2004

BODY BUILDERS LAYOUT BOOK

2004

IMPORTANT NOTICE

The specifications and designs described herein are believed to be correct as of the time that this book was approved for printing, but accuracy cannot be guaranteed. They are intended only to provide basic data regarding such matters as dimensions and weight ratings of Ford-built chassis. The information contained in this book is general and nothing contained herein is to be regarded as providing specific or comprehensive instructions for the completion of a particular vehicle or as authorization by Ford of the specific modifications, alteration or designs of individual vehicles.

Representations regarding the compliance of any Ford-manufactured incomplete vehicle to any rule, regulation or standard issued pursuant to the National Traffic and Motor Vehicle Safety Act or the Canadian Motor Vehicle Safety Act are set forth only in the incomplete vehicle manual which accompanies each incomplete vehicle. Ford reserves the right to discontinue models or change specifications or designs at any time without notice and without incurring any obligation.

Regulations such as those issued by the Federal Highway Administration (FHWA) or issued pursuant to the Occupational Safety and Health Act (OSHA), and/or state, provincial, and local laws and regulations may require installation of additional equipment for the particular use intended for the vehicle. It is the responsibility of the subsequent stage manufacturer or completed vehicle alterer and the vehicle purchaser to ascertain how the vehicle will ultimately be used, if FHA, OSHA or state provincial or local regulations apply and how the vehicle as completed will comply with those requirements.

Nothing contained herein is to be construed as a representation that such equipment required for the particular use intended has been installed on the completed or incomplete vehicle.

For the most recent information and updates to this publication refer to www.fleet.ford.com/truckbbas.

REFERENCE INFORMATION

FORD TRUCK BODY BUILDERS LAYOUT PUBLICATION

To obtain a free copy of this publication on CD-ROM or to receive an order form for additional CD-ROM's or books please visit our website at www.fleet.ford.com/truckbbas/. Under Publications select Body Builders Order Forms. All dealer requests can be handled online. All other U.S. orders should be faxed to (734) 713-2971. Canadian orders should be faxed to (905) 670-0844.

FORD SERVICE PUBLICATIONS

Many Ford Service Publications pertain to a specific Model Year and vehicle types. The following publications are a few of many manuals which are available from Helm Incorporated; call 1-800-782-4356 or contact Helm, Inc. at their website: www.helminc.com

- Ford Truck Shop Manuals
- Ford Towing Manuals
- Ford Wiring Diagrams
- Ford Truck Shop Manuals and Wiring Diagrams on CD-ROM

FORD TRUCK BODY BUILDER ADVISORY SERVICE

The Ford Truck Body Builder Advisory Service assistance may be consulted regarding information contained in this manual. For assistance:

- Call (877) 840-4338
- Fax (313) 594-2633
- E-Mail bbasqa@ford.com or at the BBAS website - www.fleet.ford.com/truckbbas/

Include your name, company and telephone number with all inquiries. If requesting written materials, include your mailing address.

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The following terms include definitions from the Title 49, Code of Federal Regulations, Section 571.3 except where noted. Canadian definitions are from Canada Motor Vehicle Safety Regulations, Section 2(1), and are in italics. Ford Motor Company definitions are for the purpose of this publication only. Some terms are followed by an abbreviation that is used throughout this publication.

Ambulance — is a vehicle for emergency medical care which provides:
A driver's compartment; a patient compartment to accommodate an Emergency Medical Technician (EMT)/Paramedic and two litter patients (one patient on the primary cot and a secondary patient on a folding litter located on the squad bench) so positioned that the primary patient can be given intensive life support during transit; equipment and supplies for emergency care at the scene as well as during transport; two-way radio communicaion; and, when necessary, equipment for light rescue/extrication procedures. The Ambulance shall be designed and constructed to afford safety, comfort and avoid aggravation of the patient's injury or illness. (From Federal Specification KKA-1822-D). Ford Motor Company also includes within its definition of ambulance, "any vehicle that is used for transporting life-supported equipment, for rescue operations, or for non-emergency patient transfer if the engine of the vehicle is equipped with a "throttle kicker" device, which enables an operator to increase engine speed over normal idle speed when the vehicle is not moving."

B-Pillar — is the vehicle body structure located directly rearward of each front door. This structure will include the outer panel, all inner panels or reinforcements which support the door opening, the door latching system and/or the roof structure (source: Ford Motor Company).

Bus — a motor vehicle with motive power, except a trailer, designed for carrying more than 10 persons.

Bus (Canada) *— a vehicle having a designated seating capacity of more than 10, but does not include a trailer or a vehicle imported temporarily for special purposes.*

Chassis Cab — an incomplete vehicle, with completed occupant compartment, that requires only the addition of cargo-carrying, work-performing or lead-bearing components to perform its intended functions. (From Title 49 CFR, Section 567.3)

Critical Control Item — is a component or procedure which may affect compliance with a federal regulation or, which could directly affect the safe operation of the vehicle. ∇ is the identifying symbol. (source: Ford Motor Company)

Designated Seating Position — any plan view location capable of accommodating a person at least as large as a 5th percentile adult female if the overall seat configuration and design and vehicle design is such that the position is likely to be used as a seating position while the vehicle is in motion, except for auxiliary seating accommodations such as temporary or folding jump seats. Any bench or split-bench seat in passenger car, truck or multipurpose passenger vehicle with a GVWR less than 10,000 pounds, having greater than 50 inches of hip room (measured in accordance with SAE Standard J1100(a) shall have not less than three designated seating positions, unless the seat design or vehicle design is such that the center position cannot be used for seating.

Designated Seating Position (Canada) *— any plan view position capable of accommodating a person at least as large as a 5th percentile adult female, as defined in section 100 of Schedule IV, where the overall seat configuration and design and the vehicle design are such that the position is likely to be used as a seating position while the vehicle is in motion, but does not include any plan view position of temporary or folding jump seats or other auxiliary seating accommodation.*

Final-Stage Manufacturer — a person who performs such manufacturing operations on an incomplete vehicle that it becomes a completed vehicle. (49 CFR, Section 568.3)

Forward Control — a vehicle configuration in which more than half of the engine length is rearward of the foremost point of the windshield base and the steering wheel hub is in the forward quarter of the vehicle length.

Gross Axle Weight Rating (GAWR) — the value specified by the vehicle manufacturer as the load carrying capacity of a single axle system as measured at the tire-ground interfaces.

Gross Combination Weight Rating (GCWR) — the value specified by the manufacturer as the loaded weight of a combination vehicle.

Gross Vehicle Weight Rating (GVWR) — the value specified by the manufacturer as the loaded weight of a single vehicle.

H-Point — the mechanically hinged hip point of a manikin which simulated the actual pivot center of the human torso and thigh, described in SAE Recommended Practice J826, "Manikins For Use in Defining Vehicle Seating Accommodation," November 1962.

H-Point (Canada) *— the mechanically hinged hip point of a manikin that simulates the actual pivot centre of the human torso and thigh, described in SAE Standard J826 APR80, Devices for Use in Defining and Measuring Vehicle Seating Accommodation.*

Incomplete Vehicle Manufacturer — a person who manufactures an incomplete vehicle by assembling components none of which, taken separately constitute an incomplete vehicle. (49 CFR, Section 568.3)

Intermediate Manufacturer — a person, other than the incomplete vehicle manufacturer or the final stage manufacturer, who performs manufacturing operations on an incomplete vehicle. (49 CFR, Section 568.3)

Incomplete Vehicle — an assemblage consisting, as a minimum, of frame and chassis structure, powertrain, steering system, suspension system and braking system, to the extent that those systems are to be part of the completed vehicle, that requires further manufacturing operations, other than the addition of readily attachable components such as mirrors or tire and rim assemblies, or minor finishing operations, such as painting, to become a completed vehicle.

Incomplete Vehicle (Canada) *— (a) a vehicle other than a vehicle imported temporarily for special purposes, that is capable of being driven and that consists, at a minimum, of a chassis structure, power train, steering system, suspension system and braking system in the state in which those systems are to be part of the completed vehicle, but requires further manufacturing operations to become a completed vehicle or (b) that is an incomplete trailer; (vehicule incompler)*

Multipurpose Passenger Vehicle (MPV) — a motor vehicle with motive power, except a trailer, designed to carry 10 persons or less which is constructed either on a truck chassis or with special features for occasional off-road operation, but does not include an air cushion vehicle, all-terrain vehicle, golf-cart, passenger car or truck.

Multipurpose Passenger Vehicle (MPV) (Canada) *— a vehicle having a designated seating capacity of 10 or less that is constructed either on a truck chassis or with special features for occasional off-road operation, but does not include an air cushion vehicle, all-terrain vehicle, a low speed vehicle, a golf cart, a passenger car, a truck or a vehicle imported temporarily for special purposes.*

Prescribed Class (Canada) *— a class of vehicles listed in Schedule III.*

Seating Reference Point — the manufacturer's design reference point which:

(a) Establishes the rearmost normal design driving or riding position of each designated seating position in a vehicle;

(b) Has coordinates established relative to the designated vehicle structure;

(c) Simulates the position of the pivot center of the human torso and thigh; and

(d) Is the reference point employed to position the two dimensional templates described in SAE Recommended Practice J826. "Manikins for Use in Defining Vehicle Seating Accommodation," November, 1962.

Seating Reference Point (Canada) *— the unique design H-Point, as defined in section 2.2.11.1 of SAE Recommended Practice J1100 (June 1993), that:*

(a) Establishes the rearmost normal design driving or riding position of each designated seating position, taking into account all modes of adjustment – horizontal, vertical and tilt – in a vehicle;

(b) Has X, Y and Z coordinates, as defined in section 2.2.3 of SAE REcommended Practice J1100 (June 1993), established relative to the designated vehicle structure;

(c) Simulates the position of the pivot center of the human torso and thigh; and

(d) Is the reference point employed to position the H-Point template with the 95th percentile leg, as described in section 3.1 of SAE Standard J826 (June 1992), or, if that drafting template cannot be positioned, the reference point when the seat is in its rearmost adjustment position.

DEFINITIONS OF TERMS

The following terms include definitions from the Title 49, Code of Federal Regulations, Section 571.3 except where noted. Canadian definitions are from Canada Motor Vehicle Safety Regulations, Section 2(1), and are in italics. Ford Motor Company definitions are for the purpose of this publication only. Some terms are followed by an abbreviation that is used throughout this publication.

School Bus — a bus that is sold, or introduced in interstate commerce, for purposes that include carrying students to and from school or related events, but does not include a bus designed and sold for operation as a common carrier in urban transportation.

School Bus (Canada) *— a bus designed or equipped primarily to carry students to and from school.*

Second Unit Body (SUB) — consists of the body structure and/or all the cargo carrying, work performing, and/or lead bearing components and/or equipment installed by a subsequent stage manufacturer on an incomplete vehicle, such that the incomplete vehicle becomes a completed vehicle. (source: Ford Motor Company)

Subsequent Stage Manufacturer — is a term which means either intermediate or final stage manufacturers or both. (source: Ford Motor Company)

Trimmed Seat — a complete functional seat assembly including the seat pedestal, seat track, seat base frame, seat back, recliner mechanism, seat padding, all attaching hardware and the final trim material) i.e., cloth, leather or vinyl). (source: Ford Motor Company)

Truck — a motor vehicle with motive power, except a trailer, designed primarily for the transportation of property or special purpose equipment.

Truck (Canada) *— a truck designed primarily for the transportation of property or special purpose equipment but does not include a competition vehicle, a crawler mounted vehicle, a trailer, a work vehicle, a vehicle imported temporarily for special purposes or a vehicle designed for operation exclusively off-road; (camion).*

Truck Tractor — a truck designed primarily for drawing other motor vehicles and not so constructed as to carry a load other than a part of the weight of the vehicle and the load so drawn.

Truck Tractor (Canada) *— a truck designed primarily for drawing other vehicles and not constructed for carrying any load other than part of the weight of the vehicles and load drawn, and includes a vehicle designed to accept a fifth-wheel coupling but does not include a crane-equipped breakdown vehicle.*

Unloaded Vehicle Weight (UVW) — the weight of a vehicle with maximum capacity of all fluids necessary for operation of the vehicle, but without cargo, occupants, or accessories that are ordinarily removed from the vehicle when it is not in use.

Unloaded Vehicle Weight (UVW) (Canada) *— the weight of a vehicle equipped with containers for the fluids necessary for the operation of the vehicle filled to their maximum capacity but without cargo or occupants.*

Untrimmed Seat — the structure including the seat pedestal, seat track, seat base frame, seat back, recliner mechanism, seat padding and all attaching hardware required for a functional seat assembly without the final trim material (e.g., cloth, leather or vinyl) and tim material attaching components. (source: Ford Motor Company)

Walk-In Van — is a step entry city delivery van type vehicle that permits a person to enter the vehicle without stooping. This definition by Ford Motor Company is based on information appearing in 41 FR 54945, published December 16, 1976, and in 42 FR 34288, published July 5, 1977.

Walk-In Van (Canada) *— a van type of truck in which a person having a height of 1 700 mm can enter the occupant compartment in an upright position by a front door.*

COMPONENTS:

BPP Brake Pedal Position Switch: Supplies the processor a signal for converter clutch operation. A connection here may have an adverse effect on transmission operation. Refer to the ELECTRICAL WIRING SECTION “ADDING LIGHTS OR ELECTRICAL DEVICES” (page 193) for guidelines.

CAUTION: Any connection to the PCM-V system (i.e., wiring, components) or alterations to the system may adversely affect vehicle operation (transmission and/or engine).

BARO/ MAP Barometer Pressure Sensor/Manifold Absolute Pressure Sensor: Must be physically in a higher location than the intake manifold and angled with the vacuum nipple at least 4 degrees downwards. MAP vacuum line must have a downward slope to the manifold without any potential kinking or twisting. BARO has no vacuum line.

DTR Digital Transmission Range Sensor: Located on the outside of the automatic transmission at the manual lever on all models except 6.0L diesel engines. The DTR sensor provides the position of the manual lever (P, R, N, D, 2, 1) to various vehicle circuits. Do not tap into or splice any wire attached to the DTR sensor or engine and transmission damage may occur.

HO_2 Heated Oxygen Sensor: Pigtail wire must be at least 4 inches from the exhaust pipe and exhaust manifold. If necessary, a clip should be used to secure its location.

PCM Powertrain Control Module: Location must be completely shielded from weather and case grounded to sheet metal. It should be oriented such that no moisture can accumulate in the 104-way connector. The ambient temperature at the PCM module should not exceed 80° Centigrade (176° Fahrenheit). Exterior surface shall not exceed 140° F.

NOTE: The powertrain control module requires battery power to be supplied at all times to maintain the keep-alive memory. Keep this in mind when installing load disconnect switches or solenoids.

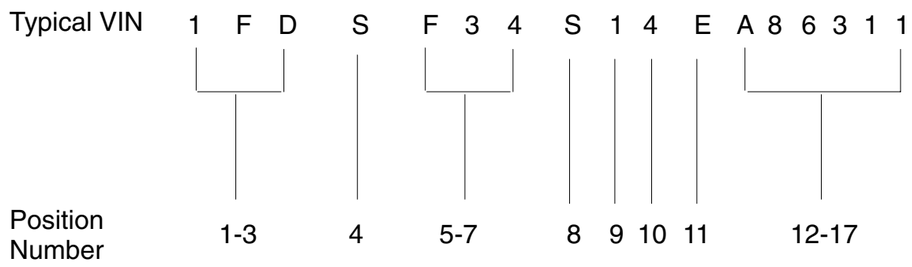
TP Throttle Position Sensor: Supplies a throttle position signal to the PCM processor. Do not tap into or splice any wire to the TP Sensor. For 6.0L diesel engines use the TPO wire, circuit 1857 (YE/WH).

VSS Vehicle Speed Sensor: The source varies by model. Sources include the Anti-Lock Brake System (ABS) module, a transmission speed sensor or the Transfer Case Speed Sensor (TCSS) for 4x4 model equipped with a manual transfer case. The vehicle speed signal is either a speed variable frequency AC signal, or a SCP Data message depending on the source. The vehicle speed signal must be operational for key sub-systems and the vehicle diagnostics to operate properly. Do not tap into or splice any VSS signal wire, sensors or engine and transmission damage may occur. For 6.0L diesel engines use VSO wire, circuit 239 (WH/OG) for the vehicle speed signal. For all other engines, installation of an additional sensor will be required.

2004 VIN ELEMENT CODING INFORMATION

VIN – What it Means

Universal Vehicle Identification Numbers (VINs) have 17 “positions”. There is a number or a letter in each position (see example below).



Positions	1-3	World Manufacturer Identifier
Position	4	Restraint System Type (Passenger Car Only) Brake Type, GVWR Class, and Restraint System Type (Trucks, MPVs and Buses)
Positions	5-7	Line, Series, Body Type
Position	8	Engine Type
Position	9	Check Digit
Position	10	Model Year
Position	11	Assembly Plant
Positions	12-17	Production Sequence Number

For a direct interpretation of a specific VIN, see the reference material at your dealership for the years of your specific interest (the specific meanings of some of the codes used in the VIN can change from year to year.)

Additionally a “VIN Decoder” is accessible on the Ford Fleet web site: www.fleet.ford.com

OCCUPANT PROTECTION SYSTEMS
SEAT RESTRAINT SYSTEM

INFORMATION

The following recommendations are intended to assist in the design of seats and seat belt systems capable of meeting the requirements of the F/CMVSS 207, 208, 209 and 210 except for front seating positions for vehicles having a GVWR of 3855 kg [8500 lb] or less, and an Unloaded Vehicle Weight of 2495 kg [5500 lb] or less. These recommendations are based on testing and analyses performed by Ford Motor Company.

Ford cautions subsequent stage manufacturers to note the definition of “Designated Seating Positions” on page 5. If a position can reasonably be used by a 5th percentile adult female for seating and the overall seat configuration and vehicle design make it likely that the position will be used by an occupant while the vehicle is in motion, then the position must be considered to be a “Designated Seating Position” for determination of compliance to U.S. and Canadian motor vehicle safety standards.

Seat and seat belt systems may take many forms; this list of recommendations cannot cover all possibilities. Strict adherence to these suggestions will not ensure that systems will comply with F/CMVSS 207, 208, 209 and 210. Responsibility for determining compliance to appropriate F/CMVSS regulations is that of the final stage manufacturer. Accordingly, Ford Motor Company makes no representation as to the appropriateness of any particular recommendation in its specific application of a particular design or act of intermediate or final stage manufacture.

To confidently verify compliance with F/CMVSS 207, 208, 209 and 210, the testing of representative systems to applicable F/CMVSS 207, 208, 209 and 210 procedures is recommended. Questions regarding compliance with F/CMVSS regulations should be directed to your legal counsel, the National Highway Traffic Safety Administration, or Transport Canada.

SEAT SYSTEMS

1. For Incomplete E-Series Vans and Cutaways with a GVWR over 3855 kg [8500 lb] purchased with the front seat delete option, Ford strongly recommends following the practices specified in the compliance representations for F/CMVSS 208 that apply to Incomplete E-Series Vans with a GVWR of 3855 kg [8500 lb] or less and completed units Unloaded Vehicle Weight of 2495 kg [5500 lb] or less that are purchased without front seats.
2. Any additional seats and seat anchorages installed by subsequent stage manufacturers must meet F/CMVSS 207 requirements and specifications.
3. Do not modify or alter Ford furnished seating or occupant restraint system. When utilizing the Ford driver’s seat delete package, care must be taken to insure proper function of the seat adjustment latching mechanism, electrical wiring and seat belt buckle pretensioner. Refer to Bulletin Q-48 for wire routing. Model year 2004 E-Series ordered with Passenger Seat Delete, Air Bag Delete, or RH Door Delete option may have the vehicle wiring modified according to Bulletin Q-93.
4. If the seat or seat belt components are temporarily removed for any reason, they must be reinstalled in accordance with the instructions and specifications found on the following pages for E-Series, Super Duty F-Series or the applicable *Ford Truck Shop Manual*.
5. Seating systems that include the attachment of lap belt or shoulder belt assemblies should also consider the requirements of F/CMVSS 210 as part of the seating system.
6. Seating system components should be free of sharp edges to prevent damage to seat belt systems when the belts could potentially contact the seating system components.
7. Seats should be mounted with appropriate fasteners in the mounting holes provided, since these holes are located to utilized floor pan structural reinforcements. See figures on following pages.
8. If additional holes are required for any reason, their locations should be carefully selected so that the structural integrity of the floor pan will not be compromised and to prevent damage to other components located below the floor.
9. Seating systems should be designed to be compatible with the seat belt systems, so as to permit proper adjustment, allow for occupant movement and provide convenient accessibility of the restraint system buckle release.
10. Seats not designated for occupancy while the vehicle is in motion must be conspicuously labeled as such.

WARNING:

FORD SAFETY BELTS ARE DESIGNED TO WORK WITH THE SEATS ORIGINALLY DESIGNED FOR THE VEHICLE. IF A MODIFIER USES DIFFERENT SEATS WITH FORD SEAT BELTS, THAT MODIFIER MUST ENSURE THE SAFETY BELTS AND REPLACEMENT SEATS MEET ALL FMVSS REQUIREMENTS AND WILL PERFORM SAFELY IN THE FIELD. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY IN THE EVENT OF A COLLISION.

LAP AND SHOULDER BELT SYSTEMS

1. The front seats are equipped with a pyrotechnic buckle pretensioner. The buckle pretensioner reduces slack in the lap and should safety belt by pulling the buckle downward. The buckle pretensioners and air bags operate on the same sensors and will function simultaneously.
2. Additional lap and shoulder belt assemblies, including retractors and hardware, must comply with the requirements of F/CMVSS 208 and 209.
3. Additional lap and shoulder belt system anchorages must comply with the requirements of F/CMVSS 210.
4. Lap and shoulder belt systems that are attached to seat frame or base may affect compliance of the seating system with the requirements of F/CMVSS 207.
5. Ford lap and shoulder belts, retractors and attaching hardware should not be altered or modified in any way. The reinstallation of these components should follow the instructions and specifications on the following pages, or those in the appropriate *Ford Truck Shop Manual*.
6. Lap and shoulder belt assemblies should be compatible with the seat systems and anchorages so that lap belts will be properly positioned about the occupant’s pelvis to provide proper adjustment and fit. The buckle and buckle release are properly located with respect to the occupant and must comply with the requirements of F/CMVSS 208.
7. Seat belt warning system activation/deactivation, where applicable, should be provided by the lap and shoulder belt assembly.

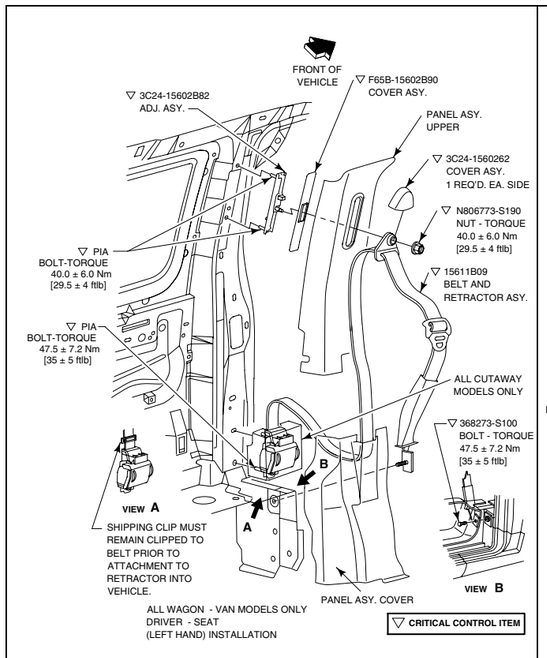
WARNING:

THE SEAT BELT BUCKLE PRETENSIONER, AIRBAGS AND ELECTRONIC SENSOR MODULE ARE BAR CODED WITH AN UNIQUE SERIAL NUMBER WHICH IS MATCHED TO THE VEHICLE VIN. TO MAINTAIN THE OCCUPANT PROTECTION SYSTEM PERFORMANCE, THE COMPLETED VEHICLE MUST CONTAIN THE SAME SEAT BELT BUCKLE PRETENSIONER, AIR BAGS AND ELECTRONIC SENSOR MODULE THAT WERE INSTALLED BY FORD MOTOR COMPANY. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY IN THE EVENT OF A COLLISION.

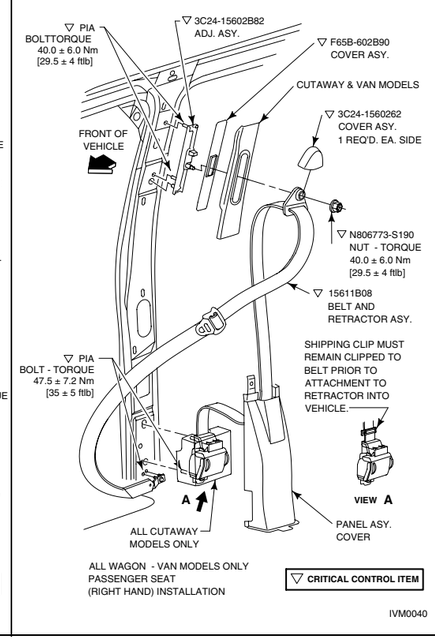
OCCUPANT PROTECTION ZONE AND OVERHEAD CONSOLE

For vehicles completed with an Unloaded Vehicle Weight (UVW) greater than 2495 kg [5500 lb], Ford strongly recommends following the practices in the compliance representations for F/CMVSS 208 regarding overhead console specifications that apply to Incomplete E-Series Vans with a GVWR of 3856 kg [8500 lb] or less and completed units have an Unloaded Vehicle Weight of 2495 kg [5500 lb] or less. Refer to the *Incomplete Vehicle Manual* for these compliance representations.

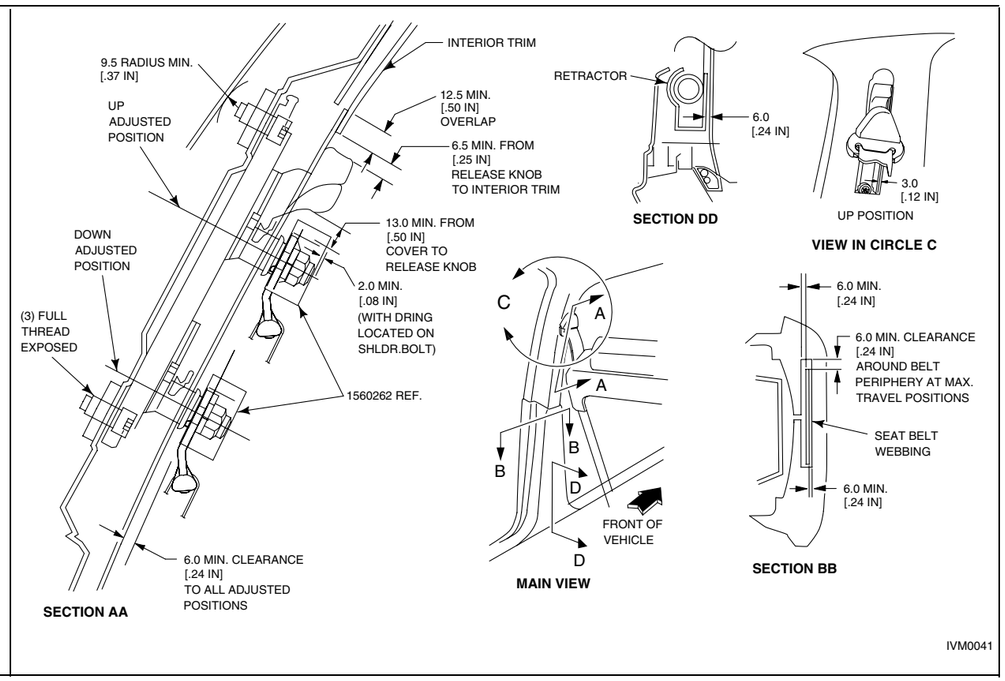
OCCUPANT PROTECTION SYSTEMS
SEAT RESTRAINT SYSTEM



E-SERIES DRIVER (LH)
SEAT RESTRAINT SYSTEM INSTALLATION



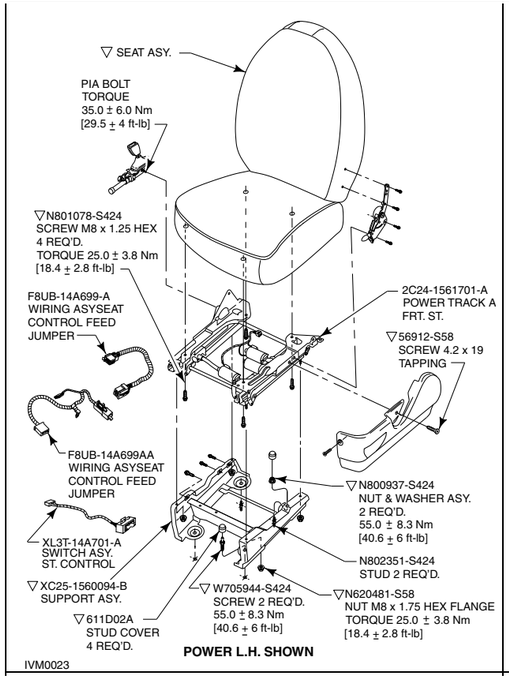
E-SERIES PASSENGER (RH)
SEAT RESTRAINT SYSTEM INSTALLATION



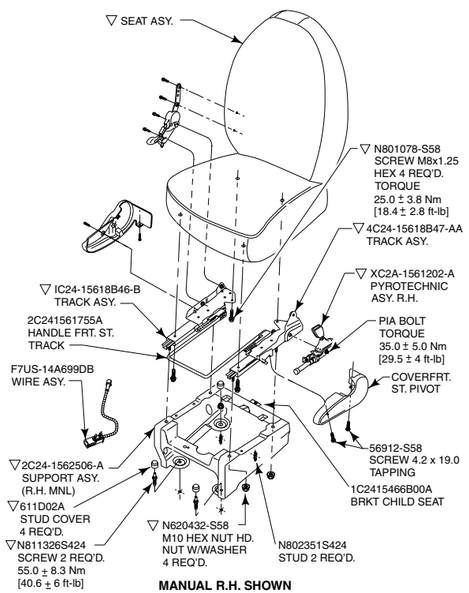
E-SERIES FRONT SEAT RESTRAINT INSTALLATION

NOTE — [ ] DIMENSIONS ARE FT-LB OR INCHES.

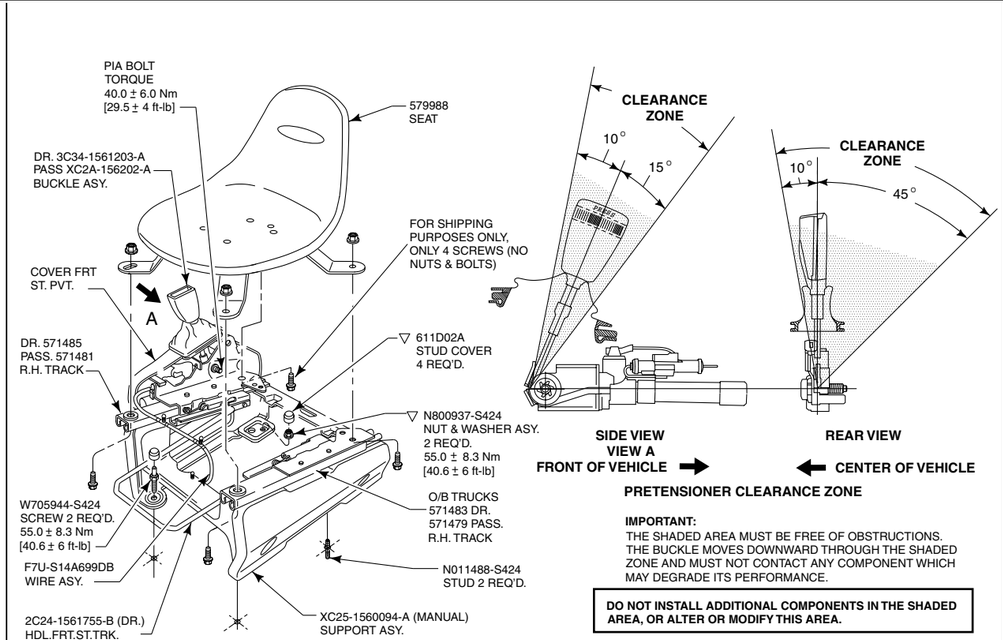
OCCUPANT PROTECTION SYSTEMS
SEAT RESTRAINT SYSTEM



E-SERIES DRIVER (LH) SEAT INSTALLATION



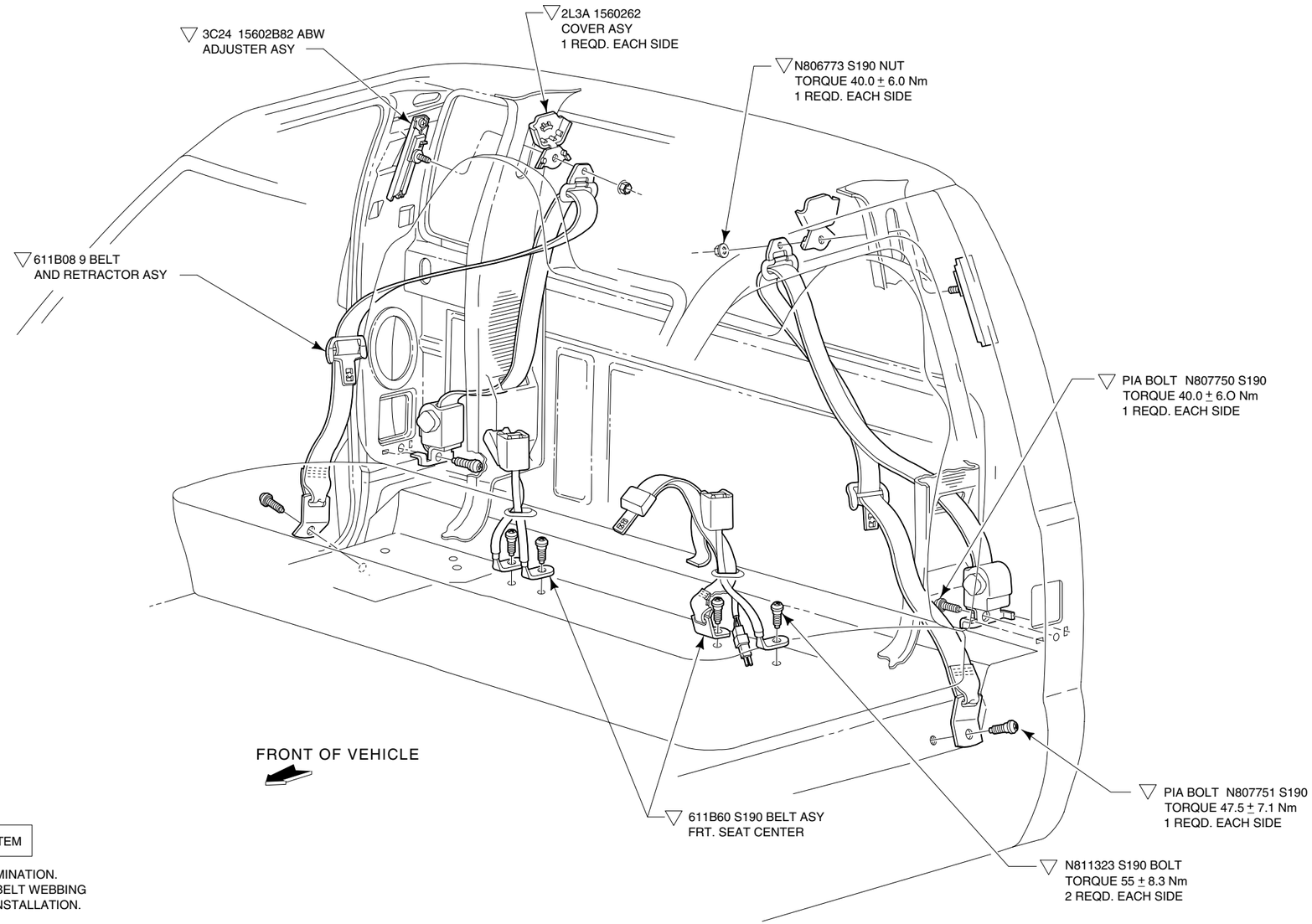
E-SERIES PASSENGER (RH) SEAT INSTALLATION



E-SERIES DRIVER (LH) SEAT DELETE OPTION

NOTE — [ ] DIMENSIONS ARE FT-LB OR INCHES.

OCCUPANT PROTECTION SYSTEMS
SEAT RESTRAINT SYSTEM



▽ CRITICAL CONTROL ITEM

▽ NOTE: AVOID CONTAMINATION. ASSURE THAT SEAT BELT WEBBING IS NOT TWISTED AT INSTALLATION.

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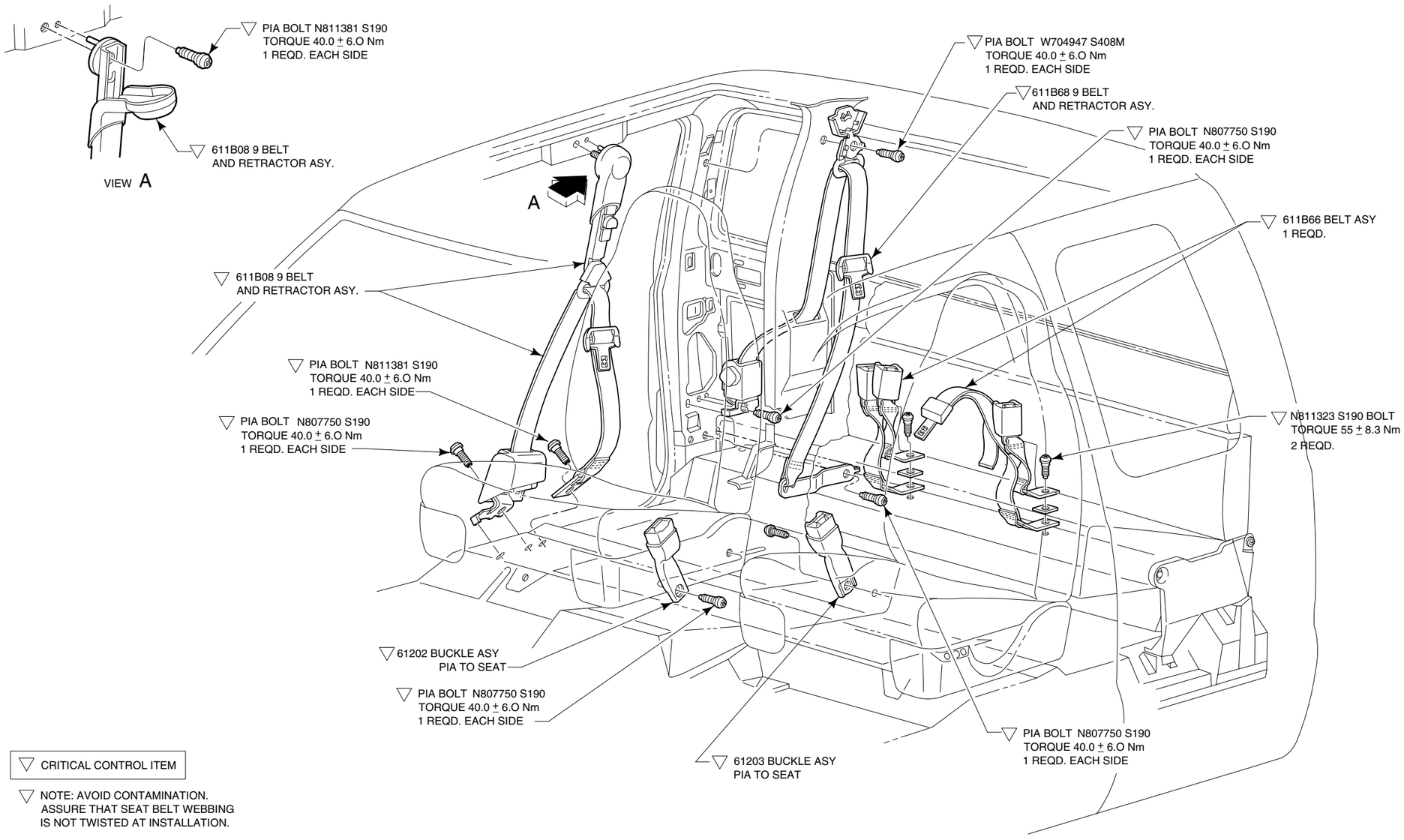
SUPER DUTY F-SERIES FRONT PASSENGER BENCH RESTRAINT SYSTEM - REGULAR CAB



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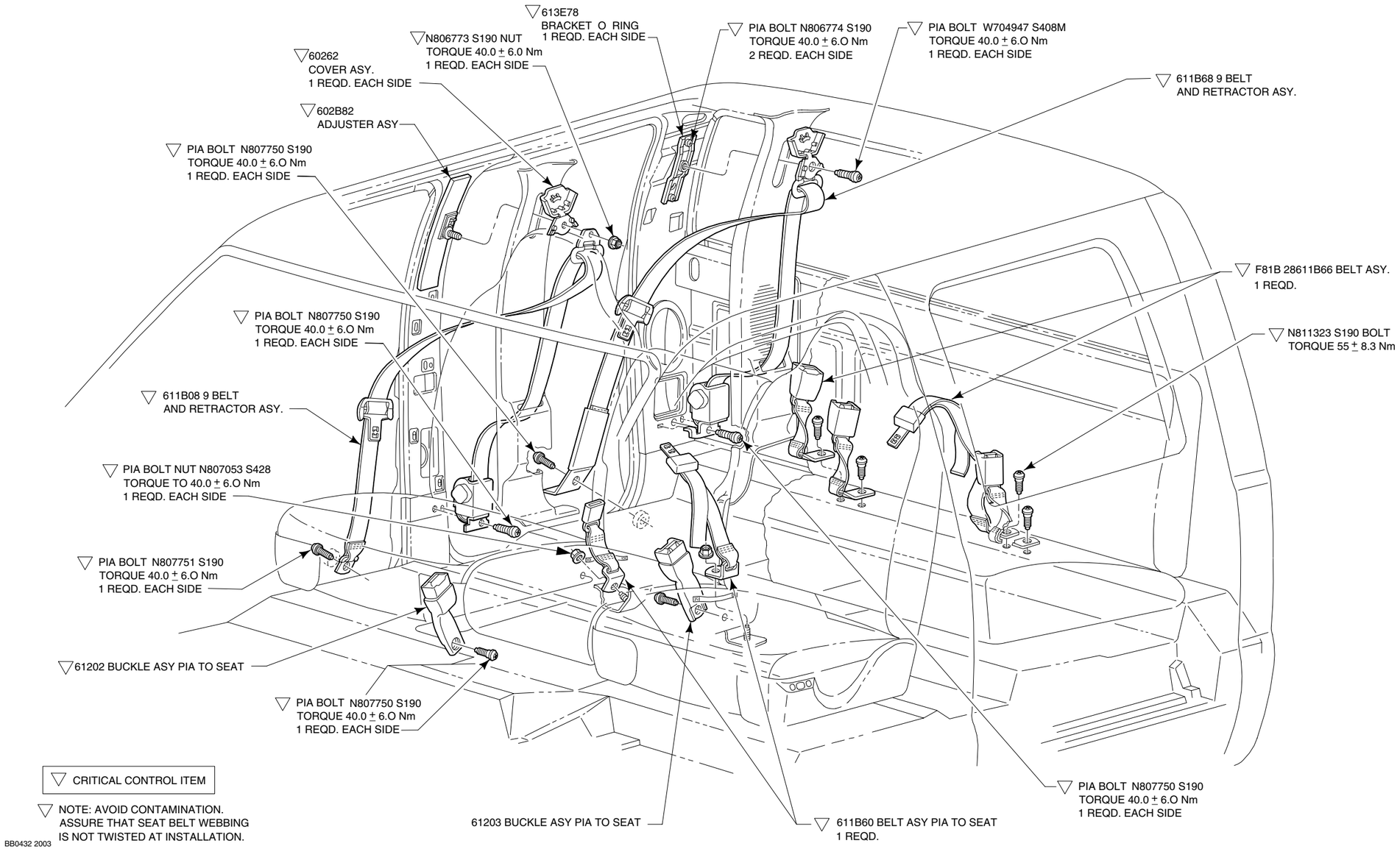
SUPER DUTY F-SERIES FRONT PASSENGER AND REAR SEAT RESTRAINT SYSTEMS - SUPERCAB

OCCUPANT PROTECTION SYSTEMS
SEAT RESTRAINT SYSTEM



SUPER DUTY F-SERIES FRONT PASSENGER AND REAR SEAT RESTRAINT SYSTEMS WITH 40/20/40 SEATS - CREW CAB

OCCUPANT PROTECTION SYSTEMS
AIRBAG SUPPLEMENTAL RESTRAINT SYSTEM

INFORMATION

Ford urges careful consideration of the recommendations that follow. They are based on analyses of component and vehicle tests, actual service situations, and engineering judgments. Disregard of these recommendations may affect the durability, reliability, handling and performance characteristics of a completed vehicle and may result in elevated underbody temperatures, increase the potential for fire, or may affect the safety of the occupants in the event of an accident.

These recommendations are supplemental to U.S. and Canadian Motor Vehicle Safety compliance representations provided in the *Incomplete Vehicle Manual* (IVM). Also, additional information is provided in the *Ford Truck Service Manual* which may be helpful to subsequent stage manufacturers.

The completed vehicle in the “Loaded” condition must not exceed the front GAWR, rear GAWR or the GVWR. (“Loaded” means the completed vehicle weight with the maximum fluid capacity necessary for vehicle operation, plus 150 lb for each designated seating position, and an additional allowance for any cargo weight advertised by the manufacturer). The GAWR and GVWR are on the label affixed to the cover of the *Incomplete Vehicle Manual*.

Subsequent Stage Manufacturers are encouraged to contact the Ford Truck Body Builder Advisory Service if they have any questions concerning these recommendations.

AIRBAG SUPPLEMENTAL RESTRAINT SYSTEM

Some trucks produced by Ford Motor Company are equipped with an Airbag Supplemental Restraint System (SRS). Vehicles equipped with this system will have the words “AIRBAG” and an airbag symbol on the VIN plate located on the top driver-side corner of the instrument panel. System components are shown in their vehicle locations on the following pages.

Included on the vehicle identification number -VIN- plate (visible through the windshield) of the vehicle, manufactured by Ford with a driver’s airbag, are the words “AIR” and “BAG” and a pictogram for the airbag separating the two (see illustration on this page).

BB0538

Detailed system and service information will be found in the *Ford Truck Service Manual* for the appropriate type and model year. Ford Motor Company urges the subsequent stage manufacturers to become familiar with this system prior to modifying vehicles that are so equipped.

CAUTION:

DO NOT REMOVE THE STEERING COLUMN, STEERING WHEEL, AND AIRBAG MODULE AS AN ASSEMBLY FROM THE VEHICLE UNLESS (1) THE COLUMN IS LOCKED TO PREVENT ROTATION, OR (2) THE LOWER END OF STEERING SHAFT IS SECURED (e.g., by wire) IN SUCH A WAY THAT THE STEERING WHEEL CANNOT BE ROTATED.

WARNING:

THE SEAT BELT BUCKLE PRETENSIONER, AIRBAGS, AND ELECTRONIC SENSOR MODULE ARE BAR CODED WITH A UNIQUE SERIAL NUMBER WHICH IS MATCHED TO THE VEHICLE VIN. TO MAINTAIN THE OCCUPANT PROTECTION SYSTEM PERFORMANCE, THE COMPLETED VEHICLE MUST CONTAIN THE SAME SEAT BELT BUCKLE PRETENSIONER, AIR BAGS, AND ELECTRONIC SENSOR MODULE THAT WERE INSTALLED BY FORD MOTOR COMPANY. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY IN THE EVENT OF A COLLISION.

If electrical work is performed in the steering column area, the instrument panel of the air bag system, the system must be deactivated to avoid unwanted inflation of the air bag. To do this, follow the procedure described on this page.

DEACTIVATION PROCEDURE

1. Disconnect all negative battery cable(s), and power supplies (if equipped).
2. Wait 1 minute. This is the time required for backup power supply in diagnostic monitor to deplete its stored energy.

WARNING:

TO AVOID ACCIDENTAL DEPLOYMENT AND POSSIBLE PERSONAL INJURY, THE BACKUP POWER SUPPLY MUST BE DEPLETED BEFORE REPAIRING OR REPLACING ANY AIRBAG SUPPLEMENTAL RESTRAINT SYSTEM (SRS) COMPONENTS. TO DEPLETE THE BACKUP POWER SUPPLY ENERGY, DISCONNECT THE BATTERY GROUND CABLE AND WAIT ONE MINUTE. BE SURE TO DISCONNECT AUXILIARY BATTERIES AND POWER SUPPLIES (IF EQUIPPED).

WARNING:

CARRY A LIVE AIRBAG MODULE WITH THE AIRBAG AND TRIM COVER POINTED AWAY FROM YOUR BODY. THIS WILL REDUCE THE RISK OF INJURY IN THE EVENT OF AN ACCIDENTAL DEPLOYMENT.

WARNING:

DO NOT SET A LIVE AIRBAG MODULE DOWN WITH THE TRIM COVER FACE DOWN.

3. Remove fasteners retaining driver airbag module to steering wheel. Disconnect driver airbag connector and remove the bag from steering wheel. Place the bag on a flat surface with trim cover facing upward. Connect an Airbag Simulator (Part # 105-R0012 in the Rotunda Tool catalog) to the airbag connector on the wire harness in the steering wheel.
4. Disconnect passenger airbag module connector and replace it with an Airbag Simulator (Part # 105-R0012 in the Rotunda Tool catalog) to the airbag connector on the wire harness in the I/P.
5. Reconnect all negative battery cables and power supplies (if equipped).

REACTIVATION PROCEDURE

1. Disconnect all negative battery cable(s) and power supplies (if equipped).
2. Wait 1 minute for backup power supply to deplete stored energy.
3. Remove Airbag Simulator and reconnect driver airbag connector. Position driver airbag on steering wheel and secure with fasteners (10 mm). Tighten fasteners to 2.7-3.7 Nm. [24-32 in-lb].
4. Remove Airbag Simulator and reconnect passenger airbag connector.
5. Reconnect all negative battery cables and power supplies (if equipped).
6. PROVE-OUT the system.

PROVE-OUT SYSTEM PROCEDURE

Prove out system means to turn the ignition switch from OFF to RUN and visually monitor the airbag indicator. The airbag will light continuously for approximately six seconds and then turn off. If an airbag system fault is present, the indicator will either fail to light, remain lit continuously or light in a flashing manner. The flashing manner may not occur until approximately 30 seconds after the ignition switch has been turned from OFF to RUN. This is the time required for the diagnostic monitor to complete the testing of the airbag system. If the airbag indicator is inoperative and an airbag system fault exists, a tone will sound in a pattern of five sets of five beeps. If this occurs, the airbag indicator will need to be serviced before further diagnosis can be done.

E-SERIES ORDERED WITH PASSENGER SEAT/AIR BAG DOOR DELETE OPTIONS

Starting with Job #1 2004, any E-Series vehicle with the Passenger Seat Delete option, RH Door Delete option, or Air Bag Delete option will have a new seat/air bag delete resistor/bracket installed in the front out-board seat pedestal’s mounting hole. The intent of this resistor/bracket is to assure installation of the correct air bag/seat restraint actuation module at the assembly plant.

The builder may need to relocate the resistor/bracket in order to provide a “clear” cab floor in the passenger seat area. It is suggested the following procedure be used:

1. Remove resistor/bracket from current mounting hole.
2. Detach wire harness from rear of cab floor.
3. Remove the pushpin from the bracket and enlarge the mounting hole so that the bracket will slip over the M12 stud.
4. Route and neatly bundle wire harness under drivers seat pedestal.
5. Attach resistor/bracket over outboard rear driver’s pedestal mounting stud, **using an additional M12 nut** (not provided) to retain the resistor/bracket. **Do not install the bracket under the nut retaining the seat pedestal.**

Note: If bundling the wire harness results in an undesirable package, shorten the harness by cutting, splicing with appropriate butt connectors, and protecting with convolute as necessary. Refer to QVM Bulletin Q93 published on the website www.fleet.ford.com/truckbbas.

VEHICLE	DRIVER	PASSENGER
Windstar	Standard Front Optional Side	Standard Front Optional Side
Ranger	Standard Front	Standard Front (Includes deactivation switch except with Crew Cab models)
F150	Standard Front	Standard Front (Includes deactivation switch except with Crew Cab models)
E-Series Wagon	Standard Front	Standard Front
E-Series Vans	Standard Front	Standard Front
E-Series Cutaway/Chassis Cab	Standard Front	Standard Front
E-Series Stripped Chassis	—	—
Super Duty F-Series Pickups	Standard Front	Standard Front (Includes deactivation switch except with Crew Cab models)
Super Duty F-Series Pickup Box Delete and Chassis Cabs	Standard Front	Standard Front (Includes deactivation switch except with Crew Cab models)

E-Series Cutaway vehicles equipped with passenger seat delete option refer to QVM Bulletin Q-93 published on the website www.fleet.ford.com/truckbbas. Bulletin provides instructions on relocating resistor/bracket from passenger seat area to driver seat area.

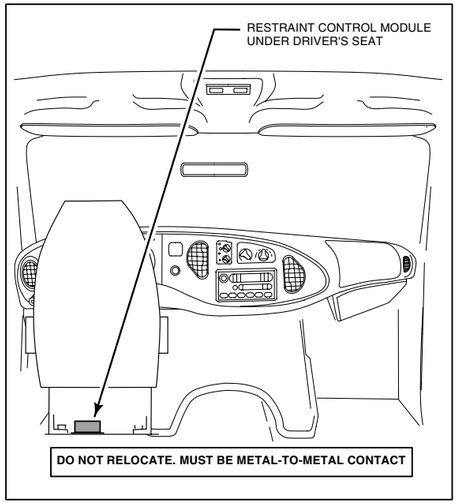


FIGURE A - E-SERIES OCCUPANT PROTECTION ZONE

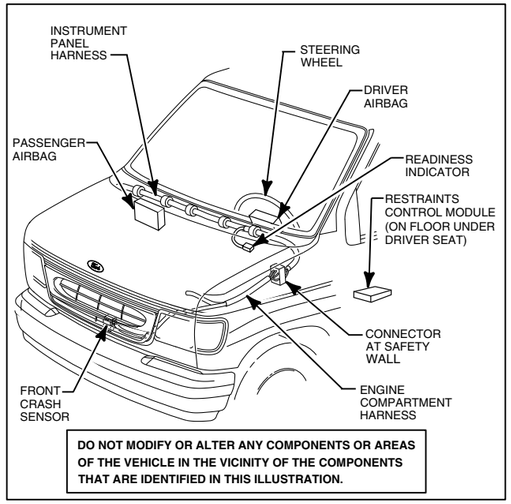


FIGURE B - E-SERIES SUPPLEMENTAL RESTRAINT SYSTEM (AIRBAGS, SENSORS AND WIRING)

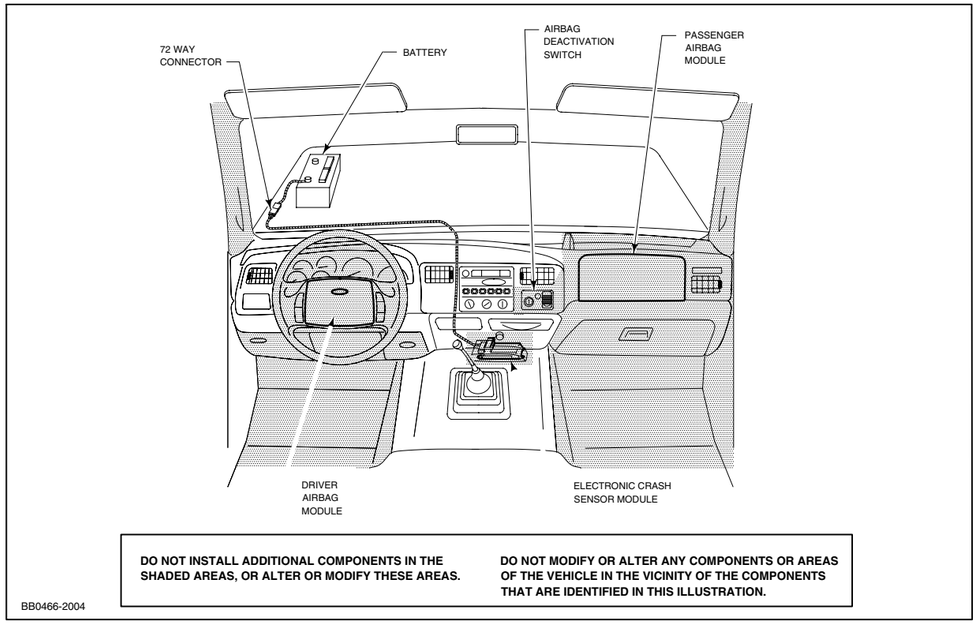


FIGURE C - SUPER DUTY F-SERIES OCCUPANT PROTECTION ZONE

OCCUPANT PROTECTION SYSTEMS
AIRBAG SUPPLEMENTAL RESTRAINT SYSTEM

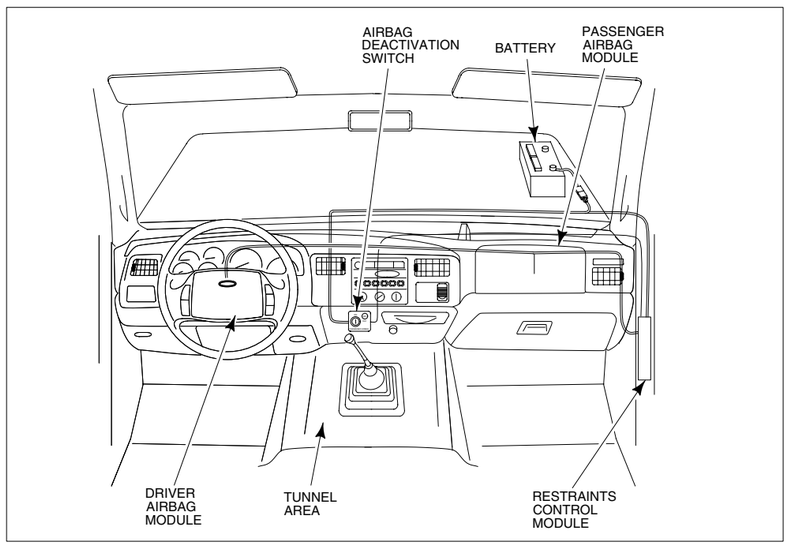


FIGURE A - RANGER OCCUPANT PROTECTION ZONE

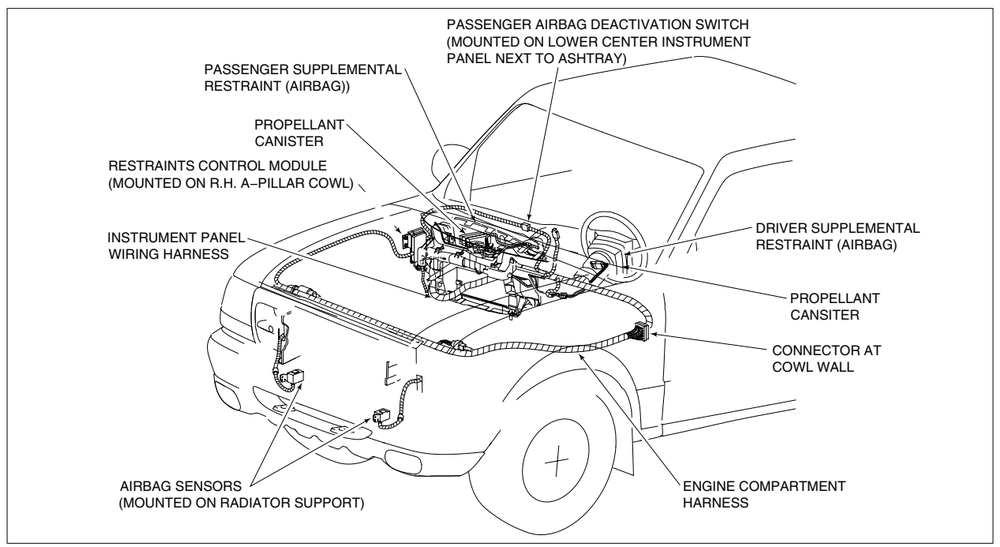


FIGURE B - RANGER SUPPLEMENTAL RESTRAINT SYSTEM

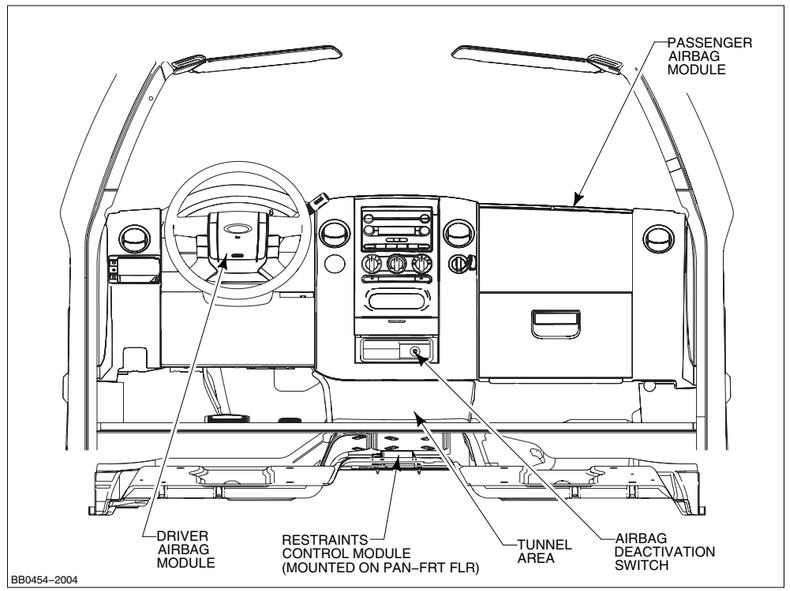


FIGURE C - F-150 OCCUPANT PROTECTION ZONE

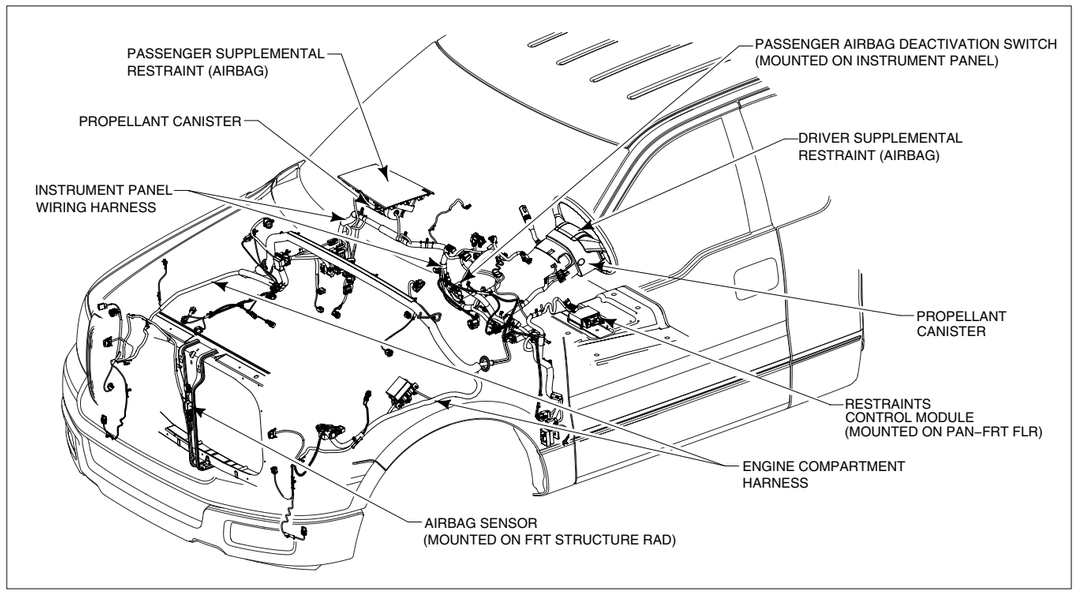


FIGURE D - F-150 SUPPLEMENTAL RESTRAINT SYSTEM (AIRBAGS, SENSORS AND WIRING)

VEHICLE NOISE REGULATIONS

2004 MODEL YEAR

EXTERIOR

The U.S. Federal Government, the Canadian Federal Government, and some states, provinces and municipalities have enacted a variety of noise control laws and regulations which apply to motor vehicles sold or operating within their jurisdictions. Sales Representatives should become familiar with the various sales and user regulations, as required, to alert the individual purchaser. Moreover, the individual purchaser should check and become aware of any applicable regulations. The individual purchaser should be sure that the specifications of the vehicle, which he orders, are appropriate in view of those sales and user noise regulations applicable to his purchase and his anticipated user of that vehicle.

Although vehicles which have GVWRs over 4536 kg (10,000 lb) are designed to comply with Federal Interstate Motor Carrier Noise Emissions Standards, 40 CFR § 325, Ford Motor Company does not represent compliance with this standard under numerous and varying conditions under which such vehicles may be operated.

Furthermore, Ford does not represent compliance of any school bus, stripped chassis or chassis-cowl type vehicles with any noise control law or regulation. Because vehicle noise varies with number of tires on total vehicle combination, tire tread pattern, vehicle load, tire wear and the road surface condition, completed vehicles should not be ordered with lug-type tires.

Vehicles, to which alterations or additions are made that may increase noise emissions, must be ascertained to comply with the applicable noise standards after modifications have been completed by the vehicle modifiers.

EXTERIOR NOISE REGULATIONS APPLICABLE TO SALE OF NEW VEHICLES

The U.S. Environmental Protection Agency (EPA) noise emission standards for medium and heavy trucks in excess of 4536 kg (10,000 lb) GVWR (40 CFR § 205.52) preempts, with certain exceptions, all those state and local noise regulations that are applicable to the sale of such new vehicles, and are not identical to the federal standards. These federal standards, which set a maximum sound emission level 80 dB(A), as measured by the prescribed procedure, are effective in all states, the District of Columbia, Puerto Rico, Virgin Islands, American Samoa, Guam and the Trust Territory of the Pacific Islands. These Federal regulations do not apply to school buses which are required to meet 80 dB(A) in a number of local jurisdictions. They also do not apply to trucks not having a partially or fully enclosed operator's compartment (for example stripped chassis). (See 40 CFR § 205.50, "Applicability" and pertinent definitions in § 205.51. See 40 CFR § 205.55-1 (b) for when incomplete vehicles being completed become subject to the Federal standard.)

SPECIFICATIONS FOR INTERIOR NOISE WHEN BMCS (INTERSTATE COMMERCE) SERVICE IS INDICATED

The Federal Interstate Motor Carrier interior noise standard (49 CFR § 393.94) is applicable to all motor vehicles. This standard requires that the interior sound level at the driver's seating position of any such vehicle not exceed 90db(A), when measured in accordance with the test procedure in 49 CFR § 393.94(c).

Ford Motor Company does not represent that stripped chassis or cutaway vehicles manufactured by Ford Motor Company comply with the Federal Interstate Motor Carrier interior noise standard.

Vehicles subjected to alterations or additions, which may increase interior sound levels, must be ascertained to comply with the interior noise regulation after the modifications have been completed by the vehicle modifiers.

CANADIAN INTERIOR NOISE REGULATION

Trucks and buses over 4536 kg (10,000 lb) GVWR manufactured for use in Canada must meet the noise standard of the Canada Motor Vehicle Safety Standards (Section 1106 (2)) which specifies that the interior sound level at the driver's seating position shall not exceed 90 db(A), as measured in accordance with the test procedure set forth in Section 1106 (2).

Ford Motor Company does not represent that stripped chassis vehicles and vehicles with cut-away operators' compartments comply with the standard.

RADIO FREQUENCY INTERFERENCE (RFI)

The ignition system on your vehicle (if other than a stripped chassis) has been designed to be capable of compliance with RFI requirements established by the Canadian government. However, because Ford has no control over how an incomplete vehicle is completed by subsequent-stage manufacturers, Ford does not represent that the completed vehicle, incorporating the Ford-built components, will comply with those requirements. Any ignition system component (i.e., spark plugs, ignition wiring, coil suppressor assembly, etc.) that is replaced should be replaced by the same Ford Motor Company part number or equivalent, to maintain RFI suppression. Ford Motor Company does not represent that stripped chassis vehicles comply with the standard.

While there are currently no RFI regulations in the United States, specifically applicable to automotive ignition systems, some Ford trucks are built with ignition system components the same or equivalent to those supplied on Canadian vehicles. Ford Motor Company recommends that all ignition system service be performed at a Ford-authorized service facility to help hold RFI emission levels to a minimum.

Devices that emit radio frequency (RF) energy, such as AM/FM radios, mobile telecommunications systems (two-way radios, telephones) and radio-controlled security systems, are subject to the rules and regulations of the Federal Communications Commission (FCC) 47 CFR Parts 2 and 15. Any such system installed in a vehicle should comply with those rules and should be installed only by a qualified technician. In addition, to ensure continued compliance with the FCC's regulations, RF devices must not be modified or changed in a manner not expressly approved by Ford Motor Company.

Mobile communication systems, particularly if not properly installed, may adversely affect vehicle operation. For example, such systems, when operated, may cause the engine to stumble or stall. In addition, such systems themselves may be damaged, or their operation affected by the operation of the vehicle. (Citizens Band [CB] transceivers, garage door openers, and other transmitters whose power output is 5 watts or less, ordinarily will NOT affect vehicle operation.)

Because Ford has no control over the operation or manufacture of such systems, or their installation, Ford cannot assume responsibility for any adverse effects or damage, if this equipment is used.

Similar radio regulations are in place in Canada: see, e.g., Radio Standards Specification RSS-119 and Radio Standards Procedure RSP-100.

VEHICLE NOISE REGULATIONS/EMISSION CONTROL MODIFICATIONS

NOISE CONTROL MODIFICATIONS

All new Ford Motor Company trucks over 4536 kg (10,000 lb) GVWR (other than stripped chassis) manufactured for use in the United States are designed to comply with the U.S. Environmental Protection Agency's Medium and Heavy Truck Noise Emission Standards (40CFR Part 205). Information pertinent to these noise emission standards appears in the *Ford Truck Owners' Guide* and *Maintenance Schedule and Record Log* supplied with each Ford vehicle. Sections of the Guide that specifically relate to the Federal noise regulations are:

1. A statement entitled "Tampering with Noise Control System Prohibited," prescribed by Environmental Protection Agency regulation (40 CFR § 205.58-2(b)), and a list of acts, commission of any of which may be presumed to constitute tampering (Tampering List).
2. Instructions for the maintenance, use and repair of the vehicle to minimize noise emission degradation * and
3. A section reserved for recording what maintenance was done, by whom, where and when.

* *For trucks powered by diesel engines, the engine manufacturer's operation and maintenance manual, supplied with the vehicle, should also be consulted.*

In planning vehicle modifications, the Tampering List should be consulted to identify those parts or systems where the alteration or removal is likely to affect the truck's compliance with the Noise Emission Standards. In addition, prospective modifications not mentioned in the Tampering List may increase the noise emissions of the truck to an impermissibly high level. The Federal regulations require regulated trucks completed by a subsequent-stage manufacturer for use in the United States, to conform to these standards. The Federal Noise Control Act of 1972, as amended, provides civil penalties for distribution in commerce by a manufacturer of non-complying trucks, and criminal penalties where such distribution is willful or knowing. Advice concerning compliance with noise regulations should be obtained from your legal counsel.

A compliance label (see sample) is affixed to each Ford truck regulated by the Federal Noise Regulations.

VEHICLE NOISE EMISSION CONTROL INFORMATION

FORD MOTOR COMPANY

The Vehicle Conforms to U.S. Regulations for Noise Emission Applicable to Medium and Heavy Trucks.

The Following acts or the causing thereof by any person are prohibited by the Noise Control Act of 1972: (A) The removal or rendering inoperative, other than for purposes of maintenance, repair or replacement, of any noise control device or element of design (listed in the owner's manual) incorporated into this vehicle in compliance with the Noise Control Act; (B) The use of this vehicle after such device or element of design has been removed or rendered inoperative.

'Month and Year of Mfr.'
SAMPLE

BB0526

EMISSION CONTROL MODIFICATIONS

All new Ford Motor Company trucks, vehicles, and engines are certified by the U.S. Environmental Protection Agency and/or by the California Air Resources Board (CARB) for compliance with applicable government emission control regulations. A copy of the appropriate *Ford Truck Owner's* or *Operator's Manual and Warranty Facts Booklet* must be installed in every vehicle prior to sale to the ultimate purchaser in order to provide emission systems warranty and maintenance schedules.

CAUTION

2004 MODEL YEAR VEHICLES ARE EMISSION CERTIFIED FOR REGISTRATION IN SPECIFIC AREAS OF THE UNITED STATES. FOR EXAMPLE, **VEHICLES CERTIFIED AND LABELED FOR SALE IN CALIFORNIA MAY NOT BE SOLD IN THE STATES THAT REQUIRE FEDERALLY CERTIFIED VEHICLES AND VEHICLES CERTIFIED TO FEDERAL STANDARDS MAY NOT BE SOLD IN STATES THAT REQUIRE CALIFORNIA CERTIFIED VEHICLES.** IT IS THE SUBSEQUENT STAGE MANUFACTURER'S RESPONSIBILITY TO PURCHASE A VEHICLE CERTIFIED FOR THE STATE/AREA IN WHICH THE VEHICLE WILL BE SOLD. EPA HAS STATED THAT UNDER CERTAIN CIRCUMSTANCES THEY WILL NOT ENFORCE THESE REQUIREMENTS. FOR FURTHER GUIDANCE, CONSULT EPA'S "POLICY ON CROSS BORDER SALES OF CALIFORNIA VEHICLES."

Modifications, revisions or removal of components may affect the emissions certification status of the vehicle and could cause the body builder, installer or any other subsequent modifier to be considered a manufacturer for purposes of emissions certification, warranty and recall. Modification of the emission control system may result in civil or criminal liability under federal, state, or provincial law. To avoid any question of certification coverage, approval of any modification, revision or removal of components should be sought from the Environmental Protection Agency, California Air Resources Board or Canadian Department of Transportation, as applicable. Advice concerning compliance with applicable standards and regulations should be obtained from your legal counsel.

EMISSION COMPLIANCE

When ordering a vehicle, the body builder must ensure that the vehicle emissions system purchased complies with appropriate emission regulations. Failure to order such a vehicle could result in the inability to register the vehicle in the area of intended use. Examples of areas requiring specific emissions certification are Altitude, SLA-Civil, California, Federal and states adopting California Emissions Regulations.

FUEL VAPOR RECOVERY

The California Air Resources Board has adopted regulations "Specifications for Fill Pipes and Openings of Motor Vehicle Fuel Tanks" requiring that all 1977 and later model year gasoline-powered motor vehicles offered for sale in that state meet certain specifications for fill pipes and fuel tank openings.

EMISSION CONTROL MODIFICATIONS

2004 MODEL YEAR

Curb Weight and Frontal Area Restrictions

Vehicle modifiers that add weight to a vehicle or increase the frontal area of a vehicle prior to sale and delivery to the ultimate purchaser may be considered manufacturers for emission purposes (including responsibility for emissions warranty, recall and in-use compliance) and may be required to recertify the vehicle for compliance with applicable federal or California emissions standards.

Federally Certified Vehicles with a GVWR of 8500 Lb or Less

According to U.S. Environmental Protection Agency (EPA) guidance, for all federally certified vehicles and trucks (8500 lb GVWR or less), a vehicle modifier will not be deemed to be a manufacturer, and will not be required to obtain a separate Certificate of Conformity for a modified vehicle, if the following conditions are met:

1. The modified vehicle conforms in all material respects to the design specifications in the original manufacturer's application for certification; and
2. The weight of the modified vehicle, including the weight of fuel at nominal tank capacity, is no more than 500 lb above the maximum vehicle weight.

"Maximum vehicle weight" for a given vehicle is determined by (A) Subtracting 300 lb from the highest loaded vehicle weight (see 40 CFR 86.079-2 for loaded vehicle weight definition and the table at 40 CFR 86.129-80) associated with the test weight listed in the Application for Certification for the vehicle in question; and (B) Adding the weight of all options (in the case of mutually exclusive options only the weight of the heavier option is used) that are offered by the original manufacturer for the applicable truck line that were not included in the curb weight reported in the Application. Vehicle modifiers can refer to the *Ford Source Book* to determine loaded vehicle weights and option weights for Ford vehicles.

EPA guidance provides that no frontal area restrictions will apply to secondary manufacturers that comply with the conditions listed above.

NOTE: The information above is derived from guidance contained in U.S. EPA MSAPC Advisory Circular No. 64 (March 7, 1977) and a letter dated July 13, 1979 from Charles N. Freed, EPA Director, Mobile Source Enforcement Division to Maurice H. McBride, Legal Counsel, Recreational Vehicle Industry Association. Vehicle modifiers should refer to these documents directly for specific guidance regarding whether vehicle modifications are within the scope of the original application for certification. Vehicle modifiers should periodically consult with legal counsel to determine whether these documents have been amended or superseded and whether additional guidance exists.

Vehicles (14,000 lb GVWR or less) Certified for Sale, Registration or Use in California

Modifications to passenger cars, trucks, and vehicles (14,000 lb GVWR or less) intended for sale, registration, or use in California will be deemed to be within the original emissions certification only if such modifications do not:

1. increase vehicle weight more than 10 percent above the curb weight, increase frontal area more than 10 percent, or result in a combination increase of weight plus frontal area of more than 14 percent; or
2. include changes in axle ratio, tire size, or tire type resulting in changes in the drivetrain ratio of more than 5 percent; or
3. include any modification to the emission control system.

Modified vehicles that do not satisfy these conditions may not be sold to an ultimate purchaser, offered or delivered for sale to an ultimate purchaser, or registered in California unless the modified vehicle is certified by the California Air Resources Board pursuant to applicable emissions requirements. The vehicle modifier is responsible for obtaining such certification. Refer to "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Trucks, and Vehicles."

IMPORTANT:
The information above is provided as guidance only. Vehicle modifiers are responsible for compliance with applicable emissions, regulations, including recertification if necessary. Modifiers should refer to the documents referenced above for additional guidance. Questions regarding the above requirements should be directed to your legal counsel, the EPA, or the California Air Resources Board. **In no case can vehicle weight exceed the UVW in Table A, page 200 (Super Duty F-Series), or Table A, page 201 (Ranger), without also recertifying for F/CMVSS No. 105, 135, 204, 208, 212, 219, 301, and 303.**

Incomplete vehicles using engines which are certified as heavy duty engines will not have frontal area or curb weight restrictions based on exhaust emissions regulations. It is important, however, that the final stage manufacturer observe vehicle restrictions from vehicle safety requirements, etc., which are located in the *Incomplete Vehicle Manual*.

WARNING

Any modification should not cause a vehicle to fit into a different weight class, (See Safety/Emission, page 25 for a discussion against revising GAWR). Doing so may require recertification to both FMVSS and Emissions Standards. Also, this type of change voids Ford's warranty.

Modifications not specified by Ford, such as changes to the exhaust system, tire size, axle ratio, fuel system, etc., could adversely affect emissions performance of the vehicle and require emissions recertification by the modifier. More details are shown below.

Light-Duty Trucks/Medium-Duty Trucks/Some Heavy-Duty Trucks – Chassis Certified

Includes Ranger, Windstar, E-Series, and F-150 up through 3856 kg (8500 lb) for Federal, California, and Canada.

Examples of emission related parts:

- Engine Assembly
- Air Intake System including Air Cleaner, Duct, Valve, Heat Stove, and Cold Air Inlet Tube
- All EGR, Catalytic Converter(s), Thermactor, or any other emission control system components[3/4/]
- Transmission including Vacuum Control System
- Axle Ratio
- Tire Size (other than available options)
- Fuel Pump and Lines
- Fuel Tank[5/6/]
- Fuel Economy Rating (as printed on vehicle invoice as applicable[7/]
- Filler and Vent Tube Assembly and Hose[5/6/8/]
- Vapor Control Orifice and/or Float Valve Assembly
- Vapor Control Orifice Seal[5/]
- Vapor Delivery Lines/Hoses/Clamps[5/]
- Fuel Vapor Purge Line[5/]
- Fuel Filler Pipe, Cap, and surrounding Sheet Metal[5/6/8/]
- Carbon Canister(s) and Hoses[5/]
- Exhaust Inlet and Outlet Pipe and Attaching Nuts[8/]
- Exhaust System Joint Clamps/Suspension/Bracket Assemblies[3/]
- Muffler[3/4/]
- Tailpipe[3/4/]
- Important Vehicle Information Label
- Emission Control Information Label[2/]

Heavy-Duty Engine / Vehicles – Gasoline Powered and Diesel Powered – Engine Certified

Includes all vehicles over 8500 lb GVWR, both Federal and California Medium-Duty vehicle category.

Examples of emission related parts:

- Engine Assembly[10/]
- Fuel System
- Air Intake System, including Air Cleaner, Duct, Valve, Heat Stove, and Cold Air Inlet Tube
- All EGR, Catalytic Converter(s), Thermactor or any other emission control system components[3/4/]
- Exhaust Inlet and Outlet Pipes[3/4/]
- Muffler[3/4/]
- Tailpipe[3/4/]
- Important Engine Information Label
- Emission Control Information Label[2/]
- All gasoline powered units require an evaporative emission control system. Damage to or mislocation of any of the following elements of the evaporative emission control system may render the system inoperative, may invalidate the vehicle emission control system certification, and may result in the release of flammable gasoline fumes.
- Fuel Tank[5/6/]
- Fuel Filler Pipe and Vent Tube Assembly, Hose, Cap, and surrounding sheet metal[5/6/8/]
- Vapor Control Orifice Seal[5/]
- Vapor Delivery Lines/Hoses/Clamps[5/]
- Fuel Vapor Purge Line[5/]
- Carbon Canister(s) and Hoses[5/]
- Vapor Seal in Fuel Tank
- Fastener Seals on All Components Attached to Fuel Tank
- Vapor Control Valves, Solenoids, and Related Wiring in Engine Compartment or Adjacent Thereto
- Vehicle Emission Control Label 49 States Only[9/]

EMISSION CONTROL MODIFICATIONS

Heavy-Duty Engine / Vehicles – Gasoline Powered and Diesel Powered (Cont'd)

1/ For important information regarding radio frequency interference (RFI), see Radio Frequency Interference on pages 198 & 199. Note particularly that Canada has RFI regulations.

2/ **EMISSION CONTROL INFORMATION LABEL**
To meet United States Environmental Protection Agency regulations, the important vehicle information (tune-up and fuel tank capacity) labels must be affixed in a location that is readily visible after installation and in such a manner that it cannot be removed without destroying or defacing the label. The label shall not be affixed to any equipment that is easily detached from such vehicle.
When emission control labels are supplied but not attached to the vehicle (i.e., tune-up label or fuel tank label), they must be permanently mounted in a readily visible location to meet the preceding requirements. In addition, whether the label is already affixed or to be affixed, no components shall be installed which visibly obscure the label in any way that fails to satisfy the visibility requirements described in the California Emission Control Label Specifications.

CALIFORNIA FUEL VAPOR RECOVERY

California regulations require that the vehicle fuel systems be designed to accommodate a vapor recovery fueling nozzle including unobstructed access to the fill pipe. Fuel filler pipes installed per the sketches on page 72 for E-Series and pages 131-132 for Super Duty F-Series, will comply with the "Specifications For Fill Pipes and Openings of Motor Vehicle Fuel Tanks" referenced in Title 13 California Administrative Code provided no part of the aftermarket body, as installed, intrudes within a 254 mm [10 in] radius cylinder which has its axis parallel to the ground, passing through point "Z" and extends outward from the Ford supplied fuel pipe housing component. The fuel pipe housing component is shown on the referenced figures and is attached to the aftermarket body via 4.76 mm [0.188 in] diameter rivets. Fuel filler pipes installed, using the alternative bracket shown in the sketches on Super Duty F-Series, pages 131-132, will comply with the above California vapor recovery regulations provided the aftermarket body does not interfere with the access zone as described by the California Air Resources Board, and the areas adjacent to this opening cannot foreseeably damage the nozzle bellows or face plate of nozzles during insertion, latching, disposing, or removal.

CALIFORNIA MOTOR VEHICLE EMISSION CONTROL LABEL

To meet California emission certification regulations, the Emission Control Information (tune-up) label must be welded, riveted, or otherwise permanently attached to an area within the engine compartment or to the engine in such a way that it will be readily visible to the average person after installation of the engine in a vehicle. In selecting an acceptable location, the manufacturer shall consider the possibility of accidental damage (e.g., possibility of tools or sharp instruments coming in contact with the label). The label shall be affixed in such a manner that it cannot be removed without destroying or defacing the label, and shall not be affixed to any part which is likely to be replaced during the vehicle's useful life. For motor vehicles rated at 3856 kg (8500 lb) GVWR or less, the label shall not be affixed to any equipment which is easily detached from the vehicle. The tune-up label must include the heading "Important Vehicle Information" for Medium-Duty trucks. As used in these specifications, readily visible to the average person shall mean that the label shall be readable from a distance of 460 cm [18 in] without any obstructions from vehicle or engine parts (including all manufacturer available optional equipment), except for flexible parts, (e.g., vacuum hoses, ignition wires). Alternately, information required by these specifications to be printed on the label shall be no smaller than 8 point type size provided that no vehicle or engine parts, (including all manufacturer available optional equipment), except for flexible parts that can be moved out of the way without disconnection, obstruct the label.

Completed vehicles for retail sale in California require a machine-readable vehicle identification number (VIN) bar-code label made of paper, plastic, metal, or other permanent material which shall be affixed in a readily visible location to either the door-latch post next to the driver's seating position, the door edge that meets this door-latch post, or above the instrument panel in a location clearly visible through the lower left corner of the windshield.

- All Incomplete Vehicles except Stripped Chassis Type Vehicles will conform to this standard.
- Stripped Chassis Type Vehicles:
  Conformity with CARB Motor Vehicle Emission Control Label specifications for VIN label is not substantially affected by the design of this incomplete vehicle. Accordingly, Ford Motor Company makes no representation as to conformity with this requirement. To assist a subsequent stage manufacturer with conforming to this specification, Ford is providing a label which will accompany the *Incomplete Vehicle Manual* inside the protective plastic bag located in the dunnage box.

For the VEC† and VIN labels, sufficient clearance shall be provided to use a non-contact bar-code Reading Wand. For the tune-up label and vacuum hose routing diagram label, the label and any adhesives used shall be designed to withstand, for the vehicle's total expected life, typical vehicle environment conditions in the area where the label is attached. Typical vehicle environmental conditions shall include, but are not limited to, exposure to engine lubricants and coolants (e.g., gasoline, motor oil, brake fluids, water, ethylene glycol), underhood temperatures, steam cleaning, and paints or paint solvents.

To meet U.S. Environmental Protection Agency important engine regulations, the Vehicle Emission Control Information of the Important Vehicle Information label (also referred to as the tune-up label) must be affixed in a readily visible location. The tune-up label must include the heading "Important Vehicle Information" or "Important Engine Information". See sample labels on the following page.

When the tune-up label is supplied detached from the engine (with the operator's manual), it must be permanently mounted in a readily visible location to meet the preceding requirements. In addition, whether the label is already affixed or to be affixed, no components shall be installed which visibly obscure the label in any way such that the preceding requirements are not satisfied.

3/ Some model trucks of Ford Motor Company built since 1981 may exhibit higher engine compartment and exhaust system temperatures in some operating modes than in previous model years. Components, including exhaust heat shielding systems, have been installed on some vehicles in our assembly plants in an effort to provide greater protection against such temperatures. Subsequent manufacturers are responsible for providing thermal protection for any structure and/or equipment added to the vehicle and **should not** remove any components and/or exhaust heat shielding installed on the vehicles by Ford.

4/ The back pressure at the exhaust manifold **must not** be changed, and vehicle noise intensity (dbA) **must not** be allowed to increase. Catalytic converter **must not** be relocated.

5/ If a subsequent manufacturer desires to modify or add to the evaporative emission control system, or add permanent gasoline fuel tank(s) or an evaporative emission control system to a vehicle required to have an evaporative emission control system, the subsequent manufacturer is responsible for installing an appropriate evaporative emission control system. U.S. Environmental Protection Agency (EPA) approval and California Air Resources Board (CARB) approval (for all vehicles which will be delivered for sale and primary use in California) must be obtained by the subsequent manufacturer for any evaporative emission control system installed or modified by the subsequent manufacturer.

6/ **Must not** be altered such that CARB fuel vapor recovery regulations are not met.

7/ May not be removed until after sale to ultimate customer. Also see Frontal Area and Curb Weight considerations (above).

8/ Any rerouting or change in materials cannot be made unless approval is obtained from the California Air Resources Board (CARB) and/or the U.S. Environmental Protection Agency (EPA). Unleaded fuel filler pipe restrictions may not be removed.

9/ To meet U.S. EPA Regulation, the Vehicle Emission Control Information label must be affixed in a readily visible location. See sample labels on the following page.

10/ The check engine light is required by emissions regulations. It is installed by Ford Motor Company in all vehicles except the commercial stripped chassis. For this vehicle, it is located in the instrument cluster shipped in the dunnage box. The final stage manufacturer must install this light. For information regarding installation of Check Engine Warning Light to the E-350 Stripped Chassis model, see page193, adding Lights and Electrical Devices.

† Vehicle Emission Control

EVAPORATIVE EMISSIONS

All Ford Trucks are required to comply with evaporative emissions requirements established by the U.S. Environmental Protection Agency or the California Air Resources Board. Production fuel systems supplied on incomplete vehicles manufactured by Ford Motor Company comply with applicable requirements. **If the subsequent manufacturer adds to or modifies the fuel system in any manner, it becomes that manufacturer's responsibility to assure compliance with the applicable Federal or California emissions standards.**

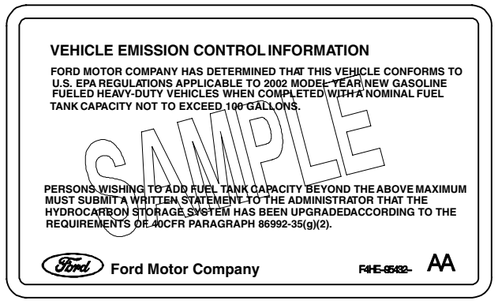
MALFUNCTION INDICATOR LIGHT (MIL)

The MIL light is used to indicate malfunctions of the Electronic Engine Control System and certain emissions related components. For all incomplete vehicles **except** Stripped Chassis (which is not equipped with an instrument panel), it is Ford installed and operational.

The Stripped Chassis vehicle has the warning light installed in the instrument cluster, which is shipped in the dunnage box. If an alternate instrument cluster is utilized, the final stage manufacturer must install an operational light in the instrument cluster. This light must glow amber and display the message "Service Engine Soon" or "Check Engine". It should be recognized that this light is a requirement of emission certification.

POWER TAKE-OFF CIRCUIT

An underhood wire labeled "Power Take-Off Circuit" is provided to minimize the inadvertent illumination of the "Service Engine Soon Light" while the PTO is engaged. See Figure A, page 187 of this book for the circuit location. Connect the underhood wire to the Power Take-Off Light Circuit as instructed on page 187 and isolate the wire labeled "Power Take-Off Circuit" from the solenoid to prevent damage to the Power Control Module (PCM).



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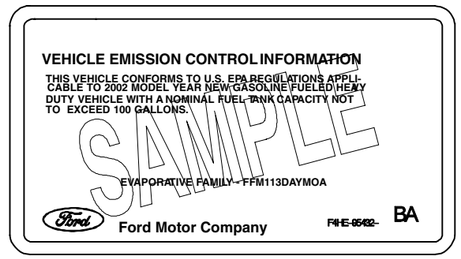
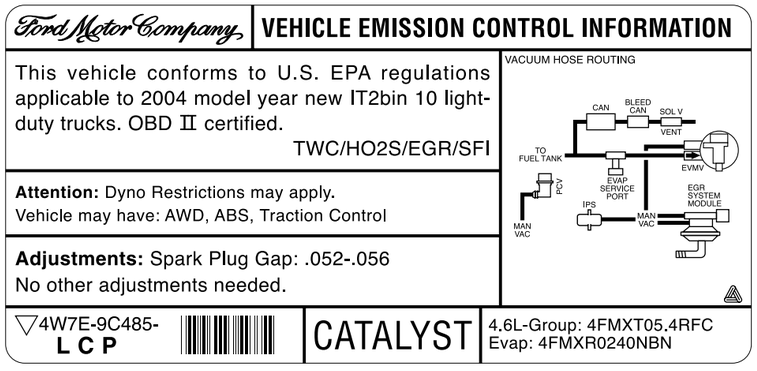




EMISSIONS COMPLIANCE GUIDELINES
NON-OEM FUEL TANK MODIFICATIONS

These guidelines are applicable to those tanks designed to replace the Original Equipment Manufacturer (OEM) fuel tank for the purpose of increasing fuel capacity or to accommodate modifications to the vehicle. These tanks differ in design from the OEM tanks in terms of size, tank material, shape, location or purge strategy. Auxiliary fuel tanks are those tanks added on to the existing OEM tank(s) in order to increase the vehicle's fuel capacity.

WARNING:
Prohibitions Against Uncertified Vehicles, Devices and Tampering

Changes to the size, material, or shape of a fuel tank may cause the certified vehicle to exceed applicable evaporative emissions or not comply with OBD-II monitoring requirements. Such changes may constitute tampering. Changes made to accommodate the installation of non-OEM fuel tanks may also constitute tampering; these include changes in the Filler and Vent Tube Assembly and Hose, Fuel Vapor Purge Line, Vapor Control Orifice and/or Float Valve Assembly, Vapor Delivery Lines/Hoses/Clamps, etc.

Ford vehicles are certified as compliant with California's OBD-II (On-Board Diagnostic II) requirements. These requirements (among other diagnostic tests) check the evaporative emission control and fuel tank system for leaks. A decrease or increase in tank size or change in material and shape, may degrade the function of the evaporative leak monitor. Further, decreases below the 25 gallon threshold would make the vehicle ineligible for an alternative to the new 0.020" threshold. The 2004 Freestar with a 26 gallon tank is certified. Degrading of the evaporative leak detection monitor may constitute tampering.

Violation of the applicable Federal, State or Canadian Provincial Laws prohibiting tampering may result in civil or criminal liability.

Exemptions from Tampering Prohibitions for Fuel Tank Modifications

Only those modifications to the evaporative emission control system (which includes the fuel tank) or OBD-II system that are specifically approved or certified by EPA and/or CARB may be exempted from these tampering prohibitions. In general, to obtain an exemption, the aftermarket manufacturer or converter must demonstrate that the replacement or auxiliary fuel tank does not reduce the effectiveness of the vehicle's OBD-II and evaporative emission control systems. This demonstration may require an evaluation using the Federal Test Procedure and enhanced evaporative system test procedures to ensure compatibility with OBD-II system requirements as well as compliance with the applicable evaporative emission standards.

Any conversion made to the vehicle must comply with the applicable Federal and California on-board diagnostic (OBD-II) system regulations. Any changes that potentially affect the OBD-II system must be reported to the Agencies (EPA and/or CARB) for their review and approval.

General Information Relating to EPA/CARB Approval of Aftermarket Conversions

Any conversion made to the vehicle must comply with the applicable Federal and California Emission regulations and laws including EPA's Tampering Prohibition (See EPA Mobile Source Enforcement Memorandum 1A and Addendum thereto as revised at 63 FR 32878) or obtain an "Exemption for Aftermarket from Tampering Prohibition" under Subpart F, 40CFR85. For California, please refer to CARB Mail Out #96-27, subject: "Sales and Installation of Replacement (and Auxiliary) Fuel Tanks", dated September 9, 1996. (See the Section of this Layout Book entitled "Vehicle Noise Regulations/Emissions Control Modifications" for a further explanation of the potential liabilities for the modifier.)

CARB Website

To apply for specific VC 27156 exemptions from the ARB for aftermarket conversions including non-OEM fuel tank replacement, contact Ms. Rose Castro, Manager, Aftermarket Parts Section, at 626-575-6848 or e-mail at rcastro@arb.ca.gov. CARB consumer information on aftermarket performance and add-on parts can be found at the following website:
http://www.arb.ca.gov/msprog/aftermkt/aftermkt.htm

Website

To apply for an exemption from the tampering provisions of the Clean Air Act, contact Mr. Steven Albrink (albrink.steve@epa.gov) on 202-564-8997. EPA information concerning the conditions that must be satisfied to obtain an EPA exemption for an aftermarket conversion from the tampering prohibition contained in Section 203 of the Clean Air Act can be found at the Code of Federal Regulations and using the search option: http://www.access.gpo.gov/nara/cfr/.

Ford and SEMA Website

Ford Motor Company and the Specialty Equipment Market Association (SEMA) have established a Powertrain Technology Initiative (PTI) for OBD-II related products. PTI provides manufacturers of performance aftermarket equipment with the opportunity to obtain custom-developed software calibrations needed for the proper use and installation of aftermarket products which could affect emissions, OBD-II compliance, emission compliance and durability, fuel requirements, exhaust temperatures, etc. If these categories are significantly affected, a calibration modification may be appropriate. PTI has established a website by which an aftermarket converter can learn how to obtain the custom calibration for its conversion. The PTI website explains the purpose of the PTI program, how PTI works, basic criteria for approval, what are the steps and expected turnover time, and what are the costs. The PTI website is: http://www.sema.org/

General OBD-II Monitoring Requirements:

The EPA has regulations in place establishing requirements for on-board diagnostic (OBD-II) systems on light duty vehicles and light duty trucks beginning with the 1994 model year. The purpose of the OBD-II system is to assure proper emission control system operation for the vehicle's lifetime by monitoring emission-related components and systems for deterioration and malfunction.
NOTE: California has slightly different OBD-II requirements from EPA's OBD-II requirements; however, systems designed to meet California's requirements are also accepted by EPA as meeting the federal requirements.

What is OBD-II and How Does It Work?

Automobile manufacturers developed the first OBD-II systems in the early 1980's as electronic systems replaced mechanical systems. The engines in today's vehicle are largely electronically controlled. Sensors and actuators sense the operation of specific components (e.g., the oxygen sensor) and actuate others (e.g., the fuel injectors) to maintain optimal engine control. An on-board computer, known sometimes as a "powertrain control module" or an "engine control unit" controls all of these systems.

With proper software, the on-board computer is capable of monitoring all of the sensors and actuators to determine whether they are working as intended. It can detect a malfunction or deterioration of the various sensors and actuators, usually well before the driver becomes aware of the problem through a loss in vehicle performance or drivability. The sensors and actuators, along with the diagnostic software in the on-board computer, make up what is called "the OBD-II system".

OBD-II monitoring requirements include the following systems: catalyst, misfire, evaporative, secondary air, air conditioning system refrigerant, fuel, oxygen sensor, Exhaust Gas Recirculation (EGR), Positive Crankcase Ventilation (PCV), thermostat monitoring, and comprehensive component monitoring.

Sources of Information on OBD-II Regulations:

For a comprehensive description of the regulations governing OBD-II systems, visit the EPA and CARB websites shown below.
(EPA) http://www.epa.gov/otag/obd.htm
(CARB) http://www.arb.ca.gov/msprog/obdprog/obdprog.htm

U.S. AND CANADA SAFETY STANDARDS

2004 MODEL YEAR

The National Traffic and Motor Vehicle Safety Act of 1966 (United States) and the Motor Vehicle Safety Act (Canada) and the standards and regulations issued under authority of these laws impose responsibilities on dealers, intermediate and final stage manufacturers, and vehicle alterers and modifiers, as well as on Ford Motor Company. This section identifies some of these responsibilities. **It is not intended to be comprehensive, nor to provide advice on legal questions applicable to individual situations.** Advice on matters involving particular factual situations should be obtained from your legal counsel or from the National Highway Traffic Safety Administration (United States) or the Ministry of Transport (Canada).

Included among these safety standards and regulations re those applicable to trucks, buses, multipurpose passenger vehicles, passenger cars, vehicles manufactured in tow or more stages, and to certain types of motor vehicle equipment offered for sale in the United States or Canada.

Completed vehicles as manufactured by Ford Motor Company and Ford Motor Company of Canada, Limited, are certified as conforming to all applicable Motor Vehicle Safety Standards issued under the National Traffic and Motor Vehicle Safety Act of 1966 (U.S.) or the Motor Vehicle Safety Act (Canada).

Where the vehicle is incomplete, a dealer or body builder who, after delivery and before retail sale, completes the vehicle is responsible for certification that the completed vehicle conforms to applicable U.S. or Canada Motor Vehicle Safety Standards. Dealers and body builders may be subject to substantial penalties if they sell or offer for sale vehicles which do not conform to all applicable U.S. or Canada Standards.

Certification-related information concerning Ford Motor Company completed vehicles and incomplete vehicles follows:

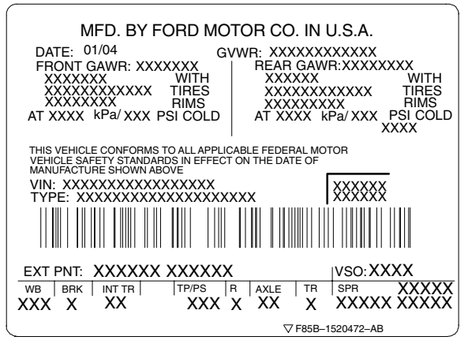
COMPLETED VEHICLES

All completed vehicles manufactured by Ford Motor Company and Ford Motor Company of Canada, Limited, for use on the public roads are provided with safety compliance certification labels affixed to the vehicles at the assembly plants. These labels contain information required by Part 567 of Title 49 of the Code of Federal Regulations for completed vehicles offered for sale in the United States and by Section 6 of the Canadian Motor Vehicle Safety Regulations for completed vehicles offered for sale in Canada. This information includes, among other things, the Gross Axle Weight Rating (GAWR) for each axle of the vehicle and the Gross Vehicle Weight Rating (GVWR) of the total vehicle. The labels also list the tire and rim data required by FMVSS or CMVSS No.120, Tire Selection And Rims For Motor Vehicles Other Than Passenger Cars.

Completed vehicles, manufactured by Ford, for sale in the United States, will have a label similar to the one shown on this page (the label is located on the driver's door latch pillar).

The Canadian Motor Vehicle Safety Act and Regulations require: (1) display of the National Safety mark (below); (2) the expression "Canada Motor Vehicle Safety Standards" or "CMVSS"; and (3) "Poids Nominal Brut du Vehicule" or "PNBV" on vehicles manufactured for sale in Canada. A label containing this information is shown on this page.

Completed vehicles manufactured by Ford for sale in Canada, will have a label similar to the one shown on this page containing the Canadian National Safety Mark or a separate National Safety Mark label.



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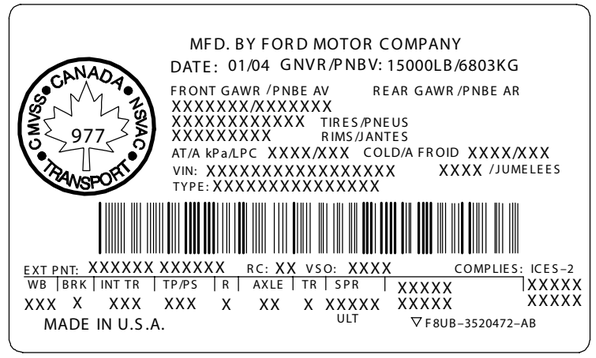
VEHICLES 4536 kg (10,000 lb) GVWR AND LESS

Trucks, buses and MPVs having GVWRs of 4536 kg (10,000 lb) and less manufactured by Ford Motor Company in the current model year are certified as complying with the requirements of all applicable Federal U.S. and Canadian Motor Vehicle Safety Standards including FMVSS and CMVSS NO. 105 or 135, Hydraulic Brakes; FMVSS and CMVSS No. 204, Steering Column Rearward Displacement (if the vehicles have unloaded vehicle weights of 2495 kg (5500 lb) or less); FMVSS No. 208, Occupant Crash Protection (injury criteria if vehicles GVWR is 3856 kg (8500 lb) or less having an unloaded vehicle weight of 2495 kg (5500 lb) or less); FMVSS and CMVSS No. 212, Windshield Mounting; FMVSS and CMVSS No. 219, Windshield Zone Intrusion; FMVSS and CMVSS NO. 301, Fuel System Integrity; and FMVSS 303 and CMVSS 301.1 (LPG Fuel System Integrity); and CMVSS NO. 301.2 (CNG Fuel System Integrity). Ford conducts compliance testing and makes compliance representations based on vehicle test weights that include the weights of all available regular production options plus the loads specified by FMVSS and CMVSS Nos. 105, 135, 204, 208, 212, 219, 301, and 303 (301.1 and 301.2 Canada). With the exception of FMVSS and CMVSS No. 105 or 135, the test weight for a particular vehicle is usually less than the GVWR indicated on the vehicle safety compliance certification label.

Alteration of completed vehicles before the first purchase of the vehicle for purposes other than resale may affect compliance of the vehicle to certain safety standards. Parts 567 and 568 of Title 49 of the Code of Federal Regulations state requirements for vehicle alterers in the United States. In Canada, Regulation 9 of the Canadian Motor Vehicle Safety Regulations determines the obligations of vehicle alterers under the Canadian Motor Vehicle Safety Regulations.

NOTE: For completed vehicles offered for sale in the province of Quebec, Canada, the label will be printed in French.

