



BULLET WORKSHOP MANUAL

**Models: CONV45
CONV55**

Foreword

The purpose of this manual is to assist the service technician when the vehicle is serviced. Major drivetrain component service information is not included in this manual, but is located in each manufacturer's service manual.

Instructions and procedures are those recommended by Sterling Truck Corporation or the component manufacturer.

Maintenance schedules and additional service information are included in the *Bullet® Driver's and Maintenance Manual*.

IMPORTANT: Descriptions and specifications in this manual were in effect at the time of printing. Sterling Truck Corporation reserves the right to discontinue models, and to change specifications or design at any time without notice and without incurring obligation. Descriptions and specifications contained in this publication provide no warranty, expressed or implied, and are subject to revision and editions without notice.

For additional information, please contact Freightliner LLC, Service Systems and Documentation, P.O. Box 3849, Portland, OR 97208-3849, U.S.A. or refer to <http://www.Freightliner.com> and <http://www.SterlingTrucks.com>.

Environmental Concerns and Recommendations

Whenever you see instructions in this manual to discard materials, you should attempt to reclaim and recycle them. To preserve our environment, follow appropriate environmental rules and regulations when disposing of materials.

NOTICE: Parts Replacement Considerations

Do not replace suspension, axle, or steering parts (such as springs, wheels, hubs, and steering gears) with used parts. Used parts may have been subjected to collisions or improper use and have undetected structural damage.

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INTRODUCTION

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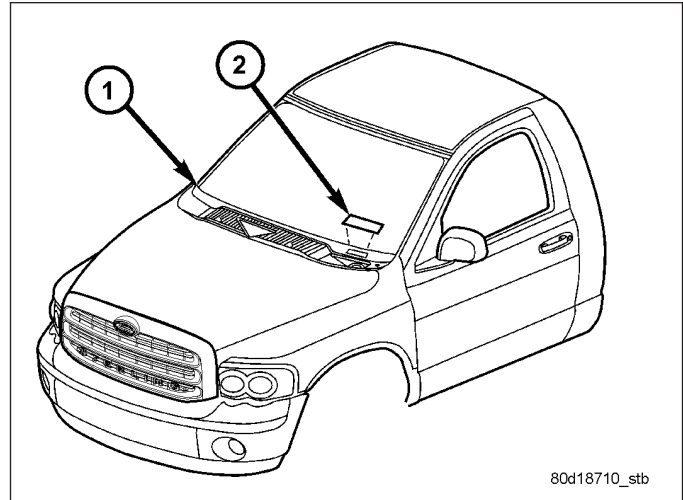
VEHICLE IDENTIFICATION NUMBER

DESCRIPTION – VIN CODING/LOCATIONS

The Vehicle Identification Number (VIN) plate (2) 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 VIN is also imprinted on the:

- Body Code Plate.
- Equipment Identification 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 VIN. 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.

POSITION	INTERPRETATION	CODE = DESCRIPTION
1	Country of Origin	3 = Manufactured By Chrysler De Mexico
2	Make	F = Sterling
3	Vehicle Type	6 = Incomplete Less Side Airbag
4	Gross Vehicle Weight Rating	W = Incomplete Vehicles With Hydraulic Brakes
5	Vehicle Line	J = Cab Chassis (4x2) K = Cab Chassis (4x4)
6	Series	6 = 4500 With Dual Rear Wheels 7 = 5500 With Dual Rear Wheels
7	Body Style	6 = Conventional Cab/Cab Chassis 8 = Quad Cab Full Rear Doors
8	Engine	A = 6.7L I6 CYL Cummins Turbo Diesel
9	Check Digit	0 through 9 or X
10	Model Year	8 = 2008
11	Plant Location	G = Saltillo
12 – 17	Vehicle Build Sequence	

VEHICLE EMISSION CONTROL INFORMATION (VECI)

