

# INTRODUCTION

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### DESCRIPTION AND OPERATION

#### VEHICLE IDENTIFICATION NUMBER (VIN)

##### DESCRIPTION

The Vehicle Identification Number (VIN) plate is attached to the top left side of the instrument panel.

The VIN contains 17 characters that provide data concerning the vehicle. Refer to the decoding chart to determine the identification of a vehicle.

VEHICLE IDENTIFICATION NUMBER DECODING CHART

POSITION	INTERPRETATION	CODE = DESCRIPTION
1	Country of Origin	1 = Austria
2	Make	J = Jeep
3	Vehicle Type	4 = MPV
4	Gross Vehicle Weight Rating	G = 5001-6000 lbs.
5	Vehicle Line	2 = Grand Cherokee 4X2 (LHD) W = Grand Cherokee 4X4 (LHD) 7 = Grand Cherokee 4X2 (RHD) 8 = Grand Cherokee 4X4 (RHD)
6	Series	5 = Laredo 6 = Limited
7	Body Style	8 = 4dr Sport Utility
8	Engine	S = 4.0L 6 cyl. (MPI) Unleaded N = 4.7L 8 cyl. (MPI) Unleaded 4 = 3.1L 5 cyl. Turbo Diesel V = 4.0L 6 cyl. (MPI) Leaded
9	Check Digit	
10	Model Year	X = 1999
11	Assembly Plant	Y = Steyr Assembly
12 thru 17	Vehicle Build Sequence	

DESCRIPTION AND OPERATION (Continued)

VEHICLE SAFETY CERTIFICATION LABEL

DESCRIPTION

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 shut-face.

MFD BY	CHRYSLER CORPORATION	DATE OF MFR	1-96 C	GVWR	2288 KG (05000 LB)
GAWR FRONT	WITH TIRES	RIMS AT	COLD		
1203 KG (2650 LB)	P185/75R14	14 X 5.5	380 KPA(35 PSI)		
GAWR REAR	WITH TIRES	RIMS AT	COLD		
1225 KG (2700 LB)	P195/75R14	14 X 5.5	380 KPA(35 PSI)		

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

VIN: XXXXXXXXXXXXXXXXXXXX TYPE: SINGLE X DUAL



MDH: 010615 021 PAINT:POP VEHICLE MADE IN CANADA TRIM:C5C3 4648505

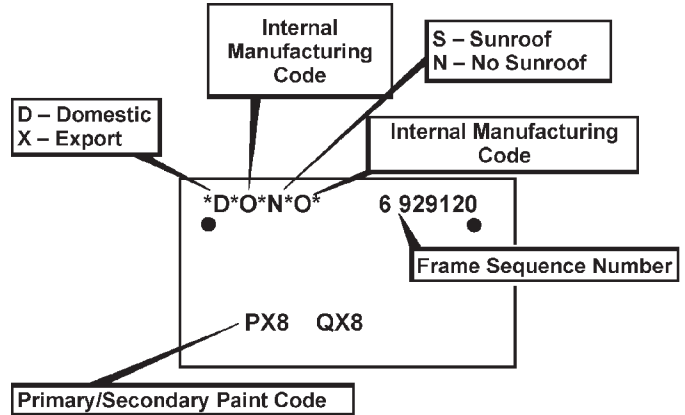
80ab36d9

Fig. 1 Vehicle Safety Certification Label

BODY CODE PLATE

DESCRIPTION

A metal Body Code plate is located in the engine compartment and attached to the top of the right frame rail. The information listed on the plate (Fig. 2) is used for manufacturing and service purposes.



80a517a

Fig. 2 Body Code Plate

SERVICE PROCEDURES

THREADED HOLE REPAIR

























Most stripped threaded holes can be repaired using a Helicoil®. Follow the manufactures recommendations for application and repair procedures.