The following section headed "Information For Persons Who Alter Completed Vehicles" explains the "accessory reserve capacity" information printed on the safety compliance certification label and its relationship to FMVSS and CMVSS No. 105 or 135 (Hydraulic Brakes), FMVSS and CMVSS NO. 204 (Steering Column Rearward Displacement), FMVSS and CMVSS 208 (Occupant Crash Protection), FMVSS and CMVSS NO. 212 (Windshield Mounting), FMVSS and CMVSS No. 219 (Windshield Zone Intrusion), FMVSS and CMVSS NO. 301 (Fuel System Integrity), FMVSS No. 303 (Fuel System Integrity of Compressed Natural Gas Vehicles), CMVSS 301.1 (LPG Fuel System Integrity), and CMVSS NO. 301.2 (CNG Fuel System Integrity) compliance testing for Ford completed vehicles.



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IMPORTANT INFORMATION!
For Persons who Alter Completed Vehicles

The following applies to the alteration of vehicles completed by Ford Motor Company.

The degree of conformity to safety standards of incomplete vehicle chassis produced by Ford is represented by the *Incomplete Vehicle Manual* or IVM. An IVM is normally included in dunnage accompanying each Incomplete Vehicle.

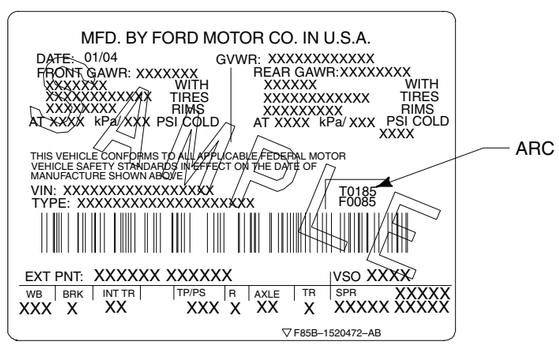
Vehicle alterers should exercise caution when adding weight to the vehicle by installing accessories or modifying the vehicle because if the unloaded vehicle weight of the altered vehicle exceeds the unloaded vehicle weight for which Ford Motor Company has established compliance, then the vehicle alterer will be responsible to certify the altered vehicle pursuant to Title 49 of the Code of Federal Regulations Sections 567.7 and 568.8 in the United States or to Section 9 of the Canadian Motor Vehicle Safety Regulations in Canada.

Payload worksheets are provided in the *Ford Truck Source Book* at your Ford Dealer to help prospective purchasers of Ford truck products estimate the total weight of accessories, equipment, and modifications that may be added to the completed vehicle without exceeding the allowable weight ratings for the vehicle in question. Specific questions on this or related subjects may be directed to the Ford Truck Body Builder Advisory Service.

For each completed vehicle, Ford Motor Company determines the **TOTAL ACCESSORY RESERVE CAPACITY (ARC)**, which represents the amount of accessory or modification weight in pounds that can be added to a certified vehicle before its unloaded vehicle weight exceeds the unloaded vehicle weight for which Ford Motor Company has established compliance. Total Accessory Reserve Capacity designations assume the use of permanently attached components resulting in center of gravity locations generally similar to those of comparable completed vehicles. Any additions or alterations that significantly affect the center of gravity of the total unit could impose more severe conditions than those for which Ford Motor Company has established compliance to FMVSS and CMVSS requirements. Examples of such extremes would be the installation of relatively heavy devices at the front or rear of the vehicle, particularly if these devices also had very high centers of gravity.

Vehicles having a GVWR greater than 10,000 lb manufactured by Ford Motor Company display a total ARC weight that represents the maximum weight that can be permanently installed without compromising the durability and allow a reasonable minimum cargo for the customer.

TOTAL ACCESSORY RESERVE CAPACITY T.A.R.C. is provided on the Safety Compliance Certification Label (located on the driver's door latch pillar of Ford completed vehicles, as shown in the following example.



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The T.A.R.C. specifies the total weight of permanently attached accessories or equipment that can be added to the vehicle. T0185 in the illustrated example indicates that 185 lbs of accessories or equipment can be added to the vehicle.

Also specified is the Front Axle Accessory Reserve Capacity (F0085 in the illustrated example). Although not directly applicable to FMVSS/CMVSS Nos. 204, 208, 212, 219, 301, and 303 (301.2 Canada) conformity representations, this magnitude represents the allowable weight that may be added in various forms (permanently attached equipment and accessories, removable equipment and accessories or any combination thereof) without overloading the front axle. Except for vehicles with the Snowplow Prep Package, this value will usually be less than the Total Accessory Reserve Capacity. Thus in the example, a total of 185 lbs of permanently installed equipment may be added to the vehicle but its distribution must be such that the load on the front axle is not increased by more than 85 lbs. However, although the Front Axle Accessory Reserve Capacity value may be greater than the Total Accessory Reserve Capacity value in some cases, the latter must never be exceeded. For vehicles with the Snowplow Prep Package, the Front Axle Accessory Reserve Capacity may be greater than the Total Accessory Reserve Capacity. This additional front axle capacity can be utilized to accommodate the removable snow plow components, such as the blade assembly.

Should the Front Axle Accessory Reserve Capacity on a Snowplow Package optioned vehicle be less than that which is required to accommodate the snow plow assembly, it should be understood that allowances for carrying persons in at least two designated seating positions (those provided with seat belts) have already been made. Therefore, it may be possible to operate the vehicle with minimum cargo and only one or two persons on board.

To prevent overloading under these circumstances, it is recommended that the vehicle alterer weigh the front axle under the conditions in which the vehicle is to be operated to ensure that the Front Gross Axle Weight Rating is not exceeded. See the Loading Information section of the *Owner's Guide*.

If the weight and weight distribution (front to rear) of the accessories or equipment to be added are not known, it will be necessary to weigh the vehicle before and after accessories or equipment are added to verify that neither the Front Axle Accessory Reserve Capacity nor the Total Accessory Reserve Capacity has been exceeded. When weighing the vehicle, remember to have all fluids necessary for vehicle operation (including fuel) filled to maximum capacity and weigh vehicle by axle so that front axle weight and total vehicle weight can be determined. Subtract the front axle weight of the vehicle before modification from the front axle weight of the vehicle after accessories or equipment have been added; this value must be equal to or less than the Front Axle Accessory Reserve Capacity (for the above example — 85 lb). Subtract the total vehicle weight before modification from the total vehicle weight after accessories or equipment have been added; this value must be equal to or less than the Total Vehicle Accessory Reserve Capacity (for the above example — 185 lb). Use the actual Accessory Reserve Capacity information as it appears on the safety compliance certification label of your vehicle.

If you know the weight and weight distribution of the accessories or equipment (including all fluids, if applicable) to be added, compare these weights with the Accessory Reserve Capacity to ensure that the added accessories or equipment do not exceed the Accessory Reserve Capacity.

Compliance to FMVSS and CMVSS 105 or 135 depends upon, among other things, the location of the center of gravity of the completed vehicle. Therefore, any modification or alteration to a completed vehicle must take into account its effect upon FMVSS and CMVSS 105 or 135 conformance. A set of guidelines are contained at the end of the completed vehicle portion of this section. A section specifically addressing the modification of pickup trucks in ways that include replacing pickup boxes with other equipment is contained in the Appendix section of this book.

Completed vehicles as produced by Ford meet the Center High Mounted Stop Lamp (CHMSL) requirements of FMVSS 108, Lamps, Reflector Devices, and Associated Equipment; and the mirror requirements of FMVSS and CMVSS 111, Rearview Mirrors. Removing a pickup box and installing a second unit body could affect compliance of the vehicle to these requirements even though the CHMSL and mirror systems have not been altered. See the detailed discussion on page 197 to determine what must be done to maintain compliance with the CHMSL and mirror requirements of FMVSS 108 and F/CMVSS 111.

For Incomplete Vehicles, please refer to the Incomplete Vehicle Manual.

WARNING: The accessory reserve capacity weight limitation found on the safety compliance certification label refers to FMVSS and CMVSS Nos. 204, 208, 212, 219, 301, and 303 (301.2 Canada) compliance only. If the **added weight is 227 kg/500 lb or more and the vehicle's GVWR rating is 3856 kg/8500 lb or less, the modifier may be responsible for recertification** to the applicable EPA, CARB, or CMVSS emissions standards (refer to MSAPC [EPA] Advisory Circular No. 64).

GUIDELINES FOR REVISING GAWR CAPACITIES FOR FORD LIGHT TRUCK VEHICLES

NOTE: GVWR increases may not be made on Ford Light Truck vehicles.

These guidelines are provided in response to requests for information on revising the Gross Axle Weight Rating (GAWR) capacities of Ford Light Truck vehicles. Dealers or purchasers should first try to obtain a vehicle with the desired GAWR capacities before modifying a vehicle to revise its weight ratings. If circumstances require a vehicle to be altered and the GAWR ratings to be revised, the following guidelines must be followed:

1. This information is provided for new, current model vehicles, to assist vehicle alterers who modify vehicles as described below in determining whether the modified vehicle complies with applicable regulatory requirements.
2. Revised GAWR capacities must be within the currently available capacities in Ford production for the particular model to maintain the vehicle's warranty. The **GVWR may be revised downward but must remain in the same GVWR range as coded in the fourth position of the vehicle identification number (VIN) in accordance with the requirements of 49 CFR Part 565 and CMVSS 115**. The VIN is displayed on the driver's side of the instrument panel and is visible from outside the vehicle. For GVWR codes utilized in the fourth position of the VIN, see the list in the chart on this page.

EXAMPLE:

A typical F-Series VIN is 1FTSF31S84EA01784. The fourth position in the VIN is S. Therefore, the GVWR of the vehicles is in the range 9001 to 10,000 lb and the lowered GVWR of this vehicle must fall in this GVWR range as well.

3. The appropriate chassis component or components (axles, brakes, tires/tire pressure, wheels, springs) are to be modified or changed to provide the revised GAWR capacity desired. All new suspension components installed are to have the same engineering specifications as those used by Ford in production (Ford service parts meet those specifications) at the GAWR capacities desired and must be installed according to the procedures specified in the applicable model year *Ford Truck Service Manual* to maintain the vehicle's warranty. Refer to the *Ford Source Book* for component specifications information. The person who alters the vehicle should maintain records of the modifications made to obtain the desired revised GAWR capacities in order to document the basis for certification to applicable Federal Motor Vehicle Safety Standards. Besides the suspension components noted above, the specifications for other components that have been altered must also be carefully reviewed to establish that these systems are equivalent to those provided by Ford in a production vehicle at the GAWR capacities desired. These systems include brakes, steering, frame, powertrain (engine availability, driveline, transmission, rear axle ratio), and axle capacities (both front and rear) and are also specified in the *Ford Source Book*. For other information concerning the component changes necessary for the desired GAWR capacities, please contact the Ford Truck Body Builders Advisory Service.

GVWR CODES UTILIZED IN VIN POSITION FOUR

Brake System	GVWR	GVWR Range	Trucks w/o Air Bags	Lt. Trucks & MPV's w/ DRV & Pass Air Bags	Lt. Trucks & MPV's w/ DRV & Pass Air Bags & Side Air Bags, Curtains, or Canopies
Hydraulic	Class A:	Not greater than 3000 pounds		T	
Hydraulic	Class B:	3001 - 4000 lb		U	B
Hydraulic	Class C:	4001 - 5000 lb		Y	C
Hydraulic	Class D:	5001 - 6000 lb		Z	D
Hydraulic	Class E:	6001 - 7000 lb		R	E
Hydraulic	Class F:	7001 - 8000 lb		P	F
Hydraulic	Class G:	8001 - 8500 lb		V	
Hydraulic	Class G:	8501 - 9000 lb	H	N	
Hydraulic	Class H:	9001 - 10,000 lb	J	S	
Hydraulic	Class 3:	10,001 - 14,000 lb	K	W	
Hydraulic	Class 4:	14,001 - 16,000 lb	L	X	
Hydraulic	Class 5:	16,001 - 19,500 lb	M	A	
Hydraulic	Class 6:	19,501 - 26,000 lb	N		
Hydraulic	Class 7:	26,001 - 33,000 lb	P		
Air	Class 3:	10,001 - 14,000 lb	T		
Air	Class 4:	14,001 - 16,000 lb	U		
Air	Class 5:	16,001 - 19,500 lb	V		
Air	Class 6:	19,501 - 26,000 lb	W		
Air	Class 7:	26,001 - 33,000 lb	X		

4. Certification Labels for Altered Vehicles

United States

A person or company who alters a previously certified vehicle before the first purchase by the final customer in such a manner that its stated weight ratings are revised, is required by Federal Regulation (49 CFR Part 567.7) to affix an altered vehicle certification label in addition to the Ford completed vehicle certification label.

The label must be affixed to the vehicle in the manner and form described in 49 CFR Part 567.4:

- The label shall, unless riveted, be permanently affixed in such a manner that it cannot be removed without destroying or defacing it.
- The label shall be affixed to either the hinge pillar, door-latch post, or the door edge that meets the door-latch post next to the driver's seating position, or if none of these locations is practicable, to the left side of the instrument panel (other permissible locations are also specified in 49 CFR Part 567.4).
- The lettering on the label shall be of a color that contrasts with the background of the label.
- The label shall contain the required statements in the English language and lettered in block capitals and numerals not less than three thirty-seconds of an inch high.
- The lettering shall be permanent. If typed or written, a protective clear cover may be necessary to prevent information from being wiped off.
- Label must not cover or obscure the chassis manufacturers label.

Canada

"Alterers" of motor vehicles are required to affix a permanent label on vehicles that they manufacture bearing a statement of compliance as provided by Section 9 of the Canadian Motor Vehicle Safety Regulations. The vehicle alterer should affix a corporate label containing information shown on this page.

1. Insert the name of the company that altered the vehicle.
2. Insert the month and year during which the alteration of the vehicle was completed.
3. Insert a drawing of the National Safety Mark which includes their unique manufacturer number.
4. Insert revised GVWR or PNBV capacities in kilograms of the vehicle as altered, where they differ from those shown on the original compliance label.
5. Insert the GAWR/PNBEs of the vehicle as altered, where they differ from those shown on the original compliance label. Also, include the tire size, rim size and tire inflation pressure.
6. Insert the vehicle type stated on the safety standard certification label provided by Ford Motor Company.

   The type of vehicle, in both official languages, or the word "TYPE" along with one of the following abbreviations, namely,

   (i) "AT/PA" to refer to an auto transporter,
   (ii) "ATV/VTT" to refer to an all-terrain vehicle,
   (iii) "B/A" to refer to a bus,
   (iv) "BT/RA" to refer to a bus trailer,
   (v) "CD/CCC" to refer to a C-dolly,
   (vi) "CMC/MCC" to refer to a competition motorcycle,
   (ix) "LDD/CRC" to refer to a load divider dolly,
   (x) "MH/AC" to refer to a motor home,
   (xi) "MC" to refer to a motorcycle,
   (xii) "MPV/VTUM" to refer to a multipurpose passenger vehicle,
   (xiv) "RUM/MUR" to refer to a restricted-use motorcycle,
   (xv) "SB/AS" to refer to a school bus,
   (xvi) "TRA/REM" to refer to a trailer,
   (xvii) "TCD/CDC" to refer to a trailer converter dolly,
   (xviii) "TRU/CAM" to refer to a truck, and
   (xix) "TT/CT" to refer to a truck tractor.

The label must meet the following requirements as described in Section 9:

- Shall be permanently attached.
- Shall be affixed adjacent to the original compliance label required by Section 6.
- The lettering of the label shall be clear, indelible, indented, or embossed, or of a color that contrasts with the background color of the label, and in block capitals and numerals not less than 2 mm high.
- The label shall be permanently affixed to the same surface as that to which the National Safety Mark is affixed.

THIS VEHICLE WAS ALTERED BY (1)
IN (2) AND AS ALTERED, IT CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT IN (3)
TYPE (4)
GVWR: (5) LB
FRONT GAWR: (5) LB WITH (6)
TIRES, (6) RIMS AT (6) PSI COLD (6)
REAR GAWR: (5) LB WITH (6)
TIRES, (6) RIMS AT (6) PSI COLD (6)

(1) Insert individual or corporate name of vehicle alterer.
(2) Insert month and year in which alterations were completed.
(3) Insert appropriate month and year — no earlier than the manufacturing date of the original vehicle and no later than the date alterations were completed.
(4) Insert "Type" of altered vehicle, i.e., Truck, Bus, MPV, etc.
(5) Insert revised GAWR capacities in lb.
(6) Insert appropriate tire, rim and cold inflation pressure information corresponding to the revised GAWR capacities (insert the word "DUAL" after the rear wheel cold inflation pressure information on dual rear wheel vehicles).

Typical Certification Label for altered vehicle for sale in the United States

THIS VEHICLE WAS ALTERED BY/CE VÉHICLE A ÉTÉ MODIFIÉ PAR
(1)

DATE: (2) (3)

GVWR: (4) KG
FRONT GAWR: (5) KG WITH (5)
TIRES, (5) RIMS AT (5) kPa COLD
REAR GAWR: (5) KG WITH (5)
TIRES, (5) RIMS AT (5) kPa COLD
TYPE: (6)

Typical Corporate Label information for altered vehicles for sale in Canada (Reference Section 9 of the Canadian Motor Vehicle Safety Regulations)

FMVSS AND CMVSS 105 and 135 HYDRAULIC BRAKE COMPLIANCE GUIDELINES FOR ALTERED RANGER VEHICLES AND E-SERIES VEHICLES (EXCEPT WHEN COMPLETED AS A SCHOOL BUS)

105 and 135 INFORMATION

Vehicle weight and dimensional information required for center of gravity calculations are available in the *Ford Source Book*. See your local Ford Dealer and refer to appropriate model year and specific vehicle for required information.

Abbreviated definitions and a vehicle diagram to assist with the equations for the FMVSS 105 and 135 segment are shown on page 28 for E-Series and Ranger and page 34 for Super Duty F-Series.

FOR ALL RANGER AND E-SERIES VEHICLES

The vehicle, as altered will conform to FMVSS and CMVSS No. 105 or 135, Hydraulic Brake System. if:

- No alterations, modifications or replacements are made to the service or parking brake system, anti-lock brake system, vacuum system, wheels or tires, brake system, indicator lamp and wiring, brake system reservoir labeling, suspension ride height or spring rate, hydro-boost system, power steering pump and lines if used with hydro-boost, and engine belt drive system.
- Any removal of a Ford body or chassis component is accompanied by the addition of equal weight.
- The vertical distance from the ground to the completed vehicle center of gravity should not exceed 36 inches for vehicles < 8000 lb GVWR and 48 inches for vehicles ≥ 8000 lb GVWR. (Restrictions for other standards may also apply).
- For Ranger Pickup Box Removal, the SUB weights found in Table A page 201 are met, as is the maximum Unloaded Vehicle Weight.
- The applicable GAWR's, GVWR, and accessory reserve capacity (ARC) weights (see preceding pages) are not exceeded.
- The applicable center of gravity limitations are met using one of the following calculation methods on this page.

FOR VEHICLES UNDER 3629 KG [8000 LB] GVWR

- The rear weight component (W_{rul}), as measured between the rear tires and the ground, does not exceed 58% of the completed vehicle weight at Unloaded Vehicle Weight plus 397 lb or 400 lb located in the driver and front passenger area (W_{ul}).

  Maximum W_{rul} = .58 x W_{ul} (see definitions on the next page).
- The horizontal center of gravity of the †SUB is rearward of ††L_{min} for the appropriate vehicle description in Table A on this page.

  L_{min} does not apply to a SUB of 120 lb or less when installed rearward of the front seats and forward of the centerline of the rear axle. (Do not restrict seat travel. See IVM for SgRP location and torso angle).

The horizontal center of gravity for the SUB is:

- At or forward of the rear axle centerline. The vertical center of gravity for the completed vehicle at Unloaded Vehicle Weight + 397 lb or 400 lb passenger load CG_v (Equation A) must not exceed 36.0 inches, when measured from the ground.
- Behind the rear axle centerline. The vertical center of gravity of the completed vehicle at Unloaded Vehicle Weight + 400 lb passenger load must fall within the appropriate range determined from Table 5, page 31. The value of CG_h (Equation B), which approximates the horizontal center of gravity of the completed vehicle, is used in Table 5 page 31 to determine the vertical center of gravity limits for the completed vehicle. The value CG_v (Equation A), which approximates the vertical center of gravity of the completed vehicle, must fall within the appropriate range determined from Table 5 page 31.

EQUATION A

$$CG_v = \frac{CG_{vb}W_b + CG_{vc}W_c + 25P}{W_t}$$

EQUATION B

$$CG_h = \frac{\left(W_{rb} + W_{rc} + \left(\frac{P \times CG_{hp}}{WB}\right)\right) \times WB}{W_t}$$

FOR VEHICLES 3629 KG [8000 LB] THROUGH 8618 KG [19,000 LB] GVWR

The horizontal center of gravity for the SUB is:

- E-Series Van with a GVWR of 4536 kg [10,000 lb] or less does not exceed the maximum Unloaded Vehicle Weight value in Table 1 on page 30.
- At or forward of the rear axle centerline. The vertical center of gravity for the completed vehicle at GVWR (CG_v — Equation C) must not exceed 48 inches, when measured from the ground.
- Behind the rear axle centerline. The vertical center of gravity for the completed vehicle at GVWR must fall within the appropriate range determined from Table 5 page 31. The value of CG_h (Equation D), which approximates the horizontal center of gravity of the completed vehicle, is used in Table 5 page 31 to determine the vertical center of gravity limits for the completed vehicle.

EQUATION C

$$CG_v = \frac{CG_{vb}W_b + CG_{vc}(W_c + W_l) + 25P}{GVWR}$$

EQUATION D

$$CG_h = \frac{\left(W_{rb} + W_{rc} + \left(\frac{P \times CG_{hp}}{WB}\right) + W_{rl}\right)}{GVWR} \times WB$$

TABLE A
HORIZONTAL CENTER OF GRAVITY FORWARD LIMIT

Vehicle	Wheelbase Millimeter [inch]	L_{min} Millimeter [inch]
E-150	3505 [138]	1473 [58]
E-250	3505 [138]	1524 [60]

TABLE B
PASSENGER LOAD

GVWR [lb]	P [lb]
0 – 7716	397
7717 – 10,000	400
10,001 – 19,000	500

†SUB = Second Unit Body (See definition next page.)

††L_{min} = The minimum horizontal center of gravity of the SUB measured in inches rearward from the centerline of the front axle.

FMVSS AND CMVSS 105 and 135 HYDRAULIC BRAKE COMPLIANCE GUIDELINES FOR ALTERED FORD LIGHT TRUCKS. FOR INCOMPLETE VEHICLES - REFER TO THE *IVM*.

L^* = Horizontal distance in inches between the SUB center of gravity and the ℄ of the front axle.

P = Passenger load [See Table B page 27.]

CG_v = Vertical distance from the ground to the center of gravity [inches] of the completed vehicle.

CG_h = Horizontal distance from of the front wheels to completed vehicle center of gravity [inches].

CG_{vb} = Vertical distance from the ground to the center of gravity of the SUB and/or permanently attached equipment [inches].

CG_{vc} = Vertical distance from the ground to the center of gravity of the chassis [inches] (including cab if original equipment). (Taken from Table 4, page 31.)

CG_{hp} = Horizontal distance from the ground to the center of gravity of the of the front wheels to the P [inches] (passenger load). (Taken from Table 3, page 30.)

W_b = Weight of the SUB and/or permanently attached added equipment [pounds].

W_{rb} = Weight on the rear wheels of the SUB and/or permanently attached added equipment [pounds].

W_{rc} = Weight at the rear wheels of the vehicle (chassis and cab) (fuel tanks full) [pounds], including option weight.

W_c = Weight of the vehicle (chassis and cab) (fuel tanks full) [pounds], including option weight.

WB = Vehicle wheelbase [inches].

W_t = Total unladen weight = $(W_b + W_c + P)$

GVWR = Gross Vehicle Weight Rating of the vehicle [pounds].

W_l** = Remaining cargo capacity [pounds].
Where: $W_l = GVWR - (W_b + W_c + P)$

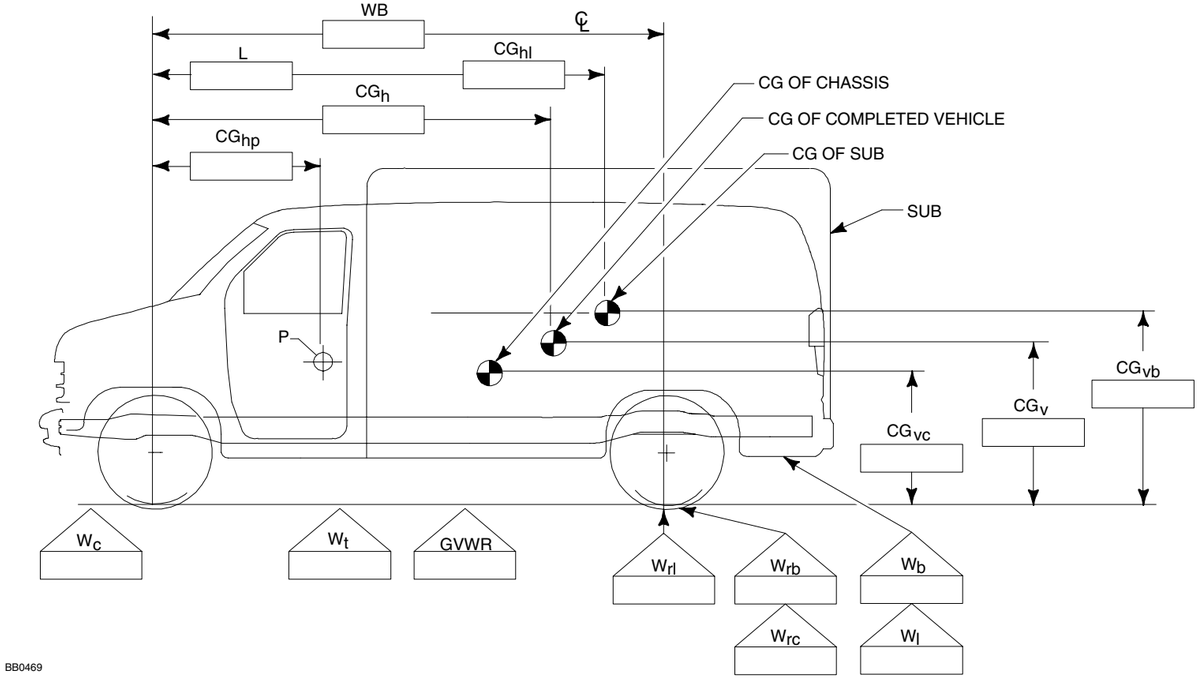
W_{rl}** = Weight of the remaining cargo capacity on the rear wheels [pounds].

$$W_{rl} = \frac{(CG_{hl})\ W_l}{WB}$$

CG_{hl}** = Horizontal distance from the ℄ of the front wheels to the cargo center of gravity [inches], (taken from Table 3, Page 30). For many common vehicles, if the CG_{hl} is not given in the table, then it may be estimated as the distance from the of the front wheel to the horizontal midpoint of the cargo area.

SUB = A Second Unit Body consists of the body structure and/or all the cargo carrying, work performing and/or load bearing components and/pr equipment installed by a subsequent stage manufacturer on an incomplete vehicle, such that the incomplete vehicle becomes a completed vehicle.

* Required for < 8000 lb GVWR calculations only.
** Required for ≥ 8000 lb GVWR calculations only.



FMVSS AND CMVSS 105 and 135 HYDRAULIC BRAKE COMPLIANCE GUIDELINES FOR ALTERED FORD LIGHT TRUCKS. FOR INCOMPLETE VEHICLES - REFER TO THE *IVM*.

SECOND UNIT BODY CENTER OF GRAVITY CALCULATION SUGGESTIONS

In the case where the rear weight of the SUB and/or added equipment must be reduced and the CG_v is found to be below the allowed minimum CG_v it may be possible to bring the vehicles into compliance by moving the CG_h forward. Forward movement of the CG_h can be accomplished by:

- Redistributing the weight of the SUB and/or added equipment.
- Adding **permanently** attached ballast forward of the CG_h. In order to reduce the rear weight, the ballast must be forward of the front axle. (Caution must be taken not to exceed the GVWR or front GAWR of the vehicle.)

The following general equations can be used to find the center of gravity of the SUB and added equipment when there are several elements making up the CG.

NOTE: Removal of the components or body parts would be represented by a negative weight being used in these calculations.

$$CG_{vb} = \frac{CG_{vb1}(W_{b1}) + CG_{vb2}(W_{b2}) + ... + CG_{vbn}(W_{bn})}{W_{b1} + W_{b2} + ...W_{bn}}$$

and the horizontal CG location of the combined SUB and added equipment is:

$$CG_{hb} = \frac{(W_{rb1} + W_{rb2} + ... + W_{rbn})WB}{W_{b1} + W_2 + ... + W_{bn}}$$

The front/rear weight break down can be found with the use of the following equation:

$$W_{rb} = \frac{CG_{hb}(W_{b1} + W_{b2} + ... + W_{bn})}{WB}$$

Conversely, the front weight component of the SUB and added equipment is:

$$W_{fb} = (W_{b1} + W_{b2} + ... + W_{bn}) - W_{rb}$$

SAMPLE CALCULATIONS

Vehicles <8000 lb GVWR
Sample (1)
Ranger (4x2) pickup box removal vehicle 118 inch WB 4800 lb GVWR

Known:
W_b = 250 lb W_{rb} = 260 lb (behind rear axle)
W_c = 2912 lb; W_{rc} = 1080 lb
CG_{vb} = 28 CG_{vc} = 25.5 CG_{hp} = 53.9
This vehicle falls in the under 7717 lb GVWR category and the SUB CG is behind the rear axle.

From equation A & B.

$$CG_v = \frac{(28)(250) + (25.5)(2912) + (25)(397)}{3562} = 25.4 \text{ inches}$$

$$CG_h = \frac{260 + 1080 + \frac{397 \times 53.9}{113.9}}{3562} \times 113.9 = 48.9 \text{ inches}$$

From Table 1, page 30:
Upper Limit CG_v = 1.39 x 48.4 – 36.8 = 31.2 inches
Lower Limit CG_v = 1.39 x 48.4 – 51.7 = 16.3 inches
The 25.4 inches calculated is within the range given so this vehicle is acceptable from a compliance to FMVSS and CMVSS 135 standpoint.

Sample (2)
E-Series under 8000 lb GVWR 138 inch WB

Altering a completed E-150 vehicle with the addition of a permanently attached tool box and partition can be handled as follows:

The vertical distance above the floor is

$$V = \frac{Wt1(CG_{1V}) + Wt2(CG_{2V})}{Wt1 + Wt2}$$

$$V = \frac{125(24) + 100(25)}{125 + 100}$$

$$= 24.4 \text{ inches}$$

The longitudinal distance aft of the front axle is

$$L = \frac{Wt1(CG_{1h}) + Wt2(CG_{2h})}{Wt1 + Wt2}$$

$$= \frac{125(133) + 100(63)}{125 + 100}$$

$$= 101.9 \text{ inches}$$

Using the value for Min L from Table A on page 27:
Min L = .23 (138) + 21.4 +.72 (24.4)
Min L = 70.7 inches
Since 101.9 is greater than 58, this meets the L_{MIN} criteria.
If the vehicle curb weight + 397 lb for passengers (before alteration) is: front = 2825 lb; rear = 1888 lb; and, total = 4713 lb, adding the alteration weight of 225 lb which is distributed as follows:

$$\text{Rear Axle Reaction} = \frac{225 + 101.9}{138} = 166lb$$

Rear Axle Reaction = 166 lb
Conversely the Front Axle Reaction = 225 lb - 166 lb = 59 lb
W_{rul} = 1888 lb + 166 lb = 2054 lb
W_{ul} = 4713 lb + 225 lb = 4938 lb
Max W_{rul} = (.58) (4938) = 2864 lb using the equation from page 27
So a W_{rul} of 2054 lb is less than the max.
W_{rul}, therefore, meets the criteria specified for compliance with FMVSS and CMVSS 135.

If the add-on weight of the SUB is forward of the centerline of the rear axle while conforming to GAWR, GVWR, ARC, and for pickup box removal vehicles min/max SUB weight restrictions (Table A page 201) are conformed to, then there are no FMVSS and CMVSS 135 issues.

E–150 ALTERED COMPLETED VEHICLE ADD TOOL CABINET AND A PARTITION

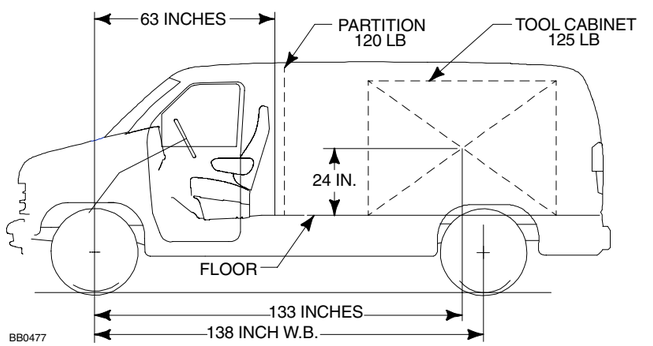


TABLE 1
Unloaded Vehicle Weight (UVW)
This information Does Not Apply to Vehicles Over 4536 kg [10,000 lb]

Models	Wheelbase Millimeter [inch]	MAXIMUM UNLOADED VEHICLE WEIGHTS Kilogram [pound] by Engine Size Liter [cubic inch]			
Incomplete E-Series Vehicles		**4.6L [281]**	**5.4L [330]**	**6.8L [413]**	**6.0 LD [363]**
E-150 Van	3505 [138]	2699 [5950](2)	2699 [5950](2)	NA	NA
E-150 Wagon	3505 [138]	2631 [5800](1)	2631 [5800](1)	NA	NA
E-250 Regular and Extended Van or Crew Van	3505 [138]	3130 [6900]	3130 [6900]	NA	NA
E-350 Regular or Extended Van or Crew Van	3505 [138]	NA	3583 [7900]	3583 [7900]	3583 [7900]
E-350 Regular Wagon	3505 [138]	NA	3084 [6800](2)	3130 [6900](2)	3130 [6900](2)
E-350 Extended Wagon	3505 [138]	NA	3107 [6850](3)	3198 [7050](3)	3243 [7150](3)

(1) E-150 eight passenger wagon. If there are only seven seating positions, the limit is increased to 2699 kg [5959 lb].

(2) E-350 twelve passenger. For eight passenger, the values are 3357 kg [7400 lb] (5.4L) and 3402 kg [7500] (6.8L and 6.0 LD). For seven passengers, the values are 3425 kg [7550 lb] (5.4L) and 3470 kg [7650 lb] (6.8L and 6.0 LD).

(3) E-350 fifteen passengers. For twelve passengers, the values are 3402 kg [7500 lb] for all engines.

TABLE 2
CG_{hl} = Horizontal distance from front axle cargo CG:

Model	WB [in]	CG_{hl} [in] †
Super Duty F-Series:		
Regular Cab	137.0	132
SuperCab	141.8	144
SuperCab	158.0	153
Crew Cab	156.2	158
Crew Cab	172.4	165
E-Series:		
Regular Van	138	116
†Extended Van or Extended Wagon	138	126

† If CG_{hl} is not given in the table or if the location of your cargo is not in the normal cargo area, then your CG_{hl} may be estimated as the distance from the ℄ of the front wheel to the horizontal midpoint of the cargo area.

TABLE 3
CG_{hp} = Horizontal distance from front wheel ℄ to Passenger Load. [Dimensions are in inches.]

All Rangers	53.9
All Super Duty F-Series	61.2
All E-Series †	48.5

† Except E-Series Stripped Chassis where the distance from the ℄ of the front axle to the H-point of the driver must be measured.

TABLE 4 CG_{vc} = Vertical distance ground to chassis CG [Dimensions are in inches.]	
Ranger (4x2)	= 24.0
Ranger (4x4)	= 27.0
F-150 (4x2)	= 26.0
F-150 (4x4)	= 28.5
F-250/350 (4x2) SRW > 8500 lb GVWR	= 30.0
F-250/350 (4x4) SRW > 8500 lb GVWR	= 31.0
F-350 (4x2) DRW	= 30.0
F-350 (4x4) DRW	= 31.0
E-150 & E-250 Van < 8000 lb GVWR	= 28.5
E-250/350 SRW Van or Wagon > 8000 lb GVWR	= 32.0

TABLE 5

CG_v = Vertical distance from the ground to the completed vehicle center of gravity [inch].

GVWR < 8000 lb use equation A & B, page 27

Model	WB	Equation for CG_v Range		
		Upper Limit		Lower Limit
Ranger 4x2 GVWR ≤ 4580 lb	112	CG_v =	1.39 x CG_h – 34.8	1.39 x CG_h – 49.0
	118	CG_v =	1.39 x CG_h – 36.8	1.39 x CG_h – 51.7
	126	CG_v =	1.39 x CG_h – 40.3	1.39 x CG_h – 56.7
Ranger 4x2 GVWR ≥ 4580 lb	112	CG_v =	1.39 x CG_h – 36.0	1.39 x CG_h – 42.0
	118	CG_v =	1.39 x CG_h – 38.5	1.39 x CG_h – 44.6
	126	CG_v =	1.39 x CG_h – 45.5	1.39 x CG_h – 48.6
Ranger 4x4 GVWR ≥ 4580 lb	112	CG_v =	1.39 x CG_h – 32.8	1.39 x CG_h – 38.4
	118	CG_v =	1.39 x CG_h – 34.7	1.39 x CG_h – 40.5
	126	CG_v =	1.39 x CG_h – 38.0	1.39 x CG_h – 44.4

GVWR < 8000 lb use equation A & B, page 27

Place the CG_h of the vehicle (from equation B) into the appropriate equations below to determine the allowable range of the CG_v. If the actual CG_v (from equation A) is within the range calculated, the center of gravity location is acceptable.

Model	WB	Equation for CG_v Range		
		Upper Limit		Lower Limit
E-150	138	CG_v =	1.39 x CG_h – 46.9	1.39 x CG_h – 58.7
E-250 7900 lb GVWR	138	CG_v =	1.39 x CG_h – 47.1	1.39 x CG_h – 59.0

GVWR ≥ 8000 lb use equation C & D, page 27

Place the CG_h of the vehicle (from equation D) into the appropriate equations below to determine the allowable range of the CG_v. If the actual CG_v (from equation C) is within the range calculated, the center of gravity location is acceptable.

Model	WB	Equation for CG_v Range		
		Upper Limit		Lower Limit
E-250 8600 lb GVWR	138	CG_v =	1.27 x CG_h – 59.0	1.27 x CG_h – 77.5
E-350 (SRW) ≤ 9600 lb GVWR	138 158	CG_v = CG_v =	1.27 x CG_h – 60.0 1.27 x CG_h – 69.5	1.27 x CG_h – 80.0 1.27 x CG_h – 90.7

FMVSS AND CMVSS 105 HYDRAULIC BRAKE COMPLIANCE GUIDELINES FOR ALTERED VEHICLES

TABLE 6

This Weight Information Does Not Apply to Vehicles Over 4536 kg [10,000 lb] GVWR

SUPER DUTY F-SERIES	SECOND UNIT BODY MAXIMUM LIMITATIONS		MAX. UNLOADED VEHICLE WEIGHT Kilogram [pound]		
MODELS	SUB Weight Kilogram [pound]	Center of Gravity Height‡ Millimeter [inch]	Engine Size – Liter [cubic inch]		
			5.4L [330]	6.8L [413]	6.0 LD [363]
F-250 Regular Cab (4x2) 3480 mm [137 in] WB (56.00" CA)	816 [1800]	447 [17.6]	2904 [6400]	2904 [6400]	3198 [7050]
F-250 Regular Cab (4x4) 3480 mm [137 in] WB (56.00" CA)	816 [1800]	447 [17.6]	3130 [6900]	3130 [6900]	3345 [7350]
F-250 Super Cab (4x2) 3602 mm [141.8 in] WB (40.00" CA)	816 [1800]	610 [24]	3062 [6750]	3062 [6750]	3289 [7250]
F-250 Super Cab (4x4) 3602 mm [141.8 in] WB (40.00" CA)	816 [1800]	610 [24]	3243 [7150]	3243 [7150]	3425 [7550]
F-250 Super Cab (4x2) 4013 mm [158 in] WB (56.00" CA)	816 [1800]	610 [24]	3108 [6850]	3108 [6850]	3289 [7250]
F-250 Super Cab (4x4) 4013 mm [158 in] WB (56.00" CA)	816 [1800]	610 [24]	3289 [7250]	3289 [7250]	3493 [7700]
F-250 Crew Cab (4x2) 3967 mm [156.2 in] WB (40.00" CA)	816 [1800]	610 [24]	3039 [6700]	3039 [6700]	3379 [7450]
F-250 Crew Cab (4x4) 3967 mm [156.2 in] WB (40.00" CA)	816 [1800]	610 [24]	3039 [6700]	3039 [6700]	3379 [7450]
F-250 Crew Cab (4x2) 4379 mm [172.4 in] WB (56.00" CA)	816 [1800]	610 [24]	3198 [7050]	3198 [7050]	3471 [7650]
F-250 Crew Cab (4x4) 4379 mm [172.4 in] WB (56.00" CA)	816 [1800]	610 [24]	3391 [7475]	3391 [7475]	3584 [7900]

‡ Vertical dimensions are measured from the top surface of the frame at a distance approximately 304.8 to 457.2 [12 to 18 in] from the rear of the cab.

TABLE 6 (Cont'd)

This Weight Information Does Not Apply to Vehicles Over 4536 kg [10,000 lb] GVWR

SUPER DUTY F-SERIES	SECOND UNIT BODY MAXIMUM LIMITATIONS		MAX. UNLOADED VEHICLE WEIGHT Kilogram [pound]		
MODELS	SUB Weight Kilogram [pound]	Center of Gravity Height‡ Millimeter [inch]	Engine Size – Liter [cubic inch]		
			5.4L [330]	6.8L [413]	6.0 LD [363]
F-350 Regular Cab (4x2) 3480 mm [137 in] WB (56.00" CA)	816 [1800]	447 [17.6]	2904 [6400]	2904 [6400]	3198 [7050]
F-350 Regular Cab (4x4) 3480 mm [137 in] WB (56.00" CA)	816 [1800]	447 [17.6]	3130 [6900]	3130 [6900]	3357 [7400]
F-350 Super Cab (4x2) 3602 mm [141.8 in] WB (40.00" CA)	816 [1800]	610 [24]	3062 [6750]	3062 [6750]	3289 [7250]
F-350 Super Cab (4x4) 3602 mm [141.8 in] WB (40.00" CA)	816 [1800]	610 [24]	3266 [7200]	3266 [7200]	3447 [7600]
F-350 Super Cab (4x2) 4013 mm [158 in] WB (56.00" CA)	816 [1800]	610 [24]	3108 [6850]	3108 [6850]	3379 [7450]
F-350 Super Cab (4x4) 4013 mm [158 in] WB (56.00" CA)	816 [1800]	610 [24]	3289 [7250]	3289 [7250]	3515 [7750]
F-350 Crew Cab (4x2) 3966 mm [156.1 in] WB (40.00" CA)	816 [1800]	610 [24]	3175 [7000]	3175 [7000]	3402 [7500]
F-350 Crew Cab (4x4) 3966 mm [156.1 in] WB (40.00" CA)	816 [1800]	610 [24]	3357 [7400]	3357 [7400]	3538 [7800]
F-350 Crew Cab (4x2) 4379 mm [172.4 in] WB (56.00" CA)	816 [1800]	610 [24]	3220 [7100]	3220 [7100]	3471 [7650]
F-350 Crew Cab (4x4) 4379 mm [172.4 in] WB (56.00" CA)	816 [1800]	610 [24]	3402 [7500]	3402 [7500]	3606 [7950]

‡ Vertical dimensions are measured from the top surface of the frame at a distance approximately 304.8 to 457.2 [12 to 18 in] from the rear of the cab.

TABLE 7

SUPER DUTY F-SERIES VEHICLES MINIMUM SUB WEIGHTS

8800 lb to 12,500 lb GVWR WIDE FRAME F-250/350 924 mm [36.4 in] Chassis Cabs

Model and GVWR kg [lb]	Cab Style	WB mm [in]	Minimum SUB kg [lb]
F-250 3989 [8800] F-350 4491 [9900] *	R/C	3480 [137]	172 [380]
	S/C	4013 [158]	
	C/C	4380 [172.4]	
	S/C	3602 [141.8]	154 [340]
	C/C	3967 [156.2]	
F-350 Gasoline 5077 [11,200] ** Diesel 5216 [11,500] **	R/C	3480 [137]	190 [420]
	S/C	4013 [158]	
	C/C ***	4380 [172.4]	
	S/C	3602 [141.8]	172 [380]
	C/C	3967 [156.2]	

Cab Style:
R/C = Regular Cab
S/C = SuperCab

* GVWR shown for 49 state applications, California models are 90.7 kg [200] less.

** GVWR shown for 48 state applications, California and Hawaii models are 4990 kg [1100] less.

*** Crew Cab, long box [172.4 in WB], 48 states, Diesel Engine; 5216 kg [11,500] GVWR.

FMVSS and CMVSS 105 HYDRAULIC BRAKE COMPLIANCE GUIDELINES FOR F-SERIES ALTERED VEHICLES WITH A GVWR OVER 3629 kg [8000 lb] INCLUDING PICKUP BOX REMOVAL.

105 INFORMATION

Vehicle weights and dimensional information required for center of gravity calculations are available in the *Source Book*. See your local Ford Dealer and refer to appropriate model year and specific vehicle for the required information.

The abbreviated definitions and a vehicle diagram which are required for the equations in the FMVSS 105 segment of this document are shown on the next page.

The vehicle, as altered, will conform to FMVSS and CMVSS No. 105, Hydraulic and Electric Brake Systems, provided that:

- No alterations, modifications, or replacements are made to the following:
  - – Service or parking brake system
  - – Antilock brake system
  - – Vacuum system
  - – Wheels and tires
  - – Brake system indicator lamp and wiring
  - – Brake system reservoir labeling
  - – Suspension ride height or spring rate
  - – Hydro-boost system
  - – Power steering pump and lines if used with Hydro-boost
  - – Engine belt drive system
- Any removal of a Ford body or chassis component is accompanied by the addition of equal weight.
- Vehicles with a GVWR of 4536 kg [10,000 lb] or less do not exceed the Maximum Unloaded Vehicle Weight value in Table 6, page 32.
- The applicable GAWRs and GVWR weights are not exceeded.

1. The completed vehicle must have a vertical center of gravity (equation E) of 48.00 inches or less when measured from the ground.
2. The front axle curb weight of the completed vehicle (incomplete vehicle weight + min SUB weight, Table 7, page 32 may be reduced by no more than 10% for SRW or 25% for DRW vehicles, using the front axle ground reaction as manufactured by Ford.
3. The rear axle curb weight of the completed vehicle (incomplete vehicle + min SUB weight, Table 7, page 32) must be the same or greater than the rear axle ground reaction as manufactured by Ford.
4. REFERENCE: Equation F can be used to determine the completed vehicle's horizontal center of gravity (CG_h). Abbreviated definitions and a vehicle diagram are provided to assist with the equation on page 34.

SUPER DUTY F-SERIES PASSENGER LOAD TABLE		
CG_{hp}	**GVWR [lb]**	**P [lb]**
61.2 [in]	8500-10,000	400
	10,000-19,000	500

SUPER DUTY F-SERIES PASSENGER CG_{vp}		
All Seats		
	4x2	**4x4**
CG_{vp}	39.9 [in]	43.4 [in]

EQUATION E

$$CG_v = \frac{CG_{vb}\ W_b + CG_{vc}(W_c + W_l) + (CG_{vp})\ X\ P}{GVWR}$$

EQUATION F

$$CG_h = \frac{(W_{rb} + W_{rc} + (\frac{P \times CG_{hp}}{WB}) + W_{rl})}{GVWR}\ X\ WB$$

Example:
F-250 (4x4) Pickup Box Removal with 137 inch WB and 8800 lb GVWR
Known:

F-250 (4x4) 137 inch WB, 8800 lb GVWR, 5.4L pickup box removal vehicle.

W_b = 675 lb; w_{rb} = 600 lb; w_{rc} = 1531 lb; W_c = 4684 lb; CG_{vb} = 35 inches;

CG_{vc} = 31.0 inches; W_l = GVWR - W_b + W_c +400) = 3041 lb

$$W_{rl} = \frac{(132)(3041)}{137} = 2930lb$$

From Equations E & F:

$$CG_v = \frac{35(675) + 31(4684 + 3041) + 43.4 \times (400)}{8800} = 31.9in$$

$$CG_h = \frac{(600 + 1531 + \frac{400(61.2)}{137} + 2930) \times 137}{8800} = 81.6in$$

Since CG_v is less than 48" and CG_h is less than 137", this vehicle is acceptable with the 675 lb SUB.

If CG_v exceeds 48", do one or more of the following, as required to get $CG_v \leq$ 48"	**If CG_h exceeds wheelbase, do one or more of the following, as required to get $CG_h \leq$ WB**
1. Move heavy objects to lower areas to lower the CG.	1. Move heavy objects forward to shift the CG forward.
2. Remove heavy objects with CG's greater than 48" above the ground.	2. Remove heavy objects which are aft of the rear axle.
3. Add weight as low as possible (lower than 48") to bring down CG.	3. Add weight as far forward as possible (forward of the rear axle) to shift the CG forward.

FMVSS AND CMVSS 105 HYDRAULIC BRAKE F-SERIES ALTERED VEHICLES INCLUDING PICKUP BOX REMOVAL.

P = Passenger load (see table on page 33).

CG_v = Vertical distance from the ground to the center of gravity [inches] of the completed vehicle.

CG_h = Horizontal distance from ℄ of the front wheels to the center of gravity [inches] of the completed vehicle.

CG_{vb} = Vertical distance from the ground to the center of gravity of the SUB and/or permanently attached added equipment [inches].

CG_{vc} = Vertical distance from the ground to the center of gravity of the chassis [inches] (including cab if original equipment). (Taken from Table 4 page 31).

CG_{hp} = Horizontal distance from the ℄ of the front wheels to the P (passenger load). (Taken from Passenger Load Table on page 33).

CG_{vp} = Vertical distance from the ground to the center of gravity of the front and rear seat P (passenger weight). (Taken from Passenger Load Table on page 33).

W_b = Weight of the SUB and/or permanently attached added equipment [pounds].

W_{rb} = Weight at the rear wheels of the SUB and/or permanently attached added equipment [pounds].

W_{rc} = Weight at the rear wheels of the vehicle (chassis and cab) (fuel tanks full) [pounds], including option weight.

W_c = Weight of the vehicle (chassis and cab) (fuel tanks full) [pounds], including option weight.

WB = Vehicle wheelbase [inches].

W_t = Total unladen weight = (W_b + W_c + P)

GVWR = Gross Vehicle Weight Rating of the vehicle [pounds].

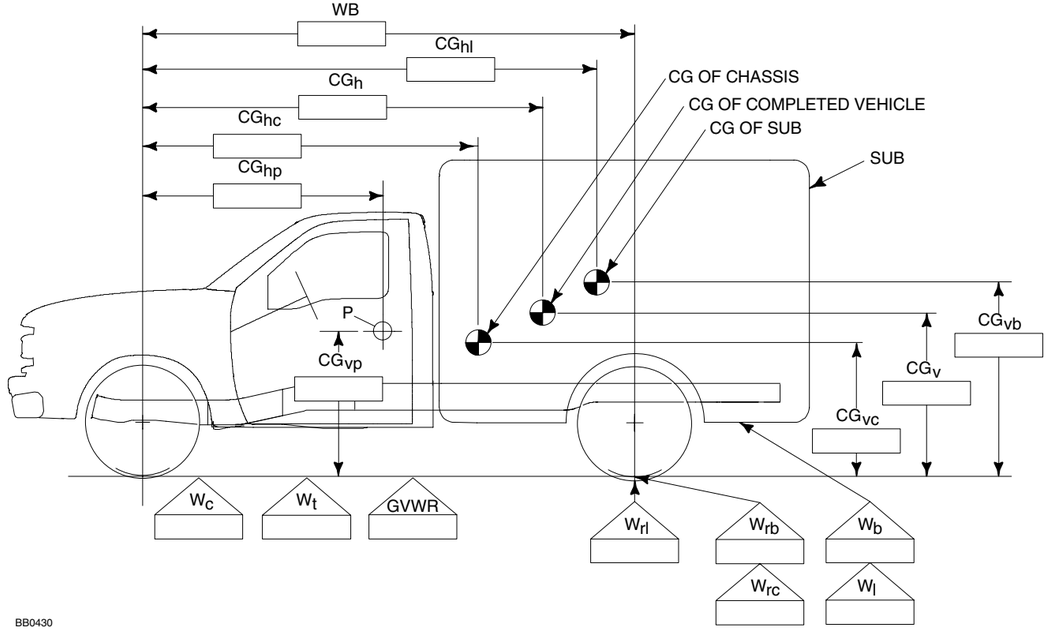
W_l = Remaining cargo capacity [pounds]. Where: W_l = GVWR – (W_b + W_c + P)

W_{rl} = Weight of the remaining cargo capacity on the rear wheels [pounds].

CG_{hl} = Horizontal distance from the ℄ of the front wheels to the cargo center of gravity [inches]. (Taken from Table 2 page 30) for many common vehicles. If the CG_{hl} is not given in the table, then it may be estimated as the distance from the of the front wheel to the horizontal midpoint of the cargo area.

SUB = A Second Unit Body consists of the body structure and/or all the cargo carrying, work performing and/or load bearing components and/or equipment installed by a subsequent stage manufacturer on an incomplete vehicle, such that the incomplete vehicle becomes a completed vehicle.

CG_{hc} = Horizontal distance from the ℄ of the front wheels to the center of gravity [inches] of the chassis.



U.S. AND CANADA SAFETY STANDARDS
INCOMPLETE VEHICLES

Each Ford incomplete vehicle product is accompanied by an *Incomplete Vehicle Manual* (see manuals on this page). These manuals contain the information required to comply with Part 568 of Title 49 of the Code of Federal Regulations for vehicles offered for sale in the United States and with Section 6 of the Canadian Motor Vehicle Safety Regulations for vehicles offered for sale in Canada. Ford incomplete vehicles offered for sale in the United States and Canada will be provided with an *Incomplete Vehicle Manual*.

The manual must be forwarded with the vehicle until the final stage manufacturer has installed a Safety Compliance label on the completed vehicle.

INCOMPLETE VEHICLE MANUAL COVER

The cover of the IVM identifies the incomplete vehicle configurations for which compliance representations are identified. Also, a label is affixed to the cover which includes the vehicle identification number (VIN) for the specific vehicle to which the manual belongs. The label identifies the following information which pertains only to the vehicle with the corresponding VIN.

- The GVWR
- The front and rear GAWRs
- Tire and wheel size
- Cold tire inflation pressure (PSI)
- Completed vehicle type(s) into which the incomplete vehicle may be manufactured.
- Optional prep package when the vehicle is so equipped.

INCOMPLETE VEHICLE LABEL

Each incomplete vehicle as manufactured by Ford Motor Company, will have an incomplete vehicle label affixed to the driver-door lock pillar. The sample labels on this page are typical of those provided for U.S. production. A detailed explanation of all label information is available in the *Ford Truck Source Book* for the appropriate model year, at your local Ford Dealer.

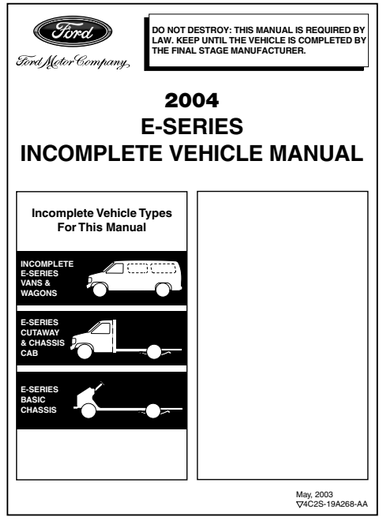
The 5th, 6th & 7th digits of the Vehicle Identification Number (VIN) will identify the incomplete vehicle type. VIN information is available in the *Ford Truck Source Book* for the appropriate model year.

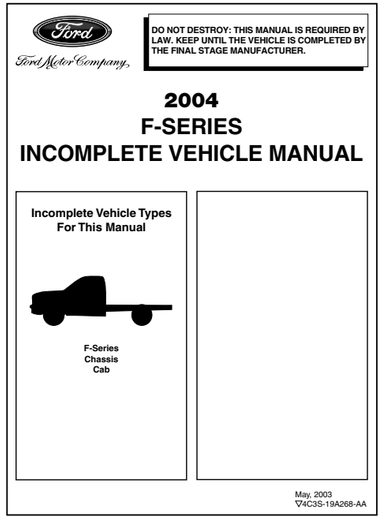
California Air Resources Board (CARB), requires a Vehicle Emission Control Label with a vehicle identification number (VIN) having a non-contact, bar-code reading wand capability. The bar-code directly below the VIN on the incomplete vehicle label will comply with this regulation.

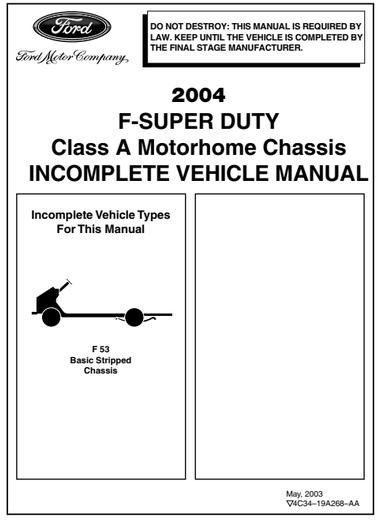
OPTIONAL PREP PACKAGES

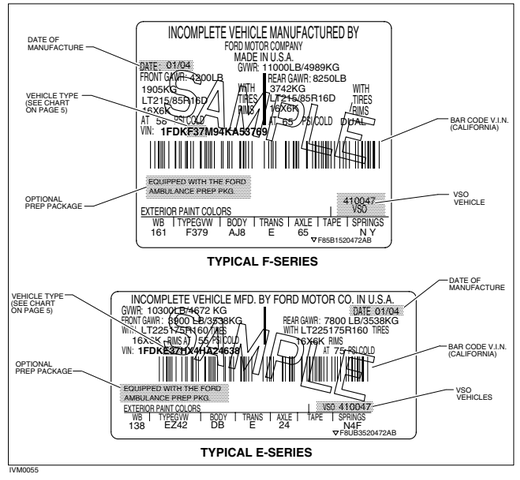
Incomplete vehicles produced by Ford Motor Company, in some instances, are equipped with optional prep packages.

If an incomplete vehicle is equipped with an optional Prep Package, both the incomplete vehicle label affixed to the vehicle and the label on the front of the IVM will identify the Prep Package.

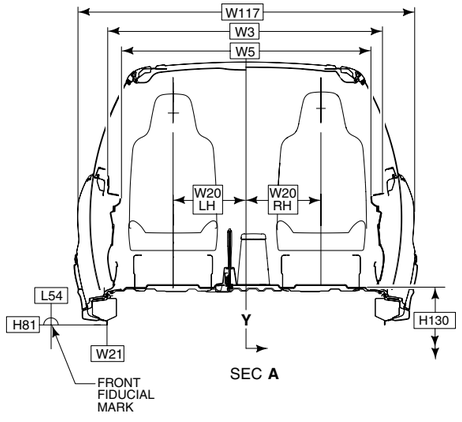








DIMENSIONAL DATA
FREESTAR 7-PASSENGER WAGON



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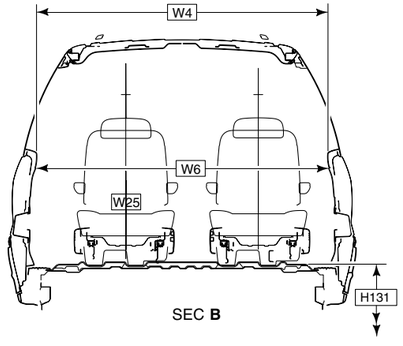

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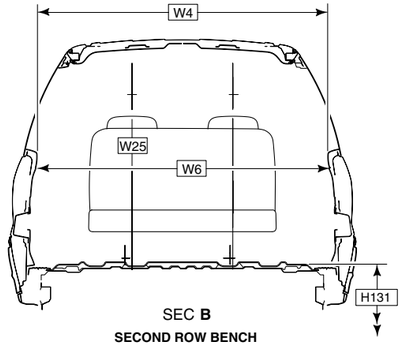
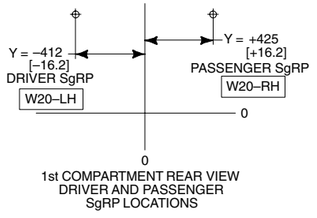
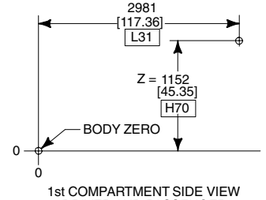


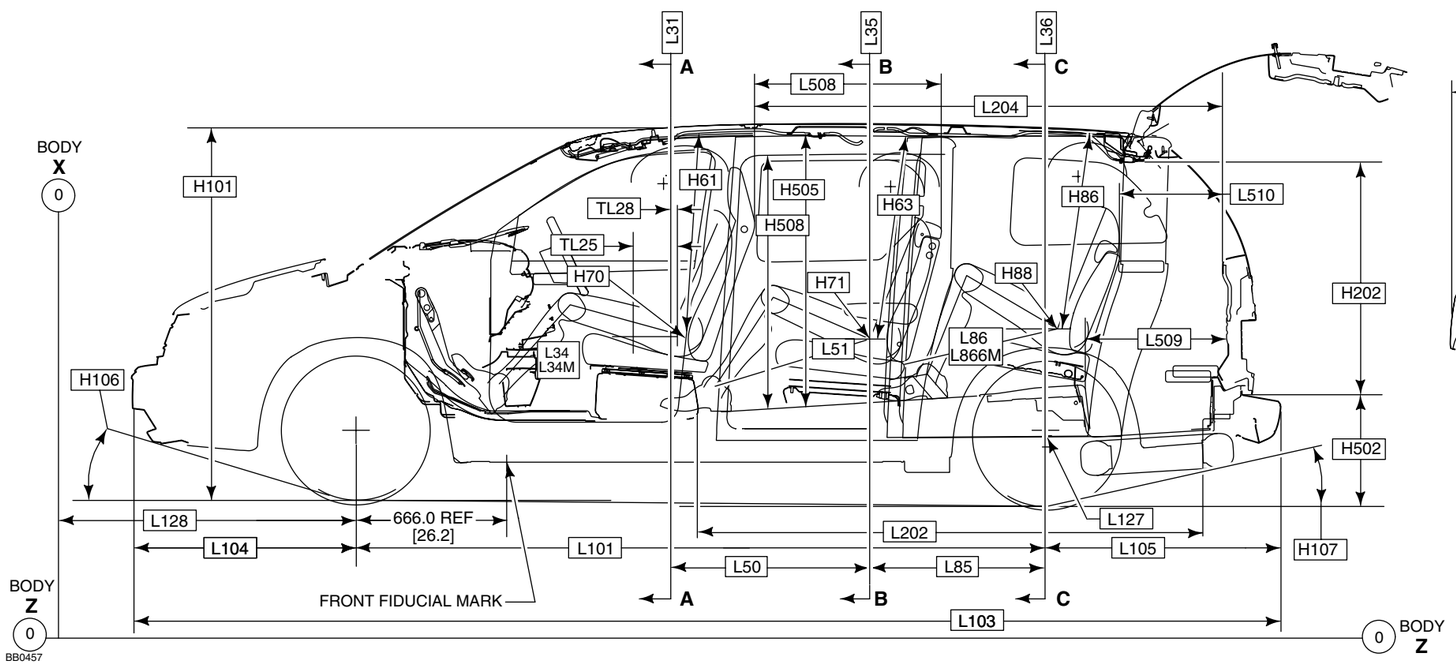
SEC **B**
SECOND ROW BENCH INDEX LEFT OR RIGHT

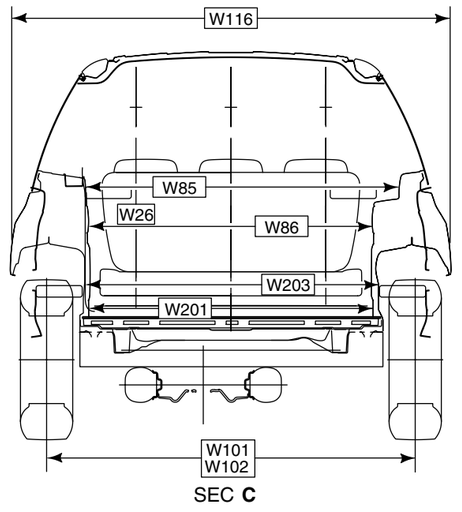


1st COMPARTMENT REAR VIEW
DRIVER AND PASSENGER
SgRP LOCATIONS



1st COMPARTMENT SIDE VIEW
DRIVER AND PASSENGER
SgRP LOCATIONS





SEC **C**

NOTE — [ ] DIMENSIONS ARE INCHES.

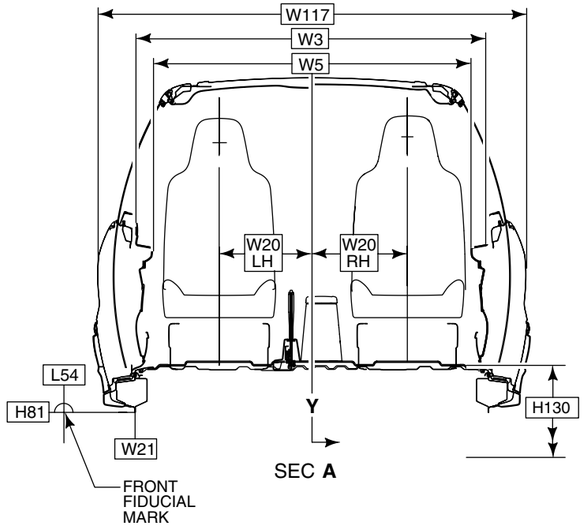
DIMENSIONAL DATA
FREESTAR 7-PASSENGER WAGON

CODE	DESCRIPTION	4-DOOR
EXTERIOR		
L101	WHEELBASE	3069 [120.8]
L103	OVERALL LENGTH	5105 [201.0]
L104	OVERHANG — FRONT	997 [39.3]
L105	OVERHANG — REAR	1039 [40.0]
L127	REAR WHEELS ℄ X-COORDINATE	4685 [184.5]
L128	FRONT WHEELS ℄ X-COORDINATE	1616 [63.6]
W101	TREAD — FRONT	1644 [64.7]
W102	TREAD — REAR	1595 [62.8]
W103	VEHICLE WIDTH MAXIMUM WITH MOLDINGS	1945 [76.5]
W116	VEHICLE WIDTH — MAXIMUM	1917 [75.5]
W117	BODY WIDTH AT DRIVER SgRP	1917 [75.5]
H101C	VEHICLE HEIGHT — CURB (LX)	1740 [68.5]
H101	VEHICLE HEIGHT — LOADED (LX)	1690 [66.5]
H106	ANGLE OF APPROACH (LX)	16.5°
H107	ANGLE OF DEPARTURE (LX)	13.4°
H130	STEP HEIGHT FRONT DOORS AT CURB	412 [16.2]
H131	STEP HEIGHT SLIDING DOOR AT CURB	465 [18.3]
H502	CARGO FLOOR TO GROUND AT CURB	646 [25.5]
FRONT COMPARTMENT		
TL25	DESIGN H-POINT TRAVEL	180 [7.1]
TL28	SEAT TRACK TRAVEL REAR OF H-POINT	30 [1.2]
L34	MAXIMUM EFFECTIVE LEGROOM	1033 [40.7]
L34M	MAXIMUM EFFECTIVE LEGROOM (SgRP AT REARMOST)	1061 [41.8]
W3	SHOULDER ROOM — FRONT	1549[61.0]
W5	HIP ROOM — FRONT	1490 [58.7]
H61	EFFECTIVE HEADROOM — FRONT	986 [38.8]
REAR COMPARTMENT — CARGO		
L202	CARGO LENGTH — CLOSED LIFTGATE TO BACK OF FRONT SEAT AT FLOOR	2307 [90.8]
L204	CARGO LENGTH AT BELT TO FRONT SEAT	2078 [81.8]
L509	CARGO LENGTH 3RD SEAT	568 [22.4]
L510	CARGO LENGTH @ BELT — BEHIND 3RD SEAT	462[18.2]
W201	CARGO WIDTH BETWEEN WHEELHOUSES	1221 [48.0]
W500	CARGO BODY WIDTH AT FLOOR	1691 [66.6]
H202	REAR OPENING HEIGHT	1201 [47.3]
H505	CARGO HEIGHT — MAXIMUM	1321 [52.0]
V6	CARGO VOLUME — CU. FT. — TOTAL (LX)	3810/134.5
V9	CARGO VOLUME BEHIND 3RD SEAT — CU. FT.	732/25.8

CODE	DESCRIPTION	4-DOOR
REAR COMPARTMENT — SEAT		
L50	SgRP COUPLE DISTANCE — FRONT SEAT TO 2ND SEAT	858 [33.7]
L51	EFFECTIVE LEGROOM — 2ND SEAT	966 [38.0]
L85	SgRP COUPLE DISTANCE 2ND TO 3RD SEAT	813 [32.0]
L86	EFFECTIVE LEGROOM — 3RD SEAT	850 [33.5]
L86M	MAXIMUM EFFECTIVE LEGROOM — 3RD SEAT (REARMOST)	850 [33.5]
W4	SHOULDER ROOM — 2ND SEAT	1615 [63.6]
W6	HIP ROOM — 2ND SEAT	1688 [66.5]
W85	SHOULDER ROOM — 3RD SEAT	1293 [50.0]
W86	HIP ROOM — 3RD SEAT	1222 [48.1]
H63	EFFECTIVE HEADROOM — 2ND SEAT	1019 [40.1]
H86	EFFECTIVE HEADROOM — 3RD SEAT	969 [38.1]
DOOR OPENINGS [ENTRANCE]		
L508-R	ENTRANCE LENGTH — CARGO SIDE DOOR	714 [28.1]
L508-L	ENTRANCE LENGTH — CARGO SIDE DOOR	646 [25.4]
W203	REAR OPENING WIDTH AT FLOOR	1263 [49.7]
H508	ENTRANCE HEIGHT — CARGO SIDE DOOR	1115 [43.9]
SEATING REFERENCE POINTS [SgRP]		
L31	SgRP FRONT LH/RH SEAT (X)	2981 [117.36]
L35	SgRP 2ND SEAT (X)	3839 [151.1]
L36	SgRP 3RD SEAT (X)	4650 [183.1]
W20	SgRP FRONT SEAT LH/RH (Y)	– 412 [–16.22]/425 [16.7]
W25	SgRP 2ND SEAT LH/RH QUAD (Y)	– 313 [–12.3]/427 [16.8]
W25	SgRP 2ND SEAT LH/RH (Y) BENCH — INDEX LEFT	– 280 [–11.0]/280 [11.0]
W26	SgRP 3RD SEAT LH/RH (Y)	– 412 [–16.2]/412 [16.2]
H70	SgRP FRONT SEAT LH/RH (Z)	1152 [45.35]
H71	SgRP 2ND SEAT LH/RH (Z) QUAD / BENCH	1124 [44.25]/1130 [44.5]
H88	SgRP 3RD SEAT LH/RH (Z)	1168 [46.0]
FRONT FIDUCIAL MARK		
L54	1ST X-COORDINATE	2285 [89.96]
W21	1ST X-COORDINATE LH/RH (Y)	– 787.4 [–31.0]/787.4 [31.0]
H81	1ST X-COORDINATE	596.5 [23.48]

NOTE — [ ] DIMENSIONS ARE INCHES.

DIMENSIONAL DATA
FREESTAR CARGO VAN



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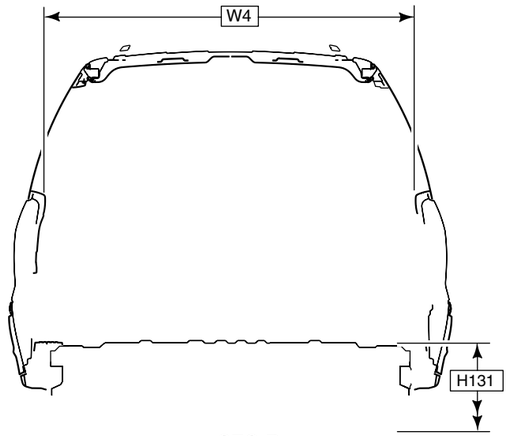

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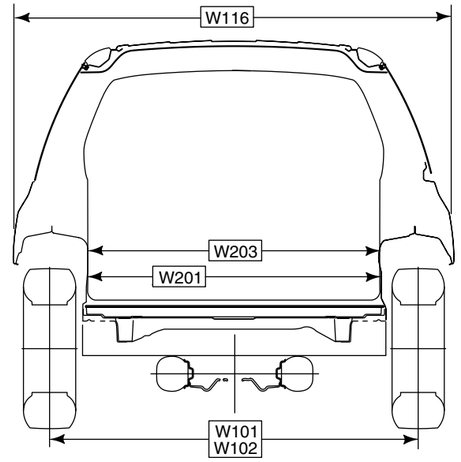

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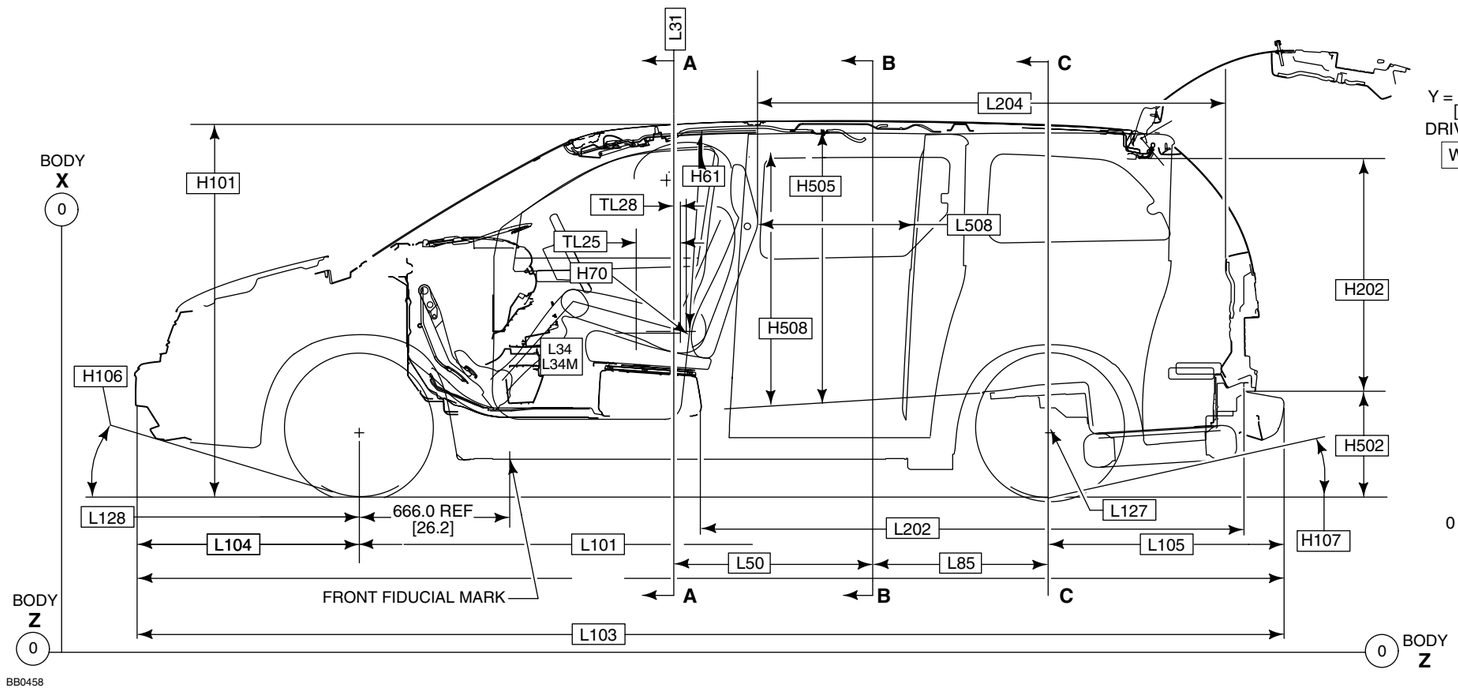
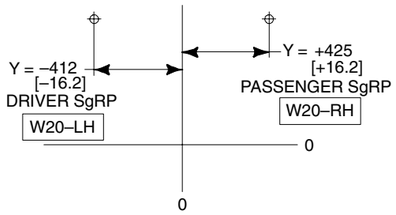
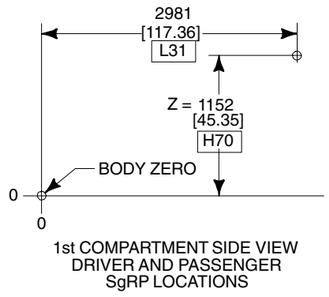




1st COMPARTMENT REAR VIEW
DRIVER AND PASSENGER
SgRP LOCATIONS



1st COMPARTMENT SIDE VIEW
DRIVER AND PASSENGER
SgRP LOCATIONS

NOTE — [ ] DIMENSIONS ARE INCHES.

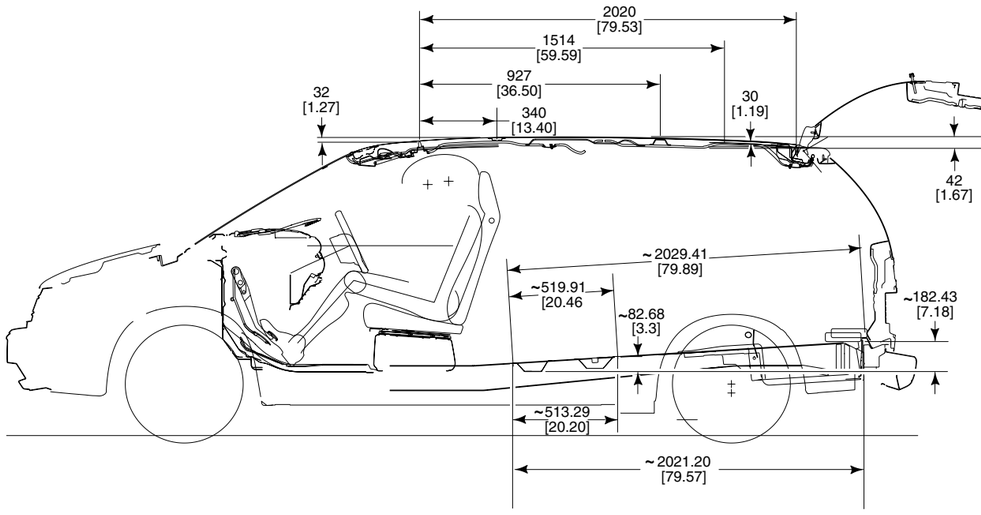
DIMENSIONAL DATA
FREESTAR CARGO VAN

CODE	DESCRIPTION	CARGO
EXTERIOR		
L101	WHEELBASE	3069 [120.8]
L103	OVERALL LENGTH	5105 [201.0]
L104	OVERHANG — FRONT	997 [39.3]
L105	OVERHANG — REAR	1039 [40.9]
L127	REAR WHEELS ℄ X-COORDINATE	4685 [184.5]
L128	FRONT WHEELS ℄ X-COORDINATE	1616 [63.6]
W101	TREAD — FRONT	1644 [64.7]
W102	TREAD — REAR	1595 [62.8]
W103	VEHICLE WIDTH MAXIMUM WITH MOLDINGS	1945 [76.5]
W116	VEHICLE WIDTH	1917 [75.4]
W117	BODY WIDTH AT DRIVER SgRP	1917 [75.4]
H101C	VEHICLE HEIGHT — CURB	1742 [68.6]
H101	VEHICLE HEIGHT — LOADED	1687 [66.5]
H106	ANGLE OF APPROACH	16.6°
H107	ANGLE OF DEPARTURE	12.9°
H130	STEP HEIGHT FRONT DOORS AT CURB	414 [16.3]
H131	STEP HEIGHT SLIDING DOOR AT CURB	466 [18.3]
H502	CARGO FLOOR TO GROUND AT CURB	646 [25.5]
FRONT COMPARTMENT		
TL25	DESIGN H-POINT TRAVEL	180 [7.1]
TL28	SEAT TRACK TRAVEL REAR OF H-POINT	30 [1.2]
L34	MAXIMUM EFFECTIVE LEGROOM	1033 [40.7]
L34M	MAXIMUM EFFECTIVE LEGROOM (SgRP AT REARMOST)	1061 [41.8]
W3	SHOULDER ROOM — FRONT	1549 [60.9]
W5	HIP ROOM — FRONT	1490 [58.6]
H61	EFFECTIVE HEADROOM — FRONT	986 [38.8]

CODE	DESCRIPTION	CARGO
REAR COMPARTMENT — CARGO		
L202	CARGO LENGTH — CLOSED LIFTGATE TO BACK OF FRONT SEAT AT FLOOR	2307 [90.8]
L204	CARGO LENGTH — CLOSED LIFTGATE TO BACK OF FRONT SEAT AT BELT	2087 [82.1]
W201	CARGO WIDTH BETWEEN WHEELHOUSES	1276 [50.2]
W500	CARGO BODY WIDTH AT FLOOR	1712 [67.4]
H202	REAR OPENING HEIGHT	1026 [40.4]
H505	CARGO HEIGHT — MAXIMUM	1194 [47.0]
V6	CARGO VOLUME — CU. FT. — TOTAL	132.3
DOOR OPENINGS		
L508	ENTRANCE LENGTH — CARGO SIDE DOOR	714 [28.1]
W203	REAR OPENING WIDTH AT FLOOR	1263 [49.7]
H508	ENTRANCE HEIGHT — CARGO SIDE DOOR	1115 [43.9]
SEATING REFERENCE POINTS (SgRP)		
L31	SgRP FRONT SEAT LH/RH (X)	2981 [117.36]
W20	SgRP FRONT SEAT LH/RH (Y)	–412 [–16.2]/425 [16.7]
H70	SgRP FRONT SEAT LG/RH (Z)	1152 [45.35]
FRONT FIDUCIAL MARK		
L54	1ST X-COORDINATE	2285 [89.96]
W21	1ST Y-COORDINATE LH/RH	–787.4 [–31.0]/787.4 [31.0]
H81	1ST Z-COORDINATE	596.5 [23.48]

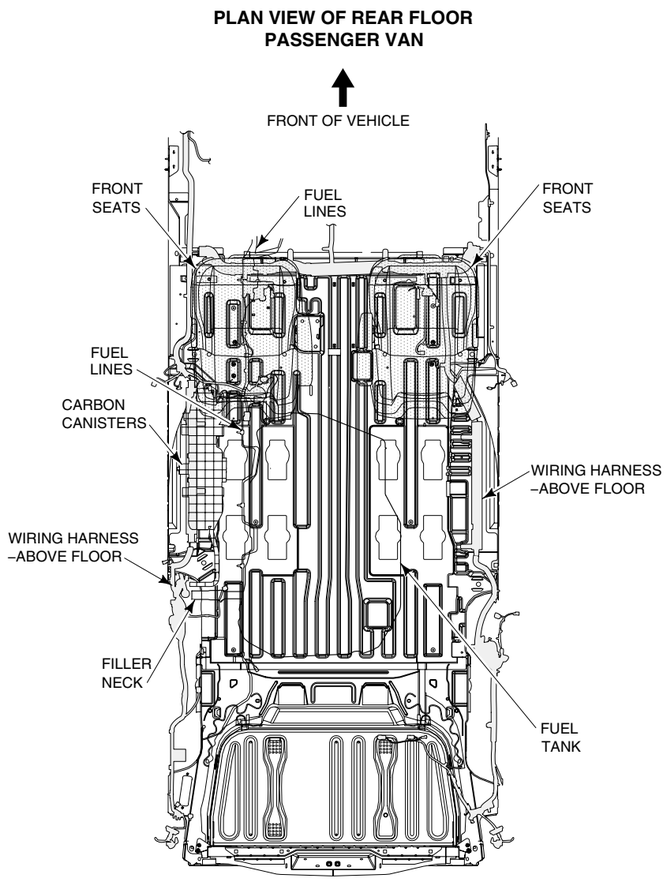
NOTE — [ ] DIMENSIONS ARE INCHES.

DIMENSIONAL DATA
FREESTAR WAGON/VAN



BB0461–2004

PLAN VIEW OF REAR FLOOR
PASSENGER VAN



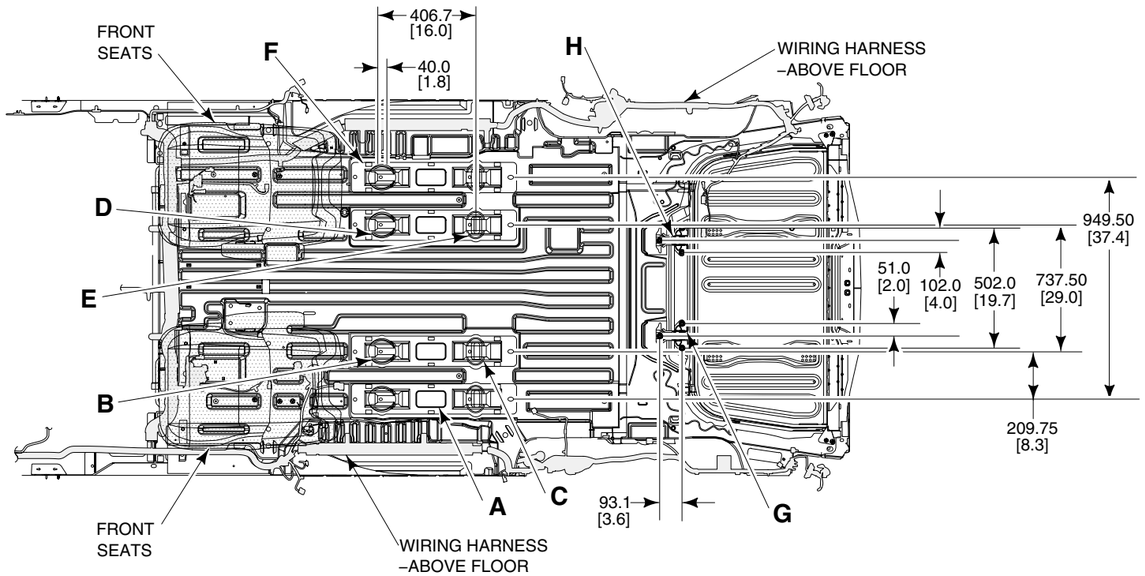
SEAT ANCHORAGE POCKET LOCATIONS

CAUTION – WHEN DRILLING THE FLOOR, UNDERSTAND THE LOCATION OF COMPONENTS BELOW FLOOR & DO NOT DRILL IN AREAS IDENTIFIED IN THE ILLUSTRATION ABOVE.

NOTE — [ ] DIMENSIONS ARE INCHES.

DIMENSIONAL DATA
FREESTAR WAGON/VAN

PLAN VIEW OF REAR FLOOR
PASSENGER VAN



FRONT OF VEHICLE

SEAT ANCHORAGE POCKET LOCATIONS

SEATING CONFIGURATION/LOCATIONS	
A, B & C:	2ND ROW DRIVER SIDE BUCKET
D, E & F:	2ND ROW PASSENGER SIDE BUCKET
B, C, D & E:	2ND ROW BENCH - NO OFFSET
G & H:	3RD ROW BENCH - NO OFFSET

NOTE — [ ] DIMENSIONS ARE INCHES.

BB0459–2004

E-SERIES WAGON MODEL LINEUP

2004 MODEL YEAR

E-SERIES MODEL	BODY CODE	WHEELBASE inches	CA inches	STANDARD ENGINE(1) liters	STANDARD TRANSMISSION	MAXIMUM GVWR pounds	PASSENGER CAPACITY	BASE CURB WEIGHT(2)		
								FRONT pounds	REAR pounds	TOTAL pounds
REGULAR/EXTENDED WAGON										
E-150 Wagon	E11	138	—	4.6L V-6	4-Spd. Auto OD (4R70W)	7000	7	2970	2536	5506
							8	2902	2334	5236
E-350 Super Duty Wagon	E31	138	—	5.4L V-8	4-Spd. Auto OD (4R75W)	8600	7	3246	2642	5888
							8	3226	2578	5804
				5.4L V-8 NGV	4-Spd. Auto OD (4R100)	8700	8	3174	3180	6354
				5.4L V-8	4-Spd. Auto OD (4R75W)	8600	12	3209	2692	5901
				5.4L V-8 NGV	4-Spd. Auto OD (4R100)	8700		3178	3308	6486
E-350 Super Duty Extended Wagon	S31	138	—	5.4L V-8	4-Spd. Auto OD (4R100)	9300	12	2945	3126	6071
				5.4L V-8 NGV				2913	3743	6656
				5.4L V-8		9100	15	2920	3240	6160
				6.8L V-10		9300		3125	3174	6299
				6.0L V-8(3)	5-Spd. Auto OD (TorqShift™)	9400		3521	3268	6789
				5.4L V-8 NGV	4-Spd. Auto OD (4R100)	9100		2923	3737	6660

(1) Engine/transmission combinations may not be available on all models, or in all areas.
(2) Base curb weight is for standard equipment only.
(3) Late Availability

E-SERIES VAN MODEL LINEUP

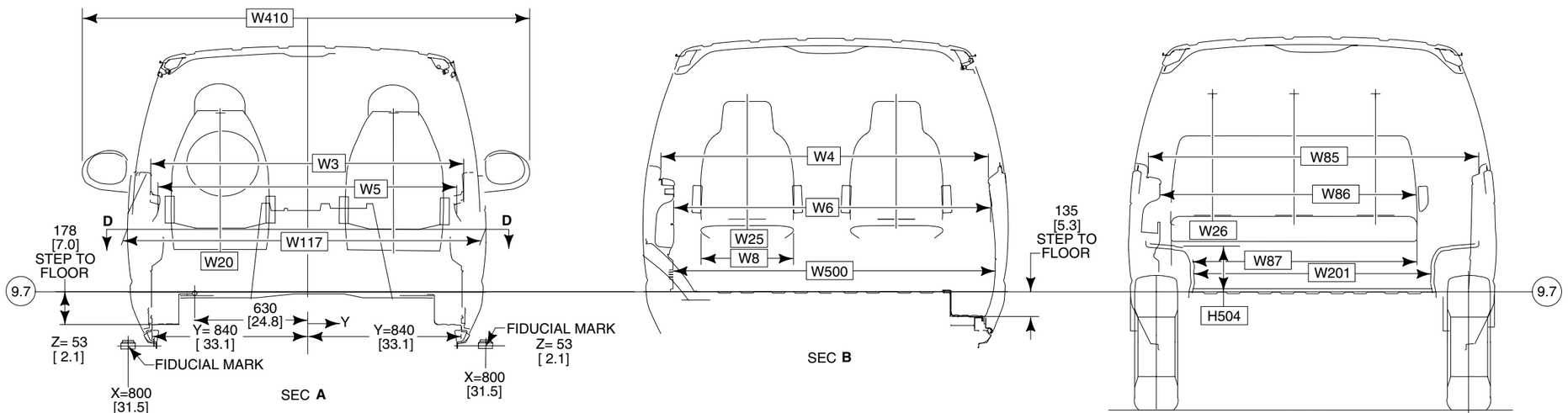
2004 MODEL YEAR

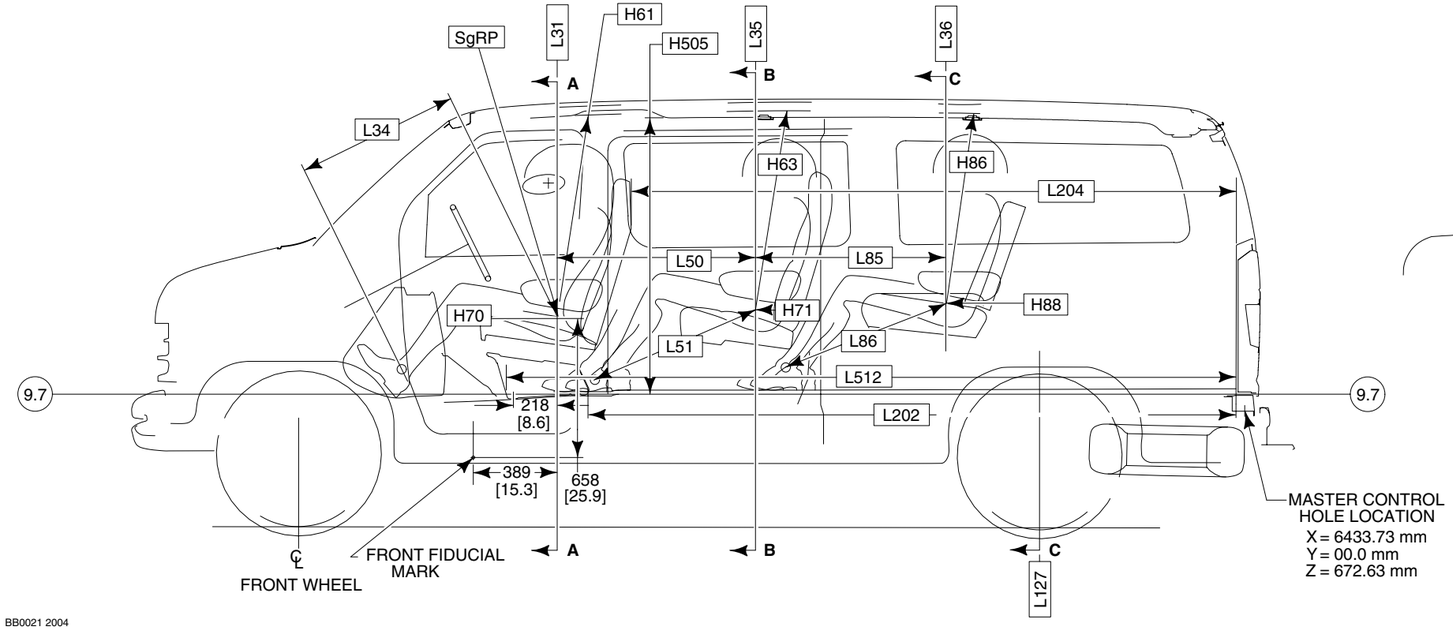
E-SERIES MODEL	BODY CODE	WHEELBASE inches	CA inches	STANDARD ENGINE[1] liters	STANDARD TRANSMISSION[1]	MAXIMUM GVWR pounds	MAXIMUM PAYLOAD[3] pounds	BASE CURB WEIGHT[2]		
								FRONT pounds	REAR pounds	TOTAL pounds
REGULAR/EXTENDED VAN										
E-150 Van	E14	138	—	4.6L V-6	4-Spd. Auto. OD (4R70W)	6700/7000[4]	1865/2205[4]	2769/2741[4]	2065/2051[4]	4834/4792[4]
						6700[5]	1635[5]	2954[5]	2107[5]	5061[5]
E-250 Van	E24	138	—	4.6L V-8	4-Spd. Auto. OD (4R70W)	8600	3430	2877	2289	5166
						8600[5]	3180[5]	3068[5]	2350[5]	5418[5]
				5.4L V-8 NGV	4-Spd. Auto OD (4R100)	8600	2775	2887	2936	5823
E-250 Extended Van	S24	138	—	4.6L V-8	4-Spd. Auto. OD (4R70W)	8600	3225	2821	2550	5371
				4.6L V-6		8600[5]	3180[5]	3073[5]	2345[5]	5418[5]
E-350 Super Duty Van	E34	138	—	5.4L V-8	4-Spd. Auto. OD (4R100)	9500	4075	3032	2391	5423
						9500[5]	3850[5]	3206[5]	2443[5]	5649[5]
				5.4L V-8 NGV		9500	3485	3000	3012	6012
E-350 Super Duty Extended Van	S34	138	—	5.4L V-8	4-Spd. Auto. OD (4R100)	9400	3815	2944	2638	5582
						9400[5]	3415[5]	3132[5]	2703[5]	5835[5]
				5.4L V-8 NGV		9300	3140	2906	3251	6157

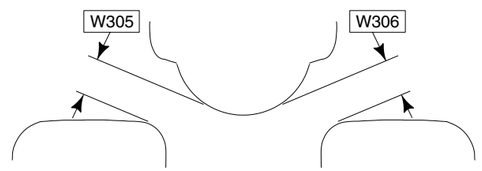
(1) Engine/transmission combinations may not be available on all models, or in all areas.
(2) Base curb weight is for standard equipment only.
(3) Includes weight of driver, passengers and optional equipment.
(4) RV Conversion
(5) Crew Van

DIMENSIONAL DATA
E-150/E-350 SUPER DUTY WAGON 7-PASSENGER

2004
MODEL YEAR







SEC **D**

TYPICAL OF ALL MODELS
ENGINE COVER TO FRONT SEATS
MINIMUM CLEARANCE
SEE CHART ON NEXT PAGE

NOTES — [ ] DIMENSIONS ARE INCHES.
— **CH, LH, F, R, FW** AND **RW** DIMENSIONS, PAGE 54.
— SEAT TRACK TRAVEL, PAGE 78.

BB0021 2004

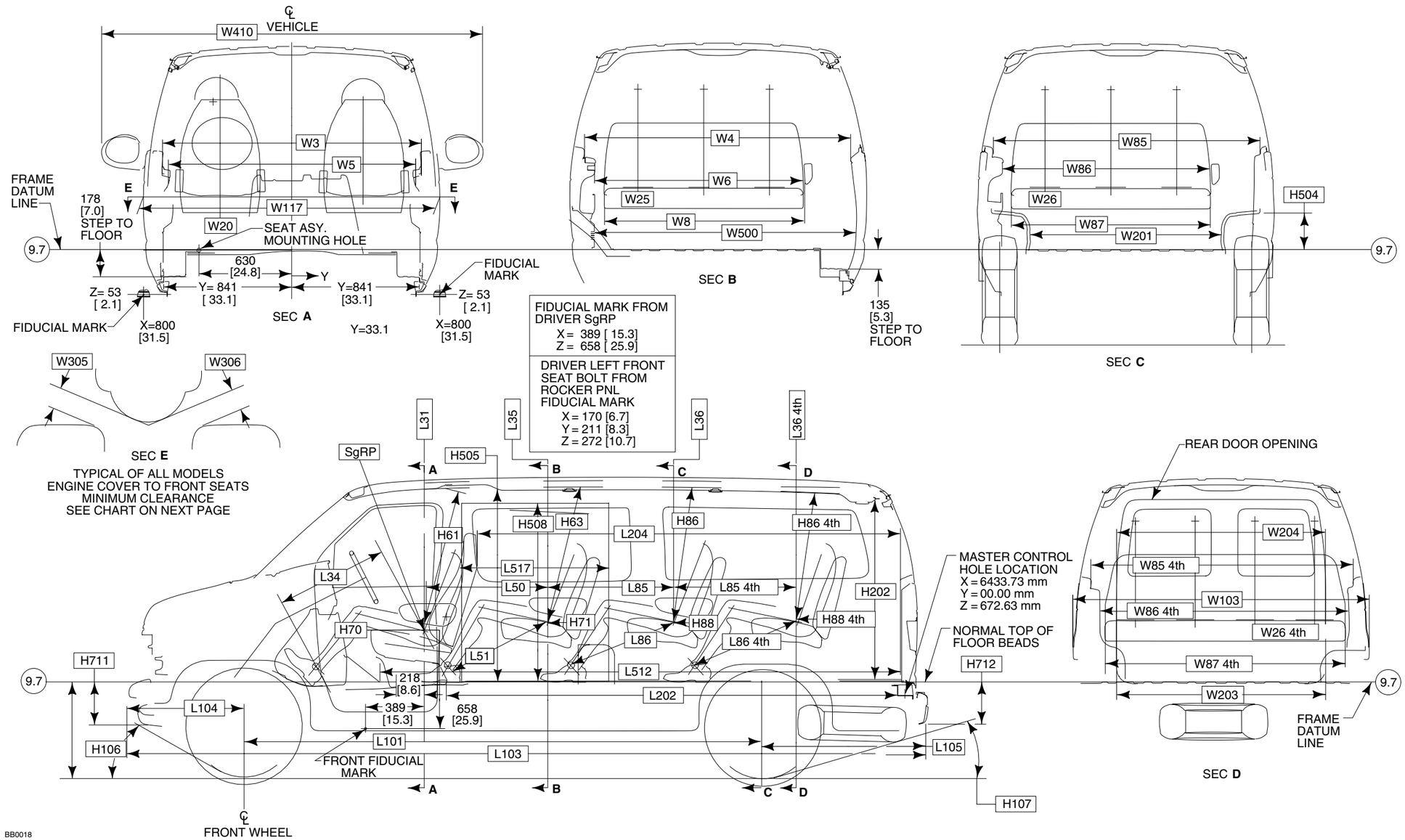
DIMENSIONAL DATA
E-150/E-350 SUPER DUTY WAGON 7-PASSENGER
QUAD CAPTAIN'S CHAIRS/3-PASSENGER BENCH

CODE	DESCRIPTION	7-PASSENGER QUAD CAPTAIN'S CHAIRS/ 3-PASSENGER BENCH
FRONT COMPARTMENT		
H61	EFFECTIVE HEAD ROOM – FRONT	1069 [42.1]
H70	SgRP FRONT LH/RH (Z)	604 [23.8]/ 597 [23.5]
L31	SgRP FRONT LG/RH (X)	1189 [46.8]/ 1211 [47.7]
L34	MAXIMUM EFFECTIVE LEG ROOM	1016 [40.0]
W3	SHOULDER ROOM – FRONT	1728 [68.0]
W5	HIP ROOM – FRONT	1670 [65.7]
W20	SgRP FRONT LH/RH (Y)	-518 [-20.4]/ 518 [20.4]
W117	BODY WIDTH AT H-POINT	1998 [78.7]
W305	SEAT TO ENGINE COVER – DRIVER	133 [5.24]
W306	SEAT TO ENGINE COVER – PASSENGER	131 [5.17]
W410	SAIL MOUNT – MANUAL/POWER	2434 [93.9]
	TRAILER TOW MIRROR / EXTENDED	2650 [102.5]/ 2753 [108.4]
REAR COMPARTMENT – CARGO		
H504	WHEELHOUSE HEIGHT	236 [9.3]
H505	CARGO HEIGHT – MAXIMUM	1339 [52.7]
L202	CARGO LENGTH – CLOSED FRONT	3064 [120.6]
L204	CARGO LENGTH AT BELT – FRONT	2886 [113.6]
L512	CARGO LENGTH TO ENGINE COVER	3511 [138.2]
W201	CARGO WIDTH BETWEEN WHEELHOUSE	1297 [51.1]
W500	CARGO BODY WIDTH AT FLOOR	1686 [66.4]
V6	CARGO VOLUME – REAR OF FRONT SEAT – CU. FT.	237.1

CODE	DESCRIPTION	7-PASSENGER QUAD CAPTAIN'S CHAIRS/ 3-PASSENGER BENCH
REAR COMPARTMENT – SEATING		
H63	EFFECTIVE HEAD ROOM – 2ND	1045 [41.1]
H71	SgRP – 2ND (Z)	650 [25.6]
H86	EFFECTIVE HEAD ROOM – 3RD	1017 [40.4]
H88	SgRP – 3RD (Z)	665 [26.2]
L35	SgRP – 2ND (X)	2098 [82.6]
L36	SgRP – 3RD (X)	3020 [118.9]
L50	H-POINT COUPLE DISTANCE	910 [35.8]
L51	EFFECTIVE LEG ROOM – 2ND	1031 [40.6]
L85	SgRP COUPLE DISTANCE – 3RD	923 [36.4]
L86	LEG ROOM – 3RD	1083 [42.6]
W4	SHOULDER ROOM – 2ND	1852 [72.9]
W6	HIP ROOM – 2ND – ARMREST UP/DOWN	1745 [68.7]/ 1417 [55.8]
W8	SEATING WIDTH – 2ND	511 [20.1]
W25	SgRP – 2ND LH (Y)	–435 [–17.1]
W26	SgRP – 3RD LH (Y)	–545 [–21.4]
W85	SHOULDER ROOM – 3RD	1801 [70.9]
W86	HIP ROOM – 3RD – ARMREST UP/DOWN	1710 [67.3]/ 1415 [55.7]
W87	SEATING WIDTH	1348 [53.1]

NOTE — [ ] DIMENSIONS ARE INCHES.

DIMENSIONAL DATA
E-150/350 SUPER DUTY WAGON 8/12-PASSENGER



NOTES — [ ] DIMENSIONS ARE INCHES.
— **CH, LH, F, R, FW** AND **RW**, PAGE 54.
— SEAT TRACK TRAVEL, PAGE 78.