DESCRIPTION

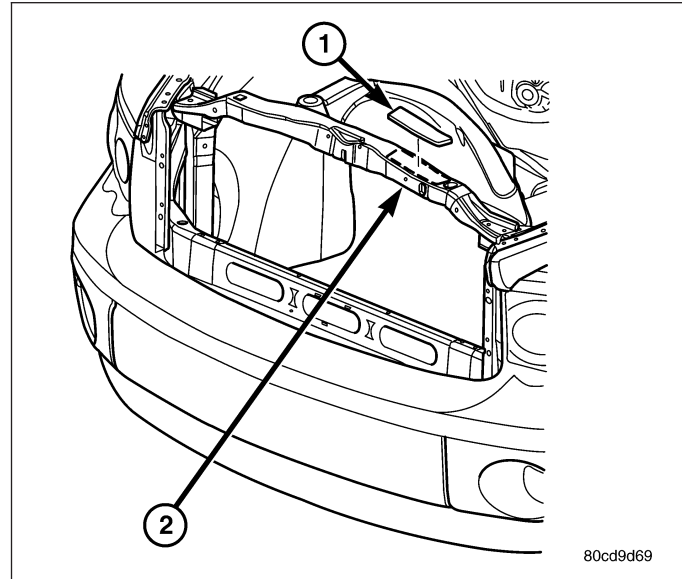
All models have a Vehicle Emission Control Information (VECI) Label (1). Sterling Trucks permanently attaches the label in the engine compartment. The label cannot be removed without defacing label information and destroying label.

The label contains the vehicle's emission specifications and vacuum hose routings. All hoses must be connected and routed according to the label.

The label also contains an engine vacuum schematic. There are unique labels for vehicles built for sale in the state of California and the country of Canada. Canadian labels are written in both the English and French languages.

The VECI label contains the following:

- Engine family and displacement
- Evaporative family
- Emission control system schematic
- Certification application
- Engine timing specifications (if adjustable)
- Idle speeds (if adjustable)
- Spark plug and gap



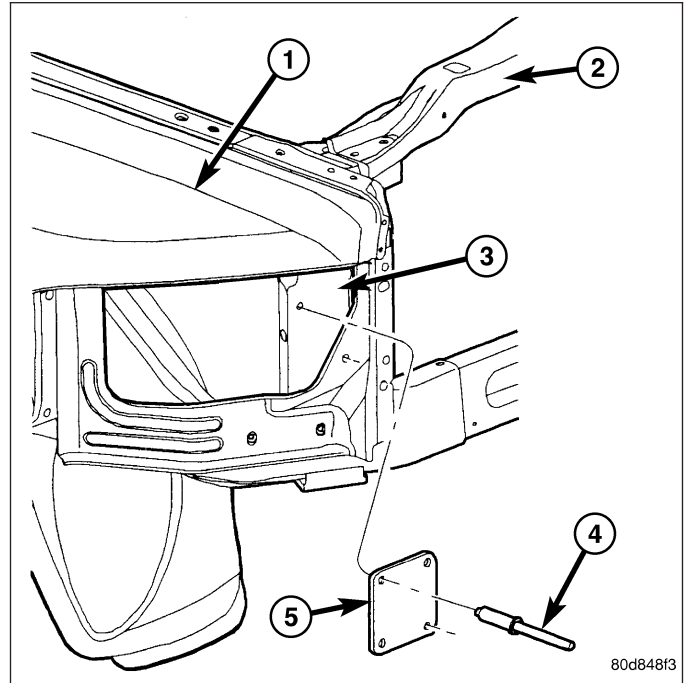
BODY CODE PLATE

DESCRIPTION

The Body Code Plate is located on the right front hydroform fender rail just behind the headlight assembly. There are seven lines of information on the body code plate. Lines 5, 6, and 7 are not used to define service information. Information reads from left to right, starting with line 4 in the center of the plate to line 1 at the bottom of the plate.

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.



BODY CODE PLATE – LINE 4

DIGITS 1 THROUGH 12

Vehicle Order Number (15)

DIGITS 13, 14, AND 15

Transmission Codes (3)

- DEG = 6-speed Manual (G56)
- DG3 = 6-speed Automatic (AS68RC)

DIGITS 16 and 17

Family (4)

- DA = Sterling Bullet

DIGIT 18

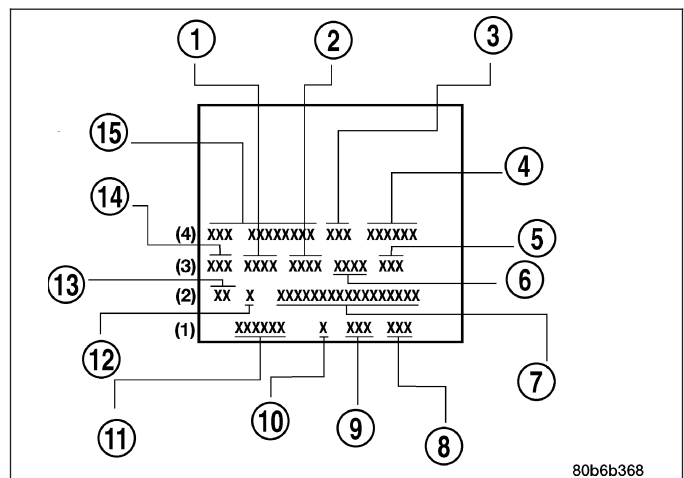
Vehicle Line (4)

