

DO NOT USE OPEN FLAME NEAR BATTERY.

REMOVE METALLIC JEWELRY WORN ON HANDS OR WRISTS TO AVOID INJURY BY ACCIDENTAL ARCHING OF BATTERY CURRENT.

WHEN USING A HIGH OUTPUT BOOSTING DEVICE, DO NOT ALLOW DISABLED VEHICLE'S BATTERY TO EXCEED 16 VOLTS. PERSONAL INJURY OR DAMAGE TO ELECTRICAL SYSTEM CAN RESULT.

CAUTION: When using another vehicle as a booster, do not allow vehicles to touch. Electrical systems can be damaged on either vehicle.

TO JUMP START A DISABLED VEHICLE:

(1) Raise hood on disabled vehicle and visually inspect engine compartment for:

- Generator drive belt condition and tension.
- Fuel fumes or leakage, correct if necessary.
- Frozen battery.
- Yellow or bright color test indicator, if equipped.
- Low battery fluid level.

CAUTION: If the cause of starting problem on disabled vehicle is severe, damage to booster vehicle charging system can result.

(2) When using another vehicle as a booster source, turn off all accessories, place gear selector in park or neutral, set park brake or equivalent and operate engine at 1200 rpm.

(3) On disabled vehicle, place gear selector in park or neutral and set park brake or equivalent. Turn OFF all accessories.

(4) Connect jumper cables to booster battery. RED clamp to positive terminal (+). BLACK clamp to negative terminal (-). DO NOT allow clamps at opposite end of cables to touch, electrical arc will result (Fig. 1). Review all warnings in this procedure.

(5) On disabled vehicle, connect RED jumper cable clamp to battery positive (+) terminal. Connect BLACK jumper cable clamp to the engine as close to the ground cable connection as possible (Fig. 1).

CAUTION: Do not crank starter motor on disabled vehicle for more than 15 seconds, starter will overheat and could fail.

(6) Allow battery in disabled vehicle to charge to at least 12.4 volts (75% charge) before attempting to start engine. If engine does not start within 15 seconds, stop cranking engine and allow starter to cool (15 min.), before cranking again.

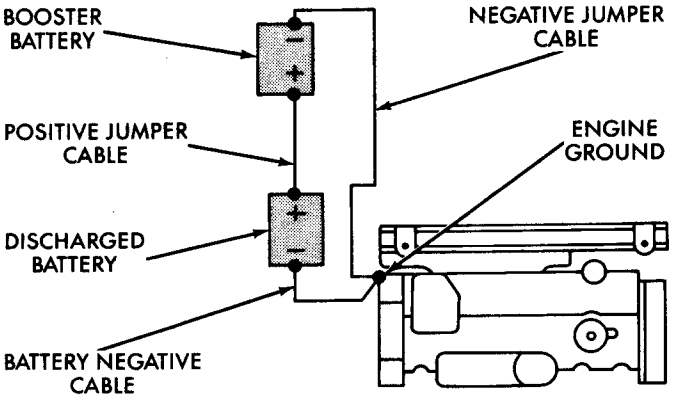


Fig. 1 Jumper Cable Clamp Connections

SERVICE PROCEDURES (Continued)

DISCONNECT CABLE CLAMPS AS FOLLOWS:

- Disconnect BLACK cable clamp from engine ground on disabled vehicle.
- When using a Booster vehicle, disconnect BLACK cable clamp from battery negative terminal. Disconnect RED cable clamp from battery positive terminal.
- Disconnect RED cable clamp from battery positive terminal on disabled vehicle.

TOWING RECOMMENDATIONS

WARNING: DO NOT ATTACH SLING-TYPE TOWING EQUIPMENT TO THE REAR OF A TJ.

When towing a TJ using a wheel-lift, or when sling-type towing equipment is attached to the front end, place tow dollies under the opposite end of the vehicle. Tow vehicles equipped with a flat-bed can also be used to transport a disabled vehicle (Fig. 2).

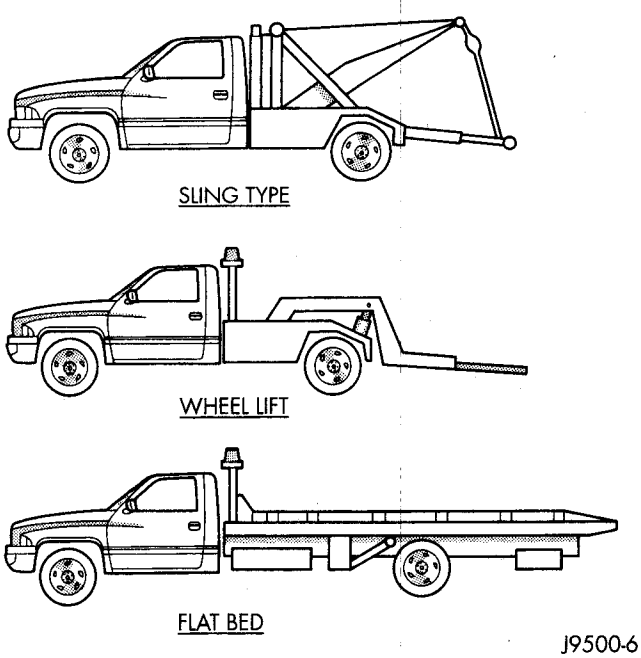


Fig. 2 Tow Vehicles With Approved Equipment

SAFETY PRECAUTIONS

- Secure loose and protruding parts.
- Always use a safety chain system that is independent of the lifting and towing equipment.
- Do not allow towing equipment to contact the disabled vehicle's fuel tank.
- Do not allow anyone under the disabled vehicle while it is lifted by the towing device.
- Do not allow passengers to ride in a vehicle being towed.
- Always observe state and local laws regarding towing regulations.
- Do not tow a vehicle in a manner that could jeopardize the safety of the operator, pedestrians or other motorists.
- Do not attach tow chains, T-hooks, J-hooks, or a tow sling to a bumper, steering linkage, drive shafts or a non-reinforced frame hole.

GROUND CLEARANCE

CAUTION: If vehicle is towed with wheels removed, install lug nuts to retain brake drums.

A towed vehicle should be raised until lifted wheels are a minimum 100 mm (4 in) from the ground. Be sure there is adequate ground clearance at the opposite end of the vehicle, especially when towing over rough terrain or steep rises in the road. If necessary, remove the wheels from the lifted end of the vehicle and lower the vehicle closer to the ground, to increase the ground clearance at the opposite end of the vehicle. Install lug nuts on wheel attaching studs to retain brake drums.

FLAT-BED TOWING RAMP ANGLE

If a vehicle with flat-bed towing equipment is used, the approach ramp angle should not exceed 15 degrees.

VEHICLE TOWING

Chrysler Corporation recommends that a 4WD vehicle be transported on a flat-bed device. A Wheel-lift or front end attached Sling-type device can be used provided all the wheels are lifted off the ground using tow dollies.

TOWING-FRONT END LIFTED (WHEEL LIFT)

(1) Raise the rear of the vehicle off the ground and install tow dollies under rear wheels.
(2) Attach the wheel lift to the front wheels.

TOWING-REAR END LIFTED (WHEEL LIFT ONLY)

(1) Raise the front of the vehicle off the ground and install tow dollies under front wheels.
(2) Attach the wheel lift to the rear wheels.

SERVICE PROCEDURES (Continued)

TOWING-FRONT END LIFTED (SLING-TYPE)

(1) Raise the rear of the vehicle off the ground and install tow dollies under rear wheels.

(2) Attach T-hooks to the access holes on the outboard side of the frame rails (Fig. 3).

(3) Before tightening the chain, position a protective pad between the chain and the bumper.

(4) Attach the safety chains to the vehicle (Fig. 4).

(5) Turn the ignition switch to the OFF position to unlock the steering wheel.

(6) Shift transfer case to NEUTRAL.