DIMENSIONAL DATA
E-150/350 SUPER DUTY WAGON 8/12-PASSENGER

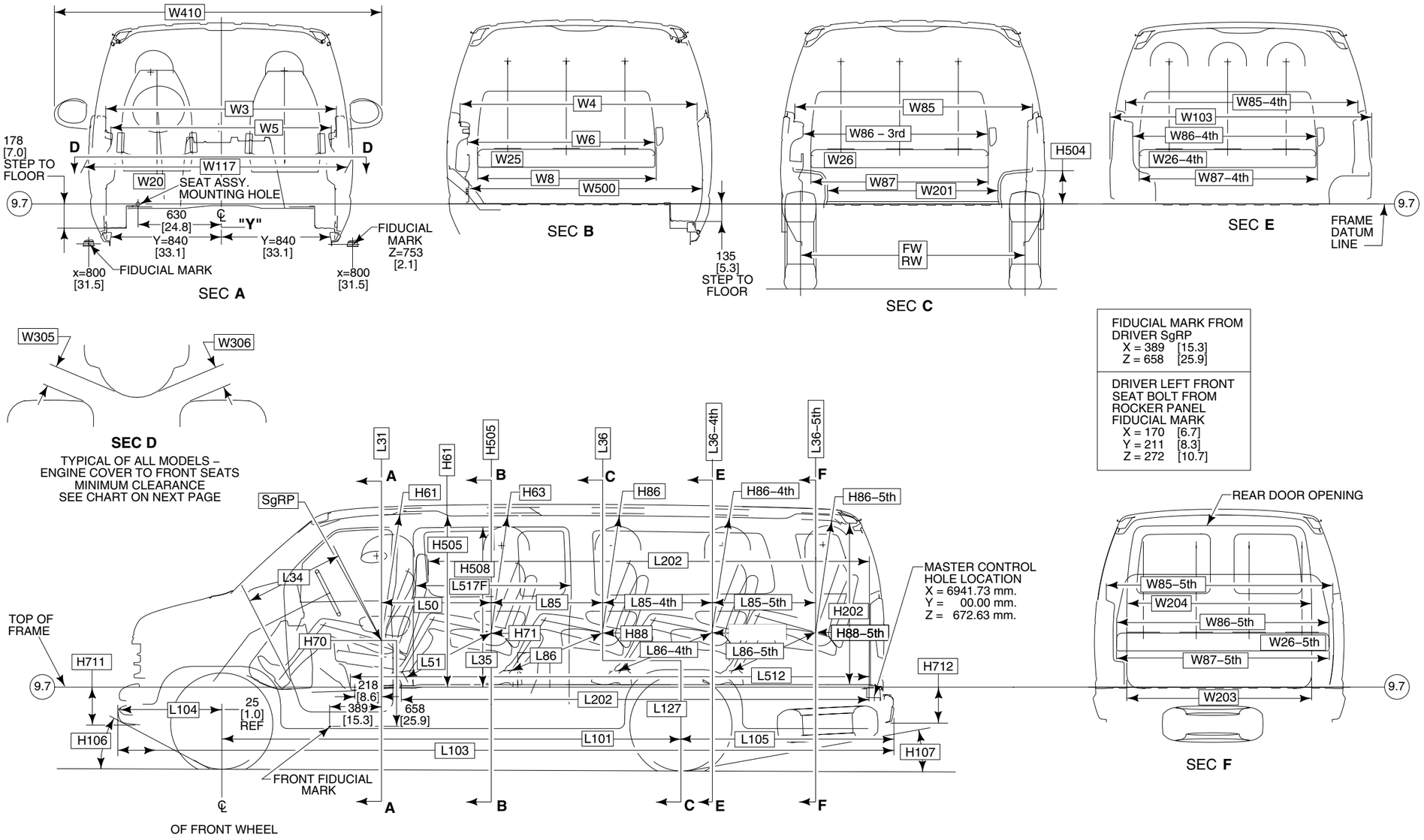
CODE	DESCRIPTION	BASE BUCKET 8-PASS CARGO DOOR	BASE BUCKET 12-PASS SLIDING DOOR	CAPTAIN'S CHAIR 8-PASS SLIDING DOOR	CAPTAIN'S CHAIR 12-PASS SLIDING DOOR
EXTERIOR					
H106	ANGLE OF APPROACH	26.7°	29.2°	26.7°	29.2°
H107	ANGLE OF DEPARTURE	19.3°	14.3°	19.3°	14.3°
H711	FRAME DATUM LINE TO BOTTOM OF FRONT BUMPER	206 [8.1]	206 [8.1]	206 [8.1]	206 [8.1]
H712	FRAME DATUM LINE TO BOTTOM OF REAR BUMPER	256 [10.1]	256 [10.1]	256 [10.1]	256 [10.1]
L101	WHEELBASE	3506 [138.0]	3506 [138.0]	3506 [138.0]	3506 [138.0]
L103	OVERALL LENGTH	5381 [211.8]	5381 [211.8]	5381 [211.8]	5381 [211.8]
L104	OVERHANG — FRONT	762 [30.0]	762 [30.0]	762 [30.0]	762 [30.0]
L105	OVERHANG — REAR	1114 [43.8]	1114 [43.8]	1114 [43.8]	1113 [43.8]
W103	VEHICLE WIDTH	2014 [79.3]	2014 [79.3]	2014 [79.3]	2014 [79.3]
W117	BODY WIDTH AT H-POINT	1998 [78.7]	1998 [78.7]	1998 [78.7]	1998 [78.7]
W410	SAIL MOUNT — MANUAL/POWER MIRROR	2389 [94.0]	2434 [93.9]	2241 [88.2]	2203 [86.7]
	TRAILER TOW MIRROR / EXTENDED	2605 [102.5]/ 2753 [108.4]	2605 [102.5]/ 2753 [108.4]	2605 [102.5]/ 2753 [108.4]	2605 [102.5]/ 2753 [108.4]
FRONT COMPARTMENT					
H61	EFFECTIVE HEAD ROOM — FRONT	1069[42.1]	1069[42.1]	1069 [42.1]	1069 [42.1]
H70	SgRP FRONT LEFT/RIGHT (Z)	604 [23.8]/ 597 [23.5]	604 [23.8]/ 597 [23.5]	604 [23.8]/ 597 [23.5]	604 [23.8]/ 597 [23.5]
L31	SgRP FRONT LEFT/RIGHT (X)	1188 [46.8]/ 1211 [47.7]	1188 [46.8]/ 1211 [47.7]	1188 [46.8]/ 1211 [47.7]	1188 [46.8]/ 1211 [47.7]
L34	MAXIMUM EFFECTIVE LEG ROOM	1015 [40.0]	1015 [40.0]	1015 [40.0]	1015 [40.0]
W3	SHOULDER ROOM — FRONT	1728 [68.0]	1728 [68.0]	1728 [68.0]	1728 [68.0]
W5	HIP ROOM — FRONT	1670 [65.7]	1670 [65.7]	1670 [65.7]	1670 [65.7]
W20	SgRP FRONT LEFT/RIGHT (Y)	-518 [-20.4]/ 518 [20.4]	-518 [-20.4]/ 518 [20.4]	-518 [-20.4]/ 518 [20.4]	-518 [-20.4]/ 518 [20.4]
W305	SEAT TO ENGINE COVER — DRIVER	186 [7.3]	186 [7.3]	133 [5.2]	133 [5.2]
W306	SEAT TO ENGINE COVER — PASSENGER	168 [6.6]	168 [6.6]	131 [5.2]	131 [5.2]
REAR COMPARTMENT — CARGO					
H504	WHEELHOUSE HEIGHT	236 [9.3]	236 [9.3]	236 [9.3]	236 [9.3]
H505	CARGO HEIGHT — MAXIMUM	1339 [52.7]	1339 [52.7]	1339 [52.7]	1339 [52.7]
L202	CARGO LENGTH — CLOSED FRONT	3064 [120.6]	3064 [120.6]	3064 [120.6]	3064 [120.6]
L204	CARGO LENGTH AT BELT — CLOSED FRONT	2886 [113.6]	2886 [113.6]	2886 [113.6]	2886 [113.6]
L512	CARGO LENGTH TO ENGINE COVER	3511 [138.2]	3511 [138.2]	3511 [138.2]	3511 [138.2]
W201	CARGO WIDTH BETWEEN WHEELHOUSE	1297 [51.1]	1297 [51.1]	1297 [51.1]	1297 [51.1]
W500	CARGO BODY WIDTH AT FLOOR	1741 [68.6]	1741 [68.6]	1796 [70.7]	1796 [70.7]
V16	CARGO VOLUME — REAR OF FRONT SEAT - CU.FT.	236.2	236.2	234.9	234.9

CODE	DESCRIPTION	BASE BUCKET 8-PASS CARGO DOOR	BASE BUCKET 12-PASS SLIDING DOOR	CAPTAIN'S CHAIR 8-PASS SLIDING DOOR	CAPTAIN'S CHAIR 12-PASS SLIDING DOOR
REAR COMPARTMENT — SEATING					
H63	EFFECTIVE HEAD ROOM — 2ND	1019 [40.1]	1019 [40.1]	1019 [40.1]	1019 [40.1]
H71	SgRP 2ND LEFT/CENTER (Z)	665 [26.2]/ 665 [26.2]	665 [26.2]/ 665 [26.2]	665 [26.2]/ 665 [26.2]	665 [26.2]/ 665 [26.2]
H86	EFFECTIVE HEAD ROOM — 3RD	1019 [40.1]	1019 [40.1]	1019 [40.1]	1019 [40.1]
H86-4TH	EFFECTIVE HEAD ROOM — 4TH	–	962 [37.9]	–	962 [37.9]
H88	SgRP 3RD (Z)	665 [26.2]	665 [26.2]	665 [26.2]	665 [26.2]
H88-4TH	SgRP 4TH (Z)	–	665 [26.2]	–	665 [26.2]
L35	SgRP 2ND LEFT/CENTER (X)	2032[80.0]/ 2032 [80.0]	2032[80.0]/ 2032 [80.0]	2032[80.0]/ 2032 [80.0]	2032[80.0]/ 2032 [80.0]
L36	SgRP 3RD (X)	2883 [113.5]	2883 [113.5]	2883 [113.5]	2883 [113.5]
L36-4TH	SgRP 4TH (X)	–	3718 [146.4]	–	3718 [146.4]
L50	H-POINT COUPLE DISTANCE	844 [33.2]	844 [33.2]	844 [33.2]	844 [33.2]
L51	EFFECTIVE LEG ROOM — 2ND	966 [38.0]	937 [36.9]	1023 [40.3]	927 [36.5]
L85	SgRP COUPLE DISTANCE — 3RD	851 [33.5]	851 [33.5]	851 [33.5]	851 [33.5]
L85-4TH	SgRP COUPLE DISTANCE — 4TH	–	837 [32.9]	–	837 [32.9]
L86	EFFECTIVE LEG ROOM — 3RD	1046 [41.2]	1046 [41.2]	1046 [41.2]	1046 [41.2]
L86-4TH	EFFECTIVE LEG ROOM — 4TH	–	1033 [40.7]	–	1033 [40.7]
W4	SHOULDER ROOM — 2ND	1791 [70.5]	1791 [70.5]	1800 [70.9]	1800 [70.9]
W6	HIP ROOM — 2ND ARMREST DOWN/UP	1417 [55.8]/ 1688 [66.5]	1417 [55.8]/ 1688 [66.5]	1417 [55.8]/ 1744 [68.7]	1417 [55.8]/ 1744 [68.7]
W8	SEATING WIDTH — 2ND	1350 [53.2]	1350 [53.2]	1350 [53.2]	1350 [53.2]
W25	SgRP 2ND LEFT/CENTER (Y)	-545 [-21.4]/ -100 [-3.9]	-545 [-21.4]/ -100 [-3.9]	-545 [-21.4]/ -100 [-3.9]	-545 [-21.4]/ -100 [-3.9]
W26	SgRP 3RD LEFT/CENTER (Y)	-545 [-21.4]/ -99 [-3.9]	-545 [-21.4]/ -99 [-3.9]	545 [-21.4]/- -99 [-3.9]	-545 [-21.4]/ --99 [-3.9]
W26-4TH	SgRP 4TH — RIGHT OUTSIDE (Y)	–	631 [24.9]	–	631 [24.9]
W85	SHOULDER ROOM — 3RD	1808 [71.2]	1808 [71.2]	1808 [71.2]	1808 [71.2]
W85-4TH	SHOULDER ROOM — 4TH	–	1770 [69.7]	–	1770 [69.7]
W86	HIP ROOM — 3RD ARMREST DOWN/UP	1415 [55.7]/ 1698 [66.9]	1415 [55.7]/ 1698 [66.9]	1415 [55.7]/ 1698 [66.9]	1415 [55.7]/ 1698 [66.9]
W86-4TH	HIP ROOM — 4TH	–	1684 [66.3]	–	1684 [66.3]
W87	SEATING WIDTH — 3RD	1350 [53.2]	1350 [53.2]	1350 [532]	1350 [53.2]
W87-4TH	SEATING WIDTH — 4TH	–	1623 [63.9]	–	1623 [63.9]
DOOR OPENINGS (ENTRANCE ROOM)					
H202	REAR OPENING HEIGHT	1202 [47.3]	1202 [47.3]	1202 [47.3]	1202 [47.3]
H508	ENTRANCE HEIGHT — CARGO SIDE	1206 [47.5]	1206 [47.5]	1206 [47.5]	1206 [47.5]
L517	ENTRANCE LENGTH — CARGO SIDE	1196 [47.1]	1006 [39.6]	1006 [39.6]	1006 [39.6]
W203	REAR OPENING WIDTH @ FLOOR	1386 [54.6]	1386 [54.6]	1386 [54.6]	1386 [54.6]
W204	REAR OPENING WIDTH AT BELT	1382 [54.4]	1382 [54.4]	1382 [54.4]	1382 [54.4]

NOTE — [ ] DIMENSIONS ARE INCHES.

DIMENSIONAL DATA
E-350 SUPER DUTY
EXTENDED WAGON 12/15-PASSENGER

2004
MODEL YEAR



FIDUCIAL MARK FROM DRIVER SgRP
X = 389 [15.3]
Z = 658 [25.9]
DRIVER LEFT FRONT SEAT BOLT FROM ROCKER PANEL FIDUCIAL MARK
X = 170 [6.7]
Y = 211 [8.3]
Z = 272 [10.7]

BB0020–2004

NOTES — [ ] DIMENSIONS ARE INCHES.
— **CH, LH, F, R, FW** AND **RW** DIMENSIONS, PAGE 54.
— SEAT TRACK TRAVEL, PAGE 78.

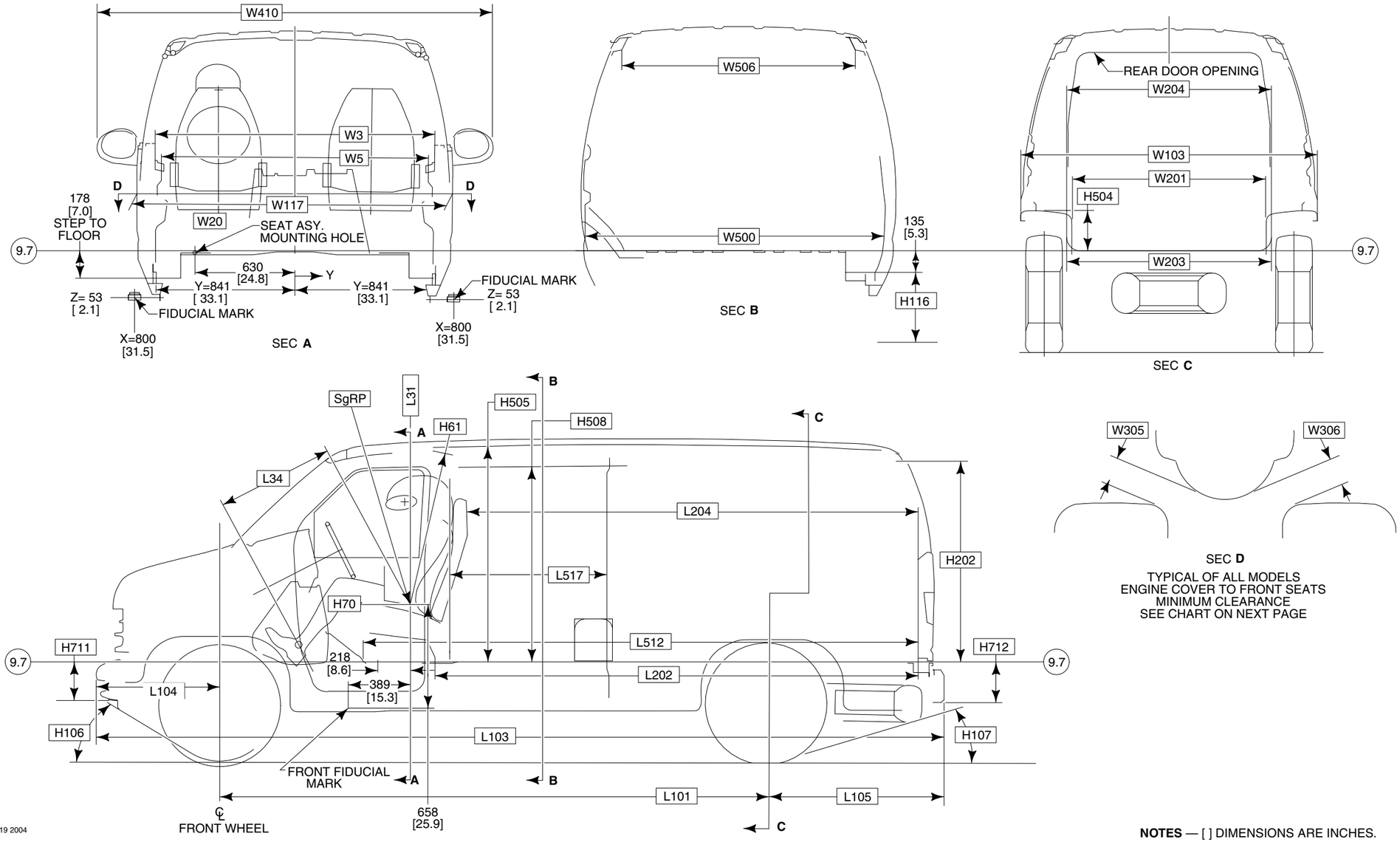
DIMENSIONAL DATA
E-350 SUPER DUTY
EXTENDED WAGON 12/15-PASSENGER

CODE	DESCRIPTION	BASE BUCKET CARGO DOOR	CAPTAIN'S CHAIR SLIDING DOOR
EXTERIOR			
H106	ANGLE OF APPROACH	32.1°	32.1°
H107	ANGLE OF DEPARTURE	16.4°	16.4°
H711	FRAME DATUM LINE TO BOTTOM OF FRONT BUMPER	206 [8.1]	206 [8.1]
H712	FRAME DATUM LINE TO BOTTOM OF REAR BUMPER	256 [10.1]	256 [10.1]
L101	WHEELBASE	3503 [137.9]	3503 [137.9]
L103	OVERALL LENGTH	5889 [231.8]	5889 [231.8]
L104	OVERHANG — FRONT	762 [30.0]	762 [30.0]
L105	OVERHANG — REAR	1623 [63.9]	1623 [63.9]
W103	VEHICLE WIDTH	2013 [79.2]	2013 [79.2]
W117	BODY WIDTH AT H-POINT	1998 [78.7]	1998 [78.7]
W410	SAIL MOUNT — MANUAL/POWER MIRROR	2434 [93.9]	2434 [93.9]
	TRAILER TOW MIRROR / EXTENDED	2605 [102.5]/ 2753 [108.4]	2605 [102.5]/ 2753 [108.4]
FRONT COMPARTMENT			
H61	EFFECTIVE HEAD ROOM — FRONT	1069[42.1]	1069 [42.1]
H70	SgRP FRONT LEFT/RIGHT (Z)	604 [23.8]/ 599 [23.6]	604 [23.8]/ 599 [23.6]
L31	SgRP FRONT LEFT/RIGHT (X)	1188 [46.8]/ 1211 [47.6]	1188 [46.8]/ 1211 [47.6]
L34	MAXIMUM EFFECTIVE LEG ROOM	1015 [40.0]	1015 [40.0]
W3	SHOULDER ROOM — FRONT	1729 [68.1]	1728 [68.0]
W5	HIP ROOM — FRONT	1670 [65.7]	1670 [65.7]
W20	SgRP FRONT LEFT/RIGHT (Y)	-518 [-20.4]/ 518 [20.4]	-518 [-20.4]/ 518 [20.4]
W305	SEAT TO ENGINE COVER — DRIVER	186 [7.3	133 [5.2]
W306	SEAT TO ENGINE COVER — PASSENGER	168 [6.6]	131 [5.2]
REAR COMPARTMENT — CARGO			
H504	WHEELHOUSE HEIGHT	220 [8.7]	220 [8.7]
H505	CARGO HEIGHT — MAXIMUM	1344 [52.9]	1339 [52.7]
L202	CARGO LENGTH — CLOSED FRONT	3572 [140.6]	3572 [140.6]
L204	CARGO LENGTH AT BELT — FRONT	3394 [133.6]	3394 [133.6]
L512	CARGO LENGTH TO ENGINE COVER	4019 [158.2]	4019 [158.2]
W201	CARGO WIDTH BETWEEN WHEELHOUSE	1312 [51.6]	1312 [51.6]
W500	CARGO BODY WIDTH AT FLOOR	1820 [71.7]	1820 [71.7]
V16	CARGO VOLUME — REAR OF FRONT SEAT - CU.FT.	8517.7 [300.8]	8483.9 [299.6]
REAR COMPARTMENT — SEATING			
H63	EFFECTIVE HEAD ROOM — 2ND	1019 [40.1]	1019 [40.1]
H71	SgRP 2ND LEFT/CENTER (Z)	665 [26.2]/ 665 [26.2]	665 [26.2]/ 665 [26.2]
H86	EFFECTIVE HEAD ROOM — 3RD	1019 [40.1]	1019 [40.1]
H86-4TH	EFFECTIVE HEAD ROOM — 4TH	1005 [39.6]	1005 [39.6]
H86-5TH	EFFECTIVE HEAD ROOM — 5TH	933 [36.7]	933 [36.7]
H88	SgRP 3RD (Z)	665 [26.2]	665 [26.2]

CODE	DESCRIPTION	BASE BUCKET CARGO DOOR	CAPTAIN'SCHAIR SLIDING DOOR
REAR COMPARTMENT — SEATING (continued)			
H88-4TH	SgRP 4TH (Z)	665 [26.2]	665 [26.2]
H88-5TH	SgRP 5TH (Z)	665 [26.2]	665 [26.2]
L35	SgRP 2ND LEFT/CENTER (X)	2032[80.0]	2032[80.0]
L36	SgRP 3RD (X)	2883 [113.5]	2883 [113.5]
L36-4TH	SgRP 4TH (X)	3718 [146.4]	3718 [146.4]
L36-5TH	SgRP 5TH (X)	4508[177.5]	4508 [177.5]
L50	H-POINT COUPLE DISTANCE	844 [33.2]	844 [33.2]
L51	EFFECTIVE LEG ROOM — 2ND	937 [36.9]	937 [36.9]
L85	SgRP COUPLE DISTANCE — 3RD	851 [33.5]	851 [33.5]
L85-4TH	SgRP COUPLE DISTANCE — 4TH	837 [32.9]	837 [32.9]
L85-5TH	SgRP COUPLE DISTANCE — 5TH	789 [31.0]	789 [31.0]
L86	EFFECTIVE LEG ROOM — 3RD	1046 [41.2]	1046 [41.2]
L86-4TH	EFFECTIVE LEG ROOM — 4TH	1033 [40.7]	1033 [40.7]
L86-5TH	EFFECTIVE LEG ROOM — 5TH	909 [35.8]	909 [35.8]
W4	SHOULDER ROOM — 2ND	1791 [70.5]	1799 [70.8]
W6	HIP ROOM — 2ND ARMREST DOWN/UP	1417 [55.8]/ 1689 [66.5]	1417 [55.8]/ 1745 [68.7]
W8	SEATING WIDTH — 2ND	1354 [53.3]	1354 [53.3]
W25	SgRP 2ND LEFT/CENTER (Y)	-545 [-21.4]/ -100 [-3.9]	-545 [-21.4]/ -100 [-3.9]
W26	SgRP 3RD LEFT/CENTER (Y)	-545 [-21.4]/ -99 [-3.9]	-545 [-21.4] -99 [-3.9]
W26-4TH	SgRP 4TH — LH (Y)	-545 [-21.4]	-546 [-21.5]
W26-5TH	SgRP 5TH — LH (Y)	631 [24.9]	631 [24.9]
W85	SHOULDER ROOM — 3RD	1808 [71.2]	1808 [71.2]
W85-4TH	SHOULDER ROOM — 4TH	1767 [69.6]	1767 [69.6]
W85-5TH	SHOULDER ROOM — 5TH	1730 [68.1]	1730 [68.1]
W86-3RD	HIP ROOM — 3RD ARMREST DOWN/UP	1413 [55.6]/ 1698 [66.9]	1413 [55.6]/ 1698 [66.9]
W86-4TH	HIP ROOM — 4TH ARMREST DOWN/UP (3-PASSENGER)	1402 [55.2]/ 1681 [66.2]	1402 [55.2]/ 1681 [66.2]
W86-5TH	HIP ROOM — 4TH/5TH (4-PASSENGER)	1684 [66.3]/ 1676 [66.0]	1684 [66.3]/ 1676 [66.0]
W87	SEATING WIDTH — 3RD	1354 [53.3]	1354 [53.3]
W87-4TH	SEATING WIDTH — 4TH (3-PASSENGER)	1350 [53.2]	1350 [53.2]
W87-5TH	SEATING WIDTH — 5TH (4-PASSENGER)	1623 [63.9]	1623 [63.9]
DOOR OPENINGS (ENTRANCE ROOM)			
H202	REAR OPENING HEIGHT	1224 [48.2]	1224 [48.2]
H508	ENTRANCE HEIGHT — CARGO SIDE	1206 [47.5]	1206 [47.5]
L517	ENTRANCE LENGTH — CARGO SIDE	1196 [47.1]	1006 [39.6]
W203	REAR OPENING WIDTH @ FLOOR	1384 [54.5]	1384 [54.5]
W204	REAR OPENING WIDTH AT BELT	1382 [54.4]	1382 [54.4]

NOTE — [ ] DIMENSIONS ARE INCHES.

DIMENSIONAL DATA
E-150/250/350 SUPER DUTY VAN



SEC **D**

TYPICAL OF ALL MODELS
ENGINE COVER TO FRONT SEATS
MINIMUM CLEARANCE
SEE CHART ON NEXT PAGE

BB0019 2004

NOTES — [ ] DIMENSIONS ARE INCHES.
— **CH, LH, F, R, FW** AND **RW**, PAGE 54.
— SEAT TRACK TRAVEL, PAGE 78.

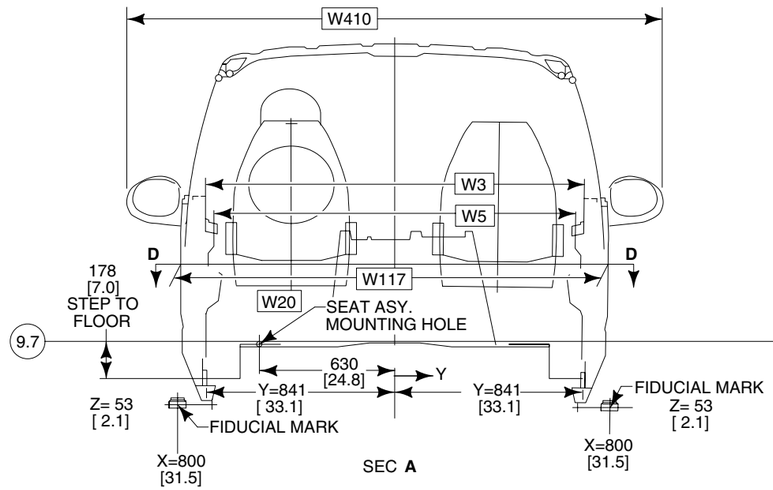
DIMENSIONAL DATA
E-150/250/350 SUPER DUTY VAN

CODE	DESCRIPTION	REGULAR VAN BASE BUCKET 2-PASS SLIDING DOOR	REGULAR VAN BASE BUCKET 2-PASS CARGO DOOR	SUPER VAN CAPTAIN'S CHAIR 2-PASS CARGO DOOR
EXTERIOR				
H106	ANGLE OF APPROACH	26.7°	26.7°	32.0°
H107	ANGLE OF DEPARTURE	19.3°	19.3°	15.5°
H711	FRAME DATUM LINE TO BOTTOM OF FRONT BUMPER	—	206 [8.1]	—
H712	FRAME DATUM LINE TO BOTTOM OF REAR BUMPER	—	256 [10.1]	—
L101	WHEELBASE	3506 [138.0]	3506 [138.0]	3508 [138.1]
L103	OVERALL LENGTH	5381 [211.8]	5382 [211.9]	5889 [231.8]
L104	OVERHANG — FRONT	762 [30.0]	764 [30.1]	762 [30.0]
L105	OVERHANG — REAR	1114 [43.8]	1112 [43.8]	1619 [63.7]
W103	VEHICLE WIDTH	2014 [79.3]	2014 [79.3]	2014 [79.3]
W117	BODY WIDTH AT H-POINT	1998 [78.7]	1999 [78.7]	1998 [78.7]
W410	SAIL MOUNT — MANUAL/POWER	2434 [93.9]	2434 [93.9]	2434 [93.9]
	TRAILER TOW MIRROR /EXTENDED	2605 [102.5]/ 2753 [108.4]	2605 [102.5]/ 2753 [108.4]	2605 [102.5]/ 2753 [108.4]
FRONT COMPARTMENT				
H61	EFFECTIVE HEAD ROOM — FRONT	1069 [42.1]	1079 [42.1]	1069 [42.1
H70	SgRP — LH/RH — FRONT (Z)	1104 [23.8]	604 [23.8]/ 597 [23.5]	1104 [23.8]
L31	SgRP — LH/RH — FRONT (X)	1189 [46.8]/ 1211 [49.1]	1189 [46.8]/ 1247 [49.1]	1189 [46.8]/ 1211 [49.1]
L34	MAXIMUM EFFECTIVE LEG ROOM SgRP — FRONT	1015 [40.0]	1016 [40.0]	1015 [40.0]
W3	SHOULDER ROOM SgRP — FRONT	1729 [68.1]	1737 [68.4]	1729 [68.1]
W5	HIP ROOM — FRONT	1670 [65.7]	1670 [65.7]	1670 [65.7]
W20	SgRP — LH/RH — FRONT (Y)	–518 [–20.4]/ 518 [20.4]	–518 [–20.4]/ 518 [20.4]	–518 [–20.4]/ 518 [20.4]
W305	SEAT TO ENGINE COVER — DRIVER	133 [5.2]	186 [7.3]	186 [7.3]
W306	SEAT TO ENGINE COVER — PASSENGER	131 [5.2]	168 [6.6]	168 [6.6]

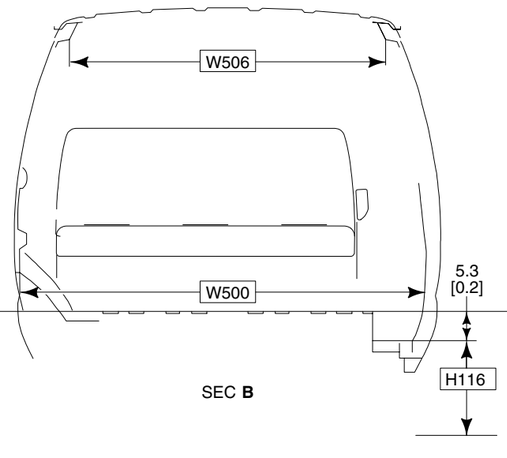
CODE	DESCRIPTION	REGULAR VAN BASE BUCKET 2-PASS SLIDING DOOR	REGULAR VAN BASE BUCKET 2-PASS CARGO DOOR	SUPER VAN CAPTAIN'S CHAIR 2-PASS CARGO DOOR
REAR COMPARTMENT — CARGO				
H504	WHEELHOUSE HEIGHT	236 [9.3]	241 [9.5]	241 [9.5]
H505	CARGO HEIGHT — MAXIMUM	1339 [52.7]	1333 [52.2]	1368 [53.9]
L202	CARGO LENGTH — CLOSED FRONT	3064 [120.6]	3061 [120.5]	3581 [141.0]
L204	CARGO LENGTH AT BELT — FRONT	2886 [113.6]	2857 [112.5]	3394 [133.6]
L512	CARGO LENGTH TO ENGINE COVER	3511 [138.2]	3711 [146.1]	4019 [158.2]
W201	CARGO WIDTH BETWEEN WHEELHOUSE	1312 [51.6]	1341 [52.8]	1330 [52.3]
W500	CARGO BODY WIDTH AT FLOOR	1796 [70.7]	1839 [72.4]	1763 [69.4]
W506	CARGO WIDTH AT ROOF RAIL	1559 [61.4]	1559 [61.4]	1559 [61.4]
V16	CARGO VOLUME — REAR OF FRONT SEAT WHICH IS IN ITS FORWARD MOST ADJUSTMENT — CU.FT.	252.5	256.5	297.1
DOOR OPENINGS (ENTRANCE ROOM)				
H116	STEP HEIGHT — 2ND	458 [18.0]	458 [18.0]	522 [20.6]
H202	REAR OPENING HEIGHT	1202 [47.3]	1227 [48.3]	1244 [49.0]
H508	ENTRANCE HEIGHT — CARGO SIDE	1206 [47.5]	1227 [48.3]	1226 [48.3]
L517	ENTRANCE LENGTH — CARGO SIDE	1006 [39.6]	1196 [47.1]	1196 [47.1]
W203	REAR OPENING WIDTH AT FLOOR	1386 [54.6]	1305 [51.4]	1381 [54.4]
W204	REAR OPENING WIDTH AT BELT	1382 [54.4]	1382 [54.4]	1382 [54.4]

NOTE — [ ] DIMENSIONS ARE INCHES.

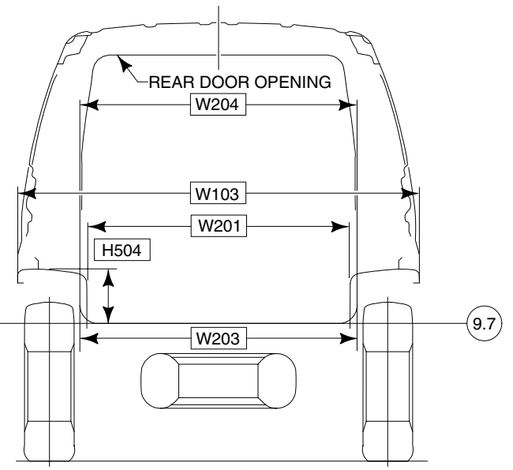
DIMENSIONAL DATA
E-150/250/350 SUPER DUTY
CREW VAN – REGULAR/EXTENDED LENGTH



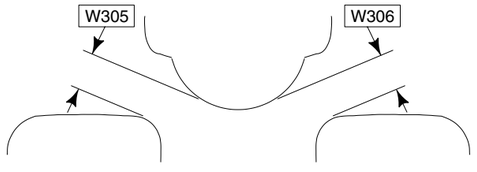
SEC **A**



SEC **B**

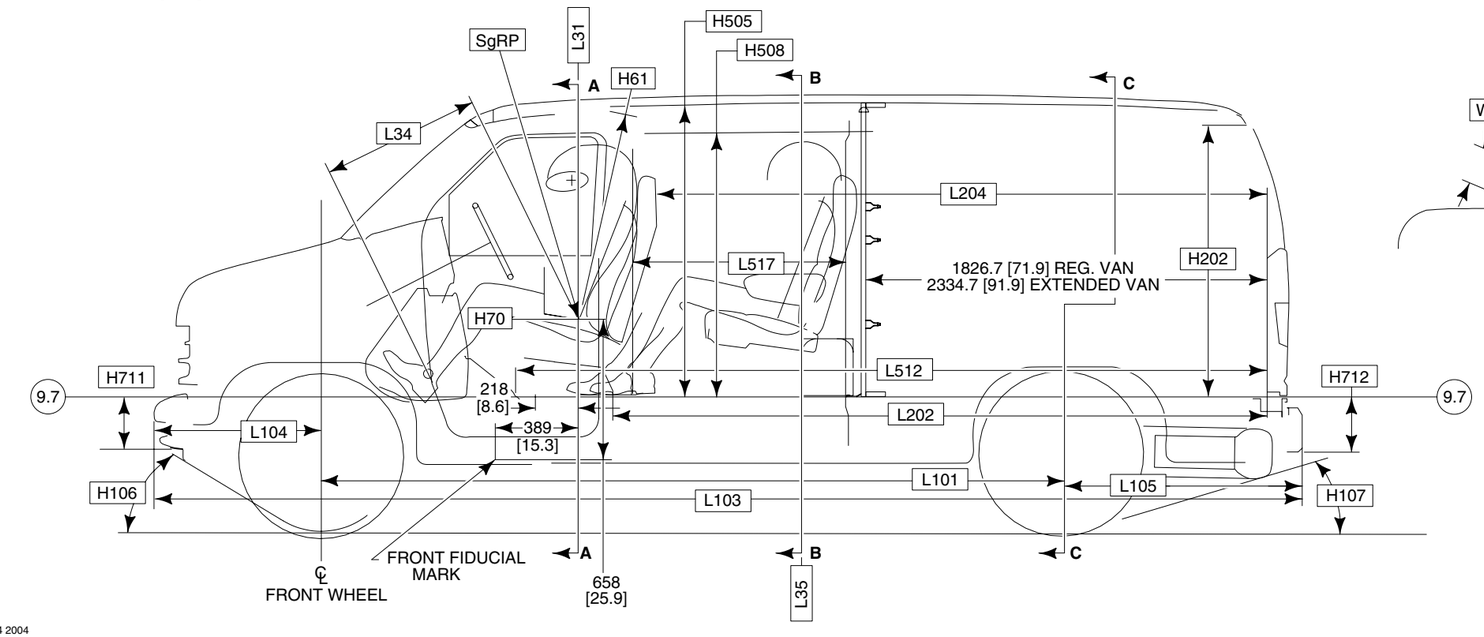


SEC **C**



SEC **D**

TYPICAL OF ALL MODELS
ENGINE COVER TO FRONT SEATS
MINIMUM CLEARANCE
SEE CHART ON NEXT PAGE



BB0544 2004

NOTES — [ ] DIMENSIONS ARE INCHES.
— **CH, LH, F, R, FW, RW** DIMENSIONS, PAGE 54.
— SEAT TRACK TRAVEL, PAGE 78.

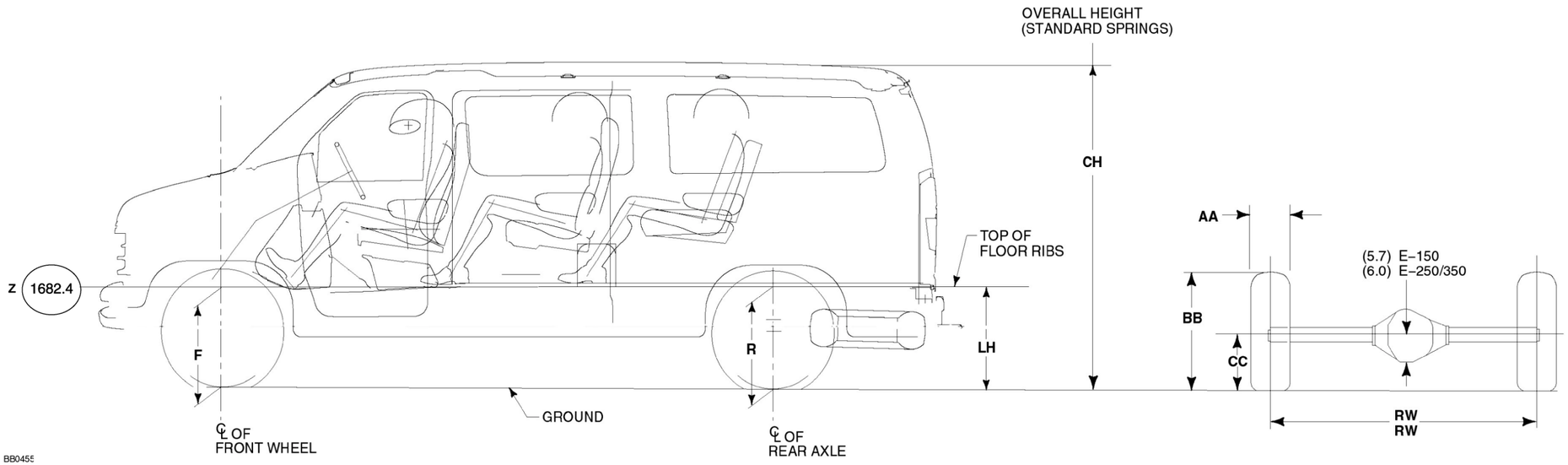
DIMENSIONAL DATA
E-150/250/350 SUPER DUTY
CREW VAN – REGULAR/EXTENDED LENGTH

CODE	DESCRIPTION	REGULAR LENGTH BASE BUCKET 5-PASS CARGO DOOR	EXTENDED LENGTH BASE BUCKET 5-PASS CARGO DOOR
EXTERIOR			
H106	ANGLE OF APPROACH	26.7°	32.0°
H107	ANGLE OF DEPARTURE	19.3°	15.5°
H711	FRAME DATUM LINE TO BOTTOM OF FRONT BUMPER	206 [8.1]	206 [8.1]
H712	FRAME DATUM LINE TO BOTTOM OF REAR BUMPER	256 [10.1]	256 [10.1]
L101	WHEELBASE	3506 [138.0]	3508 [138.1]
L103	OVERALL LENGTH	5381 [211.8]	5889 [231.8]
L104	OVERHANG – FRONT	762 [30.0]	762 [30.0]
L105	OVERHANG – REAR	1114 [43.8]	1619 [63.7]
W103	VEHICLE WIDTH	2014 [79.3]	2014 [79.3]
W117	BODY WIDTH AT H-POINT	1998 [78.7]	1998 [78.7]
W410	SAIL MOUNT – MANUAL/POWER MIRROR	2434 [93.9]	2434 [93.9]
	TRAILER TOW MIRROR / EXTENDED	2605 [102.5]/ 2753 [108.4]	2605 [102.5]/ 2753 [108.4]
FRONT COMPARTMENT			
H61	EFFECTIVE HEAD ROOM – FRONT	1069 [42.1]	1069 [42.1]
H70	SgPR – LH/RH – FRONT (Z)	604 [23.8] 597 [23.5]	604 [23.8] 597 [23.5]
L31	SgPR – LH/RH – FRONT (X)	1188 [46.8]/ 1211 [47.7]	1188 [46.8]/ 1211 [47.7]
L34	MAXIMUM EFFECTIVE LEG ROOM – FRONT	1015 [40.0]	1015 [40.0]
W3	SHOULDER ROOM – FRONT	1728 [68.0]	1729 [68.1]
W5	HIP ROOM — FRONT	1670 [65.7]	1670 [65.7]
W20	SgRP – LH/RH – FRONT (Y)	-518 [-20.4]/ 518 [20.4]	-518 [-20.4]/ 518 [20.4]
W305	SEAT TO ENGINE COVER – DRIVER	186 [7.3]	186 [7.3]
W306	SEAT TO ENGINE COVER – PASSENGER	168 [6.6]	168 [6.6]

CODE	DESCRIPTION	REGULAR LENGTH BASE BUCKET 5-PASS CARGO DOOR	EXTENDED LENGTH BASE BUCKET 5-PASS CARGO DOOR
REAR COMPARTMENT — SEATING			
H63	EFFECTIVE HEAD ROOM – 2ND	1019 [40.1]	1019 [40.1]
H71	SgRP 2ND LEFT/CENTER (Z)	665 [26.2]/ 665 [26.2]	665 [26.2]/ 665 [26.2]
L35	SgRP 2ND LEFT/CENTER (X)	2032 [80.0]	2032 [80.0]
L50	H-POINT COUPLE DISTANCE	844 [33.2]	844 [33.2]
L51	EFFECTIVE LEG ROOM – 2ND	966 [38.0]	966 [38.0]
W4	SHOULDER ROOM – 2ND	1791 [70.5]	1791 [70.5]
W6	HIP ROOM – 2ND ARMREST DOWN/UP	1417 [55.8]/ 1688 [66.5]	1417 [55.8]/ 1688 [66.5]
W8	SEATING WIDTH – 2ND	1350 [53.2]	1350 [53.2]
W25	SgRP 2ND LEFT/CENTER (Y)	-545 [-21.4]/ -100 [-3.9]	-545 [-21.4]/ -100 [-3.9]
REAR COMPARTMENT — CARGO			
H504	WHEELHOUSE HEIGHT	236 [9.3]	240 [9.5]
H505	CARGO HEIGHT – MAXIMUM	1368 [53.9]	1368 [53.9]
L202	CARGO LENGTH – CLOSED FRONT	3064 [120.6]	3581 [141.0]
L204	CARGO LENGTH AT BELT – FRONT	2886 [113.6]	3394 [133.6]
L512	CARGO LENGTH TO ENGINE COVER	3511 [138.2]	4019 [158.2]
W201	CARGO WIDTH BETWEEN WHEELHOUSE	1330 [52.3]	1330 [52.3]
W500	CARGO BODY WIDTH AT FLOOR	1763 [69.4]	1763 [69.4]
W506	CARGO WIDTH AT ROOF RAIL	1559 [61.4]	1559 [61.4]
V16	CARGO VOLUME – REAR OF PARTITION LITERS/CU.FT.	3805.7/134.4	4872.7/172.1
DOOR OPENINGS (ENTRANCE ROOM)			
H116	STEP HEIGHT – 2ND	458 [18.0]	522 [20.6]
H202	REAR OPENING HEIGHT	1202 [47.3]	1244 [49.0]
H508	ENTRANCE HEIGHT – CARGO SIDE	1226 [48.3]	1226 [48.3]
L517	ENTRANCE LENGTH – CARGO SIDE	1196 [47.1]	1196 [47.1]
W203	REAR OPENING WIDTH AT FLOOR	1381 [54.4]	1381 [54.4]
W204	REAR OPENING WIDTH AT BELT	1382 [54.4]	1382 [54.4]

NOTE — [ ] DIMENSIONS ARE INCHES.

AXLE/TIRE/VEHICLE HEIGHT DATA
E-SERIES VAN/WAGON



MODEL	WB [in]	GVWR [lb]	BASE TIRE(5)	F HEIGHT AT WHEEL FRONT(1)		R HEIGHT AT AXLE REAR(1)		LH (1)		CH (1)		AA	BB	CC*	FW	RW
				CURB(2)	LOADED(3)	CURB(2)	LOADED(3)	EMPTY	LOADED	EMPTY	LOADED					
E-150 VAN	138	6700	P235/70R16XL	597 [23.5]	564 [22.2]	637 [25.1]	561 [22.1]	683 26.9]	574 [22.6]	2050 [80.7]	1976 [77.8]	218 [8.6]	676 [26.6]	328 [12.9]	1763 [69.4]	1707 [67.2]
E-150 VAN(4)	138	7000	P235/70R16XL	625 [24.6]	576 [22.7]	655 [25.8]	569 [22.4]	686 [27.0]	584 [23.0]	2055 [80.9]	1984 [78.1]	236 [9.3]	754 [29.7]	333 [13.1]	1763 [69.4]	1707 [67.2]
E-250 VAN	138	7200	LT225/75R16E	663 [26.1]	625 [24.6]	703 [27.7]	640 [25.2]	742 [29.2]	640 [25.2]	2118 [83.4]	2032 [80.0]	236 [9.3]	752 [29.6]	345 [13.6]	1763 [69.4]	1692 [66.6]
E-250 VAN EXTENDED VAN	138	7300	LT225/75R16E	663 [26.1]	625 [24.6]	734 [28.9]	640 [25.2]	752 [29.6]	645 [25.4]	2118 [83.4]	2032 [80.0]	236 [9.3]	752 [29.6]	345 [13.6]	1763 [69.4]	1692 [66.6]
E-350 SUPER DUTY VAN	138	9500	LT245/75R16E	703 [27.7]	643 [25.3]	790 [31.1]	665 [26.2]	808 [31.8]	668 [26.3]	2136 [84.1]	2045 [80.5]	263 [10.3]	767 [30.2]	358 [14.1]	1763 [69.4]	1687 [66.4]
E-350 SUPER DUTY EXTENDED VAN	138	9400	LT245/75R16E	711 [28.0]	640 [25.2]	785 [30.9]	668 [26.3]	813 [32.0]	676 [26.6]	2136 [84.1]	2045 [80.5]	263 [10.3]	767 [30.2]	358 [14.1]	1763 [69.4]	1687 [66.4]
E-150 WAGON	138	7000	P235/70R16XL	620 [24.4]	576 [22.7]	665 [26.2]	561 [22.1]	683 [36.9]	584 [23.0]	2055 [80.9]	1984 [78.1]	236 [9.3]	754 [29.7]	333 [13.1]	1763 [69.4]	1707 [67.2]
E-350 SUPER DUTY WAGON	138	8600	LT225/75R16E	703 [27.7]	627 [24.7]	721 [28.4]	612 [24.1]	731 [28.8]	610 [24.0]	2118 [83.4]	2032 [80.0]	236 [9.3]	752 [29.6]	345 [13.6]	1763 [69.4]	1687 [66.4]
E-350 SUPER DUTY EXTENDED WAGON	138	9100 9300	LT245/75R16E	706 [27.8]	643 [25.3]	747 [29.4]	645 [25.4]	767 [30.2]	645 [25.4]	2136 [84.1]	2045 [80.5]	263 [10.3]	780 [30.7]	358 [14.1]	1763 [69.4]	1687 [66.4]

(1) THE HEIGHT DATA SHOWN REPRESENTS DIMENSIONS OF A BASE/STANDARD VEHICLE WITH NO OPTIONS, ACTUAL HEIGHT MAY VARY DUE TO PRODUCTION TOLERANCES.
(2) HEIGHT AT BASE CURB WEIGHT WITH STANDARD SPRINGS.
(3) LOADED HEIGHT AT SPRING RATING WITH STANDARD SPRINGS.
(4) RV CONVERSION.
(5) ADDITIONAL TIRE DATA, PAGE 71.

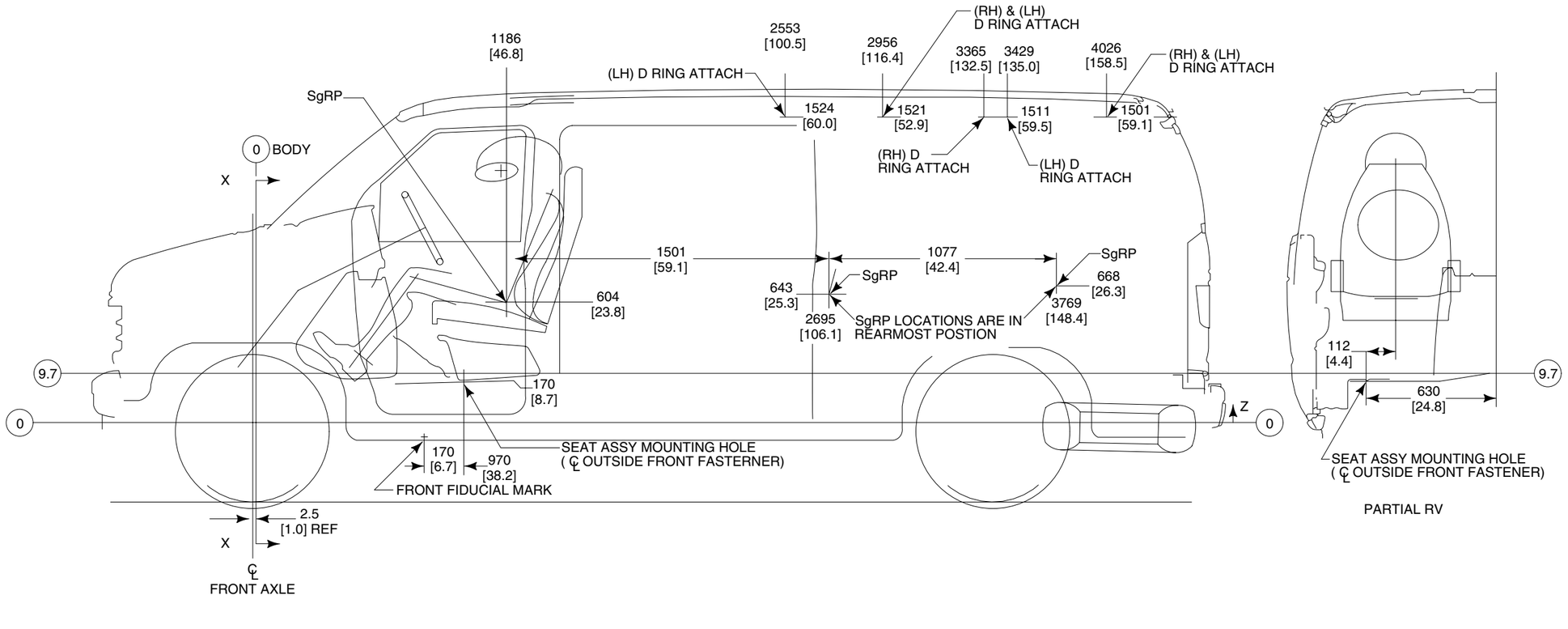
* — STATIC LOADED RADIUS REPRESENTS AXLE ℄ TO GROUND WITH MAXIMUM RATED LOAD ON TIRE AT MAXIMUM PRESSURE.

NOTES — [ ] DIMENSIONS ARE INCHES.
— **F/R** - TO FRAME DATUM LINE 633.7 MM (24.95 INCHES); TO TOP OF FLOOR BEADS ADD 113.2 MM (4.46 INCHES).

INCOMPLETE E-150/250/350 SUPER DUTY WITH RECREATIONAL TRIM

NOTE: This sketch identifies the locations in 138-inch wheelbase Regular Length E-Series van equipped with Recreational Trim where Ford Motor Company provides anchorages for attachment of the upper or “D-ring” ends of the torso restraints for second and third row seats that maybe installed by subsequent-stage manufacturers. The longitudinal distances from the vertical reference line for the second and third row seat anchorages are 116.4 inches and 158.5 inches, respectively.

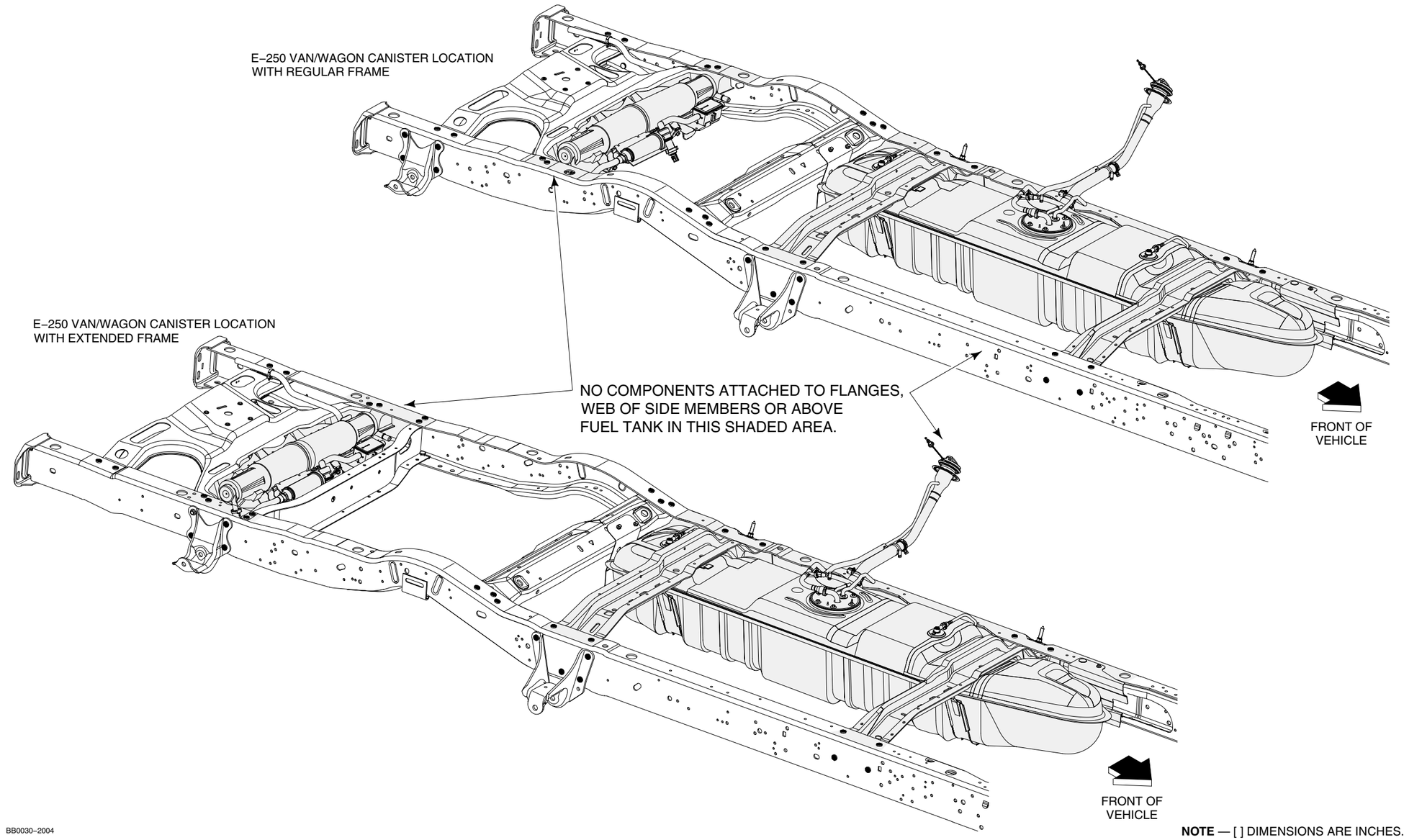
NOTE: If a left-hand, second-row seat is installed, an anchorage must be installed by the subsequent-stage manufacturer on the left side of the vehicle at 16.4 inches. (This anchorage should be located symmetrically opposite the corresponding right-hand anchorage installed by Ford.) A nut mounted to a reinforcement plate and four rivets are furnished for this purpose by Ford with the incomplete vehicle as part of the Recreational Trim. The sketch also identifies the rearmost seating reference points (SgRP’s) for second and third row seats that may be installed. These are 106.1 inches and 148.4 inches (longitudinal), respectively. Call the Ford Truck Body Builders Advisory Service if there are any questions regarding this sketch.



BB0126

NOTES — [ ] DIMENSIONS ARE INCHES.
— **CH, LH, F, R, FW** AND **RW**, SEE PAGE 54.
— SEAT TRACK TRAVEL, PAGE 78.

E-SERIES
FUEL SYSTEM EVAPORATIVE EMISSIONS



BB0030–2004

NOTE — [ ] DIMENSIONS ARE INCHES.

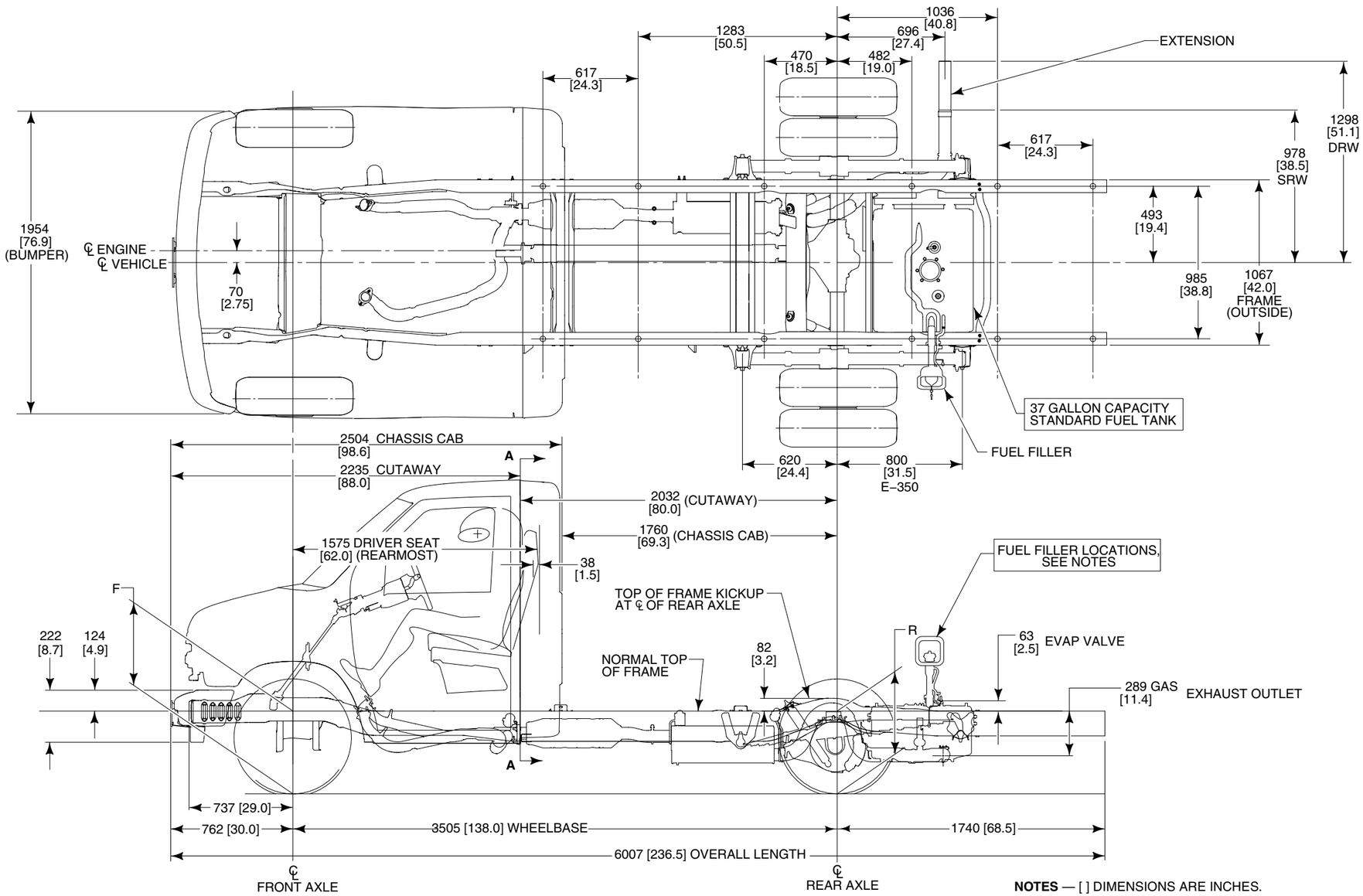
E-SERIES SUPER DUTY
CUTAWAY/CHASSIS CAB/STRIPPED CHASSIS
MODEL LINEUP

2004
MODEL YEAR

E-SERIES MODEL	BODY CODE	WHEELBASE inches	CA inches	STANDARD ENGINE(1) liters	STANDARD TRANSMISSION	MAXIMUM GVWR pounds	MAXIMUM PAYLOAD(3) pounds	BASE CURB WEIGHT(2) FRONT pounds	REAR pounds	TOTAL pounds
COMMERCIAL/RV CUTAWAY										
E-350 Super Duty Cutaway	E35	138	80	5.4L V-8	4-Spd. Auto OD (4R100)	9600 SRW	4795	2892	1909	4801
						10,700	5770	2906	2024	4930
				6.0L V-8(6)(7)	5-Spd. Auto OD (TorqShift™)	11,500(6) DRW	6010(6)	3384(6)	2104(6)	5488(6)
		158	100	5.4L V-8	4-Spd. Auto OD (4R100)	11,500	6425	2984	2091	5075
		176	118	5.4L V-8		11,500	6480	3020	1999	5019
E-450 Super Duty Cutaway	E45	158	100	6.8L V-10		14,050	8435	3082	2530	5612
				5.4L V-8 NGV		14,050	8420	3050	2579	5629
		176	118	6.8L V-10		14,050	8410	3154	2482	5636
				5.4L V-8 NGV		14,050	8320	3090	2639	5729
CHASSIS CAB										
E-350 Super Duty Chassis Cab	C35	138	70	5.4L V-8	4-Spd. Auto OD (4R100)	10,700 DRW	5690	2937	2069	5006
		158	90	5.4L V-8		11,500 DRW	6345	3019	2132	5151
		176	108	5.4L V-8		11,500 DRW	6415	3049	2035	5084
E-450 Super Duty Chassis Cab	C45	158	90	6.8L V-10	4-Spd. Auto OD (4R100)	14,050	8360	3116	2570	5686
				5.4L V-8 NGV		14,050	8045	2918	2787	5705
		176	108	6.8L V-10		14,050	8335	3194	2518	5712
				5.4L V-8 NGV		14,050	8320	3090	2639	5729
COMMERCIAL STRIPPED CHASSIS										
E-350 Super Duty Commercial Stripped Chassis	E39	138	—	5.4L V-8	4-Spd. Auto OD (4R100)	9600 SRW	5615	2163	1822	3985
						10,000 DRW(7)	5745	2172	2082	4254
		158				9600 SRW	5525	2272	1801	4073
						11,000 DRW	6675	2284	2041	4325
		176				11,000 DRW	6635	2281	2080	4361
E-450 Super Duty Commercial Stripped Chassis	E49	158	—	5.4L V-8	4-Spd. Auto OD (4R100)	14,050 DRW	9475	2263	2310	4573
		176	—			14,050 DRW	9480	2321	2247	4568

(1) Engine/transmission combinations may not be available on all models, or in all areas.
(2) Base curb weight is for standard equipment only.
(3) Includes weight of driver, passengers and optional equipment.
(4) RV Conversion.
(5) Crew van only.
(6) School Bus only.
(7) Late Availability.

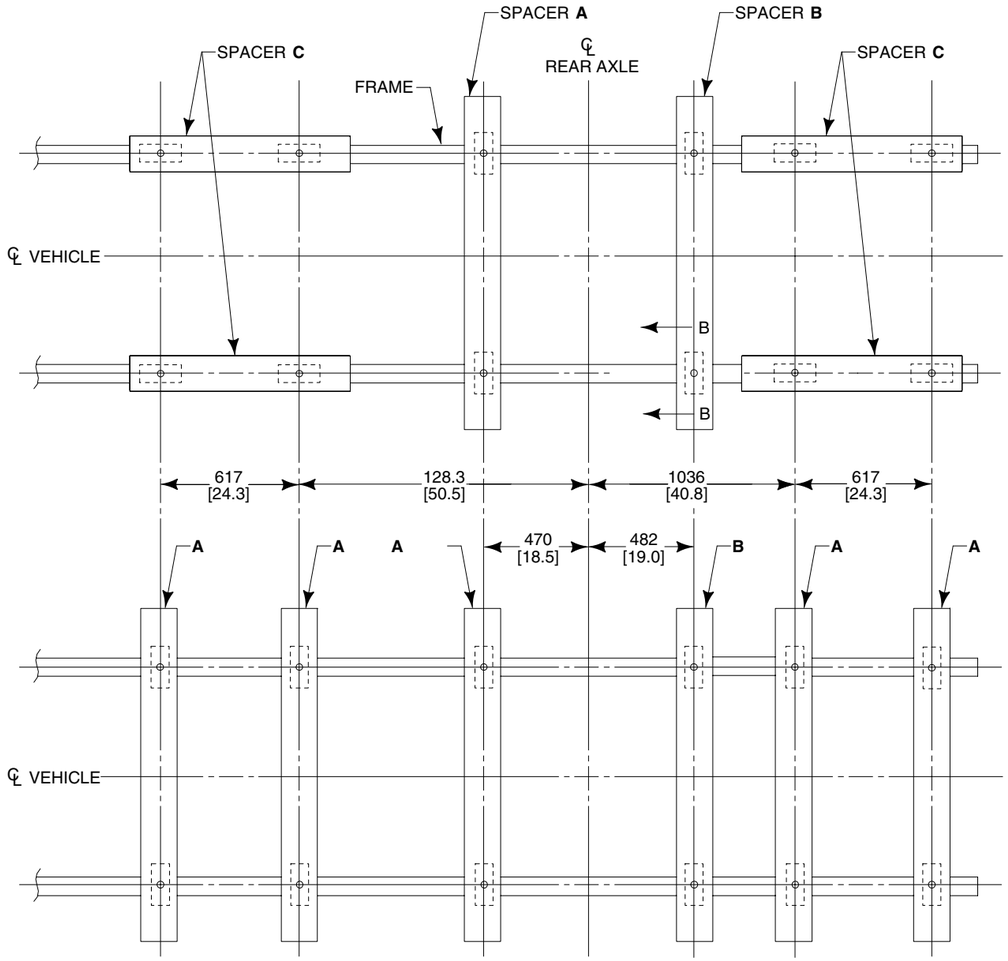
E-350 SUPER DUTY CUTAWAY/CHASSIS CAB
138" WHEELBASE (SRW/DRW)



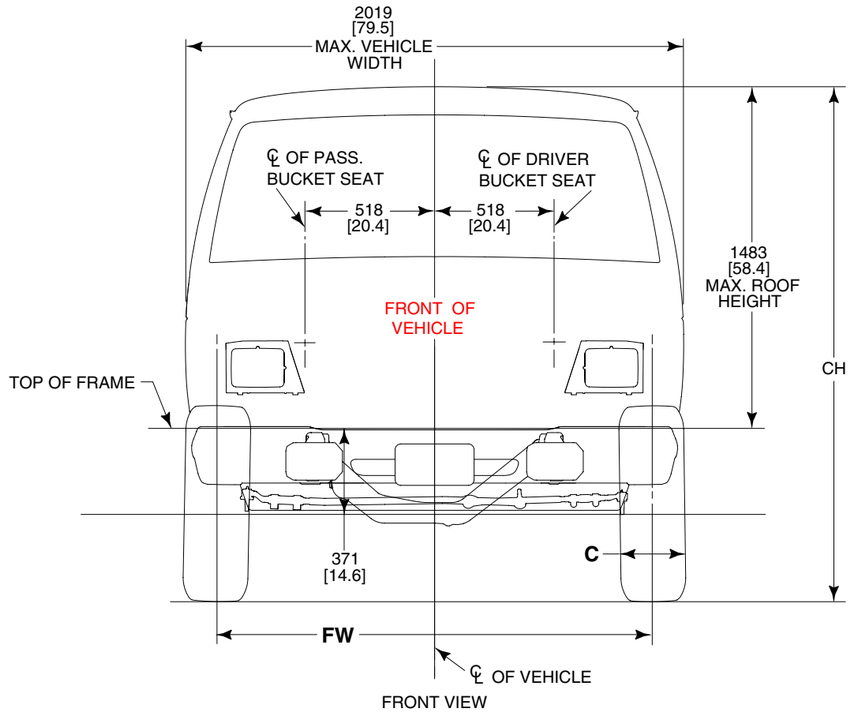
BB0022–2004

NOTES — [ ] DIMENSIONS ARE INCHES.
— FOR SECTION A, SEE PAGE 76.
— FOR DIMENSIONS NOT SHOWN, SEE PAGE 69-71.
— FOR FUEL FILLER LOCATIONS, SEE PAGE 72.
— FOR CA DIMENSIONS, SEE MODEL LINE UP.

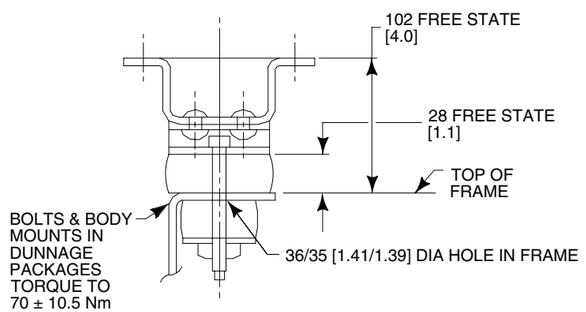
E-350 SUPER DUTY CUTAWAY/CHASSIS CAB
138" WHEELBASE (SRW/DRW)



INCLUDES 6 LATERAL FRAME SPACERS WITH 12 BODY MOUNTS. USES SAME FRAME HOLES FOR LONGITUDINAL/LATERAL FRAME SPACER STANDARD SYSTEM.



FRONT VIEW



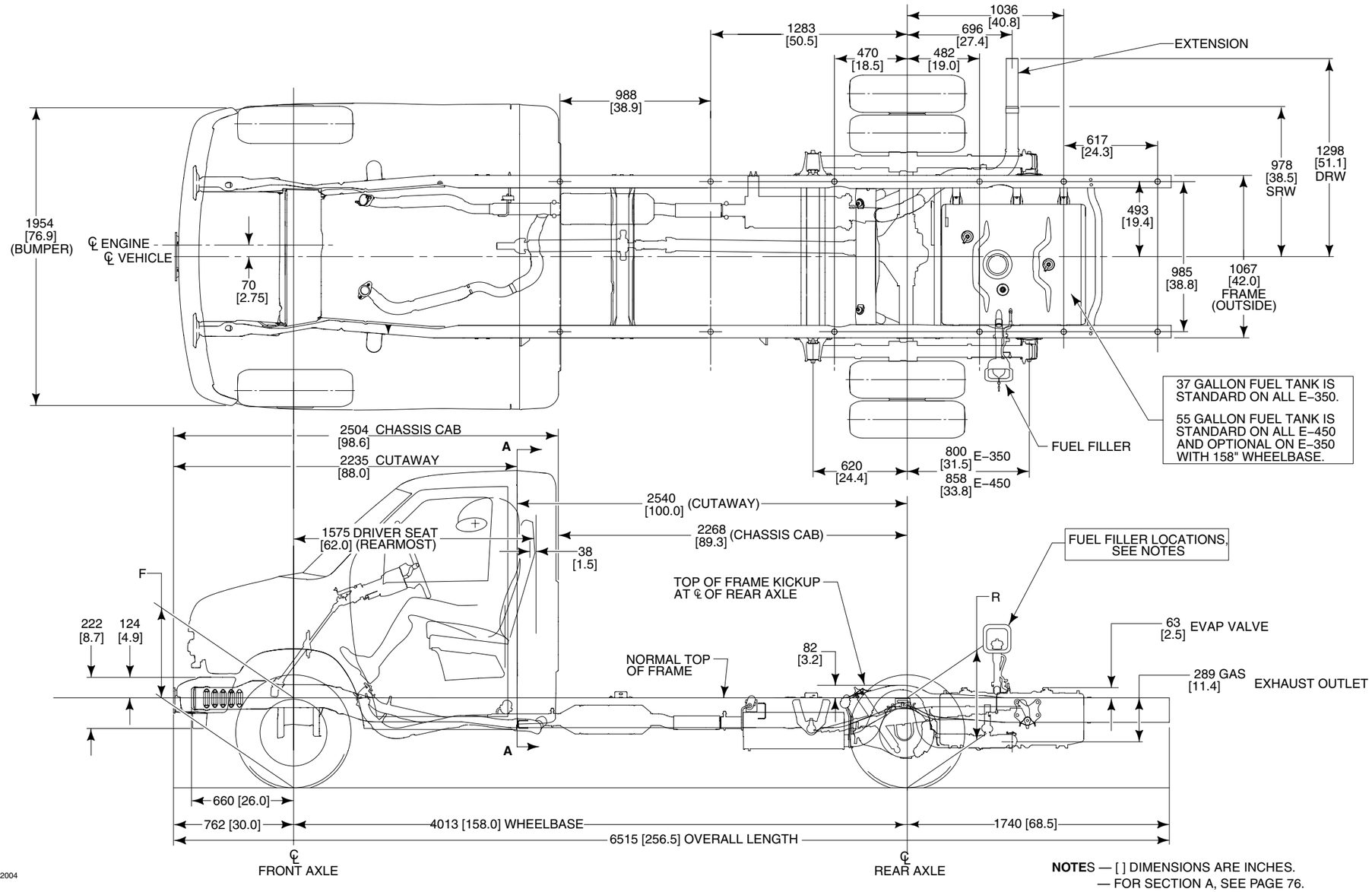
SEC B

BB0023

NOTES — [ ] DIMENSIONS ARE INCHES.
— FOR SECTION A, SEE PAGE 76.
— FOR DIMENSIONS NOT SHOWN, SEE PAGE 69-71.

E-350/450 SUPER DUTY CUTAWAY/CHASSIS CAB
158" WHEELBASE (DRW)

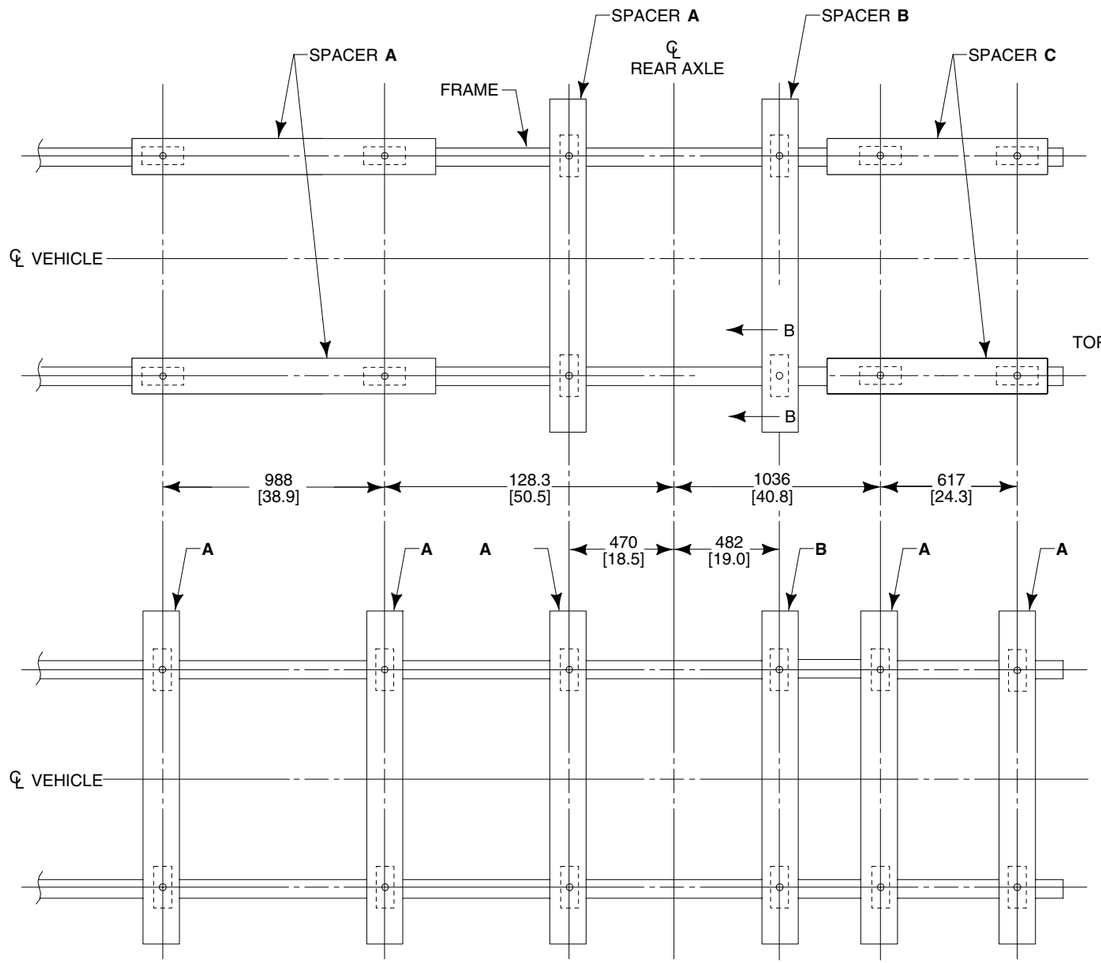
2004
MODEL YEAR



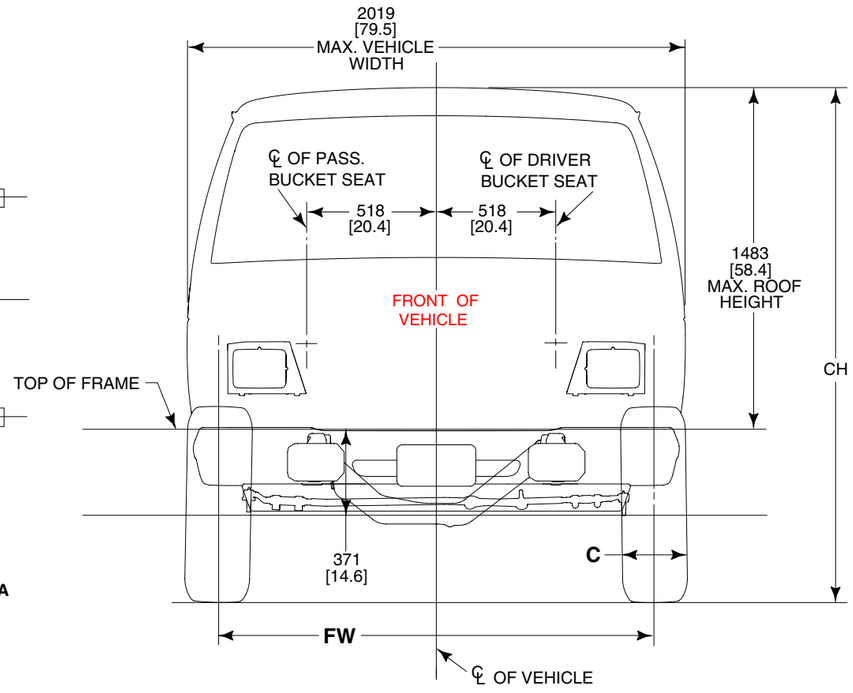
BB0024–2004

NOTES — [ ] DIMENSIONS ARE INCHES.
— FOR SECTION A, SEE PAGE 76.
— FOR DIMENSIONS NOT SHOWN, SEE PAGE 69-71.
— FOR FUEL FILLER LOCATIONS, SEE PAGE 72.
— FOR CA DIMENSION, SEE MODEL LINE UP.

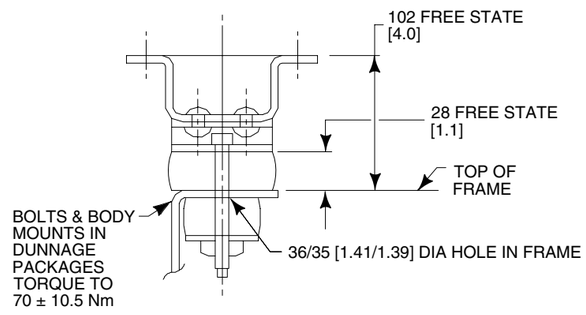
E-350/450 SUPER DUTY CUTAWAY/CHASSIS CAB
158" WHEELBASE (DRW)



INCLUDES 6 LATERAL FRAME SPACERS WITH 12 BODY MOUNTS. USES SAME FRAME HOLES FOR LONGITUDINAL/LATERAL FRAME SPACER STANDARD SYSTEM.



FRONT VIEW



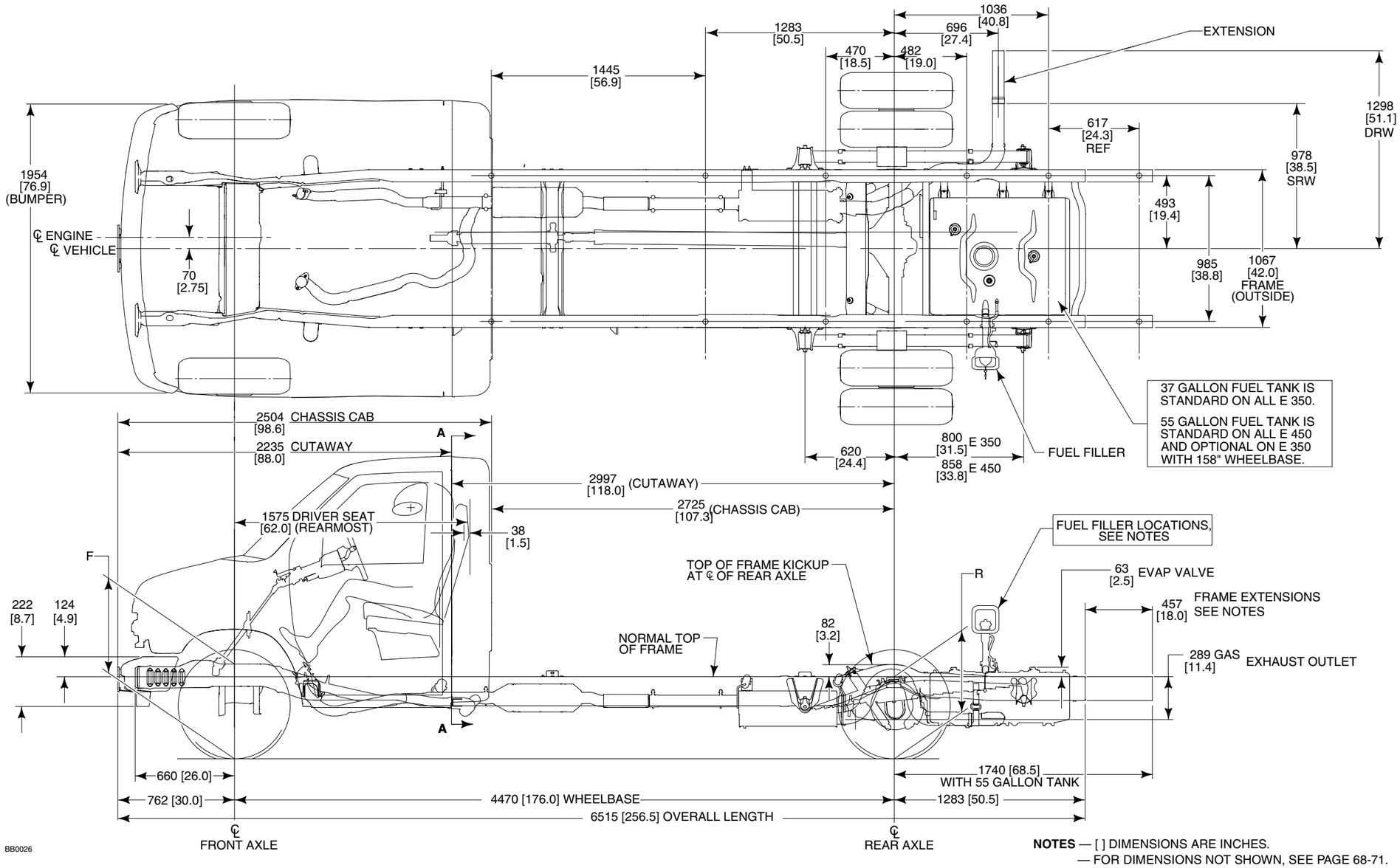
SEC B

BB0025

NOTES — [ ] DIMENSIONS ARE INCHES.
— FOR DIMENSIONS NOT SHOWN, SEE PAGE 68-71.
— FOR DETAILED SPACER INFORMATION, SEE PAGE 63.

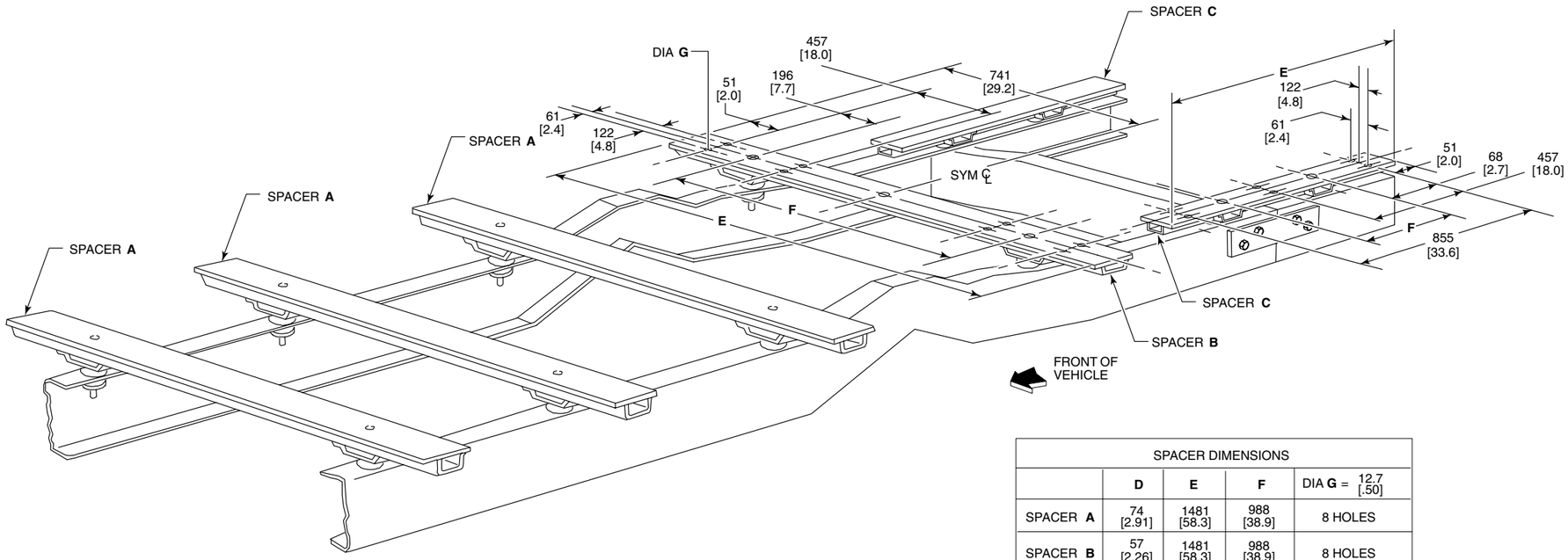
E-350/450 SUPER DUTY CUTAWAY/CHASSIS CAB
176" WHEELBASE (DRW)

2004
MODEL YEAR

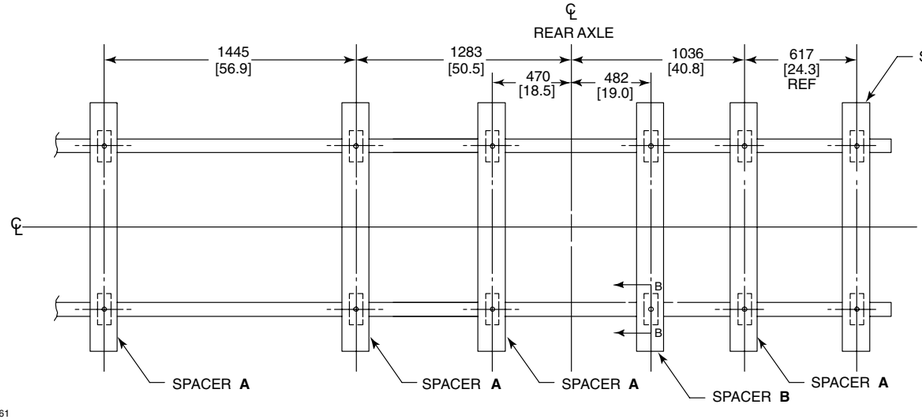


NOTES — [ ] DIMENSIONS ARE INCHES.
— FOR DIMENSIONS NOT SHOWN, SEE PAGE 68-71.
— FOR SPACER/FRAME INFORMATION, SEE PAGE 63.
— FOR FUEL FILLER LOCATIONS, SEE PAGE 72.
— FOR CA DIMENSION, SEE MODEL LINE UP.

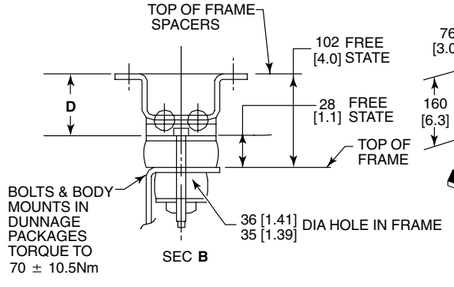
E-350/450 SUPER DUTY CUTAWAY/CHASSIS CAB
176" WHEELBASE (DRW)

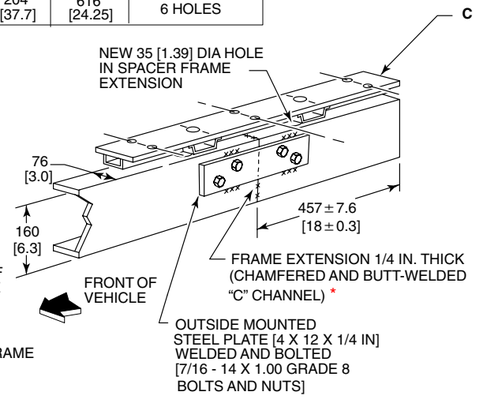


SPACER DIMENSIONS				
	D	**E**	**F**	DIA **G** = 12.7 [.50]
SPACER **A**	74 [2.91]	1481 [58.3]	988 [38.9]	8 HOLES
SPACER **B**	57 [2.26]	1481 [58.3]	988 [38.9]	8 HOLES
SPACER **C**	74 [2.91]	204 [37.7]	616 [24.25]	6 HOLES



BB0661

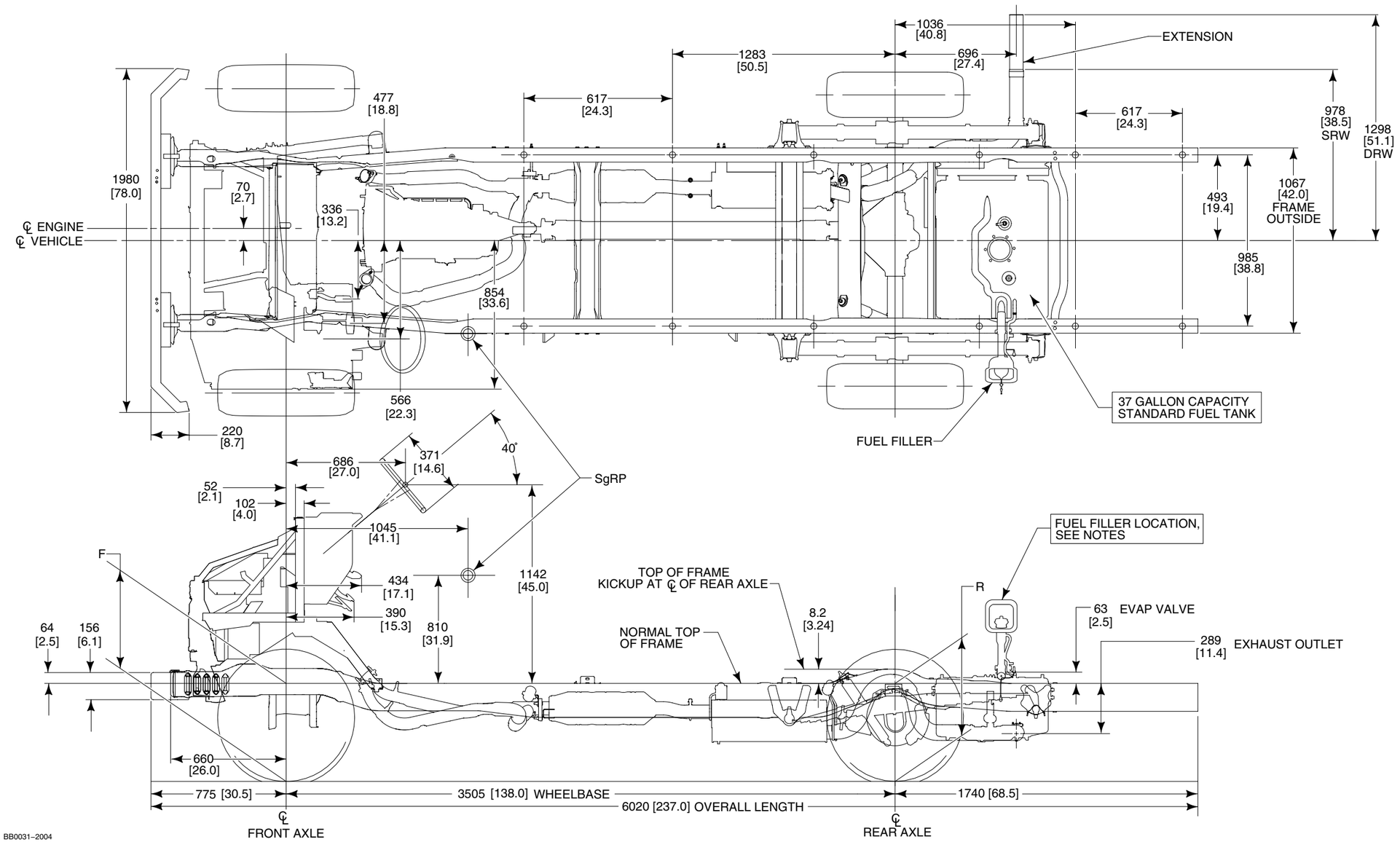




NOTES — [ ] DIMENSIONS ARE INCHES.
* FOR NGV VARIANT A "C" CHANNEL FRAME REINFORCEMENT IS REQUIRED ALONG WITH THE FRAME EXTENSION.

E-350 SUPER DUTY STRIPPED CHASSIS
138" WHEELBASE (SRW/DRW)

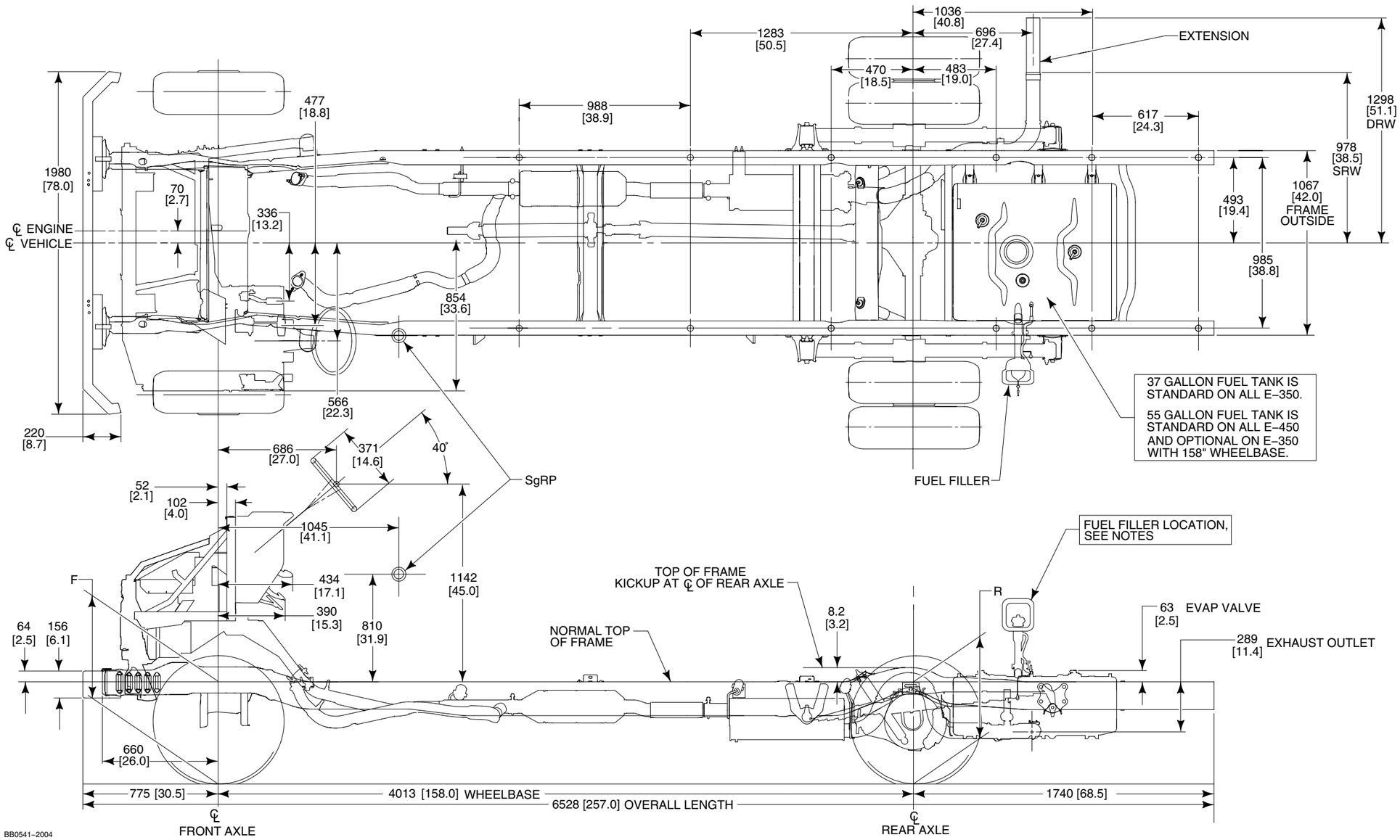
2004
MODEL YEAR



BB0031–2004

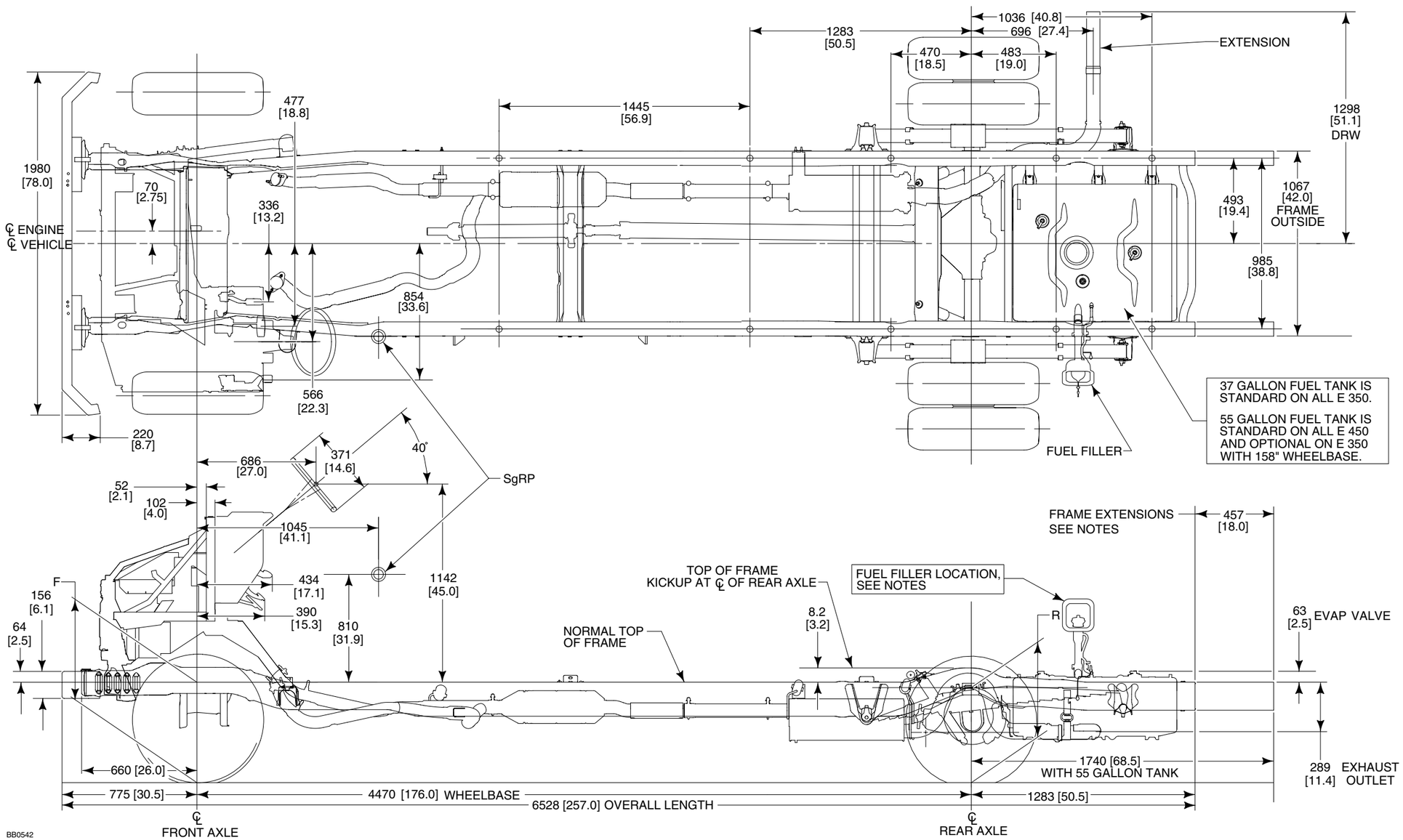
NOTES — [ ] DIMENSIONS ARE INCHES.
— FOR FUEL FILLER LOCATIONS, SEE PAGE 72.
— FOR DIMENSIONS NOT SHOWN, SEE PAGE 69-71.

E-350/450 SUPER DUTY STRIPPED CHASSIS
158" WHEELBASE (DRW)



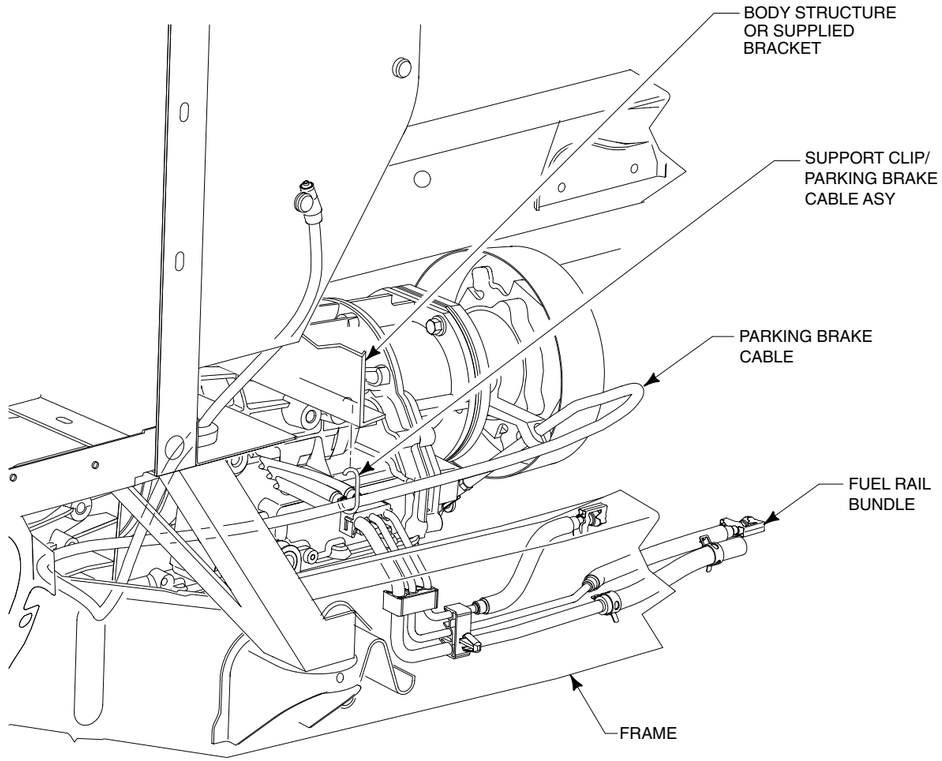
NOTES — [ ] DIMENSIONS ARE INCHES.
— FOR FUEL FILLER LOCATIONS, SEE PAGE 72.
— FOR DIMENSIONS NOT SHOWN, SEE PAGE 69-71.