2 - Wheel Drive

-

4 - Wheel Drive

-



DIGIT 19

Price Class (4)

- L = Low
- H = Highline
- P = Premium

DIGITS 20 AND 21

Body Type (4)

-

BODY CODE PLATE – LINE 3

DIGITS 1,2, AND 3

Paint Procedure (14)

- APA = Monotone
- AP9 = Special
- APD = Two-tone (Lower break)

DIGIT 4

Open Space

DIGITS 5 THROUGH 8

Primary Paint (1)

(Refer to 23 - BODY/PAINT - SPECIFICATIONS) for color codes.

DIGIT 9

Open Space

DIGITS 10 THROUGH 13

Secondary Paint (2)

DIGIT 14

Open Space

DIGITS 15 THROUGH 18

Interior Trim Code (6)

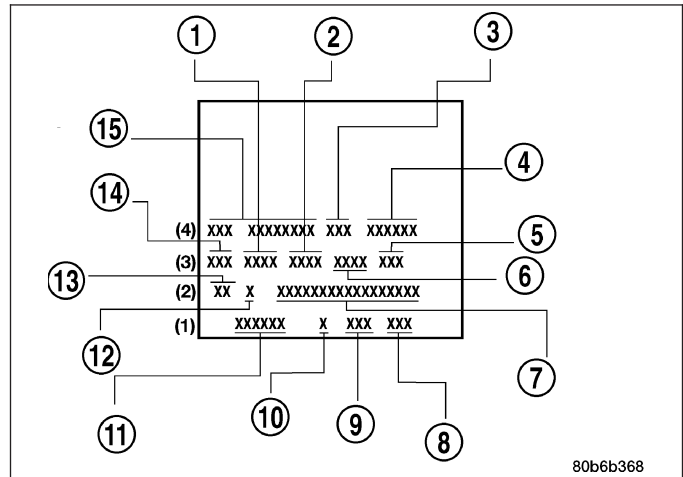
DIGIT 19

Open Space

DIGITS 20, 21, AND 22

Engine Code (5)

- ETJ = 6.7L I6 CYL Cummins Turbo Diesel



BODY CODE PLATE – LINE 2

DIGIT 1

Open Space

DIGITS 2 AND 3

Species Code. (Used for Manufacturing) (13)

DIGIT 4

Open Space

DIGIT 5

Market Code (12)

- C = Canada
- U = United States

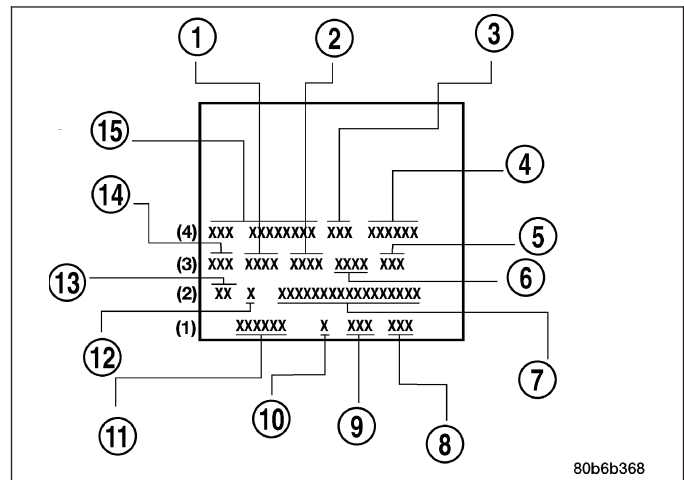
DIGIT 6

Open Space

DIGITS 7 THROUGH 23

Vehicle Identification Number (VIN) (7)

(Refer to VEHICLE DATA/VEHICLE INFORMATION/VEHICLE IDENTIFICATION NUMBER - DESCRIPTION) for proper breakdown of VIN code.