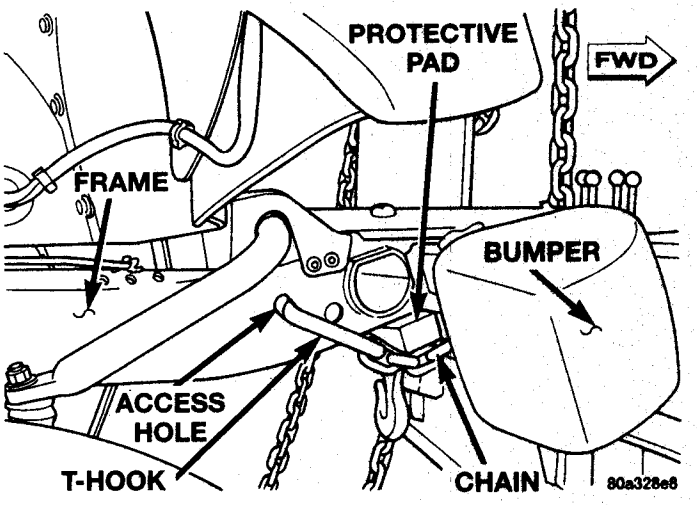


Fig. 3 T-Hook Attachment

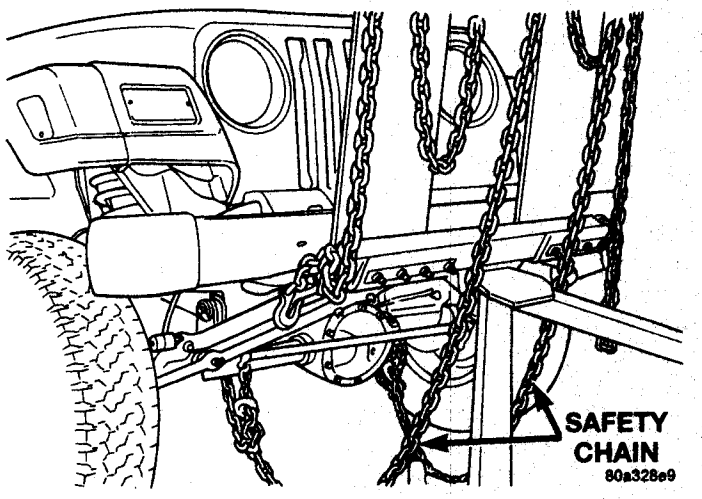


Fig. 4 Safety Chain Attachment

RECREATIONAL TOWING

Refer to the Owners Manual for towing procedures.

EMERGENCY TOW HOOKS

WARNING: REMAIN AT A SAFE DISTANCE FROM A VEHICLE THAT IS BEING TOWED VIA ITS TOW HOOKS. THE TOW STRAPS/CHAINS COULD BREAK AND CAUSE SERIOUS INJURY.

Some Jeep vehicles are equipped with front emergency tow hooks. The tow hooks should be used for **EMERGENCY** purposes only.

CAUTION: DO NOT use emergency tow hooks for tow truck hook-up or highway towing.

HOISTING RECOMMENDATIONS

Refer to the Owner's Manual for emergency vehicle lifting procedures.

FLOOR JACK

When properly positioned, a floor jack can be used to lift a Jeep vehicle (Fig. 5). Support the vehicle in the raised position with jack stands at the front and rear ends of the frame rails.

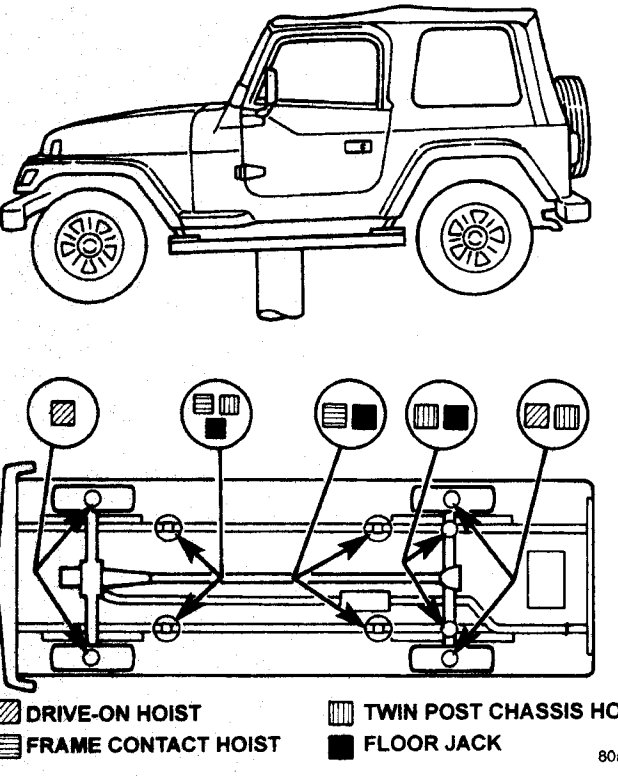


Fig. 5 Vehicle Lifting Locations

CAUTION: Do not attempt to lift a Jeep vehicle with a floor jack positioned under:

- An axle tube.
- A body side sill.
- A steering linkage component.
- A drive shaft.
- The engine or transmission oil pan.
- The fuel tank.
- A front suspension arm.

NOTE: Use the correct sub-frame rail or frame rail lifting locations only.

SERVICE PROCEDURES (Continued)

HOIST

A vehicle can be lifted with:

- A single-post, frame-contact hoist.
- A twin-post, chassis hoist.
- A ramp-type, drive-on hoist.

NOTE: When a frame-contact type hoist is used, verify that the lifting pads are positioned properly.

WARNING: THE HOISTING AND JACK LIFTING POINTS PROVIDED ARE FOR A COMPLETE VEHICLE. WHEN A CHASSIS OR DRIVETRAIN COMPONENT IS REMOVED FROM A VEHICLE, THE CENTER OF GRAVITY IS ALTERED MAKING SOME HOISTING CONDITIONS UNSTABLE. PROPERLY SUPPORT OR SECURE VEHICLE TO HOISTING DEVICE WHEN THESE CONDITIONS EXIST.

SUSPENSION

CONTENTS

ALIGNMENT

INDEX

GENERAL INFORMATION

WHEEL ALIGNMENT

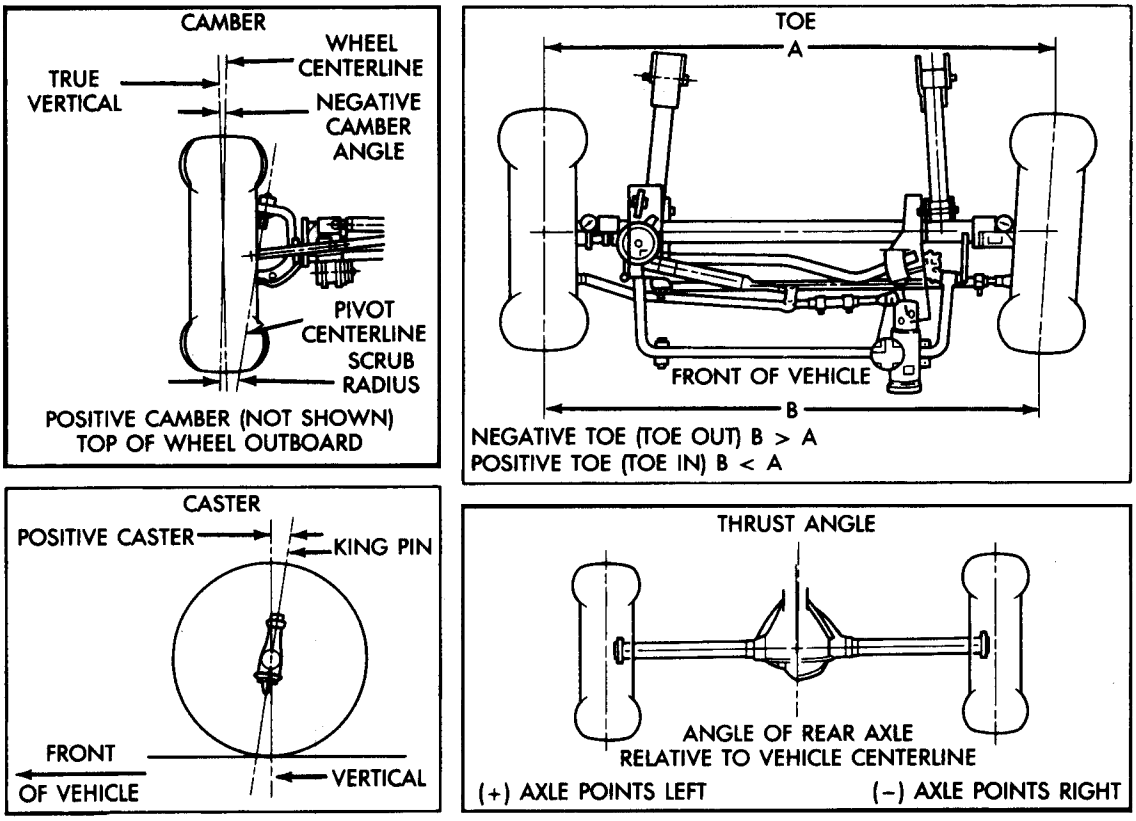
Wheel alignment involves the correct positioning of the wheels in relation to the vehicle. The positioning is accomplished through suspension and steering linkage adjustments. An alignment is considered essential for efficient steering, good directional stability and to maximize tire wear. The most important measurements of front end alignment are caster, camber and toe position.

NOTE: Routine inspection of the front suspension and steering components is a good preventative maintenance practice. Inspection also helps to ensure safe operation of the vehicle.