E-350/450 SUPER DUTY STRIPPED CHASSIS
176" WHEELBASE (DRW)



NOTES — [ ] DIMENSIONS ARE INCHES.
— FOR DIMENSIONS NOT SHOWN, SEE PAGE 69-71.
— FOR FUEL FILLER LOCATIONS, SEE PAGE 72.
— FOR FRAME EXTENSIONS, SEE PAGE 63.

E-450 SUPER DUTY STRIPPED CHASSIS
158"/176" WHEELBASE (DRW)
PARKING BRAKE CABLE ATTACHMENT

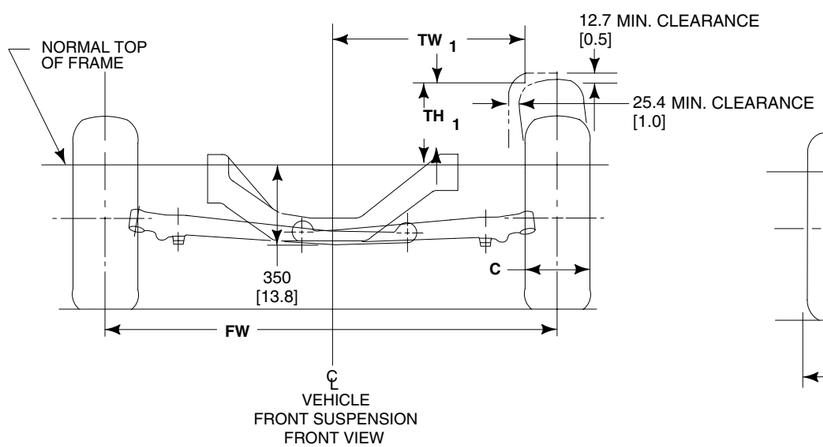


BB0548

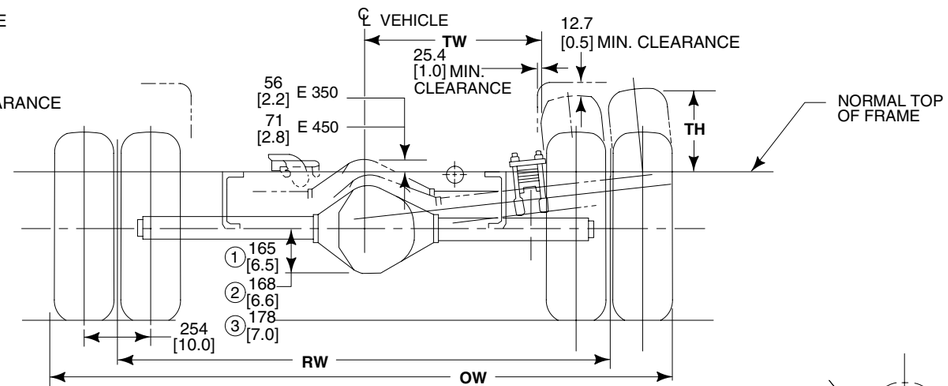
RECOMMENDED PARKING BRAKE CABLE ATTACHMENT TO BODY

1. REMOVE TIE STRAP SECURING PARKING BRAKE CABLE TO FUEL BUNDLE.
2. USING CLIP SUPPLIED ON PARKING BRAKE CABLE, ATTACH CABLE TO BODY STRUCTURE OR BRACKET SUPPLIED BY BODY BUILDER IN AREA SHOWN.
3. TO ASSURE PROPER PARKING BRAKE FUNCTION THE CABLE SHOULD NOT DEVIATE FROM CURRENT PATH BY MORE THAN 2″ SIDE TO SIDE.
4. NO PAINT IS ALLOWED ON CABLE ATTACHMENT ENDS OR ON PARKING BRAKE PEDAL ASSEMBLY.

E-350/450 SUPER DUTY CUTAWAY/CHASSIS CAB/ STRIPPED CHASSIS ALL WHEELBASE (SRW/DRW)



FRONT SUSPENSION
FRONT VIEW

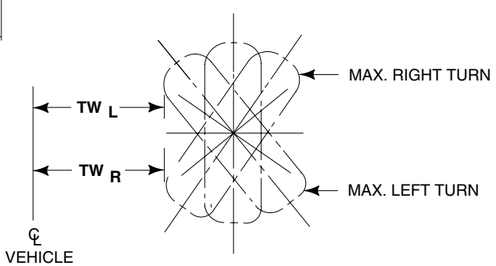


REAR SUSPENSION (DRW)
REAR VIEW

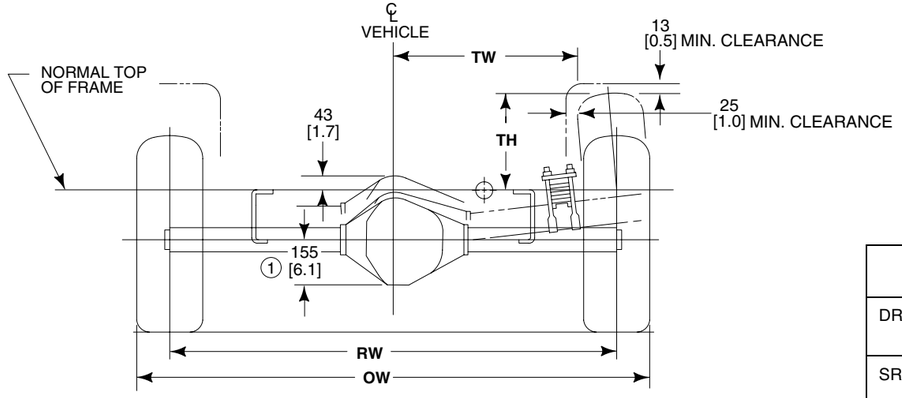
① 7800 LB AXLE USED AT 10,000 11,000 LB GVWR FOR RPO APPLICATIONS

② 8000 LB AXLE DSO USE ONLY

③ 9450 LB AXLE USED AT 14,050 LB GVWR FOR E 450



PLAN VIEW
LEFT FRONT TIRE



① 7800 LB AXLE USED AT 10,000 11,000 LB GVWR FOR ALL RPO APPLICATIONS

REAR SUSPENSION (SRW)
REAR VIEW

	TW_1	TH_1	TW_L	TW_R
DRW LT225/75R16E	655 [25.8]	302 [11.9]	549 [21.6]	521 [20.5]
SRW LT245/75R16E	655 [25.8]	320 [12.6]	549 [21.6]	521 [20.5]

TW = DISTANCE FROM ℄ OF VEHICLE TO SIDE OF TIRE IN MODIFIED JOUNCE.
TH = DISTANCE FROM NORMAL TOP OF FRAME TO TOP OF TIRE IN MODIFIED JOUNCE.

NOTES — [ ] DIMENSIONS ARE INCHES.
— REFER TO PAGE 63 FOR DETAIL INFORMATION ON FRAME EXTENSION METHOD.
— FOR DIMENSIONS NOT SHOWN, SEE PAGE 71.

BB0029 2003

VEHICLE HEIGHT DATA
E-SERIES SUPER DUTY
CUTAWAY/CHASSIS CAB/STRIPPED CHASSIS

MODEL	WB inches	GVWR pounds	MINIMUM TIRE	FRONT GAWR MIN/MAX pounds	COMBINED FRONT SPRING CAPACITY RATE pounds	F HEIGHT AT FRONT AXLE (1)		REAR GAWR MIN/MAX pounds	COMBINED REAR SPRING CAPACITY RATE pounds	R HEIGHT AT REAR AXLE (1)		CH OVERALL HEIGHT OF VEHICLE (STANDARD SPRINGS)(1) mm [in]	
						BASE CURB WEIGHT mm [in]	LOADED mm [in]			BASE CURB WEIGHT mm [in]	LOADED mm [in]		
					STD SPRING	STD SPRING	STD SPRING		STD SPRING	STD SPRING	STD SPRING	CURB	LOADED
CUTAWAY													
E-350 SD	138	9600(2)	LT245/75R16E	3700/4600(3)	3700/4600(3)	574 [22.6]	545 [21.5]	6084	7810	666 [26.2]	598 [23.4]	2045 [80.5]	1981 [78.0]
		10,700	LT225/75R16E	3700/4600(3)	3700/4600(3)	556 [21.9]	528 [20.8]	7800	7810	648 [25.5]	580 [22.8]	2078 [81.8]	2019 [79.5]
		11,500(4)	LT225/75R16E	4050	4050	556 [21.9]	528 [20.8]	7800	7810	648 [25.5]	580 [22.8]	2078 [81.8]	2019 [79.5]
	158	11,500	LT225/75R16E	4050/4600(3)	4050/4600(3)	556 [21.9]	519 [20.4]	7800	7810	648 [25.5]	580 [22.8]	2108 [83.0]	2019 [79.5]
	176	11,500	LT225/75R16E	4050/4600(3)	4050/4600(3)	556 [21.9]	519 [20.4]	7800	7810	648 [25.5]	580 [22.8]	2103 [82.8]	2019 [79.5]
E-450 SD	158	14,050	LT225/75R16E	4600	4600	557 [21.9]	520 [20.5]	9450	9450	652 [25.7]	575 [22.6]	2108 [83.0]	2019 [79.5]
	176	14,050	LT225/75R16E	4600	4600	557 [21.9]	520 [20.5]	9450	9450	652 [25.7]	575 [22.6]	2108 [83.0]	2019 [79.5]

(1) The Height Data shown represents dimensions of a nominal vehicle with no options. Actual height may vary due to production tolerances.
(2) Single Rear Wheels.
(3) 4600 lb. Standard with Ambulance Prep Package.
(4) School Bus Prep Package.

NOTE — [ ] DIMENSIONS ARE INCHES.

VEHICLE HEIGHT DATA
E-SERIES SUPER DUTY
CUTAWAY/CHASSIS CAB/STRIPPED CHASSIS

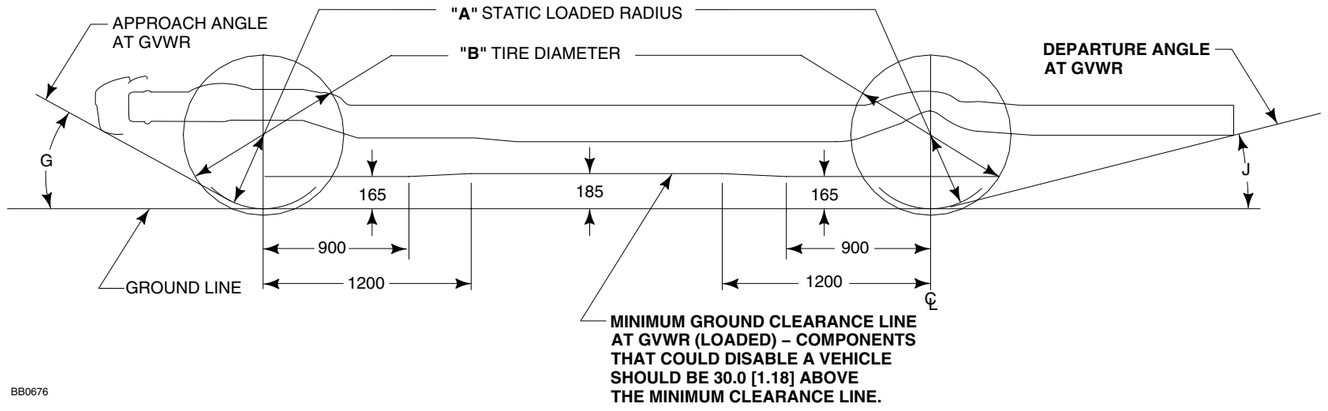
2004
MODEL YEAR

MODEL	WB inches	GVWR pounds	MINIMUM TIRE	FRONT GAWR MIN/MAX pounds	F HEIGHT AT FRONT AXLE (1)		REAR GAWR MIN/MAX pounds	COMBINED REAR SPRING CAPACITY RATE pounds	R HEIGHT AT REAR AXLE (1)		CH OVERALL HEIGHT OF VEHICLE (STANDARD SPRINGS)(1) mm [in]	
					COMBINED FRONT SPRING CAPACITY RATE pounds	BASE CURB WEIGHT mm [in]	LOADED mm [in]			BASE CURB WEIGHT mm [in]	LOADED mm [in]	
					STD SPRING	STD SPRING	STD SPRING		STD SPRING	STD SPRING	STD SPRING	CURB	LOADED
CHASSIS CAB													
E-350 SD	138	10,700	LT225/75R16E	3550/4400	3700/4400	556 [21.9]	528 [20.8]	7800	7810	648 [25.5]	580 [22.8]	2078 [81.8]	2019 [79.5]
	158	11,500	LT225/75R16E	4050/4600	4050/4600	556 [21.9]	519 [20.4]	7800	7810	648 [25.5]	580 [22.8]	2108 [83.0]	2019 [79.5]
	176	11,500	LT225/75R16E	4050/4600	4050/4600	556 [21.9]	519 [20.4]	7800	7810	648 [25.5]	580 [22.8]	2103 [82.8]	2019 [79.5]
E-450 SD	158	14,050	LT225/75R16E	4600	4600	557 [21.9]	520 [20.5]	9450	9450	652 [25.7]	575 [22.6]	2108 [83.0]	2019 [79.5]
	176	14,050	LT225/75R16E	4600	4600	557 [21.9]	520 [20.5]	9450	9450	652 [25.7]	575 [22.6]	2108 [83.0]	2019 [79.5]
STRIPPED CHASSIS													
E-350 SD	138	9600(2)	LT245/75R16E	3550/3800	3550/3900	—	545 [21.5]	6084	7810	—	598 [23.4]	—	—
		10,000	LT225/75R16E	3700/3800	3700/3900	—	528 [20.8]	7800	7810	—	580 [22.8]	—	—
	158	9600(2)	LT245/75R16E	3550/3800	3550/3800	—	545 [21.5]	6084	7810	—	598 [23.4]	—	—
		10,000	LT225/75R16E	3550/3800	3550/3800	—	519 [20.4]	7800	7810	—	580 [22.8]	—	—
		11,000	LT225/75R16E	3800/4200	3800/4200	—	519 [20.4]	7800	7810	—	580 [22.8]	—	—
	176	10,000	LT225/75R16E	3800/4050	3800/4050	—	519 [20.4]	7200	7810	—	580 [22.8]	—	—
		11,000	LT225/75R16E	4050/4400	4050/4400	—	519 [20.4]	7800	7810	—	580 [22.8]	—	—
E-450 SD	158	14,050	LT225/75R16E	4600	4600	—	520 [20.5]	9450	9450	—	575 [22.6]	—	—
	176	14,050	LT225/75R16E	4600	4600	—	520 [20.5]	9450	9450	—	576 [22.6]	—	—

(1) The Height Data shown represents dimensions of a nominal vehicle with no options. Actual height may vary due to production tolerances.
(2) Single Rear Wheels.

NOTE — [ ] DIMENSIONS ARE INCHES.

TIRE/GROUND CLEARANCE DATA
SUPER DUTY CUTAWAY/CHASSIS CAB/STRIPPED CHASSIS



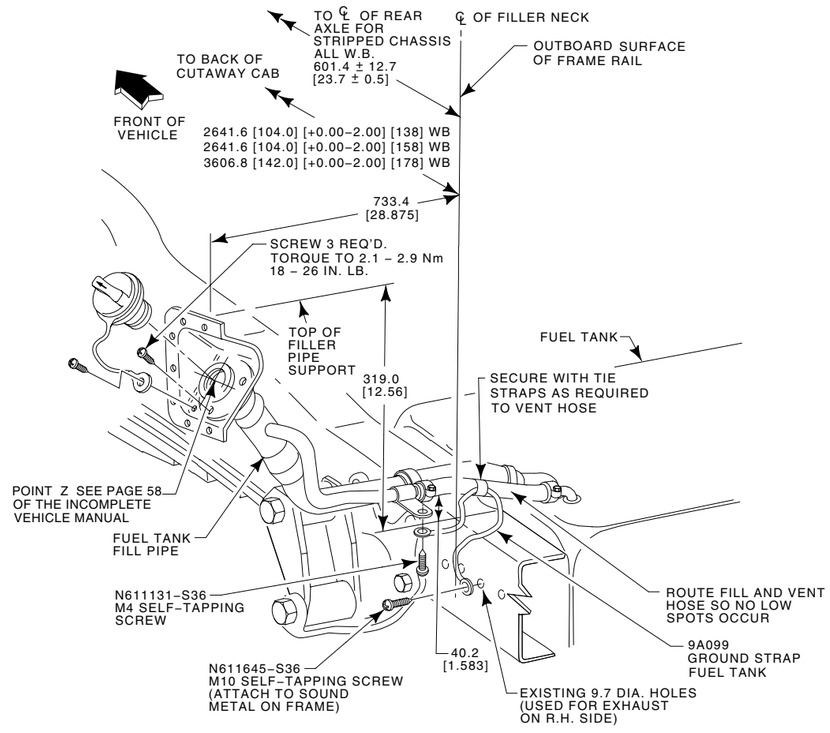
BASE VEHICLE LOADED

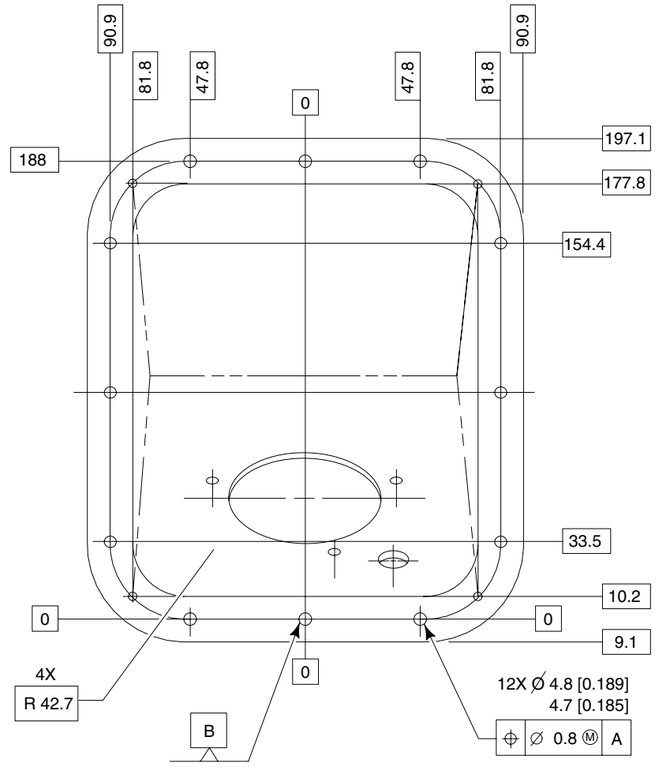
MODEL	TIRE SIZE	ALL SEASON TIRE DATA				TREAD WIDTH		OW	TH	TW	GROUND CLEARANCE							
		A	B	C		FW	RW	OVERALL WIDTH	STD	STD	G				J			
											APPROACH ANGLE				DEPARTURE ANGLE			
		STATIC LOADED RADIUS	MAX. DIAMETER	MAX. SECTION WIDTH	RIM WIDTH	FRONT	REAR	REAR	SPRING	SPRING	124" WB	138" WB	158" WB	176" WB	124" WB	138" WB	158" WB	176" WB
E-350 Cutaway SRW	LT245/75R16E	356 [14.0]	787 [31.0]	263 [10.3]	178 [7.0]	1763 [69.4]	1831 [72.1]	2094 [82.4]	307 [12.1]	710 [28.0]	N/A	33°	N/A	N/A	N/A	14°	N/A	N/A
E-350 Cutaway/Chassis Cab DRW	LT225/75R16E	346 [13.6]	757 [29.8]	236 [9.3]	152 [6.0]	1763 [69.4]	1859 [73.2]	2349 [92.5]	329 [12.9]	684 [26.9]	N/A	34°	34°	34°	N/A	14°	14°♦	14°♦
E-350 Stripped Chassis SRW	LT245/75R16E	356 [14.0]	787 [31.0]	263 [10.3]	178 [7.0]	1763 [69.4]	1687 [66.4]	1950 [76.7]	298 [11.7]	638 [25.1]	N/A	33°	31°	N/A	N/A	14°	14°	N/A
E-350 Stripped Chassis DRW	LT225/75R16E	346 [13.6]	757 [29.8]	236 [9.3]	152 [6.0]	1763 [69.4]	1859 [73.2]	2349 [92.5]	329 [12.9]	684 [26.9]	N/A	31°	31°	32°	N/A	14°	14°	14°
E-450 Cutaway/Chassis Cab DRW	LT225/75R16E	346 [13.6]	757 [29.8]	236 [9.3]	152 [6.0]	1763 [69.4]	1974 [77.7]	2464 [97.0]	325 [12.8]	743 [29.2]	N/A	N/A	34°	34°	N/A	N/A	14°♦	14°♦
E-450 Stripped Chassis DRW	LT225/75R16E	346 [13.6]	757 [29.8]	236 [9.3]	152 [6.0]	1763 [69.4]	1974 [77.7]	2464 [97.0]	325 [12.8]	743 [29.2]	N/A	N/A	31°	32°	N/A	N/A	14°♦	14°♦

♦ 55-gallon tank and 18 inch frame extension.

NOTE — [ ] DIMENSIONS ARE INCHES.

E-SERIES SUPER DUTY CUTAWAY/CHASSIS CAB/ STRIPPED CHASSIS FUEL FILLER SYSTEMS





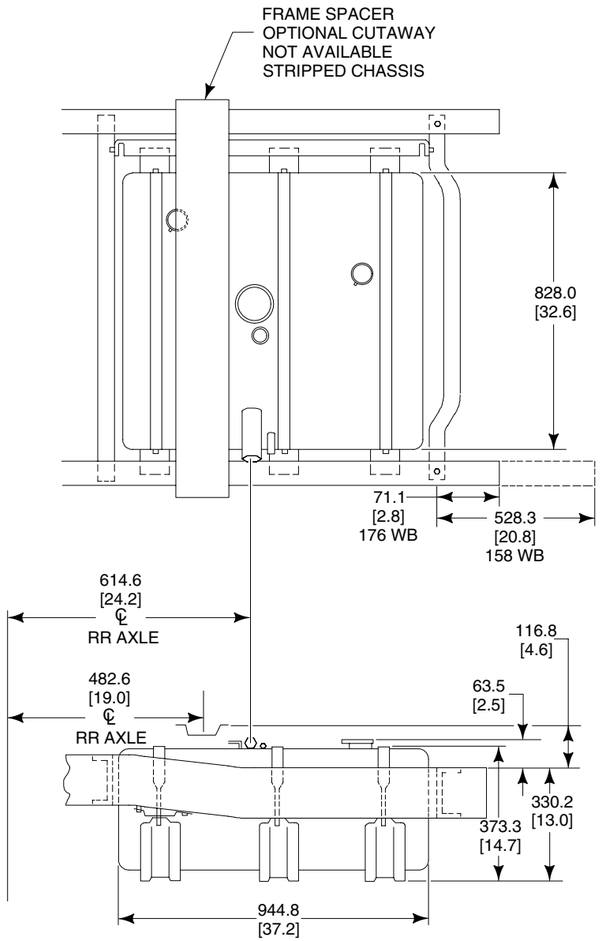
TORQUE ALL WORM GEAR DRIVEN HOSE CLAMPS TO 2.9 –4.3 NM 25 –38 IN–LB

▽ **CRITICAL CONTROL ITEM**

BB0678–2004

NOTE — [ ] DIMENSIONS ARE INCHES.

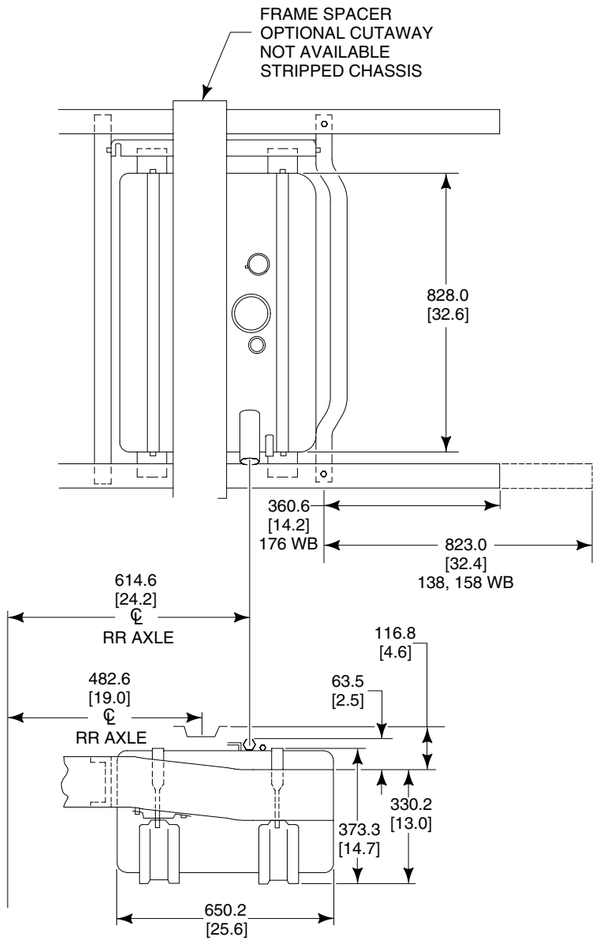
E-350/450 SUPER DUTY
CUTAWAY/CHASSIS CAB/STRIPPED CHASSIS
37/55 GALLON AFT-OF-AXLE FUEL TANK



55 GALLON TANK

WARNING

18 INCH MIN. FRAME EXTENSION REQUIRED WITH THE 55 GAL. TANK AND THE 176 " WHEELBASE ONLY

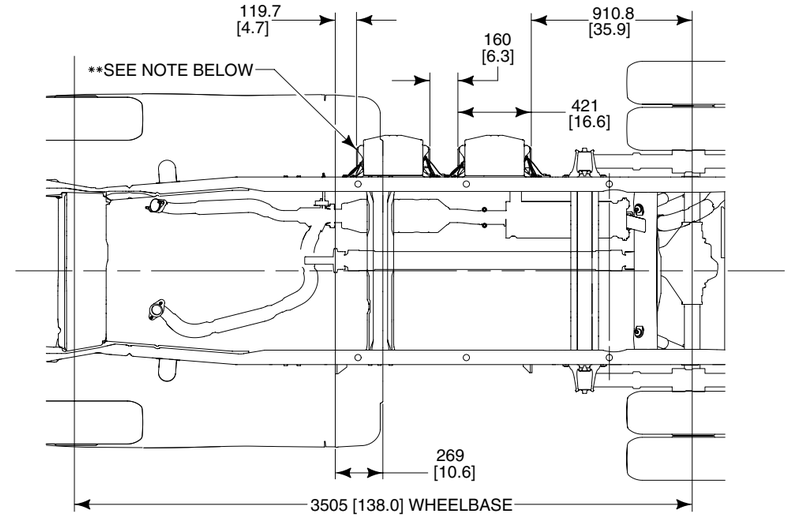


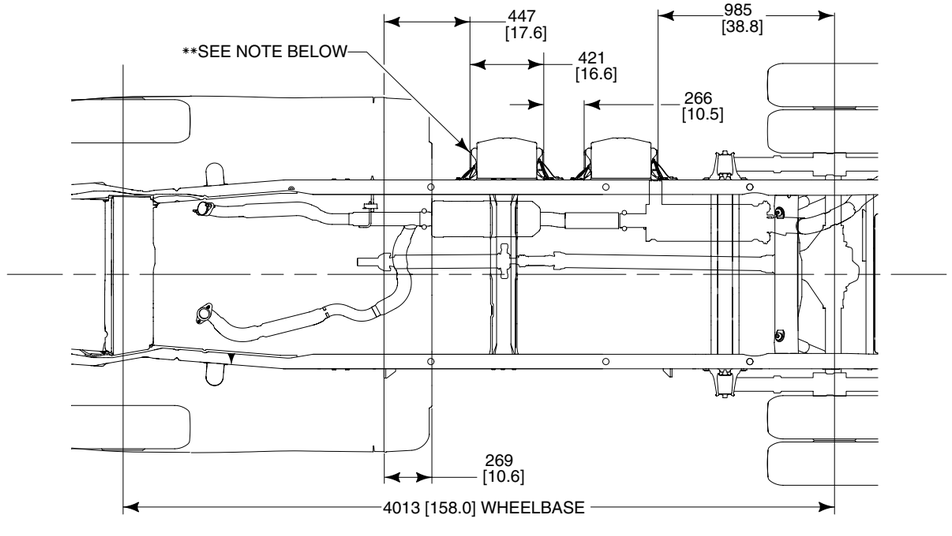
37 GALLON TANK

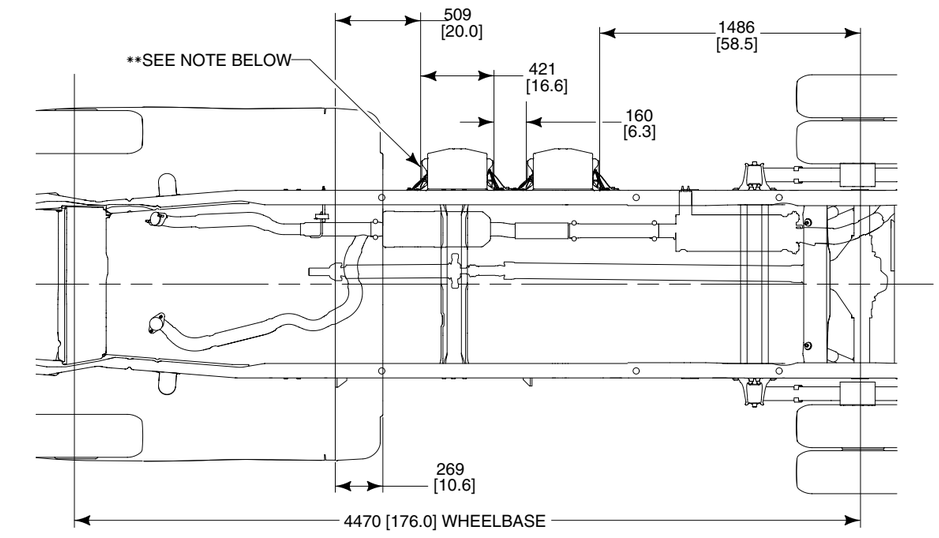
BB0038 2004

NOTE — [ ] DIMENSIONS ARE INCHES.

E-350/450 6.0L DUAL AND GAS AUXILIARY BATTERY BOX LOCATIONS







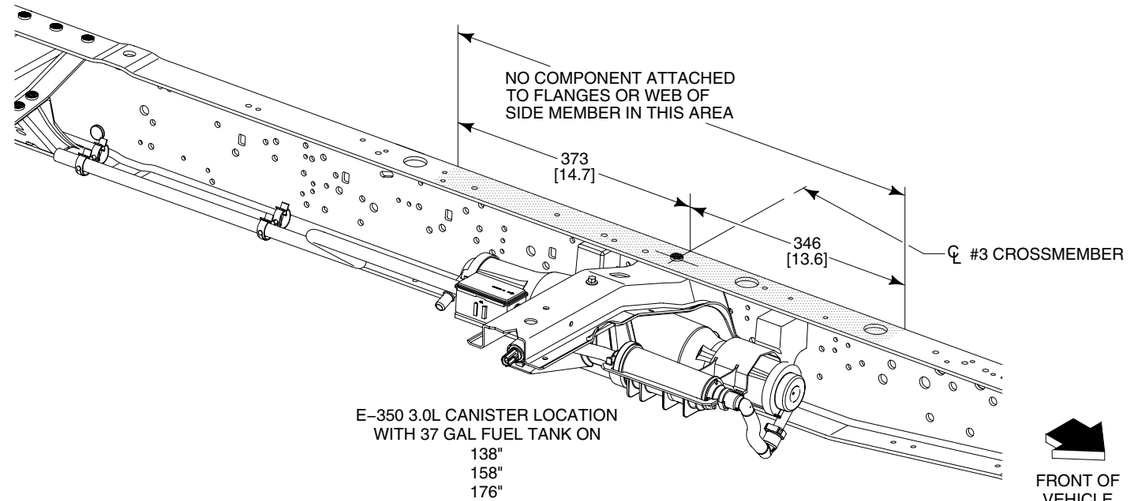
BB0016-2004

The guidelines below must be followed when repositioning the battery box

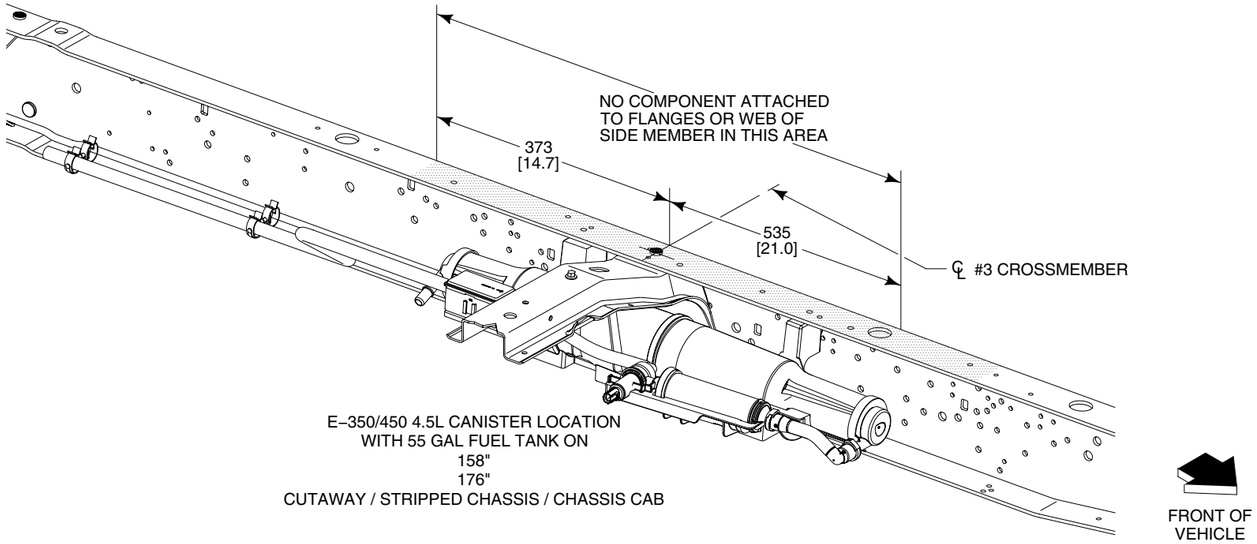
- Maintain attachment hole diameter of (12 mm)
- Maintain use of existing OEM bolts (M10)
- The battery box must NOT be packaged any lower in vehicle position than is provided by Ford
- All new frame holes must be at least 1x hole diameter away from all other holes & 1½ diameter away from the edge of a radius tangent
- Battery boxes may not be moved rearward of position provided by Ford

NOTES — [ ] DIMENSIONS ARE INCHES.
— ** PLACEMENT FOR GAS ENGINES AUXILIARY BATTERY OPTION

E-SERIES
FUEL SYSTEM EVAPORATIVE EMISSIONS



E–350 3.0L CANISTER LOCATION
WITH 37 GAL FUEL TANK ON
138"
158"
176"
CUTAWAY / STRIPPED CHASSIS / CHASSIS CAB

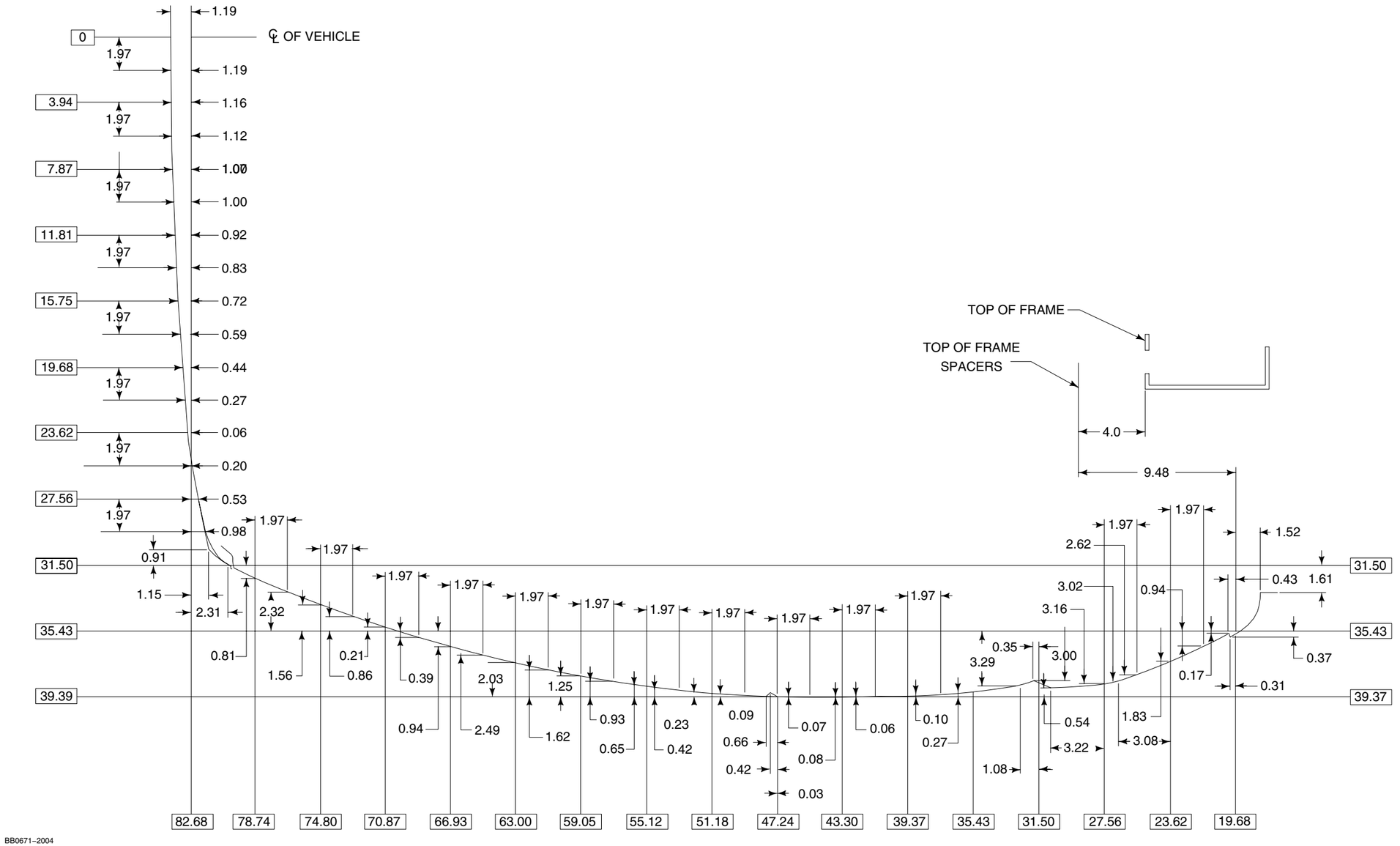


E–350/450 4.5L CANISTER LOCATION
WITH 55 GAL FUEL TANK ON
158"
176"
CUTAWAY / STRIPPED CHASSIS / CHASSIS CAB

BB0474–2004

NOTE — [ ] DIMENSIONS ARE INCHES.

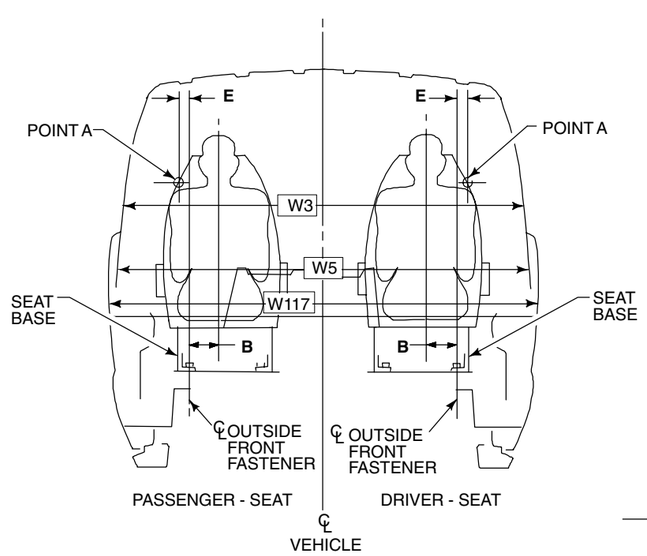
E-350/450 SUPER DUTY CUTAWAY/CHASSIS CAB
BODY "SECTION A"

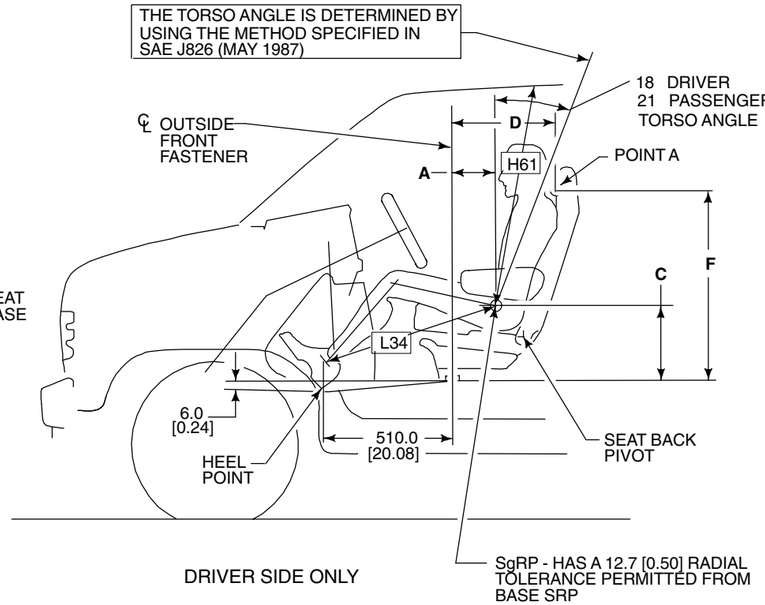


BB0671–2004

NOTE — [ ] DIMENSIONS ARE INCHES.

DIMENSIONAL DATA
E-350/450 SUPER DUTY CUTAWAY/CHASSIS CAB





IMPORTANT:
THE DIMENSIONS IN THIS FIGURE REQUIRE THE VEHICLE TO BE AT DESIGN POSITION. E-SERIES VEHICLES AT DESIGN POSITION WILL BE LEVEL FRONT TO REAR, AND SIDE TO SIDE, ON THE UPPER SURFACE OF THE RIBBED FLOOR PANEL FROM THE B-PILLAR REARWARD.

BB0672

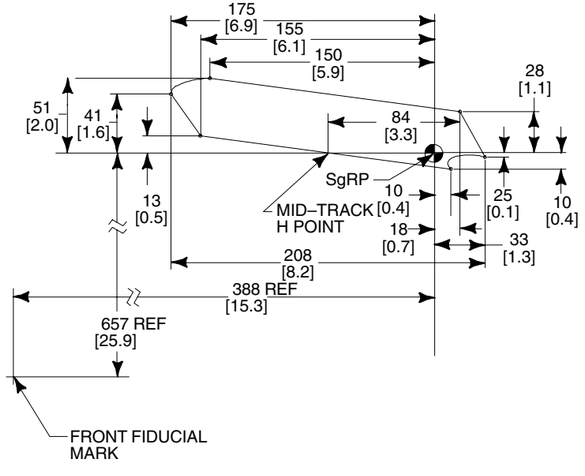
SRP INFORMATION (SEAT POSITION IS 10.0 mm [0.39] FORWARD OF REARMOST POSITION)				POINT A (SEAT POSITION IS AT THE MIDPOINT OF AVAILABLE TRAVEL)		
	A	B	C	D	E	F
DRIVER – SEAT	217.8 [8.57]	105.0 [4.13]	384.2 [15.13]	356.0 [14.01]	67.0 [2.64]	937.4 [36.90]
PASSENGER – SEAT	277.3 [10.92]	103.0 [4.06]	377.0 [14.84]	412.0 [16.22]	65.0 [2.56]	960.1 [37.80]

CODE	DESCRIPTION	
FRONT COMPARTMENT		
L34	MAXIMUM EFFECTIVE LEG ROOM – FRONT	1016 [40.0]
W3	SHOULDER ROOM – FRONT	1737 [68.4]
W5	HIP ROOM – FRONT	1666 [65.5]
W117	BODY WIDTH AT H-POINT	1999 [78.7]
H61	EFFECTIVE HEAD ROOM – FRONT	1069 [42.1]

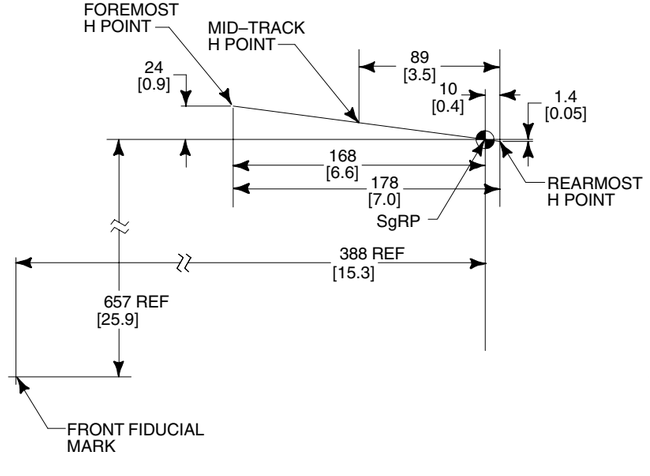
NOTE — [ ] DIMENSIONS ARE INCHES.

E-SERIES
SEAT TRACK TRAVEL/H-POINT LOCATION

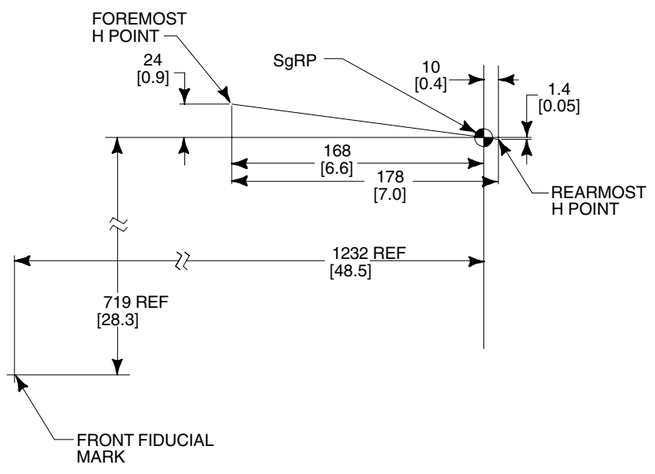
DRIVER
POWER TRACK



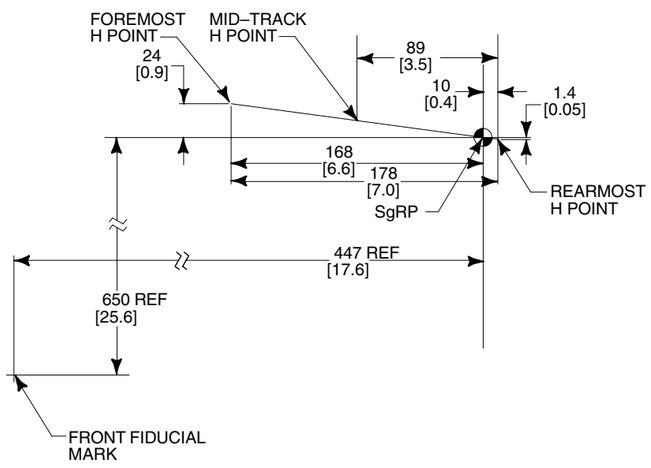
DRIVER
MANUAL TRACK



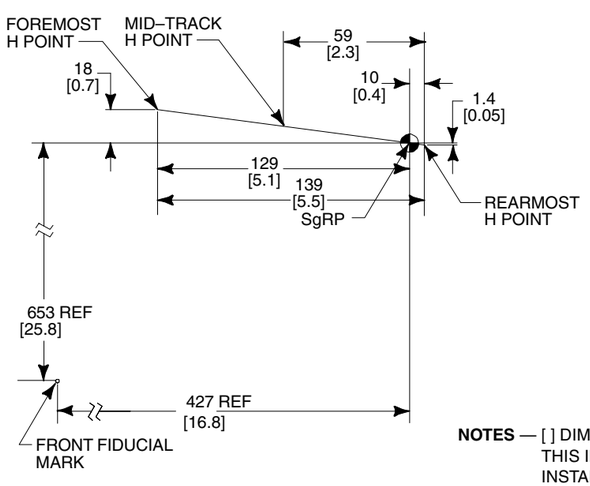
REAR CAPTAIN CHAIR
MANUAL TRACK



FRONT PASSENGER
MANUAL TRACK



FRONT PASSENGER MANUAL TRACK
FIXED SEAT BACK



NOTES — [ ] DIMENSIONS ARE INCHES.
THIS INFORMATION IS PROVIDED TO ASSIST IN THE INSTALLATION OF SEATS OTHER THAN FORD INSTALLED SEATS AND TO HELP PRESERVE THE INTENDED PERFORMANCE OF THE SAFETY AND ERGONOMIC FEATURES OF THE 2004 E-SERIES. THE MID-TRACK H-POINT LOCATION MUST BE MAINTAINED IN ORDER TO COMPLY WITH F/CMVSS 208 AIRBAG REQUIREMENTS.

BB0056

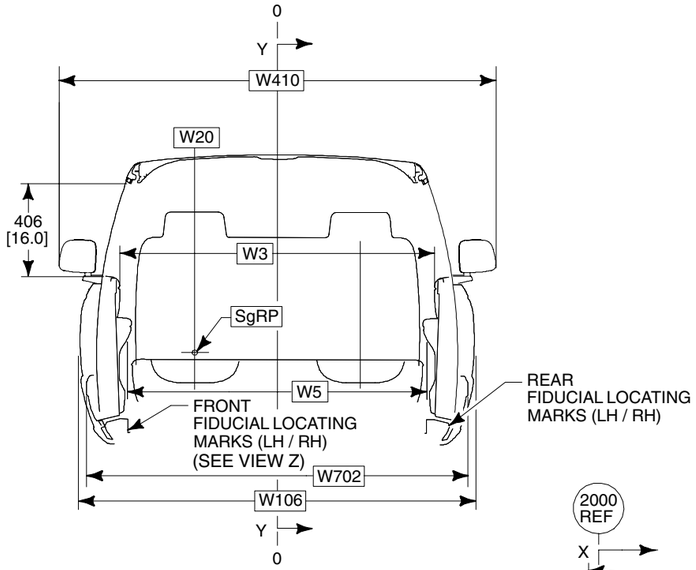
RANGER MODEL LINEUP

2004 MODEL YEAR

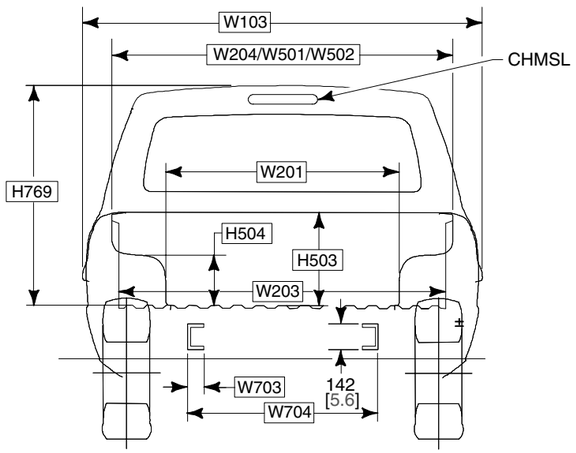
RANGER MODEL	BODY CODE	WHEELBASE inches	CA inches	STANDARD ENGINE(1) liters	STANDARD TRANSMISSION(1)	MAXIMUM GVWR pounds	TRANSFER CASE	MAXIMUM PAYLOAD(2) pounds	BASE CURB WEIGHT(3)			PICKUP NOMINAL LENGTH feet
									FRONT pounds	REAR pounds	TOTAL pounds	
REGULAR CAB PICKUP												
4x2 SWB	R10	112	37.6	2.3L I-4	5-Spd. Manual OD	4740 4700	—	1260 1620	1774	1253	3027	6
4x2 LWB	R10	118	43.5	3.0L V-6	5-Spd. Manual OD	4380 4720	—	1240 1560	1784	1309	3093	7
4x4 SWB	R11	112	37.6	3.0L V-6	5-Spd. Manual OD	4760 5040	BW1354	1240 1520	2089	1377	3466	6
4x4 LWB	R11	118	43.6	4.0L V-6	5-Spd. Automatic OD	4840 5060	BW1354	1260 1480	2110	1422	3532	7
SUPERCAB STYLESIDE PICKUP												
4x2 LWB	R14	126	37.7	3.0L V-6	5-Spd. Manual OD	4780	—	1260	1844	1349	3193	6
	R44				5-Spd. Automatic OD	5060		1640				
4x4 LWB	R15	126	37.8	4.0L V-6	5-Spd. Manual OD	5140	BW1354	1260	2241	1470	3711	6
	R45					5320		1560				

(1) Engine/transmission combinations may not be available on all models, or in all areas.
(2) Includes weight of driver, passengers and optional equipment.
(3) Base curb weight is for standard equipment only.

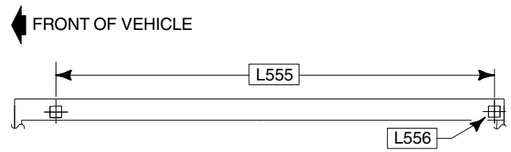
DIMENSIONAL DATA
RANGER REGULAR CAB STYLESIDE 4X2/4X4



SEC A

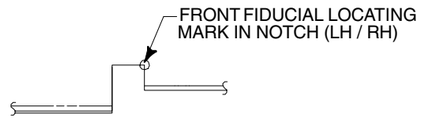


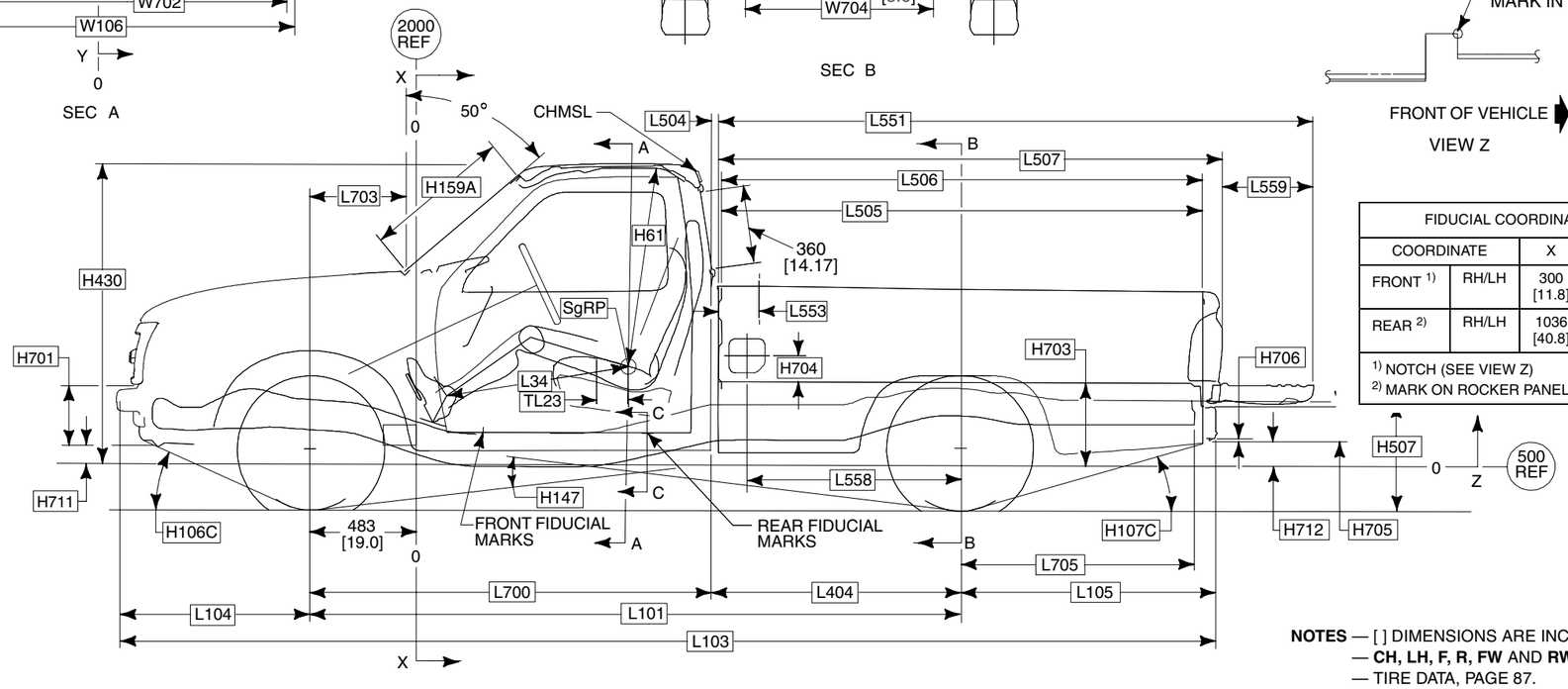
SEC B



PARTIAL PLAN VIEW OF PICKUP BOX

SEC C





FIDUCIAL COORDINATE CHART				
COORDINATE		X	Y	Z
FRONT [1]	RH/LH	300 [11.8]	±655 [±25.8]	137 [5.4]
REAR [2]	RH/LH	1036 [40.8]	±790 [±31.1]	142 [5.6]

[1] NOTCH (SEE VIEW Z)
[2] MARK ON ROCKER PANEL (SEE SECTION C)

NOTES — [ ] DIMENSIONS ARE INCHES.
— **CH, LH, F, R, FW** AND **RW** DIMENSIONS, PAGE 86.
— TIRE DATA, PAGE 87.
— SgRP X AND Z LOCATIONS, PAGE 89.

BB0334

DIMENSIONAL DATA
RANGER REGULAR CAB STYLESIDE 4X2/4X4

2004 MODEL YEAR

CHASSIS

CODE	DESCRIPTION	LWB		SWB	
		4X2	4X4	4X2	4X4
H106C	ANGLE OF APPROACH	22.5°	22.8°	22.5°	26.4°
H107C	ANGLE OF DEPARTURE	19.7°	24.3°	23.3°	27.6°
H147	RAMP BREAKOVER ANGLE	20.0°	20.0°	21.6°	20.9°
H507	TOP OF FRAME TO GROUND	846 [33.3]	892 [35.1]	846 [33.3]	892 [35.1]
L101	WHEELBASE	2983 [117.4]	2988 [117.6]	2831 [111.4]	2836 [111.6]
L103	OVERALL LENGTH	5091 [200.6]	5091 [200.6]	4787 [188.6]	4787 [188.6]
L104	FRONT OVERHANG	845 [33.3]	845 [33.3]	845 [33.3]	845 [33.3]
L105	REAR OVERHANG	1268 [49.9]	1264 [49.7]	1116 [43.9]	1112 [43.7]
L404	CAB TO ℄ OF REAR AXLE	1106 [43.5]	1106 [43.6]	948 [37.3]	948 [37.3]
L700	℄ OF FRONT AXLE TO END OF CAB	1880 [74.0]	1880 [74.0]	1880 [74.0]	1880 [74.0]
L705	℄ REAR AXLE TO END OF FRAME	1046 [41.2]	1046 [41.2]	894 [35.2]	894 [35.2]
W703	FRAME RAIL WIDTH	74 [2.9]	74 [2.9]	74 [2.9]	74 [2.9]
W704	WIDTH — REAR FRAMES	834 [32.8]	834 [32.8]	834 [32.8]	834 [32.8]

PICKUP BODY

CODE	DESCRIPTION	LWB	SWB
	NOMINAL CARGO BODY SIZE	7 FT.	6 FT.
H503	CARGO BODY HEIGHT	424 [16.7]	424 [16.7]
H504	WHEELHOUSE HEIGHT	220 [8.7]	220 [8.7]
H703	Z DATUM LINE TO CARGO BODY FLOOR	391 [15.4]	391 [15.4]
H704	TOP OF FLOOR TO ℄ OF FUEL FILLER	132 [5.2]	132 [5.2]
H705	REAR BUMPER HEIGHT	178 [7.0]	178 [7.0]
H706	BOTTOM OF REAR BUMPER TO TOP OF HITCH PLATE	43 [1.7]	43 [1.7]
H712	Z DATUM LINE TO BOTTOM OF REAR BUMPER	99 [3.9]	99 [3.9]
H769	TOP OF FLOOR TO TOP OF CAB @ ℄ REAR WHEELS	975 [38.4]	975 [38.4]
L504	CAB TO PICKUP BODY	21 [0.8]	21 [0.8]
L505	CARGO BODY LENGTH @ FLOOR	2151 [84.7]	1834 [72.2]
L506	CARGO BODY LENGTH @ BELT	2133 [84.0]	1829 [72.0]
L507	CARGO BODY OVERALL LENGTH	2246 [88.4]	1942 [76.4]
L553	FRONT OF BOX TO ℄ STAKE #1	180 [7.1]	180 [7.1]
L555	℄ STAKE #1 TO ℄ STAKE #2	1925 [75.8]	1623 [63.9]
L556	STAKE POCKET SIZE	52 X 40 [2 X 1.6]	52 X 40 [2 X 1.6]
L558	℄ REAR AXLE TO ℄ FUEL FILLER	777 [30.6]	777 [30.6]
L559	OPEN TAILGATE	409 [16.1]	409 [16.1]
W201	CARGO WIDTH BETWEEN WHEELHOUSE	1026 [40.4]	1026 [40.4]
W203	REAR OPENING WIDTH AT FLOOR	1320 [52.0]	1320 [52.0]
W204	TAILGATE OPENING AT BELT	1379 [54.3]	1379 [54.3]
W501	CARGO BODY WIDTH AT BELT	1377 [54.2]	1377 [54.2]
W502	MAXIMUM INSIDE BOX	1382 [54.4]	1382 [54.4]
V5	CARGO VOLUME — LITERS/CU.FT.	1231.9 43.4	1057.6 37.3

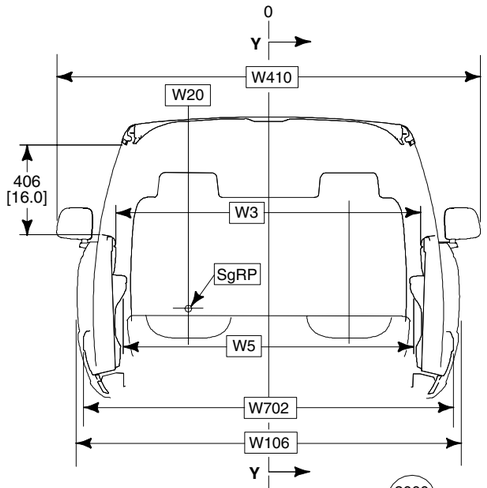
CAB

CODE	DESCRIPTION		LWB	SWB
H61	EFFECTIVE HEADROOM W/HEADLINER		999 [39.3]	999 [39.3]
H159A	WINDSHIELD HEIGHT		673 [26.5]	673 [26.5]
H430	Z DATUM LINE TO TOP OF CAB		1347 [53.0]	1347 [53.0]
H701	FRONT BUMPER HEIGHT *	4X2	333 [13.1]	333 [13.1]
		4X4	349 [13.7]	349 [13.7]
H711	Z DATUM LINE TO BOTTOM OF BUMPER *	4X2	39 [1.5]	39 [1.5]
		4X4	23 [0.9]	23 [0.9]
TL23	SEAT TRACK TRAVEL		200 [7.8]	200 [7.8]
L34	MAXIMUM EFFECTIVE LEG ROOM		1075 [42.3]	1075 [42.3]
L703	℄ FRONT AXLE TO COWL POINT		432 [17.0]	432 [17.0]
W3	SHOULDER ROOM		1386 [54.6]	1386 [54.6]
W5	HIP ROOM		1338 [52.7]	1338 [52.7]
W20	SgRP (Y)		–365 [–14.4]	–365 [–14.4]
W103	VEHICLE WIDTH	4X2	1762 [69.4]	1762 [69.4]
		4X4	1785 [70.3]	1785 [70.3]
W106	FRONT FENDER WIDTH	4X2	1756 [69.1]	1756 [69.1]
		4X4	1768 [69.6]	1768 [69.6]
W410	OVERALL WIDTH WITH STANDARD MIRRORS		1954 [76.9]	1954 [76.9]
W702	FRONT BUMPER WIDTH		1696 [66.8]	1696 [66.8]

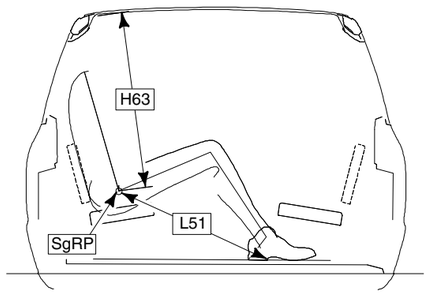
* Includes lower valance panel.

NOTES — [ ] DIMENSIONS ARE INCHES.
— DIMENSIONS ARE AT CURB HEIGHTS.

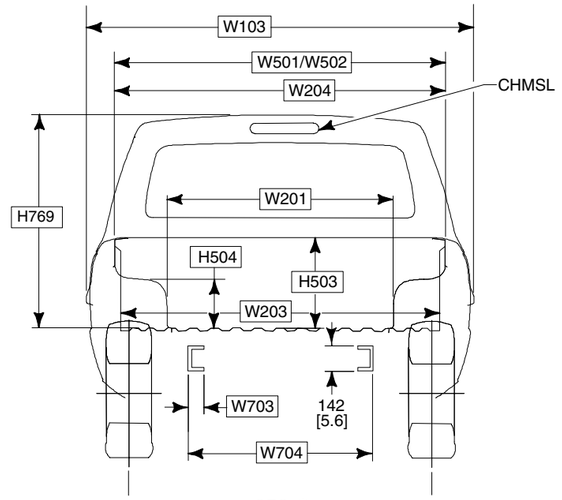
DIMENSIONAL DATA
RANGER SUPERCAB STYLESIDE 4X2/4X4



SEC **A**



SEC **B**



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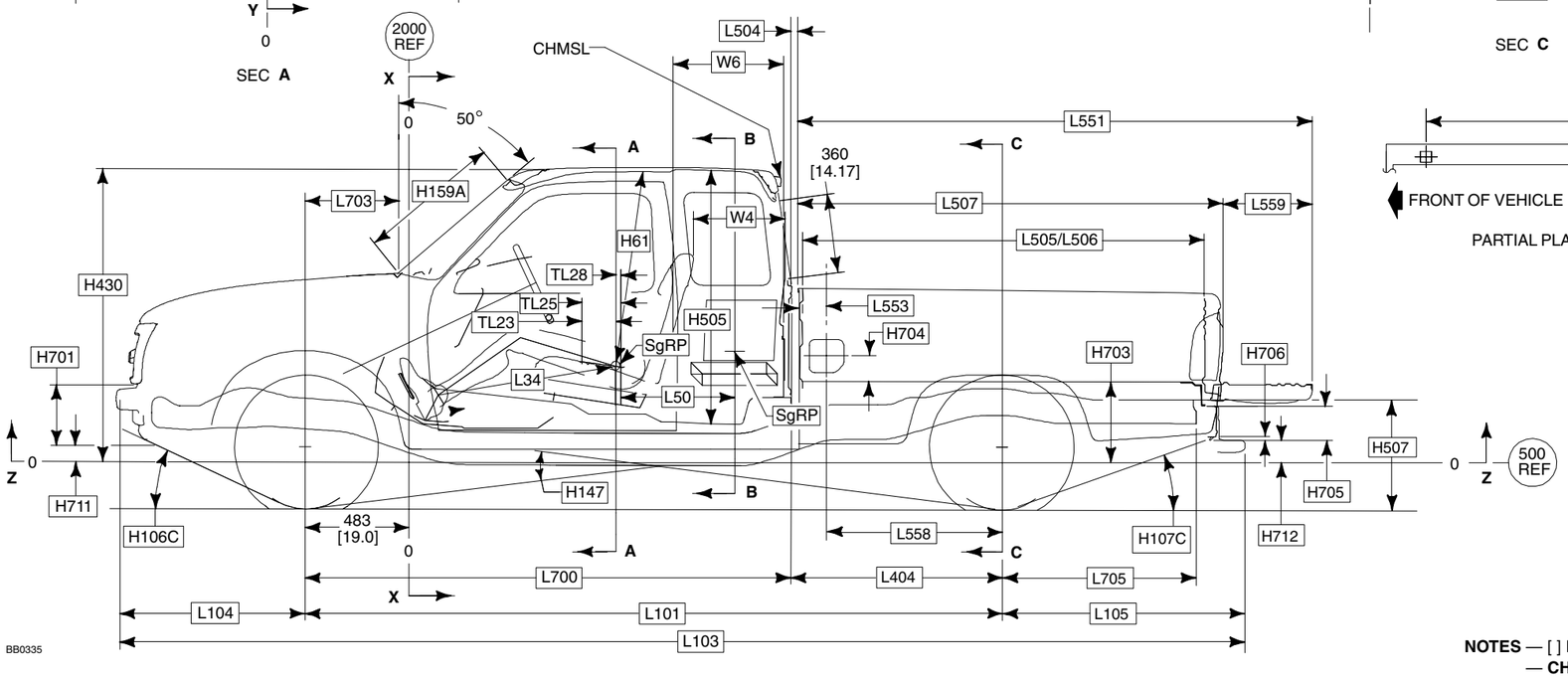
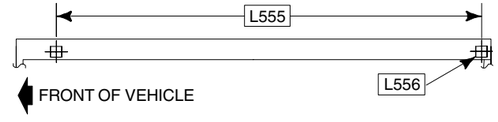




PARTIAL PLAN VIEW OF PICKUP BOX

NOTES — [ ] DIMENSIONS ARE INCHES.
— **CH, LH, F, R, FW** AND **RW** DIMENSIONS, PAGE 86.
— TIRE DATA, PAGE 87.
— SgRP X AND Z LOCATIONS, PAGE 89.

DIMENSIONAL DATA
RANGER SUPERCAB STYLESIDE 4X2/4X4

2004 MODEL YEAR

CHASSIS

CODE	DESCRIPTION	4X2	4X4
H106C	ANGLE OF APPROACH	20.0°	27.0°
H107C	ANGLE OF DEPARTURE	22.3°	26.9°
H147	RAMP BREAKOVER ANGLE	18.7°	19.4°
H507	TOP OF FRAME TO GROUND	846 [33.3]	892 [35.1]
L101	WHEELBASE	3192 [125.7]	3197 [125.9]
L103	OVERALL LENGTH	5153 [202.9]	5153 [202.9]
L104	FRONT OVERHANG	845 [33.3]	845 [33.3]
L105	REAR OVERHANG	1116 [43.9]	1112 [43.7]
L404	CAB TO ℄ OF REAR AXLE	958 [37.7]	960 [37.8]
L700	℄ OF FRONT AXLE TO BACK OF CAB	2235 [88.0]	2235 [88.0]
L705	℄ REAR AXLE TO END OF FRAME	894 [35.2]	894 [35.2]
W703	FRAME RAIL WIDTH	74 [2.9]	74 [2.9]
W704	WIDTH — REAR FRAMES	834 [32.8]	834 [32.8]

PICKUP BODY

CODE	DESCRIPTION	6 FT.	
	NOMINAL CARGO BODY SIZE	4X2	4X4
H503	CARGO BODY HEIGHT	424 [16.7]	424 [16.7]
H504	WHEELHOUSE HEIGHT	220 [8.7]	220 [8.7]
H703	Z DATUM LINE TO CARGO BODY FLOOR	391 [15.4]	391 [15.4]
H704	TOP OF FLOOR TO ℄ OF FUEL FILLER	132 [5.2]	132 [5.2]
H705	REAR BUMPER HEIGHT	178 [7.0]	178 [7.0]
H706	BOTTOM OF REAR BUMPER TO TOP OF HITCH PLATE	43 [1.7]	43 [1.7]
H712	Z DATUM LINE TO BOTTOM OF REAR BUMPER	99 [3.9]	99 [3.9]
—	REAR BUMPER WIDTH (NOT SHOWN)	1618 [63.7]	1618 [63.7]
H769	TOP OF FLOOR TO TOP OF CAB @ ℄ REAR WHEELS	978 [38.5]	978 [38.5]
L504	CAB TO PICKUP BODY	26 [1.1]	26 [1.1]
L505	CARGO BODY LENGTH @ FLOOR	1833 [72.2]	1833 [72.2]
L506	CARGO BODY LENGTH @ BELT	1829 [72.0]	1829 [72.0]
L507	CARGO BODY OVERALL LENGTH	1942 [76.4]	1942 [76.4]
L551	OVERALL LENGTH TO OPEN TAILGATE	2351 [92.5]	2351 [92.5]
L553	FRONT OF BOX TO ℄ STAKE #1	180 [7.1]	180 [7.1]
L555	℄ STAKE #1 TO ℄ STAKE #2	1623 [63.9	1623 [63.9
L556	STAKE POCKET SIZE	52 X 40 [2 X 1.6]	52 X 40 [2 X 1.6]
L558	℄ REAR AXLE TO ℄ FUEL FILLER	775 [30.5]	777 [30.6]
L559	OPEN TAILGATE	409 [16.1]	409 [16.1]
W201	CARGO WIDTH BETWEEN WHEELHOUSE	1026 [40.4]	1026 [40.4]
W203	REAR OPENING WIDTH AT FLOOR	1320 [52.0]	1320 [52.0]
W204	TAILGATE OPENING AT BELT	1379 [54.3]	1379 [54.3]
W501	CARGO BODY WIDTH AT BELT	1377 [54.2]	1377 [54.2]
W502	MAX. INSIDE BOX	1382 [54.4]	1382 [54.4]
V5	CARGO VOLUME — LITERS/CU.FT.	1057.6 37.3	1057.6 37.3

CAB

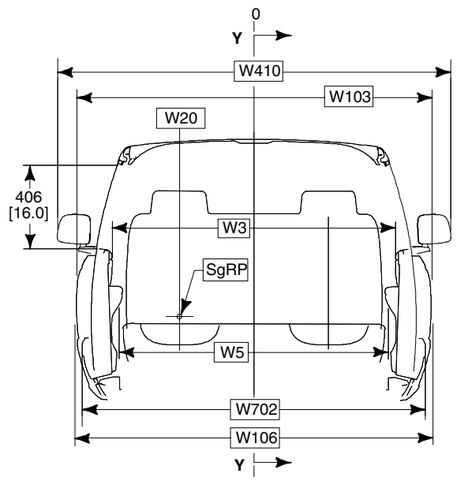
CODE	DESCRIPTION	4X2	4X4
H61	EFFECTIVE HEADROOM — FRONT (WITH HEADLINER)	999 [39.3]	999 [39.3]
H63	EFFECTIVE HEADROOM — REAR SIDE FACING	845 [33.3]	845 [33.3]
H159A	WINDSHIELD HEIGHT	673 [26.5]	673 [26.5]
H430	Z DATUM LINE TO TOP OF CAB	1351 [53.2]	1351 [53.2]
H505	INTERIOR CARGO HEIGHT — MAX.	1095 [43.1]	1095 [43.1]
H701	FRONT BUMPER HEIGHT *	333 [13.1]	349 [13.7]
H711	Z DATUM LINE TO BOTTOM OF FRONT BUMPER *	39 [1.5]	23 [0.9]
TL23	SEAT TRACK TRAVEL	209 [8.2]	209 [8.2]
TL25	TRUE TRACK TRAVEL LENGTH	250 [9.8]	250 [9.8]
TL28	TRUE TRACK TRAVEL LENGTH REAR OF SgRP BENCH SEAT	38 [1.5]	38 [1.5]
L34	MAXIMUM EFFECTIVE LEG ROOM — FRONT	1077 [42.4]	1077 [42.4]
L50	H POINT COUPLE DISTANCE	543 [21.3]	543 [21.3]
L51	EFFECTIVE LEG ROOM — REAR	1023 [40.3]	1023 [40.3]
L703	℄ FRONT AXLE TO COWL POINT	432 [17.0]	432 [17.0]
W3	SHOULDER ROOM — FRONT	1366 [53.8]	1366 [53.8]
W4	SHOULDER ROOM — REAR SIDE FACING	388 [15.3]	388 [15.3]
W5	HIP ROOM — FRONT	1338 [52.7]	1338 [52.7]
W6	HIP ROOM — REAR SIDE FACING	489 [19.3]	489 [19.3]
W20	SgRP (Y)	–365 [–14.4]	–365 [–14.4]
W103	VEHICLE WIDTH	1762 [69.4]	1785 [70.3]
W106	FRONT FENDER WIDTH	1756 [69.1]	1768 [69.6]
W410	OVERALL WIDTH WITH STANDARD MIRRORS	1954 [76.9]	1954 [76.9]
W702	FRONT BUMPER WIDTH	1696 [66.8]	1696 [66.8]

* Includes lower valance panel.

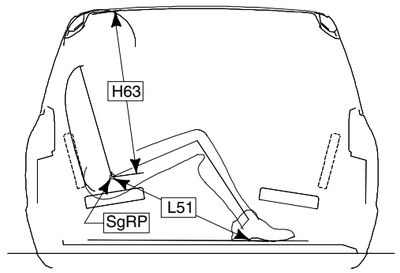
NOTES — [ ] DIMENSIONS ARE INCHES.
— DIMENSIONS ARE AT CURB HEIGHTS.

DIMENSIONAL DATA
RANGER REGULAR/SUPER CAB
FLARESIDE 4X2/4X4

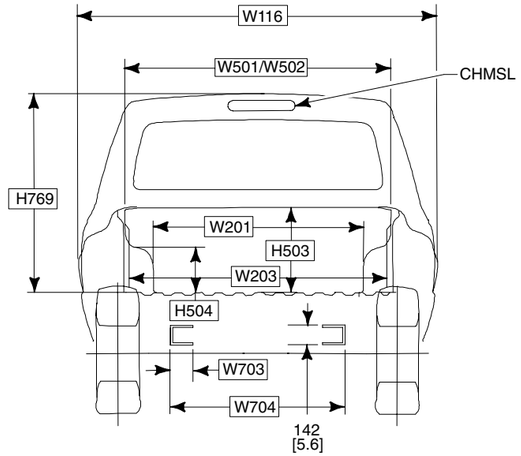
2004
MODEL YEAR



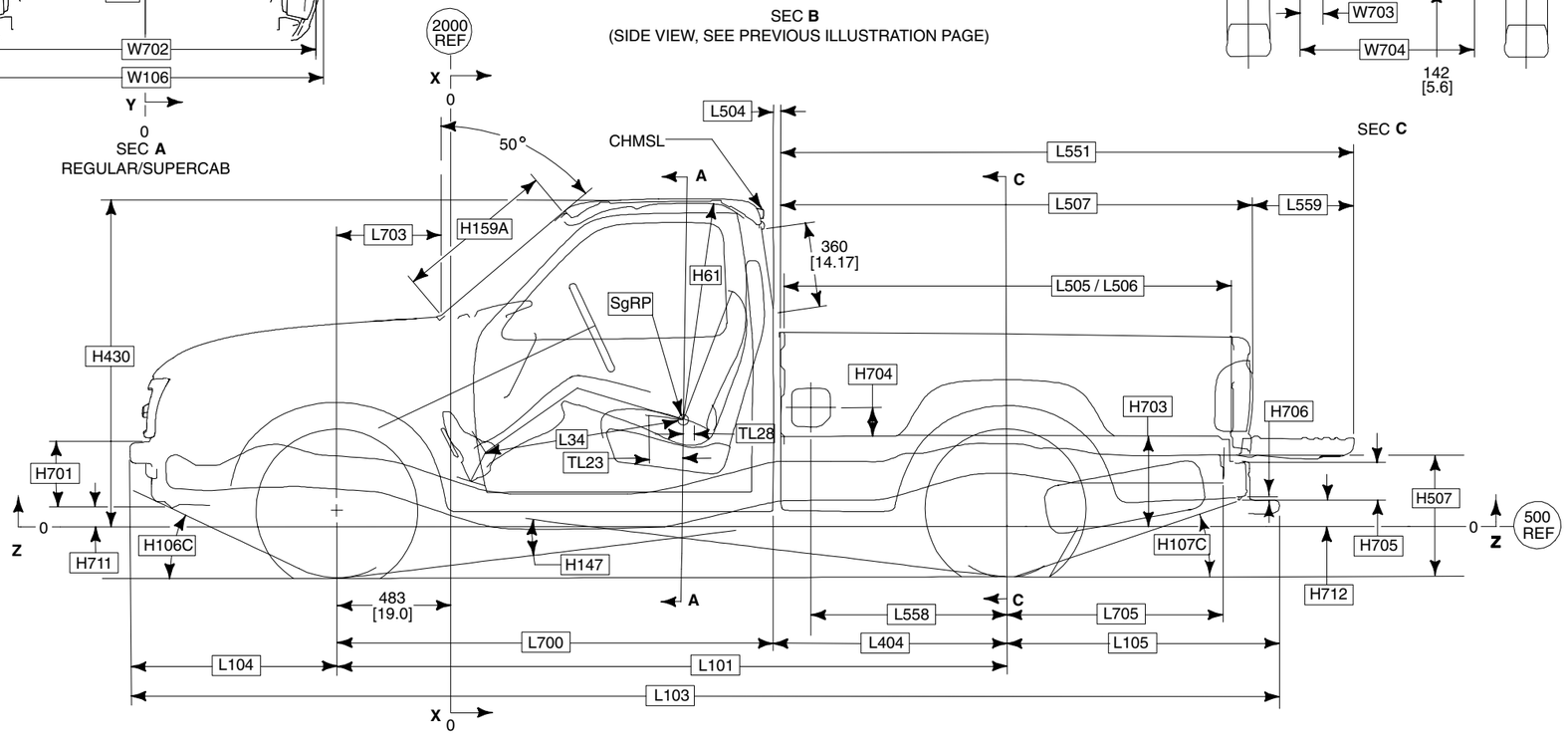
SEC **A**
REGULAR/SUPERCAB



SEC **B**
(SIDE VIEW, SEE PREVIOUS ILLUSTRATION PAGE)



SEC **C**



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NOTES — [ ] DIMENSIONS ARE INCHES.
— **CH, LH, F, R, FW** AND **RW** DIMENSIONS, PAGE 86.
— TIRE DATA, PAGE 87.
— FIDUCIAL DATA, PAGE 80.
— SgRP X AND Z LOCATIONS, PAGE 89.
— FLARESIDE BOX DOES NOT HAVE STAKE POCKETS.

DIMENSIONAL DATA
RANGER REGULAR/SUPERCAB FLARESIDE 4X2/4X4

2004 MODEL YEAR

CHASSIS

CODE	DESCRIPTION	REGULAR CAB		SUPERCAB	
		4X2	4X4	4X2	4X4
H106C	ANGLE OF APPROACH	22.5°	26.4°	20.0°	27.0°
H107C	ANGLE OF DEPARTURE	23.3°	27.6°	22.3°	26.9°
H147	RAMP BREAKOVER ANGLE	21.6°	20.9°	18.7°	19.4°
H507	TOP OF FRAME TO GROUND	846 [33.3]	892 [35.1]	846 [33.3]	892 [35.1]
L101	WHEELBASE	2831 [111.4]	2836 [111.6]	3192 [125.7]	3197 [125.9]
L103	OVERALL LENGTH	4787 [188.6]	4787 [188.6]	5153 [202.9]	5153 [202.9]
L104	FRONT OVERHANG	845 [33.3]	845 [33.3]	845 [33.3]	845 [33.3]
L105	REAR OVERHANG	1116 [43.9]	1112 [43.7]	1116 [43.9]	1112 [43.7]
L404	CAB TO ℄ OF REAR AXLE	948 [37.3]	948 [37.3]	958 [37.7]	960 [37.8]
L700	℄ OF FRONT AXLE TO END OF CAB	1880 [74.0]	1880 [74.0]	2235 [88.0]	2235 [88.0]
L705	℄ REAR AXLE TO END OF FRAME	894 [35.2]	894 [35.2]	894 [35.2]	894 [35.2]
W703	FRAME RAIL WIDTH	74 [2.9]	74 [2.9]	74 [2.9]	74 [2.9]
W704	WIDTH — REAR FRAMES	834 [32.8]	834 [32.8]	834 [32.8]	834 [32.8]

PICKUP BODY

CODE	DESCRIPTION	REGULAR CAB		SUPERCAB	
NOMINAL CARGO BODY SIZE		4X2 6 FT.	4X4 6 FT.	4X2 6 FT.	4X4 6 FT.
H503	CARGO BODY HEIGHT	424 [16.7]	424 [16.7]	424 [16.7]	424 [16.7]
H504	WHEELHOUSE HEIGHT	231 [9.1]	231 [9.1]	231 [9.1]	231 [9.1]
H703	Z DATUM LINE TO CARGO BODY FLOOR	363 [14.3]	363 [14.3]	363 [14.3]	363 [14.3]
H704	TOP OF FLOOR TO ℄ OF FUEL FILLER	132 [5.2]	132 [5.2]	132 [5.2]	132 [5.2]
H705	REAR BUMPER HEIGHT	178 [7.0]	178 [7.0]	178 [7.0]	178 [7.0]
H706	BOTTOM OF REAR BUMPER TO TOP OF HITCH PLATE	43 [1.7]	43 [1.7]	43 [1.7]	43 [1.7]
H712	Z DATUM LINE TO BOTTOM OF REAR BUMPER	99 [3.9]	99 [3.9]	99 [3.9]	99 [3.9]
H769	TOP OF FLOOR TO TOP OF CAB @ ℄ REAR WHEELS	975 [38.4]	975 [38.4]	978 [38.5]	978 [38.5]
L504	CAB TO PICKUP BODY	23 [0.9]	23 [0.9]	28 [1.1]	28 [1.1]
L505	CARGO BODY LENGTH @ FLOOR	1834 [72.2]	1834 [72.2]	1834 [72.2]	1834 [72.2]
L506	CARGO BODY LENGTH @ BELT	1816 [71.5]	1816 [71.5]	1816 [71.5]	1816 [71.5]
L507	CARGO BODY OVERALL LENGTH	1943 [76.5]	1943 [76.5]	1943 [76.5]	1943 [76.5]
L551	OVERALL LENGTH TO OPEN TAILGATE	2351 [92.5]	2351 [92.5]	2351 [92.5]	2351 [92.5]
L558	℄ REAR AXLE TO ℄ FUEL FILLER	775 [30.5]	777 [30.6]	775 [30.5]	777 [30.6]
L559	OPEN TAILGATE	409 [16.1]	409 [16.1]	409 [16.1]	409 [16.1]
W116	MAXIMUM OUTSIDE FENDER	1763 [69.4]	1763 [69.4]	1763 [69.4]	1763 [69.4]
W201	CARGO WIDTH BETWEEN WHEELHOUSE	1026 [40.4]	1026 [40.4]	1026 [40.4]	1026 [40.4]
W203	REAR OPENING WIDTH AT FLOOR	1117 [44.0]	1117 [44.0]	1117 [44.0]	1117 [44.0]
W501	CARGO BODY WIDTH AT BELT	1164 [45.8]	1164 [45.8]]	1164 [45.8]	1164 [45.8]
W502	MAXIMUM INSIDE BOX	1273 [50.1]	1273 [50.1]	1273 [50.1]	1273 [50.1]
V5	CARGO VOLUME — LITERS/ CU.FT.	982 34.7	982 34.7	982 34.7	982 34.7

CAB

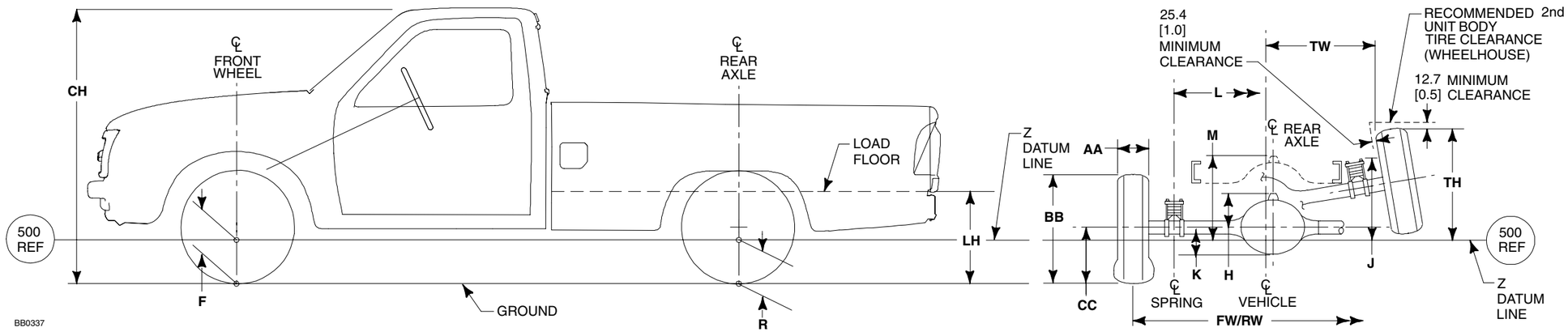
CODE	DESCRIPTION	REGULAR CAB		SUPERCAB	
		4X2	4X4	4X2	4X4
H61	EFFECTIVE HEADROOM WITH HEADLINER	999 [39.3]	999 [39.3]	999 [39.3]	999 [39.3]
H63	EFFECTIVE HEADROOM — REAR SIDE FACING	—	—	845 [33.3]	845 [33.3]
H159A	WINDSHIELD HEIGHT	673 [26.5]	673 [26.5]	673 [26.5]	673 [26.5]
H430	Z DATUM LINE TO TOP OF CAB	1347 [53.0]	1347 [53.0]	1351 [53.2]	1351 [53.2]
H505	INTERIOR CARGO HEIGHT — MAX. (NOT SHOWN)	—	—	1095 [43.1]	1095 [43.1]
H701	FRONT BUMPER HEIGHT *	333 [13.1]	349 [13.7]	333 [13.1]	349 [13.7]
H711	Z DATUM LINE TO BOTTOM OF FRONT BUMPER *	39 [1.5]	23 [0.9]	39 [1.5]	23 [0.9]
TL23	SEAT TRACK TRAVEL	200 [7.8]	200 [7.8]	209 [8.2]	209 [8.2]
TL28	TRUE TRACK TRAVEL LENGTH REAR OF SgRP — BENCH SEAT	28 [0.1]	28 [0.1]	38 [1.5]	38 [1.5]
L34	MAXIMUM EFFECTIVE LEG ROOM	1075 [42.4]	1075 [42.4]	1077 [42.4]	1077 [42.4]
L50	H POINT COUPLE DISTANCE (NOT SHOWN)	—	—	543 [21.4]	543 [21.4]
L51	EFFECTIVE LEG ROOM — REAR	—	—	1023 [40.3]	1023 [40.3]
L703	℄ FRONT AXLE TO COWL POINT	442 [17.4]	442 [17.4]	442 [17.4]	442 [17.4]
W3	SHOULDER ROOM — FRONT	1367 [53.8]	1367 [53.8]	1367 [53.8]	1367 [53.8]
W4	SHOULDER ROOM — REAR SIDE FACING (NOT SHOWN)	—	—	388 [15.3]	388 [15.3]
W5	HIP ROOM	1338 [52.7]	1338 [52.7]	1338 [52.7]	1338 [52.7]
W6	HIP ROOM — REAR SIDE FACING (NOT SHOWN)	—	—	489 [19.3]	489 [19.3]
W20	SgRP (Y)	–365 [–14.4]	–365 [–14.4]	–365 [–14.4]	–365 [–14.4]
W103	VEHICLE WIDTH	1762 [69.4]	1762 [69.4]	1762 [69.4]	1762 [69.4]
W106	FRONT FENDER WIDTH	1756 [69.1]	1756 [69.1]	1756 [69.1]	1756 [69.1]
W410	OVERALL WIDTH WITH STANDARD MIRRORS	1954 [76.9]	1954 [76.9]	1954 [76.9]	1954 [76.9]
W702	FRONT BUMPER WIDTH	1696 [66.8]	1696 [66.8]	1696 [66.8]	1696 [66.8]

* Includes lower valance panel.

NOTES — [ ] DIMENSIONS ARE INCHES.
— DIMENSIONS ARE AT CURB HEIGHTS.

RANGER AXLE/TIRE/VEHICLE HEIGHT DATA

2004
MODEL YEAR



Model	WB [in]	GVWR	Base Tire	F Height @ Front Wheel(1)		R Height @ Rear Axle(1)		LH(1)		CH(1)		H(2)(3)	J	K(4)	L	M(2)(3)	CC(5)	FW At Base Curb Weight	RW	TW	TH
				Height at Base Curb Weight	Loaded Height @ Spring Rating	Height at Base Curb Weight	Loaded Height @ Spring Rating	Empty	Loaded	Empty	Loaded										
Regular Cab Styleside 4x2	112	4360 4680	P225/70R-15SL	269 [10.6]	234 [9.2]	326 [12.8]	217 [8.5]	724 [28.5]	586 [23.1]	1650 [64.9]	1575 [62.0]	157 [6.2]	338 [13.3]	130 [5.10]	986 [38.8]	335 [13.2]	300 [11.8]	1488 [58.6]	1455 [57.3]	559 [22.0] 546 [21.5]	411 [16.2]
	118	4360 4700	P225/70R-15SL	269 [10.6]	234 [9.2]	323 [12.7]	217 [8.5]	714 [28.1]	572 [22.5]	1649 [64.9]	1575 [62.0]	157 [6.2]	338 [13.3]	130 [5.10]	986 [38.8]	335 [13.2]	300 [11.8]	1488 [58.6]	1455 [57.3]	559 [22.0] 546 [21.5]	411 [16.2]
SuperCab Styleside 4x2	126	4740 5020	P225/70R-15SL	268 [10.5]	234 [9.2]	314 [12.4]	217 [8.5]	708 [27.9]	587 [23.1]	1645 [64.8]	1577 [62.0]	157 [6.2]	338 [13.3]	130 [5.10]	986 [38.8]	335 [13.2]	300 [11.8]	1488 [58.6]	1455 [57.3]	559 [22.0] 546 [21.5]	411 [16.2]
Regular Cab Styleside 4x4	112	4740 5020	P235/75R-15	351 [13.8]	310 [12.2]	415 [16.3]	316 [12.4]	804 [31.6]	692 [27.2]	1724 [67.9]	1663 [65.4]	157 [6.2]	302 [11.9]	130 [5.10]	986 [38.8]	249 [9.8]	328 [12.9]	1488 [58.6]	1455 [57.3]	569 [22.4]	348 [13.7]
	118	4800 5040		350 [13.8]	310 [12.2]	413 [16.3]	316 [12.4]	804 [31.6]	692 [27.2]	1726 [67.9]	1662 [65.4]	157 [6.2]	302 [11.9]	130 [5.10]	986 [38.8]	249 [9.8]	328 [12.9]	1488 [58.6]	1455 [57.3]	569 [22.4]	419 [16.5]
SuperCab Styleside 4x4	126	5120 5300	P235/75R-15	349 [13.7]	310 [12.2]	403 [15.9]	316 [12.4]	795 [31.3]	692 [27.2]	1723 [67.8]	1664 [65.5]	157 [6.2]	302 [11.9]	130 [5.10]	986 [38.8]	249 [9.8]	328 [12.9]	1488 [58.6]	1455 [57.3]	569 [22.4]	374 [14.7]

(1) — The Height Data shown represents dimensions of a base/standard vehicle with no options. Actual height may vary due to production tolerances.
(2) — Add 0.5" on vehicles equipped with 4.0L engine.
(3) — To top of brake tube union.
(4) — 5.7" on vehicles equipped with 4.0L engine.
(6) — Minimum loaded radius.

NOTES — [ ] DIMENSIONS ARE INCHES.
— VEHICLE RIDE HEIGHTS ARE GIVEN AT TIRE MINIMUM LOAD RADIUS.
— TIRE DATA ON PAGE 87.

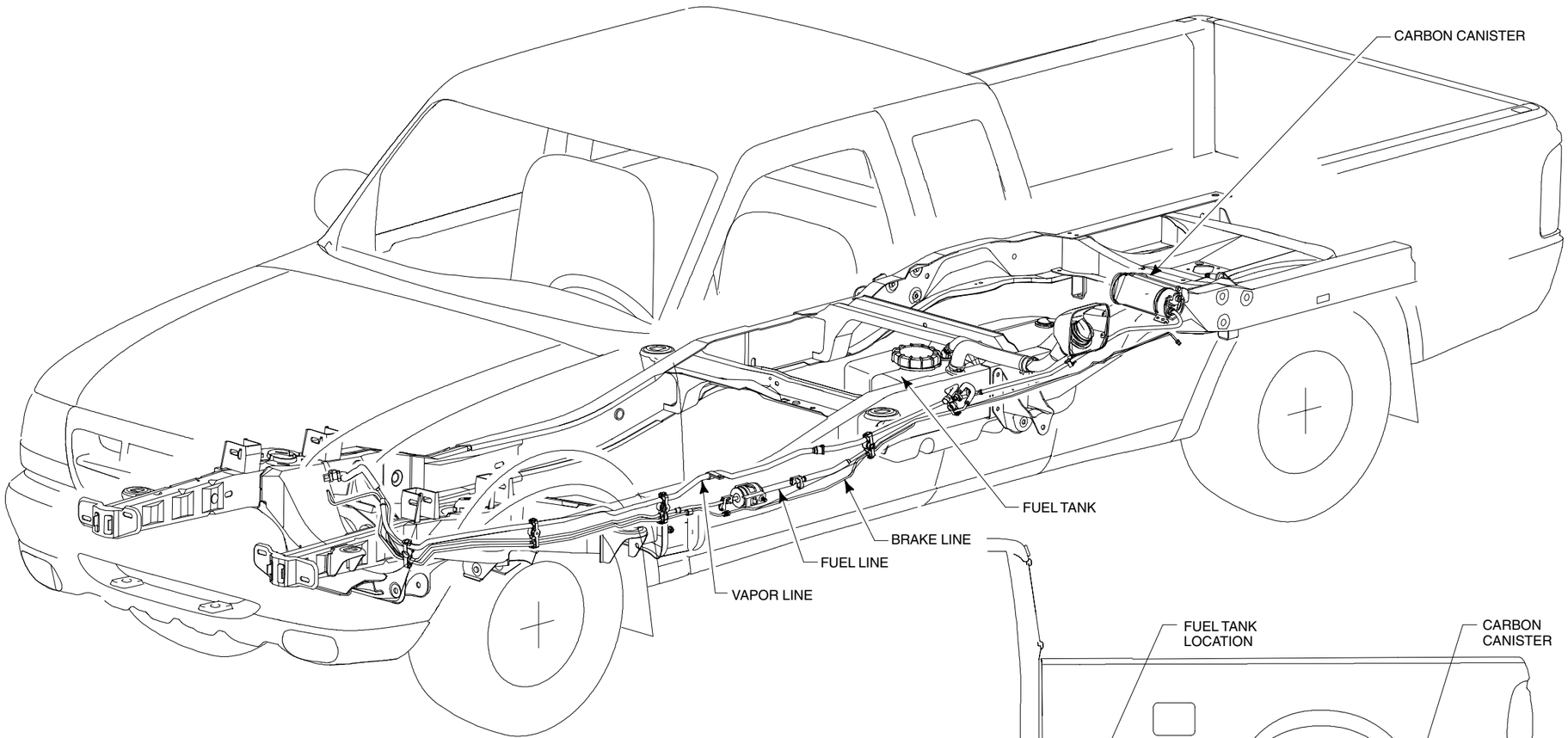
RANGER TIRE DATA

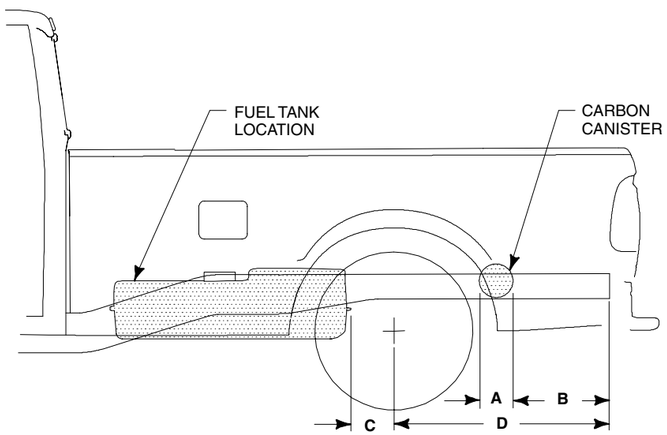
ALL-SEASON TIRE DATA				
Tire Size	**Rim Width**	**AA Maximum Section Width**	**BB Maximum Diameter**	***CC Minimum Loaded Radius**
P225/70R-15SL	178 [7.0]	241 [9.3]	702 [27.5]	315 [12.2]
ALL-TERRAIN TIRE DATA				
P235/75R-15SL(1)	178 [7.0]	245 [9.9]	744 [29.2]	328 [13.0]
P245/75R-16SL(2)	178 [7.0]	261 [10.3]	783 [30.8]	345 [13.6]
31x10.50R-15SL(3)	178 [7.0]	259 [10.2]	783 [30.8]	345 [14.0]

* This number represents Radius – Axle centerline to ground with maximum rated load on tire at maximum pressure.
(1) Available XL 4x4, Edge 4x2 and XLT 4x2.
(2) Available XLT 4x4 and Edge 4x4.
(3) Available FX4/Level II 4x4 only.

NOTE — [ ] DIMENSIONS ARE INCHES.

FUEL AND VAPOR SYSTEM
TYPICAL FOR ALL LENGTHS OF RANGER



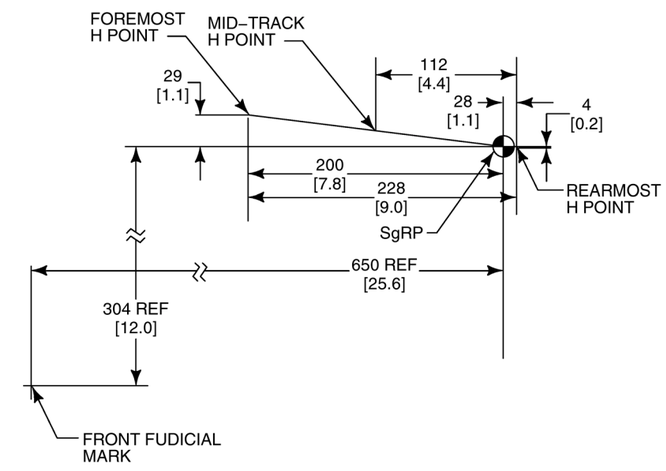


			DIMENSIONS			
CAB STYLE	**WHEELBASE INCHES**	**TANK**	**A**	**B**	**C**	**D**
REGULAR CAB STYLESIDE/FLARESIDE	[112]	STANDARD	126 [5.0]	537 [21.4]	185.7 [7.3]	897 [35.3]
REGULAR CAB STYLESIDE	[118]	STANDARD	126 [5.0]	689.9 [27.2]	185.7 [7.3]	1050 [41.3]
SUPERCAB STYLESIDE/FLARESIDE	[126]	STANDARD	126 [5.0]	536.2 [21.1]	181.9 [7.2]	897 [35.3]

NOTE — [ ] DIMENSIONS ARE INCHES.

RANGER
SEAT TRACK TRAVEL/H-POINT LOCATION

DRIVER/FRONT PASSENGER
MANUAL TRACK



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NOTE — [ ] DIMENSIONS ARE INCHES.