BODY CODE PLATE – LINE 1

DIGITS 1 THROUGH 6 Body-in-white assembly sequence (11)

DIGIT 7

Open Space

DIGIT 8 Tailgate trim code (10)

DIGIT 9

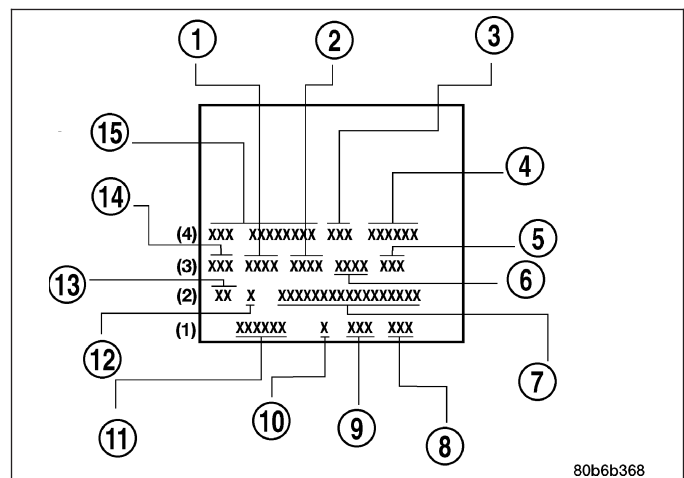
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DIGITS 10 THROUGH 12 Cargo box code (9)

DIGIT 13

























Open Space

DIGITS 14 THROUGH 16 Tailgate code (8)



INTERNATIONAL VEHICLE CONTROL & DISPLAY SYMBOLS

DESCRIPTION - INTERNATIONAL SYMBOLS

 1	 2	 3	 4	 5	 6
 7	 8	 9	 10	 11	 12
 13	 14	 15	 16	 17	 18
 19	 20	 21	 22	 23	 24

80be4768

- 1 - High Beam
- 2 - Fog Lamps
- 3 - Headlamp, Parking Lamps, Panel Lamps
- 4 - Turn Warning
- 5 - Hazard Warning
- 6 - Windshield Washer
- 7 - Windshield Wiper
- 8 - Windshield Wiper and Washer
- 9 - Windscreen Demisting and Defrosting
- 10 - Ventilating Fan
- 11 - Rear Window Defogger
- 12 - Rear Window Wiper
- 13 - Rear Window Washer
- 14 - Fuel
- 15 - Engine Coolant Temperature
- 16 - Battery Charging Condition
- 17 - Engine Oil
- 18 - Seat Belt
- 19 - Brake Failure
- 20 - Parking Brake
- 21 - Front Hood
- 22 - Rear hood (Decklid)
- 23 - Horn
- 24 - Lighter

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.

FASTENER IDENTIFICATION

DESCRIPTION

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.

Bolt Markings and Torques - Metric

Bolt Markings	8.8/8.9		10.9		12.9	
	N·m	Ft. Lbs.	N·m	Ft. Lbs.	N·m	Ft. Lbs.
6	12	105*	14	120*	16	12
8	25	250*	32	23	38	28
10	54	40	60	45	74	55
12	95	70	108	80	135	100
14	155	115	175	130	216	160
16	243	180	324	210	324	240


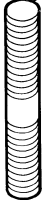


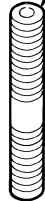

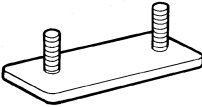



* Inch Lbs.

Bolt Markings and Torques - U. S. Customary

Bolt Markings	Grade 5		Grade 8	
	N·m	Ft. Lbs	N·m	Ft. Lbs
1/4 - 20	10	95*	14	125*
1/4 - 28	10	95*	17	150*
5/16 - 18	22	200*	30	270*
5/16 - 24	26	240*	33	300*
3/8 - 16	40	30	55	40
3/8 - 24	47	35	60	45
7/16 - 14	68	50	88	65
7/16 - 20	74	55	95	70
1/2 - 13	101	75	135	100
1/2 - 20	115	85	150	110
9/16 - 12	135	105	182	135
9/16 - 18	155	115	202	150
5/8 - 11	202	150	263	195
5/8 - 18	215	160	284	210
3/4 - 10	230	170	297	220
3/4 - 16	236	175	304	225
7/8 - 14	405	300	540	400

* Inch Lbs.

HOW TO DETERMINE BOLT STRENGTH

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

FASTENER USAGE

DESCRIPTION

FASTENER USAGE

WARNING: Use of an incorrect fastener may result in component damage or personal injury.

Fasteners and torque specifications 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.

THREADED HOLE REPAIR

DESCRIPTION

THREADED HOLE REPAIR

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

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	x 1.0936	= Yards
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
mph	x 0.4470	= Meters/Sec (M/S)	M/S	x 2.237	= mph
Kilometers/Hr. (Km/h)	x 0.27778	= Meters/Sec (M/S)	M/S	x 3.600	Kilometers/Hr. (Km/h)

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	

Refer to the Metric 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

DESCRIPTION

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

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