- **CASTER** is the forward or rearward tilt of the steering knuckle from vertical. Tilting the top of the knuckle rearward provides positive caster. Tilting the top of the knuckle forward provides negative caster. Caster is a directional stability angle. This angle enables the front wheels to return to a straight ahead position after turns.
- **CAMBER** is the inward or outward tilt of the wheel relative to the center of the vehicle. Tilting the top of the wheel inward provides negative camber. Tilting the top of the wheel outward provides positive camber. Incorrect camber will cause wear on the inside or outside edge of the tire. The angle is not adjustable, the damaged component(s) must be replaced to correct mis-alignment.
- **WHEEL TOE POSITION** is the difference between the leading inside edges and trailing inside edges of the front tires. Incorrect wheel toe position is the most common cause of unstable steering and uneven tire wear. The wheel toe position is the **final** front wheel alignment adjustment.
- **STEERING AXIS INCLINATION ANGLE** is measured in degrees and is the angle that the steering knuckles are tilted. The inclination angle has a fixed relationship with the camber angle. It will not change except when a spindle or ball stud is damaged or bent. The angle is not adjustable, the damaged component(s) must be replaced to correct misalignment.

CAUTION: Do not attempt to modify any suspension or steering component by heating and bending.

SERVICE PROCEDURES (Continued)



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Wheel Alignment Measurements

Suspension And Steering System Diagnosis

CONDITION	POSSIBLE CAUSES	CORRECTION
FRONT END NOISE	1. Loose or worn wheel bearings. 2. Loose or worn steering or suspension components	1. Adjust or replace wheel bearings. 2. Tighten or replace components as necessary.
EXCESSIVE PLAY IN STEERING	1. Loose or worn wheel bearings. 2. Loose or worn steering or suspension components 3. Loose or worn steering gear.	1. Adjust or replace wheel bearings. 2. Tighten or replace components as necessary. 3. Adjust or replace steering gear.
FRONT WHEELS SHIMMY	1. Loose or worn wheel bearings. 2. Loose or worn steering or suspension components 3. Tires worn or out of balance. 4. Alignment.	1. Adjust or replace wheel bearings. 2. Tighten or replace components as necessary. 3. Replace or balance tires. 4. Align vehicle to specifications.
VEHICLE INSTABILITY	1. Loose or worn wheel bearings. 2. Loose or worn steering or suspension components 3. Tire pressure. 4. Alignment.	1. Adjust or replace wheel bearings. 2. Tighten or replace components as necessary. 3. Adjust tire pressure. 4. Align vehicle to specifications.
EXCESSIVE STEERING EFFORT	1. Loose or worn steering gear. 2. Column coupler binding. 3. Tire pressure. 4. Alignment.	1. Adjust or replace steering gear. 2. Replace coupler. 3. Adjust tire pressure. 4. Align vehicle to specifications.
VEHICLE PULLS TO ONE SIDE	1. Tire pressure. 2. Alignment. 3. Loose or worn steering or suspension components 4. Radial tire lead. 5. Brake pull.	1. Adjust tire pressure. 2. Align vehicle to specifications. 3. Tighten or replace components as necessary. 4. Rotate or replace tire as necessary. 5. Repair brake as necessary.

SERVICE PROCEDURES

PRE-ALIGNMENT INSPECTION

Before starting wheel alignment, the following inspection and necessary corrections must be completed. Refer to Suspension and Steering System Diagnosis Chart for additional information.

(1) Tires with the same recommended air pressure, size, and tread wear. Refer to Group 22, Wheels and Tires for diagnosis information.

(2) Inspect front wheel bearings for wear or adjustment.

(3) Inspect front wheels for excessive radial, lateral runout and unbalance. Refer to Group 22, Wheels and Tires for diagnosis information.

(4) Inspect ball studs, linkage pivot points and steering gear for looseness, roughness, binding or a sticking condition. Refer to Group 19, Steering for additional information.

(5) Inspect suspension components for wear and noise. Refer to Suspension And Steering System Diagnosis for additional information. Check components for correct torque.

SERVICE PROCEDURES (Continued)

ALIGNMENT MEASUREMENTS AND ADJUSTMENTS

Before each alignment reading the vehicle should be jounced (rear first, then front). Grasp each bumper at the center and jounce the vehicle up and down three times. Always release the bumper in the down position.

CAMBER

The wheel camber angle is preset. This angle is not adjustable and cannot be altered.

CASTER

Check the caster of the front axle for correct angle. Be sure the axle is not bent or twisted. Road test the vehicle and observe the steering wheel return-to-center position. Low caster will cause poor steering wheel returnability.

During the road test, turn the vehicle to both the left and right. If the steering wheel returns to the center position unassisted, the caster angle is correct. However, if steering wheel does not return toward the center position unassisted, a low caster angle is probable.

Caster can be adjusted by loosening and rotating the cams on the lower suspension arm (Fig. 1). **Changing caster angle will also change the front propeller shaft angle. The propeller shaft angle has priority over caster. Refer to Group 3, Differential and Driveline for additional information.**

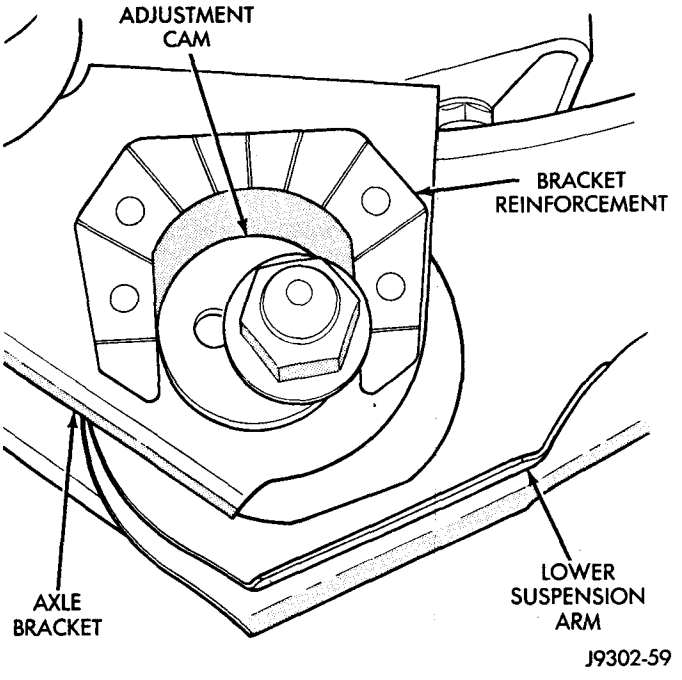


Fig. 1 Cam Adjuster

TOE POSITION

NOTE: The wheel toe position adjustment should be the final adjustment.

(1) Start the engine and turn wheels both ways before straightening the steering wheel. Center and secure the steering wheel.

(2) Loosen the adjustment sleeve clamp bolts (Fig. 2).

(3) Adjust the right wheel toe position with the drag link (Fig. 3). Turn the sleeve until the right wheel is at the correct positive TOE-IN position. Position the clamp bolts as shown (Fig. 2) and tighten to 49 N·m (36 ft. lbs.). **Make sure the toe setting does not change during clamp tightening.**

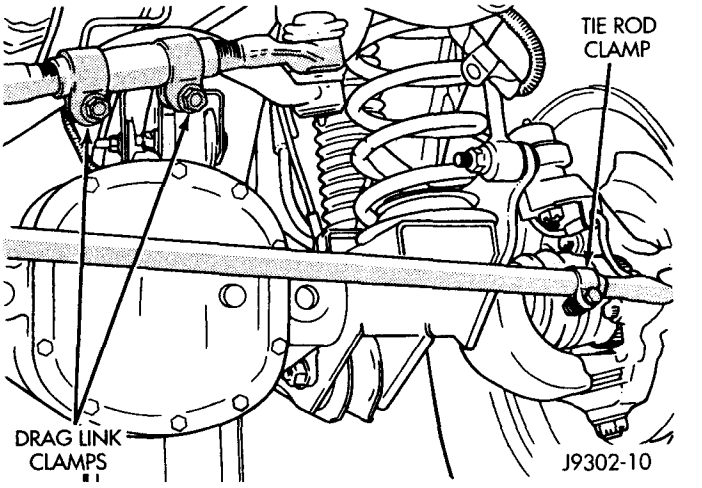


Fig. 2 Drag Link and Tie Rod Clamp

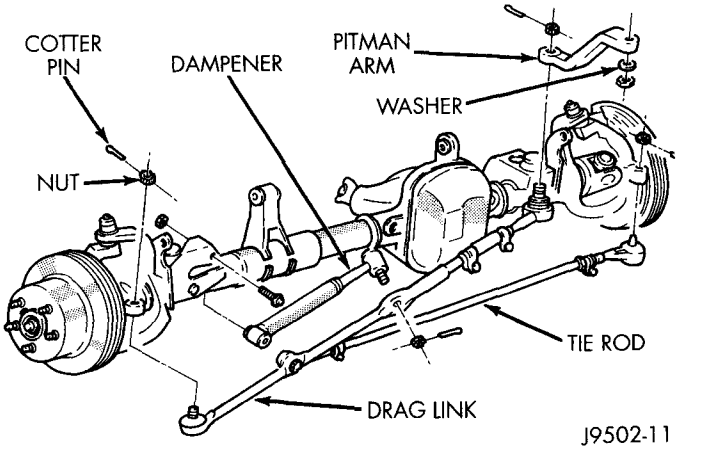


Fig. 3 Steering Linkage

(4) Adjust the left wheel toe position with the tie rod. Turn the sleeve until the left wheel is at the same TOE-IN position as the right wheel. Position the clamp bolts as shown (Fig. 2) and tighten to 27

SERVICE PROCEDURES (Continued)

N·m (20 ft. lbs.). **Make sure the toe setting does not change during clamp tightening.**

(5) Verify the right toe setting.