F-150 MODEL LINEUP

2004 MODEL YEAR

F-SERIES MODEL	BODY CODE	WHEELBASE inches	ENGINE[1] liters	TRANSMISSION[1]	MIN-MAX GVWR pounds	TRANSFER CASE	MAXIMUM PAYLOAD[2] pounds	BASE CURB WEIGHT[3]			PICKUP BOX NOMINAL LENGTH feet
								FRONT pounds	REAR pounds	TOTAL pounds	
REGULAR CAB FLARESIDE PICKUP											
F-150 4x2	F02	126.0	4.6L V-8	4-Spd. Auto OD	6650	—	1830	2720	2052	4772	6½
F-150 4x2	F02	126.0	5.4L V-8	4-Spd. Auto OD	6650	—	1690	2798	2111	4909	6½
F-150 4x4	F04	126.0	4.6L V-8	4-Spd. Auto OD	6800	Warner 44-06	1670	2952	2119	5171	6½
F-150 4x4	F04	126.0	5.4L V-8	4-Spd. Auto OD	6850	Warner 44-06	1680	2993	2124	5117	6½
REGULAR CAB STYLESIDE PICKUP											
F-150 4x2	F12	126.0	4.6L V-8	4-Spd. Auto OD	6650	—	1840	2712	2046	4758	6½
F-150 4x2	F12	126.0	5.4L V-8	4-Spd. Auto OD	6650	—	1700	2790	2105	4895	6½
F-150 4x2	F12	144.5	4.6L V-8	4-Spd. Auto OD	6800	—	1870	2827	2051	4878	8
F-150 4x2	F12	144.5	5.4L V-8	4-Spd. Auto OD	7050	—	1990	2907	2097	5004	8
F-150 4x2	F12	144.5	5.4L V-8	4-Spd. Auto OD	8200	—	3000	2957	2185	5142	8
F-150 4x4	F14	126.0	4.6L V-8	4-Spd. Auto OD	6800	Warner 44-06	1690	2944	2113	5057	6½
F-150 4x4	F14	126.0	5.4L V-8	4-Spd. Auto OD	6850	Warner 44-06	1690	2985	2118	5103	6½
F-150 4x4	F14	144.5	4.6L V-8	4-Spd. Auto OD	6950	Warner 44-06	1720	3063	2114	5177	8
F-150 4x4	F14	144.5	5.4L V-8	4-Spd. Auto OD	6950	Warner 44-06	1630	3123	2140	5263	8
F-150 4x4	F14	144.5	5.4L V-8	4-Spd. Auto OD	8200	Warner 44-06	2660	3230	2248	5478	8

(1) Engine/transmission combinations may not be available on all models, or in all areas.
(2) Includes weight of driver, passengers and optional equipment.
(3) Base curb weight is for standard equipment only.

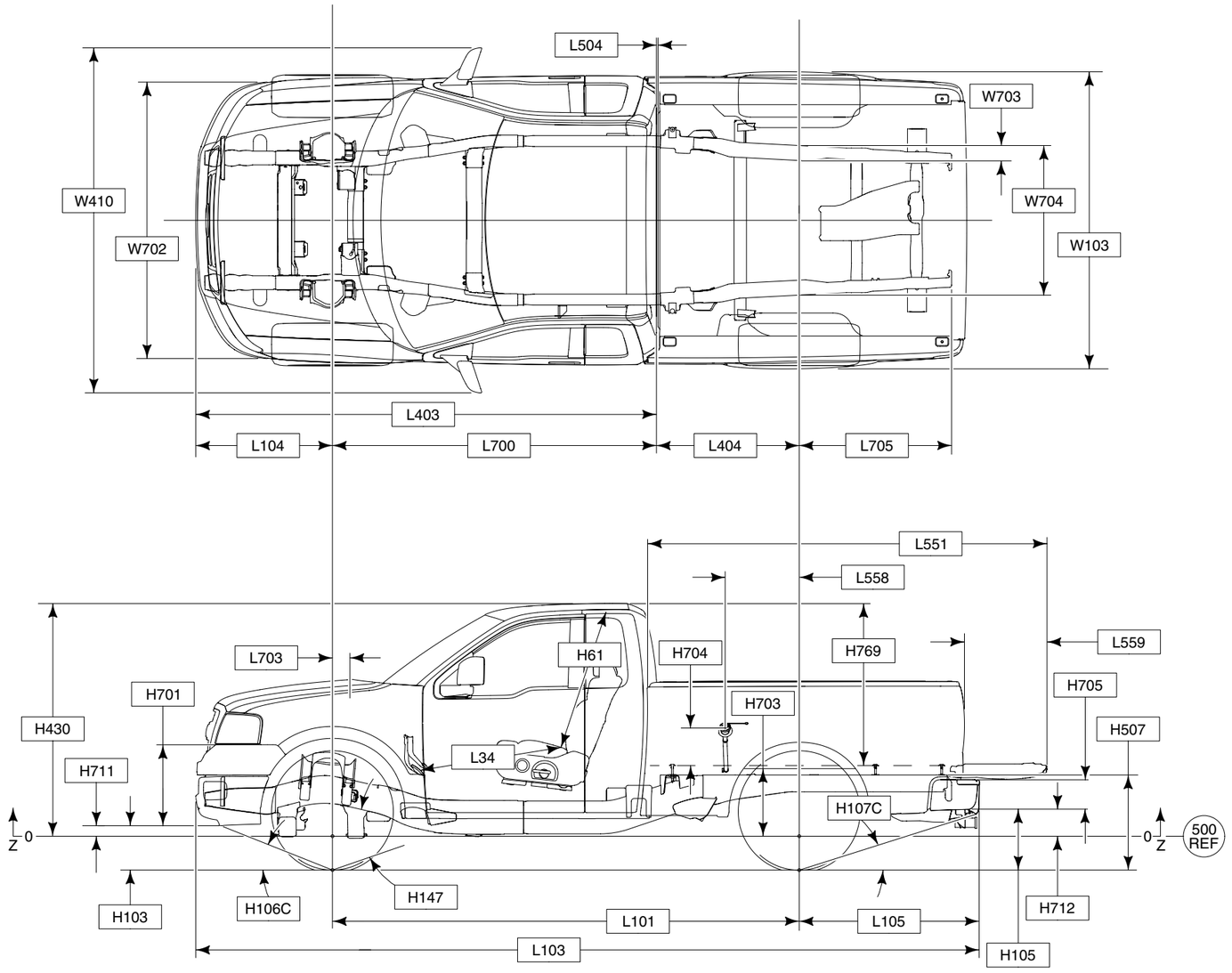
F-150 MODEL LINEUP

2004 MODEL YEAR

F-SERIES MODEL	BODY CODE	WHEELBASE inches	ENGINE[1] liters	TRANSMISSION[1]	MIN./MAX. GVWR pounds	TRANSFER CASE	MAXIMUM PAYLOAD[2] pounds	BASE CURB WEIGHT[3]			PICKUP BOX NOMINAL LENGTH feet
								FRONT pounds	REAR pounds	TOTAL pounds	
SUPERCAB FLARESIDE PICKUP											
F-150 4x2	X02	144.5	4.6L V-8	4-Spd. Auto OD	6700	—	1520	2902	2227	5129	6½
F-150 4x2	X02	144.5	5.4L V-8	4-Spd. Auto OD	7050	—	1730	2963	2342	5305	6½
F-150 4x4	X04	144.5	4.6L V-8	4-Spd. Auto OD	6950	Warner 44-06	1460	3100	2335	5435	6½
F-150 4x4	X04	144.5	5.4L V-8	4-Spd. Auto OD	7200	Warner 44-06	1630	3211	2298	5509	6½
SUPERCAB STYLESIDE PICKUP											
F-150 4x2	X12	132.5	4.6L V-8	4-Spd. Auto OD	6650	—	1600	2796	2197	4993	5½
F-150 4x2	X12	132.5	5.4L V-8	4-Spd. Auto OD	6950	—	1750	2879	2266	5145	5½
F-150 4x2	X12	144.5	4.6L V-8	4-Spd. Auto OD	6700	—	1530	2894	2221	5115	6½
F-150 4x2	X12	144.5	5.4L V-8	4-Spd. Auto OD	7050	—	1750	2973	2271	5244	6½
F-150 4x2	X12	163.0	5.4L V-8	4-Spd. Auto OD	8200	—	2690	3107	2344	5451	8
F-150 4x4	X14	132.5	4.6L V-8	4-Spd. Auto OD	6900	Warner 44-06	1520	3005	2313	5318	5½
F-150 4x4	X14	132.5	5.4L V-8	4-Spd. Auto OD	7150	Warner 44-06	1630	3089	2375	5464	5½
F-150 4x4	X14	144.5	4.6L V-8	4-Spd. Auto OD	6950	Warner 44-06	1470	3092	2329	5421	6½
F-150 4x4	X14	144.5	5.4L V-8	4-Spd. Auto OD	7200	Warner 44-06	1650	3203	2292	5495	6½
F-150 4x4	X14	163.0	5.4L V-8	4-Spd. Auto OD	8200	Warner 44-06	2260	3411	2464	5875	8
SUPERCREW PICKUP											
F-150 4x2	W12	138.5	4.6L V-8	4-Spd. Auto OD	6800	—	1530	2915	2295	5210	5½
F-150 4x2	W12	138.5	5.4L V-8	4-Spd. Auto OD	7050	—	1690	2963	2342	5305	5½
F-150 4x4	W14	138.5	4.6L V-8	4-Spd. Auto OD	6900	Warner 44-06	1340	3150	2352	5502	5½
F-150 4x4	W14	138.5	5.4L V-8	4-Spd. Auto OD	7200	Warner 44-06	1530	3217	2389	5606	5½

(1) Engine/transmission combinations may not be available on all models, or in all areas.
(2) Includes weight of driver, passengers and optional equipment.
(3) Base curb weight is for standard equipment only.

DIMENSIONAL DATA
F-150 REGULAR CAB STYLESIDE 4X2/4X4



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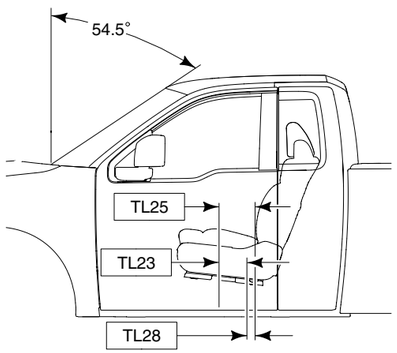


NOTES — [ ] DIMENSIONS ARE INCHES.
— **CH, LH, F, R, FW, RW** DIMENSIONS, SEE PAGE 105.
— TIRE DATA, PAGE 107.
— INTERIOR BOX DIMENSIONS, PAGE 102-103.

DIMENSIONAL DATA
F-150 REGULAR CAB STYLESIDE 4X2/4X4

2004
MODEL YEAR

CHASSIS

CODE	DESCRIPTION	126" WB		144.5" WB	
		4x2	4x4	4x2	4x4
H103	BOTTOM OF FRONT BUMPER VALANCE TO GROUND @ CURB	385 [15.2]	445 [17.5]	407 [16.0]	474 [18.7]
H105	BOTTOM OF REAR BUMPER TO GROUND @ CURB	463 [18.2]	510 [20.1]	488 [19.2]	542 [21.3]
H106C	ANGLE OF APPROACH	20.7°	24.3°	21.3°	25.1°
H107C	ANGLE OF DEPARTURE	22.1°	25.0°	21.8°	24.9°
H147	RAMP BREAKOVER ANGLE	19.0°	23.2°	16.6°	20.4°
H507	TOP OF FRAME TO GROUND FRAME HEIGHT	705 [27.8]	755 [29.7]	736 [29.0]	786 [30.9]
L101	WHEELBASE	3198 [126.0]	3198 [126.0]	3671 [144.5]	3671 [144.5]
L103	OVERALL LENGTH — STANDARD REAR STEP BUMPER	5364 [211.2]	5364 [211.2]	5837 [229.8]	5837 [229.8]
L104	FRONT OVERHANG	936 [36.9]	936 [36.9]	936 [36.9]	936 [36.9]
L105	REAR OVERHANG — STANDARD REAR STEP BUMPER	1230 [48.4]	1230 [48.4]	1230 [48.4]	1230 [48.4]
L403	FRONT BUMPER TO REAR OF CAB	3172 [124.9]	3172 [124.9]	3172 [124.9]	3172 [124.9]
L404	BACK OF CAB TO ℄ OF REAR AXLE	963 [37.9]	963 [37.9]	1436 [56.5]	1436 [56.5]
L700	℄ OF FRONT AXLE TO REAR OF CAB	2235 [88.0]	2235 [88.0]	2235 [88.0]	2235 [88.0]
L705	℄ REAR AXLE TO END OF FRAME (INCLUDES REAR BUMPER MOUNTING BRACKET)	1041 [41.0]	1041 [41.0]	1041 [41.0]	1041 [41.0]
W703	FRAME RAIL WIDTH	102 [4.0]	102 [4.0]	102 [4.0]	102 [4.0]
W704	REAR FRAME WIDTH	1024 [40.3]	1024 [40.3]	1024 [40.3]	1024 [40.3]

PICKUP BODY

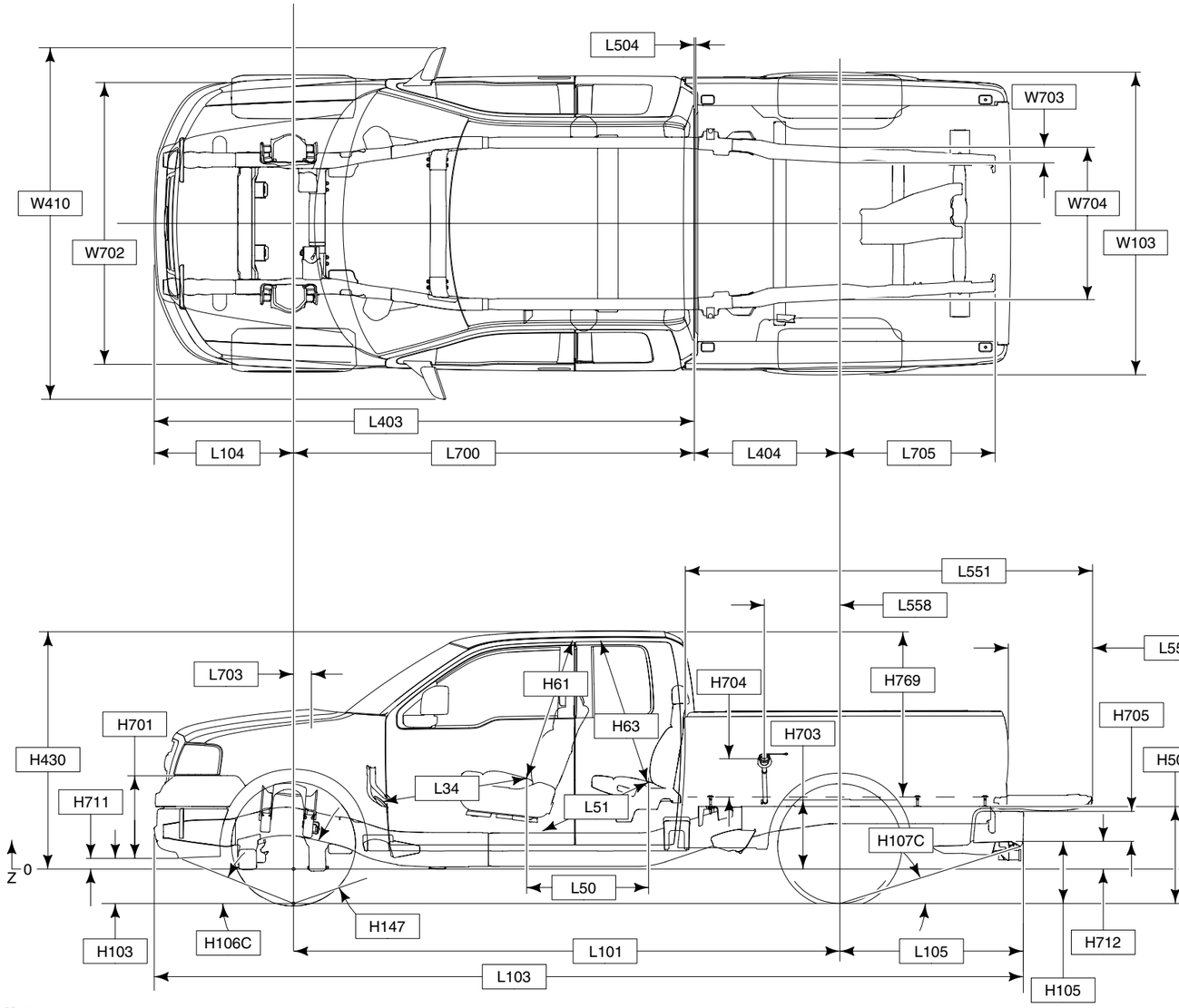
CODE	DESCRIPTION	126" WB		144.5" WB	
		4x2	4x4	4x2	4x4
NOMINAL CARGO BODY SIZE		6.5 FT.		8 FT.	
H703	Z REFERENCE LINE TO CARGO BODY FLOOR	418 [16.5]	418 [16.5]	418 [16.5]	418 [16.5]
H704	TOP OF FLOOR TO ℄ OF FUEL FILLER	267 [10.5]	267 [10.5]	267 [10.5]	267 [10.5]
H705	REAR BUMPER HEIGHT	258 [10.2]	258 [10.2]	258 [10.2]	258 [10.2]
—	REAR BUMPER WIDTH (NOT SHOWN)	1916 [75.4]	1916 [75.4]	1916 [75.4]	1916 [75.4]
H712	Z REFERENCE LINE TO BOTTOM OF REAR BUMPER	128 [5.0]	128 [5.0]	128 [5.0]	128 [5.0]
H769	TOP OF PICKUP FLOOR TO TOP OF CAB @℄ REAR WHEELS	1103 [43.4]	1103 [43.4]	1103 [43.4]	1103 [43.4]
L504	CAB TO PICKUP BODY	6 [0.2]	6 [0.2]	6 [0.2]	6 [0.2]
L551	BOX OVERALL LENGTH TO OPEN TAILGATE	2632 [103.6]	2632 [103.6]	3104 [122.2]	3104 [122.2]
L558	℄ REAR AXLE TO ℄ FUEL FILLER	508 [20.0]	508 [20.0]	508 [20.0]	508 [20.0]
L559	OPEN TAILGATE	557 [21.9]	557 [21.9]	557 [21.9]	557 [21.9]

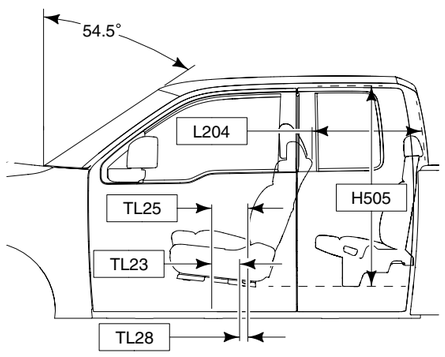
CAB

CODE	DESCRIPTION	4x2	4x4
H61	EFFECTIVE HEAD ROOM	1040 [40.9]	1040 [40.9]
H122	WINDSHIELD ANGLE	1384 [54.5]	1384 [54.5]
H430	Z REFERENCE LINE TO TOP OF CAB	1521 [59.9]	1521 [59.9]
H701	FRONT BUMPER HEIGHT	479 [18.9]	479 [18.9]
H711	Z REFERENCE LINE TO BOTTOM OF FRONT BUMPER (LESS LOWER VALANCE)	76 [3.0]	76 [3.0]
TL23	FORWARD SEAT TRACK	169 [6.7]	169 [6.7]
TL25	TRUE TRACK TRAVEL LENGTH	220 [8.7]	220 [8.7]
TL28	TRUE TRACK TRAVEL LENGTH REAR OF SgRP	50 [2.0]	50 [2.0]
L34	EFFECTIVE LEG ROOM	1050 [41.3]	1050 [41.3]
L204	BACK OF FRONT SEAT TO BACK PANEL (NOT SHOWN)	166 [6.5]	166 [6.5]
L703	℄ FRONT AXLE TO COWL POINT	376 [14.8]	376 [14.8]
W3	SHOULDER ROOM (NOT SHOWN)	1690 [66.5]	1690 [66.5]
W5	HIP ROOM (NOT SHOWN)	1660 [65.3]	1660 [65.3]
W20	SgRP (Y) (NOT SHOWN)	–440 [–17.3]	–440 [–17.3]
W103	VEHICLE WIDTH	2005 [78.9]	2005 [78.9]
W410	OVERALL WIDTH WITH STANDARD MIRRORS	2351 [92.6]	2351 [92.6]
W702	FRONT BUMPER WIDTH	1901 [74.8]	1901 [74.8]
V16	REAR CARGO VOLUME LITRES/CU.FT. (NOT SHOWN)	486.5/ 17.2	486.5/ 17.2

NOTE — [ ] DIMENSIONS ARE INCHES.

DIMENSIONAL DATA
F-150 SUPERCAB STYLESIDE 4X2/4X4





NOTES — [ ] DIMENSIONS ARE INCHES.
— **CH, LH, F, R, FW, RW** DIMENSIONS, SEE PAGE 105.
— TIRE DATA, PAGE 107.
— INTERIOR BOX DIMENSIONS, PAGE 102-103.

DIMENSIONAL DATA
F-150 SUPERCAB STYLESIDE 4X2/4X4

CHASSIS

CODE	DESCRIPTION	132.5" WB 4x2	132.5" WB 4x4	144.5" WB 4x2	144.5" WB 4x4	163.0" WB 4x2	163.0" WB 4x4
H103	BOTTOM OF FRONT BUMPER VALANCE TO GROUND @ CURB	282 [11.1]	334 [13.1]	279 [11.0]	326 [12.8]	293 [11.5]	356 [14.0]
H105	BOTTOM OF REAR BUMPER TO GROUND @ CURB	463 [18.2]	510 [20.1]	450 [17.7]	514 [20.2]	472 [18.6]	515 [20.3]
H106C	ANGLE OF APPROACH	21.1°	25.2°	21.1°	25.2°	22.5°	26.4°
H107C	ANGLE OF DEPARTURE	21.8°	24.9°	21.8°	24.7°	22.1°	24.6°
H147	RAMP BREAKOVER ANGLE	18.2°	22.4°	16.6°	20.4°	15.4°	18.6°
H507	TOP OF FRAME TO GROUND FRAME HEIGHT	707 [27.8]	746 [29.4]	701 [27.6]	761 [30.0]	720 [28.3]	767 [30.2]
L101	WHEELBASE	3366 [132.5]	3366 [132.5]	3671 [144.5]	3671 [144.5]	4143 [163.0]	4143 [163.0]
L103	OVERALL LENGTH — STANDARD REAR STEP BUMPER	5532 [217.8]	5532 [217.8]	5837 [229.8]	5837 [229.8]	6309 [248.3]	6309 [248.3]
L104	FRONT OVERHANG	936 [36.9]	936 [36.9]	936 [36.9]	936 [36.9]	936 [36.9]	936 [36.9]
L105	REAR OVERHANG — STANDARD REAR STEP BUMPER	1230 [48.4]	1230 [48.4]	1230 [48.4]	1230 [48.4]	1230 [48.4]	1230 [48.4]
L403	FRONT BUMPER TO REAR OF CAB	3644 [143.5]	3644 [143.5]	3644 [143.5]	3644 [143.5]	3644 [143.5]	3644 [143.5]
L404	BACK OF CAB TO ℄ OF REAR AXLE	659 [25.9]	659 [25.9]	963 [37.9]	963 [37.9]	1436 [56.5]	1436 [56.5]
L700	℄ OF FRONT AXLE TO REAR OF CAB	2708 [106.6]	2708 [106.6]	2708 [106.6]	2708 [106.6]	2708 [106.6]	2708 [106.6]
L705	℄ REAR AXLE TO END OF FRAME (INCLUDES REAR BUMPER MOUNTING BRACKET)	1041 [41.0]	1041 [41.0]	1041 [41.0]	1041 [41.0]	1041 [41.0]	1041 [41.0]
W703	FRAME RAIL WIDTH	102 [4.0]	102 [4.0]	102 [4.0]	102 [4.0]	102 [4.0]	102 [4.0]
W704	REAR FRAME WIDTH	1024 [40.3]	1024 [40.3]	1024 [40.3]	1024 [40.3]	1024 [40.3]	1024 [40.3]

PICKUP BODY

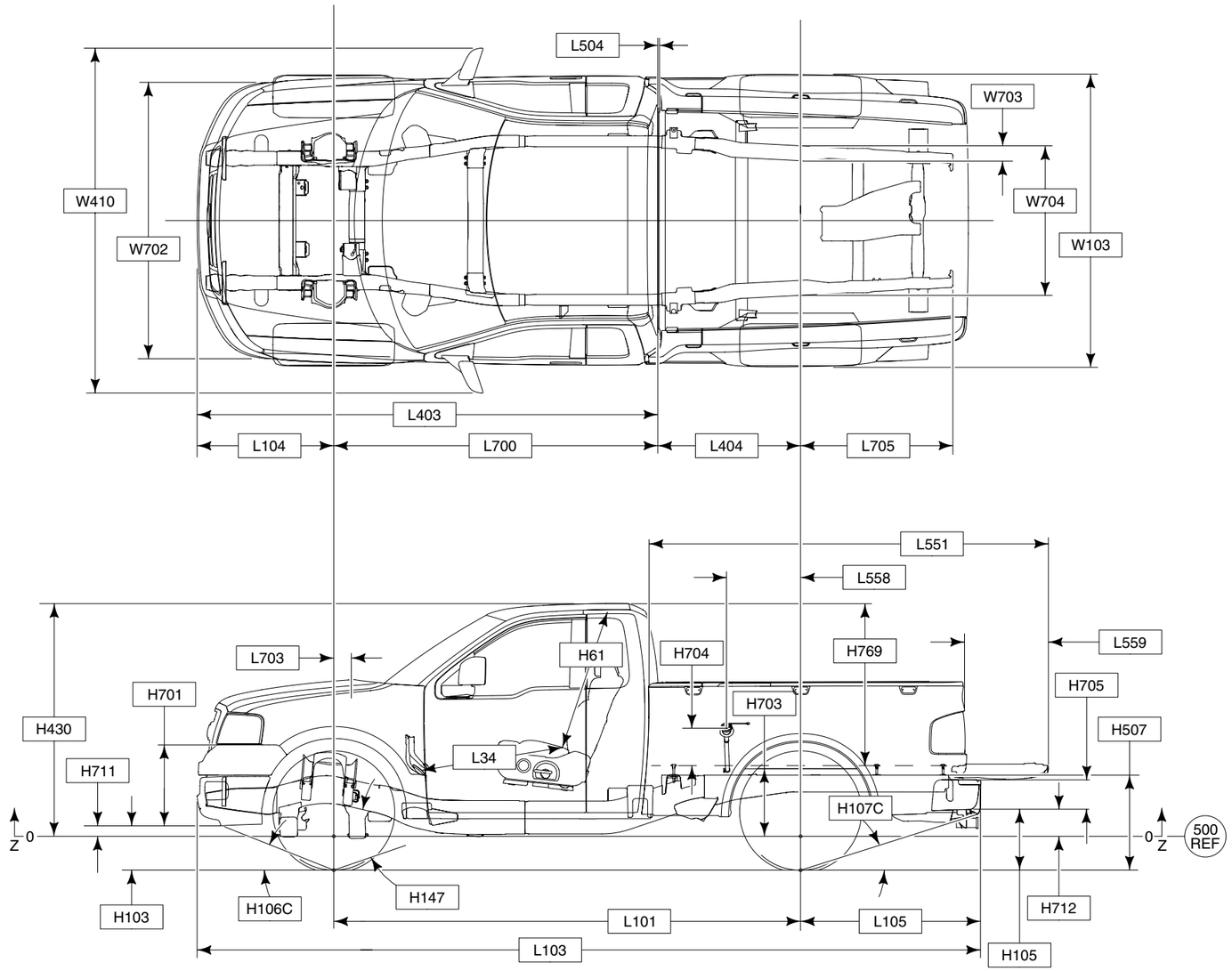
CODE	DESCRIPTION	132.5" WB 4x2	132.5" WB 4x4	144.5" WB 4x2	144.5" WB 4x4	163.0" WB 4x2	163.0" WB 4x4
NOMINAL CARGO BODY SIZE		5.5 FT.		6.5 FT.		8 FT.	
H703	Z REFERENCE LINE TO CARGO BODY FLOOR	418 [16.5]	418 [16.5]	418 [16.5]	418 [16.5]	418 [16.5]	418 [16.5]
H704	TOP OF FLOOR TO ℄ OF FUEL FILLER	267 [10.5]	267 [10.5]	267 [10.5]	267 [10.5]	267 [10.5]	267 [10.5]
H705	REAR BUMPER HEIGHT	258 [10.2]	258 [10.2]	258 [10.2]	258 [10.2]	258 [10.2]	258 [10.2]
—	REAR BUMPER WIDTH (NOT SHOWN)	1916 [75.4]	1916 [75.4]	1916 [75.4]	1916 [75.4]	1916 [75.4]	1916 [75.4]
H712	Z REFERENCE LINE TO BOTTOM OF REAR BUMPER	128 [5.0]	128 [5.0]	128 [5.0]	128 [5.0]	128 [5.0]	128 [5.0]
H769	TOP OF PICKUP FLOOR TO TOP OF CAB @ ℄ REAR WHEELS	1103 [43.4]	1103 [43.4]	1103 [43.4]	1103 [43.4]	1103 [43.4]	1103 [43.4]
L504	CAB TO PICKUP BODY	6 [0.2]	6 [0.2]	6 [0.2]	6 [0.2]	6 [0.2]	6 [0.2]
L551	BOX OVERALL LENGTH TO OPEN TAILGATE	2332 [91.8]	2332 [91.8]	2632 [103.6]	2632 [103.6]	3104 [122.2]	3104 [122.2]
L558	℄ REAR AXLE TO ℄ FUEL FILLER	508 [20.0]	508 [20.0]	508 [20.0]	508 [20.0]	508 [20.0]	508 [20.0]
L559	OPEN TAILGATE	557 [21.9]	557 [21.9]	557 [21.9]	557 [21.9]	557 [21.9]	557 [21.9]

CAB

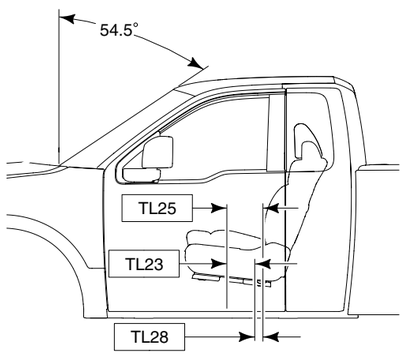
CODE	DESCRIPTION	4x2	4x4
H61	EFFECTIVE HEAD ROOM — FRONT	1040 [40.9]	1040 [40.9]
H63	EFFECTIVE HEAD ROOM — REAR	1005 [39.6]	1005 [39.6]
H430	Z REFERENCE LINE TO TOP OF CAB	1521 [59.9]	1521 [59.9]
H505	MAXIMUM INTERIOR CARGO HEIGHT (REAR SEAT)	1162 [45.8]	1162 [45.8]
H701	FRONT BUMPER HEIGHT	479 [18.9]	479 [18.9]
H711	Z REFERENCE LINE TO BOTTOM OF FRONT BUMPER (LESS LOWER VALANCE)	76 [3.0]	76 [3.0]
TL23	FORWARD SEAT TRACK	169 [6.7]	169 [6.7]
TL25	TRUE TRACK TRAVEL LENGTH	220 [8.7]	220 [8.7]
TL28	TRUE TRACK TRAVEL LENGTH REAR OF SgRP	50 [2.0]	50 [2.0]
L34	EFFECTIVE LEG ROOM — FRONT	1050 [41.3]	1050 [41.3]
L50	H-POINT COUPLE DISTANCE	775 [30.5]	775 [30.5]
L51	EFFECTIVE LEG ROOM — REAR	831 [32.7]	831 [32.7]
L204	BACK OF FRONT SEAT TO BACK PANEL	553 [21.8]	553 [21.8]
L703	℄ FRONT AXLE TO COWL POINT	376 [14.8]	376 [14.8]
W3	SHOULDER ROOM — FRONT (NOT SHOWN)	1690 [66.5]	1690 [66.5]
W4	SHOULDER ROOM — REAR (NOT SHOWN)	1695 [66.7]	1695 [66.7]
W5	HIP ROOM — FRONT (NOT SHOWN)	1671 [65.8]	1671 [65.8]
W6	HIP ROOM — REAR (NOT SHOWN)	1690 [66.5]	1690 [66.5]
W20	SgRP (Y) (NOT SHOWN)	–439 [–17.3]	–439 [–17.3]
W103	VEHICLE WIDTH	2005 [78.9]	2005 [78.9]
W410	OVERALL WIDTH WITH STANDARD MIRRORS	2351 [92.6]	2351 [92.6]
W702	FRONT BUMPER WIDTH	1901 [74.8]	1901 [74.8]
V16	REAR CARGO VOLUME WITH REAR SEAT CUSHION FOLDED UP — LITRES/CU.FT. (NOT SHOWN)	1072/ 37.8	1072/ 37.8

NOTE — [ ] DIMENSIONS ARE INCHES.

DIMENSIONAL DATA
F-150 REGULAR CAB FLARESIDE 4X2/4X4



BB0011



NOTES — [ ] DIMENSIONS ARE INCHES.
— **CH, LH, F, R, FW, RW** DIMENSIONS, SEE PAGE 105.
— TIRE DATA, PAGE 107.
— INTERIOR BOX DIMENSIONS, PAGE 104.

DIMENSIONAL DATA
F-150 REGULAR CAB FLARESIDE 4X2/4X4

CHASSIS

CODE	DESCRIPTION	126" WB	
		4X2	4X4
H103	BOTTOM OF FRONT BUMPER VALANCE TO GROUND @ CURB	385 [15.1]	445 [17.5]
H105	BOTTOM OF REAR BUMPER TO GROUND @ CURB	463 [18.2]	510 [20.1]
H106C	ANGLE OF APPROACH	18.5°	26.0°
H107C	ANGLE OF DEPARTURE	16.2°	19.9°
H147	RAMP BREAKOVER ANGLE	17.4°	21.7°
H507	TOP OF FRAME TO GROUND FRAME HEIGHT	705 [27.8]	705 [27.8]
L101	WHEELBASE	3198 [126.0]	3198 [126.0]
L103	OVERALL LENGTH — WITH STANDARD REAR STEP BUMPER	5364 [211.2]	5364 [211.2]
L104	FRONT OVERHANG	936 [36.9]	936 [36.9]
L105	REAR OVERHANG — WITH STANDARD REAR STEP BUMPER	1230 [48.4]	1230 [48.4]
L403	FRONT BUMPER TO REAR OF CAB	3172 [124.9]	3172 [124.9]
L404	BACK OF CAB TO ℄ OF REAR AXLE	963 [37.9]	963 [37.9]
L700	℄ OF FRONT AXLE TO REAR OF CAB	2235 [88.0]	2235 [88.0]
L705	℄ REAR AXLE TO END OF FRAME (INCLUDES REAR BUMPER MOUNTING BRACKET)	1041 [41.0]	1041 [41.0]
W703	FRAME RAIL WIDTH	102 [4.0]	102 [4.0]
W704	REAR FRAME WIDTH	1024 [40.3]	1024 [40.3]

PICKUP BODY

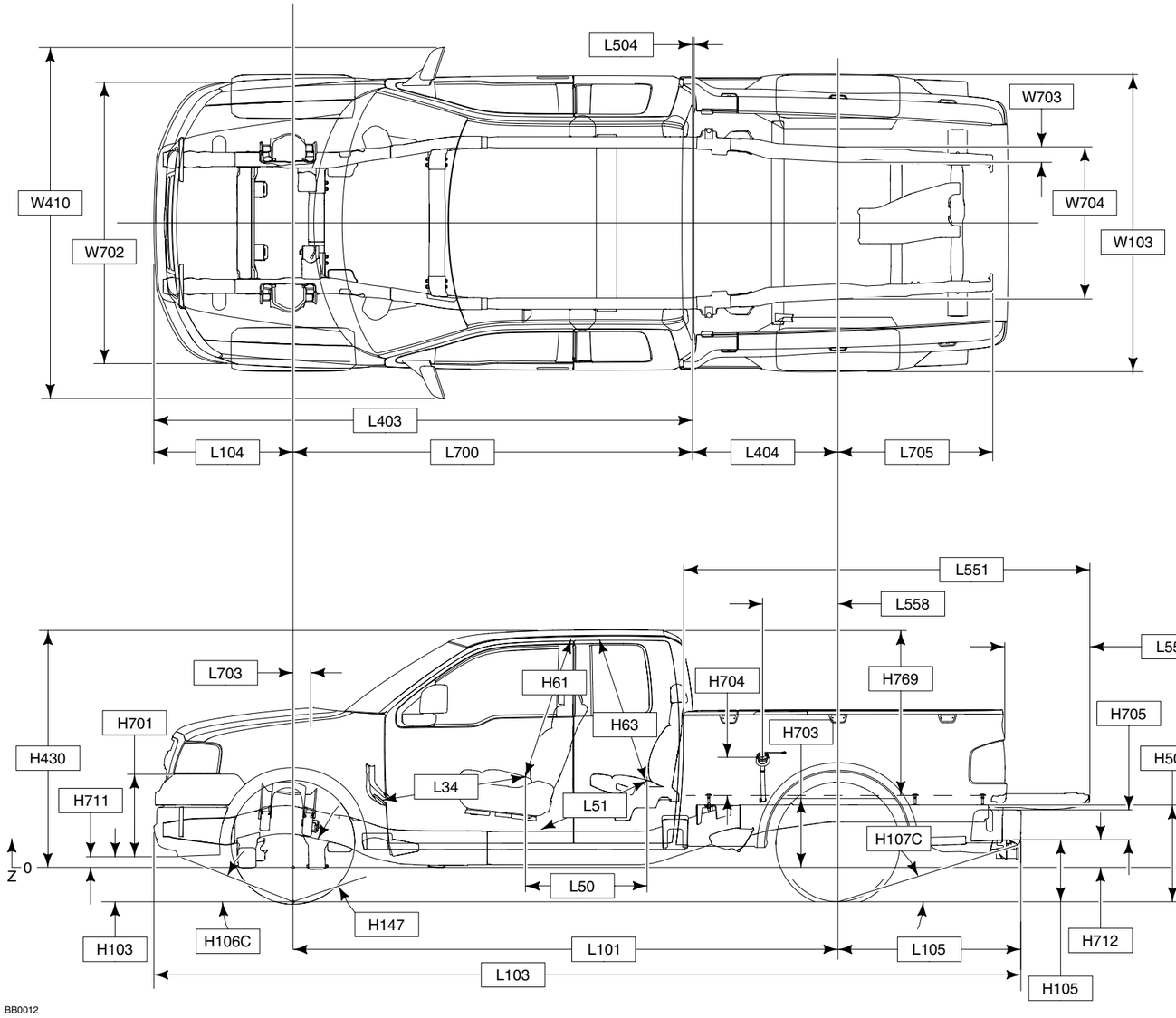
CODE	DESCRIPTION	4X2	4X4
NOMINAL CARGO BODY SIZE		6.5 FT.	
H703	Z REFERENCE LINE TO CARGO BODY FLOOR	418 [16.5]	418 [16.5]
H704	TOP OF FLOOR TO ℄ OF FUEL FILLER	267 [10.5]	267 [10.5]
H705	REAR BUMPER HEIGHT	258 [10.2]	258 [10.2]
—	REAR BUMPER WIDTH (NOT SHOWN)	1916 [75.4]	1916 [75.4]
H712	Z REFERENCE LINE TO BOTTOM OF REAR BUMPER	128 [5.0]	128 [5.0]
H769	TOP OF FLOOR TO TOP OF CAB @ ℄ REAR WHEELS	1103 [43.4]	1103 [43.4]
L504	CAB TO PICKUP BODY	6 [0.2]	6 [0.2]
L551	OVERALL LENGTH TO OPEN TAILGATE	2630 [103.5]	2630 [103.5]
L558	℄ REAR AXLE TO ℄ FUEL FILLER	508 [20.0]	508 [20.0]
L559	OPEN TAILGATE	557 [21.9]	557 [21.9]

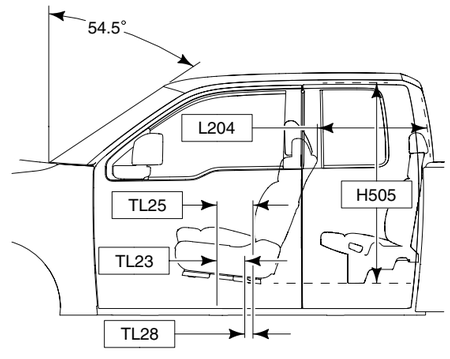
CAB

CODE	DESCRIPTION	4X2	4X4
H61	EFFECTIVE HEAD ROOM	1040 [40.9]	1040 [40.9]
H122	WINDSHIELD ANGLE	1384 [54.5]	1384 [54.5]
H430	Z REFERENCE LINE TO TOP OF CAB	1521 [59.9]	1521 [59.9]
H701	FRONT BUMPER HEIGHT	479 [18.9]	479 [18.9]
H711	Z REFERENCE LINE TO BOTTOM OF FRONT BUMPER (LESS LOWER VALANCE)	76 [3.0]	76 [3.0]
TL23	FORWARD SEAT TRACK	169 [6.7]	169 [6.7]
TL25	TRUE TRACK TRAVEL LENGTH	220 [8.7]	220 [8.7]
TL28	TRUE TRACK TRAVEL LENGTH REAR OF SgRP	50 [2.0]	50 [2.0]
L34	EFFECTIVE LEG ROOM	1050 [41.3]	1050 [41.3]
L204	BACK OF FRONT SEAT TO BACK PANEL (NOT SHOWN)	166 [6.5]	166 [6.5]
L703	℄ FRONT AXLE TO COWL POINT	376 [14.8]	376 [14.8]
W3	SHOULDER ROOM (NOT SHOWN)	1690 [66.5]	1690 [66.5]
W5	HIP ROOM (NOT SHOWN)	1660 [65.3]	1660 [65.3]
W20	SgRP (Y) (NOT SHOWN)	–440 [–17.3]	–440 [–17.3]
W103	VEHICLE WIDTH	2005 [78.9]	2005 [78.9]
W410	OVERALL WIDTH WITH STANDARD MIRRORS	2351 [92.6]	2351 [92.6]
W702	FRONT BUMPER WIDTH	1901 [74.8]	1901 [74.8]
V16	REAR CARGO VOLUME LITRES/CU.FT (NOT SHOWN)	486.5/ 17.2	486.5/ 17.2

NOTE — [ ] DIMENSIONS ARE INCHES.

DIMENSIONAL DATA
F-150 SUPERCAB FLARESIDE 4X2/4X4





NOTES — [ ] DIMENSIONS ARE INCHES.
— **CH, LH, F, R, FW, RW** DIMENSIONS, SEE PAGE 105.
— TIRE DATA, PAGE 107.
— INTERIOR BOX DIMENSIONS, PAGE 104.

DIMENSIONAL DATA
F-150 SUPERCAB FLARESIDE 4X2/4X4

CHASSIS

CODE	DESCRIPTION	144.5" WB 4X2	144.5" WB 4X4
H103	BOTTOM OF FRONT BUMPER VALANCE TO GROUND @ CURB	279 [11.0]	326 [12.8]
H105	BOTTOM OF REAR BUMPER TO GROUND @ CURB	450 [17.7]	514 [20.2]
H106C	ANGLE OF APPROACH	21.1°	25.2°
H107C	ANGLE OF DEPARTURE	21.8°	24.7°
H147	RAMP BREAKOVER ANGLE	16.6°	20.4°
H507	TOP OF FRAME TO GROUND FRAME HEIGHT	700 [27.6]	749 [29.5]
L101	WHEELBASE	3671 [144.5]	3671 [144.5]
L103	OVERALL LENGTH — WITH STANDARD REAR STEP BUMPER	5837 [229.8]	5837 [229.8]
L104	FRONT OVERHANG	936 [36.9]	936 [36.9]
L105	REAR OVERHANG — WITH STANDARD REAR STEP BUMPER	1230 [48.4]	1230 [48.4]
L403	FRONT BUMPER TO REAR OF CAB	3644 [143.5]	3644 [143.5]
L404	BACK OF CAB TO ℄ OF REAR AXLE	963 [37.9]	963 [37.9]
L700	℄ OF FRONT AXLE TO REAR OF CAB	2708 [106.6]	2708 [106.6]
L705	℄ REAR AXLE TO END OF FRAME (INCLUDES REAR BUMPER MOUNTING BRACKET)	1041 [41.0]	1041 [41.0]
W703	FRAME RAIL WIDTH	102 [4.0]	102 [4.0]
W704	REAR FRAME WIDTH	1024 [40.3]	1024 [40.3]

PICKUP

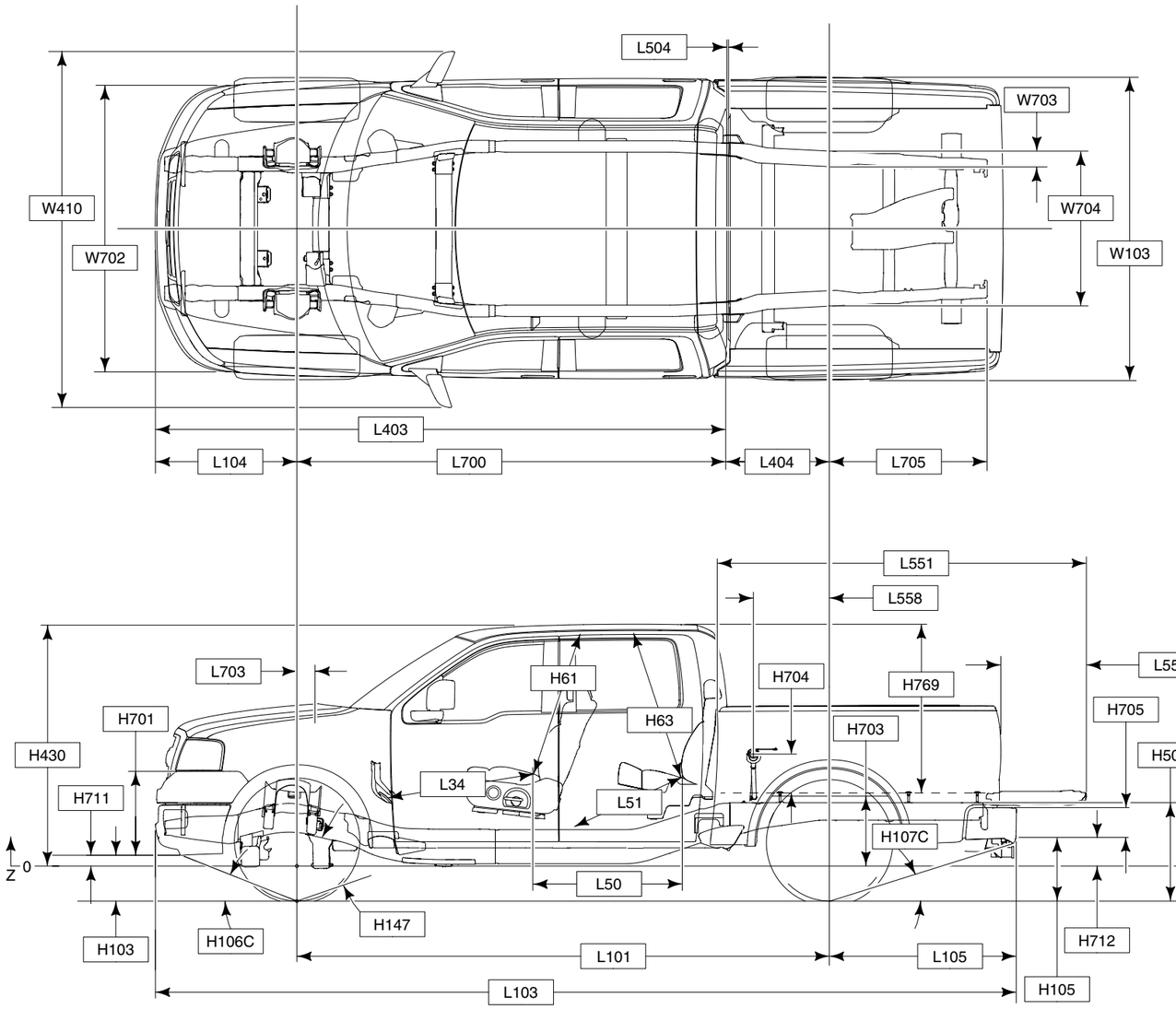
CODE	DESCRIPTION	4X2	4X4
	NOMINAL CARGO BODY SIZE	6.5 FT.	
H703	Z REFERENCE LINE TO CARGO BODY FLOOR	418 [16.5]	418 [16.5]
H704	TOP OF FLOOR TO ℄ OF FUEL FILLER	267 [10.5]	267 [10.5]
H705	REAR BUMPER HEIGHT	258 [10.2]	258 [10.2]
—	REAR BUMPER WIDTH (NOT SHOWN)	1916 [75.4]	1916 [75.4]
H712	Z REFERENCE LINE TO BOTTOM OF REAR BUMPER	128 [5.0]	128 [5.0]
H769	TOP OF FLOOR TO TOP OF CAB @ ℄ REAR WHEELS	1103 [43.4]	1103 [43.4]
L504	CAB TO PICKUP BODY	6 [0.2]	6 [0.2]
L551	OVERALL LENGTH TO OPEN TAILGATE	2630 [103.5]	2630 [103.5]
L558	℄ REAR AXLE TO ℄ FUEL FILLER	508 [20.0]	508 [20.0]
L559	OPEN TAILGATE	557 [21.9]	557 [21.9]

CAB

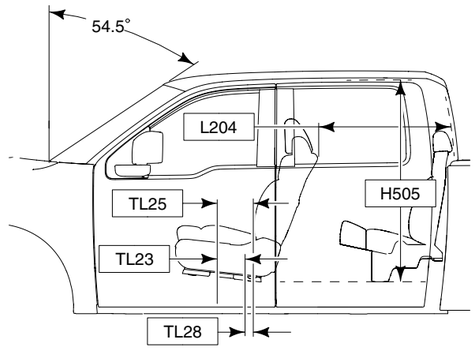
CODE	DESCRIPTION	4X2	4X4
H61	EFFECTIVE HEAD ROOM — FRONT	1040 [40.9]	1040 [40.9]
H63	EFFECTIVE HEAD ROOM — REAR	1005 [39.6]	1005 [39.6]
H430	Z REFERENCE LINE TO TOP OF CAB	1521 [59.9]	1521 [59.9]
H505	MAXIMUM CARGO HEIGHT	1162 [45.8]	1162 [45.8]
H701	FRONT BUMPER HEIGHT	479 [18.9]	479 [18.9]
H711	Z REFERENCE LINE TO BOTTOM OF FRONT BUMPER (LESS LOWER VALANCE)	76 [3.0]	76 [3.0]
TL23	FORWARD SEAT TRACK	169 [6.7]	169 [6.7]
TL25	TRUE TRACK TRAVEL LENGTH	220 [8.7]	220 [8.7]
TL28	TRUE TRACK TRAVEL LENGTH REAR OF SgRP	50 [2.0]	50 [2.0]
L34	EFFECTIVE LEG ROOM — FRONT	1050 [41.3]	1050 [41.3]
L50	H-POINT COUPLE DISTANCE	775 [30.5]	775 [30.5]
L51	EFFECTIVE LEG ROOM — REAR	831 [32.7]	831 [32.7]
L204	BACK OF FRONT SEAT TO BACK PANEL	553 [21.8]	553 [21.8]
L703	℄ FRONT AXLE TO COWL POINT	376 [14.8]	376 [14.8]
W3	SHOULDER ROOM — FRONT (NOT SHOWN)	1690 [66.5]	1690 [66.5]
W4	SHOULDER ROOM — REAR (NOT SHOWN)	1695 [66.7]	1695 [66.7]
W5	HIP ROOM — FRONT (NOT SHOWN)	1671 [65.8]	1671 [65.8]
W6	HIP ROOM — REAR (NOT SHOWN)	1690 [66.5]	1690 [66.5]
W20	SgRP (Y) (NOT SHOWN)	–439 [–17.3]	–439 [–17.3]
W103	VEHICLE WIDTH	2005 [78.9]	2005 [78.9]
W410	OVERALL WIDTH WITH STANDARD MIRRORS	2351 [92.6]	2351 [92.6]
W702	FRONT BUMPER WIDTH	1901 [74.8]	1901 [74.8]
V16	REAR CARGO VOLUME WITH REAR SEAT CUSHION FOLDED UP — LITRES/CU.FT.	1072/ 37.8	1072/ 37.8

NOTE — [ ] DIMENSIONS ARE INCHES.

DIMENSIONAL DATA
F-150 SUPERCREW PICKUP 4X2/4X4



BB0552



NOTES — [ ] DIMENSIONS ARE INCHES.
— **CH, LH, F, R, FW, RW** DIMENSIONS, SEE PAGE 105.
— TIRE DATA, PAGE 107.
— INTERIOR BOX DIMENSIONS, PAGE 102.

DIMENSIONAL DATA
F-150 SUPERCREW PICKUP 4X2/4X4

2004
MODEL YEAR

CHASSIS

CODE	DESCRIPTION	138.5" WB	
		4X2	4X4
H103	BOTTOM OF FRONT BUMPER VALANCE TO GROUND @ CURB	268 [10.6]	323 [12.7]
H105	BOTTOM OF REAR BUMPER TO GROUND @ CURB	463 [18.2]	486 [19.1]
H106C	ANGLE OF APPROACH	21.5°	24.9°
H107C	ANGLE OF DEPARTURE	21.9°	25.2°
H147	RAMP BREAKOVER ANGLE	17.6°	21.4°
H507	TOP OF FRAME TO GROUND FRAME HEIGHT	706 [27.8]	791 [31.1]
L101	WHEELBASE	3518 [138.5]	3518 [138.5]
L103	OVERALL LENGTH — WITH STANDARD REAR STEP BUMPER	5685 [223.8]	5685 [223.8]
L104	FRONT OVERHANG	936 [36.9]	936 [36.9]
L105	REAR OVERHANG — WITH STANDARD REAR STEP BUMPER	1230 [48.4]	1230 [48.4]
L403	FRONT BUMPER TO REAR OF CAB	3791 [149.3]	3791 [149.3]
L404	BACK OF CAB TO ℄ OF REAR AXLE	663 [26.1]	663 [26.1]
L700	℄ OF FRONT AXLE TO REAR OF CAB	2855 [112.4]	2855 [112.4]
L705	℄ REAR AXLE TO END OF FRAME (INCLUDES REAR BUMPER MOUNTING BRACKET)	1041 [41.0]	1041 [41.0]
W703	FRAME RAIL WIDTH	102 [4.0]	102 [4.0]
W704	REAR FRAME WIDTH	1024 [40.3]	1024 [40.3]

PICKUP BODY

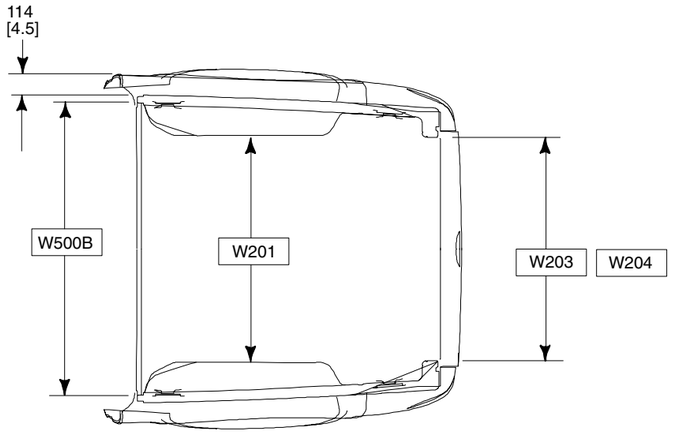
CODE	DESCRIPTION	4X2	4X4
	NOMINAL CARGO BODY SIZE	5.5 FT.	
H703	Z REFERENCE LINE TO CARGO BODY FLOOR	418 [16.5]	418 [16.5]
H704	TOP OF FLOOR TO ℄ OF FUEL FILLER	267 [10.5]	267 [10.5]
H705	REAR BUMPER HEIGHT	258 [10.2]	258 [10.2]
—	REAR BUMPER WIDTH (NOT SHOWN)	1916 [75.4]	1916 [75.4]
H712	Z REFERENCE LINE TO BOTTOM OF REAR BUMPER	128 [5.0]	128 [5.0]
H769	TOP OF PICKUP FLOOR TO TOP OF CAB @ ℄ REAR WHEELS	1103 [43.4]	1103 [43.4]
L504	CAB TO PICKUP BODY	6 [0.2]	6 [0.2]
L551	OVERALL LENGTH TO OPEN TAILGATE	2332 [91.8]	2332 [91.8]
L558	℄ REAR AXLE TO ℄ FUEL FILLER	508 [20.0]	508 [20.0]
L559	OPEN TAILGATE	557 [21.9]	557 [21.9]

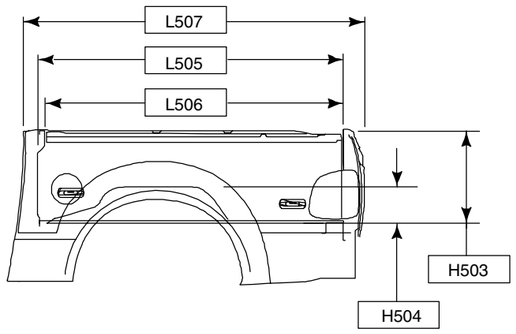
CAB

CODE	DESCRIPTION	4X2	4X4
H61	EFFECTIVE HEAD ROOM — FRONT	1019 [40.1]	1019 [40.1]
H63	EFFECTIVE HEAD ROOM — REAR	1005 [39.6]	1005 [39.6]
H430	Z REFERENCE LINE TO TOP OF CAB	1521 [59.9]	1521 [59.9]
H505	MAXIMUM INTERIOR CARGO HEIGHT (REAR SEAT)	1168 [46.0]	1168 [46.0]
H701	FRONT BUMPER HEIGHT	479 [18.9]	479 [18.9]
H711	Z REFERENCE LINE TO BOTTOM OF FRONT BUMPER (LESS LOWER VALANCE)	76 [3.0]	76 [3.0]
TL23	FORWARD SEAT TRACK	169 [6.7]	169 [6.7]
TL25	TRUE TRACK TRAVEL LENGTH	220 [8.7]	220 [8.7]
TL28	TRUE TRACK TRAVEL LENGTH REAR OF SgRP	50 [2.0]	50 [2.0]
L34	EFFECTIVE LEG ROOM — FRONT	1050 [41.3]	1050 [41.3]
L50	H-POINT COUPLE DISTANCE	922 [36.3]	922 [36.3]
L51	EFFECTIVE LEG ROOM — REAR	990 [39.0]	990 [39.0]
L204	BACK OF FRONT SEAT TO BACK PANEL	741 [29.2]	741 [29.2]
L703	℄ FRONT AXLE TO COWL POINT	376 [14.8]	376 [14.8]
W3	SHOULDER ROOM — FRONT	1671 [65.8]	1671 [65.8]
W4	SHOULDER ROOM — REAR	1670 [65.8]	1670 [65.8]
W5	HIP ROOM — FRONT	1621 [63.8]	1621 [63.8]
W6	HIP ROOM — REAR	1603 [63.1]	1603 [63.1]
W20	SgRP (Y)	–440 [–17.3]	–440 [–17.3]
W103	VEHICLE WIDTH	2005 [78.9]	2005 [78.9]
W410	OVERALL WIDTH WITH STANDARD MIRRORS	2458 [96.8]	2458 [96.8]
W702	FRONT BUMPER WIDTH	1901 [74.8]	1901 [74.8]
V16	REAR CARGO VOLUME WITH REAR SEAT BACK FOLDED DOWN — LITRES/CU.FT.	1357/ 47.9	1357/ 47.9

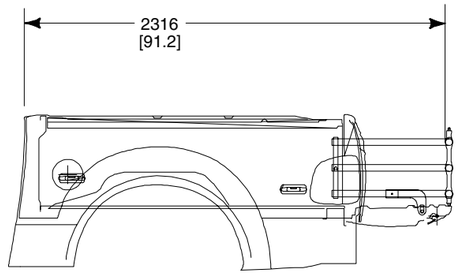
NOTE — [ ] DIMENSIONS ARE INCHES.

F-150 DIMENSIONS
5 ½' STYLESIDE PICKUP BOX





5½' BOX



5½' BOX WITH OPTIONAL BOX EXTENDER

CODE	DESCRIPTION	
	NOMINAL CARGO BODY SIZE	5 ½ FT.
L505	CARGO BODY LENGTH @ FLOOR	1703 [67.0]
L506	CARGO BODY LENGTH @ TOP	1675 [65.9]
L507	CARGO BODY OVERALL LENGTH	1800 [70.9]
W201	CARGO WIDTH BETWEEN WHEELHOUSE	1269 [50.0]
W203	REAR OPENING WIDTH @ FLOOR	1531 [60.3]
W204	REAR OPENING WIDTH @ BELT	1524 [62.4]
W500B	CARGO BODY MAX. INSIDE WIDTH	1656 [65.2]
H503	CARGO BODY HEIGHT W/MOLDING	568 [22.3]
H504	WHEELHOUSE HEIGHT	235 [9.3]
V5	CARGO VOLUME - LITRES/CU.FT.	1570/ 55.5

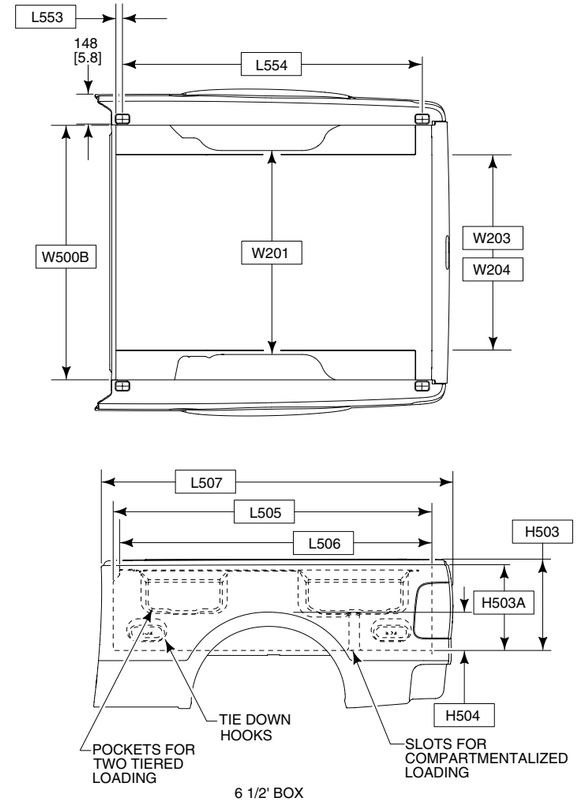
BB0553

NOTE— [ ] DIMENSIONS ARE INCHES.

F-150 DIMENSIONS
6 ½ & 8' STYLESIDE PICKUP BOX

2004
MODEL YEAR

F-150



6 1/2' BOX

8' BOX

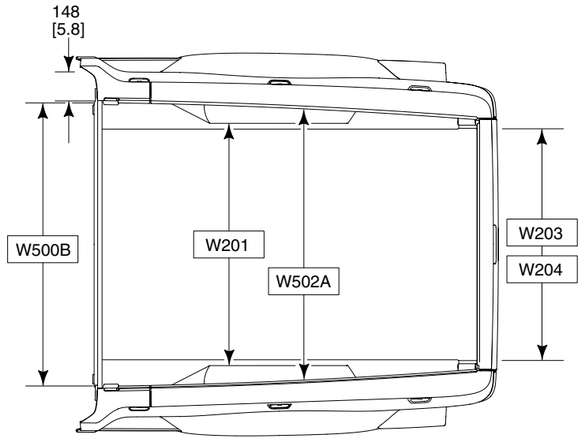
BB0013 2004

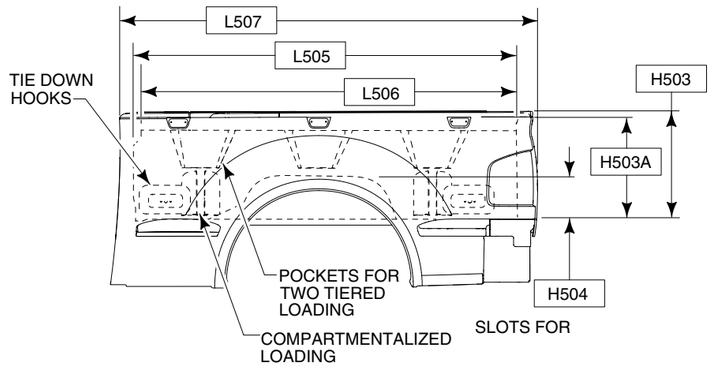
CODE	DESCRIPTION	6.5 FT.	8 FT.
L505	CARGO BODY LENGTH @ FLOOR	2002 [78.8]	2475 [97.4]
L506	CARGO BODY LENGTH @ TOP	1975 [77.7]	2448 [96.4]
L507	CARGO BODY OVERALL LENGTH	2101 [82.7]	2571 [101.2]
L553	FRONT OF BOX TO ℄ STAKE #1	41 [1.6]	41 [1.6]
L554	℄ OF STAKE #1 TO STAKE #2	1867 [73.5]	1192 [46.9]
L555	℄ OF STAKE #1 TO STAKE #3	—	—
L556	STAKE POCKET SIZE	58 x 43 [2.3 x 1.7]	58 x 43 [2.3 x 1.7]

CODE	DESCRIPTION	6.5 FT.	8 FT.
W201	CARGO WIDTH @ WHEELHOUSE	1269 [50.0]	1269 [50.0]
W203	REAR OPENING WIDTH @ FLOOR	1531 [60.3]	1531 [60.3]
W204	REAR OPENING WIDTH @ BELT	1524 [62.4]	1524 [62.4]
W500B	CARGO BODY MAX. INSIDE WIDTH	1656 [65.2]	1656 [65.2]
H503	CARGO BODY HEIGHT W/MOLDING	565 [22.2]	568 [22.3]
H503A	CARGO BODY HEIGHT W/O MOLDING	556 [21.9]	556 [21.9]
H504	WHEELHOUSE HEIGHT	235 [9.3]	235 [9.3]
V5	CARGO VOLUME - LITRES/CU.FT.	1673/59.1	2302/81.3

NOTE— [ ] DIMENSIONS ARE INCHES.

F-150 DIMENSIONS
6 ½' FLARESIDE PICKUP BOX



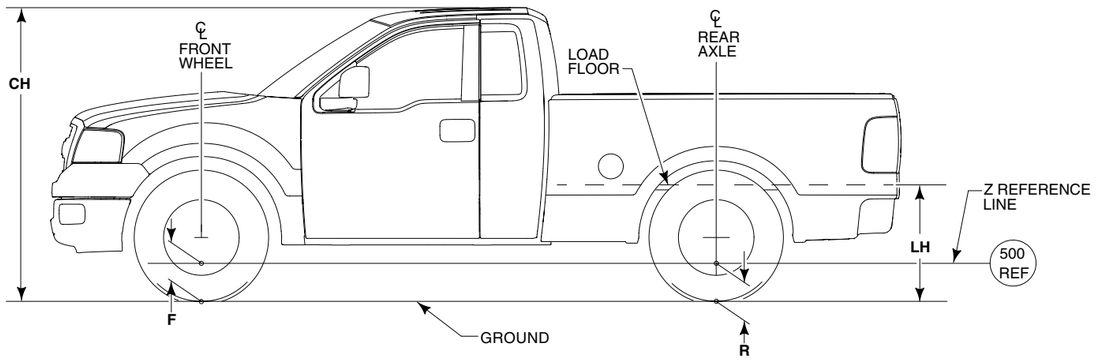


BB0014 2004

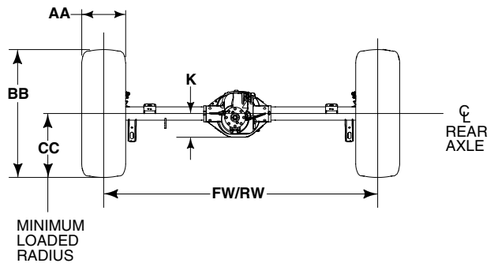
CODE	DESCRIPTION	
	NOMINAL CARGO BODY SIZE	6.5 FT.
L505	CARGO BODY LENGTH @ FLOOR	2002 [78.8]
L506	CARGO BODY LENGTH @ TOP	1968 [77.5]
L507	CARGO BODY OVERALL LENGTH	2098 [82.6]
W201	CARGO WIDTH @ WHEELHOUSE	1270 [50.0]
W203	REAR OPENING WIDTH @ FLOOR	1250 [49.2]
W204	REAR OPENING WIDTH @ BELT	1323 [52.1]
W500B	CARGO BODY MAX. INSIDE WIDTH	1507 [59.3]
W502A	CARGO BODY MAX. WIDTH INSIDE BOX @ ℄ OF REAR AXLE	1463 [57.6]
H503	CARGO BODY HEIGHT W/MOLDING	565 [22.2]
H503A	CARGO BODY HEIGHT W/O MOLDING	551 [21.7]
H504	WHEELHOUSE HEIGHT	235 [9.3]
V5	CARGO VOLUME - LITRES/CU.FT.	1673/59.1

NOTE— [ ] DIMENSIONS ARE INCHES.

F-150 REGULAR/SUPERCAB
AXLE/TIRE/VEHICLE HEIGHT DATA



BB0017 2004



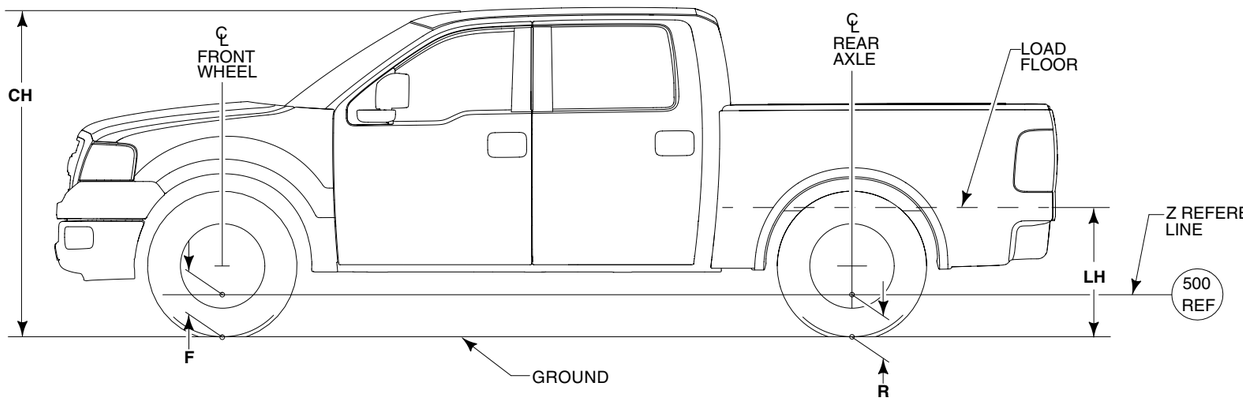
Model	WB inches	GVWR pounds	Base Tire	F Height @ Front Wheel (1)(2) mm [in]		R Height @ Rear Axle (1)(2) mm [in]		LH (1)(2) mm [in]		CH (1)(2) mm [in]		K mm [in]	AA mm [in]	BB mm [in]	CC mm [in]	FW mm [in]	RW mm [in]
				Height at Base Curb Weight	Loaded Height @ Spring Rating	Height at Base Curb Weight	Loaded Height @ Spring Rating	Empty	Loaded	Empty	Loaded						
F-150 Regular Cab 4x2 Styleside	126.0	6600	P235/70R-17A/S	293 [11.5]	253 [9.9]	379 [14.9]	263 [10.3]	802 [31.6]	684 [26.9]	1850 [72.8]	1779 [70.0]	147 [5.8]	246 [9.6]	732 [28.8]	351 [13.8]	1701 [66.9]	1701 [66.9]
	144.5	6800	P235/70R-17A/S	283 [11.1]	252 [9.9]	377 [14.8]	261 [10.2]	835 [32.9]	698 [27.5]	1866 [73.5]	1794 [70.6]	147 [5.8]	246 [9.6]	732 [28.8]	351 [13.8]	1701 [66.9]	1701 [66.9]
F-150 Regular Cab 4x2 Flareside	126.0	6600	P255/65R-17A/S	293 [11.5]	254 [10.0]	380 [14.9]	264 [10.3]	802 [31.6]	684 [26.9]	1850 [72.8]	1779 [70.0]	147 [5.8]	275 [10.8]	778 [30.6]	343 [13.5]	1701 [66.9]	1701 [66.9]
F-150 SuperCab 4x2 Styleside	132.5	6650	P235/70R-17A/S	295 [11.6]	252 [9.9]	371 [14.6]	262 [10.3]	814 [32.0]	697 [27.4]	1873 [73.7]	1793 [70.6]	147 [5.8]	246 [9.6]	732 [28.8]	351 [13.8]	1701 [66.9]	1701 [66.9]
	144.5	6700	P235/70R-17A/S	289 [11.3]	250 [9.8]	367 [14.4]	262 [10.3]	791 [31.1]	685 [27.0]	1856 [73.1]	1782 [70.2]	147 [5.8]	246 [9.6]	732 [28.8]	351 [13.8]	1701 [66.9]	1701 [66.9]
	163.0	8200	LT245/70R-17D A/S	287 [11.3]	249 [9.8]	388 [15.3]	257 [10.1]	810 [31.9]	697 [27.4]	1868 [73.6]	1796 [70.7]	167 [6.5]	263 [10.3]	790 [31.1]	360 [14.1]	1701 [66.9]	1701 [66.9]
F-150 SuperCab 4x2 Flareside	144.5	6700	P255/65R-17A/S	290 [11.4]	252 [9.9]	368 [14.4]	260 [10.2]	791 [31.1]	685 [27.0]	1856 [73.1]	1782 [70.2]	147 [5.8]	275 [10.8]	778 [30.6]	343 [13.5]	1701 [66.9]	1701 [66.9]
F-150 Regular Cab 4x4 Styleside	126.0	6800	P235/75R-17A/T	345 [13.5]	311 [12.2]	435 [17.1]	322 [12.6]	850 [33.5]	744 [29.3]	1903 [74.9]	1837 [72.3]	147 [5.8]	251 [9.8]	752 [29.6]	359 [14.1]	1701 [66.9]	1701 [66.9]
	144.5	6950	P235/75R-17A/T	339 [13.3]	309 [12.1]	435 [17.1]	321 [12.6]	888 [35.0]	750 [29.5]	1927 [75.9]	1844 [72.6]	147 [5.8]	251 [9.8]	752 [29.6]	359 [14.1]	1701 [66.9]	1701 [66.9]
F-150 Regular Cab 4x4 Flareside	126.0	6800	P255/70R-17A/T	346 [13.6]	312 [12.2]	436 [17.1]	323 [12.7]	850 [33.5]	744 [29.3]	1903 [74.9]	1837 [72.3]	147 [5.8]	275 [10.8]	804 [31.6]	357 [14.0]	1701 [66.9]	1701 [66.9]
F-150 SuperCab 4x4 Styleside	132.5	6900	P235/75R-17A/T	347 [13.6]	309 [12.1]	419 [16.4]	321 [12.6]	860 [33.9]	757 [29.8]	1922 [75.7]	1852 [72.9]	147 [5.8]	251 [9.8]	752 [29.6]	359 [14.1]	1701 [66.9]	1701 [66.9]
	144.5	6950	P235/75R-17A/T	346 [13.6]	307 [12.0]	427 [16.8]	321 [12.6]	854 [33.6]	745 [29.3]	1912 [75.3]	1841 [72.5]	147 [5.8]	251 [9.8]	752 [29.6]	359 [14.1]	1701 [66.9]	1701 [66.9]
	163.0	8200	LT245/70R-17D A/T	341 [13.4]	300 [11.8]	425 [16.7]	310 [12.2]	854 [33.6]	753 [29.6]	1921 [75.6]	1848 [72.8]	167 [6.5]	263 [10.3]	790 [31.1]	360 [14.1]	1701 [66.9]	1701 [66.9]
F-150 SuperCab 4x4 Flareside	144.5	6950	P255/70R-17A/T	347 [13.6]	309 [12.1]	428 [16.8]	323 [12.7]	854 [33.6]	745 [29.3]	1912 [75.3]	1841 [72.5]	147 [5.8]	275 [10.8]	804 [31.6]	357 [14.0]	1701 [66.9]	1701 [66.9]

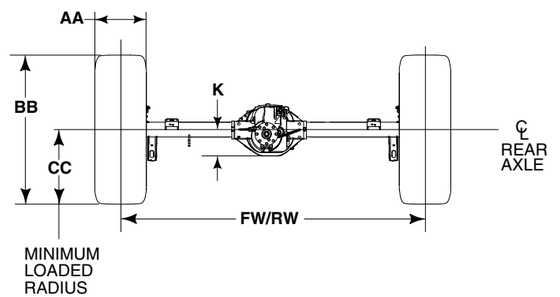
(1) The Height Data shown represents dimensions of a base/standard vehicle with no options. Actual height may vary due to production tolerances.
(2) Vehicle ride heights are given at tire minimum loaded radius.

NOTES — [ ] DIMENSIONS ARE INCHES.
— TIRE DATA, PAGE 107.

F-150 SUPERCREW
AXLE/TIRE/VEHICLE HEIGHT DATA

2004
MODEL YEAR





BB0554 2004

Model	WB inches	GVWR pounds	Base Tire	F Height @ Front Wheel (1)(2) mm [in]		R Height @ Rear Axle (1)(2) mm [in]		LH (1)(2) mm [in]		CH (1)(2) mm [in]		K mm [in]	AA mm [in]	BB mm [in]	CC mm [in]	FW mm [in]	RW mm [in]
				Height @ Base Curb Weight	Loaded Height @ Spring Rating	Height @ Base Curb Weight	Loaded Height @ Spring Rating	Empty	Loaded	Empty	Loaded						
F-150 SuperCrew 4x2	138.5	6800	P255/65R-17A/S	288 [11.3]	249 [9.8]	360 [14.1]	259 [10.1]	802 [31.6]	684 [26.9]	1861 [73.3]	1781 [70.1]	147 [5.8]	275 [10.8]	778 [30.6]	343 [13.5]	1701 [66.9]	1701 [66.9]
F-150 SuperCrew 4x4	138.5	6900	P255/70R-17A/T	327 [12.8]	291 [11.4]	406 [15.9]	305 [12.0]	826 [32.5]	730 [28.7]	1898 [74.7]	1827 [71.9]	147 [5.8]	251 [9.8]	752 [29.6]	359 [14.1]	1701 [66.9]	1701 [66.9]

(1) The Height Data shown represents dimensions of a base/standard vehicle with no options. Actual height may vary due to production tolerances.
(2) Vehicle ride heights are given at tire minimum loaded radius.

NOTES — [ ] DIMENSIONS ARE INCHES.
— TIRE DATA, PAGE 107.

F-150 WHEEL AND TIRE DATA

2004
MODEL YEAR

F-150 REGULAR/SUPERCAB/SUPERCREW TIRE DATA

Tire Size	Rim Width (in)	AA Maximum Section Width (mm)		BB Maximum Diameter (mm)		*CC Minimum Loaded Radius (mm)	
		All-Season	All-Terrain	All-Season	All-Terrain	All-Season	All-Terrain
P235/70R17XL	7.5	246	—	732	—	351	—
P235/75R17	7.5	—	251	—	752	—	359
P255/65R17	7.5	275	—	778	—	343	—
P255/70R17	7.5	—	275	—	804	—	357
P265/60R18	7.5	260	—	778	—	354	—
P275/65R18	7.5	—	271	—	810	—	362
LT275/65R18C	7.5	—	318	—	826	—	383
LT245/70R17D	7.5	263	—	790	—	360	—

* This number represents Radius — Axle centerline to ground with maximum rated load on tire at maximum pressure.

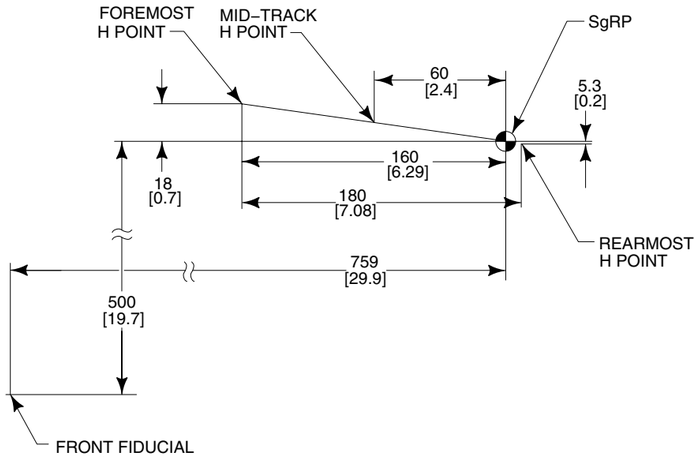
F-150 REGULAR/SUPERCAB/SUPERCREW WHEEL DATA

Wheel Type	Wheel Size	Inset (mm)	No. of Studs	Bolt Circle (mm)	Max. Wheel Capacity
Painted Styled Steel	17x7.5J	44	6	135	2100
Al 5 Spoke Machined w/ Satin Nickel Accents	18x7.5J	44	6	135	2100
Al 5 Spoke Fabricated	17x7.5J	44	6	135	2100
Al 5 Spoke Fully Painted	17x7.5J	44	6	135	2100
Al 5 Spoke Center Fluted	17x7.5J	44	6	135	2100
Al 5 Spoke Machine Finish	17x7.5J	44	6	135	2100
Al 5 Spoke Machined Finish	18x7.5J	44	6	135	2100
Argent Steel (8200#)	17x7.5J	44	7	150	2450
Steel Wheel Spare	17x7.5J	44	6	135	2100
Steel Wheel Spare	18x7.5J	44	6	135	2100

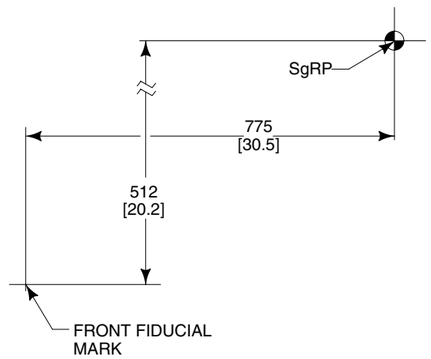
NOTE — [ ] DIMENSIONS ARE INCHES.

F-150
SEAT TRACK TRAVEL/H-POINT LOCATION

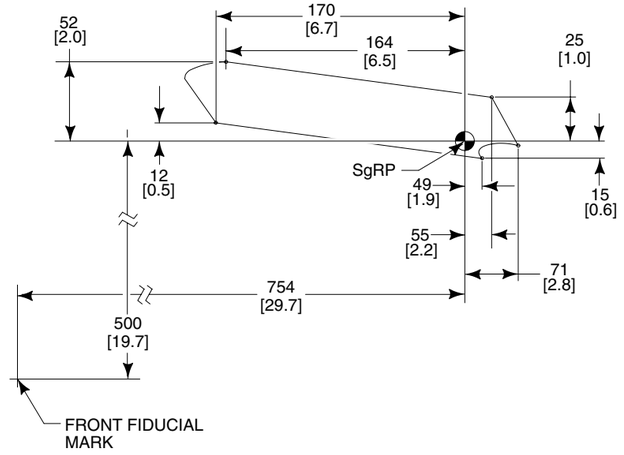
SUPER CREW/REGULAR CAB/SUPER CAB
BENCH SEAT MANUAL TRACK



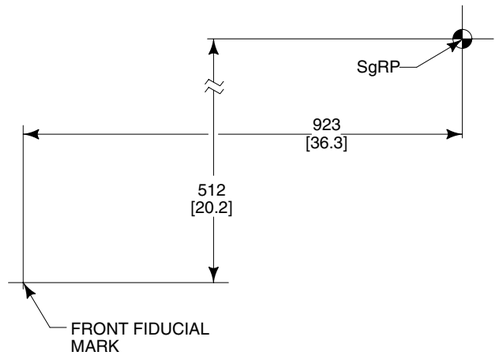
SUPER CAB
REAR PASSENGER SEAT



SUPER CREW/REGULAR CAB/SUPER CAB
DRIVER SEAT POWER TRACK



SUPER CREW
REAR PASSENGER SEAT



BB0298–2004

NOTE — [ ] DIMENSIONS ARE INCHES.

F-150 HERITAGE MODEL LINEUP

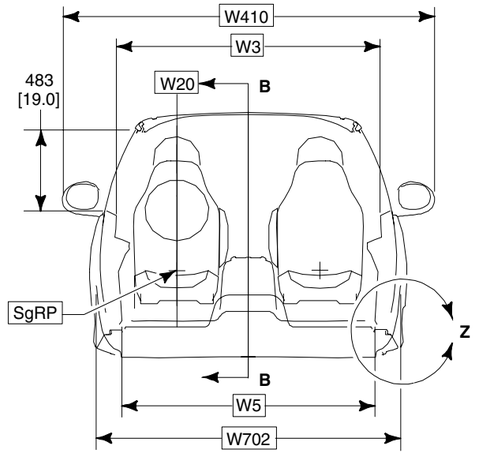
2004 MODEL YEAR

F-SERIES MODEL	BODY CODE	WHEELBASE inches	ENGINE[1] liters	TRANSMISSION[1]	MIN-MAX GVWR pounds	TRANSFER CASE	MAXIMUM PAYLOAD[2] pounds	BASE CURB WEIGHT[3]			PICKUP BOX NOMINAL LENGTH feet
								FRONT pounds	REAR pounds	TOTAL pounds	
REGULAR CAB FLARESIDE PICKUP											
F-150 4x2	F07	119.9	4.2L V-6	5-Spd. Manual OD	6050	—	1990	2275	1744	4019	6½
F-150 4x2	F07	119.9	4.6L V-8	4-Spd. Auto OD	6050	—	1890	2373	1736	4109	6½
F-150 4x4	F08	120.2	4.2L V-6	5-Spd. Manual OD	6050	Warner 44-06	1630	2523	1845	4368	6½
F-150 4x4	F08	120.2	4.6L V-8	4-Spd. Auto OD	6250	Warner 44-06	1740	2623	1836	4459	6½
REGULAR CAB STYLESIDE PICKUP											
F-150 4x2	F17	119.9	4.2L V-6	5-Spd. Manual OD	6050	—	2000	2268	1739	4007	6½
F-150 4x2	F17	119.9	4.6L V-8	4-Spd. Auto OD	6050	—	1910	2366	1731	4097	6½
F-150 4x2	F17	138.5	4.2L V-6	5-Spd. Manual OD	6050	—	1920	2337	1745	4082	8
F-150 4x2	F17	138.5	4.6L V-8	4-Spd. Auto OD	6050/6600	—	1800/2310	2447/2464	1754/1783	4201/4247	8
F-150 4x2	F17	138.5	5.4L V-8 Bi-Fuel	4-Spd. Auto OD	7700	—	2690	2745	2207	4952	8
F-150 4x2	F17	138.5	5.4L V-8 NGV	4-Spd. Auto OD	7650	—	2620	2862	2117	4979	8
F-150 4x4	F18	120.2	4.2L V-6	5-Spd. Manual OD	6050	Warner 44-06	1650	2516	1840	4356	6½
F-150 4x4	F18	120.2	4.6L V-8	4-Spd. Auto OD	6250	Warner 44-06	1750	2616	1831	4447	6½
F-150 4x4	F18	138.8	4.2L V-6	5-Spd. Manual OD	6050	Warner 44-06	1570	2604	1830	4434	8
F-150 4x4	F18	138.8	4.6L V-8	4-Spd. Auto OD	6250	Warner 44-06	1650	2712	1839	4551	8
F-150 4x4	F18	138.8	5.4L V-8 Bi-Fuel	4-Spd. Auto OD	7700	Warner 44-06	2350	3013	2278	5291	8
SUPERCAB STYLESIDE PICKUP											
F-150 4x2	X17	138.5	4.2L V-6	5-Spd. Manual OD	6050	—	1760	2384	1860	4244	6½
F-150 4x2	X17	138.5	4.6L V-8	4-Spd. Auto OD	6050	—	1640	2494	1869	4363	6½
F-150 4x2	X17	138.5	5.4L V-8 Bi-Fuel	4-Spd. Auto OD	7700	—	2560	2791	2297	5088	6½
F-150 4x2	X17	157.1	4.6L V-8	4-Spd. Auto OD	6050	—	1460	2621	1921	4542	8
F-150 4x4	X18	138.8	4.6L V-8	4-Spd. Auto OD	6250	Warner 44-06	1510	2742	1947	4689	6½
F-150 4x4	X18	138.8	5.4L V-8 Bi-Fuel	4-Spd. Auto OD	7700	Warner 44-06	2210	3055	2377	5432	6½
F-150 4x4	X18	157.4	4.6L V-8	4-Spd. Auto OD	6250	Warner 44-06	1370	2867	1955	4822	8

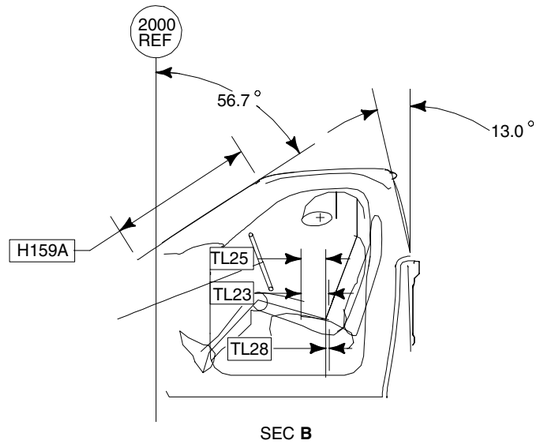
(1) Engine/transmission combinations may not be available on all models, or in all areas.
(2) Includes weight of driver, passengers and optional equipment.
(3) Base curb weight is for standard equipment only.

F-150 HERITAGE
DIMENSIONAL DATA
REGULAR CAB STYLESIDE 4X2/4X4

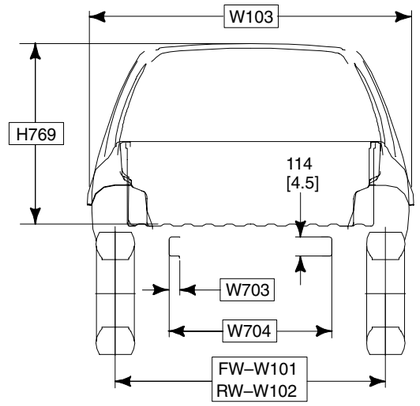
2004 MODEL YEAR



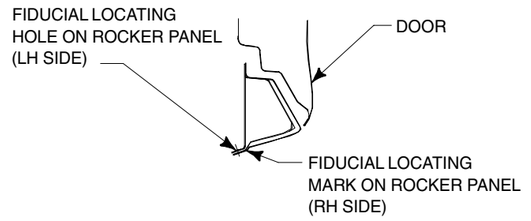
SEC **A**



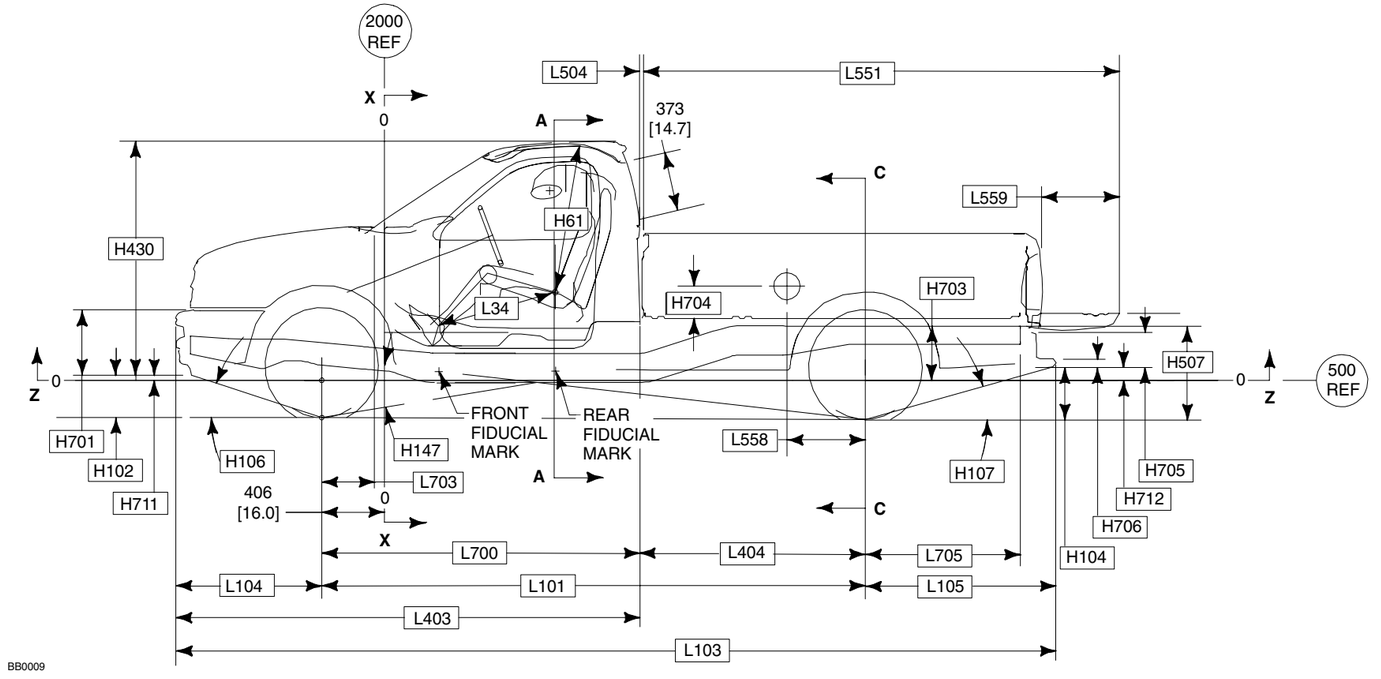
SEC **B**



SEC **C**



VIEW IN CIRCLE **Z**



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FIDUCIAL COORDINATE CHART				
PT.		X	Y	Z
FRONT	RH	2300 [90.6]	844 [33.2]	559 22.0]
	LH	—	—	—
REAR	RH	3476 [136.8]	844 [33.2]	559 [22.0]
	LH	3105 [122.2]	829 [32.6]	554 [21.8]

NOTES — [ ] DIMENSIONS ARE INCHES.
— **CH, LH, F, R, FW, RW** DIMENSIONS, SEE PAGE 118.
— TIRE DATA, PAGE 119.
— INTERIOR BOX DIMENSIONS, PAGE 116.

F-150 HERITAGE
DIMENSIONAL DATA
REGULAR CAB STYLESIDE 4X2/4X4

2004 MODEL YEAR

CHASSIS

CODE	DESCRIPTION	LWB F-150		SWB F-150	
		4x2	4x4	4x2	4x4
H102	BOTTOM OF FRONT BUMPER VALANCE TO GROUND @ CURB	256 [10.1]	338 [13.3]	272 [10.7]	375 [14.7]
H104	BOTTOM OF REAR BUMPER TO GROUND @ CURB	341 [13.4]	433 [17.0]	351 [13.8]	458 [18.0]
H106	ANGLE OF APPROACH	18.2°	25.7°	18.5°	26.0°
H107	ANGLE OF DEPARTURE	16.3°	20.7°	16.2°	19.9°
H147	RAMP BREAKOVER ANGLE	15.0°	19.8°	17.4°	21.7°
H507	TOP OF FRAME TO GROUND	843 [33.2]	843 [33.2]	843 [33.2]	843 [33.2]
L101	WHEELBASE	3519 [138.5]	3526 [138.8]	3046 [119.9]	3054 [120.2]
L103	OVERALL LENGTH — STANDARD REAR STEP BUMPER	5729 [225.5]	5736 [225.8]	5256 [206.9]	5264 [207.2]
L104	FRONT OVERHANG	983 [38.7]	983 [38.7]	983 [38.7]	983 [38.7]
L105	REAR OVERHANG — STANDARD REAR STEP BUMPER	1227 [48.3]	1227 [48.3]	1227 [48.3]	1227 [48.3]
L403	FRONT BUMPER TO REAR OF CAB	3043 [119.8]	3043 [119.8]	3043 [119.8]	3043 [119.8]
L404	CAB TO ℄ OF REAR AXLE	1458 [57.4]	1465 [57.7]	985 [38.8]	993 [39.1]
L700	℄ OF FRONT AXLE TO REAR OF CAB	2061 [81.1]	2061 [81.1]	2061 [81.1]	2061 [81.1]
L705	℄ REAR AXLE TO END OF FRAME (INCLUDES REAR BUMPER MOUNTING BRACKET)	1039 [40.9]	1031 [40.6]	1039 [40.9]	1031 [40.6]
W703	FRAME RAIL WIDTH	66 [2.6]	66 [2.6]	66 [2.6]	66 [2.6]
W704	REAR FRAME WIDTH	1001 [39.4]	1001 [39.4]	1001 [39.4]	1001 [39.4]

PICKUP BODY

CODE	DESCRIPTION	LWB F-150		SWB F-150	
		4x2	4x4	4x2	4x4
NOMINAL CARGO BODY SIZE		8 FT.		6.5 FT.	
H703	Z REFERENCE LINE TO CARGO BODY FLOOR	424 [16.7]	424 [16.7]	424 [16.7]	424 [16.7]
H704	TOP OF FLOOR TO ℄ OF FUEL FILLER	170 [6.7]	170 [6.7]	170 [6.7]	170 [6.7]
H705	REAR BUMPER HEIGHT	221 [8.7]	221 [8.7]	221 [8.7]	221 [8.7]
—	REAR BUMPER WIDTH (NOT SHOWN)	1872 [73.7]	1872 [73.7]	1872 [73.7]	1872 [73.7]
H706	BOTTOM OF REAR BUMPER TO TOP OF BUMPER HITCH PLATE	51 [2.0]	51 [2.0]	51 [2.0]	51 [2.0]
H712	Z REFERENCE LINE TO BOTTOM OF REAR BUMPER	178 [7.0]	178 [7.0]	178 [7.0]	178 [7.0]
H769	TOP OF FLOOR TO TOP OF CAB @ ℄ REAR WHEELS	1092 [43.0]	1092 [43.0]	1092 [43.0]	1092 [43.0]
L504	CAB TO PICKUP BODY	13.5 [0.5]	13.5 [0.5]	13.5 [0.5]	13.5 [0.5]
L551	BOX OVERALL LENGTH TO OPEN TAILGATE	3068 [120.8]	3068 [120.8]	2601 [102.4]	2601 [102.4]
L558	℄ REAR AXLE TO ℄ FUEL FILLER	505 [19.9]	513 [20.2]	505 [19.9]	513 [20.2]
L559	OPEN TAILGATE	498 [19.6]	498 [19.6]	498 [19.6]	498 [19.6]

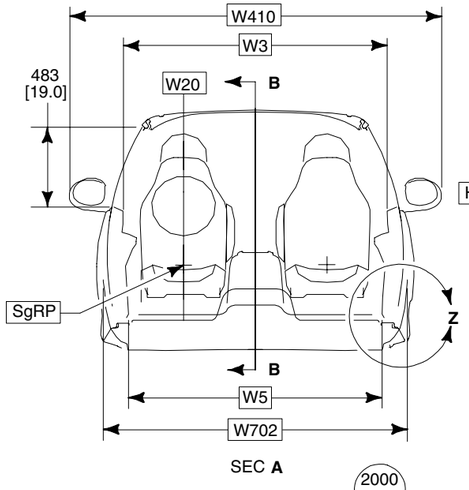
CAB

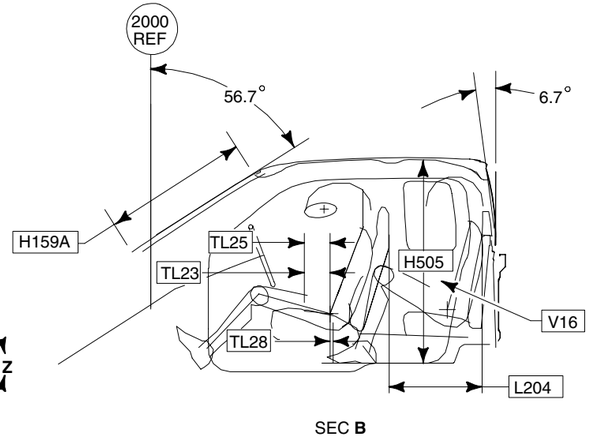
CODE	DESCRIPTION	4x2	4x4
H61	EFFECTIVE HEAD ROOM	1036 [40.8]	1036 [40.8]
H159A	WINDSHIELD HEIGHT	889 [35.0]	889 [35.0]
H430	Z REFERENCE LINE TO TOP OF CAB	1516 [59.7]	1516 [59.7]
H701	FRONT BUMPER HEIGHT	259 [10.2]	282 [11.1]
H711	Z REFERENCE LINE TO BOTTOM OF FRONT BUMPER (LESS LOWER VALANCE)	178 [7.0]	142 [5.6]
TL23	FORWARD SEAT TRACK	159 [6.3]	159 [6.3]
TL25	TRUE TRACK TRAVEL LENGTH	220 [8.7]	220 [8.7]
TL28	TRUE TRACK TRAVEL LENGTH REAR OF SgRP	40 [1.6]	40 [1.6]
L34	EFFECTIVE LEG ROOM	1039 [40.9]	1039 [40.9]
L703	℄ FRONT AXLE TO COWL POINT	345 [13.6]	345 [13.6]
W3	SHOULDER ROOM	1620 [63.8]	1620 [63.8]
W5	HIP ROOM	1549 [61.0]	1549 [61.0]
W20	SgRP (Y)	–439 [–17.3]	–439 [–17.3]
W103	VEHICLE WIDTH	1988 [78.3]	1988 [78.3]
W410	OVERALL WIDTH WITH STANDARD MIRRORS	2278 [89.7]	2278 [89.7]
W702	FRONT BUMPER WIDTH	1880 [74.0]	1892 [74.5]

NOTE — [ ] DIMENSIONS ARE INCHES.

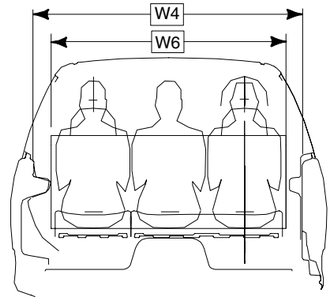
F-150 HERITAGE
DIMENSIONAL DATA
SUPERCAB STYLESIDE 4X2/4X4

2004 MODEL YEAR





SEC **B**



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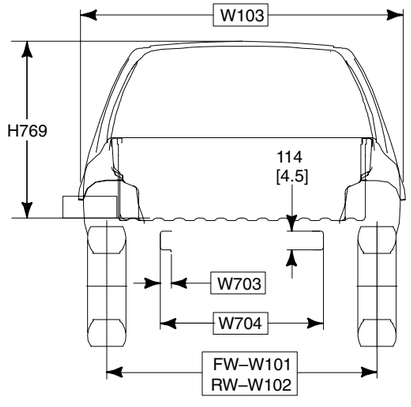
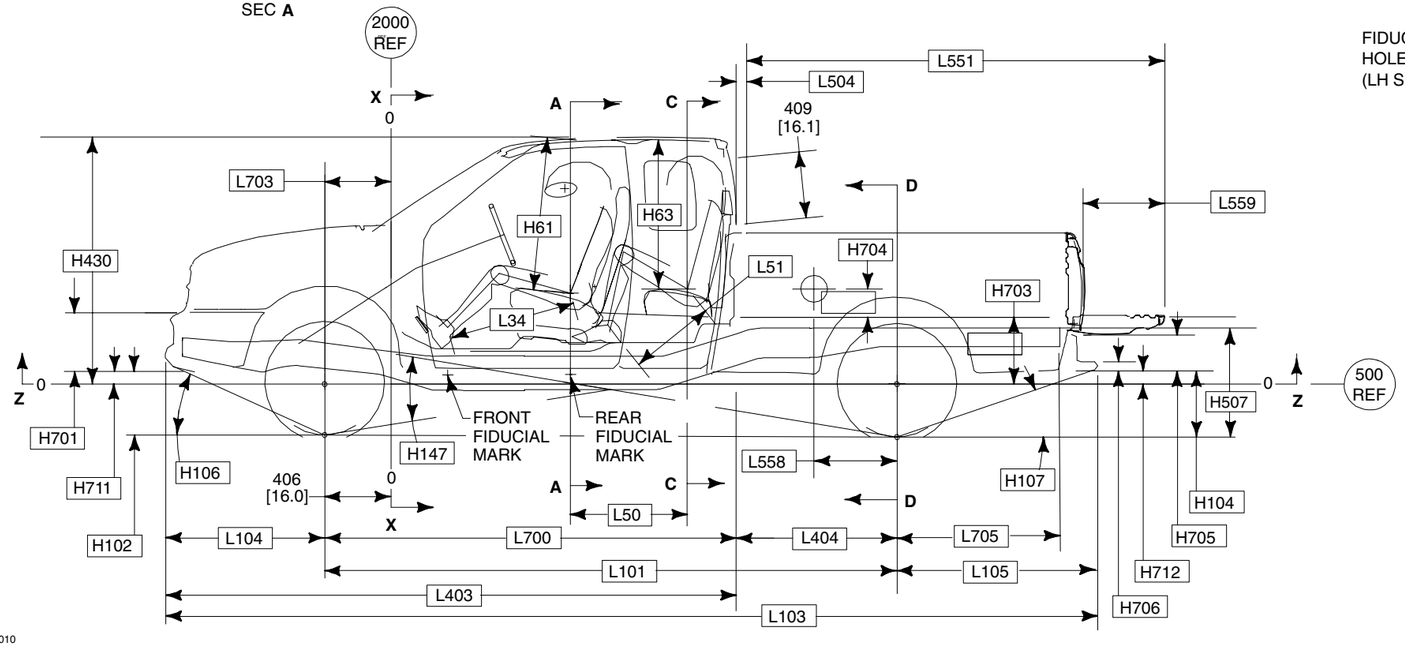


SEC **D**

SEC **A**



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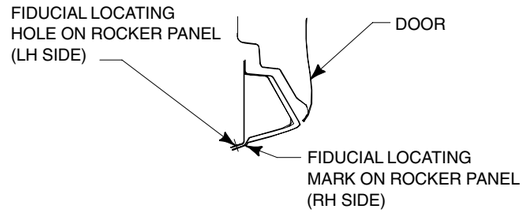


VIEW IN CIRCLE **Z**

FIDUCIAL COORDINATE CHART				
PT.		X	Y	Z
FRONT	R_H	2350 [92.5]	829 [32.6]	556 [21.8]
	L_H	———	———	———
REAR	R_H	3476 [136.8]	829 [32.6]	555 [21.8]
	L_H	3105 [122.2]	829 [32.6]	554 [21.8]

NOTES — [ ] DIMENSIONS ARE INCHES.
— **CH, LH, F, R, FW, RW** DIMENSIONS, SEE PAGE 118.
— TIRE DATA, PAGE 119.
— INTERIOR BOX DIMENSIONS, PAGE 116.