## SPECIFICATIONS

### INTERNATIONAL VEHICLE CONTROL AND DISPLAY SYMBOLS

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

INTERNATIONAL CONTROL AND DISPLAY SYMBOLS

 HIGH BEAM	 FOG LIGHTS	 HEADLIGHTS, PARKING LIGHTS, PANEL LIGHTS	 TURN SIGNAL	 HAZARD WARNING	 WINDSHIELD WASHER
 WINDSHIELD WIPER	 WINDSHIELD WIPER AND WASHER	 WINDSCREEN DEMISTING AND DEFROSTING	 VENTILATING FAN	 REAR WINDOW DEFOGGER	 REAR WINDOW WIPER
 REAR WINDOW WASHER	 FUEL	 ENGINE COOLANT TEMPERATURE	 BATTERY CHARGING CONDITION	 ENGINE OIL	 SEAT BELT
 BRAKE FAILURE	 PARKING BRAKE	 FRONT HOOD	 REAR HOOD (TRUNK)	 HORN	 LIGHTER

80a53b2d

Fig. 3

### 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).

INCH		METRIC	
5/16-18		M8 X 1.25	
THREAD MAJOR DIAMETER IN INCHES	NUMBER OF THREADS PER INCH	THREAD MAJOR DIAMETER IN MILLIMETERS	DISTANCE BETWEEN THREADS IN MILLIMETERS

PR606B

Fig. 4 Thread Notation Chart – 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 10.9. 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.

### 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 must be used.

SPECIFICATIONS (Continued)

FASTENER IDENTIFICATION

**Bolt Markings and Torque - Metric**

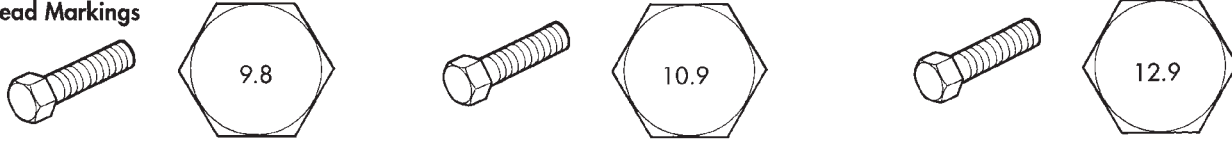
Commercial Steel Class

8.8

10.9

12.9

Bolt Head Markings



Body Size	Torque				Torque				Torque			
	Cast Iron		Aluminum		Cast Iron		Aluminum		Cast Iron		Aluminum	
	Diam. mm	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb	N•m
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**

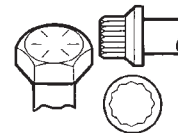
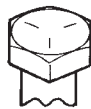
SAE Grade Number

5

8

Bolt Head Markings

These are all SAE Grade 5 (3) line



Bolt Torque - Grade 5 Bolt


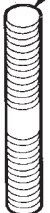


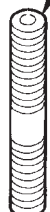


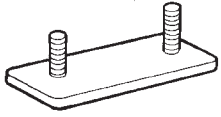


Bolt Torque - Grade 8 Bolt

Body Size	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

SPECIFICATIONS (Continued)

FASTENER STRENGTH

HOW TO DETERMINE BOLT STRENGTH

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

SPECIFICATIONS (Continued)

**METRIC SYSTEM**

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

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.)

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

J901N-2

**Fig. 5 Metric Prefixes**

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

CONVERSION FORMULAS AND EQUIVALENT VALUES

<b>Multiply</b>	<b>By</b>	<b>To Get</b>	<b>Multiply</b>	<b>By</b>	<b>To Get</b>
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

<b>COMMON METRIC EQUIVALENTS</b>			
1 Inch	=	25 Millimeters	
1 Foot	=	0.3 Meter	
1 Yard	=	0.9 Meter	
1 Mile	=	1.6 Kilometers	
1 Cubic Inch	=	16 Cubic Centimeters	
1 Cubic Foot	=	0.03 Cubic Meter	
1 Cubic Yard	=	0.8 Cubic Meter	

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SPECIFICATIONS (Continued)

METRIC CONVERSION

in-lbs to N•m

N•m to in-lbs

Table with 20 columns and 20 rows for in-lbs to N•m and N•m to in-lbs conversion. Columns are labeled 'in-lb' and 'N•m' in pairs. Rows contain numerical conversion values.

ft-lbs to N•m

N•m to ft-lbs

Table with 20 columns and 20 rows for ft-lbs to N•m and N•m to ft-lbs conversion. Columns are labeled 'ft-lb' and 'N•m' in pairs. Rows contain numerical conversion values.

in. to mm

mm to in.

Table with 20 columns and 20 rows for in. to mm and mm to in. conversion. Columns are labeled 'in.' and 'mm' in pairs. Rows contain numerical conversion values.

## SPECIFICATIONS (Continued)

## TORQUE REFERENCES

Individual Torque Charts appear at the end of many Groups. Refer to the Standard Torque Specifi-

cations Chart for torque references not listed in the individual torque charts.

## 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