SPECIFICATIONS

ALIGNMENT SPECIFICATIONS

ADJUSTMENT	PREFERRED	RANGE
CASTER	7°	± 1.0°
CAMBER (fixed angle)	– 0.25°	± 0.63°
WHEEL TOE-IN (each wheel)	0.15°	± 0.15°
THRUST ANGLE	0	± 0.15°

FRONT SUSPENSION

INDEX

DESCRIPTION AND OPERATION

FRONT SUSPENSION

The front suspension is a link/coil design comprised of:

- Shock absorbers
- Coil springs
- Upper and lower suspension arms
- Stabilizer bar
- Track bar

Link/Coil Suspension: The link/coil suspension allows each wheel to adapt to different road surfaces without greatly affecting the opposite wheel. Wheels are attached to a hub/bearings which bolts to the knuckles. The hub/bearing is not serviceable and is replaced as a unit. Steering knuckles pivot on replaceable ball studs attached to the axle tube yokes.

Shock Absorbers: The shock absorbers dampen jounce and rebound motion of the vehicle over various road conditions. The top of the shock absorbers are bolted to a frame bracket. The bottom of the shocks are bolted to the axle brackets.

Coil Springs: The coil springs control ride quality and maintain proper ride height. The coil springs mount up in the wheelhouse. A rubber doughnut isolator is located between the top of the spring and the frame. The bottom of the spring seats on a axle pad and is retained with a clip.

Upper And Lower Suspension: The suspension arms use bushings to isolate road noise. The suspension arms are bolted to the frame and axle through the rubber bushings. The lower suspension arm uses cam bolts at the axle to allow for caster and pinion angle adjustment. The suspension arm travel is limited through the use of jounce bumpers in compression and shocks absorbers in rebound.

Stabilizer Bar: The stabilizer bar is used to control vehicle body roll during turns. The spring steel bar helps to control the vehicle body in relationship to the suspension. The bar extends across the top of the chassis frame rails. Stabilizer bar mounts are isolated by rubber bushings. Links are connected from the bar to the axle brackets.

Track Bar: The track bar is used to control front axle lateral movement. The bar is attached to a frame rail bracket with a ball stud and isolated with a bushing at the axle bracket.

NOTE: Periodic lubrication of the front suspension (steering) system components is required. Rubber bushings must never be lubricated. Refer to Group 0, Lubrication And Maintenance for the recommended maintenance schedule.

CAUTION: Suspension components with rubber bushings should be tightened with the vehicle at normal height. It is important to have the springs supporting the weight of the vehicle when the fasteners are torqued. If springs are not at their normal ride position, vehicle ride comfort could be affected and premature bushing wear may occur.

DIAGNOSIS AND TESTING

SHOCK DIAGNOSIS

A noise from a shock absorber may be caused by movement between mounting bushings and metal brackets or attaching components. This noise can usually be stopped by tightening the attaching nuts. If the noise persists, inspect for damaged and worn bushings, and attaching components. Repair as necessary if any of these conditions exist.

The shock absorbers are not refillable or adjustable. If a malfunction occurs, the shock absorber

DIAGNOSIS AND TESTING (Continued)

must be replaced. To test a shock absorber, hold it in an upright position and force the piston in and out of the cylinder four or five times. The action throughout each stroke should be smooth and even.

The shock absorber bushings do not require any type of lubrication. Do not attempt to stop bushing noise by lubricating them. Grease and mineral oil-base lubricants will deteriorate the bushing rubber.

REMOVAL AND INSTALLATION

SHOCK ABSORBER

REMOVAL

(1) Remove the nut, retainer and grommet from the upper stud through engine compartment access hole (Fig. 1).

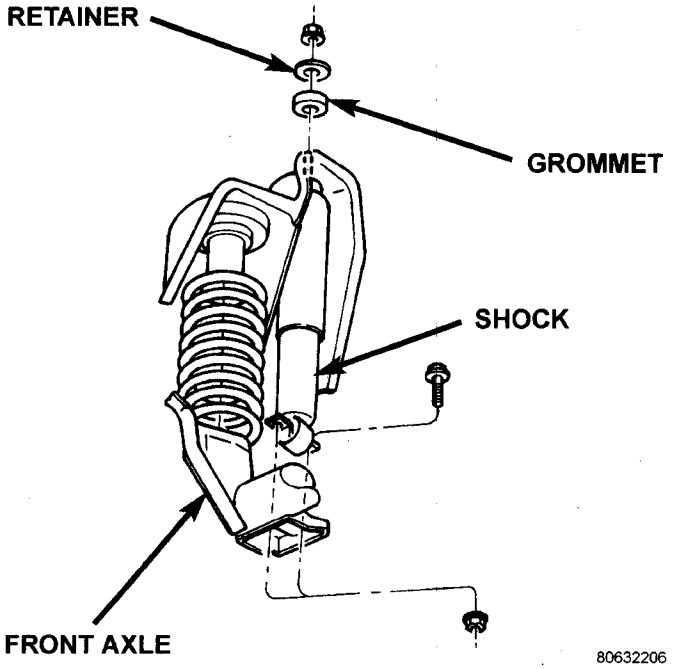


Fig. 1 Coil Spring & Shock Absorber

(2) Remove the lower nuts and bolts from the axle bracket and remove the shock absorber.

INSTALLATION

(1) Position the lower retainer and grommet on the upper stud. Insert the shock absorber through the shock bracket hole.

(2) Install the lower bolts and nuts. Tighten nuts to 28 N·m (250 in. lbs.).

(3) Install the upper grommet and retainer on the stud and install the nut and tighten to 23 N·m (17 ft. lbs.).

COIL SPRING

REMOVAL

(1) Raise and support the vehicle. Position a hydraulic jack under the axle to support it.

(2) Paint or scribe alignment marks on the cam adjusters and axle bracket for installation reference.

(3) Mark and disconnect the front propeller shaft from the axle.

(4) Remove the lower suspension arm nut, cam and cam bolt from the axle.

(5) Disconnect the stabilizer bar links and shock absorbers from the axle.

(6) Disconnect the track bar from the frame rail bracket.

(7) Disconnect the drag link from the pitman arm.

(8) Lower the axle until the spring is free from the upper mount. Remove the coil spring retainer bolt and remove the spring.

(9) Remove the jounce bumper if necessary from the upper spring mount.

INSTALLATION

(1) Position the coil spring on the axle pad. Install the spring retainer and bolt and tighten to 22 N·m (16 ft. lbs.).

(2) Install the jounce bumper.

(3) Raise the axle into position until the spring seats in the upper mount, then raise another 51 mm (2 in.).

(4) Connect the stabilizer bar links and shock absorbers to the axle bracket. Connect the track bar to the frame rail bracket.

(5) Install the lower suspension arm to the axle.

(6) Install the front propeller shaft to the axle.

(7) Install drag link to pit man arm.

(8) Remove the supports and lower the vehicle.

(9) Tighten all suspension components to proper torque.

STEERING KNUCKLE

For service procedures on the steering knuckle and ball studs refer to Group 3 Differentials And Driveline.

LOWER SUSPENSION ARM

REMOVAL

(1) Raise and support the vehicle.

(2) If equipped with ABS brakes remove sensor wire from the inboard side of the arm.

(3) Paint or scribe alignment marks on the cam adjusters and suspension arm for installation reference (Fig. 2).

(4) Remove the lower suspension arm nut, cam and cam bolt from the axle (Fig. 3).

(5) Remove the nut and bolt from the frame rail bracket and remove the lower suspension arm (Fig. 3).

INSTALLATION

(1) Position the lower suspension arm in the axle bracket and frame rail bracket.