F-150 HERITAGE
DIMENSIONAL DATA
SUPERCAB STYLESIDE 4X2/4X4

2004
MODEL YEAR

CHASSIS

CODE	DESCRIPTION	LWB F-150		SWB F-150	
		4x2	4x4	4x2	4x4
H102	BOTTOM OF FRONT BUMPER VALANCE TO GROUND @ CURB	256 [10.1]	338 [13.3]	272 [10.7]	343 [13.5]
H104	BOTTOM OF REAR BUMPER TO GROUND @ CURB	341 [13.4]	433 [17.0]	351 [13.8]	458 [18.0]
H106	ANGLE OF APPROACH	18.3°	26.0°	18.9°	25.8°
H107	ANGLE OF DEPARTURE	16.1°	19.8°	16.2°	19.8°
H147	RAMP BREAKOVER ANGLE	13.6°	16.6°	14.7°	18.7°
H507	TOP OF FRAME TO GROUND	843 [33.2]	843 [33.2]	843 [33.2]	843 [33.2]
L101	WHEELBASE	3991 [157.1]	3998 [157.4]	3518 [138.5]	3525 [138.8]
L103	OVERALL LENGTH — STANDARD REAR STEP BUMPER	6201 [244.1]	6208 [244.4]	5728 [225.5]	5735 [225.8]
L104	FRONT OVERHANG	983 [38.7]	983 [38.7]	983 [38.7]	983 [38.7]
L105	REAR OVERHANG — STANDARD REAR STEP BUMPER	1227 [48.3]	1227 [48.3]	1227 [48.3]	1227 [48.3]
L403	FRONT BUMPER TO REAR OF CAB	3515 [138.4]	3515 [138.4]	3515 [138.4]	3515 [138.4]
L404	CAB TO ℄ OF REAR AXLE	1459 [57.4]	1466 [57.7]	986 [38.8]	993 [39.1]
L700	℄ OF FRONT AXLE TO REAR OF CAB	2532 [99.7]	2532 [99.7]	2532 [99.7]	2532 [99.7]
L705	℄ REAR AXLE TO END OF FRAME (INCLUDES REAR BUMPER MOUNTING BRACKET)	1039 [40.9]	1031 [40.6]	1039 [40.9]	1031 [40.6]
W703	FRAME RAIL WIDTH	66 [2.6]	66 [2.6]	66 [2.6]	66 [2.6]
W704	REAR FRAM WIDTH	1001 [39.4]	1001 [39.4]	1001 [39.4]	1001 [39.4]

PICKUP BODY

CODE	DESCRIPTION	LWB F-150		SWB F-150	
		4x2	4x4	4x2	4x4
NOMINAL CARGO BODY SIZE		8 FT.		6.5 FT.	
H703	Z REFERENCE LINE TO CARGO BODY FLOOR	424 [16.7]	424 [16.7]	424 [16.7]	424 [16.7]
H704	TOP OF FLOOR TO ℄ OF FUEL FILLER	170 [6.7]	170 [6.7]	170 [6.7]	170 [6.7]
H705	REAR BUMPER HEIGHT	221 [8.7]	221 [8.7]	221 [8.7]	221 [8.7]
—	REAR BUMPER WIDTH (NOT SHOWN)	1872 [73.7]	1872 [73.7]	1872 [73.7]	1872 [73.7]
H706	BOTTOM OF REAR BUMPER TO TOP OF BUMPER HITCH PLATE	51 [2.0]	51 [2.0]	51 [2.0]	51 [2.0]
H712	Z REFERENCE LINE TO BOTTOM OF REAR BUMPER	178 [7.0]	178 [7.0]	178 [7.0]	178 [7.0]
H769	TOP OF FLOOR TO TOP OF CAB @ ℄ REAR WHEELS	1092 [43.0]	1092 [43.0]	1092 [43.0]	1092 [43.0]
L504	CAB TO PICKUP BODY	13.5 [0.5]	13.5 [0.5]	13.5 [0.5]	13.5 [0.5]
L551	BOX OVERALL LENGTH TO OPEN TAILGATE	3068 [120.8]	3068 [120.8]	2601 [102.4]	2601 [102.4]
L558	℄ REAR AXLE TO ℄ FUEL FILLER	505 [19.9]	513 [20.2]	505 [19.9]	513 [20.2]
L559	OPEN TAILGATE	498 [19.6]	498 [19.6]	498 [19.6]	498 [19.6]

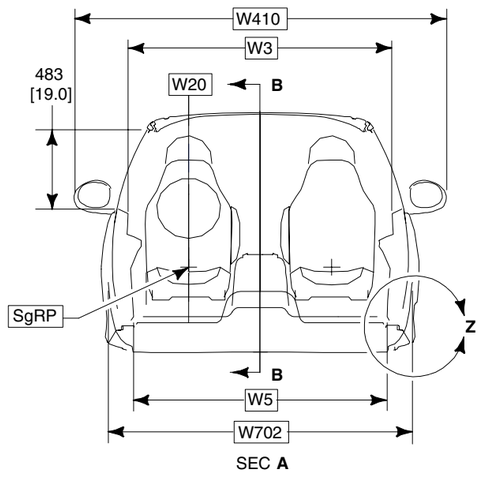
CAB

CODE	DESCRIPTION	4x2	4x4
H61	EFFECTIVE HEAD ROOM — FRONT	1036 [40.8]	1036 [40.8]
H63	EFFECTIVE HEAD ROOM — REAR	960 [37.8]	960 [37.8]
H159A	WINDSHIELD HEIGHT	889 [35.0]	889 [35.0]
H430	Z REFERENCE LINE TO TOP OF CAB	1516 [59.7]	1516 [59.7]
H505	MAXIMUM INTERIOR CARGO HEIGHT (REAR SEAT)	1166 [45.9]	1166 [45.9]
H701	FRONT BUMPER HEIGHT	259 [10.2]	282 [11.1]
H711	Z REFERENCE LINE TO BOTTOM OF FRONT BUMPER (LESS LOWER VALANCE)	178 [7.0]	142 [5.6]
TL23	FORWARD SEAT TRACK	159 [6.3]	159 [6.3]
TL25	TRUE TRACK TRAVEL LENGTH	220 [8.7]	220 [8.7]
TL28	TRUE TRACK TRAVEL LENGTH REAR OF SgRP	40 [1.6]	40 [1.6]
L34	EFFECTIVE LEG ROOM — FRONT	1039 [40.9]	1039 [40.9]
L50	H-POINT COUPLE DISTANCE	719 [28.3]	719 [28.3]
L51	EFFECTIVE LEG ROOM — REAR	818 [32.2]	818 [32.2]
L204	BACK OF FRONT SEAT TO BACK PANEL	571 [22.5]	571 [22.5]
L703	℄ FRONT AXLE TO COWL POINT	345 [13.6]	345 [13.6]
W3	SHOULDER ROOM — FRONT	1620 [63.8]	1620 [63.8]
W4	SHOULDER ROOM — REAR	1620 [63.8]	1620 [63.8]
W5	HIP ROOM — FRONT	1549 [61.0]	1549 [61.0]
W6	HIP ROOM — REAR	1605 [63.2]	1605 [63.2]
W20	SgRP (Y)	–439 [–17.3]	–439 [–17.3]
W103	VEHICLE WIDTH	1988 [78.3]	1988 [78.3]
W410	OVERALL WIDTH WITH STANDARD MIRRORS	2278 [89.7]	2278 [89.7]
W702	FRONT BUMPER WIDTH	1880 [74.0]	1892 [74.5]
V16	REAR CARGO VOLUME WITH REAR SEAT CUSHION FOLDED UP — LITRES/CU.FT.	1082/ 38.2	1082/ 38.2

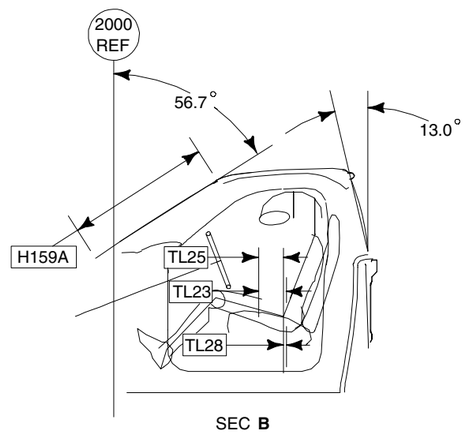
NOTE — [ ] DIMENSIONS ARE INCHES.

F-150 HERITAGE
DIMENSIONAL DATA
REGULAR CAB FLARESIDE 4X2/4X4

2004 MODEL YEAR



SEC **A**



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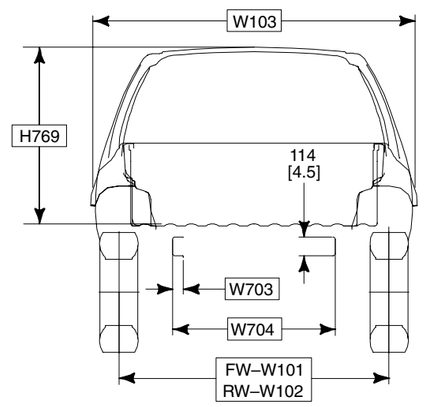

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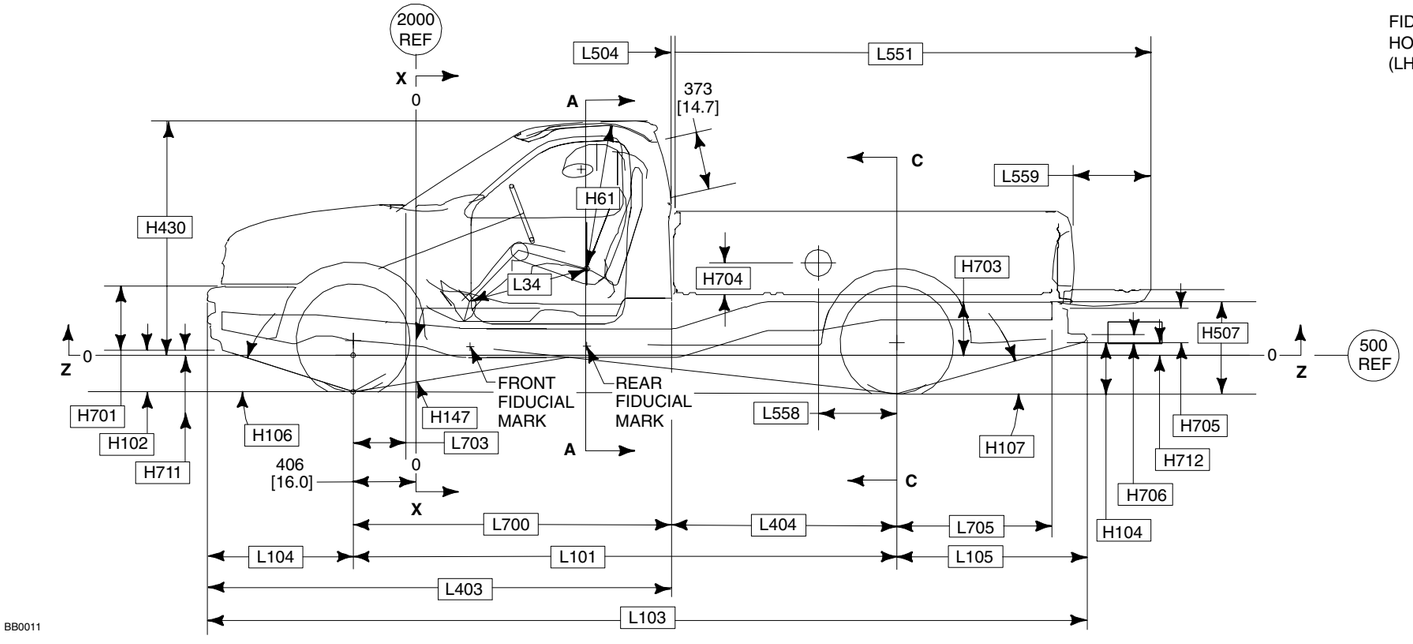

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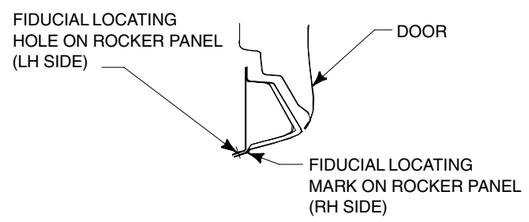


VIEW IN CIRCLE **Z**

FIDUCIAL COORDINATE CHART				
PT.		X	Y	Z
FRONT	R_H	2350 [92.5]	829 [32.6]	556 [21.8]
	L_H	———	———	———
REAR	R_H	3105 [122.2]	829 [32.6]	554 [21.8]
	L_H	3105 [122.2]	829 [32.6]	554 [21.8]

NOTES — [ ] DIMENSIONS ARE INCHES.
— **CH, LH, F, R, FW, RW** DIMENSIONS, SEE PAGE 118.
— TIRE DATA, PAGE 119.
— INTERIOR BOX DIMENSIONS, PAGE 117.

F-150 HERITAGE
DIMENSIONAL DATA
REGULAR CAB FLARESIDE 4X2/4X4

2004 MODEL YEAR

CHASSIS

CODE	DESCRIPTION	SWB 4X2	SWB 4X4
H102	BOTTOM OF FRONT BUMPER VALANCE TO GROUND @ CURB	261 [10.3]	343 [13.5]
H104	BOTTOM OF REAR BUMPER TO GROUND @ CURB	341 [13.4]	458 [18.0]
H106	ANGLE OF APPROACH	18.5°	26.0°
H107	ANGLE OF DEPARTURE	16.2°	19.9°
H147	RAMP BREAKOVER ANGLE	17.4°	21.7°
H507	TOP OF FRAME TO GROUND	844 [33.2]	844 [33.2]
L101	WHEELBASE	3046 [119.9]	3053 [120.2]
L103	OVERALL LENGTH — WITH STANDARD REAR STEP BUMPER	5255 [206.9]	5263 [207.2]
L104	FRONT OVERHANG	983 [38.7]	983 [38.7]
L105	REAR OVERHANG — WITH STANDARD REAR STEP BUMPER	1227 [48.3]	1227 [48.3]
L403	FRONT BUMPER TO REAR OF CAB	3043 [119.8]	3043 [119.8]
L404	CAB TO ℄ OF REAR AXLE	985 [38.8]	993 [39.1]
L700	℄ OF FRONT AXLE TO REAR OF CAB	2060 [81.1]	2060 [81.1]
L705	℄ REAR AXLE TO END OF FRAME (INCLUDES REAR BUMPER MOUNTING BRACKET)	1039 [40.9]	1031 [40.6]
W703	FRAME RAIL WIDTH	66 [2.6]	66 [2.6]
W704	REAR FRAME WIDTH	1001 [39.4]	1001 [39.4]

PICKUP BODY

CODE	DESCRIPTION	4X2	4X4
	NOMINAL CARGO BODY SIZE	6.5 FT.	
H703	Z REFERENCE LINE TO CARGO BODY FLOOR	424 [16.7]	424 [16.7]
H704	TOP OF FLOOR TO ℄ OF FUEL FILLER	170 [6.7]	170 [6.7]
H705	REAR BUMPER HEIGHT	221 [8.7]	221 [8.7]
—	REAR BUMPER WIDTH (NOT SHOWN)	1760 [69.3]	1760 [69.3]
H706	BOTTOM OF REAR BUMPER TO TOP OF BUMPER HITCH PLATE	51 [2.0]	51 [2.0]
H712	Z REFERENCE LINE TO BOTTOM OF REAR BUMPER	74 [2.9]	74 [2.9]
H769	TOP OF FLOOR TO TOP OF CAB @ ℄ REAR WHEELS	1092 [43.0]	1092 [43.0]
L504	CAB TO PICKUP BODY	30 [1.2]	30 [1.2]
L551	OVERALL LENGTH TO OPEN TAILGATE	2603 [102.5]	2603 [102.5]
L558	℄ REAR AXLE TO ℄ FUEL FILLER	505 [19.9]	513 [20.2]
L559	OPEN TAILGATE	498 [19.6]	498 [19.6]

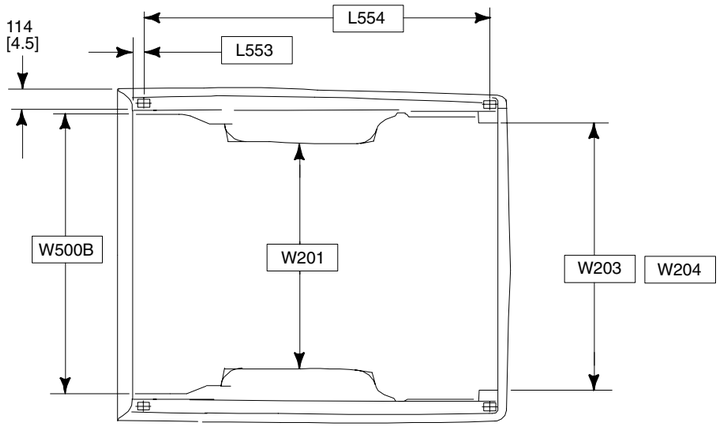
CAB

CODE	DESCRIPTION	4X2	4X4
H61	EFFECTIVE HEAD ROOM	1036 [40.8]	1036 [40.8]
H159A	WINDSHIELD HEIGHT	889 [35.0]	889 [35.0]
H430	Z REFERENCE LINE TO TOP OF CAB	1516 [59.7]	1516 [59.7]
H701	FRONT BUMPER HEIGHT	259 [10.2]	282 [11.1]
H711	Z REFERENCE LINE TO BOTTOM OF FRONT BUMPER (LESS LOWER VALANCE)	178 [7.0]	142 [5.6]
TL23	FORWARD SEAT TRACK	159 [6.3]	159 [6.3]
TL25	TRUE TRACK TRAVEL LENGTH	220 [8.7]	220 [8.7]
TL28	TRUE TRACK TRAVEL LENGTH REAR OF SgRP	40 [1.6]	40 [1.6]
L34	EFFECTIVE LEG ROOM	1039 [40.9]	1039 [40.9]
L703	℄ FRONT AXLE TO COWL POINT	345 [13.6]	345 [13.6]
W3	SHOULDER ROOM	1620 [63.8]	1620 [63.8]
W5	HIP ROOM	1549 [61.0]	1549 [61.0]
W20	SgRP (Y)	–439 [–17.3]	–439 [–17.3]
W103	VEHICLE WIDTH	1988 [78.3]	2019 [79.4]
W410	OVERALL WIDTH WITH STANDARD MIRRORS	2278 [89.7]	2278 [89.7]
W702	FRONT BUMPER WIDTH	1880 [74.0]	1892 [74.5]

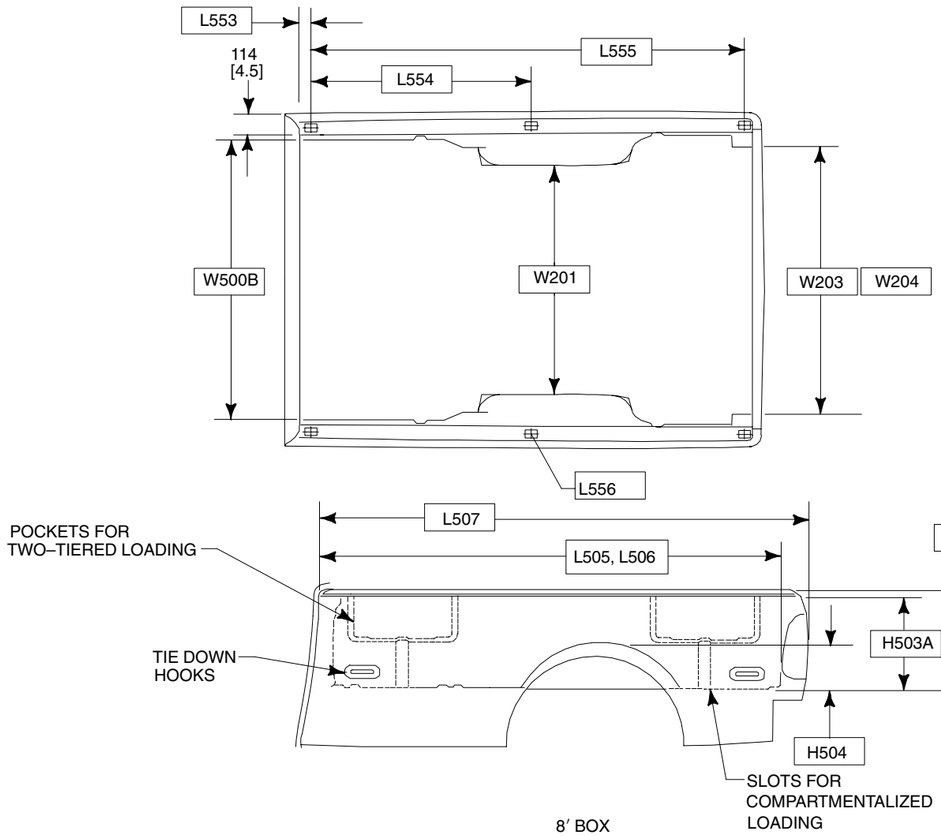
NOTE — [ ] DIMENSIONS ARE INCHES.

F-150 HERITAGE DIMENSIONS
STYLESIDE PICKUP BOX

2004
MODEL YEAR



6-½′ BOX



8′ BOX

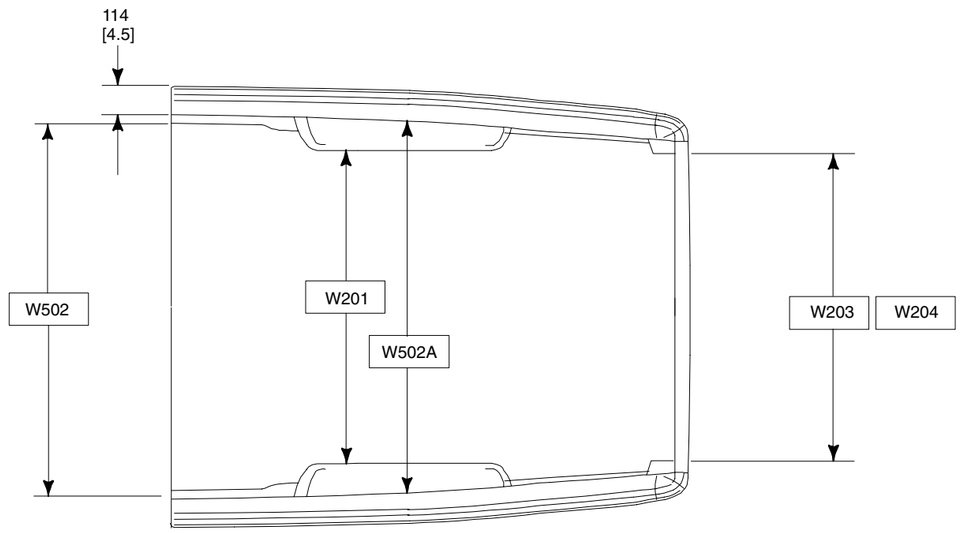
CODE	DESCRIPTION	LWB	SWB
	NOMINAL CARGO BODY SIZE	8 FT.	6.5 FT
L505	CARGO BODY LENGTH @ FLOOR	2464 [97.0]	2001 [78.8]
L506	CARGO BODY LENGTH @ TOP	2443 [96.2]	1966 [77.4]
L507	CARGO BODY OVERALL LENGTH	2588 [101.9]	2118 [83.4]
L553	FRONT OF BOX TO ℄ STAKE #1	68 [2.7]	68 [2.7]
L554	℄ OF STAKE #1 TO STAKE #2	1191 [46.9]	1864 [73.4]
L555	℄ OF STAKE #1 TO STAKE #3	2354 [92.7]	—
L556	STAKE POCKET SIZE	61 X 44 [2.4 x 1.75]	61 X 44 [2.4 x 1.75]

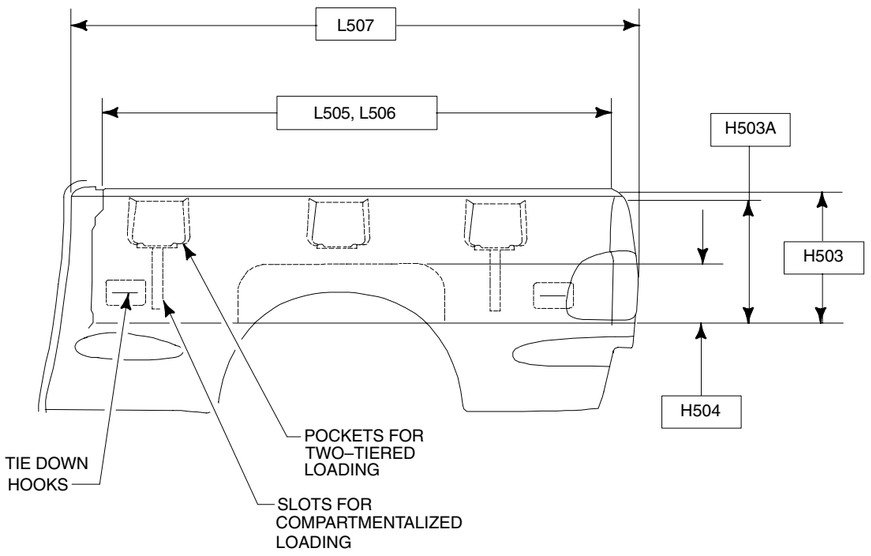
CODE	DESCRIPTION	LWB	SWB
	NOMINAL CARGO BODY SIZE	8 FT.	6.5 FT.
W201	CARGO WIDTH AT WHEELHOUSE	1270 [50.0]	1270 [50.0]
W203	REAR OPENING WIDTH AT FLOOR	1532 [60.3]	1532 [60.3]
W204	REAR OPENING WIDTH AT BELT	1552 [61.1]	1577 [62.1]
W500B	CARGO BODY MAX. INSIDE WIDTH	1656 [65.2]	1656 [65.2]
H503	CARGO BODY HEIGHT W/MOLDING	508 [20.0]	508 [20.0]
H503A	CARGO BODY HEIGHT W/O MOLDING	500 [19.7]	500 [19.7]
H504	WHEELHOUSE HEIGHT	236 [9.3]	236 [9.3]
V5	CARGO VOLUME – LITRES/CU.FT.	2056/72.6	1659/58.6

BB0013

NOTE— [ ] DIMENSIONS ARE INCHES.

F-150 HERITAGE DIMENSIONS
FLARESIDE PICKUP BOX



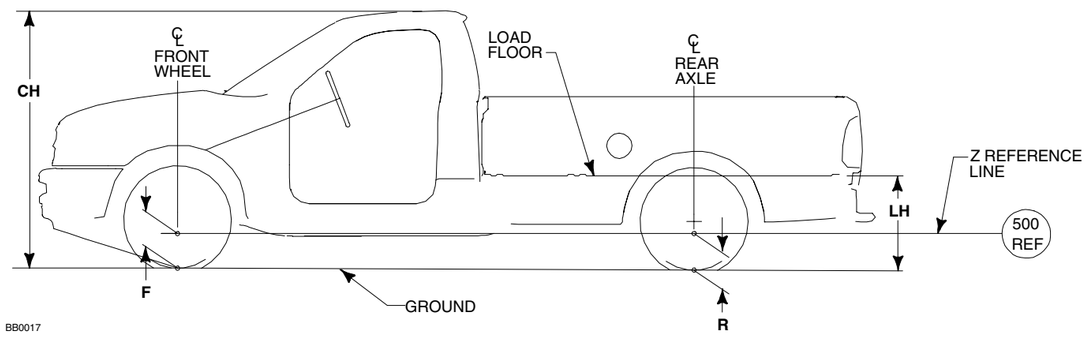


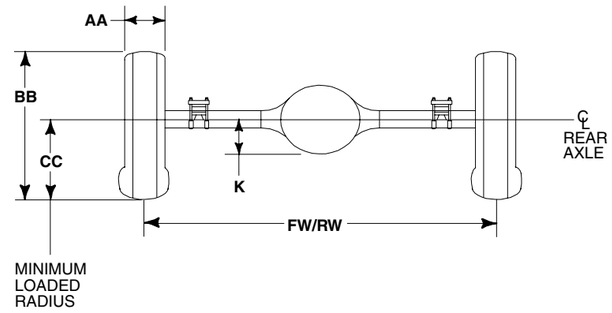
CODE	DESCRIPTION	SWB
	NOMINAL CARGO BODY SIZE	6.5 FT
L505	CARGO BODY LENGTH @ FLOOR	2001 [78.8]
L506	CARGO BODY LENGTH @ TOP	1966 [77.4]
L507	CARGO BODY OVERALL LENGTH	2296 [90.4]
W201	CARGO WIDTH AT WHEELHOUSE	1270 [50.0]
W203	REAR OPENING WIDTH AT FLOOR	1250 [49.2]
W204	REAR OPENING WIDTH AT BELT	1300 [51.2]
W502	CARGO BODY MAX. INSIDE WIDTH	1516 [59.7]
W502A	CARGO BODY MAX. WIDTH INSIDE BOX AT ℄ OF REAR AXLE	1463 [57.6]
H503	CARGO BODY HEIGHT W/ MOLDING	508 [20.0]
H503A	CARGO BODY HEIGHT W/O MOLDING	472 [18.6]
H504	WHEELHOUSE HEIGHT	190 [7.5]
V5	CARGO VOLUME – LITRES/CU.FT.	1421/50.2

NOTE — [ ] DIMENSIONS ARE INCHES.

F-150 HERITAGE
REGULAR/SUPERCAB
AXLE/TIRE/VEHICLE HEIGHT DATA

2004
MODEL YEAR





Model	WB inches	GVWR pounds	Base Tire	F Height @ Front Wheel (1)(2) mm [in]		R Height @ Rear Axle (1)(2) mm [in]		LH (1)(2) mm [in]		CH (1)(2) mm [in]		K mm [in]	AA mm [in]	BB mm [in]	CC mm [in]	FW mm [in]	RW mm [in]
				Height at Base Curb Weight	Loaded Height @ Spring Rating	Height at Base Curb Weight	Loaded Height @ Spring Rating	Empty	Loaded	Empty	Loaded						
F-150 Regular Cab 4x2 Styleside	119.9	6050	P255/70R-16SL	254 [10.0]	236 [9.3]	343 [13.5]	249 [9.8]	843 [33.2]	691 [27.2]	1864 [73.4]	1778 [70.0]	142 [5.6]	269 [10.6]	777 [30.6]	345 [13.6]	1661 [65.4]	1661 [65.4]
	138.5	6050	P235/70R-16SL	256 [10.1]	236 [9.3]	353 [13.9]	249 [9.8]	820 [32.3]	670 [26.4]	1838 [72.4]	1760 [69.3]	142 [5.6]	249 [9.8]	742 [29.2]	328 [12.9]	1661 [65.4]	1661 [65.4]
F-150 Regular Cab 4x2 Flareside	119.9	6050	P255/70R-16SL	254 [10.0]	236 [9.3]	343 [13.5]	249 [9.8]	843 [33.2]	691 [27.2]	1864 [73.4]	1778 [70.0]	142 [5.6]	269 [10.6]	777 [30.6]	345 [13.6]	1661 [65.4]	1661 [65.4]
F-150 SuperCab 4x2 Styleside	138.5	6050	P235/70R-16SL	248 [9.7]	236 [9.3]	348 [13.7]	249 [9.8]	820 [32.3]	670 [26.4]	1849 [72.8]	1763 [69.4]	142 [5.6]	249 [9.8]	742 [29.2]	328 [12.9]	1661 [65.4]	1661 [65.4]
	157.1	6050	P235/70R-16SL	256 [10.1]	236 [9.3]	348 [13.7]	249 [9.8]	818 [32.2]	673 [26.5]	1841 [72.5]	1763 [69.4]	142 [5.6]	249 [9.8]	742 [29.2]	328 [12.9]	1661 [65.4]	1661 [65.4]
F-150 Regular Cab 4x4 Styleside	120.2	6050	P255/70R-16SL	356 [14.0]	315 [12.4]	424 [16.7]	325 [12.8]	922 [36.3]	770 [30.3]	1935 [76.2]	1859 [73.2]	142 [5.6]	269 [10.6]	780 [30.7]	348 [13.7]	1661 [65.4]	1661 [65.4]
	138.8	6050	P235/70R-16SL	348 [13.7]	310 [12.2]	432 [17.0]	325 [12.8]	886 [34.9]	754 [29.7]	1907 [75.1]	1836 [72.3]	142 [5.6]	249 [9.8]	742 [29.2]	328 [12.9]	1661 [65.4]	1661 [65.4]
F-150 Regular Cab 4x4 Flareside	120.2	6050	P255/70R-16SL	356 [14.0]	312 [12.3]	424 [16.7]	325 [12.8]	922 [36.3]	770 [30.3]	1935 [76.2]	1859 [73.2]	142 [5.6]	269 [10.6]	780 [30.7]	348 [13.7]	1661 [65.4]	1661 [65.4]
F-150 SuperCab 4x4 Styleside	138.8	6250	P235/70R-16SL	348 [13.7]	307 [12.1]	424 [16.7]	325 [12.8]	886 [34.9]	754 [29.7]	1918 [75.5]	1841 [72.5]	142 [5.6]	249 [9.8]	742 [29.2]	328 [12.9]	1661 [65.4]	1661 [65.4]
	157.4	6250	P255/70R-16SL	348 [13.7]	307 [12.1]	424 [16.7]	325 [12.8]	902 [35.5]	775 [30.5]	1925 [75.8]	1857 [73.1]	142 [5.6]	269 [10.6]	780 [30.7]	345 [13.6]	1661 [65.4]	1661 [65.4]

(1) The Height Data shown represents dimensions of a base/standard vehicle with no options. Actual height may vary due to production tolerances.
(2) Vehicle ride heights are given at tire minimum loaded radius.

NOTES — [ ] DIMENSIONS ARE INCHES.
— TIRE DATA, PAGE 119.

F-150 HERITAGE
WHEEL AND TIRE DATA

F-150 REGULAR/SUPERCAB TIRE DATA

Tire Size	Rim Width	AA Maximum Section Width		BB Maximum Diameter		*CC Minimum Loaded Radius	
		All-Season	All-Terrain	All-Season	All-Terrain	All-Season	All-Terrain
P235/70R16SL	178 [7.0]	249 [9.8]	249 [9.8]	742 [29.2]	742 [29.2]	328 [12.9]	—
P255/70R16SL	178 [7.0]	269 [10.6]	269 [10.6]	777 [30.6]	780 [30.7]	345 [13.6]	—
P265/70R17SL	190 [7.5]	—	284 [11.2]	—	825 [32.5]	—	371 [14.6]
P275/60R17SL	190 [7.5]	263 [10.4]	—	785 [30.9]	—	350 [13.8]	—
LT245/75R16/D	178 [7.0]	264 [10.4]	264 [10.4]	787 [31.0]	792 [31.2]	356 [14.0]	358 [14.1]

* This number represents Radius - Axle centerline to ground with maximum rated load on tire at maximum pressure.

F-150 REGULAR/SUPERCAB WHEEL DATA

Wheel Type	Wheel Size	Inset	No. of Studs	Bolt Circle	Max. Wheel Capacity [lb @ ground]
Styled Steel	16 x 7.0J	0.55	5	5.3	1950 Front/2064 Rear
Polished Aluminum	16 x 7.0J	0.55	5	5.3	1900
Cast Aluminum	16 x 7.0J	0.55	5	5.3	1900
Cast Aluminum	17 x 7.5J	0.55	5	5.3	1900 Front/2064 Rear
Cast Aluminum Spoke	17 x 7.5J	0.55	5	5.3	1900 Front/2064 Rear
Chromed Steel	17 x 7.5J	0.55	5	5.3	1950 Front/2064 Rear
Argent Styled Steel	16 x 7.0J	0.55	7	5.9	2100 Front/2400 Rear

NOTE — [ ] DIMENSIONS ARE INCHES.

SUPER DUTY F-250/350 STYLESIDE PICKUP MODEL LINEUP

2004 MODEL YEAR

SUPER DUTY F-SERIES MODEL	BODY CODE	WHEELBASE inches	CA inches	STANDARD ENGINE(1) liters	STANDARD TRANSMISSION(1)	MAXIMUM GVWR pounds	TRANSFER CASE	MAXIMUM PAYLOAD(2) pounds	BASE CURB WEIGHT(3)			PICKUP NOMINAL LENGTH feet
									FRONT pounds	REAR pounds	TOTAL pounds	
REGULAR CAB STYLESIDE PICKUP												
F-250 4X2 SRW	F20	137	56.2(5)	5.4L V-8	6-Spd. Manual OD	8800	—	3320	3086	2325	5411	8
F-250 4X4 SRW	F21	137	56.2(5)	5.4L V-8	6-Spd. Manual OD	8800	NV271	2900	3422	2406	5828	8
F-350 4X2 SRW	F30	137	56.2(5)	5.4L V-8	6-Spd. Manual OD	9900/9700(4)	—	4440/4200(4)	3083/3051(4)	2322/2314(4)	5405/5365(4)	8
F-350 4X4 SRW	F31	137	56.2(5)	5.4L V-8	6-Spd. Manual OD	9900/9700(4)	NV271	4000/3760(4)	3419/3384(4)	2403/2404(4)	5822/5788(4)	8
F-350 4X2 DRW	F32	137	56.2(5)	5.4L V-8	6-Spd. Manual OD	11,200/ 11,000(4) ♦	—	5500/5090(4)	3101/3236(4)	2532/2603(4)	5633/5839(4)	8
F-350 4X4 DRW	F33	137	56.2(5)	5.4L V-8	6-Spd. Manual OD	11,200/ 11,000(4) ♦	NV271	5000/4590(4)	3456/3591(4)	2666/2740(4)	6122/6331(4)	8
SUPERCAB STYLESIDE PICKUP												
F-250 4X2 SRW	X20	141.8	40	5.4L V-8	6-Spd. Manual OD	8800	—	3120	3167	2437	5604	6¾
		158	56.2(5)			8800	—	2960	3273	2492	5765	8
F-250 4X4 SRW	X21	141.8	40	5.4L V-8	6-Spd. Manual OD	8800	NV271	2720	3504	2509	6013	6¾
		158	56.2(5)			8800	NV271	2560	3619	2557	6176	8
F-350 4X2 SRW	X30	141.8	40	5.4L V-8	6-Spd. Manual OD	9900/9700(4)	—	4240/4010(4)	3164/3139(4)	2434/2436(4)	5598/5575(4)	6¾
		158	56.2(5)	5.4L V-8		9900/9700(4)	—	4080/3850(4)	3271/3246(4)	2488/2486(4)	5759/5732(4)	8
F-350 4X4 SRW	X31	141.8	40	5.4L V-8	6-Spd. Manual OD	9900/9700(4)	NV271	3820/3580(4)	3501/3467(4)	2506/2507(4)	6007/5974(4)	6¾
		158	56.2(5)	5.4L V-8		9900/9700(4)	NV271	3660/3420(4)	3617/3585(4)	2553/2551(4)	6170/6136(4)	8
F-350 4X2 DRW	X32	158	56.2(5)	5.4L V-8	6-Spd. Manual OD	11,200/ 11,000(4) ♦	—	5140/4730(4)	3288/3422(4)	2698/2769(4)	5986/6191(4)	8
F-350 4X4 DRW	X33	158	56.2(5)	5.4L V-8	6-Spd. Manual OD	11,200/ 11,000(4) ♦	NV271	4660/4250(4)	3653/3788(4)	2817/2890(4)	6470/6678(4)	8

(1) Engine/transmission combinations may not be available on all models, or in all areas.
(2) Includes weight of driver, passengers and optional equipment.
(3) Base curb weight is for standard equipment only.
(4) California only.
(5) Available with Pickup Box Delete Regular Production Option (RPO).

NOTE: ♦ — SEE CHART ON FOLLOWING PAGE FOR 6.0L V-8 DIESEL ENGINE WEIGHT RATINGS.

SUPER DUTY F-250/350 STYLESIDE PICKUP MODEL LINEUP

2004 MODEL YEAR

SUPER DUTY F-SERIES MODEL	BODY CODE	WHEELBASE inches	CA inches	STANDARD ENGINE(1) liters	STANDARD TRANSMISSION(1)	MAXIMUM GVWR pounds	TRANSFER CASE	MAXIMUM PAYLOAD(2) pounds	BASE CURB WEIGHT(3) FRONT pounds	BASE CURB WEIGHT(3) REAR pounds	BASE CURB WEIGHT(3) TOTAL pounds	PICKUP BOX NOMINAL LENGTH feet
CREW CAB STYLESIDE PICKUP												
F-250 4x2 SRW	W20	156.2	40	5.4L V-8	6-Spd. Manual OD	8800	—	2900	3294	2546	5840	6¾
		172.4	56.2(5)	5.4L V-8	6-Spd. Manual OD	8800	—	2740	3393	2592	5985	8
F-250 4x4 SRW	W21	156.2	40	5.4L V-8	6-Spd. Manual OD	8800	NV271	2460	3640	2630	6270	6¾
		172.4	56.2(5)	5.4L V-8	6-Spd. Manual OD	8800	NV271	2320	3750	2659	6409	8
F-350 4x2 SRW	W30	156.2	40	5.4L V-8	6-Spd. Manual OD	9900/9700(4)	—	4000/3770(4)	3292/3268(4)	2542/2542(4)	5834/5810(4)	6¾
		172.4	56.2(5)	5.4L V-8	6-Spd. Manual OD	9900/9700(4)	—	3860/3630(4)	3391/3370(4)	2587/2584(4)	5978/5954(4)	8
F-350 4x4 SRW	W31	156.2	40	5.4L V-8	6-Spd. Manual OD	9900/9700(4)	NV271	3560/3320(4)	3638/3604(4)	2626/2621(4)	6264/6225(4)	6¾
		172.4	56.2(5)	5.4L V-8	6-Spd. Manual OD	9900/9700(4)	NV271	3420/3180(4)	3748/3716(4)	2654/2649(4)	6402/6365(4)	8
F-350 4x2 DRW	W32	156.2	40	6.8L V-10	6-Spd. Manual OD	11,200/11,000(4) ♦	—	4910/4710(4)	3444/3444(4)	2761/2761(4)	6205/6205(4)	6¾
		172.4	56.2(5)	6.8L V-10	6-Spd. Manual OD	11,200/11,000(4) ♦	—	4710/4510(4)	3544/3544(4)	2870/2870(4)	6414/6414(4)	8
F-350 4x4 DRW	W33	156.2	40	6.8L V-10	6-Spd. Manual OD	11,200/11,000(4) ♦	NV271	4420/4220(4)	3808/3808(4)	2896/2896(4)	6704/6704(4)	6¾
		172.4	56.2(5)	6.8L V-10	6-Spd. Manual OD	11,200/11,000(4) ♦	NV271	4210/4010(4)	3919/3919(4)	2989/2989(4)	6908/6908(4)	8

(1) Engine/transmission combinations may not be available on all models, or in all areas.
(2) Includes weight of driver, passengers and optional equipment.
(3) Base curb weight is for standard equipment only.
(4) California only.
(5) Available with Pickup Box Delete Regular Production Option (RPO).

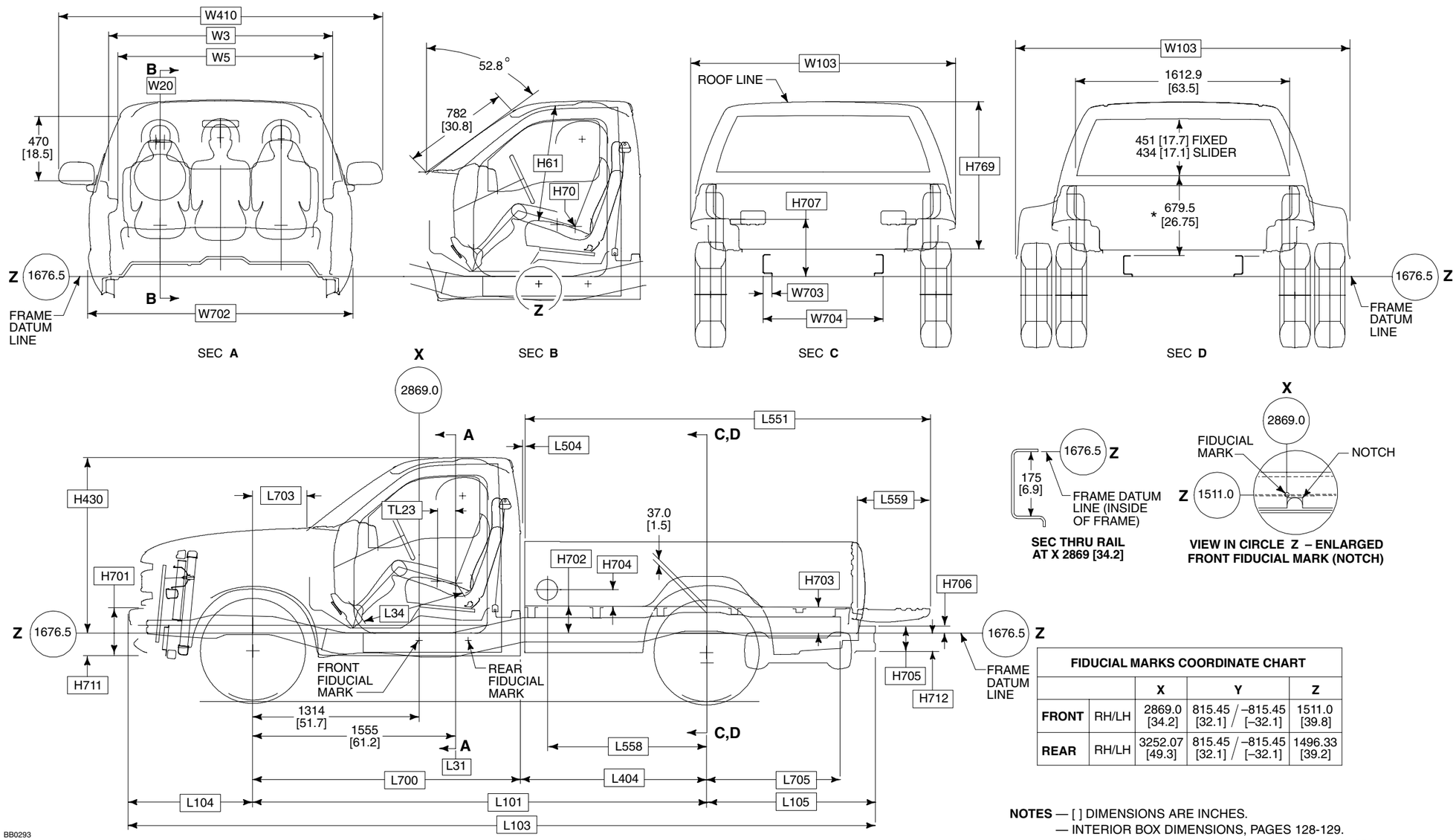
NOTE: ♦ — SEE CHART BELOW FOR 6.0L V-8 DIESEL ENGINE WEIGHT RATINGS.

SUPER DUTY F-350 DRW STYLESIDE WITH 6.0L V-8 DIESEL ENGINE (49 STATES, CALIFORNIA REMAINS AT 11,000 LB GVWR)

SUPER DUTY F-SERIES MODEL	BODY CODE	WHEELBASE inches	ENGINE liters	TRANSMISSION	MIN/MAX GVWR pounds	TRANSFER CASE	MAXIMUM PAYLOAD(1) pounds	CURB WEIGHT(2) FRONT pounds	CURB WEIGHT(2) REAR pounds	CURB WEIGHT(2) TOTAL pounds
REGULAR CAB										
F-350 4x2 DRW	F32	137	6.0L V-8	6-Spd. Manual OD	11,500	—	5060	3724	2650	6374
F-350 4x4 DRW	F33	137	6.0L V-8	6-Spd. Manual OD	11,500	NV271	4560	4068	2792	6860
SUPERCAB										
F-350 4x2 DRW	X32	158	6.0L V-8	6-Spd. Manual OD	11,500	—	4700	3912	2811	6723
F-350 4x4 DRW	X33	158	6.0L V-8	6-Spd. Manual OD	11,500	NV271	4220	4268	2937	7205
CREW CAB										
F-350 4x2 DRW	W32	156.2	6.0L V-8	6-Spd. Manual OD	11,500	—	4680	3934	2804	6738
		172.4	6.0L V-8	6-Spd. Manual OD	11,500	—	4480	4034	2912	6946
F-350 4x4 DRW	W33	156.2	6.0L V-8	6-Spd. Manual OD	11,500	NV271	4180	4287	2944	7231
		172.4	6.0L V-8	6-Spd. Manual OD	11,500	NV271	3980	4399	3035	7434

(1) Includes weight of driver, passengers and optional equipment.
(2) Curb weight is for standard equipment and 6.0L V-8/6-speed Manual OD transmission.

DIMENSIONAL DATA
SUPER DUTY F-250/350 REGULAR CAB
STYLESIDE PICKUP – 4X2/4X4



FIDUCIAL MARKS COORDINATE CHART				
		X	Y	Z
FRONT	RH/LH	2869.0 [34.2]	815.45 [32.1] / –815.45 [–32.1]	1511.0 [39.8]
REAR	RH/LH	3252.07 [49.3]	815.45 [32.1] / –815.45 [–32.1]	1496.33 [39.2]

NOTES — [ ] DIMENSIONS ARE INCHES.
— INTERIOR BOX DIMENSIONS, PAGES 128-129.
— AXLE/TIRE/VEHICLE HEIGHT DATA, PAGES 133-134.
* MEASURED FROM TOP OF FRAME TO BOTTOM OF REAR WINDOW.

DIMENSIONAL DATA
SUPER DUTY F-250/350 REGULAR CAB
STYLESIDE PICKUP – 4X2/4X4

2004
MODEL YEAR

CHASSIS

CODE	DESCRIPTION	4X2/4X4
L101	WHEELBASE	3480 [137.0]
L103	OVERALL LENGTH — WITH REAR BUMPER	5643 [222.2]
L104	FRONT OVERHANG	950 [37.4]
L105	REAR OVERHANG — WITH REAR BUMPER	1214 [47.8]
L404	BACK OF CAB TO ℄ OF REAR AXLE	1431 [56.3]
L705	℄ REAR AXLE TO END OF FRAME	1026 [40.4]
W703	FRAME RAIL WIDTH	72 [2.8]
W704	REAR FRAME WIDTH	956 [37.7]

PICKUP BODY

CODE	DESCRIPTION	4X2/4X4
	NOMINAL CARGO BODY SIZE	
H702	FRAME DATUM LINE TO TOP OF CARGO BOX FLOOR — FRONT	211 [8.3]
H703	FRAME DATUM LINE TO CARGO BODY FLOOR — REAR	194 [7.6]
H704	TOP OF FLOOR TO ℄ OF FUEL FILLER DOOR	125 [5.0]
H705	REAR BUMPER HEIGHT	219 [8.6]
H706	FRAME DATUM TO TOP OF BUMPER STEP	55 [2.2]
H707	FRAME DATUM TO TOP OF WHEELHOUSE	438 [17.1]
H712	FRAME DATUM LINE TO BOTTOM OF REAR BUMPER	163 [6.4]
H769	TOP OF FLOOR TO TOP OF CAB @ ℄ REAR WHEELS	1139 [44.8]
L504	BACK OF CAB TO PICKUP BODY	33 [1.3]
L551	OVERALL LENGTH TO OPEN TAILGATE	3109 [122.4]
L558	℄ REAR AXLE TO ℄ FUEL FILLER DOOR	1223 [48.2]
L559	OPEN TAILGATE	598 [23.5]
W103	VEHICLE WIDTH SRW DRW	2031 [80.0] 2426 [95.5]

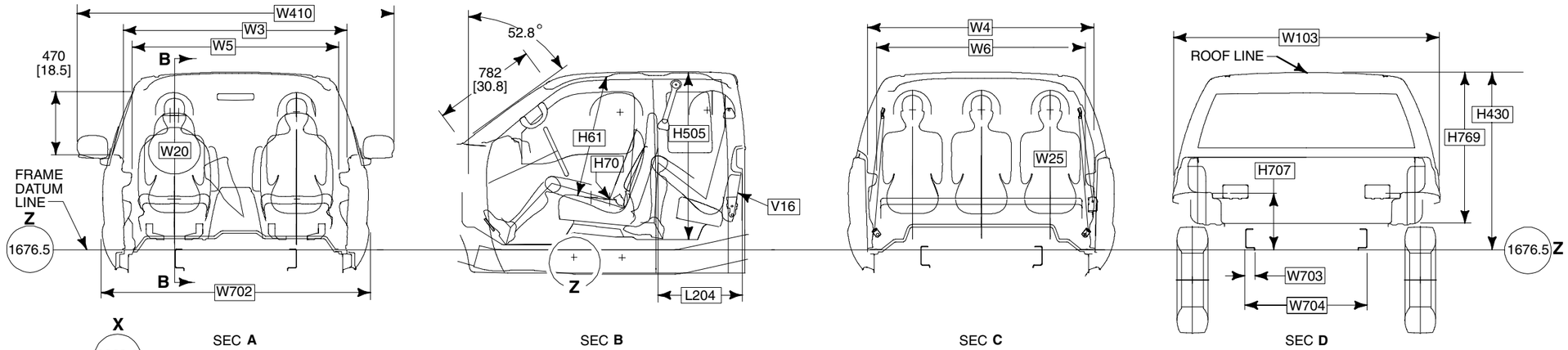
CAB

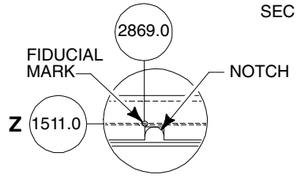
CODE	DESCRIPTION	4X2/4X4
H61	EFFECTIVE HEAD ROOM	1045 [41.1]
H70	SEATING REFERENCE POINT — LH/RH (Z)	2064 [81.2]
H430	FRAME DATUM TO TOP OF CAB	1350 [53.1]
H701	FRONT BUMPER HEIGHT — W/O VALANCE — W/VALANCE	337[13.3] 361[14.2]
H711	FRAME DATUM TO BOTTOM OF FRONT BUMPER — W/O VALANCE — W/VALANCE	 145 [5.7] 170 [6.7]
TL23	SEAT TRACK TRAVEL H FORWARD	199 [7.8]
L31	SEAT REFERENCE POINT — SgRP — LH/RH (X)	3110 [43.7]
L34	MAXIMUM EFFECTIVE LEG ROOM — W/VINYL MAT — W/CARPET	1034 [40.7] 1036 [40.8]
L700	℄ FRONT AXLE TO BACK OF CAB	2052 [80.8]
L703	℄ FRONT AXLE TO COWL POINT	447 [17.6]
W3	SHOULDER ROOM — BASE TRIM — HIGH SERIES TRIM	1701 [67.0] 1728 [68.0]
W5	HIP ROOM	1711 [67.4]
W20	SEATING REFERENCE POINT — SgRP — LH/RH (Y)	–464/464 [–18.3/18.3]
W410	OVERALL CAB WIDTH WITH MIRRORS — MANUAL — ELECTRIC — TRAILER TOW	 2522 [99.3] 2522 [99.3] 2677 [105.4]
W702	FRONT BUMPER WIDTH	2006 [79.0]

NOTE — [ ] DIMENSIONS ARE INCHES.

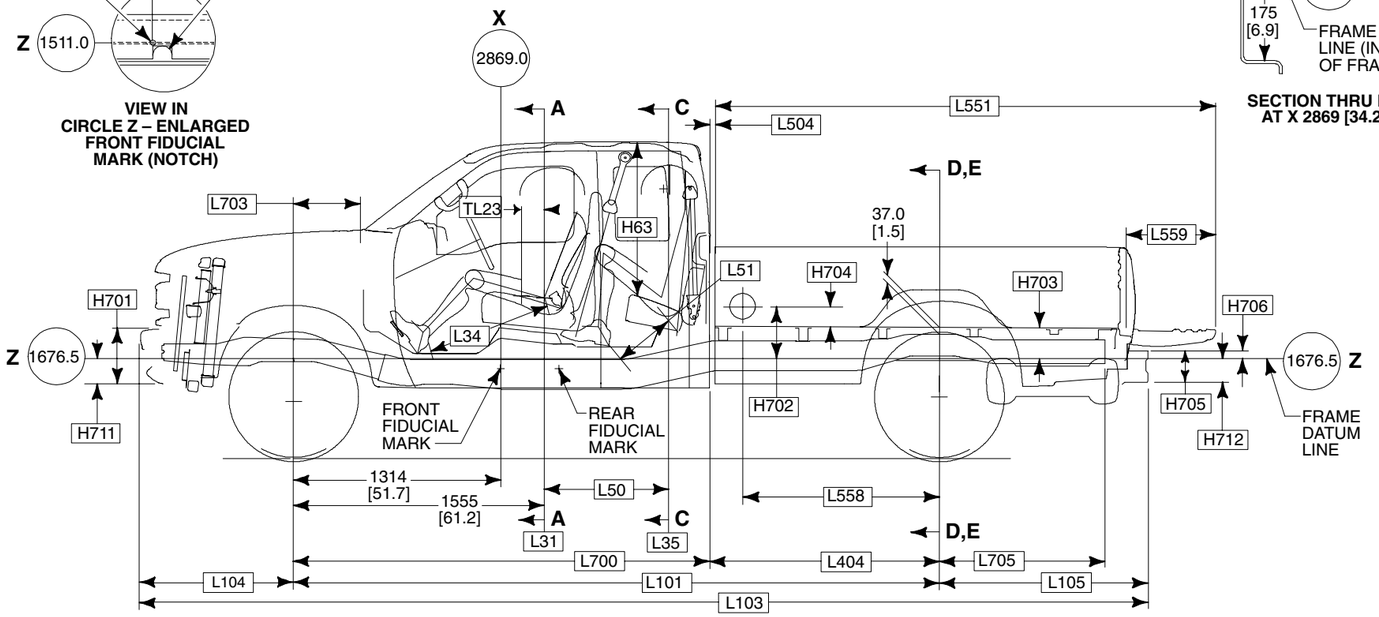
DIMENSIONAL DATA
SUPER DUTY F-250/350 SUPERCAB
STYLESIDE PICKUP – 4X2/4X4

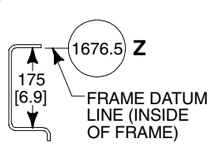
2004
MODEL YEAR



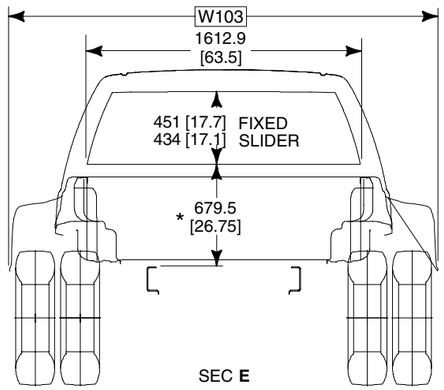


VIEW IN CIRCLE Z – ENLARGED FRONT FIDUCIAL MARK (NOTCH)





SECTION THRU RAIL AT X 2869 [34.2]



SEC **E**

FIDUCIAL MARKS COORDINATE CHART				
		X	**Y**	**Z**
FRONT	RH/LH	2869.0 [34.2]	815.45 [32.1] / –815.45 [–32.1]	1511.0 [39.8]
REAR	RH/LH	3252.07 [49.3]	815.45 [32.1] / –815.45 [–32.1]	1496.33 [39.2]

BB0291

NOTES — [ ] DIMENSIONS ARE INCHES.
— INTERIOR BOX DIMENSIONS, PAGES 128-129.
— AXLE/TIRE/VEHICLE HEIGHT DATA, PAGES 133-134.
* MEASURED FROM TOP OF FRAME TO BOTTOM OF REAR WINDOW.

DIMENSIONAL DATA
SUPER DUTY F-250/350 SUPERCAB
STYLESIDE PICKUP – 4X2/4X4

2004
MODEL YEAR

CHASSIS

CODE	DESCRIPTION	SWB	LWB
L101	WHEELBASE	3602 [141.8]	4013 [158.0]
L103	OVERALL LENGTH — WITH REAR BUMPER	5876 [231.3]	6177 [243.2]
L104	FRONT OVERHANG	950 [37.4]	950 [37.4]
L105	REAR OVERHANG — WITH REAR BUMPER	1325 [52.2]	1214 [47.8]
L404	BACK OF CAB TO ℄ OF REAR AXLE	1016 [40.0]	1427 [56.2]
L705	℄ REAR AXLE TO END OF FRAME	1026 [40.4]	1026 [40.4]
W703	FRAME RAIL WIDTH	72 [2.8]	72 [2.8]
W704	REAR FRAME WIDTH	956 [37.7]	956 [37.7]

PICKUP BODY

CODE	DESCRIPTION	SWB	LWB
	NOMINAL CARGO BODY SIZE		
H702	FRAME DATUM LINE TO TOP OF CARGO BOX FLOOR — FRONT	211 [8.3]	211 [8.3]
H703	FRAME DATUM LINE TO CARGO BODY FLOOR — REAR	199 [7.8]	199 [7.8]
H704	TOP OF FLOOR TO ℄ OF FUEL FILLER DOOR	133 [5.2]	133 [5.2]
H705	REAR BUMPER HEIGHT	219 [8.6]	219 [8.6]
H706	FRAME DATUM TO TOP OF BUMPER STEP	55 [2.2]	55 [2.2]
H707	FRAME DATUM TO TOP OF WHEELHOUSE	438 [17.2]	438 [17.2]
H712	FRAME DATUM LINE TO BOTTOM OF REAR BUMPER	163 [6.4]	163 [6.4]
H769	TOP OF FLOOR TO TOP OF CAB @ ℄ REAR WHEELS	1151 [45.3]	1151 [45.3]
L504	BACK OF CAB TO PICKUP BODY	20 [0.8]	20 [0.8]
L551	OVERALL LENGTH TO OPEN TAILGATE	2683 [105.6	3109 [122.4]
L558	℄ REAR AXLE TO ℄ FUEL FILLER DOOR	597 [23.5]	1223 [48.2]
L559	OPEN TAILGATE	598 [23.5]	598 [23.5]
W103	VEHICLE WIDTH SRW DRW	2031 [80.0] 2378 [93.6]	2031 [80.0] 2378 [93.6]

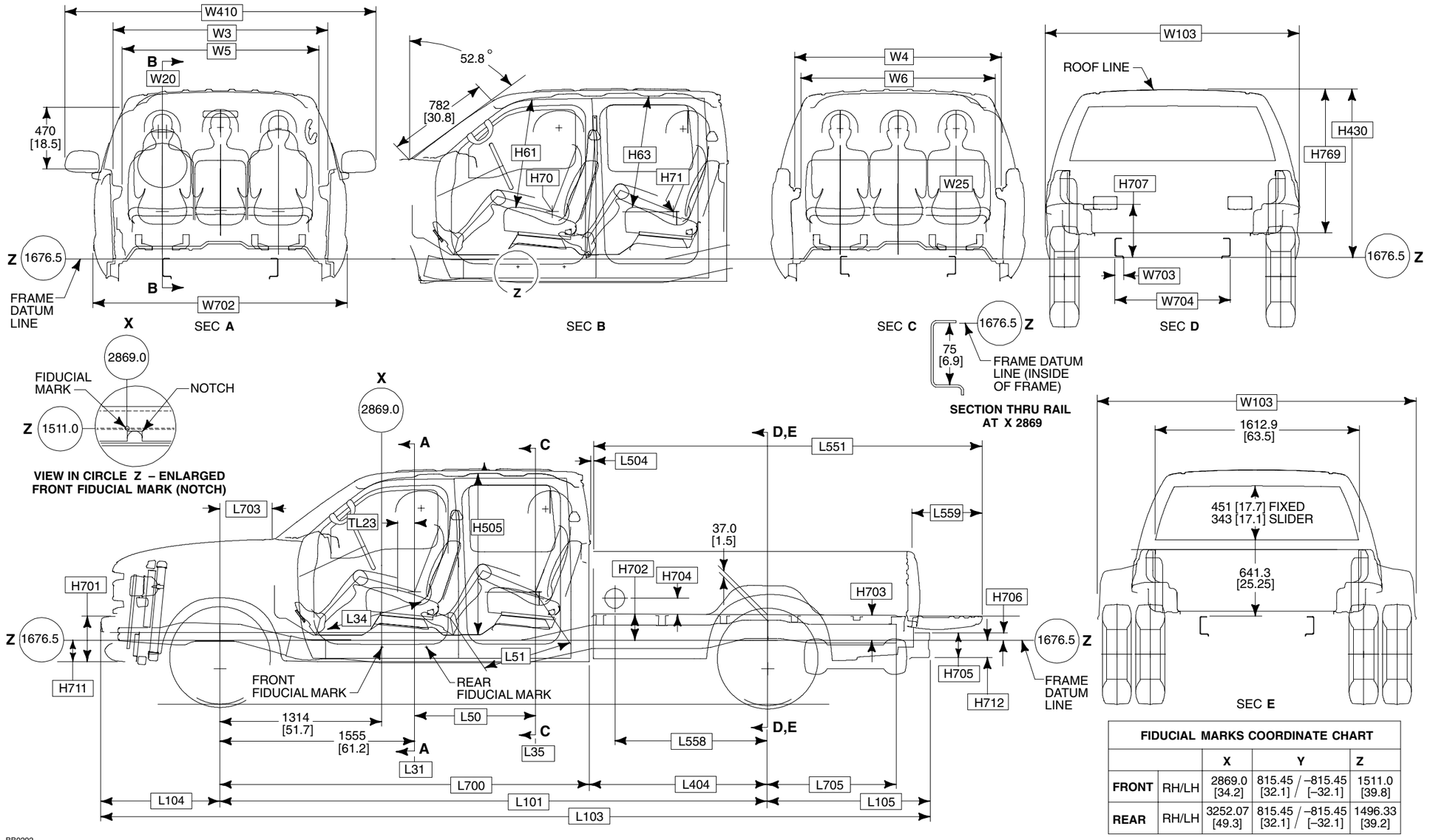
CAB

CODE	DESCRIPTION	4X2/4X4
H61	EFFECTIVE HEAD ROOM — FRONT	1052 [41.4]
H63	EFFECTIVE HEAD ROOM — REAR BENCH SEAT	971 [38.2]
H70	SEATING REFERENCE POINT — SgRP — LH/RH — FRONT (Z)	2064 [81.2]
H71	SEATING REFERENCE POINT — SgRP — LH/RH — REAR BENCH SEAT (Z)	2067 [61.7]
H430	FRAME DATUM TO TOP OF CAB	1357 [53.4]
H505	MAXIMUM CARGO HEIGHT	1057 [41.6]
H701	FRONT BUMPER HEIGHT — W/O VALANCE — W/VALANCE	337[13.3] 361[14.2]
H711	FRAME DATUM TO BOTTOM OF FRONT BUMPER — W/O VALANCE — W/VALANCE	 145 [5.7] 170 [6.7]
TL23	SEAT TRACK TRAVEL H-FORWARD	199 [7.8]
L31	SEAT REFERENCE POINT — SgRP — LH/RH — FRONT (X)	3110 [43.7]
L34	MAXIMUM EFFECTIVE LEG ROOM — FRONT — W/VINYL MAT — W/CARPET	 1034 [40.7] 1036 [40.8]
L35	SEAT REFERENCE POINT — SgRP — LH/RH — REAR BENCH SEAT (X)	3840 [72.4]
L50	H-POINT COUPLE DISTANCE	729 [28.7]
L51	EFFECTIVE LEG ROOM — REAR — FRONT BENCH/REAR BENCH — FRONT CAPTAIN'S CHAIR, REAR BENCH	 822 [32.4] 802 [31.6]
L700	℄ FRONT AXLE TO BACK OF CAB	2583 [101.6]
L703	℄ FRONT AXLE TO COWL POINT	445 [17.5]
V16	REGULAR CARGO VOLUME WITH REAR SEAT CUSHION FOLDED UP — LITERS/CU.FT. REGULAR CARGO VOLUME WITHOUT REAR SEAT — LITERS/CU.FT.	1262/44.5 1501/53.0
W3	SHOULDER ROOM — FRONT — BASE TRIM — HIGH SERIES TRIM	 1728 [68.0] 1701 [67.0]
W4	SHOULDER ROOM — REAR BENCH SEAT — BASE TRIM — HIGH SERIES TRIM	 1728 [68.0] 1728 [68.0]
W5	HIP ROOM — FRONT — BASE TRIM — HIGH SERIES TRIM	1711 [67.4] 1711 [67.4]
W6	HIP ROOM — REAR — BASE TRIM BENCH SEAT	1710 [67.3]
W20	SEATING REFERENCE POINT — SgRP — LH/RH — FRONT (Y)	–464/464 [–18.3/18.3]
W25	SEATING REFERENCE POINT — SgRP — LH/RH — REAR BENCH SEAT (Y)	523 [20.6]
W410	OVERALL CAB WIDTH WITH MIRRORS — MANUAL — ELECTRIC — TRAILER TOW	 2522 [99.3] 2522 [99.3] 2677 [105.4]
W702	FRONT BUMPER WIDTH	2006 [79.0]

NOTE — [ ] DIMENSIONS ARE INCHES.

DIMENSIONAL DATA
SUPER DUTY F-250/350 CREW CAB
STYLESIDE PICKUP – 4X2/4X4

2004
MODEL YEAR



BB0292

FIDUCIAL MARKS COORDINATE CHART				
		X	Y	Z
FRONT	RH/LH	2869.0 [34.2]	815.45 / –815.45 [32.1] / [–32.1]	1511.0 [39.8]
REAR	RH/LH	3252.07 [49.3]	815.45 / –815.45 [32.1] / [–32.1]	1496.33 [39.2]

NOTES — [ ] DIMENSIONS ARE INCHES.
— INTERIOR BOX DIMENSIONS, PAGES 128-129.
— AXLE/TIRE/VEHICLE HEIGHT DATA, PAGES 136-137.
* MEASURED FROM TOP OF FRAME TO BOTTOM OF REAR WINDOW.

DIMENSIONAL DATA
SUPER DUTY F-250/350 CREW CAB
STYLESIDE PICKUP – 4X2/4X4

2004
MODEL YEAR

CHASSIS

CODE	DESCRIPTION	SWB	LWB
L101	WHEELBASE	3966 [156.1]	4476 [176.2]
L103	OVERALL LENGTH — WITH REAR BUMPER	6244 [245.8]	6753 [265.8]
L104	FRONT OVERHANG	953 [37.5]	953 [37.5]
L105	REAR OVERHANG — WITH REAR BUMPER	1325 [52.1]	1325 [52.1]
L404	BACK OF CAB TO ℄ OF REAR AXLE	1013 [39.8]	1430 [56.2]
L705	℄ REAR AXLE TO END OF FRAME	1026 [40.4]	1026 [40.4]
W703	FRAME RAIL WIDTH	72 [2.8]	72 [2.8]
W704	REAR FRAME WIDTH	956 [37.7]	956 [37.7]

PICKUP BODY

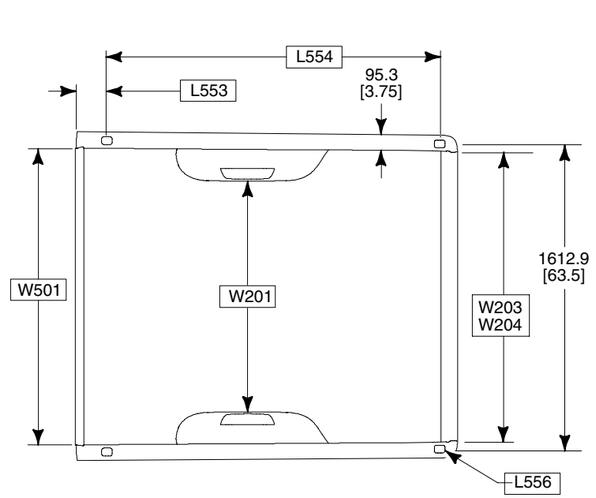
CODE	DESCRIPTION	SWB	LWB
	NOMINAL CARGO BODY SIZE		
H702	FRAME DATUM LINE TO TOP OF CARGO BOX FLOOR — FRONT	211 [8.3]	211 [8.3]
H703	FRAME DATUM LINE TO CARGO BODY FLOOR — REAR	199 [7.8]	199 [7.8]
H704	TOP OF FLOOR TO ℄ OF FUEL FILLER DOOR	126 [5.0]	126 [5.0]
H705	REAR BUMPER HEIGHT	219 [8.6]	219 [8.6]
H706	FRAME DATUM TO TOP OF BUMPER STEP	55 [2.2]	55 [2.2]
H707	FRAME DATUM TO TOP OF WHEELHOUSE	438 [17.2]	438 [17.2]
H712	FRAME DATUM LINE TO BOTTOM OF REAR BUMPER	163 [6.4]	163 [6.4]
H769	TOP OF FLOOR TO TOP OF CAB @ ℄ REAR WHEELS	1164 [45.8]	1164 [45.8]
L504	CAB TO PICKUP BODY	33 [1.3]	33 [1.3]
L551	OVERALL LENGTH TO OPEN TAILGATE	2688 [105.8]	3109 [122.4]
L558	℄ REAR AXLE TO ℄ FUEL FILLER DOOR — SRW	594 [23.3]	1223 [48.2]
	— DRW	667 [26.3]	1223 [48.2]
L559	OPEN TAILGATE	598 [23.5]	598 [23.5]
W103	VEHICLE WIDTH SRW	2031 [80.0]	2031 [80.0]
	DRW	2426 [95.5]	2426 [95.5]

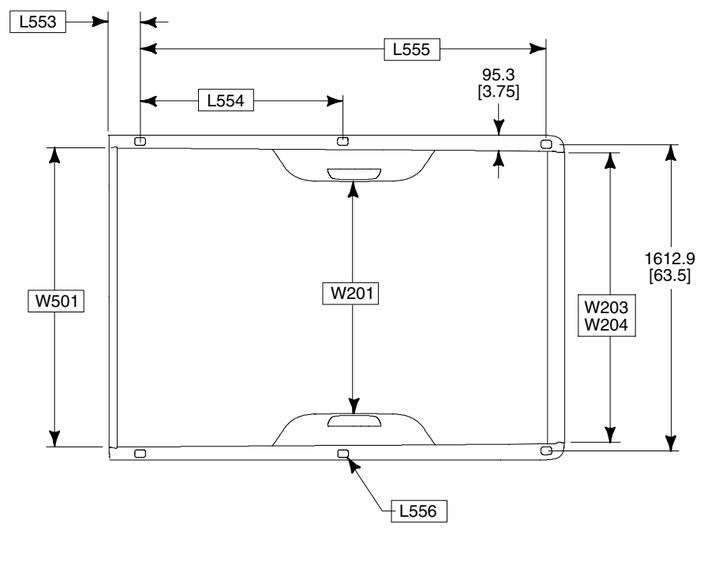
CAB

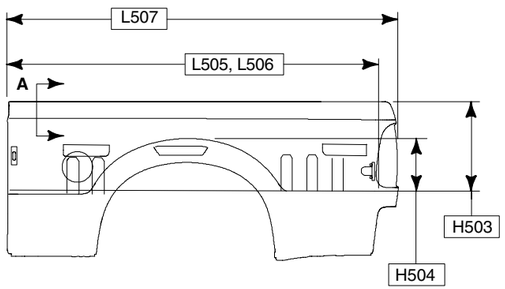
CODE	DESCRIPTION	4X2/4X4
H61	EFFECTIVE HEAD ROOM — FRONT	993 [39.0]
H63	EFFECTIVE HEAD ROOM — REAR BENCH SEAT	1033 [40.6]
H70	SEATING REFERENCE POINT — SgRP — LH/RH — FRONT (Z)	2064 [81.2]
H71	SEATING REFERENCE POINT — SgRP — LH/RH — REAR BENCH SEAT (Z)	2064 [81.2]
H430	FRAME DATUM TO TOP OF CAB	1368 [53.9]
H505	MAXIMUM CARGO HEIGHT	1277 [50.2]
H701	FRONT BUMPER HEIGHT — W/O VALANCE — W/VALANCE	361[14.2] 438[17.2]
H711	FRAME DATUM TO BOTTOM OF FRONT BUMPER — W/O VALANCE — W/VALANCE	 169 [6.6] 250[9.8]
TL23	SEAT TRACK TRAVEL H-FORWARD	199 [7.8]
L31	SEAT REFERENCE POINT — SgRP — LH/RH — FRONT (X)	3110 [43.7]
L34	MAXIMUM EFFECTIVE LEG ROOM — FRONT — W/VINYL MAT — W/CARPET	 1034 [40.7] 1036 [40.8]
L35	SEAT REFERENCE POINT — SgRP — LH/RH — REAR BENCH SEAT (X)	4078 [81.8]
L50	H-POINT COUPLE DISTANCE	968 [38.1]
L51	EFFECTIVE LEG ROOM — REAR — FRONT BENCH/REAR BENCH — FRONT CAPTAIN'S CHAIR, REAR BENCH	 1050 [41.3] 1058 [41.6]
L700	℄ FRONT AXLE TO BACK OF CAB	2951 [116.2]
L703	℄ FRONT AXLE TO COWL POINT	447 [17.6]
W3	SHOULDER ROOM — FRONT — BASE TRIM — HIGH SERIES TRIM	 1728 [68.0] 1701 [67.0]
W4	SHOULDER ROOM — REAR BENCH SEAT — BASE TRIM — HIGH SERIES TRIM	 1726 [68.0] 1700 [66.9]
W5	HIP ROOM — FRONT — BASE TRIM — HIGH SERIES TRIM	1711 [67.4] 1711 [67.4]
W6	HIP ROOM — REAR — BASE TRIM BENCH SEAT	1708 [67.3]
W20	SEATING REFERENCE POINT — SgRP — LH/RH — FRONT (Y)	–464/464 [–18.3/18.3]
W25	SEATING REFERENCE POINT — SgRP — LH/RH — REAR BENCH SEAT (Y)	–464/464 [–18.3/18.3]
W410	OVERALL CAB WIDTH WITH MIRRORS — MANUAL — ELECTRIC — TRAILER TOW	 2522 [99.3] 2522 [99.3] 2677 [105.4]
W702	FRONT BUMPER WIDTH	2006 [79.0]

NOTE — [ ] DIMENSIONS ARE INCHES.

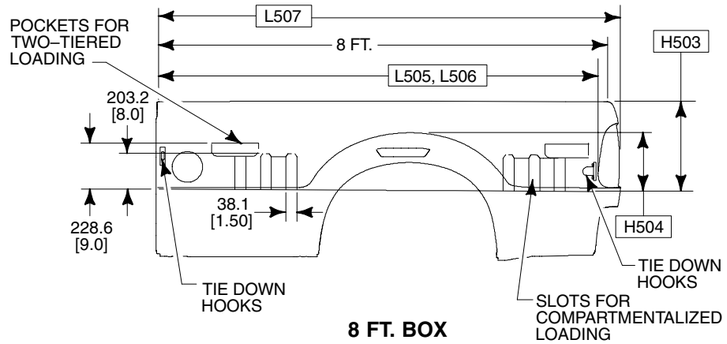
DIMENSIONS AND FEATURES
SUPER DUTY F-250/350
STYLESIDE PICKUP BOX







6–3/4 FT. BOX



8 FT. BOX

BB0439

NOTE — [ ] DIMENSIONS ARE INCHES.

DIMENSIONS AND FEATURES
SUPER DUTY F-250/350
STYLESIDE PICKUP BOX

2004
MODEL YEAR

CODE	DESCRIPTION	LWB	SWB
	NOMINAL CARGO BODY SIZE	8 FT	6¾ FT
H503†	CARGO BODY HEIGHT	507 [20.0]	507 [20.0]
H504	WHEELHOUSE HEIGHT	233 [9.2]	233 [9.2]
L505	CARGO BODY LENGTH @ FLOOR	2504 [98.6]	2092 [82.4]
L506	CARGO BODY LENGTH @ TOP	2464 [97.0]	2052 [80.8]
L507	CARGO BODY OVERALL LENGTH	2609 [102.7]	2197 [86.5]
L553	FRONT OF BOX TO ℄ STAKE #1	137 [5.4]	137 [5.4]
L554	℄ OF STAKE #1 TO STAKE #2	1135 [44.7]	1859 [73.2]

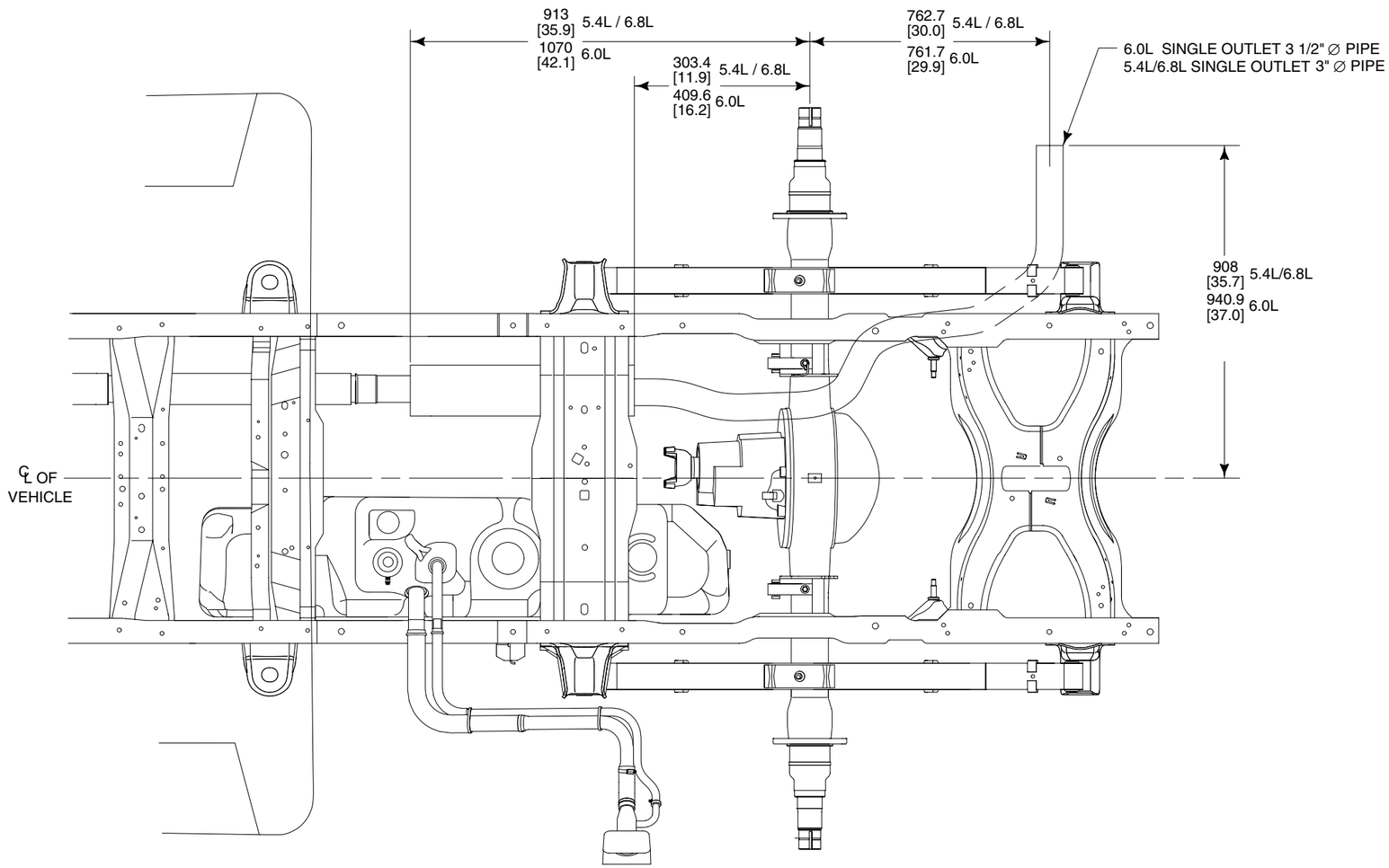
† MEASURED FROM TOP OF FLOOR BEADS

CODE	DESCRIPTION	LWB	SWB
	NOMINAL CARGO BODY SIZE	8 FT	6¾ FT
L555	℄ OF STAKE #1 TO STAKE #3	2270 [89.4]	—
L556	STAKE POCKET SIZE	59 x 44 [2.3] x [1.7]	59 x 44 [2.3] x [1.7]
W201	CARGO WIDTH BETWEEN WHEELHOUSE	1292 [50.9]	1292 [50.9]
W203	REAR OPENING WIDTH AT FLOOR	1540 [60.6]	1540 [60.6]
W204	REAR OPENING WIDTH AT TOP OF BOX OR BELT	1616 [63.6]	1616 [63.6]
W501	INSIDE WIDTH @ TOP OF BOX AT ℄ OF REAR AXLE (CARGO BODY WIDTH @ BELT)	1623 [63.9]	1623 [63.9]
V5#	CARGO VOLUME Liters^3 (Feet^3)	2199 [77.7]	1832 [64.7]

DOES NOT ALLOW FOR WHEELHOUSES

NOTE — [ ] DIMENSIONS ARE INCHES.

PICKUP/BOX DELETE – WIDE FRAME
SUPER DUTY F-SERIES
EXHAUST/FUEL SYSTEMS

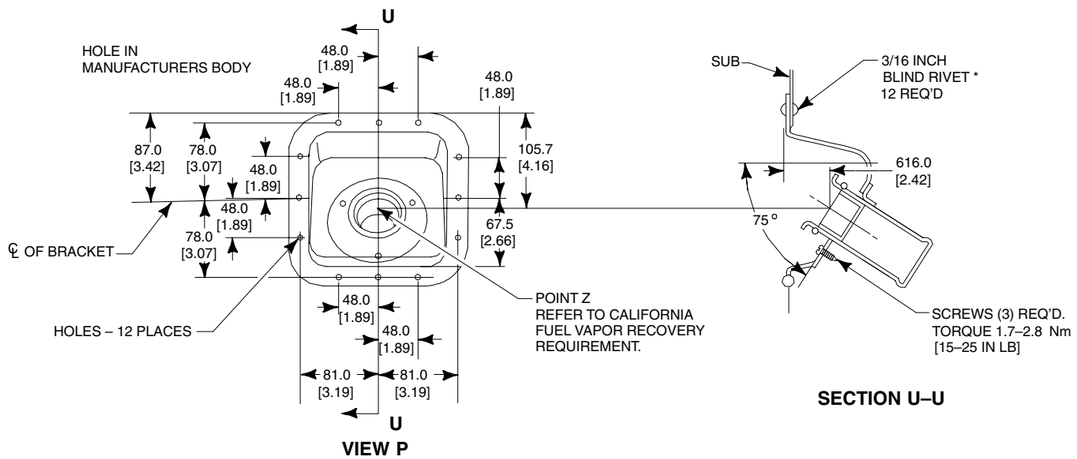


BB0440

NOTE — [ ] DIMENSIONS ARE INCHES.

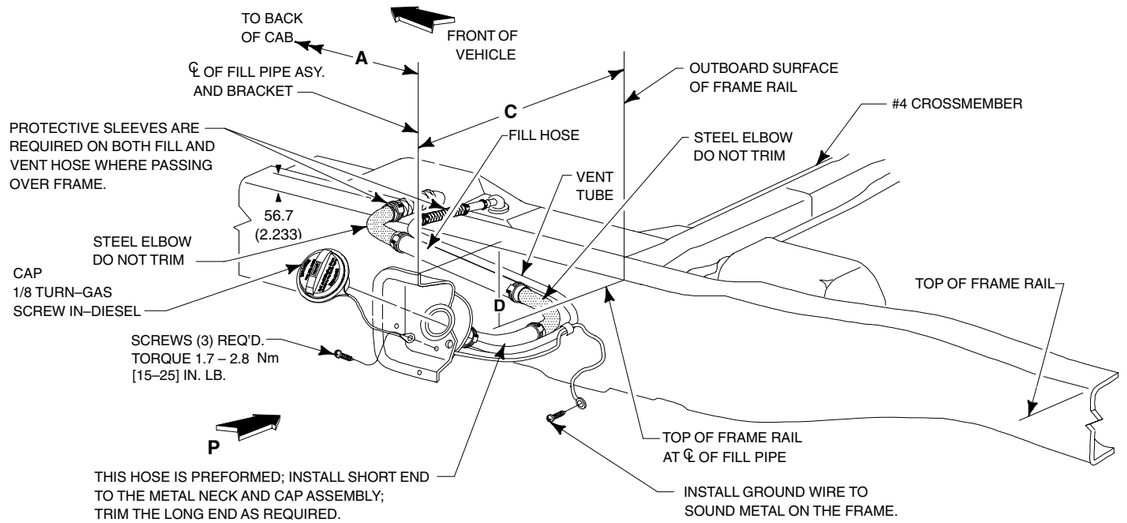
PICKUP/BOX DELETE – WIDE FRAME
SUPER DUTY F-SERIES
FUEL FILLER PIPE LOCATION AND DIMENSIONS

2004
MODEL YEAR



SECTION U–U

(CA) BACK OF CAB TO CENTERLINE OF REAR AXLE			
		40 IN. CA	**56 IN. CA**
		WHEELBASE	**WHEELBASE**
	Regular Cab **SuperCab** **Crew Cab**	not available 3602mm [141.8] 3967mm [156.2]	3480mm [137.0] 4013mm [158.0] 4380mm [172.4]
∇ **A**	**MIN.**	404mm [15.9]	620mm [24.4]
	MAX.	716mm [28.2]	932mm [36.7]
∇ **C**	**MIN.**	540mm [21.25]	540mm [21.25]
	MAX.	743mm [29.25]	743mm [29.25]
∇ **D**	**MIN.**	267mm [10.5]	267mm [10.5]
	MAX.	343mm [13.5]	343mm [13.5]



BB0435

NOTES — [ ] DIMENSIONS ARE INCHES.

TORQUE ALL WORM GEAR DRIVEN HOSE CLAMPS TO 2.8 - 3.9 NM 25-35 IN-LB

* NOT SUPPLIED BY FORD MOTOR COMPANY

∇ CRITICAL CONTROL ITEM

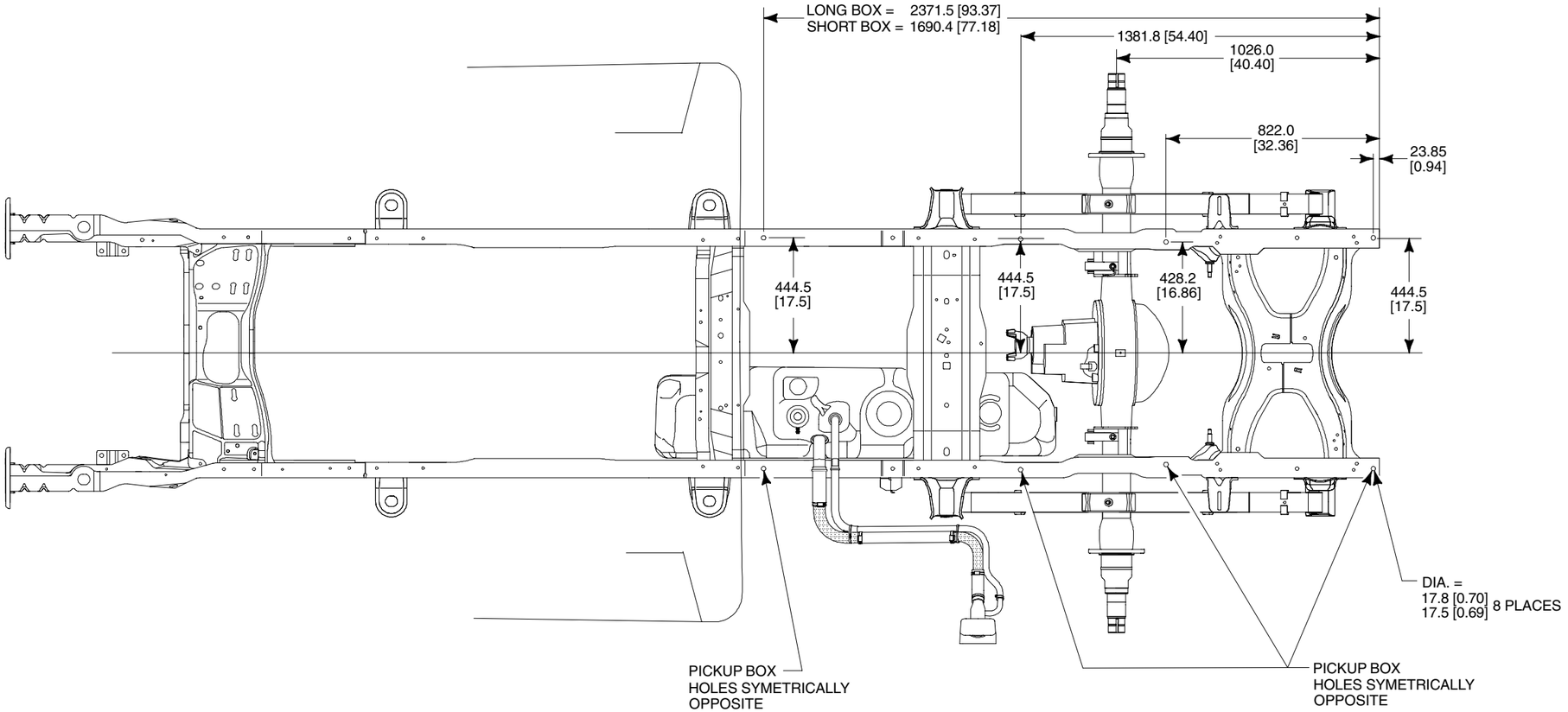
REMOVE AND DISCARD THE FORD INSTALLED FUEL FILL SYSTEM COMPONENTS (PROVIDED FOR SHIPPING PURPOSES ONLY) EXCEPT SAVE AND REUSE THE METAL NECK AND CAP ASSEMBLY.

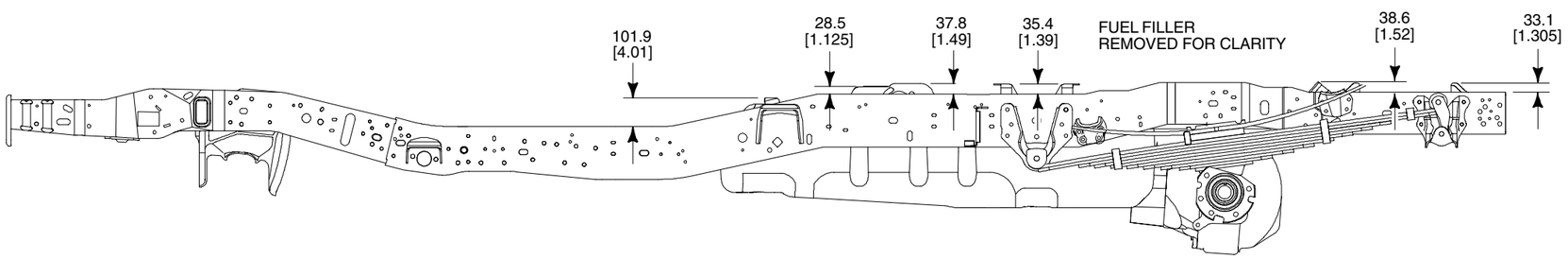
USE THE NEW HOSES, PIPES, SCUFF GUARDS, TIE WRAPS AND CLAMPS PROVIDED IN THE DUNNAGE KIT.

THE COMPLETED FUEL FILL SYSTEM MUST PROVIDE A 4 DEGREE MINIMUM, CONTINOUS, DOWNWARD SLOPE TO THE FUEL TANK. ADDITIONAL SUPPORT MAY BE REQUIRED TO PREVENT HOSE SAGGING WHICH COULD CAUSE SPRAY OR SPITBACK DURING NORMAL FUELING OPERATIONS.

DO NOT EXTEND THE FUEL FILL SYSTEM OUTBOARD OF THE SECOND UNIT BODY.

FRAME DATA
SUPER DUTY F-250/350
STYLESIDE PICKUP – WIDE FRAME

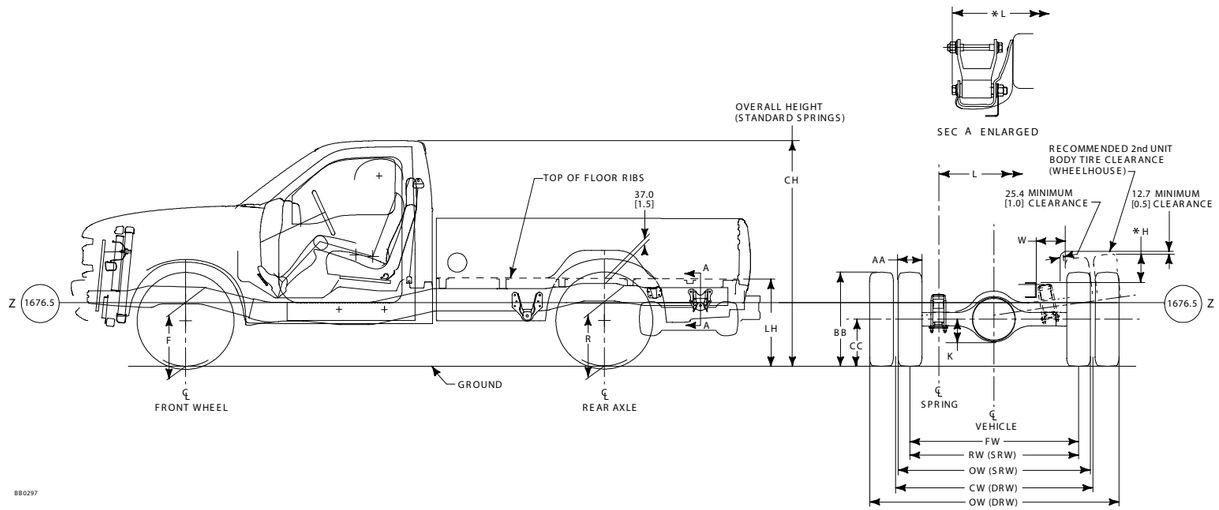




BB0438

NOTES — [ ] DIMENSIONS ARE INCHES.
— REAR PICKUP BOX MOUNTING HOLES ARE COMMON TO ALL CAB TYPES — REGULAR, SUPERCAB AND CREW CAB.

AXLE/TIRE/VEHICLE HEIGHT DATA
SUPER DUTY F-250/350 REGULAR CAB
STYLESIDE PICKUP – 4X2/4X4



MODEL	WB	GVWR	BASE TIRE	F HEIGHT AT FRONT WHEEL (5)		R HEIGHT AT REAR AXLE (5)		LH(5)(6)		CH(5)		K	L	*L	AA(7)	BB(8)	CC(8)	FW	RW	OW	CW	*H	*W
				CURB(3)	LOADED(4)	CURB(3)	LOADED(4)	EMPTY	LOADED	EMPTY	LOADED												
Super Duty F-250 Regular Cab 4x2	3480 [137.0]	8800	LT235/85R16E	527 [20.7]	515 [20.3]	633 [24.9]	505 [19.9]	863 [34.0]	697 [27.4]	1935 [76.2]	1864 [73.4]	165 [6.5]	1143 [45.0]	1271 [50.0]	259 [10.2]	792 [31.2]	375 [14.8]	1736 [68.3]	1729 [68.1]	1983 [78.1]	—	233 [9.2]	254 [10.0]
Super Duty F-250 Regular Cab 4x4	3480 [137.0]	8800	LT235/85R16E	626 [24.7]	604 [23.8]	684 [26.9]	558 [22.0]	895 [35.2]	738 [29.0]	2005 [78.9]	1931 [76.0]	165 [6.5]	1143 [45.0]	1271 [50.0]	259 [10.2]	792 [31.2]	375 [14.8]	1736 [68.3]	1729 [68.1]	1983 [78.1]	—	141 [5.6]	262 [10.3]
Super Duty F-350 Regular Cab 4x2	3480 [137.0]	9900(1)	LT265/75R16E	526 [20.7]	515 [20.3]	633 [24.9]	505 [19.9]	863 [34.0]	697 [27.4]	1938 [76.3]	1860 [73.2]	165 [6.5]	1143 [45.0]	1271 [50.0]	278 [10.9]	781 [30.7]	371 [14.6]	1736 [68.3]	1729 [68.1]	2007 [79.0]	—	219 [8.6]	245 [9.6]
		11,200(2) DRW	LT235/85R16E	520 [20.5]	504 [19.9]	635 [25.0]	494 [19.5]	867 [34.2]	686 [27.0]	1961 [77.2]	1860 [73.2]	177 [7.0]	1143 [45.0]	1271 [50.0]	259 [10.2]	792 [31.2]	375 [14.8]	1736 [68.3]	—	2380 [93.7]	1880 [74.0]	222 [8.7]	202 [8.0]
Super Duty F-350 Regular Cab 4x4	3480 [137.0]	9900(1)	LT265/75R16E	626 [24.7]	604 [23.8]	731 [28.8]	604 [23.8]	960 [37.8]	797 [31.4]	2041 [80.3]	1958 [77.1]	165 [6.5]	1143 [45.0]	1271 [50.0]	278 [10.9]	781 [30.7]	371 [14.6]	1736 [68.3]	1729 [68.1]	2007 [79.0]	—	128 [5.0]	253 [10.0]
		11,200(2) DRW	LT235/85R16E	628 [24.7]	607 [23.9]	699 [27.5]	561 [22.1]	913 [35.9]	740 [29.1]	2018 [79.4]	1956 [77.0]	177 [7.0]	1143 [45.0]	1271 [50.0]	259 [10.2]	792 [31.2]	375 [14.8]	1736 [68.3]	—	2405 [94.7]	1880 [74.0]	160 [6.3]	202 [8.0]

DRW — Dual Rear Wheels

(1) — 9700 lb California

(2) — 11,000 lb California

(3) — Height at base curb weight with standard springs

(4) — Loaded height at spring rating with standard springs

(5) — The Height Data shown represents dimensions of a base/standard vehicle with no options. Actural height may vary due to production tolerances [completed vehicles only].

(6) — Distance from Pickup Box Floor to Frame Datum Line is 211 [8.3] at front, 199 [7.8] at rear.

(7) — AA is measured at 80 psi for all season tire.

(8) — BB/CC are measured at design at 60 psi.

— Static load rating of design and curb weight are taken at 60 psi.

@ — The top of the spring seat is below datum line.

*H — Top of frame at ℄ of rear axle to top of tire in jounce

*L — From outside edge of shackle eyebolt

*W — From frame to top of tire in jounce

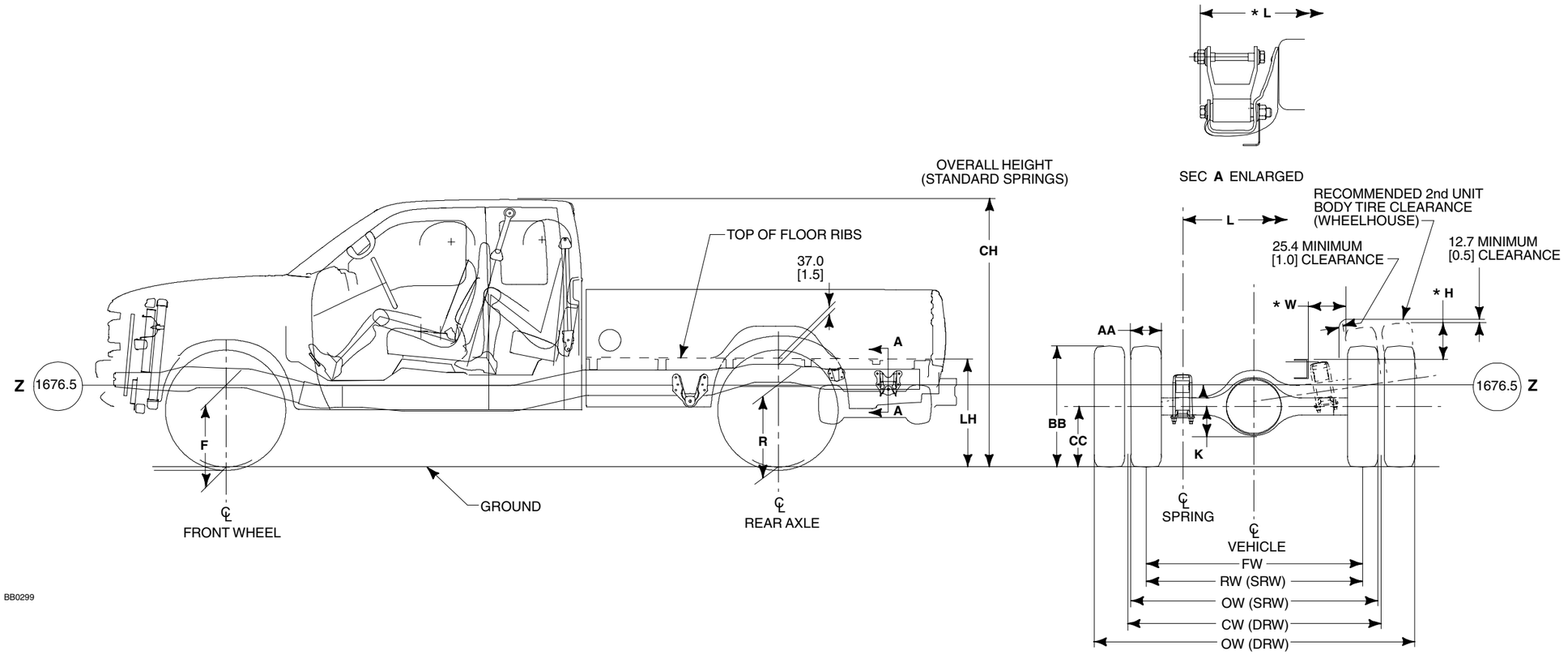
NOTES — [ ] DIMENSIONS ARE INCHES.