REMOVAL AND INSTALLATION (Continued)

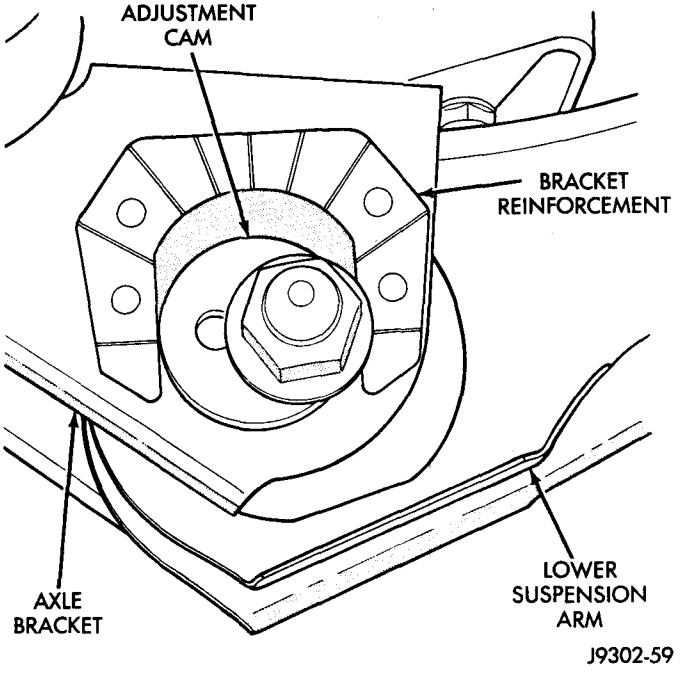


Fig. 2 Cam Adjuster

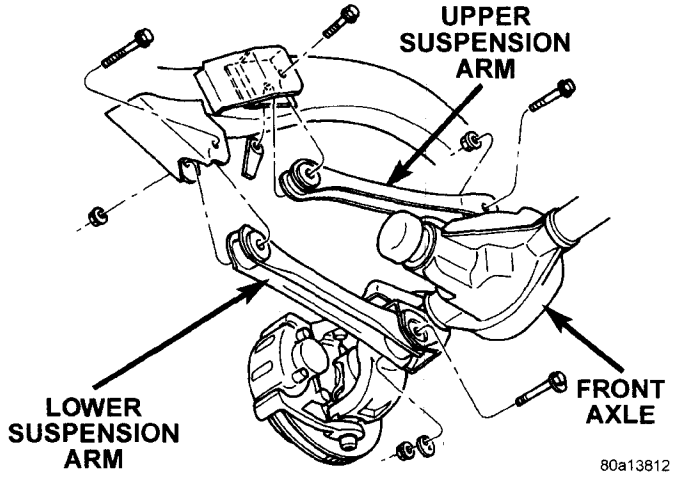


Fig. 3 Upper & Lower Suspension Arms

NOTE: Small holes in the side of the arm face inboard.

(2) Install the rear bolt and nut finger tighten.
(3) Install new cam bolt and new nut finger tighten in the axle and align the reference marks.
(4) If equipped with ABS brakes install sensor wire to the inboard side of the arm with new clips.
(5) Lower the vehicle.
(6) Tighten axle bracket nut to 115 N·m (85 ft. lbs.).
(7) Tighten frame bracket nut to 176 N·m (130 ft. lbs.).
(8) Align the vehicle.

UPPER SUSPENSION ARM

REMOVAL

(1) Raise and support the vehicle.
(2) Remove the upper suspension arm nut and bolt at the axle bracket (Fig. 3).
(3) Remove the nut and bolt at the frame rail and remove the upper suspension arm.

INSTALLATION

(1) Position the upper suspension arm at the axle and frame rail.
(2) Install the bolts and finger tighten the nuts.
(3) Remove the supports and lower the vehicle.
(4) Tighten the nut at the axle and frame brackets to 75 N·m (55 ft. lbs.).

AXLE BUSHING

REMOVAL

(1) Remove the upper suspension arm from axle
(2) Position Receiver 7932-1 (J-35581-1) over the bushing in the axle and install Bushing Removal/Installer (Fig. 4).
(3) Remove the bushing by tightening the Long Nut.

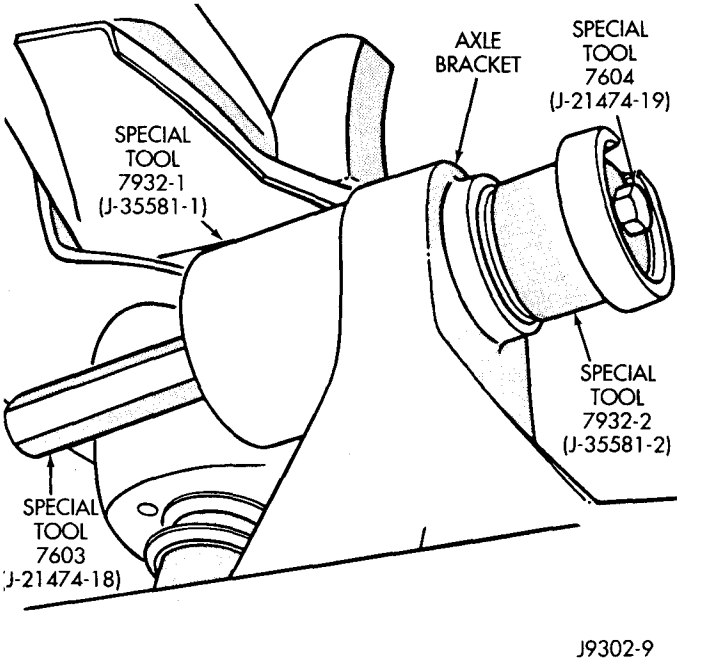


Fig. 4 Bushing Removal

NOTE: For two-wheel drive axles and right side on Model 30 axle, do not remove Receiver 7932-1 (J-35581-1) at this time.

INSTALLATION

(1) Position new bushing, Receiver and Installer on axle (Fig. 5).

REMOVAL AND INSTALLATION (Continued)

(2) Install the bushing by tightening the Long Nut.

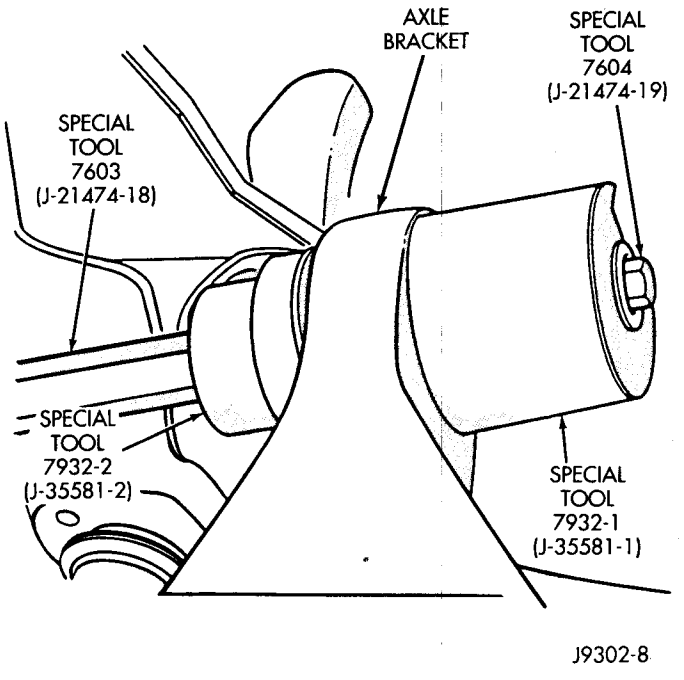


Fig. 5 Bushing Installation

(3) Remove tools and install the upper suspension arm.

STABILIZER BAR

REMOVAL

(1) Remove upper link nuts (Fig. 6) and separate the links from the stabilizer bar with Remove MB-990635.

(2) Remove front bumper valence, refer to Group 23 Body for procedure.

(3) Remove stabilizer retainer bolts (Fig. 6) and remove retainers.

(4) Remove stabilizer bar.

(5) Remove lower link nuts and bolts and remove links (Fig. 6).

INSTALLATION

(1) Center stabilizer bar on top of the frame rails and install retainers and bolts. Tighten bolts to 54 N·m (40 ft. lbs.).

(2) Position links on axle brackets and into the stabilizer bar. Install lower link bolts and nuts and tighten to 95 N·m (70 ft. lbs.).

(3) Install upper link nuts and tighten to 61 N·m (45 ft. lbs.).

(4) Install bumper valence.

TRACK BAR

CAUTION: Use a universal puller tool to separate the track bar ball stud from the frame rail bracket. This will prevent damage to the ball stud seal.

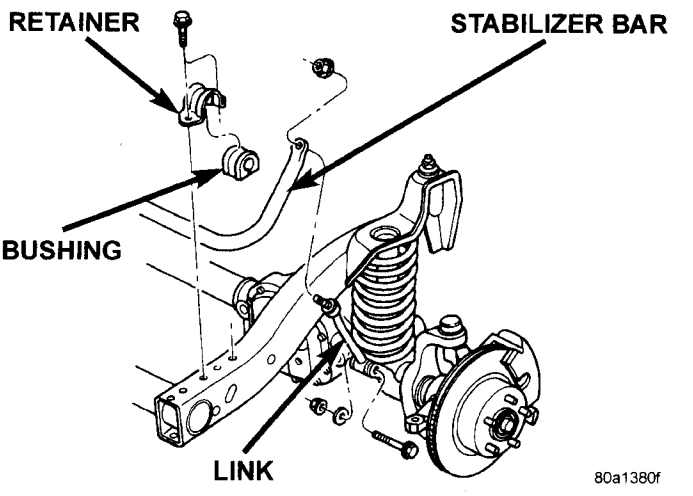


Fig. 6 Stabilizer Bar

REMOVAL

(1) Raise and support the vehicle.

(2) Remove the cotter pin and nut from the ball stud end at the frame rail bracket (Fig. 7).

(3) Use a universal puller tool to separate the track bar ball stud from the frame rail bracket.

(4) Remove the bolt and flag nut from the axle bracket (Fig. 7). Remove the track bar.

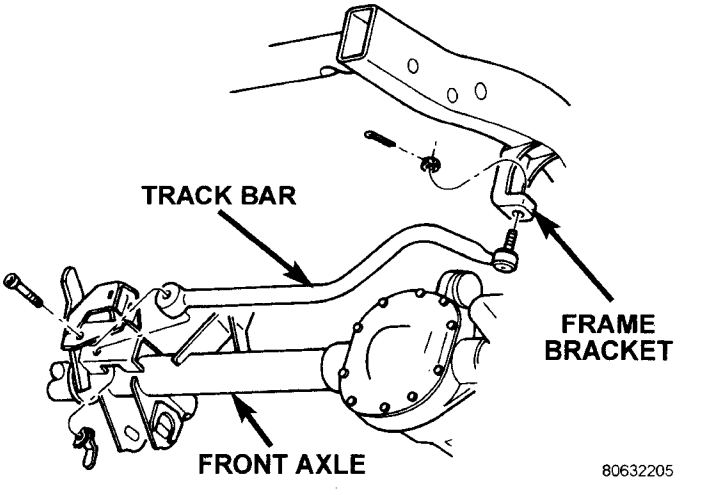


Fig. 7 Track Bar

INSTALLATION

(1) Install the track bar at axle tube bracket. Loosely install the retaining bolt and flag nut.

(2) It may be necessary to pry the axle assembly over to install the track bar at the frame rail. Install track bar at the frame rail bracket. Install the retaining nut on the stud.

(3) Tighten the ball stud nut to 88 N·m (65 ft. lbs.) and install a new cotter pin.

(4) Remove the supports and lower the vehicle.

(5) Tighten the bolt at the axle bracket to 75 N·m (55 ft. lbs.).

REMOVAL AND INSTALLATION (Continued)

(6) Check alignment if a new track bar was installed.

HUB BEARING

The Hub Bearing is serviced as an assembly.

REMOVAL

(1) Raise and support the vehicle.
(2) Remove the wheel and tire assembly.
(3) Remove the brake components from the axle, refer to Group 5 Brakes.
(4) Remove the cotter pin, nut retainer and axle hub nut (Fig. 8).
(5) Remove the hub mounting bolts and remove hub bearing from the steering knuckle and axle shaft.

INSTALLATION

(1) Install the hub bearing and brake dust shield to the knuckle.
(2) Install the hub to knuckle bolts and tighten to 102 N·m (75 ft. lbs.).
(3) Install the hub washer and nut. Tighten the hub nut to 237 N·m (175 ft. lbs.). Install the nut retainer and a new cotter pin.
(4) Install the brake components, refer to Group 5 Brakes.
(5) Install the wheel and tire assembly.
(6) Remove support and lower the vehicle.

WHEEL MOUNTING STUDS

REMOVAL

(1) Raise and support vehicle.
(2) Remove wheel and tire assembly.
(3) Remove brake caliper and rotor, refer to Group 5 Brakes for procedure.
(4) Remove stud from hub with Remover C-4150A (Fig. 9).

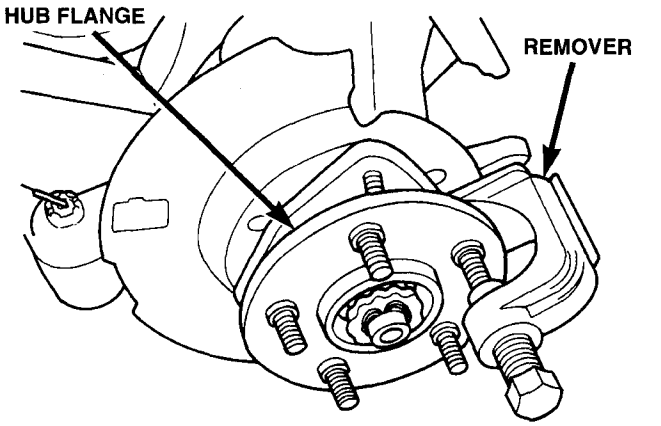


Fig. 9 Wheel Stud Removal

INSTALLATION

(1) Install new stud into hub flange.
(2) Install three washer onto stud, then install lug nut with the flat side of the nut against the washers.
(3) Tighten lug nut until the stud is pulled into the hub flange. Verify that the stud is properly seated into the flange.

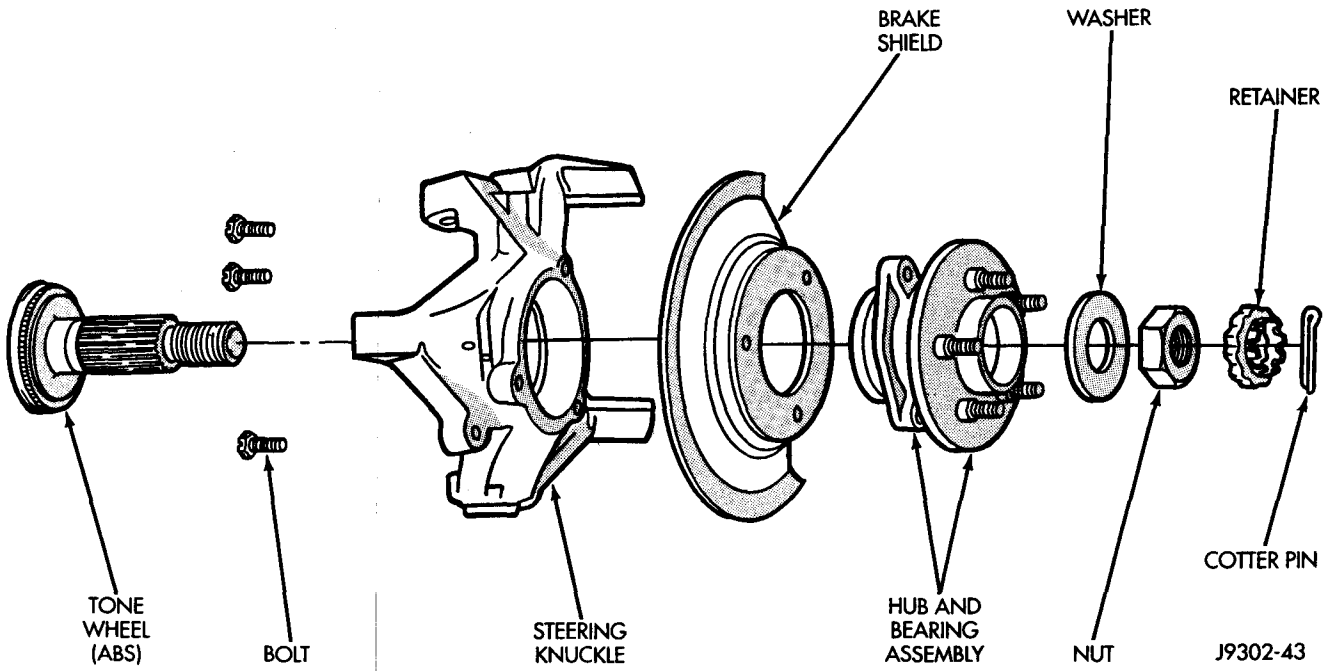


Fig. 8 Hub Bearing & Knuckle

REMOVAL AND INSTALLATION (Continued)

(4) Remove lug nut and washers.
(5) Install the brake rotor and caliper, refer to Group 5 Brakes for procedure.
(6) Install wheel and tire assembly, use new lug nut on stud or studs that were replaced.
(7) Remove support and lower vehicle.