— **F** AND **R** VEHICLE HEIGHT DIMENSIONS ARE FROM GROUND TO INSIDE TOP OF FRAME.

— **LH** IS FROM GROUND TO TOP OF FLOOR RIBS.

AXLE/TIRE/VEHICLE HEIGHT DATA
SUPER DUTY F-250/350 SUPERCAB
STYLESIDE PICKUP – 4X2/4X4

2004
MODEL YEAR



BB0299

NOTES — [ ] DIMENSIONS ARE INCHES.

— **F** AND **R** VEHICLE HEIGHT DIMENSIONS ARE FROM GROUND TO INSIDE TOP OF FRAME; **LH** IS FROM GROUND TO TOP OF FLOOR RIBS.

— ***H** IS TOP OF FRAME AT ℄ OF REAR AXLE TO TOP OF TIRE IN JOUNCE.

— ***L** IS FROM OUTSIDE EDGE OF SHACKLE EYEBOLT

— ***W** IS FROM FRAME TO TOP OF TIRE IN JOUNCE.

AXLE/TIRE/VEHICLE HEIGHT DATA
SUPER DUTY F-250/350 SUPERCAB
STYLESIDE PICKUP – 4X2/4X4

MODEL	WB	GVWR	BASE TIRE	F HEIGHT AT FRONT WHEEL (5)		R HEIGHT AT REAR AXLE (5)		LH(5)(6)		CH(5)		K	L	* L	AA(7)	BB(8)	CC(8)	FW	RW	OW	CW	* H	* W
				CURB(3)	LOADED(4)	CURB(3)	LOADED(4)	EMPTY	LOADED	EMPTY	LOADED												
Super Duty F-250 SuperCab 4x2	3602 [141.8]	8800	LT235/85R16E	526 [20.7]	515 [20.3]	632 [24.9]	505 [19.9]	861 [33.9]	698 [27.5]	1943 [76.5]	1869 [73.6]	165 [6.5]	1143 [45.0]	1271 [50.0]	259 [10.2]	792 [31.2]	375 [14.8]	1736 [68.3]	1729 [68.1]	1983 [78.1]	—	233 [9.2]	254 [10.0]
	4014 [158.0]			526 [20.7]	515 [20.3]	628 [24.7]	505 [19.9]	852 [33.6]	698 [27.5]	1943 [76.5]	1870 [73.6]												
Super Duty F-250 SuperCab 4x4	3602 [141.8]	8800	LT235/85R16E	624 [24.6]	604 [23.8]	683 [26.9]	558 [22.0]	894 [35.1]	737 [29.0]	2008 [79.0]	1935 [76.2]	165 [6.5]	1143 [45.0]	1271 [50.0]	259 [10.2]	792 [31.2]	375 [14.8]	1736 [68.3]	1729 [68.1]	1983 [78.1]	—	141 [5.6]	262 [10.3]
	4014 [158.0]			621 [24.4]	604 [23.8]	679 [26.7]	558 [22.0]	887 [34.9]	738 [29.0]	2008 [79.0]	1938 [76.3]												
Super Duty F-350 SuperCab 4x2	3602 [141.8]	9900(1)	LT265/75R16E	525 [20.7]	515 [20.3]	632 [24.9]	505 [19.9]	861 [33.9]	698 [27.5]	1952 [76.8]	1865 [73.4]	165 [6.5]	1143 [45.0]	1271 [50.0]	278 [10.9]	781 [30.7]	371 [14.6]	1736 [68.3]	1745 [68.7]	2007 [79.0]	—	219 [8.6]	245 [9.6]
	4014 [158.0]	9900(1)	LT265/75R16E	526 [20.7]	515 [20.3]	627 [24.7]	505 19.9]	852 [33.5]	698 [27.5]	1963 [77.3]	1870 [73.6]	165 [6.5]	1143 [45.0]	1271 [50.0]	278 [10.9]	781 [30.7]	371 [14.6]	1736 [68.3]	1745 [68.7]	2007 [79.0]	—	219 [8.6]	245 [9.6]
		11,200(2) DRW	LT235/85R16E	518 [20.4]	504 [19.9]	633 [24.9]	494 [19.5]	860 [33.9]	687 [27.0]	1939 [76.3]	1850 [72.8]	177 [7.0]	1143 [45.0]	1271 [50.0]	259 [10.2]	792 [31.2]	375 [14.8]	1736 [68.3]	—	2380 [93.7]	1880 [74.0]	222 [8.7]	202 [8.0]
Super Duty F-350 SuperCab 4x4	3602 [141.8]	9900(1)	LT265/75R16E	625 [24.6]	604 [23.8]	730 [28.7]	604 [23.8]	959 [37.7]	798 [31.4]	2051 [80.7]	1964 [77.3]	165 [6.5]	1143 [45.0]	1271 [50.0]	278 [10.9]	781 [30.7]	371 [14.6]	1736 [68.3]	1729 [68.1]	2007 [79.0]	—	128 [5.0]	253 [10.0]
	4014 [158.0]	9900(1)	LT265/75R16E	621 [24.4]	604 [23.8]	725 [28.6]	604 [23.8]	946 [37.2]	796 [31.3]	2039 [80.3]	1960 [77.2]	165 [6.5]	1143 [45.0]	1271 [50.0]	278 [10.9]	781 [30.7]	371 [14.6]	1736 [68.3]	1729 [68.1]	2007 [79.0]	—	128 [5.0]	253 [10.0]
		11,200(2) DRW	LT235/85R16E	623 [24.5]	607 [23.9]	698 [27.4]	561 [22.1]	909 [35.8]	741 [29.2]	2019 [79.5]	1959 [77.1]	177 [7.0]	1143 [45.0]	1271 [50.0]	259 [10.2]	792 [31.2]	375 [14.8]	1736 [68.3]	—	2405 [94.7]	1880 [74.0]	160 [6.3]	202 [8.0]

DRW — Dual Rear Wheels

(1) — 9700 lb California

(2) — 11,000 lb California

(3) — Height at base curb weight with standard springs

(4) — Loaded height at spring rating with standard springs

(5) — The Height Data shown represents dimensions of a base/standard vehicle with no options. Actural height may vary due to production tolerances [completed vehicles only].

(6) — Distance from Pickup Box Floor to Frame Datum Line is 211 [8.3] at front, 199 [7.8] at rear.

(7) — AA is measured at 80 psi for all season tire.

(8) — BB/CC are measured at design at 60 psi.

— Static load rating of design and curb weight are taken at 60 psi.

@ — The top of the spring seat is below datum line.

*H — Top of frame at ℄ of rear axle to top of tire in jounce

*L — From outside edge of shackle eyebolt

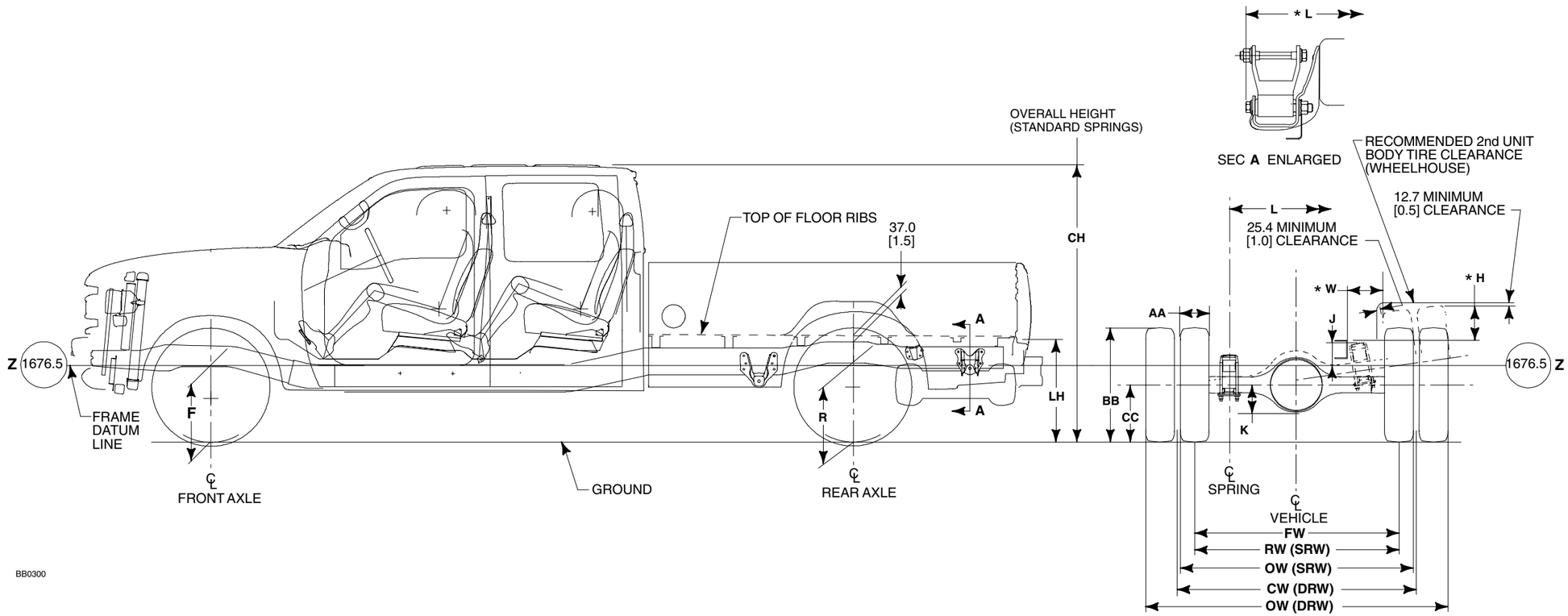
*W — From frame to top of tire in jounce

NOTES — [ ] DIMENSIONS ARE INCHES.

— **F** AND **R** VEHICLE HEIGHT DIMENSIONS ARE FROM GROUND TO INSIDE TOP OF FRAME.

— **LH** IS FROM GROUND TO TOP OF FLOOR RIBS.

AXLE/TIRE/VEHICLE HEIGHT DATA
SUPER DUTY F-250/350 CREW CAB
STYLESIDE PICKUP – 4X2/4X4



BB0300

NOTES — [ ] DIMENSIONS ARE INCHES.

— **F** AND **R** VEHICLE HEIGHT DIMENSIONS ARE FROM GROUND TO TOP OF FRAME; **LH** IS FROM GROUND TO TOP OF FLOOR RIBS.

— ***H** IS TOP OF FRAME AT ℄ OF REAR AXLE TO TOP OF TIRE IN JOUNCE.

— ***L** IS FROM OUTSIDE EDGE OF SHACKLE EYEBOLT

— ***W** IS FROM FRAME TO TOP OF TIRE IN JOUNCE.

AXLE/TIRE/VEHICLE HEIGHT DATA
SUPER DUTY F-250/350 CREW CAB
STYLESIDE PICKUP – 4X2/4X4

MODEL	WB	GVWR	BASE TIRE	F HEIGHT AT FRONT WHEEL (5)		R HEIGHT AT REAR AXLE (5)		LH(5)(6)		CH(5)		K	L	* L	AA(7)	BB(8)	CC(8)	FW	RW	OW	CW	* H	* W
				CURB(3)	LOADED(4)	CURB(3)	LOADED(4)	EMPTY	LOADED	EMPTY	LOADED												
Super Duty F-250 Crew Cab 4x2	3967 [156.2]	8800	LT235/85R16E	533 [21.0]	515 [20.3]	624 [24.6]	505 [19.9]	847 [33.3]	696 [27.4]	1960 [77.2]	1883 [74.1]	165 [6.5]	1143 [45.0]	1271 [50.0]	259 [10.2]	792 [31.2]	375 [14.8]	1736 [68.3]	1729 [68.1]	1983 [78.1]	—	233 [9.2]	254 [10.0]
	4379 [172.4]			530 [20.9]	515 [20.3]	622 [24.5]	505 [19.9]	842 [33.2]	698 [27.5]	1957 [77.0]	1884 [74.2]												
Super Duty F-250 Crew Cab 4x4	3967 [156.2]	8800	LT235/85R16E	632 [24.9]	604 [23.8]	722 [28.4]	558 [22.0]	880 [34.6]	738 [29.0]	2027 [79.8]	1950 [76.8]	165 [6.5]	1143 [45.0]	1271 [50.0]	259 [10.2]	792 [31.2]	375 [14.8]	1736 [68.3]	1729 [68.1]	1983 [78.1]	—	141 [5.6]	262 [10.3]
	4379 [172.4]			628 [24.7]	604 [23.8]	675 [26.5]	558 [22.0]	878 [34.6]	739 [29.1]	2022 [79.6]	1952 [76.8]												
Super Duty F-350 Crew Cab 4x2	3967 [156.2]	9900(1)	LT265/75R16E	532 [20.9]	515 [20.3]	624 [24.6]	505 [19.9]	847 [33.3]	697 [27.4]	1955 [77.0]	1879 [74.0]	165 [6.5]	1143 [45.0]	1271 [50.0]	278 [10.9]	781 [30.7]	371 [14.6]	1736 [68.3]	1729 [68.1]	2007 [79.0]	—	219 [8.6]	245 [9.6]
		11,200(2) DRW	LT235/85R16E	520 [20.5]	504 [19.9]	629 [24.8]	494 [19.5]	856 [33.7]	687 [27.0]	1983 [78.1]	1883 [74.1]	177 [7.0]	1143 [45.0]	1271 [50.0]	229 [9.0]	748 [29.4]	355 [14.0]	1736 [68.3]	—	2380 [93.7]	1880 [74.0]	222 [8.7]	202 [8.0]
	4379 [172.4]	9900(1)	LT265/75R16E	529 [20.8]	515 [20.3]	622 [24.5]	505 19.9]	842 [33.1]	698 [27.5]	1964 [77.3]	1880 [74.0]	165 [6.5]	1143 [45.0]	1271 [50.0]	278 [10.9]	781 [30.7]	371 [14.6]	1736 [68.3]	1729 [68.1]	2007 [79.0]	—	219 [8.6]	245 [9.6]
		11,200(2) DRW	LT235/85R16E	524 [20.6]	504 [19.9]	627 [24.7]	494 [19.5]	850 [3359]	686 [27.0]	1976 [77.8]	1884 [74.2]	177 [7.0]	1143 [45.0]	1271 [50.0]	229 [9.0]	748 [29.4]	355 [14.0]	1736 [68.3]	—	2380 [93.7]	1880 [74.0]	222 [8.7]	202 [8.0]
Super Duty F-350 Crew Cab 4x4	3967 [156.2]	9900(1)	LT265/75R16E	632 [24.9]	604 [23.8]	694 [27.3]	561 [22.0]	912 [35.9]	745 [29.3]	1958 [77.1]	1878 [73.9]	165 [6.5]	1143 [45.0]	1271 [50.0]	278 [10.9]	781 [30.7]	371 [14.6]	1736 [68.3]	1729 [68.1]	2007 [79.0]	—	128 [5.0]	253 [10.0]
		11,200(2) DRW	LT235/85R16E	622 [24.2]	607 [23.9]	694 [27.3]	561 [22.0]	906 [35.7]	741 [29.2]	2033 [80.0]	1955 [77.0]	177 [7.0]	1143 [45.0]	1271 [50.0]	259 [10.2]	792 [31.2]	375 [14.8]	1736 [68.3]	—	2405 [94.7]	1880 [74.0]	160 [6.3]	202 [8.0]
	4379 [172.4]	9900(1)	LT265/75R16E	628 [24.7]	604 [23.8]	720 [28.4]	604 [23.8]	941 [37.0]	798 [31.4]	1957 [77.0]	1879 [74.0]	165 [6.5]	1143 [45.0]	1271 [50.0]	278 [10.9]	781 [30.7]	371 [14.6]	1736 [68.3]	1729 [68.1]	2007 [79.0]	—	128 [5.0]	253 [10.0]
		11,200(2) DRW	LT235/85R16E	629 [24.5]	607 [23.9]	690 [27.1]	561 [22.0]	897 [35.3]	762 [30.0]	2031 [80.0]	1955 [77.0]	177 [7.0]	1143 [45.0]	1271 [50.0]	259 [10.2]	792 [31.2]	375 [14.8]	1736 [68.3]	—	2405 [94.7]	1880 [74.0]	160 [6.3]	202 [8.0]

DRW — Dual Rear Wheels

(1) — 9700 lb California

(2) — 11,000 lb California

(3) — Height at base curb weight with standard springs

(4) — Loaded height at spring rating with standard springs

(5) — The Height Data shown represents dimensions of a base/standard vehicle with no options. Actural height may vary due to production tolerances [completed vehicles only].

(6) — Distance from Pickup Box Floor to Frame Datum Line is 211 [8.3] at front, 199 [7.8] at rear.

(7) — AA is measured at 80 psi for all season tire.

(8) — BB/CC are measured at design at 60 psi.

— Static load rating of design and curb weight are taken at 60 psi.

@ — The top of the spring seat is below datum line.

*H — Top of frame at ℄ of rear axle to top of tire in jounce

*L — From outside edge of shackle eyebolt

*W — From frame to top of tire in jounce

NOTES — [ ] DIMENSIONS ARE INCHES.

— **F** AND **R** VEHICLE HEIGHT DIMENSIONS ARE FROM GROUND TO INSIDE TOP OF FRAME.

— **LH** IS FROM GROUND TO TOP OF FLOOR RIBS.

SUPER DUTY F-350/450/550 CHASSIS CAB MODEL LINEUP

2004 MODEL YEAR

SUPER DUTY F-SERIES MODEL	BODY CODE	WHEELBASE inches	CA inches	STANDARD ENGINE(1) liters	STANDARD TRANSMISSION(1)	MIN-MAX GVWR pounds	TRANSFER CASE	MAXIMUM PAYLOAD(2) pounds	BASE CURB WEIGHT(3)		
									FRONT pounds	REAR pounds	TOTAL pounds
REGULAR CHASSIS CAB											
F-350 4x2 SRW	F34	140.8	60	5.4L V-8	6-Spd. Manual OD	9900/9700(4)	—	4830/4670(4)	3008/2976(4)	2061/2062(4)	5069/5029(4)
F-350 4x4 SRW	F35	140.8	60	5.4L V-8	6-Spd. Manual OD	9900/9700(4)	NV271	4395/4230(4)	3385/3350(4)	2119/2120(4)	5504/5470(4)
F-350 4x2 DRW	F36	140.8	60	6.8L V-10	6-Spd. Manual OD	11,200/11,000(4) ♦	—	5695/5535(4)	3167/3141(4)	2338/2322(4)	5505/5436(4)
		164.8	84	6.8L V-10	6-Spd. Manual OD	11,200/11,000(4) ♦	—	5590/5415(4)	3288/3270(4)	2379/2371(4)	5607/5581(4)
F-350 4x4 DRW	F37	140.8	60	6.8L V-10	6-Spd. Manual OD	11,200/11,000(4) ♦	NV271	5215/5050(4)	3559/3532(4)	2424/2416(4)	5983/5948(4)
		164.8	84	6.8L V-10	6-Spd. Manual OD	11,200/11,000(4) ♦	NV271	5085/4920(4)	3696/3670(4)	2417/2408(4)	6113/6078(4)
F-450 4x2 DRW	F46	140.8	60	6.8L V-10	6-Spd. Manual OD	15,000	—	8755	3453	2792	6245
		164.8	84	6.8L V-10	6-Spd. Manual OD	15,000	—	8650	3569	2778	6347
		188.8	108	6.8L V-10	6-Spd. Manual OD	15,000	—	8575	3612	2813	6425
		200.8	120	6.8L V-10	6-Spd. Manual OD	15,000	—	8350	3777	2872	6649
F-450 4x4 DRW	F47	140.8	60	6.8L V-10	6-Spd. Manual OD	15,000	NV271	8445	3705	2850	6555
		164.8	84	6.8L V-10	6-Spd. Manual OD	15,000	NV271	8335	3842	2821	6663
		188.8	108	6.8L V-10	6-Spd. Manual OD	15,000	NV271	8245	3897	2857	6754
		200.8	120	6.8L V-10	6-Spd. Manual OD	15,000	NV271	8035	4056	2905	6961
F-550 4x2 DRW	F56	140.8	60	6.8L V-10	4-Spd. Auto OD	17,500	—	11,200	3418	2879	6297
		164.8	84	6.8L V-10	4-Spd. Auto OD	17,500/19,000	—	11,100/12,535	3537/3582	2863/2883	6400/6465
		188.8	108	6.8L V-10	4-Spd. Auto OD	17,500	—	11,020	3583	2895	6478
		200.8	120	6.8L V-10	4-Spd. Auto OD	17,500/19,000	—	10,800/12,260	3741/3771	2958/2968	6699/6739
F-550 4x4 DRW	F57	140.8	60	6.8L V-10	4-Spd. Auto OD	17,500	NV271	10,875	3688	2935	6623
		164.8	84	6.8L V-10	4-Spd. Auto OD	17,500	NV271	10,760	3819	2918	6737
		188.8	108	6.8L V-10	4-Spd. Auto OD	17,500	NV271	10,675	3877	2948	6825
		200.8	120	6.8L V-10	4-Spd. Auto OD	17,500	NV271	10,465	4031	3001	7032
SUPER CHASSIS CAB											
F-350 4x2 SRW	X34	161.8	60	5.4L V-8	6-Spd. Manual OD	9900/9700(4)	—	4465/4285(4)	3221/3200(4)	2211/2208(4)	5432/5408(4)
F-350 4x4 SRW	X35	161.8	60	5.4L V-8	6-Spd. Manual OD	9900/9700(4)	NV271	4030/3865(4)	3614/3582(4)	2253/2248(4)	5867/5830(4)
F-350 4x2 DRW	X36	161.8	60	6.8L V-10	6-Spd. Manual OD	11,200/11,000(4) ♦	—	5340/5165(4)	3373/3355(4)	2487/2480(4)	5860/5835(4)
F-350 4x4 DRW	X37	161.8	60	6.8L V-10	6-Spd. Manual OD	11,200/11,000(4) ♦	NV271	4840/4675(4)	3787/3761(4)	2570/2561(4)	6357/6322(4)
F-450 4x2 DRW	X46	161.8	60	6.8L V-10	6-Spd. Manual OD	15,000	—	8385	3668	2945	6613
F-450 4x4 DRW	X47	161.8	60	6.8L V-10	6-Spd. Manual OD	15,000	NV271	8075	3940	2985	6925
F-550 4x2 DRW	X56	161.8	60	6.8L V-10	4-Spd. Auto OD	17,500	—	10,830	3639	3027	6666
F-550 4x4 DRW	X57	161.8	60	6.8L V-10	4-Spd. Auto OD	17,500	NV271	10,500	3915	3084	6999

(1) Engine/transmission combinations may not be available on all models, or in all areas.
(2) Includes weight of driver, passengers and optional equipment.
(3) Base curb weight is for standard equipment only.
(4) California only.

NOTE: ♦ — SEE CHART ON FOLLOWING PAGE FOR 6.0L V-8 DIESEL ENGINE WEIGHT RATINGS.

SUPER DUTY F-350/450/550 CHASSIS CAB MODEL LINEUP

2004 MODEL YEAR

SUPER DUTY F-SERIES MODEL	BODY CODE	WHEELBASE inches	CA inches	ENGINE[1] liters	STANDARD TRANSMISSION[1]	MIN-MAX GVWR pounds	TRANSFER CASE	MAXIMUM PAYLOAD[2] pounds	CURB WEIGHT[3] FRONT pounds	CURB WEIGHT[3] REAR pounds	CURB WEIGHT[3] TOTAL pounds
CREW CHASSIS CAB											
F-350 4x2 SRW	W34	176.2	60	5.4L V-8	6-Spd. Manual OD	9900/9700[4]	—	4265/4085[4]	3356/3335[4]	2276/2273[4]	5632/5608[4]
F-350 4x4 SRW	W35	176.2	60	5.4L V-8	6-Spd. Manual OD	9900/9700[4]	NV271	3815/3650[4]	3748/3716[4]	2333/2328[4]	6081/6044[4]
F-350 4x2 DRW	W36	176.2	60	6.8L V-10	6-Spd. Manual OD	11,200/11,000[4] ♦	—	5140/4965[4]	3509/3492[4]	2551/2543[4]	6060/6035[4]
F-350 4x4 DRW	W37	176.2	60	6.8L V-10	6-Spd. Manual OD	11,200/11,000[4] ♦	NV271	4625/4460[4]	3921/3896[4]	2650/2640[4]	6571/6536[4]
F-450 4x2 DRW	W46	176.2	60	6.8L V-10	6-Spd. Manual OD	15,000	—	8170	3810	3019	6829
F-450 4x2 DRW	W46	200.2	84	6.8L V-10	6-Spd. Manual OD	15,000	—	8070	3934	2996	6930
F-450 4x4 DRW	W47	176.2	60	6.8L V-10	6-Spd. Manual OD	15,000	NV271	7855	4074	3067	7141
F-450 4x4 DRW	W47	200.2	84	6.8L V-10	6-Spd. Manual OD	15,000	NV271	7755	4210	3032	7242
F-550 4x2 DRW	W56	176.2	60	6.8L V-10	4-Spd. Auto OD	17,500	—	10,615	3777	3108	6885
F-550 4x2 DRW	W56	200.2	84	6.8L V-10	4-Spd. Auto OD	17,500	—	10,510	3904	3082	6986
F-550 4x4 DRW	W57	176.2	60	6.8L V-10	4-Spd. Auto OD	17,500	NV271	10,285	4048	3164	7212
F-550 4x4 DRW	W57	200.2	84	6.8L V-10	4-Spd. Auto OD	17,500	NV271	10,180	4185	3133	7318

(1) Engine/transmission combinations may not be available on all models, or in all areas.
(2) Includes weight of driver, passengers and optional equipment.
(3) Base curb weight is for standard equipment only.
(4) California only.

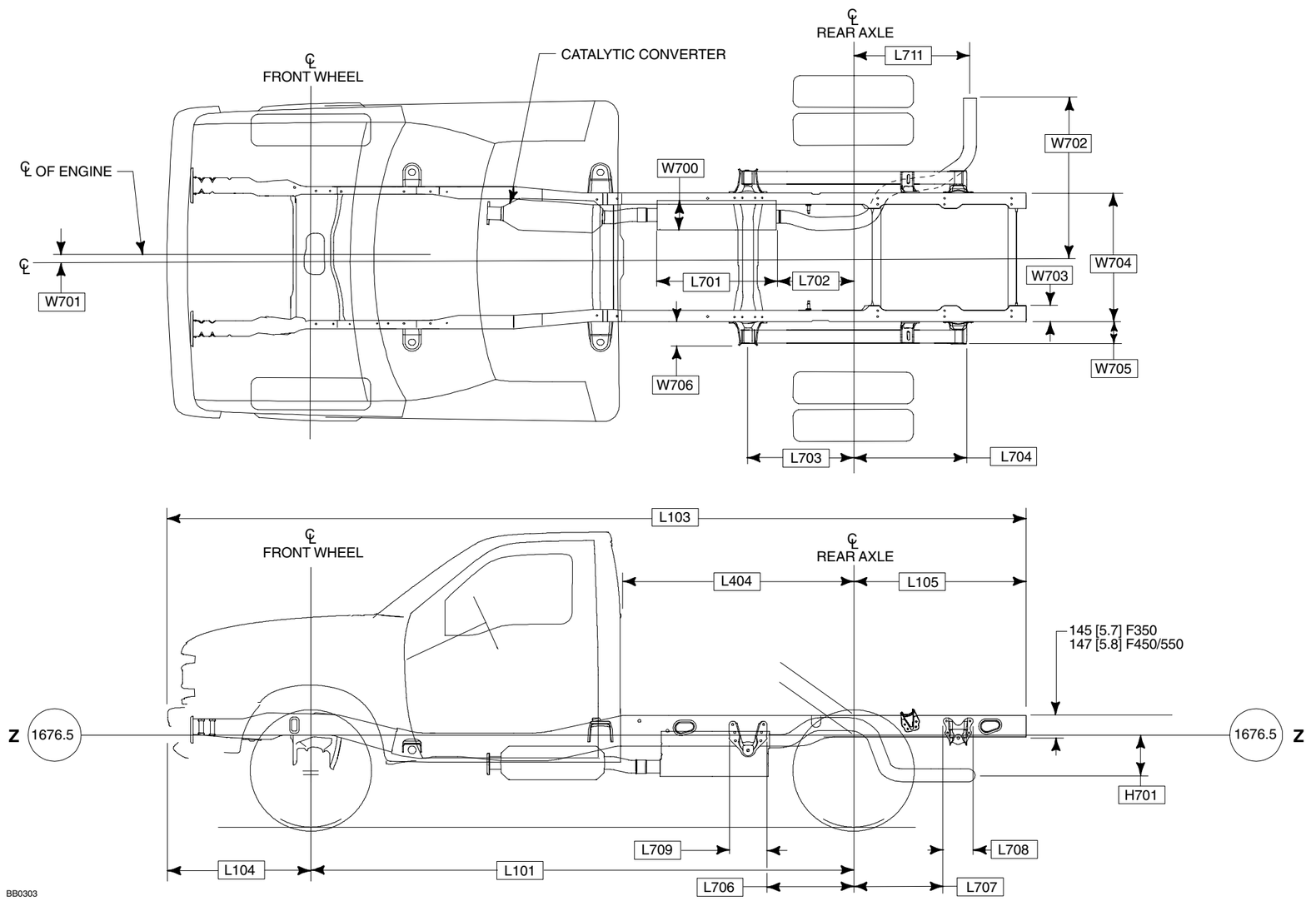
NOTE: ♦ — SEE CHART BELOW FOR 6.0L V-8 DIESEL ENGINE WEIGHT RATINGS.

SUPER DUTY F-350 CHASSIS CAB WITH 6.0L V-8 DIESEL ENGINE (12,500 LB GVWR)

SUPER DUTY F-SERIES MODEL	BODY CODE	WHEELBASE inches	CA inches	ENGINE liters	STANDARD TRANSMISSION	MIN-MAX GVWR pounds	TRANSFER CASE	MAXIMUM PAYLOAD[1] pounds	CURB WEIGHT[2] FRONT pounds	CURB WEIGHT[2] REAR pounds	CURB WEIGHT[2] TOTAL pounds
REGULAR CHASSIS CAB											
F-350 4x2 DRW	F36	140.8	60	6.0L V-8	6-Spd. Manual OD	12,500	—	6450	3644	2402	6046
		164.8	84	6.0L V-8	6-Spd. Manual OD	12,500	—	6355	3770	2375	6145
F-350 4x4 DRW	F37	140.8	60	6.0L V-8	6-Spd. Manual OD	12,500	NV271	5985	4024	2490	6514
		164.8	84	6.0L V-8	6-Spd. Manual OD	12,500	NV271	5850	4167	2479	6646
SUPER CHASSIS CAB											
F-350 4x2 DRW	X36	161.8	60	6.0L V-8	6-Spd. Manual OD	12,500	—	6090	3862	2546	6408
F-350 4x4 DRW	X37	161.8	60	6.0L V-8	6-Spd. Manual OD	12,500	NV271	5600	4265	2634	6899
CREW CHASSIS CAB											
F-350 4x2 DRW	W36	176.2	60	6.0L V-8	6-Spd. Manual OD	12,500	—	5890	4000	2606	6606
F-350 4x4 DRW	W37	176.2	60	6.0L V-8	6-Spd. Manual OD	12,500	NV271	5385	4402	2709	7111

(1) Includes weight of driver, passengers and optional equipment.
(2) Curb weight is for standard equipment and 6.0L V-8/6-speed Manual OD transmission.

DIMENSIONAL DATA
SUPER DUTY F-SERIES
REGULAR CAB – CHASSIS CAB



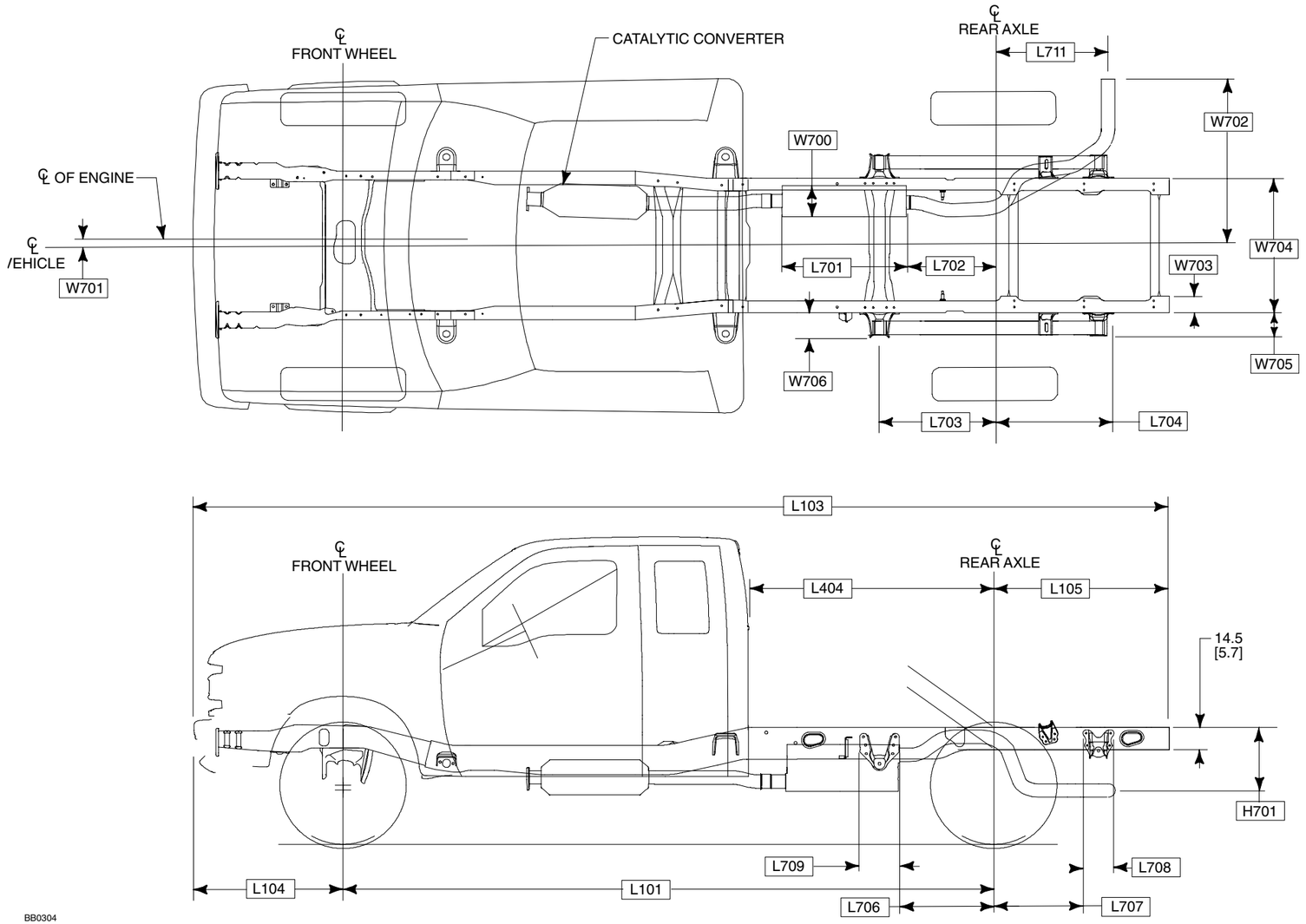
NOTES — [ ] DIMENSIONS ARE INCHES.
— AXLE/TIRE/VEHICLE HEIGHT DATA, PAGES 146-147.
— GROUND CLEARANCE DATA, PAGES 156-158.

DIMENSIONAL DATA
SUPER DUTY F-SERIES
REGULAR CAB – CHASSIS CAB

CODE	DESCRIPTION	F-350						F-450				F-550			
		SRW		DRW		DRW		DRW				DRW			
		4x2	4x4	4x2	4x4	4x2	4x4	4x2/4x4				4x2/4x4			
H701	℄ OF OUTLET PIPE TO BOTTOM OF FRAME — 5.4L/6.8L/6.0L	239 [9.4]		239 [9.4]		239 [9.4]		239 [9.4]				239 [9.4]			
L101	WHEELBASE	3576 [140.8]		3576 [140.8]		4186 [164.8]		3576 [140.8]	4186 [164.8]	4795 [188.8]	5100 [200.8]	3576 [140.8]	4186 [164.8]	4795 [188.8]	5100 [200.8]
L103	OVERALL LENGTH	5732 [225.7]		5732 [225.7]		6343 [249.7]		5732 [225.7]	6341 [249.7]	6952 [273.7]	7257 [285.7]	5732 [225.7]	6341 [249.7]	6952 [273.7]	7257 [285.7]
L104	FRONT OVERHANG	950 [37.4]		950 [37.4]		950 [37.4]		950 [37.4]				950 [37.4]			
L105	REAR OVERHANG	1207 [47.5]		1207 [47.5]		1207 [47.5]		1207 [47.5]				1207 [47.5]			
L404	BACK OF CAB TO ℄ OF REAR AXLE	1524 [60.0]		1524 [60.0]		2134 [84.0]		1524 [60.0]	2134 [84.0]	2743 [108.0]	3048 [120.0]	1524 [60.0]	2134 [84.0]	2743 [108.0]	3048 [120.0]
L701	MUFFLER LENGTH — 5.4L/6.8L	609.5 [24.0]		609.5 [24.0]		609.5 [24.0]		609.5 [24.0]				609.5 [24.0]			
	— 6.0L	661 [26.0]		661 [26.0]		661 [26.0]		661 [26.0]				661 [26.0]			
L702	MUFFLER REAR TO ℄ REAR AXLE — 5.4L/6.8L	546.5 [21.5]		546.5 [21.5]		546.5 [21.5]		546.5 [21.5]				546.5 [21.5]			
	— 6.0L	596 [23.5]	602 [23.7]	596 [23.5]	604 [23.8]	596 [23.5]	606 [23.9]	582 [22.9]	582 [22.9]			586 [23.0]	593 [23.3]		
L703	REAR SPRING FRONT EYE TO REAR AXLE	663 [26.1]	671 [26.4]	663 [26.1]	671 [26.4]	663 [26.1]	671 [26.4]	653 [25.7]				654 [25.8]			
L704	℄ REAR AXLE TO ℄ REAR SPRING SHACKLE BRACKET	748 [29.4]	739 [29.1]	748 [29.4]	739 [29.1]	748 [29.4]	739 [29.1]	757 [29.8]				755 [29.7]			
L706	REAR OF FRONT SPRING BRACKET TO ℄ REAR AXLE	536 [21.1]	544 [21.4]	536 [21.1]	544 [21.4]	536 [21.1]	544 [21.4]	525 [20.7]				526 [20.7]			
L707	℄ REAR AXLE TO FRONT OF REAR SPRING SHACKLE BRACKET	648 [25.5]	639 [25.2]	648 [25.5]	639 [25.2]	648 [25.5]	639 [25.2]	645 [25.4]				643 [25.3]			
L708	REAR SPRING SHACKLE BRACKET WIDTH	200 [7.9]		200 [7.9]		200 [7.9]		225 [8.9]				225 [8.9]			
L709	FRONT SPRING HANGER BRACKET WIDTH	253 [10.0]		253 [10.0]		253 [10.0]		256 [10.1]				256 [10.1]			
L711	℄ OF REAR AXLE TO ℄ OF EXHAUST PIPE — 5.4L/6.8L	664.6 [26.2]		664.6 [26.2]		664.6 [26.2]		664.6 [26.2]				664.6 [26.2]			
	— 6.0L	698 [27.4]	690 [27.1]	696 [27.4]	687 [27.0]	696 [27.4]	687 [27.0]	709 [27.9]	709 [27.9]			705 [27.8]	698 [27.4]		
W700	MUFFLER CROSS SECTION — 5.4L	7 x 9		7 x 9		7 x 9		7 x 9				7 X 9			
	— 6.0L	195 x 291		195 x 291		195 x 291		195 x 291				195 x 291			
W701	DISTANCE BETWEEN ℄ ENGINE/VEHICLE	45 [1.8]		45 [1.8]		45 [1.8]		45 [1.8]				45 [1.8]			
W702	END OF TAILPIPE TO ℄ VEHICLE — 5.4L/6.8L	948 [37.3]		948 [37.3]		948 [37.3]		948 [37.3]				948 [37.3]			
	— 6.0L	1027 [40.4]		1027 [40.4]		1027 [40.4]		1027 [40.4]				1027 [40.4]			
W703	FRAME RAIL WIDTH	107 [4.2]		107 [4.2]		107 [4.2]		108 [4.2]				108 [4.2]			
W704	REAR FRAME WIDTH	866 [34.1]		866 [34.1]		866 [34.1]		868 [34.2]				868 [34.2]			
W705	DISTANCE FROM FRAME TO OUTSIDE OF REAR SPRING SHACKLE BRACKET	149 [5.9]		149 [5.9]		149 [5.9]		151 [5.9]				151 [5.9]			
W706	DISTANCE FROM FRAME TO OUTSIDE OF REAR SPRING HANGER BRACKET	160 [6.3]		160 [6.3]		160 [6.3]		151 [5.9]				151 [5.9]			

NOTES — [ ] DIMENSIONS ARE INCHES.
— AXLE/TIRE/VEHICLE HEIGHT DATA, PAGES 146-147.
— GROUND CLEARANCE DATA, PAGES 156-158.

DIMENSIONAL DATA
SUPER DUTY F-SERIES
CHASSIS CAB – SUPER CAB



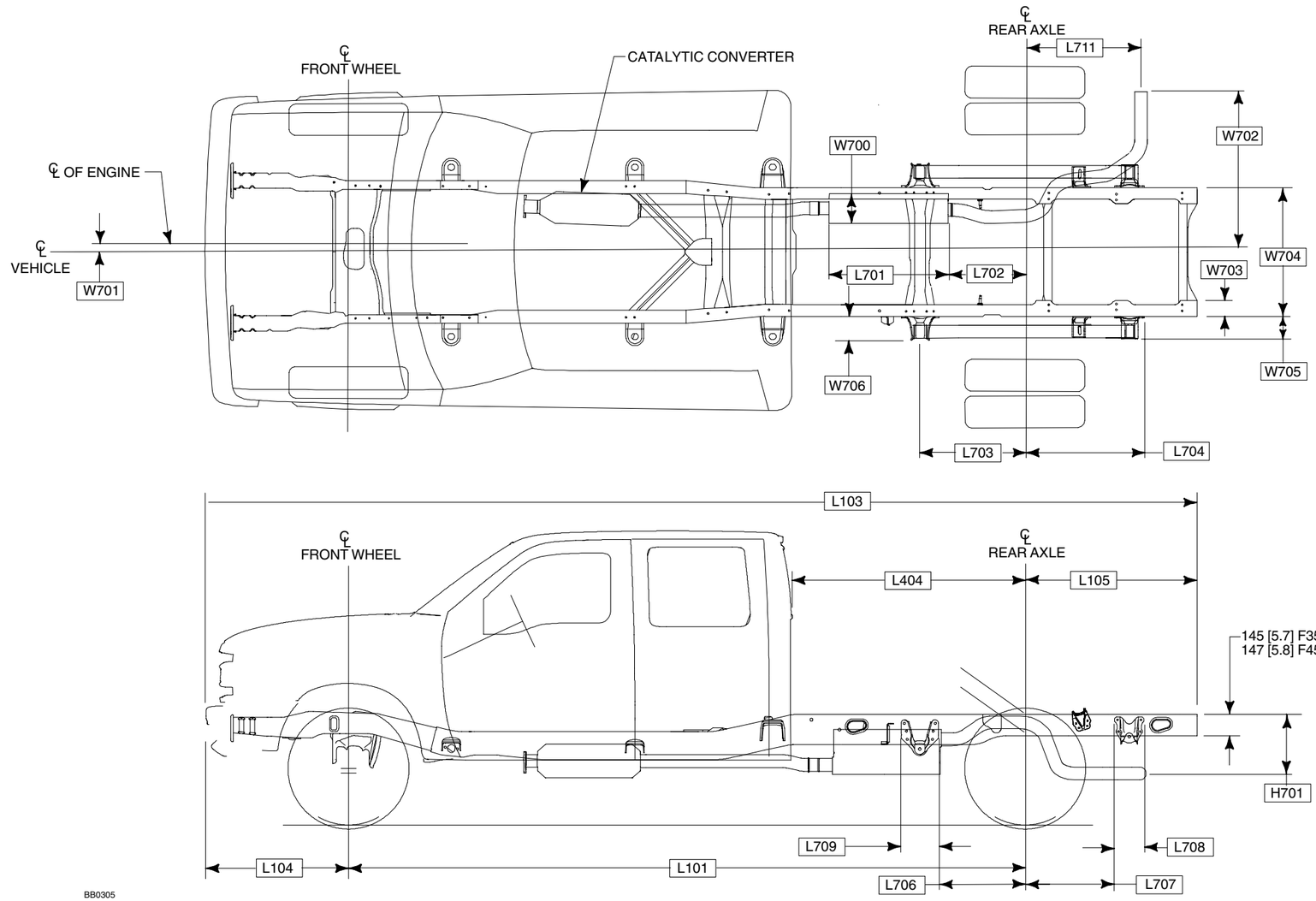
NOTES — [ ] DIMENSIONS ARE INCHES.
— AXLE/TIRE/VEHICLE HEIGHT DATA, PAGES 148-149.
— GROUND CLEARANCE DATA, PAGES 156-158.

DIMENSIONAL DATA
SUPER DUTY F-SERIES
CHASSIS CAB – SUPER CAB

CODE	DESCRIPTION	F-350				F-450		F-550	
		SRW		DRW		DRW		DRW	
		4x2	4x4	4x2	4X4	4x2/4X4		4x2/4X4	
H701	℄ OF OUTLET PIPE TO FRAME DATUM LINE — WITH 5.4L/6.8L/6.0L	239 [9.4]		239 [9.4]		239 [9.4]		239 [9.4]	
L101	WHEELBASE	4110 [161.8]		4110 [161.8]		4110 [161.8]		4110 [161.8]	
L103	OVERALL LENGTH	6267 [246.7]		6267 [246.7]		6267 [246.7]		6267 [246.7]	
L104	FRONT OVERHANG	950 [37.4]		950 [37.4]		950 [37.4]		950 [37.4]	
L105	REAR OVERHANG	1207 [47.5]		1207 [47.5]		1206 [47.5]		1207 [47.5]	
L404	BACK OF CAB TO ℄ OF REAR AXLE	1524 [60.0]		1524 [60.0]		1524 [60.0]		1524 [60.0]	
L701	MUFFLER LENGTH — WITH 5.4L/6.8L	609.5 [24.0]		609.5 [24.0]		609.5 [24.0]		609.5 [24.0]	
	— WITH 6.0L	661 [26.0]		661 [26.0]		661 [26.0]		661 [26.0]	
L702	MUFFLER REAR ℄ TO REAR AXLE — WITH 5.4L/6.8L	546.5 [21.5]		546.5 [21.5]		546.5 [21.5]		546.5 [21.5]	
	— WITH 6.0L	595.9 [23.5]	602.1 [23.7]	595.9 [23.5]	604.1 [23.7]	582.8 [23.0]	589.4 [23.2]	586.8 [23.1]	593.4 [23.3]
L703	REAR SPRING FRONT EYE TO ℄ REAR AXLE	663 [26.1]	671 [26.4]	663 [26.1]	671 [26.4]	653 [25.7]		654 [25.8]	
L704	℄ REAR AXLE TO ℄ REAR SPRING SHACKLE BRACKET	748 [29.4]	739 [29.1]	748 [29.4]	739 [29.1]	757 [29.8]		755 [29.7]	
L706	REAR OF FRONT SPRING BRACKET TO ℄ REAR AXLE	536 [21.1]	544 [21.1]	536 [21.1]	544 [21.1]	525 [20.7]		526 [20.7]	
L707	℄ REAR AXLE TO FRONT OF REAR SPRING SHACKLE BRACKET	648 [25.5]	639 [25.2]	648 [25.5]	639 [25.2]	645 [25.4]		643 [25.3]	
L708	REAR SPRING SHACKLE BRACKET WIDTH	200 [7.9]		200 [7.9]		225 [8.9]		225 [8.9]	
L709	FRONT SPRING HANGER BRACKET WIDTH	253 [10.0]		253 [10.0]		256 [10.1]		256 [10.1]	
L711	℄ OF REAR AXLE TO ℄ OF EXHAUST PIPE — WITH 5.4L/6.8L	664.6 [26.2]		664.6 [26.2]		664.6 [26.2]		664.6 [26.2]	
	— WITH 6.0L	695.9 [27.4]	689.7 [27.1]	695.9 [27.4]	689.7 [27.1]	709 [30.0]	707 [27.8]	705 [27.8]	698.4 [27.5]
W700	MUFFLER CROSS SECTION — WITH 5.4L/6.8L	7 X 9		7 X 9		7 X 9		7 X 9	
	— WITH 6.0L	195 X 291		195 X 291		195 X 291		195 X 291	
W701	DISTANCE BETWEEN ℄ ENGINE/VEHICLE	45 [1.8]		45 [1.8]		45 [1.8]		45 [1.8]	
W702	END OF TAILPIPE TO ℄ VEHICLE — WITH 5.4L/6.8L	948 [37.3]		948 [37.3]		948 [37.3]		948 [37.3]	
	— 6.0L	1027 [40.4]		1027 [40.4]		1027 [40.4]		1027 [40.4]	
W703	FRAME RAIL WIDTH	107 [4.2]		107 [4.2]		108 [4.2]		108 [4.2]	
W704	REAR FRAME WIDTH	866 [34.1]		866 [34.1]		868 [34.2]		868 [34.2]	
W705	DISTANCE FROM FRAME TO OUTSIDE OF REAR SPRING SHACKLE BRACKET	149 [5.9]		149 [5.9]		151 [5.9]		151 [5.9]	
W706	DISTANCE FROM FRAME TO OUTSIDE OF REAR SPRING HANGER BRACKET	160 [6.3]		160 [6.3]		151 [5.9]		151 [5.9]	

NOTES — [ ] DIMENSIONS ARE INCHES.
— AXLE/TIRE/VEHICLE HEIGHT DATA, PAGES 148-149.
— GROUND CLEARANCE DATA, PAGES 156-158.

DIMENSIONAL DATA
SUPER DUTY F-SERIES
CHASSIS CAB – CREW CAB



NOTES — [ ] DIMENSIONS ARE INCHES.
— AXLE/TIRE/VEHICLE HEIGHT DATA, PAGES 150-151.
— GROUND CLEARANCE DATA, PAGES 156-158.

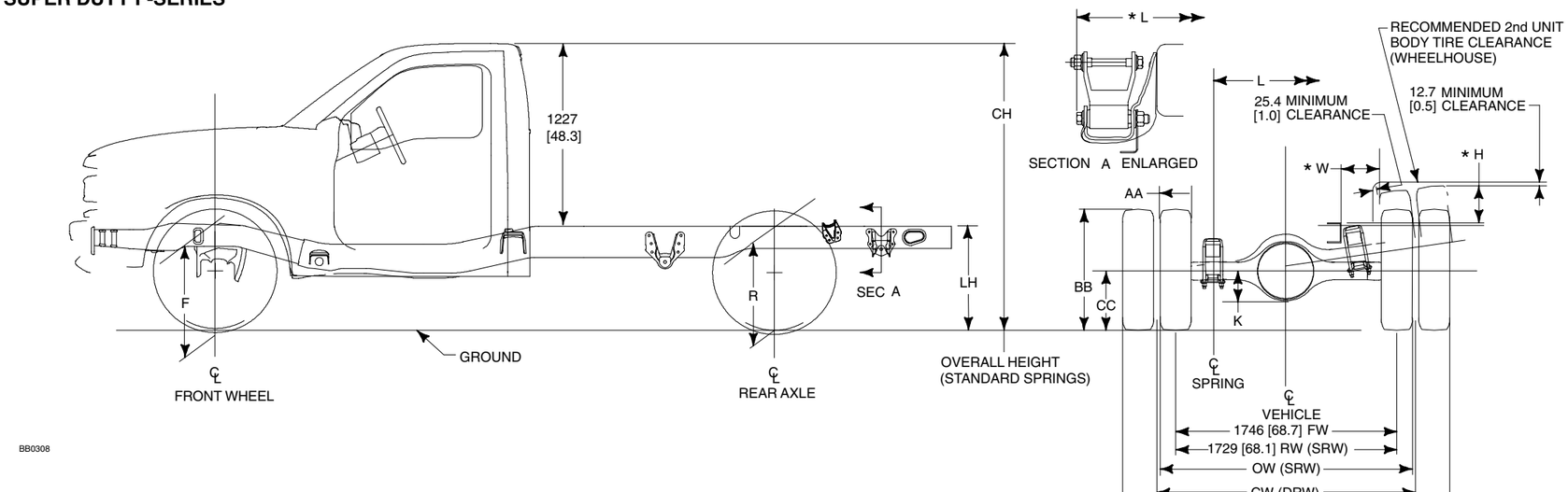
DIMENSIONAL DATA
SUPER DUTY F-SERIES
CHASSIS CAB – CREW CAB

CODE	DESCRIPTION	F-350				F-450		F-550	
		SRW		DRW		DRW		DRW	
		4x2	4x4	4x2	4X4	4x2/4X4		4x2/4X4	
H701	℄ OF OUTLET PIPE TO TOP OF FRAME — WITH 5.4L/6.8L/6.0L	239 [9.4]		239 [9.4]		239 [9.4]		239 [9.4]	
L101	WHEELBASE	4475 [176.2]		4475 [176.2]		4475 [176.2]	5085 [200.2]	4475 [176.2]	5085 [200.2]
L103	OVERALL LENGTH	6632 [261.1]		6632 [261.1]		6632 [261.1]	7241 [285.1]	6632 [261.1]	7241 [285.1]
L104	FRONT OVERHANG	950 [37.4]		950 [37.4]		950 [37.4]		950 [37.4]	
L105	REAR OVERHANG	1207 [47.5]		1207 [47.5]		1207 [47.5]		1207 [47.5]	
L404	BACK OF CAB TO ℄ OF REAR AXLE	1524 [60.0]		1524 [60.0]		1524 [60.0]	2134 [84.0]	1524 [60.0]	2134 [84.0]
L701	MUFFLER LENGTH — WITH 5.4L/6.8L	609.5 [24.0]		609.5 [24.0]		609.5 [24.0]		609.5 [24.0]	
	— WITH 6.0L	661 [26.0]		661 [26.0]		661 [26.0]		661 [26.0]	
L702	MUFFLER REAR ℄ TO REAR AXLE — WITH 5.4L/6.8L	546.5 [21.5]		546.5 [21.5]		546.5 [21.5]		546.5 [21.5]	
	— WITH 6.0L	593.2 [23.3]	601.5 [23.6]	595.3 [23.4]	603.6 [23.7]	582.4 [22.9]	582.4 [22.9]	586.2 [23.0]	592.8 [23.3]
L703	REAR SPRING FRONT EYE TO ℄ REAR AXLE	663 [26.1]	671 [26.4]	663 [26.1]	671 [26.4]	653 [25.7]		654 [25.8]	
L704	℄ REAR AXLE TO ℄ REAR SPRING SHACKLE BRACKET	748 [29.4]	739 [29.1]	748 [29.4]	739 [29.1]	757 [29.8]		755 [29.7]	
L706	REAR OF FRONT SPRING BRACKET TO ℄ REAR AXLE	536 [21.1]	544 [21.1]	536 [21.1]	544 [21.1]	525 [20.7]		526 [20.7]	
L707	℄ REAR AXLE TO FRONT OF REAR SPRING SHACKLE BRACKET	648 [25.5]	639 [25.2]	648 [25.5]	639 [25.2]	645 [25.4]		643 [25.3]	
L708	REAR SPRING SHACKLE BRACKET WIDTH	200 [7.9]		200 [7.9]		225 [8.9]		225 [8.9]	
L709	FRONT SPRING HANGER BRACKET WIDTH	253 [10.0]		253 [10.0]		256 [10.1]		256 [10.1]	
L711	℄ OF REAR AXLE TO ℄ OF EXHAUST PIPE — WITH 5.4L/6.8L	664.6 [26.2]		664.6 [26.2]		664.6 [26.2]		664.6 [26.2]	
	— WITH 6.0L	697.9 [27.4]	689.7 [27.1]	695.8 [27.3]	687.5 [27.0]	709 [27.9]	709 [27.9]	705 [27.7]	698.4 [27.4]
W700	MUFFLER CROSS SECTION — WITH 5.4L/6.8L	7 X 9		7 X 9		7 X 9		7 X 9	
	— WITH 6.0L	195 X 291		195 X 291		195 X 291		195 X 291	
W701	DISTANCE BETWEEN ℄ ENGINE/VEHICLE	45 [1.8]		45 [1.8]		45 [1.8]		45 [1.8]	
W702	END OF TAILPIPE TO ℄ VEHICLE — WITH 5.4L/6.8L	948 [37.3]		948 [37.3]		948 [37.3]		948 [37.3]	
	— WITH 6.0L	1027 [40.4]		1027 [40.4]		1027 [40.4]		1027 [40.4]	
W703	FRAME RAIL WIDTH	107 [4.2]		107 [4.2]		108 [4.2]		108 [4.2]	
W704	REAR FRAME WIDTH	866 [34.1]		866 [34.1]		868 [34.2]		868 [34.2]	
W705	DISTANCE FROM FRAME TO OUTSIDE OF REAR SPRING SHACKLE BRACKET	149 [5.9]		149 [5.9]		151[5.9]		151[5.9]	
W706	DISTANCE FROM FRAME TO OUTSIDE OF REAR SPRING HANGER BRACKET	160 [6.3]		160 [6.3]		151[5.9]		151[5.9]	

NOTES — [ ] DIMENSIONS ARE INCHES.
— AXLE/TIRE/VEHICLE HEIGHT DATA, PAGES 150-151.
— GROUND CLEARANCE DATA, PAGES 156-158.

AXLE/TIRE/VEHICLE HEIGHT DATA
SUPER DUTY F-SERIES
CHASSIS CAB – REGULAR CAB

2004
MODEL YEAR



BB0308

MODEL	WB	GVWR	BASE TIRE	F HEIGHT AT FRONT WHEEL(1)		R HEIGHT AT REAR AXLE(1)		LH(1)		CH(1)		K	L	*L	AA	BB	CC	OW	CW	*H	*W
				BASE(2)	LOADED(3)	BASE(2)	LOADED(3)	EMPTY	LOADED	EMPTY	LOADED										
Super Duty F-350 Regular Cab 4x2	3576 [140.8]	9900(5)	LT265/75R16E	521 [20.5]	503 [19.8]	628 [24.7]	527 [20.7]	798 [31.4]	664 [26.1]	1924 [75.7]	1877 [73.9]	161 [6.3]	1056 [41.55]	1184.0 [46.6]	278 [10.9]	781 [30.7]	371 [14.6]	2007 [79.0]	—	271 [10.9]	271 [10.7]
		11,200(6)(7) DRW	LT235/85R16E	509 [20.0]	492 [19.3]	624 [24.5]	517 [20.3]	813 [32.0]	668 [26.2]	1912 [75.3]	1877 [73.9]	177 [7.0]	1056 [41.55]	1184.0 [46.6]	259 [10.2]	792 [31.2]	375 [14.8]	2304 @ [90.7]	1803 @ [71.0]	258 [10.2]	193 [7.6]
Super Duty F-350 Regular Cab 4x2	4186 [164.8]	11,200(6)(7) DRW	LT235/85R16E	517 [20.3]	492 [19.3]	623 [24.5]	517 [20.3]	803 [31.6]	666 [26.2]	1912 [75.3]	1877 [73.9]	177 [7.0]	1056 [41.55]	1184.0 [46.6]	259 [10.2]	792 [31.2]	375 [14.8]	2304 @ [90.7]	1803 @ [71.0]	258 [10.2]	193 [7.6]
Super Duty F-350 Regular Cab 4x4	3576 [140.8]	9900(5)	LT265/75R16E	617 [24.2]	592 [23.3]	684 [26.9]	585 [23.0]	840 [33.0]	707 [27.8]	2028 [79.8]	1969 [77.5]	165 [6.5]	1056 [41.55]	1184.0 [46.6]	278 [10.9]	781 [30.7]	371 [14.6]	2007 [79.0]	—	276 [10.9]	271 [10.7]
		11,200(6)(7) DRW	LT235/85R16E	602 [23.7]	581 [22.8]	683 [26.8]	574 [22.5]	844 [33.2]	698 [27.4]	2031 [80.0]	1973 [77.7]	177 [7.0]	1056 [41.55]	1184.0 [46.6]	259 [10.2]	792 [31.2]	375 [14.8]	2329 @ [91.7]	1803 @ [71.0]	224 [8.8]	191 [7.5]
Super Duty F-350 Regular Cab 4x4	4186 [164.8]	11,200(6)(7) DRW	LT235/85R16E	613 [24.1]	581 [22.8]	682 [26.8]	574 [22.5]	836 [32.9]	696 [27.4]	2031 [80.0]	1973 [77.7]	177 [7.0]	1056 [41.55]	1184.0 [46.6]	259 [10.2]	792 [31.2]	375 [14.8]	2329 @ [91.7]	1803 @ [71.0]	224 [8.8]	191 [7.5]

(1) — The Height Data shown represents dimensions of a base/standard vehicle with no options. Actual height may vary due to production tolerances (completed vehicles only).
(2) — Height at base curb weight with standard spring
(3) — Loaded height at spring rating with standard spring
(4) — Reinforced frame available on 200.8" wheelbase, Regular Cab, 450/550
(5) — 9700 lb California (gas engine)
(6) — 11,000 lb California (gas engine)
(7) — 12,500 lb all states (diesel engine)

*H — Top of frame at ℄ of rear axle to top of tire in jounce
*L — From outside edge of shackle eyebolt
*W — From frame to top of tire in jounce

@ — with Ambulance Prep Package (Wide Track Axle).
CW = 1880 [74] and OW = 2380 [93.7] for 4x2,
CW = 1880 [74] and OW = 2405 [94.7] for 4x4

NOTES — [ ] DIMENSIONS ARE INCHES.
— **F** AND **R** VEHICLE HEIGHT DIMENSIONS ARE FROM GROUND TO BOTTOM OF FRAME.
— **LH** IS FROM GROUND TO TOP OF FRAME.

AXLE/TIRE/VEHICLE HEIGHT DATA
SUPER DUTY F-SERIES
CHASSIS CAB – REGULAR CAB

2004
MODEL YEAR

MODEL	WB	GVWR	BASE TIRE	F HEIGHT AT FRONT WHEEL(1)		R HEIGHT AT REAR AXLE(1)		LH(1)		CH(1)		K	L	*L	AA	BB	CC	OW	CW	*H	*W
				BASE(2)	LOADED(3)	BASE(2)	LOADED(3)	EMPTY	LOADED	EMPTY	LOADED										
Super Duty F-450 Regular Cab 4x2	3576 [140.8]	15,000 DRW	225/70R19.5F	622 [24.4]	597 [23.5]	681 [26.8]	590 [23.2]	821 [32.3]	700 [27.5]	2048 [80.6]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.9]	792 [31.2]	380 [15.0]	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-450 Regular Cab 4x2	4186 [164.8]	15,000 DRW	225/70R19.5F	657 [25.8]	597 [23.5]	681 [26.8]	590 [23.2]	821 [32.3]	704 [27.7]	2044 [80.5]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.9]	792 [31.2]	380 [15.0]	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-450 Regular Cab 4x2	4795 [188.8]	15,000 DRW	225/70R19.5F	659 [25.9]	597 [23.5]	681 [26.8]	590 [23.2]	820 [32.2]	706 [27.7]	2044 [80.5]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.9]	792 [31.2]	380 [15.0]	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-450 Regular Cab 4x2	5100(4) [200.8]	15,000 DRW	225/70R19.5F	652 [25.6]	597 [23.5]	690 [27.1]	590 [23.2]	820 [32.2]	708 [27.8]	2038 [80.2]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.9]	792 [31.2]	380 [15.0]	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-450 Regular Cab 4x4	3576 [140.8]	15,000 DRW	225/70R19.5F	655 [25.7]	597 [23.5]	681 [26.8]	590 [23.2]	823 [32.4]	702 [27.6]	2051 [80.7]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.9]	792 [31.2]	380 [15.0]	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-450 Regular Cab 4x4	4186 [164.8]	15,000 DRW	225/70R19.5F	651 [25.6]	597 [23.5]	681 [26.8]	590 [23.2]	823 [32.4]	706 [27.7]	2044 [80.5]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.9]	792 [31.2]	380 [15.0]	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-450 Regular Cab 4x4	4795 [188.8]	15,000 DRW	225/70R19.5F	651 [25.6]	597 [23.5]	681 [26.8]	590 [23.2]	822 [32.3]	708 [27.8]	2033 [80.0]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.9]	792 [31.2]	380 [15.0]	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-450 Regular Cab 4x4	5100(4) [200.8]	15,000 DRW	225/70R19.5F	644 [25.3]	597 [23.5]	680 [26.7]	590 [23.2]	821 [32.3]	710 [27.9]	2033 [80.0]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.9]	792 [31.2]	380 [15.0]	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-550 Regular Cab 4x2	3576 [140.8]	17,500 DRW	225/70R19.5F	661 [26.0]	597 [23.5]	680 [26.7]	590 [23.2]	820 [32.2]	700 [27.5]	2076 [81.7]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.9]	792 [31.2]	380 [15.0]	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-550 Regular Cab 4x2	4186 [164.8]	17,500 DRW 19,000 DRW	225/70R19.5F	658 [25.9]	597 [23.5]	680 [26.7]	590 [23.2]	820 [32.2]	704 [27.7]	2068 [81.4]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.9]	792 [31.2]	380 [15.0]	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-550 Regular Cab 4x2	4795 [188.8]	17,500 DRW	225/70R19.5F	658 [25.9]	597 [23.5]	680 [26.7]	590 [23.2]	819 [32.2]	706 [27.7]	2068 [81.4]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.9]	792 [31.2]	380 [15.0]	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-550 Regular Cab 4x2	5100(4) [200.8]	17,500 DRW 19,000 DRW	225/70R19.5F	652 [25.6] 659 [25.9]	597 [23.5] 597 [23.5]	679 [26.7] 678 [26.6]	590 [23.2] 590 [23.2]	819 [32.2] 816 [32.1]	708 [27.8] 707 [27.8]	2059 [81.1]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.9]	792 [31.2]	380 [15.0]	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-550 Regular Cab 4x4	3576 [140.8]	17,500 DRW	225/70R19.5F	651 [25.6]	597 [23.5]	679 [26.7]	590 [23.2]	822 [32.3]	706 [27.7]	2075 [81.7]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.9]	792 [31.2]	380 [15.0]	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-550 Regular Cab 4x4	4186 [164.8]	17,500 DRW	225/70R19.5F	649 [25.5]	597 [23.5]	679 [26.7]	590 [23.2]	822 [32.3]	706 [27.7]	2063 [81.2]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.9]	792 [31.2]	380 [15.0]	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-550 Regular Cab 4x4	4795 [188.8]	17,500 DRW	225/70R19.5F	649 [25.5]	597 [23.5]	679 [26.7]	590 [23.2]	820 [32.2]	708 [27.8]	2059 [81.1]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.9]	792 [31.2]	380 [15.0]	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-550 Regular Cab 4x4	5100(4) [200.8]	17,500 DRW	225/70R19.5F	643 [25.3]	597 [23.5]	679 [26.7]	590 [23.2]	820 [32.2]	711 [27.9]	2049 [80.7]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.9]	792 [31.2]	380 [15.0]	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]

(1) — The Height Data shown represents dimensions of a base/standard vehicle with no options. Actual height may vary due to production tolerances (completed vehicles only).

(2) — Height at base curb weight with standard spring

(3) — Loaded height at spring rating with standard spring

(4) — Reinforced frame available on 200.8" wheelbase, Regular Cab, 450/550

*H — Top of frame at ℄ of rear axle to top of tire in jounce

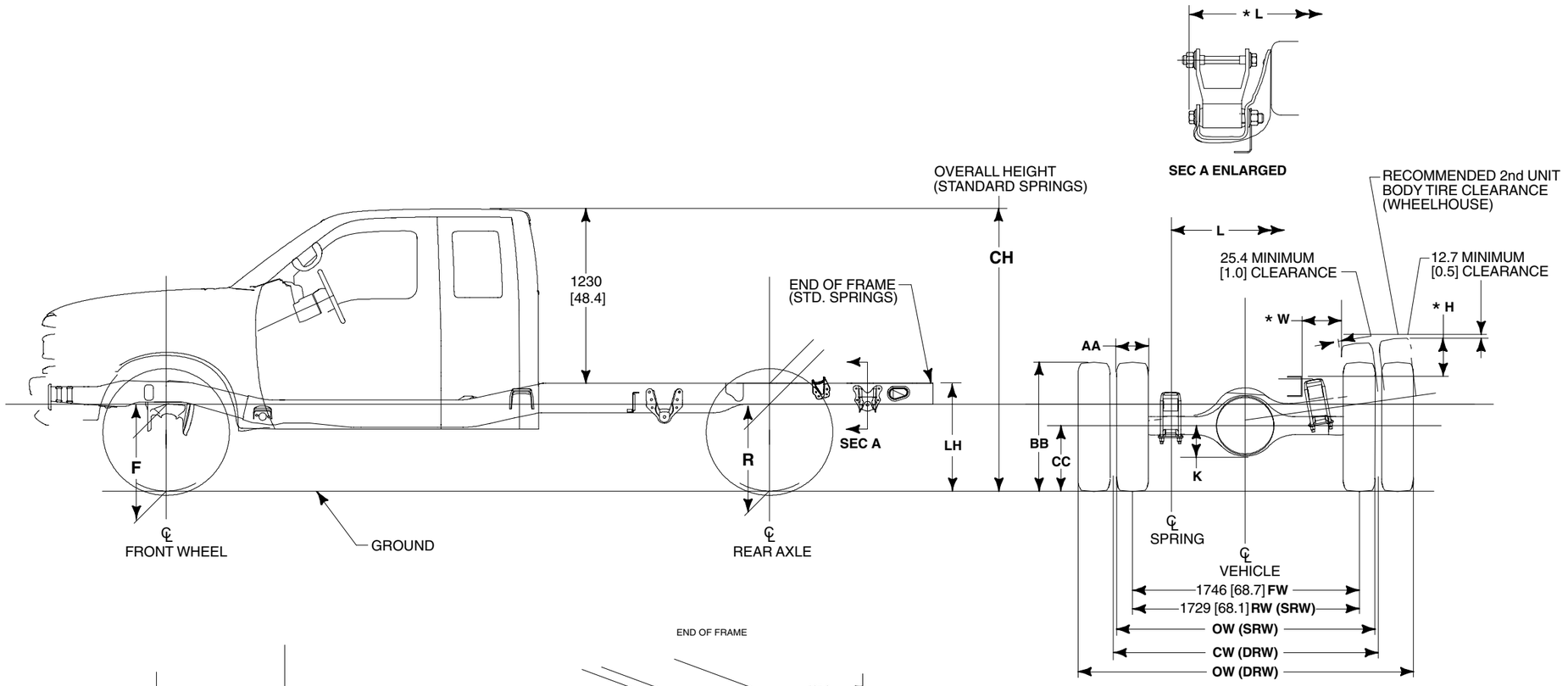
*L — From outside edge of shackle eyebolt

*W — From frame to top of tire in jounce

NOTES — [ ] DIMENSIONS ARE INCHES.
— **F** AND **R** VEHICLE HEIGHT DIMENSIONS ARE FROM GROUND TO BOTTOM OF FRAME.
— **LH** IS FROM GROUND TO TOP OF FRAME.

AXLE/TIRE/VEHICLE HEIGHT DATA
SUPER DUTY F-SERIES
CHASSIS CAB – SUPER CAB

2004
MODEL YEAR



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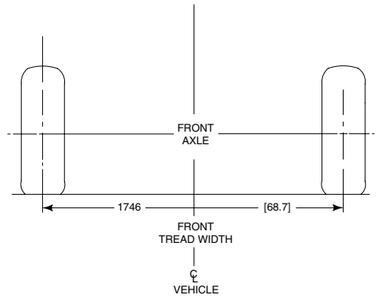

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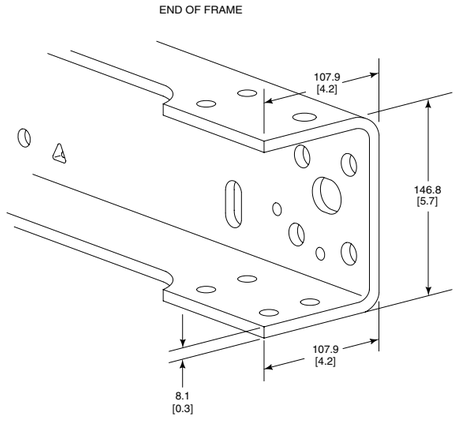


NOTES — [ ] DIMENSIONS ARE INCHES.
- — **F** AND **R** VEHICLE HEIGHT DIMENSIONS ARE FROM GROUND TO BOTTOM OF FRAME.
- — **LH** IS FROM GROUND TO TOP OF FRAME.
- — * **H** IS TOP OF FRAME AT ℄ OF REAR AXLE TO TOP OF TIRE IN JOUNCE
- — * **L** IS FROM OUTSIDE EDGE OF SHACKLE EYEBOLT
- — * **W** IS FROM FRAME TO TOP OF TIRE IN JOUNCE

AXLE/TIRE/VEHICLE HEIGHT DATA
SUPER DUTY F-SERIES
CHASSIS CAB – SUPER CAB

2004
MODEL YEAR

MODEL	WB	GVWR	BASE TIRE	F HEIGHT AT FRONT WHEEL(1)		R HEIGHT AT REAR AXLE(1)		LH(1)		CH(1)		K	L	*L	AA	BB	CC	FW	RW	OW	CW	*H	*W
				CURB(2)	LOADED(3)	CURB(2)	LOADED(3)	EMPTY	LOADED	EMPTY	LOADED												
Super Duty F-350 SuperCab 4x2	4110 [161.8]	9900(4)	LT265/75R16E	520 [20.4]	503 [19.8]	626 [24.6]	527 [20.7]	790 [31.1]	663 [26.1]	1928 [75.9]	1877 [73.9]	165 [6.5]	1056 [41.55]	1184.0 [46.6]	278 [10.9]	781 [30.7]	371 [14.6]	1746 [68.7]	1729 [68.1]	2007 [79.0]	—	276 [10.9]	271 [10.7]
		11,200(5)(6) DRW	LT235/85R16E	508 [20.0]	492 [19.3]	622 [24.4]	517 [20.3]	806 [31.7]	668 [26.2]	1930 [76.0]	1877 [73.9]	177 [7.0]	1056 [41.55]	1184.0 [46.6]	259 [10.2]	792 [31.1]	375 [14.8]	1746 [68.7]	—	2304 @ [90.7]	1803 @ [71.0]	258 [10.2]	193 [7.6]
Super Duty F-350 SuperCab 4x4	4110 [161.8]	9900(4)	LT265/75R16E	611 [24.0]	592 [23.3]	682 [26.8]	584 [22.9]	836 [32.9]	710 [27.9]	2029 [79.9]	1969 [77.5]	165 [6.5]	1056 [41.55]	1184.0 [46.6]	278 [10.9]	781 [30.7]	371 [14.6]	1746 [68.7]	1729 [68.1]	2007 [79.0]	—	276 [10.9]	271 [10.7]
		11,200(5)(6) DRW	LT235/85R16E	598 [23.5]	581 [22.8]	681 [26.8]	574 [22.5]	840 [33.0]	701 [27.5]	2019 [79.5]	1953 [76.9]	177 [7.0]	1056 [41.55]	1184.0 [46.6]	259 [10.2]	792 [31.1]	375 [14.8]	1746 [68.7]	—	2329 @ [91.7]	1803 @ [71.0]	224 [8.8]	191 [7.5]
Super Duty F-450 SuperCab 4x2	4110 [161.8]	15,000 DRW	225/70R19.5	662 [26.0]	598 [23.5]	681 [26.8]	590 [23.2]	821 [32.3]	702 [27.6]	2045 [80.5]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.8]	792 [31.1]	381 [15.0]	1746 [68.7]	—	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-450 SuperCab 4x4	4110 [161.8]	15,000 DRW	225/70R19.5	662 [26.0]	598 [23.5]	681 [26.8]	590 [23.2]	821 [32.3]	702 [27.6]	2045 [80.5]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.8]	792 [31.1]	381 [15.0]	1746 [68.7]	—	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-550 SuperCab 4x2	4110 [161.8]	17,500 DRW	225/70R19.5	662 [26.0]	598 [23.5]	681 [26.8]	590 [23.2]	821 [32.3]	702 [27.6]	2070 [81.5]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.8]	792 [31.1]	381 [15.0]	1746 [68.7]	—	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-550 SuperCab 4x4	4110 [161.8]	17,500 DRW	225/70R19.5	655 [25.7]	598 [23.5]	681 [26.8]	590 [23.2]	821 [32.3]	705 [27.7]	2066 [81.3]	1977 [77.8]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.8]	792 [31.1]	381 [15.0]	1746 [68.7]		2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]

(1) — The Height Data shown represents dimensions of a base/standard vehicle with no options. Actual height may vary due to production tolerances (completed vehicles only).
(2) — Height at base curb weight with standard spring
(3) — Loaded height at spring rating with standard spring
(4) — 9700 lb California (gas engine)
(5) — 11,000 lb California (gas engine)
(6) — 12,500 lb all states (diesel engine)

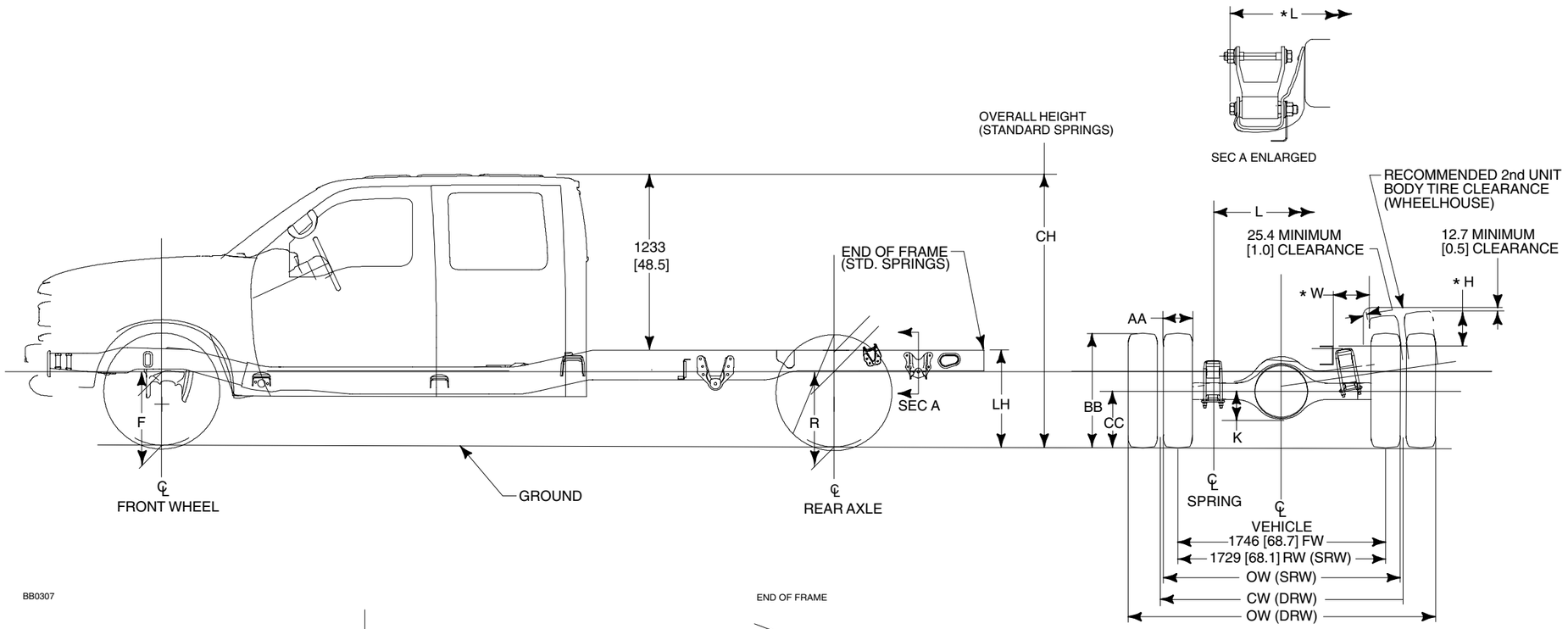
*H — Top of frame at ℄ of rear axle to top of tire in jounce
*L — From outside edge of shackle eyebolt
*W — From frame to top of tire in jounce

@ — with Ambulance Prep Package (Wide Track Axle).
CW = 1880 [74] and OW = 2380 [93.7] for 4x2,
CW = 1880 [74] and OW = 2405 [94.7] for 4x4

NOTES — [ ] DIMENSIONS ARE INCHES.
— **F** AND **R** VEHICLE HEIGHT DIMENSIONS ARE FROM GROUND TO BOTTOM OF FRAME.
— **LH** IS FROM GROUND TO TOP OF FRAME.

AXLE/TIRE/VEHICLE HEIGHT DATA
SUPER DUTY F-SERIES
CHASSIS CAB – CREW CAB

2004 MODEL YEAR



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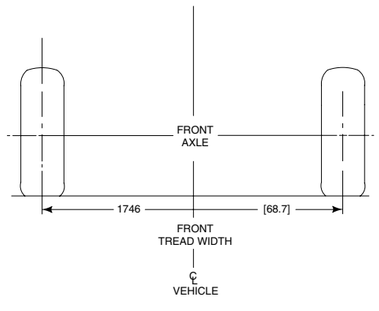
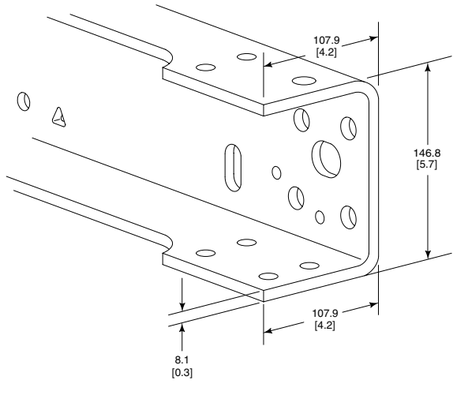


BB0427 2004

END OF FRAME



NOTES — [ ] DIMENSIONS ARE INCHES.
- — **F** AND **R** VEHICLE HEIGHT DIMENSIONS ARE FROM GROUND TO BOTTOM OF FRAME.
- — **LH** IS FROM GROUND TO TOP OF FRAME.
- — * **H** IS TOP OF FRAME AT ℄ OF REAR AXLE TO TOP OF TIRE IN JOUNCE
- — * **L** IS FROM OUTSIDE EDGE OF SHACKLE EYEBOLT
- — * **W** IS FROM FRAME TO TOP OF TIRE IN JOUNCE

AXLE/TIRE/VEHICLE HEIGHT DATA
SUPER DUTY F-SERIES
CHASSIS CAB – CREW CAB

2004
MODEL YEAR

MODEL	WB	GVWR	BASE TIRE	F HEIGHT AT FRONT WHEEL(1)		R HEIGHT AT REAR AXLE(1)		LH(1)		CH(1)		K	L	*L	AA	BB	CC	FW	RW	OW	CW	*H	*W
				CURB(2)	LOADED(3)	CURB(2)	LOADED(3)	EMPTY	LOADED	EMPTY	LOADED												
Super Duty F-350 Crew Cab 4x2	4475 [176.2]	9900(4)	LT265/75R16E	523 [20.5]	513 [20.1]	624 [24.5]	527 [20.7]	784 [30.8]	662 [26.0]	1929 [75.9]	1880 [74.0]	165 [6.5]	1056 [41.55]	1184.0 [46.6]	278 [10.9]	781 [30.7]	371 [14.6]	1746 [68.7]	1729 [68.1]	2007 [79.0]	—	276 [10.9]	271 [10.7]
		11,200(5)(6) DRW	LT235/85R16E	514 [20.2]	492 [19.3]	621 [24.4]	517 [20.3]	798 [31.4]	666 [26.2]	1940 [76.4]	1879 [74.0]	177 [7.0]	1056 [41.55]	1184.0 [46.6]	259 [10.2]	792 [31.1]	375 [14.8]	1746 [68.7]	—	2304 [90.7]	1803 [71.0]	258 [10.2]	193 [7.6]
Super Duty F-350 Crew Cab 4x4	4475 [176.2]	9900(4)	LT265/75R16E	618 [24.3]	592 [23.3]	679 [26.7]	594 [23.3]	829 [32.6]	709 [27.9]	2026 [79.8]	1974 [77.7]	165 [6.5]	1056 [41.55]	1184.0 [46.6]	278 [10.9]	781 [30.7]	371 [14.6]	1746 [68.7]	1729 [68.1]	2007 [79.0]	—	276 [10.9]	271 [10.7]
		11,200(5)(6) DRW	LT235/85R16E	616 [24.2]	581 [22.8]	679 [26.7]	574 [22.5]	830 [32.6]	696 [27.4]	2038 [80.2]	1978 [77.9]	177 [7.0]	1056 [41.55]	1184.0 [46.6]	259 [10.2]	792 [31.1]	375 [14.8]	1746 [68.7]	—	2329 [91.7]	1803 [71.0]	224 [8.8]	191 [7.5]
Super Duty F-450 Crew Cab 4x2	4475 [176.2]	15,000 DRW	225/70R19.5F	653 [25.7]	597 [23.5]	677 [26.6]	590 [23.2]	817 [32.1]	706 [27.7]	2053 [80.8]	1980 [78.0]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.8]	792 [31.1]	381 [15.0]	1746 [68.7]	—	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-450 Crew Cab 4x2	5085 [200.2]	15,000 DRW	225/70R19.5F	653 [25.7]	597 [23.5]	677 [26.6]	590 [23.2]	816 [32.1]	708 [27.8]	2053 [80.8]	1980 [78.0]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.8]	792 [31.1]	381 [15.0]	1746 [68.7]	—	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-450 Crew Cab 4x4	4475 [176.2]	15,000 DRW	225/70R19.5F	654 [25.7]	597 [23.5]	677 [26.6]	590 [23.2]	820 [32.2]	709 [27.9]	2056 [80.9]	1980 [78.0]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.8]	792 [31.1]	381 [15.0]	1746 [68.7]	—	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-450 Crew Cab 4x4	5085 [200.2]	15,000 DRW	225/70R19.5F	654 [25.7]	597 [23.5]	677 [26.6]	590 [23.2]	818 [32.2]	710 [27.9]	2056 [80.9]	1980 [78.0]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.8]	792 [31.1]	381 [15.0]	1746 [68.7]	—	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-550 Crew Cab 4x2	4475 [176.2]	17,500 DRW	225/70R19.5F	651 [25.6]	597 [23.5]	678 [26.6]	590 [23.2]	818 [32.2]	707 [27.8]	2067 [81.4]	1980 [78.0]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.8]	792 [31.1]	381 [15.0]	1746 [68.7]	—	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-550 Crew Cab 4x2	5085 [200.2]	17,500 DRW	225/70R19.5F	651 [25.6]	597 [23.5]	678 [26.6]	590 [23.2]	817 [32.1]	709 [27.9]	2067 [81.4]	1980 [78.0]	177 [7.0]	1056 [41.55]	1197.6 [47.1]	226 [8.8]	792 [31.1]	381 [15.0]	1746 [68.7]	—	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-550 Crew Cab 4x4	4475 [176.2]	17,500 DRW	225/70R19.5F	653 [25.7]	597 [23.5]	677 [26.6]	590 [23.2]	820 [32.2]	709 [27.9]	2066 [81.3]	1980 [78.0]	44 [1.7]	1056 [41.55]	1197.6 [47.1]	226 [8.8]	792 [31.1]	381 [15.0]	1746 [68.7]	—	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]
Super Duty F-550 Crew Cab 4x4	5085 [200.2]	17,500 DRW	225/70R19.5F	653 [25.7]	597 [23.5]	677 [26.6]	590 [23.2]	818 [32.2]	711 [27.9]	2066 [81.3]	1980 [78.0]	44 [1.7]	1056 [41.55]	1197.6 [47.1]	226 [8.8]	792 [31.1]	381 [15.0]	1746 [68.7]	—	2377 [93.6]	1880 [74.0]	234 [9.2]	242 [9.5]

(1) — The Height Data shown represents dimensions of a base/standard vehicle with no options. Actual height may vary due to production tolerances (completed vehicles only).

(2) — Height at base curb weight with standard spring

(3) — Loaded height at spring rating with standard spring

(4) — 9700 lb California (gas engine)

(5) — 11,000 lb California (gas engine)

(6) — 12,500 lb all states (diesel engine)

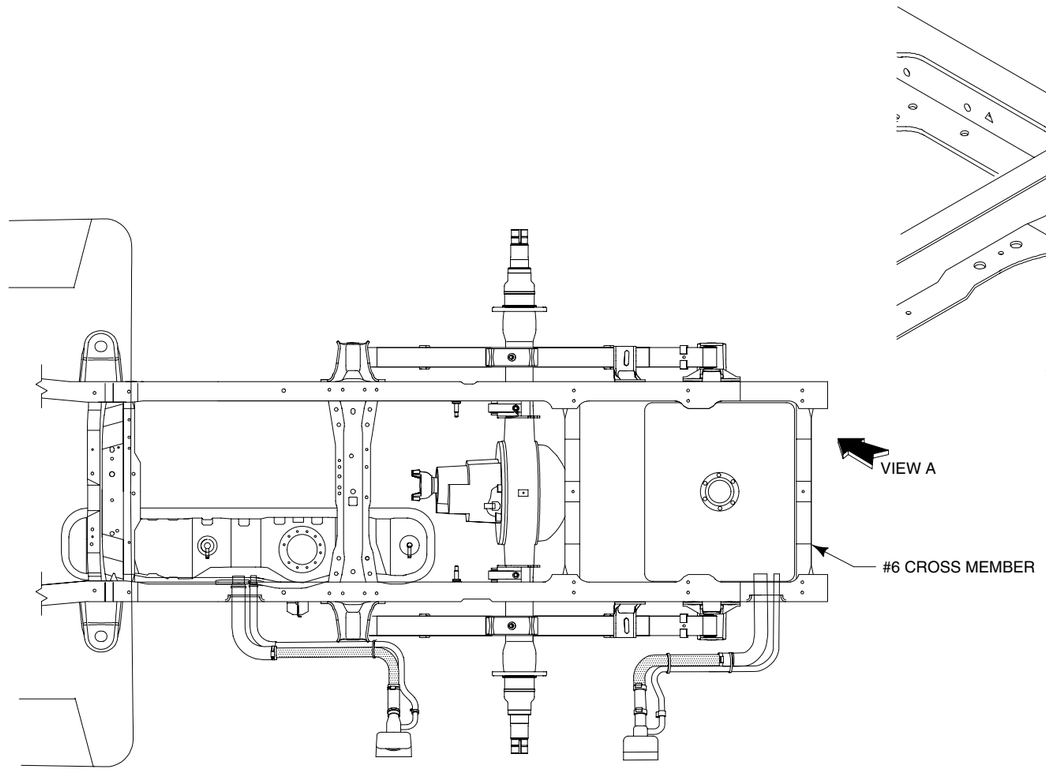
*H — Top of frame at ℄ of rear axle to top of tire in jounce

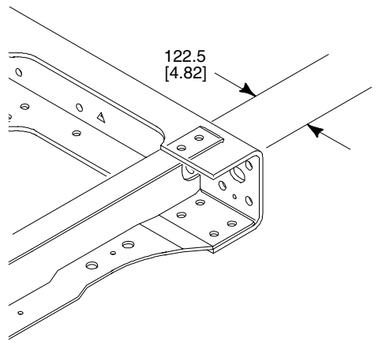
*L — From outside edge of shackle eyebolt

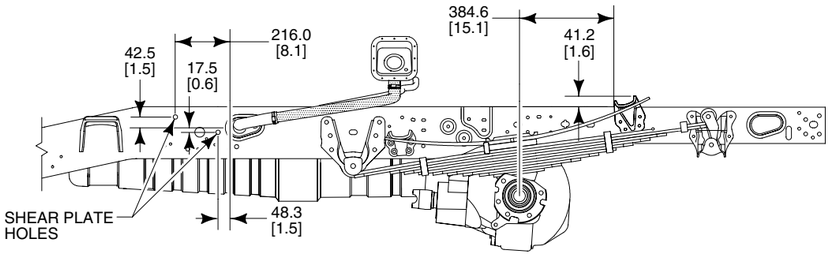
*W — From frame to top of tire in jounce

NOTES — [ ] DIMENSIONS ARE INCHES.
— **F** AND **R** VEHICLE HEIGHT DIMENSIONS ARE FROM GROUND TO BOTTOM OF FRAME.
— **LH** IS FROM GROUND TO TOP OF FRAME.

FRAME DATA — CHASSIS CAB — NARROW FRAME
SUPER DUTY F-350/450/550 — ALL WHEELBASE







BB0437

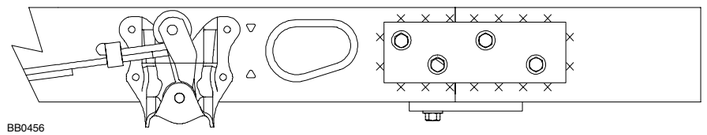
FRAME EXTENSION RECOMMENDATIONS

(applicable to all WB models)

When it is necessary to add a frame extension to the Super Duty F-Series Chassis Cab, follow these suggestions:

- Clean the back portion of the frame of wax using steam, high pressure water or solvent.
- Protect the fuel system from weld sparks and splatter, being particularly careful with the rubber fuel fill hoses.
- Select a suitable mild steel channel (not iron) with a section modulus the same as the frame to be extended.
- Chamfer both the back of the frame and the end of the extensions to be welded. Remove the 2 rearmost lower rivets attaching the rear crossmember to the frame. Weld an overlay plate on to the lower flange of the frame extension that extends approximately 2 ½" under the frame end.
- Transfer the rivet hole locations to the lower flange overlay plate and drill through the plate.
- Disconnect the battery(ies), the ABS Module, and then the Powertrain Control Module (PCM). Connect the welding ground cable to the frame at the back of the vehicle.
- Clamp the extension into place and weld all around the top and sides, but not the lower flange, following normal weld practices.
- Grind the outer side of the vertical frame web down smooth, clamp on a re-enforcement section of mild steel approximately 4" x 12" x ¼" and skip weld to the frame and extension. Do not weld at the corners of the re-enforcement to minimize stress concentrations. Note that this re-enforcement may be combined with a rear shear plate and/or underrun bumper if desired, in which case it would be an "ELL" shape to pick up the added attachment points.
- Bolt through the lower overlay plate and frame section using 5/8" grade 5 flange head, bolts and nuts (1).
- Drill through the frame and re-enforcement and bolt using four ½" grade 5 flange head bolts & nuts (1).
- Coat the frame extension with a suitable protective paint. Reconnect the PCM Module, ABS Module and battery(ies).

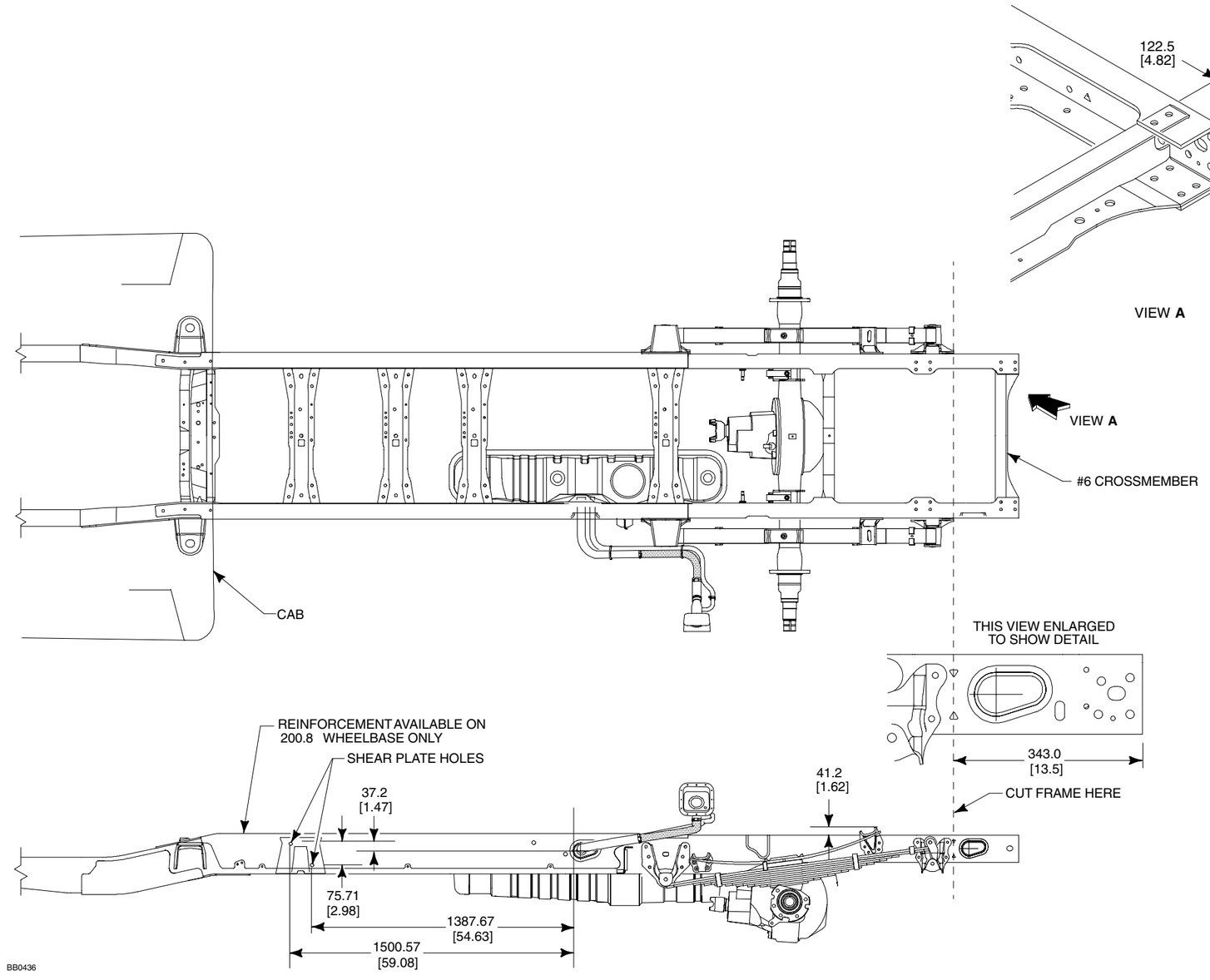
(1) If flange head fasteners are not available, regular hex heads may be substituted with one flat washer under the head of the nut and bolt.



BB0456

NOTE — [ ] DIMENSIONS ARE INCHES.

FRAME DATA – CHASSIS CAB – NARROW FRAME
SUPER DUTY F-450/550 – ALL WHEELBASE



FRAME OVERHANG SHORTENING RECOMMENDATIONS

(applicable to all WB models)

IF A SHORTER REAR FRAME OVERHANG IS REQUIRED FOR THE VOCATIONAL BODY MOUNTING, THE BODY BUILDER MUST:

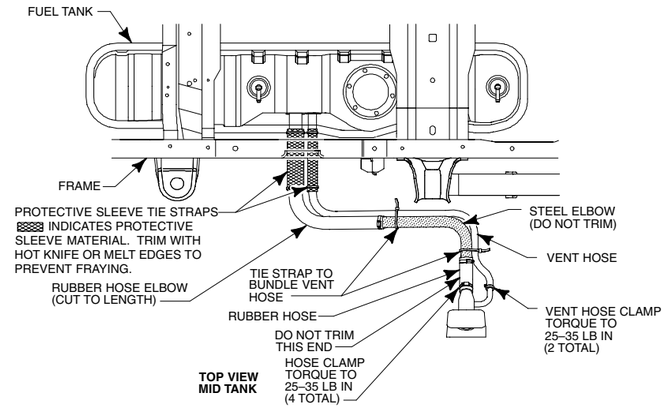
1. ORDER THE CHASSIS WITH THE OPTIONAL MID-SHIP FUEL TANK.
2. DRILL OUT ATTACHING RIVETS AND REMOVE THE REAR CROSSMEMBER. REINSTALL IN THE NEXT FORWARD CROSSMEMBER MOUNTING LOCATION PROVIDED USING GRADE 8 BOLTS, AS DESCRIBED IN THE RIVET REPLACEMENT PROCEDURE IN THE FORD SERVICE MANUAL.
3. CUT THE FRAME ALONG THE LINE THROUGH THE TWO TRIANGLE-SHAPED HOLES DEPICTED BELOW, USING A CUTOFF WHEEL OR SAW. A TORCH IS NOT RECOMMENDED. IF A TORCH IS USED WITHIN 4 INCHES OF THE REAR SUSPENSION MOUNTING ATTACHMENTS, THESE ATTACHMENTS MUST BE EITHER RETORQUED (WHERE BOLTS ARE USED) OR HAVE THE RIVETS REMOVED AND REPLACED WITH GRADE 8 BOLTS PER THE PROCEDURE NOTED ABOVE.

— ON THE F-450/550 CHASSES, THE FORWARD OUTBOARD REAR SUSPENSION BRACKET BOLT NEEDS TO BE SHARED WITH THE REAR CROSSMEMBER. RETORQUE WITH NEW GRADE 8 M12 BOLT AND NUT.

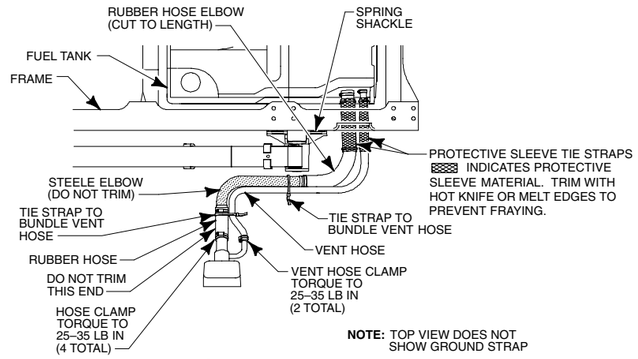
— [ ] DIMENSIONS ARE INCHES.

FUEL FILLER PIPE LOCATION AND DIMENSIONS
SUPER DUTY F-SERIES CHASSIS CAB

2004
MODEL YEAR



MIDSHIP FUEL FILL SYSTEM (OPTIONAL ON CHASSIS CAB)



AFT OF AXLE FUEL FILL SYSTEM (STANDARD ON CHASSIS CAB)

BB0468

(CA) BACK OF CAB TO CENTERLINE OF REAR AXLE					
		60 IN. CA	**84 IN. CA**	**108 IN. CA**	**120 IN. CA**
		WHEELBASE			
	Regular Cab	3576mm [140.8]	4186mm [164.8]		5100mm [200.8]
	SuperCab	4110mm [161.8]			
	Crew Cab	4475mm [176.2]	5085mm [200.2]	4795mm [188.8]	
A	**MIN.**	864mm [34.0]	1473mm [58.0]	2083mm [82.0]	2388mm [94.0]
	MAX.	1029mm [40.5]	1638mm [64.5]	2248mm [88.5]	2553mm [100.5]
B	**MIN.**	1981mm [78.0]	2591mm [102.0]	3200mm [126.0]	3505mm [138.0]
	MAX.	2159mm [85.0]	2769mm [109.0]	3378mm [133.0]	3683mm [145.0]
C	**MIN.**	584mm [23.0]	584mm [23.0]	584mm [23.0]	584mm [23.0]
	MAX.	787mm [31.0]	787mm [31.0]	787mm [31.0]	787mm [31.0]
D	**MIN.**	267mm [10.5]	267mm [10.5]	267mm [10.5]	267mm [10.5]
	MAX.	343mm [13.5]	343mm [13.5]	343mm [13.5]	343mm [13.5]

NOTES — [ ] DIMENSIONS ARE INCHES.

TORQUE ALL WORM GEAR DRIVEN HOSE CLAMPS TO 2.8 - 3.9 Nm IN LB

* NOT SUPPLIED BY FORD MOTOR COMPANY

∇ CRITICAL CONTROL ITEM

REMOVE AND DISCARD THE FORD INSTALED FUEL FILL SYSTEM COMPONENTS (PROVIDED FOR SHIPPING PURPOSES ONLY) EXCEPT SAVE AND REUSE THE METAL NECK AND CAP ASSEMBLY.

USE THE NEW HOSES, PIPES, SCUFF GUARDS, TIE WRAPS AND CLAMPS PROVIDED IN THE DUNNAGE KIT.