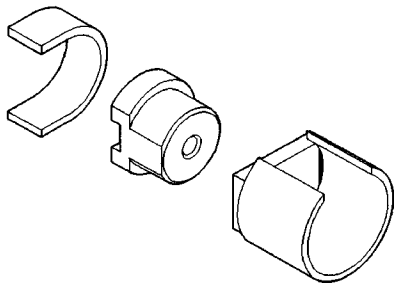
SPECIFICATIONS

TORQUE CHART

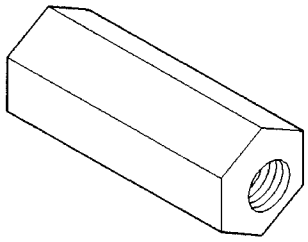
DESCRIPTION	TORQUE
Shock Absorber	
Upper Nut	23 N·m (17 ft. lbs.)
Lower Nut	28 N·m (250 in. lbs.)
Suspension Arm Lower	
Axle Bracket Nut	115 N·m (85 ft. lbs.)
Frame Bracket Nut	176 N·m (130 ft. lbs.)
Suspension Arm Upper	
Axle Bracket Nut	75 N·m (55 ft. lbs.)
Frame Bracket Bolt	75 N·m (55 ft. lbs.)
Stabilizer Bar	
Retainer Bolts	54 N·m (40 ft. lbs.)
Link Upper Nut	61 N·m (45 ft. lbs.)
Link Lower Bolt	95 N·m (70 ft. lbs.)
Track Bar	
Ball Stud Nut	88 N·m (65 ft. lbs.)
Axle Bracket Bolt	75 N·m (55 ft. lbs.)

SPECIAL TOOLS

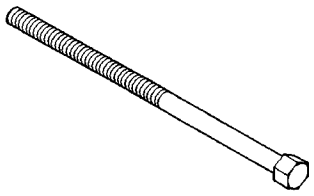
FRONT SUSPENSION



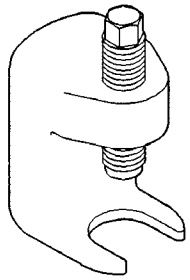
Remover/Installer Suspension Bushing 7932 (J-35581)



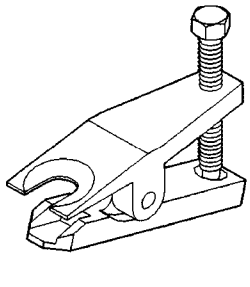
Nut, Long 7603 (J-21474–18)



Bolt, Special 7604 (J-21474–19)



Remover C-4150A



Remover Tie Rod End MB-990635

REAR SUSPENSION

INDEX

DESCRIPTION AND OPERATION

REAR SUSPENSION

The rear suspension is link/coil design comprised of:

- Dual-action shock absorbers
- Coil springs
- Upper and lower suspension arms
- Stabilizer bar
- Track bar

Shock Absorbers: The shock absorbers dampen jounce and rebound of the vehicle over various road conditions. The top of the shock absorbers are bolted to the frame. The bottom of the shocks are bolted to axle brackets.

Coil Springs: The coil springs control ride quality and maintain proper ride height. The springs mount between the bottom of the frame rail and the rear axle.

Upper And Lower Suspension: The suspension arms use bushings to isolate road noise. The suspension arms are bolted to the frame and axle through the rubber bushings. The upper suspension arm has provision for the use of cam bolts at the axle to allow for pinion angle or thrust angle adjustment. The cams are available as a service kit and are not installed at the factory. The suspension arm travel is limited through the of use jounce bumpers in compression and shock absorbers in rebound.

Stabilizer Bar: The stabilizer bar is used to control vehicle body roll during turns. The spring steel bar helps to equalize the vehicle body in relationship to the suspension. The bar extends across the underside of the chassis and mounts to the rear axle. Links are connected from the bar to frame brackets. The bar is isolated by rubber bushings.

Track Bar: The track bar is used to control rear axle lateral movement. The track bar is attached to a frame rail bracket and an axle bracket. It is isolated with bushings at both ends.

CAUTION: Suspension components that use rubber bushings should be tightened with the vehicle at normal ride height. This will prevent premature failure of the bushing and maintain ride comfort. Rubber bushings must never be lubricated.

DIAGNOSIS AND TESTING

SHOCK DIAGNOSIS

A noise from a shock absorber may be caused by movement between mounting bushings and metal brackets or attaching components. This noise can usually be stopped by tightening the attaching nuts. If the noise persists, inspect for damaged and worn bushings, and attaching components. Repair as necessary if any of these conditions exist.

The shock absorbers are not refillable or adjustable. If a malfunction occurs, the shock absorber must be replaced. To test a shock absorber, hold it in an upright position and force the piston in and out of the cylinder four or five times. The action throughout each stroke should be smooth and even.

The shock absorber bushings do not require any type of lubrication. Do not attempt to stop bushing noise by lubricating them. Grease and mineral oil-base lubricants will deteriorate the bushing rubber.

REMOVAL AND INSTALLATION

SHOCK ABSORBER

REMOVAL

(1) Raise and support the vehicle and the axle.
(2) Remove the upper mounting bolts (Fig. 1).
(3) Remove the lower nut and bolt from the axle bracket. Remove the shock absorber.

REMOVAL AND INSTALLATION (Continued)

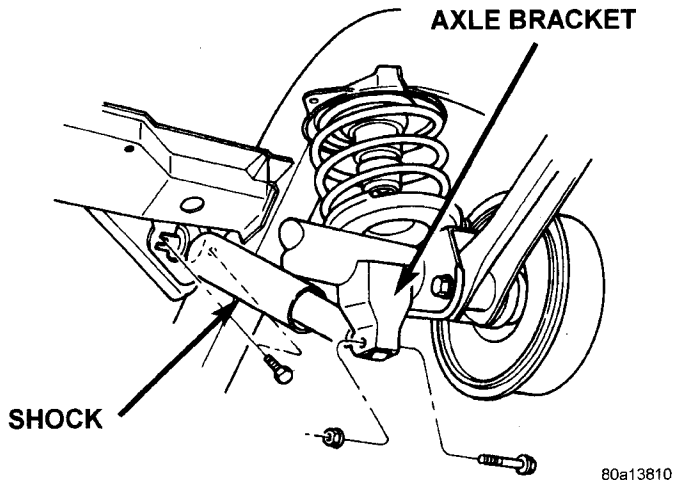


Fig. 1 Shock Absorber

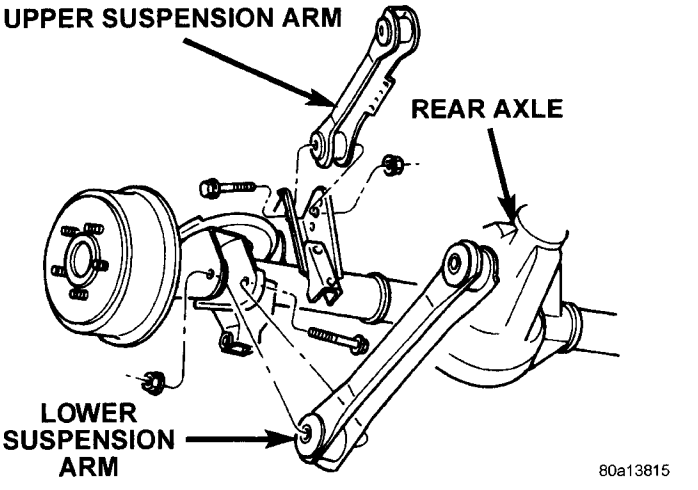


Fig. 2 Upper & Lower Suspension Arms

INSTALLATION

(1) Install the shock absorber on the upper frame rail and install mounting bolts.
(2) Tighten the upper bolts to 31 N·m (23 ft. lbs.).
(3) Install lower bolt and nut finger tight.
(4) Remove the supports and lower the vehicle.
(5) Tighten the lower nut to 100 N·m (74 ft. lbs.).

COIL SPRING

REMOVAL

(1) Raise and support the vehicle. Position a hydraulic jack under the axle to support it.
(2) Disconnect the stabilizer bar links and shock absorbers from the axle brackets.
(3) Disconnect the track bar from the frame rail bracket.
(4) Lower the axle until the spring is free from the upper mount seat and remove the spring.

INSTALLATION

(1) Position the coil spring on the axle pad.
(2) Raise the axle into position until the spring seats in the upper mount.
(3) Connect the stabilizer bar links and shock absorbers to the axle bracket. Connect the track bar to the frame rail bracket.
(4) Remove the supports and lower the vehicle.
(5) Tighten the stabilizer bar links, shock absorbers and track bar to specified torque.

LOWER SUSPENSION ARM

REMOVAL

(1) Raise and support the vehicle.
(2) Remove the lower suspension arm nut and bolt at the axle bracket (Fig. 2).
(3) Remove the nut and bolt at the frame rail mount (Fig. 3) and remove the lower suspension arm.

INSTALLATION

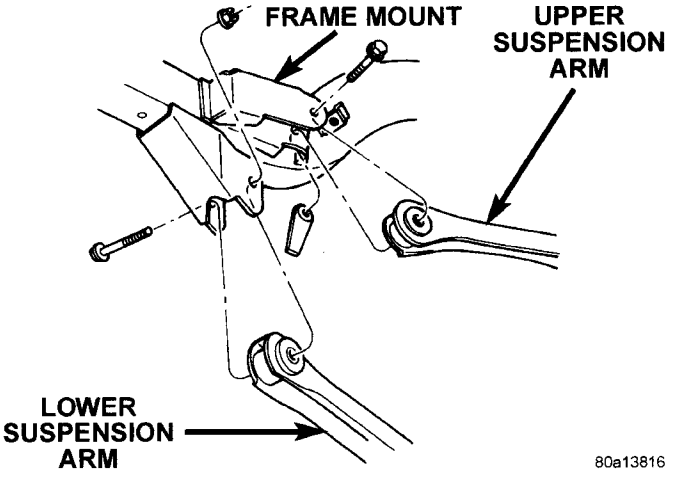


Fig. 3 Upper & Lower Suspension Arms

(1) Position the lower suspension arm in the axle bracket and frame rail mount.
(2) Install the mounting bolts and finger tighten the nuts.
(3) Remove the supports and lower the vehicle.
(4) Tighten the lower suspension arm nuts to 177 N·m (130 ft. lbs.).

UPPER SUSPENSION ARM

REMOVAL

(1) Raise and support the vehicle.
(2) Remove the parking brake cable/bracket and ABS wiring bracket from the arm if equipped (Fig. 4).
(3) Remove the upper suspension arm nut and bolt from the axle bracket (Fig. 2).
(4) Remove the nut and bolt from the frame rail bracket (Fig. 3) and remove the upper suspension arm.

REMOVAL AND INSTALLATION (Continued)

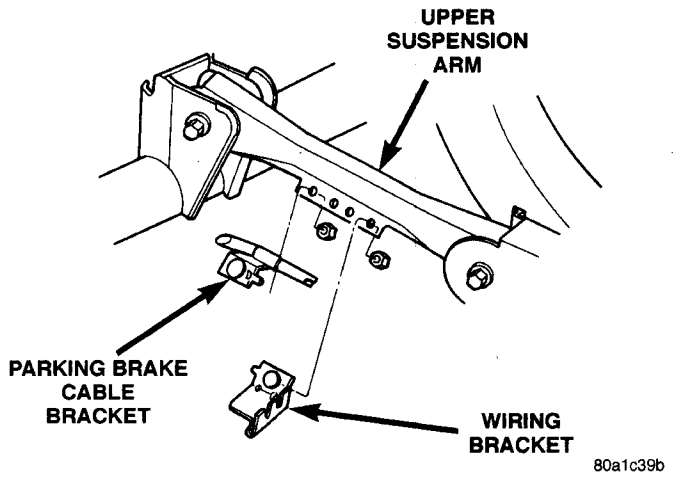


Fig. 4 Parking Brake Cable/Bracket And Wiring Bracket

INSTALLATION

(1) Position the upper suspension arm in the axle bracket and frame rail bracket.

(2) Install the bolts and finger tighten the nuts.

(3) Install the parking brake cable/bracket and ABS wiring bracket on the arm if equipped.

(4) Remove the supports and lower the vehicle.

(5) Tighten the upper suspension arm frame rail bracket bolt to 75 N·m (55 ft. lbs.).

(6) Tighten the upper suspension arm axle bracket nut to 75 N·m (55 ft. lbs.).

STABILIZER BAR

REMOVAL

(1) Raise and support the vehicle.

(2) Remove the stabilizer bar link bolts from the frame mounts (Fig. 5).

(3) Remove the link bolts from the stabilizer bar.

(4) Remove the stabilizer bar retainer bolts and retainers from the axle mounts (Fig. 6) and remove the bar.

INSTALLATION

(1) Install the stabilizer bar on the axle mounts and install the retainers and bolts.

NOTE: Ensure the bar is centered with equal spacing on both sides and is positioned above the differential housing (Fig. 6).

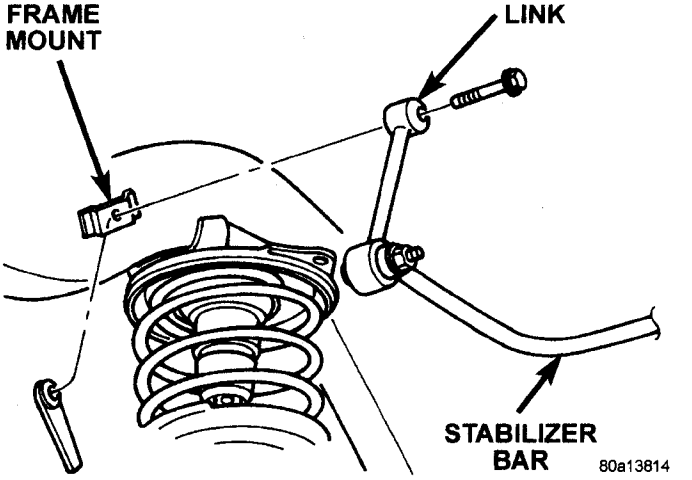


Fig. 5 Stabilizer Bar Link

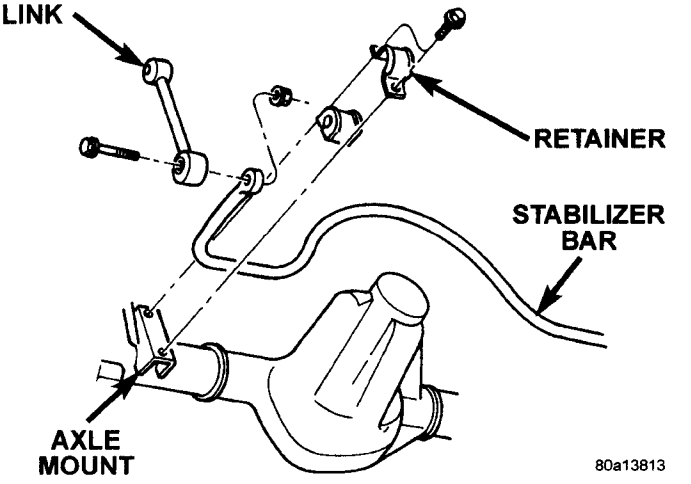


Fig. 6 Stabilizer Bar

(2) Tighten the retainer bolts to 54 N·m (40 ft. lbs.).

(3) Install the links onto the stabilizer bar and frame mounts. Install the bolts and nuts finger tight.

(4) Remove support and lower vehicle.

(5) Tighten the link nuts/bolts to 54 N·m (40 ft. lbs.).

REMOVAL AND INSTALLATION (Continued)

TRACK BAR

REMOVAL

(1) Raise and support the vehicle.
(2) Remove the bolt and nut from the frame rail bracket (Fig. 7).
(3) Remove the bolt from the axle bracket (Fig. 7) and remove the track bar.

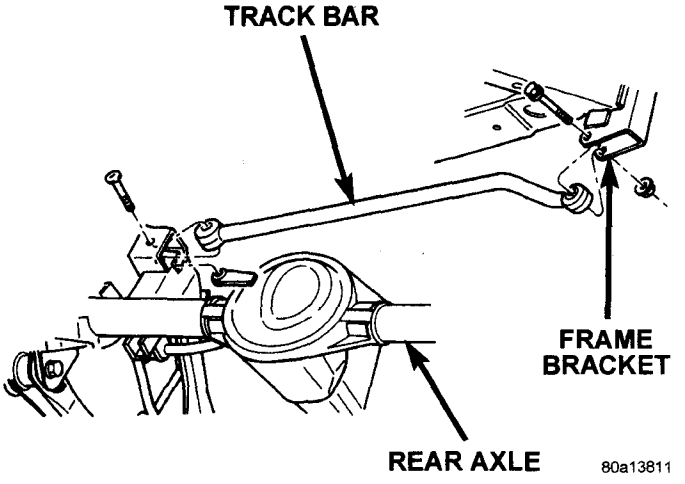


Fig. 7 Rear Track Bar

INSTALLATION

(1) Install the track bar in the axle bracket and install the bolt loosely.
(2) Install the track bar in the frame rail bracket and loosely install the bolt and nut.

NOTE: It may be necessary to pry the axle assembly over to install the track bar.

(3) Remove supports and lower the vehicle.
(4) Tighten the track bar nut/bolt at both ends to 100 N·m (74 ft. lbs.).

SPECIFICATIONS

TORQUE CHART

DESCRIPTION	TORQUE
Shock Absorber	
Upper Bolts	31 N·m (23 ft. lbs.)
Lower Nut	100 N·m (74 ft. lbs.)
Suspension Arm Lower	
Axle Bracket Nut	177 N·m (130 ft. lbs.)
Frame Bracket Nut	177 N·m (130 ft. lbs.)
Suspension Arm Upper	
Axle Bracket Nut	75 N·m (55 ft. lbs.)
Frame Bracket Bolt	75 N·m (55 ft. lbs.)
Stabilizer Bar	
Retainer Bolts	54 N·m (40 ft. lbs.)
Link Nut/Bolt	54 N·m (40 ft. lbs.)
Track Bar	
Frame Bracket Nut	100 N·m (74 ft. lbs.)
Axle Bracket Bolt	100 N·m (74 ft. lbs.)