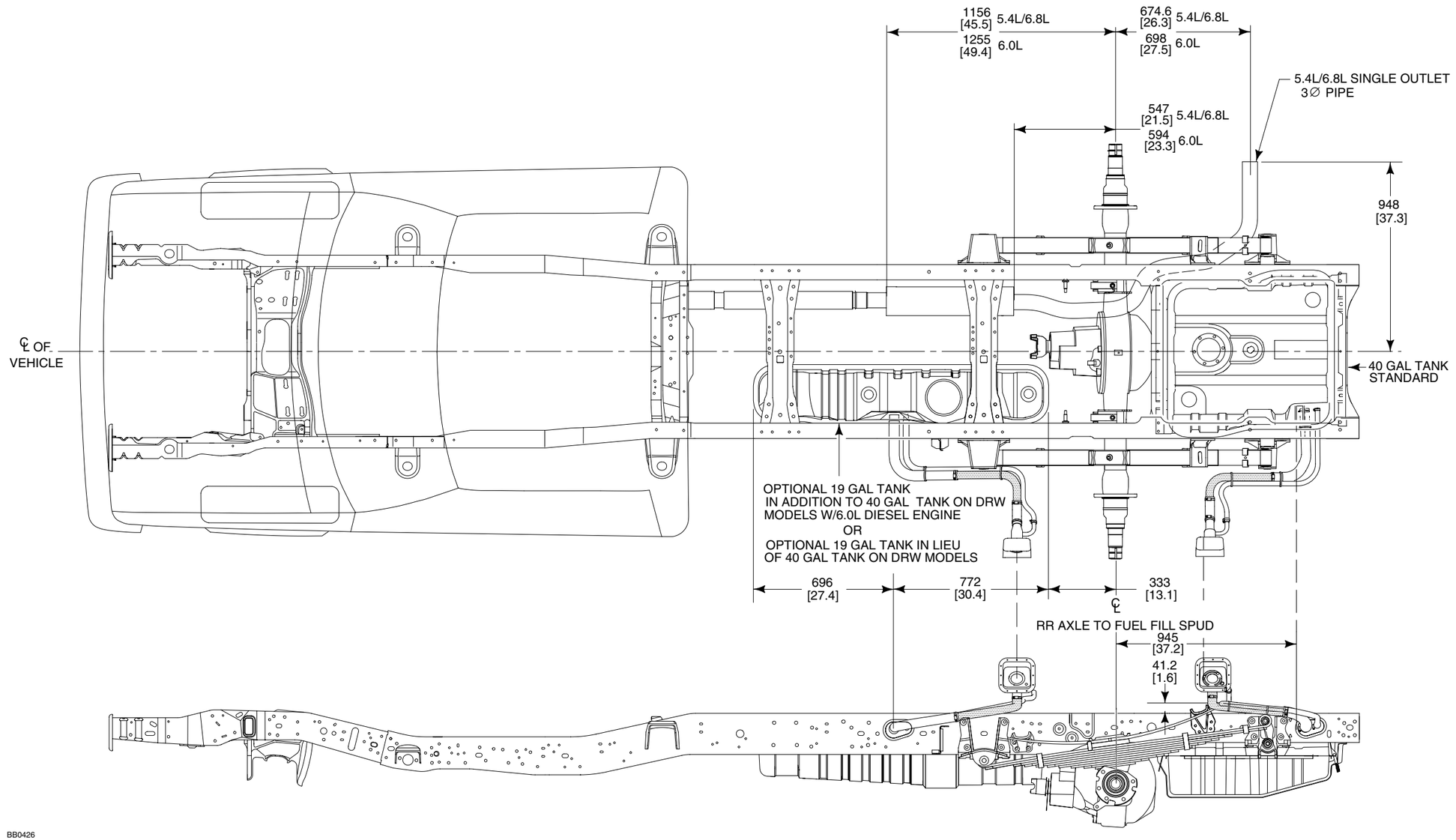
THE COMPLETED FUEL FILL SYSTEM MUST PROVIDE A 4 DEGREE MINIMUM, CONTINUOUS, DOWNWARD SLOPE TO THE FUEL TANK. ADDITIONAL SUPPORT MAY BE REQUIRED TO PREVENT HOSE SAGGING WHICH COULD CAUSE SPRAY OR SPITBACK DURING NORMAL FUELING OPERATIIONS.

DO NOT EXTEND THE FUEL FILL SYSTEM OUTBOARD OF THE SECOND UNIT BODY.

THE INSTALLATION OF TUBE EXTENSION 9B149 WILL PERMIT THE LOCATION AFT-OF-AXLE FUEL FILL HOUSING TO BE NO FURTHER REARWARD THAN THE ℄ OF THE FILL HOSE AS IT PASSES THROUGH THE FRAME

TRIM BOTH ENDS AS DIRECTED.

EXHAUSTIFUEL SYSTEMS
CHASSIS CAB — NARROW FRAME

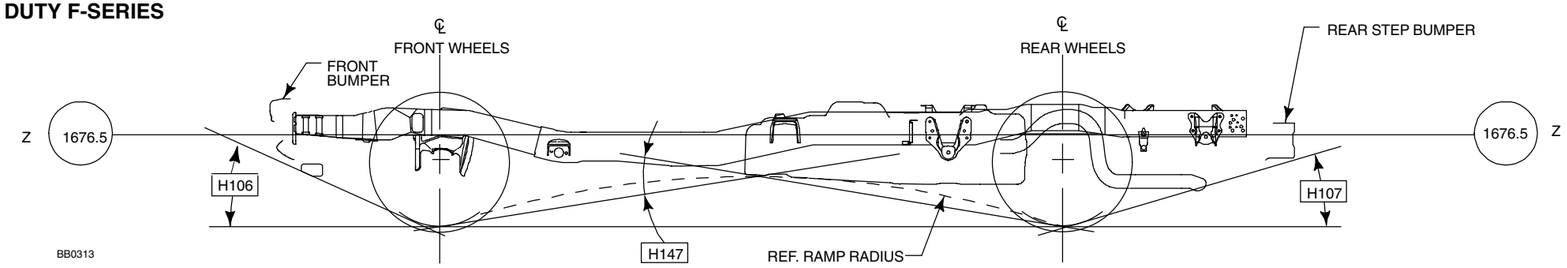


BB0426

NOTE — [ ] DIMENSIONS ARE INCHES.

SUPER DUTY F-SERIES GROUND CLEARANCE DATA

2004
MODEL YEAR



TIRE	MODEL	WHEELBASE	GVWR [lb]	H106 APPROACH ANGLE	H147 RAMP BREAKOVER	H107 DEPARTURE ANGLE					
						SPARE TIRE	REAR BUMPER	TRAILER HITCH	EXHAUST TAILPIPE	FRAME RAIL	AFT-AXLE FUEL TANK
LT235/85R16E	SD F-250 REGULAR CAB 4X2 SRW	3480 [137.0]	8800	20.8°	16.0°	13.3°	16.6°	11.2°	14.7°	—	***
	SD F-250 REGULAR CAB 4X4 SRW	3480 [137.0]	8800	27.7°	22.2°	15.5°	21.6°	15.9°	23.2°	—	***
	SD F-350 REGULAR CAB 4X4 DRW	3480 [137.0]	11,200(1)	27.7°	22.2°	15.6°	21.6°	15.9°	23.2°	—	***
	SD F-250 SUPERCAB 4X2 SRW	3602 [141.8]	8800	20.8°	15.8°	13.3°	16.6°	11.2°	14.7°	—	***
		4014 [158.0]	8800	20.8°	11.9°	13.3°	16.6°	11.2°	14.7°	—	***
	SD F-250 SUPERCAB 4X4 SRW	3602 [141.8]	8800	20.8°	21.7°	15.5°	21.6°	15.9°	23.2°	—	***
		4014 [158.0]	8800	20.8°	19.7°	15.6°	21.6°	15.9°	23.2°	—	***
	SD F-350 SUPERCAB 4X4 DRW	4014 [158.0]	11,200(1)	20.8°	19.6°	19.9°	21.6°	15.9°	23.2°	—	***
	SD F-250 CREW CAB 4X2 SRW	3967 [156.2]	8800	20.8°	14.5°	13.9°	16.6°	11.2°	14.7°	—	***
		4379 [172.4]	8800	20.8°	13.4°	13.9°	16.6°	11.2°	14.7°	—	***
	SD F-250 CREW CAB 4X4 SRW	3967 [156.2]	8800	27.6°	19.7°	19.9°	21.6°	15.9°	23.2°	—	***
		4379 [172.4]	8800	27.6°	18.6°	13.3°	21.6°	15.9°	23.2°	—	***
	SD F-350 CREW CAB 4X4 DRW	3967 [156.2]	11,200(1)	27.6°	19.7°	15.7°	21.6°	15.9°	23.2°	—	***
		4379 [172.4]	11,200(1)	27.6°	18.5°	15.8°	21.6°	15.9°	23.2°	—	***
	SD F-350 REGULAR CHASSIS CAB 4X4 DRW	3576 [140.8]	11,200(1)	28.7°	26.2°	*	**	**	31.1°	28.1°	28.8°
		4186 [164.8]	11,200(1)	28.7°	20.6°	*	**	**	31.1°	28.1°	28.8°
	SD F-350 SUPER CHASSIS CAB 4X4 DRW	4110 [161.8]	11,200(1)	28.7°	23.6°	*	**	**	31.1°	28.1°	28.8°
	SD F-350 CREW CHASSIS CAB 4X4 DRW	4475 [176.2]	11,200(1)	28.7°	22.9°	*	**	**	31.1°	28.1°	28.8°

(1) — 11,000 lb California.

NOTES — [ ] DIMENSIONS ARE INCHES

* — SPARE TIRE NOT MOUNTED UNDER THE CHASSIS.

** — NOT AVAILABLE ON CHASSIS CAB.

*** — NOT AVAILABLE ONPICKUPS.

SUPER DUTY F-SERIES GROUND CLEARANCE DATA

2004
MODEL YEAR

TIRE	MODEL	WHEELBASE	GVWR [LB]	H106 APPROACH ANGLE	H147 RAMP BREAKOVER	H107 DEPRTURE ANGLE					
						SPARE TIRE	REAR BUMPER	TRAILER HITCH	EXHAUST TAILPIPE	FRAME RAIL	AFT-AXLE FUEL TANK
LT235/85R16E	SD F-350 REGULAR CAB 4x2 DRW	3480 [137.0]	11,200(1)	20.8°	14.7°	13.0°	15.9°	10.5°	13.5°	—	***
	SD F-350 SUPERCAB 4x2 DRW	4014 [158.0]	11,200(1)	20.8°	13.3°	13.0°	15.9°	10.5°	13.5°	—	***
	SD F-350 CREW CAB 4x2 DRW	3967 [156.2]	11,200(1)	20.8°	13.4°	13.0°	15.9°	10.5°	13.5°	—	***
		4379 [172.4]	11,200(1)	20.8°	12.6°	13.0°	15.9°	10.5°	13.5°	—	***
	SD F-350 REGULAR CHASSIS CAB 4x2 DRW	3596 [140.8]	11,200(1)	21.4°	21.0°	*	**	**	24.7°	25.1°	25.1°
		4186 [164.8]	11,200(1)	21.4°	18.7°	*	**	**	24.7°	25.1°	25.1°
	SD F-350 SUPER CHASSIS CAB 4x2 DRW	4110 [161.8]	11,200(1)	21.4°	20.6°	*	**	**	24.7°	25.1°	25.1°
	SD F-350 CREW CHASSIS CAB 4x2 DRW	4475 [176.2]	11,200(1)	21.4°	18.0°	*	**	**	24.7°	25.1°	25.1°
LT265/75R16E	SD F-350 REGULAR CAB 4x2 DRW	3480 [137.0]	9900(2)	20.8°	15.0°	13.6°	16.3°	11.0°	14.3°	—	***
	SD F-350 REGULAR CAB 4x4 SRW	3480 [137.0]	9900(2)	27.7°	21.4°	19.7°	21.3°	15.7°	22.8°	—	***
	SD F-350 SUPERCAB 4x2 SRW	3602 [141.8]	9900(2)	20.8°	15.0°	13.6°	16.3°	11.0°	14.3°	—	***
		4014 [158.0]	9900(2)	20.8°	13.8°	13.6°	16.3°	11.0°	14.3°	—	***
	SD F-350 SUPERCAB 4x4 SRW	3602 [141.8]	9900(2)	27.7°	20.8°	19.7°	21.3°	15.7°	22.8°	—	***
		4014 [158.0]	9900(2)	27.7°	19.3°	19.7°	21.3°	15.7°	22.8°	—	***
	SD F-350 CREW CAB 4x2 SRW	3967 [156.2]	9900(2)	20.8°	14.0°	13.6°	16.3°	11.0°	14.3°	—	***
		4379 [172.4]	9900(2)	20.8°	13.1°	13.6°	16.3°	11.0°	14.3°	—	***
	SD F-350 CREW CAB 4x4 SRW	3967 [156.2]	9900(2)	27.6°	12.1°	13.1°	21.3°	15.7°	22.8°	—	***
		4379 [172.4]	9900(2)	27.6°	11.4°	13.1°	21.3°	15.7°	22.8°	—	***
	SD F-350 REGULAR CHASSIS CAB 4x2 SRW	3576 [140.8]	9900(2)	20.8°	21.7°	*	**	**	25.7°	25.6°	20.2°
	SD F-350 REGULAR CHASSIS CAB 4x4 SRW	3576 [140.8]	9900(2)	27.7°	25.9°	*	**	**	30.7°	27.9°	28.5°
	SD F-350 SUPER CHASSIS CAB 4x2 SRW	4110 [161.8]	9900(2)	20.8°	19.5°	*	**	**	25.7°	25.6°	25.8°
	SD F-350 SUPER CHASSIS CAB 4x4 SRW	4110 [161.8]	9900(2)	27.7°	23.3°	*	**	**	30.7°	27.9°	28.5°
	SD F-350 CREW CHASSIS CAB 4x2 SRW	4475 [176.2]	9900(2)	20.8°	18.5°	*	**	**	25.7°	25.6°	25.8°
	SD F-350 CREW CHASSIS CAB 4x4 SRW	4475 [176.2]	9900(2)	27.6°	22.1°	*	**	**	30.7°	27.9°	28.5°

(1) — 11,000 lb California.
(2) — 9700 lb California

NOTES — [ ] DIMENSIONS ARE INCHES
* — SPARE TIRE NOT MOUNTED UNDER THE CHASSIS.
** — NOT AVAILABLE ON CHASSIS CAB.
*** — NOT AVAILABLE ONPICKUPS.

SUPER DUTY F-SERIES GROUND CLEARANCE DATA

2004 MODEL YEAR

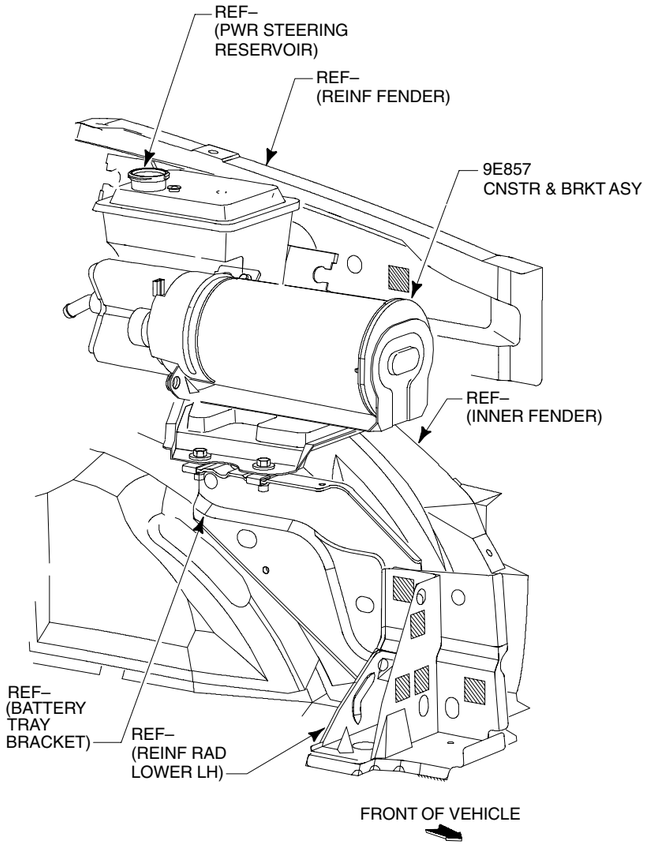
TIRE	MODEL	WHEELBASE	GVWR [lb]	H106 APPROACH ANGLE	H147 RAMP BREAKOVER	H107 DEPRTURE ANGLE					
						SPARE TIRE	REAR BUMPER	TRAILER HITCH	EXHAUST TAILPIPE	FRAME RAIL	AFT-AXLE FUEL TANK
225/70R19.5F	SD F-450 REGULAR CHASSIS CAB 4x2 DRW	3576 [140.8]	15,000	28.4°	26.5°	*	**	**	30.0°	27.5°	28.1°
		4186 [164.8]	15,000	28.4°	23.4°	*	**	**	30.0°	27.5°	28.1°
		4795 [188.8]	15,000	28.4°	23.4°	*	**	**	30.0°	27.5°	28.1°
		5100 [200.8]	15,000	28.4°	20.8°	*	**	**	30.0°	27.5°	28.1°
		3575 [140.8]	15,000	28.4°	26.5°	*	**	**	30.0°	27.5°	28.1°
	SD F-450REGULAR CHASSIS CAB 4x4 DRW	4186 [164.8]	15,000	28.4°	23.4°	*	**	**	30.0°	27.5°	28.1°
		4795 [188.8]	15,000	28.4°	23.4°	*	**	**	30.0°	27.5°	28.1°
		5100 [200.8]	15,000	28.4°	20.8°	*	**	**	30.0°	27.5°	28.1°
	SD F-450 SUPER CHASSIS CAB 4x2 DRW	4110 [161.8]	15,000	28.4°	24.1°	*	**	**	30.0°	27.5°	28.1°
	SD F-450 SUPER CHASSIS CAB 4x4 DRW	4110 [161.8]	15,000	28.4°	24.1°	*	**	**	30.0°	27.5°	28.1°
	SD F-450 CREW CHASSIS CAB 4x2	4475 [176.2]	15,000	28.4°	22.4°	*	**	**	30.0°	27.5°	28.1°
		5085 [200.2]	15,000	28.4°	22.4°	*	**	**	30.0°	27.5°	28.1°
	SD F-450 CREW CHASSIS CAB 4x4	4475 [176.2]	15,000	28.4°	22.4°	*	**	**	30.0°	27.5°	28.1°
		5085 [200.2]	15,000	28.4°	22.4°	*	**	**	30.0°	27.5°	28.1°
	SD F-550 REGULAR CHASSIS CAB 4x2 DRW	3576 [140.8]	17,500	28.4°	26.3°	*	**	**	30.0°	27.5°	28.1°
		4186 [164.8]	17,500	28.4°	23.4°	*	**	**	30.0°	27.5°	28.1°
		4795 [188.8]	17,500	28.4°	23.4°	*	**	**	30.0°	27.5°	28.1°
		5100 [200.8]	17,500	28.4°	20.8°	*	**	**	30.0°	27.5°	28.1°
		5100 [200.8]	19,000	28.4°	20.8°	*	**	**	30.0°	27.5°	28.1°
	SD F-550 REGULAR CHASSIS CAB 4x4 DRW	3576 [140.8]	17,500	28.4°	26.3°	*	**	**	30.0°	27.5°	28.1°
		4186 [164.8]	17,500	28.4°	23.6°	*	**	**	30.0°	27.5°	28.1°
		4795 [188.8]	17,500	28.4°	23.6°	*	**	**	30.0°	27.5°	28.1°
		5100 [200.8]	17,500	28.4°	20.8°	*	**	**	30.0°	27.5°	28.1°
	SD F-550 SUPER CHASSIS CAB 4x2 DRW	4110 [161.8]	17,500	28.4°	24.1°	*	**	**	30.0°	27.5°	28.1°
	SD F-550 SUPER CHASSIS CAB 4x4 DRW	4110 [161.8]	17,500	28.4°	24.1°	*	**	**	30.0°	27.5°	28.1°
	SD F-550 CREW CHASSIS CAB 4x2	4475 [176.2]	17,500	28.4°	22.4°	*	**	**	30.0°	27.5°	28.1°
		5085 [200.2]	17,500	28.4°	22.4°	*	**	**	30.0°	27.5°	28.1°
	SD F-550 CREW CHASSIS CAB 4x4	4475 [176.2]	17,500	28.4°	22.4°	*	**	**	30.0°	27.5°	28.1°
		5085 [200.2]	17,500	28.4°	22.4°	*	**	**	30.0°	27.5°	28.1°

NOTES — [ ] DIMENSIONS ARE INCHES

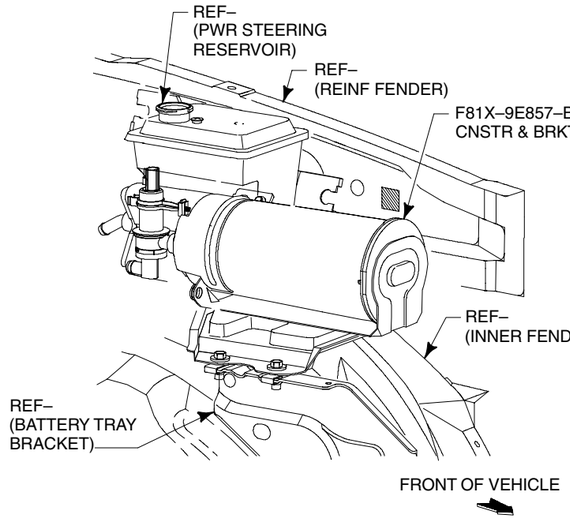
* — SPARE TIRE NOT MOUNTED UNDER THE CHASSIS.

** — NOT AVAILABLE ON CHASSIS CAB.

SUPER DUTY F-SERIES
FUEL SYSTEM EVAPORATIVE EMISSIONS



CANISTER LOCATION
5.4/6.8L GAS – 49 STATES
PICK–UPS / CHASSIS CABS

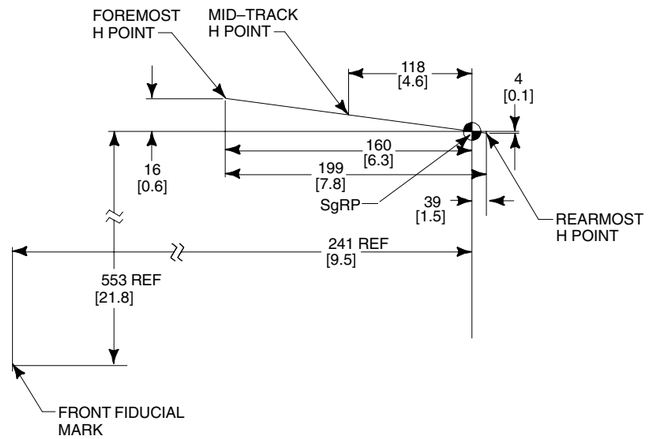


CANISTER LOCATION
CALIFORNIA ONLY
PICK–UPS / CHASSIS CABS

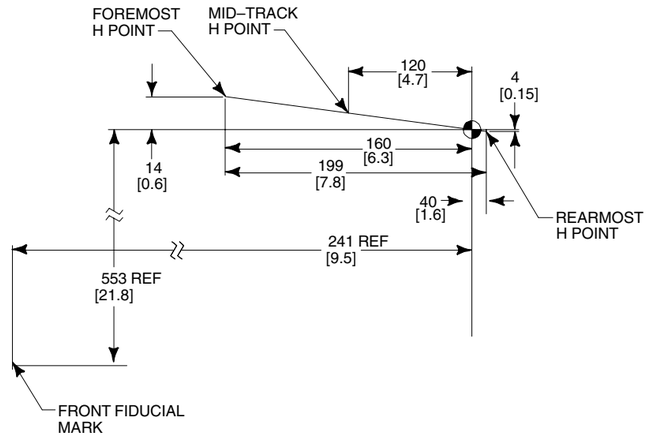
BB0321

SUPER DUTY F-SERIES
SEAT TRACK TRAVEL/H-POINT LOCATION

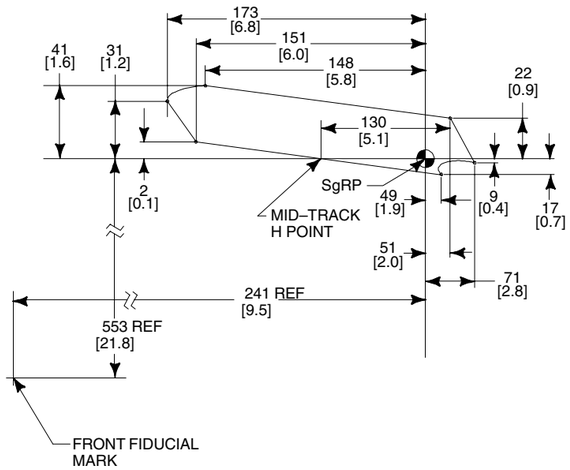
REGULAR/SUPERCAB
DRIVER'S SEAT
MANUAL TRACK



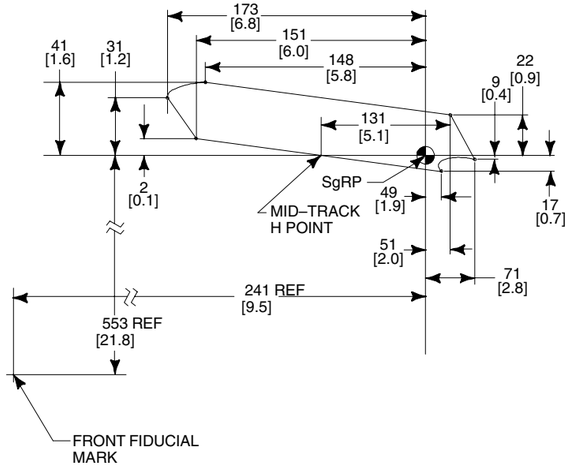
CREW CAB
DRIVER'S SEAT
MANUAL TRACK



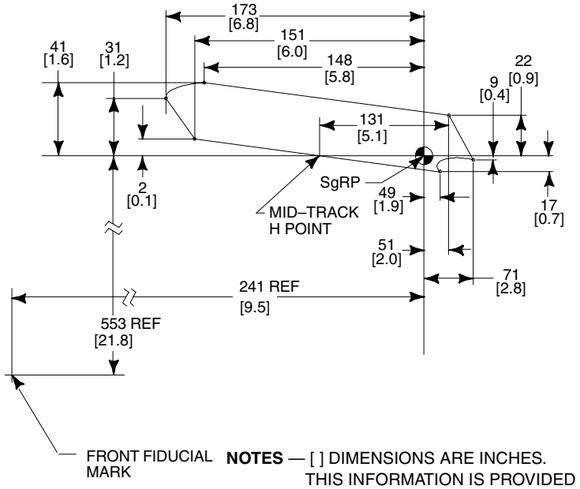
REGULAR CAB
DRIVER'S SEAT
POWER TRACK



SUPERCAB
DRIVER'S SEAT
POWER TRACK



CREW CAB
DRIVER'S SEAT
POWER TRACK



BB0298

NOTES — [ ] DIMENSIONS ARE INCHES.
THIS INFORMATION IS PROVIDED TO ASSIST IN THE INSTALLATION OF SEATS OTHER THAN FORD INSTALLED SEATS AND TO HELP PRESERVE THE INTENDED PERFORMANCE OF THE SAFETY AND ERGONOMIC FEATURES OF THE 2004 SUPER DUTY F-SERIES OVER 8500 LB.

CLASS A MOTOR HOME CHASSIS MODEL LINEUP

2004 MODEL YEAR

SUPER DUTY F-SERIES CLASS A MOTOR HOME CHASSIS (F-53)

MODEL	BODY CODE	WHEELS inches	WHEELBASE inches	STANDARD ENGINE liters	STANDARD TRANSMISSION	GVWR pounds	TRANSFER CASE	PAYLOAD pounds	CURB WEIGHT(1)		
									FRONT pounds	REAR pounds	TOTAL pounds
F-SUPER DUTY CLASS A MOTOR HOME CHASSIS	F53	19.5	178	6.8L V-10	4-Spd. Auto OD	15,700	—	10,054	3091	2555	5646
			190				—	9995	3132	2573	5705
			178			18,000	—	12,279	3120	2601	5721
			190				—	12,209	3157	2634	5791
			208				—	12,131	3208	2661	5869
			228				—	12,053	3250	2697	5947
			208			20,500	—	14,559	3228	2713	5941
			228				—	14,481	3270	2749	6019
			208			22,000	—	16,039	3228	2733	5961
			228				—	15,961	3270	2769	6039
		22.5	228				—	15,732	3416	2769	6185

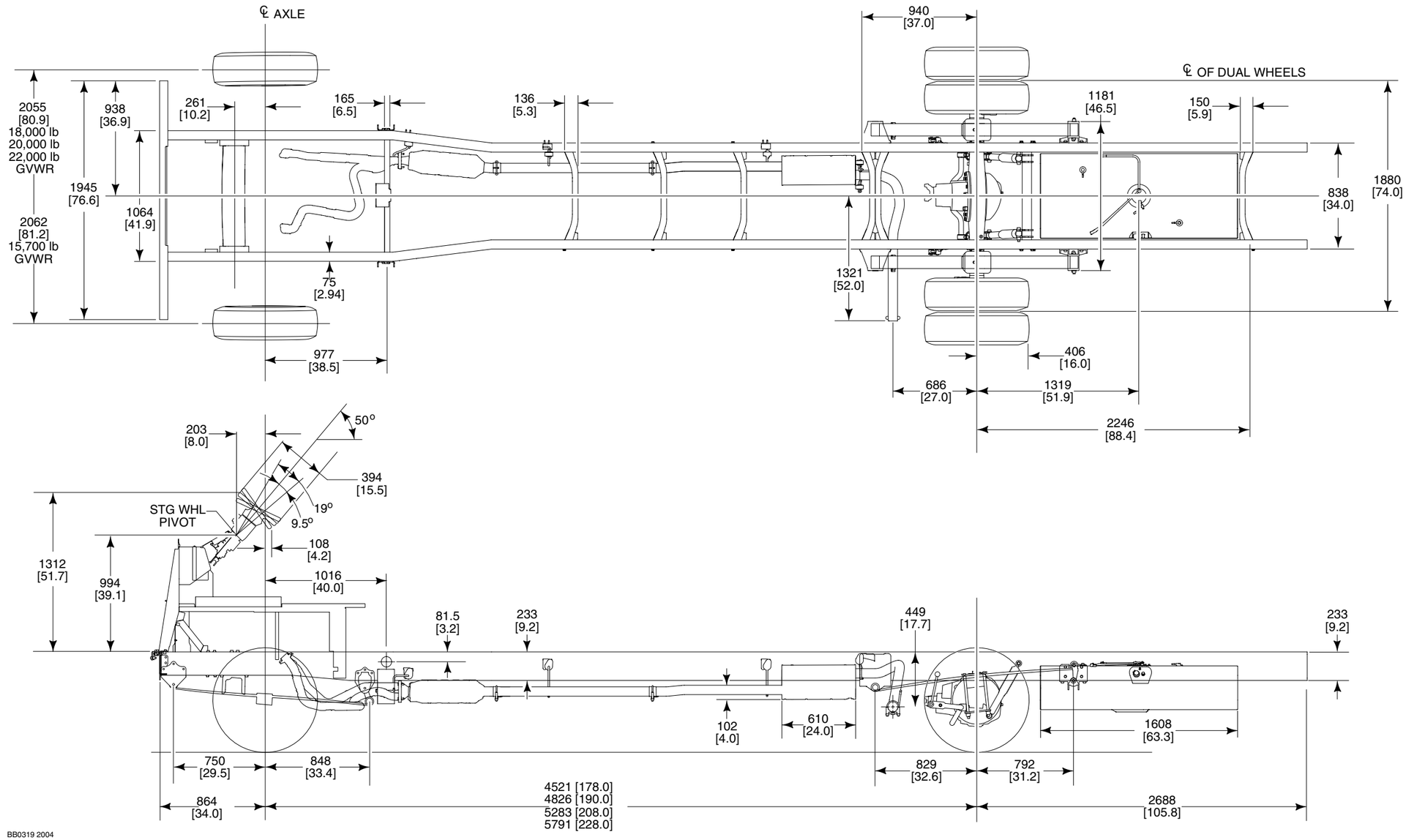
(1) Base curb weight is for standard equipment only.

	15,700 lb		18,000 lb		20,500 lb		22,000 lb	
	FRONT	REAR	FRONT	REAR	FRONT	REAR	FRONT	REAR
GAWR	6000	11,000	7000	11,000	7000	13,500	7500	14,500
AXLE	7000	11,000	7000	11,000	7000	13,500	7500	14,500
TIRES 245/70R19.5 (@ 80 PSI)	*	*	7660	14,620	7660	14,620	8160(1)	15,500(1)
TIRES 225/70R19.5 (@ 80 PSI)	6390	12,000	*	*	*	*	*	*
TIRES 235/80R22.5 (@ 90 PSI)							8160	15,500
SPRINGS COMBINED @ GROUND	7000	11,000	7000	11,000	7000	13,500	7500	14,500
NUMBER OF LEAVES	2	3	2	3	2	3	2	3
WHEELS 19.5 X 6	RATED 3750 PER WHEEL		*	*	*	*	*	*
WHEELS 19.5 X 6.75	*	*	RATED 4000 PER WHEEL					
WHEELS 22.5 X 7.5	*	*	*	*	*	*	RATED 4000 PER WHEEL	

* Not Applicable
(1) @ 85 PSI

F-SUPER DUTY CLASS A MOTOR HOME CHASSIS (F53)
CHASSIS DIMENSIONS

2004
MODEL YEAR



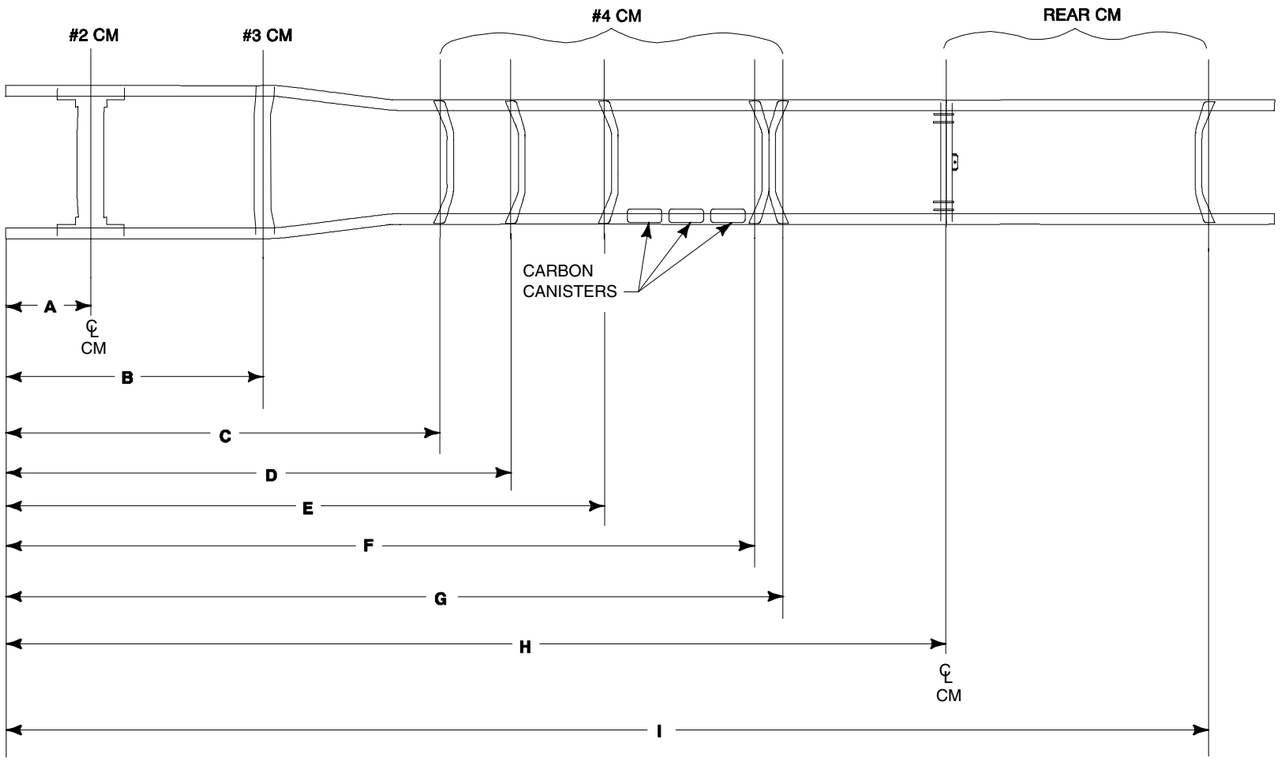
BB0319 2004

NOTE — [ ] DIMENSIONS ARE INCHES.

F-SUPER DUTY CLASS A MOTOR HOME CHASSIS (F53)
FRONT CROSSMEMBER (CM) LOCATIONS

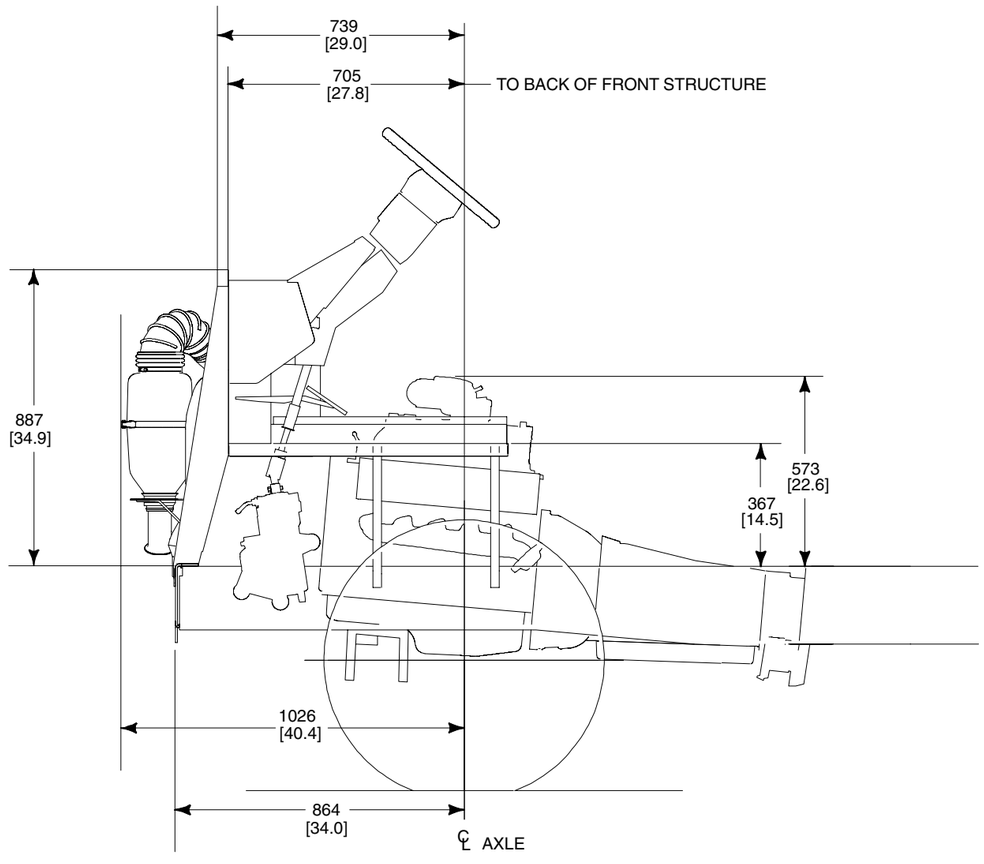
DIM.	178″ WB	190″ WB	208″ WB	228″ WB
A	599 [23.6]	599 [23.6]	599 [23.6]	599 [23.6]
B	1808 [71.2]	1808 [71.2]	1808 [71.2]	1808 [71.2]
C	NA	NA	3002 [118.2]	3282 [129.2]
D	NA	NA	NA	4004 [157.6]
E	3385 [133.3]	3436 [135.3]	4147 [163.3]	4655 [183.3]
F	4432 [174.5]	4737 [186.5]	5194 [204.5]	5702 [224.5]
G	4656 [183.3]	4960 [195.3]	5418 [213.3]	5926 [233.3]
H	5778 [227.5]	6083 [239.5]	6540 [257.5]	7048 [277.5]
I	7618 [299.9]	7923 [311.9]	8380 [329.9]	8888 [349.9]

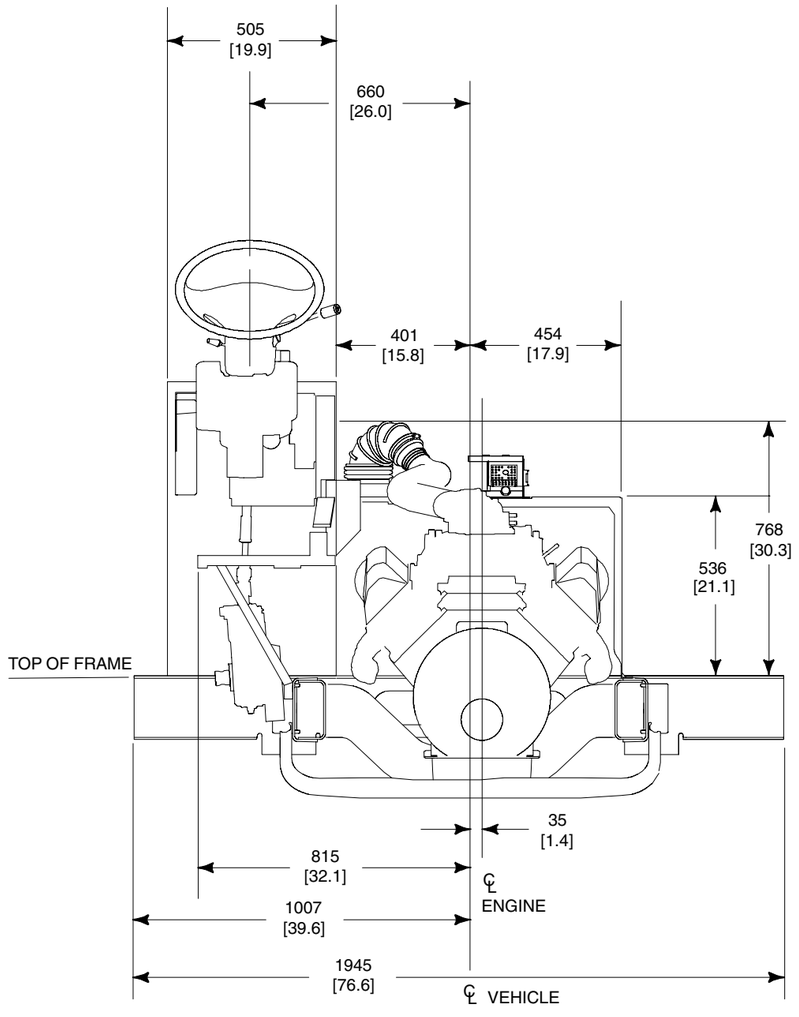
MEASUREMENTS TAKEN FROM FRONT EDGE OF LOWER FLANGE OF RAIL.



NOTES — UNLESS OTHERWISE NOTED, DIMENSIONS ARE TO THE CENTERLINE OF CROSSMEMBER FASTENERS.
— MEASUREMENTS FROM FRONT EDGE OF LOWER FRAME. SUBTRACT 9 MM IF MEASURED FROM TOP FRONT EDGE OF FRAME WEB.
— [ ] DIMENSIONS ARE INCHES.

F-SUPER DUTY CLASS A MOTOR HOME CHASSIS (F53)
FRONT STRUCTURE



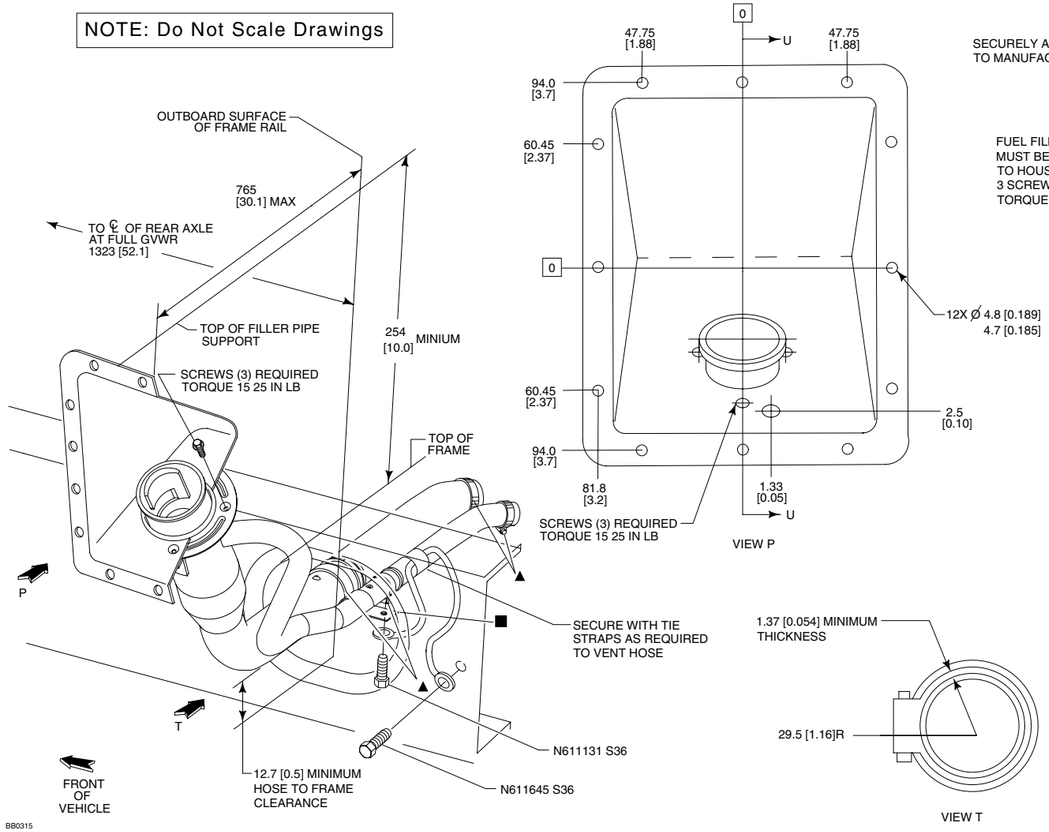


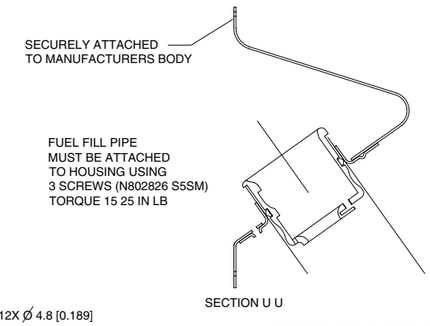
BB0314

NOTE — [ ] DIMENSIONS ARE INCHES.

F-SUPER DUTY CLASS A MOTOR HOME CHASSIS (F53)
FUEL FILLER PIPE INSTALLATION

NOTE: Do Not Scale Drawings





✳ WORM GEAR DRIVEN HOSE CLAMP STRUCTURAL BRACKET AND BLIND RIVETS ARE NOT PROVIDED BY FORD MOTOR COMPANY

● DIMENSIONS USING HOSE AS SUPPLIED BY FORD MOTOR COMPANY

▲ WORM GEAR DRIVEN HOSE CLAMPS TORQUE 2.8 4.0 NEWTON METERS (25 35 IN LBS)

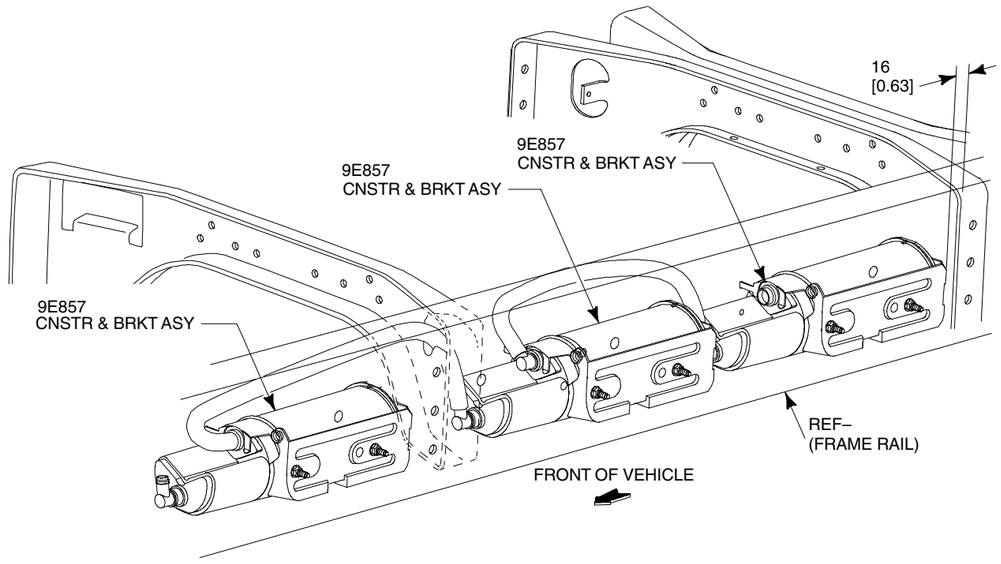
■ WORM GEAR DRIVEN HOSE CLAMP ✳ MUST FIT SECURELY OVER A 57.2 (2.25) O.D. FILL PIPE AND SECOND STAGE VEHICLE MANUFACTURERS BRACKET ✳

NOTE: MAKE SURE THE FILLER NECK SUPPORT IS INSTALLED PROPERLY AS PER THE NOTE ON PAGE 169 OF THIS SECTION.

WARNING:
IT IS MANDATORY TO USE THE SUPPLIED RUBBER HOSE FOR INSTALLING THE FUEL PIPE. ANY INCREASE IN LENGTH OR CHANGE IN MATERIAL OF THE SUPPLIED RUBBER HOSE WILL RESULT IN VOIDING THE EVAPORATE EMISSIONS CERTIFICATION.

NOTE — [ ] DIMENSIONS ARE INCHES.

F-SUPER DUTY CLASS A MOTOR HOME CHASSIS (F53)
FUEL SYSTEM EVAPORATIVE EMISSIONS

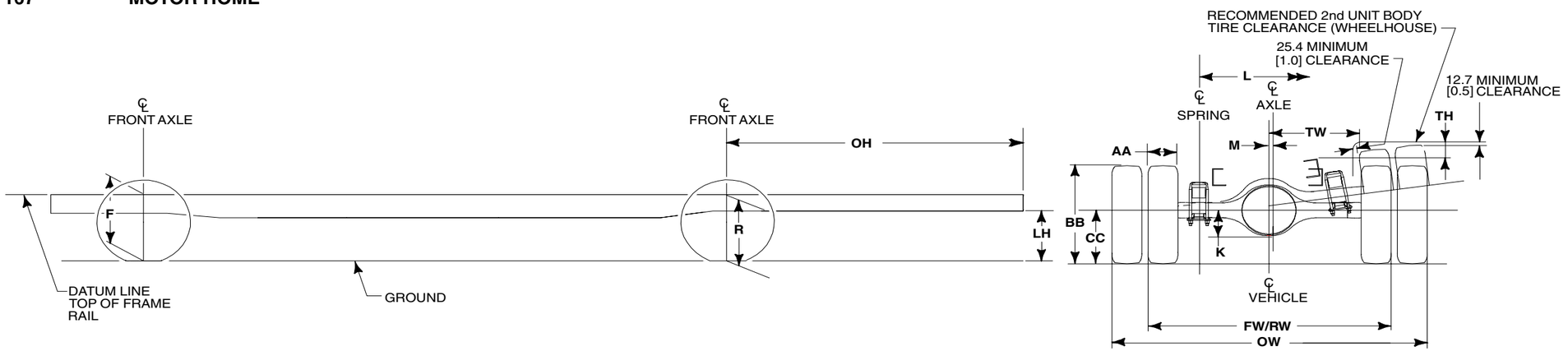


CANISTER LOCATION
CLASS A MOTOR HOME CHASSIS (F53)

BB0321

NOTE — [ ] DIMENSIONS ARE INCHES.

F-SUPER DUTY CLASS A MOTOR HOME CHASSIS (F53)
AXLE/TIRE/VEHICLE HEIGHT DATA



BB0317

MODEL	WB	GVWR	BASE TIRE	F HEIGHT AT FRONT WHEEL (1) (2) AT SPRING RATING	R HEIGHT AT REAR AXLE (1) (2) AT SPRING RATING	LH (2) AT SPRING RATING	OH	K	L	M	AA	BB	CC	FW	RW	REAR WHEEL MEASUREMENTS OW	TH	TW
F-Super Duty Class A Motor Home Chassis (F53)	4521 [178.0]	15,700	225/70R19.5	705 [27.7]	752 [29.6]	538 [21.1]	2688 [105.8]	177 [7.0]	1079 [42.5]	24 [1.0]	236 [9.3]	779 [30.7]	373 [14.7]	2291 [90.2]	1857 [73.1]	2310 [90.9]	270 [10.6]	638 [25.1]
	4826 [190.0]																	
	4521 [178.0]	18,000	245/70R19.5	722 [28.4]	770 [30.2]	552 [21.7]	2688 [105.8]	177 [7.0]	1079 [42.5]	24 [1.0]	254 [10.0]	810 [31.9]	391 [15.4]	2327 [91.6]	1848 [72.8]	2407 [94.8]	283 [11.1]	638 [25.1]
	4826 [190.0]																	
	5283 [208.0]																	
	5791 [228.0]																	
	5283 [208.0]	20,500	245/70R19.5	722 [28.4]	783 [30.8]	565 [22.2]	2688 [105.8]	214 [8.4]	1079 [42.5]	24 [1.0]	254 [10.0]	810 [31.9]	391 [15.4]	2327 [91.6]	1848 [72.8]	2407 [94.8]	283 [11.1]	638 [25.1]
	5791 [228.0]																	
	5283 [208.0]	22,000	245/70R19.5	722 [28.4]	783 [30.8]	565 [22.2]	2688 [105.8]	214 [8.4]	1079 [42.5]	24 [1.0]	254 [10.0]	810 [31.9]	391 [15.4]	2327 [91.6]	1848 [72.8]	2407 [94.8]	283 [11.1]	638 [25.1]
	5791 [228.0]																	
	5791 [228.0]		235/80R22.5	722 [28.4]	783 [30.8]	558 [22.0]	2688 [105.8]	214 [8.4]	1079 [42.5]	24 [1.0]	251 [9.9]	942 [37.1]	443 [17.4]	2327 [91.6]	1848 [72.8]	2407 [94.8]	283 [11.1]	638 [25.1]

(1) — The **F** and **R** Height Data represent dimensions from ground to “frame datum line” (top of frame rail) of a base/standard vehicle with no options.
(2) — These dimensions are for reference only. Actual height may vary due to production tolerances.

NOTE — [ ] DIMENSIONS ARE INCHES.

F-SUPER DUTY CLASS A MOTOR HOME CHASSIS (F53)
BODY AND SPECIAL EQUIPMENT
INSTALLATION PRECAUTIONS

2004 MODEL YEAR

GENERAL NOTES

1. Adherence to the following suggestions and warnings should not be construed as implying compliance with any particular U.S. or Canadian regulation. See the *Incomplete Vehicle Manual* (IVM) for specific information regarding compliance with U.S. or Canadian regulations.
2. The weight of the basic vehicle plus the sum of the weights of:
   (a) additions to the basic vehicle (body and equipment),
   (b) other cargo,
   (c) fuel sufficient to fill all tanks, and
   (d) the maximum number of occupants, at 150 lb per occupant

   must not exceed the GVWR of the vehicle as specified on the incomplete vehicle label attached to the IVM and must be distributed so that neither the front or rear GAWR (as specified on the Incomplete Vehicle label) is exceeded. Also see the IVM for further instructions. All heavy equipment installed by the body builder should be placed as close to the floor as practical to maintain a minimum vertical center of gravity. Side-to-side loading should be as symmetrical as possible about the vehicle longitudinal centerline to prevent vehicle lean and adverse steering and braking characteristics.
3. Rear departure angle of 8.1° minimum for the motor home chassis should be maintained to protect the fuel tank at GVWR. Rear bumpers or underbody skids should be considered to minimize interference to ground.
4. All subsequent manufacturer-installed items must be at least 3/4 inch away from fuel tank(s), rotating driveline components, and all other moving components. Also, they must be clear of all axle total movements.
5. EMISSIONS CONTROLS – See the *Incomplete Vehicle Manual*.
6. NOISE REGULATIONS – See the *Incomplete Vehicle Manual*.
7. SAFETY CERTIFICAITON INFORMATION – See the *Incomplete Vehicle Manual*.

BODY

1. Any structural member removed from the body or cowl assembly areas, except for the dunnage box supports, must be replaced or included in the body structure of any special body installed.
2. It is mandatory that the body builder establish a structurally sound combination of body and vehicle structure by securely fastening together the body and the frame. This requires a rigid body design and a thoroughly planned system of bolts, welds and other fastenings between the frame and body. To ensure structural integrity is maintained, the vehicle's front structure must not be modified.
3. To avoid interference problems with suspension components, body attachments to frame should not protrude below side member flange.
4. An access panel may be provided in the vehicle floor by the body builder to service the in-tank fuel pump.
5. The body builder should consider the addition of sound insulation to minimize engine and fan noise in the driver compartment.

FRAME

1. **FRAME WEB** – holes to mount brackets, outriggers, and supports may be drilled in the vertical side rail web with the following restrictions:
   - Material between edge of hole and inside of upper or lower flange must be at least 1.50 inch.
   - Minimum edge distance between any two holes must be at least twice the diameter of the largest hole.
   - Holes must be no larger than 0.75 inch in diameter. Avoid close vertical succession of fasteners.
   - All attaching fasteners, including flat washers, must be of high strength steel (Grade 8 or metric equivalent).
2. **FRAME FLANGE** – holes may be drilled in the horizontal frame flanges with the following restrictions:
   - Material between edge of hole and radius/edge of flange must be at least 1.0 inch.
   - Minimum edge distance between any two holes must be at least twice the diameter of the largest hole.
   - Holes must be no larger than 0.5 inch in diameter.
3. Welding to the frame flange is not recommended; welding to the vertical side web is preferred.
4. The frame for the motor home chassis is designed to permit removal of the engine and transmission out-the-bottom. This is facilitated by bolt-in No. 2 and No.3 crossmembers. Body builders should not add permanent structures which preclude powertrain removal.

ENGINE

1. Engine compartments must be designed to eliminate any air circulation restriction that would affect the air induction and cooling systems. Motor home engine compartments must provide adequate flow-through ventilation to prevent local temperatures from exceeding recommended maximums. Limits for critical engine components are shown in the table (see Cooling) on next page.
2. No modification of the air cleaner inlet duct is permissible. Removal or modification of this duct will affect function of the mass air meter, possibly causing driveability problems and increased tailpipe emissions.
3. The electronic speed control system used on the motor home chassis does not require any vacuum source or reservoir.

SUSPENSION AND STEERING

1. No vehicle or component alterations are allowed which restrict or prevent steering wheel, column, intermediate shaft, or coupling assembly collapse/stroke travel during crash.
2. Relocating the power steering fluid reservoir is not recommended. If the reservoir is moved, care must be taken to ensure that the power steering hoses are not kinked; hoses should have generous radii. Keep the reservoir upright in a vertical position while in the process of relocating it to ensure that no air enters the system.
3. If the suspension spacers are used between the spring and axle seats to accommodate side-to-side variations, they should not exceed 3/4 inch. Addition of spacers is not covered under warranty.

TRANSMISSION

1. Transmission components are sensitive to ambient temperatures. Underbody ventilation is critical and temperatures in specific areas should not exceed those listed in the Table (see Cooling) on the next page.
2. 4R100 wire harness routing location, wire harness locating clips, all heat shielding, and minimum clearance to the exhaust must be maintained as installed from the assembly plant. Failure to maintain minimum clearances may result in heat damage to the wiring, assembly and loss of transmission controls.
3. For the motor home equipped with automatic transmissions, it is mandatory that the shift linkage be readjusted after linkage repair, engine mount replacement or shimming, steering column replacement or repositioning, transmission replacement, or any repair which could change the linkage adjustment.

WHEELS AND TIRES

1. The 245/70Rx19.5F (18,000 lb, 20,500 lb and 22,000 lb GVWR) and the 225/70Rx19.5F (15,700 lb GVWR) are the only tires approved for the 19.5″ steel wheels F-Super Duty Class A Motor Home Chassis (F53).
2. The 235/80R22.5 XRV LRG Michelin tire (22,000 lb GVWR) is the only tire approved for the 22.5″ alum/steel wheels.

ELECTRICAL

All wiring additions and revisions should comply with procedures described in the "Electrical Wiring, General Practices" on page 191.

NOTE: Refer to the table on page 171 for identification of chassis wiring circuits, and tagged circuit splice locations. After all electrical or vehicle modifications, perform the on-board diagnostics procedures as described in the powertrain control/emissions diagnosis manual to clear all diagnostic trouble codes (DTCs). Road test vehicle and rerun on-board diagnostics to verify that no DTCs are present. If DTCs are generated, perform the appropriate diagnostic procedures and repairs. Vehicle operation (engine/transmission) may be affected if DTCs are not serviced.

NOTE: When chassis wheelbases are lengthened, the body builder must maintain the original slack length in the wire harness leads that are affected by suspension movement (jounce & rebound).

F-SUPER DUTY CLASS A MOTOR HOME CHASSIS (F53) BODY AND SPECIAL EQUIPMENT INSTALLATION PRECAUTIONS (Continued)

COOLING

Refer also to Design Recommendations: Cooling.

1. Cooling inlet area revisions (grille, bumper slots, etc.) must not significantly alter air flow and should be free from blockage such as spare tires, added brackets, etc. Restricted air flow can result in possible engine damage for which the installer may be held liable, should any claims arise.
2. A minimum frontal grille opening of 370 square inches is required to provide satisfactory engine cooling. The grille opening should be directly in front of the radiator or ducted in such a manner to direct airflow through the radiator core.
3. Engine and Automatic Transmission temperatures may be affected by motor home front-end design. Component temperature limitations should not be exceeded (See table below).

F-SUPER DUTY
CLASS A MOTOR HOME CHASSIS (F53)
MAXIMUM ALLOWABLE
COMPONENT TEMPERATURE

Components	Temperature
Fuel Rails/Pressure Regulator	200F
Engine Ignition Sensors	250F
EEC Module (mounted behind pedals)	175F
Auto Transmission Sensors	250F
Lower Transmission Area (mounts, gaskets, etc.)	250F

NOTE: Use only Ford Factory Coolers/Heat Exchangers.

EXHAUST

1. Any changes to the existing exhaust pipe length should be accomplished by welding or use of 3/8 inch U-bolt. Pipe added to the exhaust outlet must be of 0.053 inch minimum wall thickness. Extending the outlet pipe 10 inches or more requires an additional support bracket of a type similar to those provided with the original chassis.
   WARNING: It is mandatory that the side outlet tailpipe configuration be retained when any modification is made to the exhaust system, to reduce the possibility of exhaust fume entry through rear openings. The pipe outlet should not be located near any vent, window, door or body opening. The tailpipe or attenuator of any modified system should be above the departure angle of the finished vehicle.
2. Do not remove, reposition, or otherwise modify any existing OEM chassis or exhaust mounted heat shielding. These shields are there to ensure heat protection from underbody components as well as occupant comfort. Changes in the exhaust pipe length should be accompanied by a similar lengthening of the heat shielding where it exists. Additional underbody heat shielding is required to be installed by the builder as specified in the *QVM Motor Home and Transit Bus Guide*.

FUEL SYSTEM

1. The fuel tank for the motor home chassis is located between the frame rails aft of the rear axle, and is supported by straps and frame crossmembers. The body builder should consider skid plates or protective bars if the body structure does not adequately protect the lower and rear surfaces of the tank.
   WARNING: The five-gallon throwaway fuel tank used on the motor home chassis is for temporary use only during transit shipping, and is to be discarded by body builder. Minimum 10-gallon fuel fill on initial fill of aft-of-axle fuel tank to dilute anticorrosion solution.
2. Avoid relocating fuel tanks. Relocated fuel tanks must meet FMVSS requirements. Use torque specifications and controls for reinstalling tanks (refer to service manual).
   - To avoid electrical sparking at tank, disconnect the battery ground cable(s) from the vehicle battery(ies) before removing tank.
   - Fuel tank clearance to body or frame components is 0.75 inches minimum. The size of any flexible body mounts must not be considered as part of this clearance.
   - Suspension components must clear the fuel tank by 2.00 inches minimum through their functional geometry.
   - Unfriendly surfaces by fuel tanks are unacceptable (i.e., any fastener used to install back-up alarm, seats, etc., to floor or chassis components must not point toward fuel tank).
   - Revisions and welding to fuel filler pipes, filler necks and tanks must be avoided. When welding in the vicinity of the system (especially gasoline) remove the tanks and fuel components to prevent accidents.
   - When removing tanks for processing, tanks should be stored where protected and caps should be installed on all openings. Dirt/dust will plug fuel filters and could result in engine damage.
   - Reinstallation of fuel sender units always requires a new gasket (fastener torque of 85-115 in-lb is specified).
   - Auxiliary generator systems that are installed with their own fuel supply, or with a fuel supply provided by means other than using the tank auxiliary port, must meet FMVSS requirements.
   - Tapping into fuel tanks for an extra fuel source is highly undesirable and FMVSS certification is required. An auxiliary fuel port is available on the motor home chassis in-tank sender unit assembly.

   A fuel filler kit is provided with the Class A Motorhome Chassis. This filler kit is installed and tested in a representative motorhome to verify that it is capable of providing acceptable fuel fill function without spray, spitback or premature shutoff. However, Ford has no control over how the filler pipe and vent line are installed or modified by the Vehicle Modifier. Consequently, the Vehicle Modifier must ensure that the fuel filler pipe and any extensions added to the fill or vent lines are adequately supported to prevent sagging that could cause spray, spitback or premature shutoff during normal fueling operations. The Final Stage Manufacturer is responsible for verifying acceptable fuel fill function on the completed vehicle.

   The recommended horizontal and vertical location for fuel tank filler pipe is shown on page 165 of this section.
3. Fuel filler and vent hoses must not be exposed to sharp corners and should have a minimum of 1.00 inch clearance to the body and surrounding body and chassis components (except frame). If fuel filler hoses are in the vicinity of edges or corners, then shield/abrasion protection should be used. Sink traps (low spots in fuel filler and/or vent hose) are unacceptable. The recommended horizontal and vertical location for the fuel tank filler pipe is shown on page 165 of this section.
   Lengthening/relocating the fuel filler pipe can only be done with the hose supplied in the dunnage box and steel tube provided by the body builder. No substitute hose material is allowed. Total length of the hose used in the system cannot exceed that of the original hose supplied in the dunnage box. Failure to comply may void the evaporative emissions certification.
   - If fuel hoses or vent hoses are replaced, the new hoses must meet Ford Engineering specifications. ESL-M2D291-A2 torque specifications should be used for hose clamps (25 to 35 in-lb).
   - Extra connections in the fuel filler hose or vent hose, caused by the use of extensions, should be avoided.
   - Use only the Ford-specified fuel cap. Caps other than the Ford original (such as aftermarket locking gas caps) are unacceptable.
4. Splicing of fuel lines with clamps and rubber hoses is unacceptable.
   NOTE: Motor Home Chassis have P.T.F.E. nylon fuel lines.
   In-line fuel heaters (used on diesel only) should be compatible with Ford fuel line fittings (including nylon lines).
   When drilling or welding in areas where there are fuel or vapor lines, the lines should be removed
   Bolts installed into the chassis near fuel/vapor lines should have protective caps or other means of protection for the lines.
   Kinking or collapsing of fuel or vapor lines, while handling or after installation, is unacceptable. If line has been kinked, it must be replaced.
   If carbon canisters are relocated:
   - Heat shields should be added if they are located in the vicinity of the catalyst and/or muffler.
   - No additional hose can be added to the canister purge lines. Lengthening of the system can only be accomplished by replacing one or more of the steel tubes with a longer tube. The number of joints and length of hose in the system cannot be increased. If any of the hose is damaged, it must be replaced with CADBAR II low permiability hose meeting Ford Engineering Specification ESA-M2D50-B. Failure to comply may void the evaporative emissions certification.
   - Fastener torque specs are 14 to 22 ft-lb for remounting of canister brackets to frame.

   Avoid routing of fuel or vapor lines near any sharp edges or corners. Protect lines if near any sharp edges or corners.
   Do not add auxiliary filters to fuel return lines or auxiliary pumps to fuel supply lines.

DRIVELINE

1. No drilling or welding to the front axle “I” beam is permissible. Special equipment mounting or attaching brackets, requiring attachment to the front axle, may be clamped to axle “I” beam only.

F-SUPER DUTY CLASS A MOTOR HOME CHASSIS (F53) BODY AND SPECIAL EQUIPMENT INSTALLATION PRECAUTIONS (Continued)

1. ADDING LIGHT OR ELECTRICAL DEVICES

Although there are many points in the truck electrical system to connect additional circuits, certain connection points provided are recommended for reliability and convenience. This section defines the recommended connection points for the F-Super Duty Class A Motor Home Chassis (F53) models and the maximum electrical loads allowable.

CAUTION: Improper electrical tie-ins may affect vehicle operation (i.e., engine, transmission).

Alternative connections or wiring practices are not recommended as certain modifications may result in other circuits becoming nonfunctional. Disconnect the battery negative (ground) cable and remove it from the battery carrier prior to any vehicle modification. Upon completion of body or equipment installation, all wiring should be checked fro proper routing, etc., to preclude electrical shorts upon reinstallation of the battery negative cable.

All electrical power for 12 volt equipment installed by the body builder must be taken off at the battery terminal of the auxiliary battery relay, starter relay, or locations provided and identified later in this book, and must be protected by a fuse, circuit breaker, or fusible link.

The vehicle wiring and protection were designed for the following lighting loads - additional loads to any circuit must be installed in accordance with the detailed electrical wiring instructions provided later in this book

.

Qty	Components	Trade No.
2	Halogen Headlamp Bulbs	9004
10	Combination Rear Lamp (tail, brake, turn signal) Bulbs	1157
2	Back-up Lamps	1156
4	Side Marker Bulbs	194
2	License Plate Illumination Bulbs	194
2	Interior Dome Bulb	561
16 5	Bulbs for Instrument Cluster Illumination Small Bulb Large Bulb	37 194

2. LIGHTS CONTROLLED BY HEADLAMP SWITCH

The headlamp switch on the F-Super Duty Class A Motor Home Chassis (F53) utilizes one 20 amp fuse for the headlamp high beam circuit and two 10 amp fuses for low beam. The vehicle contains a standard daytime running lamp system which operates using low beam/ reduced intensity.

NOTE: Do not add marker lamps to the headlamp circuit; a separate circuit is provided for the marker lamps. Adding the marker lamps to the headlamp circuit can result in an overload of the circuit. For full service temperature range, the headlamp switch load should not exceed 15 amp.

Wiring access for lights to be controlled by the headlamp switch are provided at the front of the dash panel and at the rear of the vehicle, and are identified by tags attached to these wires.

Splices and electrical loading (fusing and wire size requirements) of these circuits must be in accordance with general practices previously identified.

3. LIGHTS CONTROLLED BY STOP LAMP SWITCH AND TURN INDICATOR SWITCH

NOTE: Splicing into the stop lamp switch on vehicles with 4R100 transmissions can interfere with the proper functioning of EEC, 4R100, and speed control. This can:

- Affect EFI engine idle speed quality.
- Prevent the 4R100 torque converter clutch from applying at throttle openings less than half throttle.
- Prevent the speed control from disengaging upon braking.

If your application involves splicing into the stop lamp switch of a 4R100-equipped vehicle, please call the Truck Body Builders Advisory Service at 1-877-840-4338.

The F-Super Duty Class A Motor Home Chassis (F53) has a mechanical stop lamp switch mounted on the brake pedal arm. These switches and associated wiring are designed for a maximum load of 10.5 amp, which is less than the fuse in the circuit, but ample for normal stop lamp loads. Under no circumstances are total loads in excess of this value permissible.

If only turn signal function is desired for the added lights, splice into the taillamp loom located at the rear of the vehicle. Splice into wires tagged “RH turn signal only ‘or’ LH turn signal only.”

If both the turn signal and stop lamp function are desired for the added lights, splice into the taillamp loom at the rear of the vehicle into wires tagged, “RH turn w/brake ‘and’ LH turn w/brake.”

NOTE: The turn signal switch used on light trucks has a maximum rated current of 6.5 amps for right and left turning functions and 10 amps for stop lamp function. Do not exceed these values on the turn signals.

The turn signal and emergency flasher system on the F-Super Duty Class A Motor Home Chassis (F53) utilizes an electronic flasher. For the turn signal function, the electronic flasher is designed to accommodate five 2.1 amp lights; and for the emergency flasher function, it is designed to accommodate ten 2.1 amp lights for combination stop/turn and trailer lamps.

NOTE: Adding more lights than what is specified above can result in reduced life and performance of the flasher.

4. ADDED LIGHT OR ACCESSORIES CONTROLLED BY ADDED SWITCHES

The added electrical switches and wiring must have sufficient electrical capacity for the accessory load and must be protected by appropriate fuses or circuit breakers. Also, added current draw must not cause total loads to exceed capabilities of the base vehicle wiring.

State, provincial, local laws may regulate the manner in which the fog and driving lamps are used, or may require additional equipment for the particular use intended for the vehicle. It is the buyer’s/owner’s responsibility to determine the applicability of such laws to the buyer’s/owner’s intended use for the vehicle and to arrange for the installation of required equipment.

When horns are installed, the location must be as high as possible with bell mouth of horn pointed downward.

NOTE: For additional information on Electrical/Trailer Tow wiring and devices, please refer to the *Body Builder Wiring Supplement*.

5. BATTERIES AND VOLTAGE REGULATOR

The battery location must be adequately ventilated, accessible for servicing, protected from road splash, and must also incorporate a shockless mounting.

The coach or chassis battery must not be located under the air cleaner inlet to prevent ingesting any gas that may be emitted from the battery.

If the original equipment battery is replace by more than one battery, or a battery of a larger capacity, the battery charging power supply circuit must be checked and revised to carry the additional loads.

F-Super Duty Class A Motor Home Chassis (F53) has a separate wire to the EEC IV module to maintain Keep Alive Power, and is not affected by the addition of a battery cut-off switch.

The electronic voltage regulator base must always be connected to the battery, engine chassis ground when the ignition switch is in either the ON or START position. The voltage regulator will be damaged if the connection does not exist when the ignition switch is energized.

ELECTRONICS

Refer to the Electrical Wiring Section for information on the Electronic Engine Control system.

A/C PREP PACKAGE

1. The F-Super Duty Class A Motor Home Chassis (F53) comes with an R134a (non-CFC) air conditioning prep package for use with a TXV controlled a/c system. This package consists of a compressor, condenser, high side lines with high pressure switch air recirculation baffles, and front end accessory drive which are mounted to the chassis, and a receiver/dryer with low pressure cutoff switch that is shipped in the dunnage box and is located by the body builder.

2. Information on air conditioning refrigerant and lubricant quantities are shown in the *Motor Home and Transit Bus Guide*.

F-SUPER DUTY CLASS A MOTOR HOME
CHASSIS (F53) BODY AND SPECIAL EQUIPMENT
INSTALLATION PRECAUTIONS (Continued)

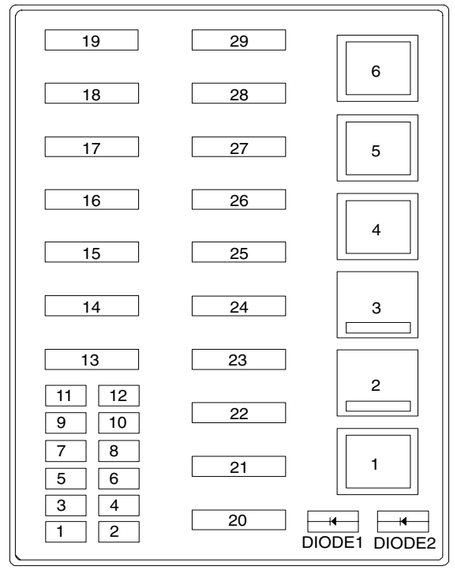
Circuit	Circuit #	Gauge	Color	Location	Fuse Loc	Fuse Size
• Accessory Feed (Accy's & Run)	296	18	White-Purple Stripe	Top Side of Dash Panel (Part of 14A318-A w/asy)	F/P Pos. #5	10A
• Accessory Feed (Run only)	294	18	White-Lt. Blue	Top Side of Dash Panel (Part of 14A318-A w/asy)	F/P Pos. #38	10A
• A/C Switch	441	16	Purple Stripe	Top Side of Dash Panel (Part of 14A318-A w/asy)	—	—
• Backup Lamp	140	18	Black-Pink	Rear of Vehicle (Part of 14408 w/asy)	F/P #32	10A
• Battery Feed	1049	16	Brown-Pink Stripe	Top Side of Dash Panel (Part of 14A318-A w/asy)	F/P #16	20A
• Blower Motor Feed	181	10	Brown-Orange Stripe	Top Side of Dash Panel (Part of 14401-A w/asy)	PDB Fuse 23	40A
• Brake Lamp Feeds	511	16	Lt. Green	Top Side of Dash Panel (Part of 14A318-A w/asy), Front Side of Dash Panel (Part of 14A348 w/asy) -and Rear of Vehicle (Part of 14408 w/asy)	F/P Pos. #9	20A
• Cigarette Lighter Feed	40	16	Lt. Blue-White Stripe	Top Side of Dash Panel (Part of 14A318-A w/asy)	PDB Fuse 22	20A
• Interior Lamp Feed (Ground)	402	20	Orange-Lt. Green	(Part of 14A318-A w/asy)	—	—
• Door Ajar Lamp Ground	433	20	Dark Green-Orange	Top Side of Dash Panel (Part of 14A318-A w/asy)	—	—
• Electric Brake Power	43	12	Dark Blue	Rear of Vehicle (Part of 14408 w/asy)	PDB Fuse 13	30A
• Ground During Start	41	20	Black-Lt. Blue	Top Side of Dash Panel (Part of 14A318-A w/asy)	—	—
• Headlamp High Beam Feed	12	16	Lt. Green-Black Stripe	Front Side of Dash Panel (Part of 14290 w/asy)	F/P #35	20A
• Headlamp Low Beam Feed (Left) (Right)	160 161	18 18	Dark Brown and White Dark Green-Orange	Front Left Side of Dash Panel (Part of 14290 w/asy) Front Right Side of Dash Panel (Part of 14290 w/asy)	F/P #31 F/P #25	10A 10A
• Horn Feed	6	16	Yellow-Lt. Green	Front Side of Dash Panel (Part of 14290 w/asy)	PDB Fuse #18	20A
• Instrument Panel Lamp Feed	19	20	Lt. Blue-Red Stripe	Top Side of Dash Panel (Part of 14A318-A w/asy)	F/P Pos. #41	10A
• Interior Lamp Feed	53	18	Black-Lt. Blue	Top Side of Dash Panel (Part of 14A318-A w/asy) and Rear of Vehicle (Part of 14408 w/asy)	F/P #4	15A
• LH Turn Signal (only) Feed	3	16	Lt. Green-White Stripe	Front Side of Dash Panel (Part of 14290 w/asy) and Rear of Vehicle (Part of 14408 w/asy)	F/P Pos. #15	15A
• LH Turn w/Brake Signal Feed (Turn)	9	16	Lt. Green-Orange	Rear of Vehicle (Part of 14408 w/asy)	F/P Pos. #1	20A
• Marker Lamp Feed (Park Lamp)	14 14 14 14 14	16 16 14 16 16	Brown Brown Brown Brown Brown	Front Side of Dash Panel (Part of 14290 w/asy) Front Side of Dash Panel (Part of 14A38 w/asy) Top Side of Dash Panel (Part of 14A318-A w/asy) Middle of Vehicle (Part of 14405 w/asy) Rear of Vehicle (Part of 14408 w/asy)	PDB #6	20A
• Park Brake Ground	162	20	Lt. Green-Red	Top Side of Dash Panel (Part of 14A318-A w/asy)	—	—
• Radio Feed	137	18	Yellow-Black Stripe	Top Side of Dash Panel (Part of 14A318-A w/asy)	F/P Pos. #17	5A
• RH Turn Signal (only) Feed	2	16	White-Lt. Blue	Front Side of Dash Panel (Part of 14290 w/asy) and Rear of Vehicle (Part of 14408 w/asy)	F/P Pos. #21	15A

NOTES — 14A032, 14A318, 17B587, 14408, 13A840, AND 18A840 WIRE ASYS ARE PROVIDED IN DUNNAGE BOX.
FUSE PANEL (F/P) IS LOCATED ON 14A032-A WIRE HARNESS PROVIDED IN DUNNAGE BOX.
POWER NETWORK BOX (PNB) IS LOCATED ON 12A581 WIRE HARNESS LOCATED IN ENGINE COMPARTMENT.

F-SUPER DUTY CLASS A MOTOR HOME
CHASSIS (F53) BODY AND SPECIAL EQUIPMENT
INSTALLATION PRECAUTIONS (Continued)

Circuit	Circuit #	Gauge	Color	Location	Fuse Loc	Fuse Size
• RH Turn w/Brake Signal Feed (Turn)	5	16	Orange-Lt. Blue	Rear of Vehicle (Part of 14408 w/Asy)	F/P Pos. #1	20A
• LH Turn w/Brake Signal Feed (Brake)	9	16	Lt. Green-Orange	Rear of Vehicle (Part of 14408 w/Asy)	F/P #9	20A
• RH Turn w/Brake Signal Feed (Brake)	5	16	Orange-Lt. Blue	Rear of Vehicle (Part of 14408 w/Asy)	F/P #9	20A
• Electric Brake Controller	50	12	Red	Front Side of Dash (Part of 14A348 w/Asy)	PDB #13	30A
• Electric Brake Ground	206	14	White	Front Side of Dash (Part of 14A348 w/Asy)	—	—
• Trailer Backup Lamp	963	16	Black-Lt. Green	Top Side of Dash Panel (Part of 14A318 w/Asy) and Rear of Vehicle (Part of 14408 w/Asy)	PDB #12	20A
• Trailer Ground	206	10	White	Rear of Vehicle (Part of 14408 w/Asy)	—	—
• Trailer LH Turn/Stop Lamp	52	16	Yellow	Rear of Vehicle (Part of 14408 w/Asy)	F/P #6	10A
• Trailer RH Turn/Stop Lamp	64	16	Dark Green	Rear of Vehicle (Part of 14408 w/Asy)	F/P #12	10A
• Trailer Running Lamps	962	16	Brown-White	Rear of Vehicle (Part of 14408 w/Asy)	PDB #12	20A
• Warning Chime — Door Jam	159	20	Red-Pink Stripe	Top Side of Dash Panel (Part of 14A318-A w/Asy)	—	—
• Warning Chime — Seat Belt	85	20	Brown-Lt. Blue Stripe	Top Side of Dash Panel (Part of 14A318-A w/Asy)	—	—
• Washer Pump Feed • Wiper Motor Feed — Common • Wiper Motor Feed — High • Wiper Motor Feed — Ignition • Wiper Motor Feed — Low • Wiper Motor Feed — Switch	941 61 58 65 56 28	14 14 14 14 14 14	Black-White Stripe Yellow-Red Stripe White Dark Green Dark Blue-Orange Stripe Black-Pink Stripe	Front Side of Dash Panel (Part of 17B587 w/Asy)	F/P Pos. #11	30A

NOTES: 14A032, 14A318, 17B587, 14408, 13A840, and 18A586 WIRE ASY'S ARE PROVIDED IN DUNNAGE BOX.
FUSE PANEL (F/P) IS LOCATED ON 14A032-A WIRE HARNESS PROVIDED IN DUNNAGE BOX.
POWER NETWORK BOX (PNB) IS LOCATED ON 12A581 WIRE HARNESS LOCATED IN ENGINE COMPARTMENT.



POWER DISTRIBUTION BOX

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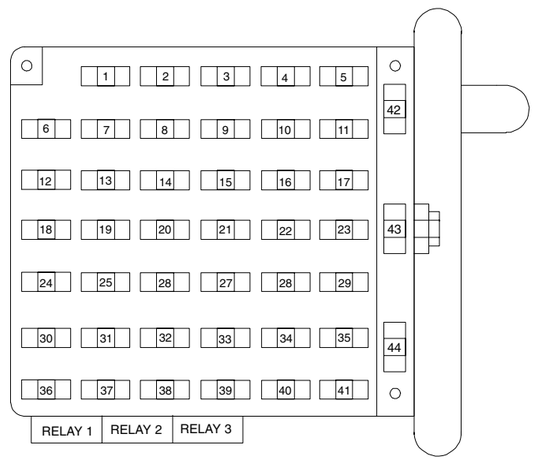


FUSE PANEL

F-150 4X4 SNOWPLOW INSTALLATION

2004 MODEL YEAR

Minimum Recommended Equipment

- Regular Cab 4x4 144.5" WB, 8.0' pickup box, or SuperCab 4x4 163.0" WB, 8.0' pickup box.
- Snowplow Prep Package (Option Code 63A), includes:
  - — FGAWR upgrade to 4300 lbs. (4300 lb. spring rating)
- Heavy Duty Payload Package (Option Code 627), includes:
  - — 8200 lb. GVWR
  - — 4050 lb. FGAWR (4050 lb. spring rating)
  - — 4800 lb. RGAWR (4900 lb. spring rating)
  - — Rear axle: capacity upgrade to 5300 lb. and 10.25" dia. ring gear, 4.10 ratio, limited-slip not included but available.
  - — 17" x 7.5" J 7-lug steel wheels
  - — LT245/70R X 17D BSW all-season tires (5)
  - — 5.4L 3-valve V8 engine, 4R75E automatic transmission
  - — Super Engine Cooling (1.42" core thickness)
  - — Auxiliary transmission oil cooler, oil-to-water, increased to 9-channel / 18-plate
  - — Battery upgrade to 72 amp-hr. / 650 CCA

Warranty

The Ford New Vehicle Limited Warranty applies to vehicles with snowplows installed in accordance with these guidelines. Consult your Ford dealer or the *Owner Guide* for any further questions.

Completed Vehicle Weight

Snowplow weights (maximum recommended):

- — 650 lb. removable snowplow equipment
- — 75 lb. permanently attached hardware
- — Assumes the weight of a driver and one front seat passenger, 150 lb. each, and maximum buildable Ford option content.

The vehicle must not be operated when over-loaded. A vehicle is over-loaded when the weight of the completed vehicle with aftermarket equipment installed, plus driver, passengers, and cargo, exceeds either the FGAWR, RGAWR, or GVWR established by Ford Motor Company and displayed on the Safety Compliance Certification Label

The addition of ballast weight placed rearward of the rear axle may be required to prevent exceeding FGAWR, and provide good vehicle braking and handling. The ballast should be attached securely to the vehicle with consideration for the normal driving dynamics of snowplowing, and occupant safety in accidents.

For Ford completed vehicles of 10,000 GVWR or less, the weight of permanently attached aftermarket equipment must not exceed the Total Accessory Reserve Capacity (T.A.R.C.) displayed on the Safety Compliance Certification Label to maintain the compliance representation that came with the Ford-built vehicle. Exceeding T.A.R.C. will require recertification. This applies only to the permanently attached equipment, such as the snowplow frame mounting hardware, and not to the removable portion of the snowplow blade assembly.

Front End Wheel Alignment and Headlight Aim

Front end wheel alignment (toe) and headlight aim may require readjustment after installation of snowplow equipment. Failure to reset front wheel alignment may cause premature uneven tire wear. If required, reset to chassis manufacturer's specifications found in the *Ford Shop Manual*.

Electrical Connections

Installation of any inductive load devices such as electric motors, or electric clutches for clutch pumps, must not be connected to Ford vehicle wiring or fuse panels. Power for such devices should be taken directly from the battery or starter motor relay power terminal. Control of these devices should be achieved via relays. No direct current path should exist between Ford vehicle wiring and the installed load that is not filtered by the battery. These recommendations are intended to eliminate or minimize any induced reverse voltage into the Ford circuitry.

SUPER DUTY F-250-550 4X4 SNOWPLOW INSTALLATION MINIMUM REQUIRED AND RECOMMENDED EQUIPMENT

2004 MODEL YEAR

The Super Duty F-Series vehicles tabled below are available for snowplow usage.

Minimum Recommended Equipment

- Snowplow Package (Option Code 86M), includes:
  - — Highest Front GAWR (5200 lb for F-250/350; 6000 lb for F-450/550)
  - — Auxiliary Rear Springs with 5.4L V-8 engine
  - — Steering damper (F-250/350)
- Plow and attaching hardware weight limits as tabled below.

Standard Equipment

- Front stabilizer bar.
- Rear stabilizer bar (standard Chassis Cab and DRW pickup models).
- Roof clearance lights (standard Chassis Cab and DRW pickup models).
- Engine oil cooler, transmission oil cooler, and maximum capacity engine coolant radiator are standard on Super Duty F-Series.
- All available axle ratios are acceptable.
- Available with manual and automatic transmission. Operate automatic transmission in overdrive when snowplowing

Completed Vehicle Weight

Snowplow weights (maximum recommended): Refer to the tables below.

The vehicle must not be operated when over-loaded. A vehicle is over-loaded when the weight of the completed vehicle with aftermarket equipment installed, plus driver, passengers, and cargo, exceeds either the FGAWR, RGAWR, or GVWR displayed on the Safety Compliance Certification Label.

The addition of ballast weight placed rearward of the rear axle may be required to prevent exceeding the FGAWR, and provide good vehicle braking and handling. The ballast should be attached securely to the vehicle with consideration for the normal driving dynamics of snowplowing, and occupant safety in accidents.

For Ford completed vehicles of 10,000 lb. GVWR or less, the weight of permanently attached aftermarket equipment must not exceed the Total Accessory Reserve Capacity (TARC) displayed on the Safety Compliance Certification Label to maintain the compliance representation that came with the Ford built vehicle. Exceeding TARC may require re-certification. This applies only to the permanently attached equipment, such as the snowplow frame mounting hardware, and not to the removable portion of the snowplow blade assembly.

Front End Wheel Alignment and Headlight Aim

Front end wheel alignment (toe) and headlight aim may require readjustment after installation of snowplow equipment. Failure to reset front wheel alignment may cause premature uneven tire wear. If required, reset to chassis manufacturer's specifications found in the *Ford Shop Manual*.

Electrical Connections

Installation of any inductive load devices, such as electric motors or electric clutches for clutch pumps, must not be connected to Ford vehicle wiring or fuse panels. Power for such devices should be taken directly from the battery or starter motor relay power terminal. Control of these devices should be achieved via relays. No direct current path should exist between Ford vehicle wiring and the installed load that is not filtered by the battery. These recommendations are intended to eliminate or minimize any induced reverse voltage into the Ford circuitry.

Warranty

The Ford New Vehicle Limited Warranty applies to vehicles with snowplows installed in accordance with these guidelines. Consult your Ford dealer or the *Owner's Guide* for any further questions.

BlockerBeam

A metal crossmember is included below the front bumper on 2004 Super Duty F250/350/450/550 vehicles called a "BlockerBeam".

Warning: Removing the BlockerBeam without installing snowplow attachment hardware may effect air bag deployment in a crash. Do not operate the truck unless either the BlockerBeam or snowplow attachment hardware is installed on the vehicle.

4x4 Pickup(1) Driver and One Passenger			Models	
			F250(2)	F350(2)
Regular Cab	137.0"	5.4L V8	100/750	100/750
		6.8L V10	100/750	100/750
		6.0L V8 Diesel	100/680	100/680
Super Cab	141.8"	5.4L V8	100/750	100/750
		6.8L V10	100/750	100/750
		6.0L V8 Diesel	N/R(3)	100/680
	158.0"	5.4L V8	100/750	100/750
		6.8L V10	100/750	100/750
		6.0L V8 Diesel	N/R(3)	N/R(3)
Crew Cab	156.2"	5.4L V8	100/750	100/750
		6.8L V10	100/750	100/750
		6.0L V8 Diesel	N/R(3)	N/R(3)
	172.4"	5.4L V8	100/750	100/750
		6.8L V10	100/750	100/750
		6.0L V8 Diesel	N/R(3)	N/R(3)

(1) = Includes Pickups ordered with Pickup Box Delete option.

(2) = 100 / 750 = Maximum 100 lb. of permanently-attached hardware / Maximum 750 lb. of removable plow blade and hardware. The plow and hardware weight limits shown are based upon a vehicle with maximum buildable Ford option content and 150 lb. for the driver and one front seat passenger.

(3) = Not recommended for snowplow application; Snowplow Package (option code 86M) not available. A model designated "N/R" is limited in the amount of load capacity available to support a typical "commercial-weight" snowplow, or would require excessive rear ballast weight.

4x4 Chassis Cab Driver and One Passenger			Models		
			F350(2)	F450(2)	F550(2)
Regular Cab	140.8" WB 60" CA	5.4L V8	100 / 750		
		6.8L V10	100 / 750	125/900	125/900
		6.0L V8 Diesel	100 / 750	125/900	125/900
	164.8" WB 84" CA	5.4L V8	100 / 750		
		6.8L V10	100 / 750	125/900	125/900
		6.0L V8 Diesel	100 / 750	125/900	125/900
	188.8" WB 108" CA	6.8L V10		125/900	125/900
		6.0L V8 Diesel		125/900	125/900
	200.8" WB 120" CA	6.8L V10		125/900	125/900
		6.0L V8 Diesel		125/900	125/900
Super Cab	161.8" WB 60" CA	5.4L V8	100 / 750		
		6.8L V10	100 / 750	125/900	125/900
		6.0L V8 Diesel	100 / 750	125/900	125/900
Crew Cab	176.2" WB 60" CA	5.4L V8	100 / 750		
		6.8L V10	100 / 750	125/900	125/900
		6.0L V8 Diesel	N/R(3)	125/900	125/900
	200.2" WB 84" CA	6.8L V10		125/900	125/900
		6.0L V8 Diesel		100 / 750	100 / 750

POWER TAKE-OFF (PTO) INSTALLATIONS

2004 MODEL YEAR

THE VEHICLE AS AN AUXILIARY OR STATIONARY POWER SOURCE

Ford trucks are designed principally to provide vehicle motivation and short term auxiliary power needs. Power activation of hydraulic or mechanically driven devices such as wrecker lift, snowplow blade lift and movement, power tailgate lift, or dump body lift, are a few examples. The variety of factors such as air circulation available, temperature environment, vehicle maintenance level, and other existing conditions, combined with the range of auxiliary horsepower and torque demands that may be placed upon a vehicle in power take-off usage, make it difficult to assess the ultimate performance of a vehicle subjected to extended duration usage as an auxiliary power source. The guidelines in this book are intended to assist the PTO equipment installer in avoiding inadvertent vehicle performance and safety concerns. These guidelines should not be considered all inclusive, and it is the responsibility of the PTO equipment installer to choose and install a PTO system to ensure safe operation and customer satisfaction.

AUTOMATIC TRANSMISSION POWER TAKE-OFF PROVISION (Option Code 62R)

The Transmission Power Take-Off (PTO) Provision must be ordered separately to obtain an automatic transmission with PTO capability for both 6.0L diesel and 6.8L gas engines. The following chart shows what is included with the PTO-Provision versus an automatic transmission vehicle without the option.

M6 MANUAL TRANSMISSION POWER TAKE-OFF PROVISION

The M6 6-speed manual transmission has a LH-side PTO port standard and does not require a PTO-Provision option.

PTO versus NON-PTO Transmission	Non-PTO	4R100	Torqshift
Option Code	None	62R	
PTO Drive Gear	None	Included	
PTO Opening	None	LH side, non-standard 60bolt pattern	
Controlled Compression Gasket	None	Included	
Transmission Shift Cable & Bracket	Standard	Unique	Standard
Diesel Engine PCM	All diesel engine PCM's are PTO-capable		
Under-dash PTO wiring	Two circuits, 12-volt power and PTO signal to PCM, included.		

PCM: Powertrain Control Module (previously called ECC or Engine Control Module)

The following chart characterizes the differences between PTO-capable automatic transmissions.

4R100 versus TorqShift Transmission	4R100	TorqShift
Transmission Fluid (1)	Type H	Type D
Fluid Line Pressure (psi)		
Normal Engine Idle	50-60	50-60
1200 RPM Engine Idle	130(2)	130
PTO Drive Gear Function		
All Forward Drive Gears (3)	Yes	Yes
Reverse(3)	Yes	Yes
Overdrive(3)	No	Yes
PARK (Stationary)	Requires 1200 minimum engine rpm	
PTO Drive Gear Torque Ratings (lb-ft)		
Peak Intermittent	170	250
Continuous	120	180
Non-Volatile PTO Memory	No(4)	Yes
Internal Transmission Fluid Temperature Monitor	Yes(5)	No

(1) Affects PTO clutch capacity.
(2) Torque converter clutch applied and PTO circuit activated. May be as high as 180 psi.
(3) Vehicle road speed must be greater than zero.
(4) 4R100-PTO logic in the PCM is "forgotten" with loss of vehicle battery electrical power. To remedy, a sensor in the transmission needs to count the teeth on the PTO drive gear. Once the vehicle ignition goes through the ON-CRANK-START cycle, a strategy cycle begins in the PCM to look for "PTO". Then, driving the vehicle in 3rd and 4th (Overdrive) gears at steady throttle for 10 seconds should re-activate PTO function. PTO function in the TorqShift automatic transmission is not similarly affected with loss of battery electrical power.
(5) The 4R100-PTO gear is automatically disconnected when transmission fluid over-temperature condition occurs. Disengage PTO operation and rest the vehicle in PARK or NEUTRAL at normal engine idle. PTO function is automatically returned once the fluid returns to normal operating temperature.

POWER TAKE-OFF (PTO) INSTALLATIONS

2004 MODEL YEAR

GENERAL RECOMMENDATIONS AND WARNINGS

1. Additional transmission fluid may be required with the addition of the PTO.
2. Follow the severe-duty vehicle maintenance schedules, including transmission fluid changes.
3. Route PTO hydraulic lines and hoses away from the vehicle exhaust system.
4. Diesel engines are recommended over gas engines for stationary PTO operation of extended duration.
5. Do not block air flow circulation to the engine coolant radiator, engine, and transmission fluid cooler.
6. The following are maximum temperatures for powertrain fluids. The PTO system designer or installer should consider adding a sensor to monitor these depending on the demands of the PTO operation's duty cycle. Request a PTO temperature monitor from the PTO supplier where available.

   a. Maximum Engine Top Water: 230° F

   b. Maximum Engine Oil Sump: 284° F

   c. Maximum Transmission Oil Sump: 250° F

   NOTE: If any of the above temperatures are exceeded disengage PTO operation and return vehicle engine speed to normal engine idle. Allow the temperature to stabilize at a lower level before re-engaging the PTO.

Ford Automatic Transmission Fluid Temperature Gauge

Beginning with 2002 model year a Transmission Fluid Temperature Gauge is included with the instrument cluster of Super Duty F-Series, automatic transmission only. A complete description can be found in the vehicle's Owner Guide. The following briefly describes the meanings of the needle readings to help the operator monitor PTO operation.

Cold Range: 50° F or colder.

White Area: "Normal" operating range, 51° F to 248° F.

Yellow Area: "Warning": Stop driving the vehicle or remove auxiliary loads at the earliest convenience. Typically, leave the engine running at normal idle and allow to cool into the normal range before starting to drive or operate the PTO. The transmission fluid is not over-heating, but operating in the Yellow Range for extended periods of tim may cause internal transmission damage.

Red Area: "Over-Temperature": The transmission fluid is over-heating. Stop the vehicle, do not drive, and allow to cool into the normal operating range. If the gauge continues to show high temperatures then see your Ford dealer.

For readings in the Red and Yellow areas, make sure that snow or debris is not blocking airflow to the radiator and transmission fluid cooler, that cooler lines are not kinked or restricted, and that vehicle load capacities or duty cycles are not excessive.

GUIDELINES FOR FRONT END ACCESSORY DRIVE (FEAD) MOUNTED PTO or "CLUTCH-PUMPS"

1. An auxiliary crankshaft bearing support is required on all modular gas engine applications where the clutch-pump is drawing greater than 5-hp from the engine crankshaft pulley. This further applies to all tangentially-mounted auxiliary aftermarket equipment in general.

   a. A "spider" bracket kit can be obtained for this purpose by contacting DewEze Manufacturing, 151 E Hwy. 160, Harper, Kansas, 67058. Toll-free phone: (800) 835-1042, or fax: (316) 896-7129. It provides up to 70 lb-ft of torque at the clutch-pump. Part Numbers: (6.8L) XC2E-7275-BB, (5.4L) XC2E-7275-AB. QVM Bulletin No. Q-62 has a complete description of the kit and its usage.

   b. QVM Bulletin No. Q-74 amends Bulletin Q-62, describing how the "Spider" bracket is not required for auxiliary equipment requiring less than 5-hp. Both bulletins are available at www.fleet.ford.com/truckbbas, and select "Bulletins".

2. Always maintain the clearance relationship between the Ford OEM fan, radiator, and shroud to help maintain optimum engine cooling performance.
3. Always consider engine roll and body/frame torsion when packaging clearances.
4. Restrict FEAD-PTO application to 5.4L and 6.8L gas, and 7.3L and 6.0L diesel engines.
5. Temperature monitoring of powertrain fluids as discussed earlier in this section is recommended.

STATIONARY ELEVATED IDLE CONTROL

Ford offers the following two methods for obtaining stationary elevated idle control for diesel engines. For gas engines the PTO installer will need to obtain elevated idle control from an aftermarket source:

a. "Auxiliary Idle Control": option code 96P for F-Series (option code 961 for E-Series) contains a "full function" Auxiliary Powertrain Control Module or APCM, mounting bracket and operating manual. It must be ordered separately and is not included with the Transmission Power Take-Off Provision option. A "limited function" APCM is included in the kit that is part of the Ambulance Prep Option, has no LED read-out, and is not a separate orderable option. Both of these kits are more fully described later in this section under PTO Auxiliary Idle Control. The operating manuals can be found at www.fleet.ford.com/truckbbas, then "Publications" drop-down box. It will function for both manual or automatic transmissions.

b. "Elevated Idle Feature": this feature is inherent in the powertrain control modules of diesel engine vehicles ordered with "Transmission Power Take-Off Provision". Activating the Ford "PTO Circuit" will automatically elevate the engine idle to 1200 rpm in "PARK" or "NEUTRAL" **regardless of the parking brake being set**. This feature does not require use of the Auxiliary Idle Control option or APCM module. This feature is not available for manual transmission.

SPLIT-SHAFT PTO

Light truck automatic transmissions from Ford are not prepared for split-shaft PTO operation. The electronic control strategy is affected, and the powertrain has not been fully qualified for the higher horsepower and extended duration usage typical of this application. Restricting split-shaft application to manual transmission only is recommended. Also, temperature monitoring and control of the manual transmission fluid is highly recommended.

POWER TAKE-OFF (PTO) INSTALLATION
M60D MANUAL TRANSMISSIONS
4R100 AND TORQSHIFT

POWERTRAIN COMPATIBILITY				
FORD POWERTRAIN			PTO MODEL SERIES (1)	
Engine	Manual Transmission	PTO Port Location (vehicle side)	Multi-Gear Single Speed	
			Chelsea	Muncie
All	M60D	LH	440	TG

(1) Consult PTO manufacturer for complete detail on gear set, usage and exceptions.
SG / TG = Single Gear / Two Gear

POWERTRAIN COMPATIBILITY				
FORD POWERTRAIN			AFTERMARKET PTO MODEL SERIES (1)	
Engine	Automatic Transmission	PTO Port Location (vehicle side)	Multi-Gear Single Speed	
			Chelsea	Muncie
6.8L 4x2	4R100	LH	242	FA62
6.8L 4x4			244	FA64
6.0L Diesel 4x2	TorqShift	LH	245	FR62 or FR64
6.0L Diesel 4x4			245	FR64

(1) Consult PTO manufacturer for complete detail on gear set, usage and exceptions.

AUTOMATIC TRANSMISSION PTO DRIVE GEAR DATA		
	TRANSMISSION 4R100	TorqShift 5-Speed
GEAR RATIO	2.71 (1^{ST})	3.09
NUMBER OF TEETH	115	121
DIAMETRAL PITCH		
PITCH DIAMETER	216.33 mm	215.985 mm
NORMAL PRESSURE ANGLE	15.907°	17.989°
ANGLE AND HAND OF HELIX	18° Left	Spur
RPM @ 1000 RPM OF ENGINE	1000 RPM	1000 RPM
PITCH LINE DIAMETER VELOCITY @ 1000 RPM OF ENGINE	2230 ft/min	2226 ft/min

M60D MANUAL TRANSMISSION PTO DRIVE GEAR DATA	
GEAR RATIO	5.79 (LOW)
NUMBER OF TEETH	39
DIAMETRAL PITCH	9.2364
PITCH DIAMETER	132.568 mm
NORMAL PRESSURE ANGLE	20°
ANGLE AND HAND OF HELIX	36° RH
RPM @ 1000 RPM OF ENGINE	590
PITCH LINE VELOCITY @ 1000 RPM OF ENGINE	806

The M60D manual transmission case will require a slight modification to package PTO pumps that are mounted directly to the PTO and facing rearward. Refer to Figure 1 for instructions on removing a small tab on the case to obtain clearance for the pump.

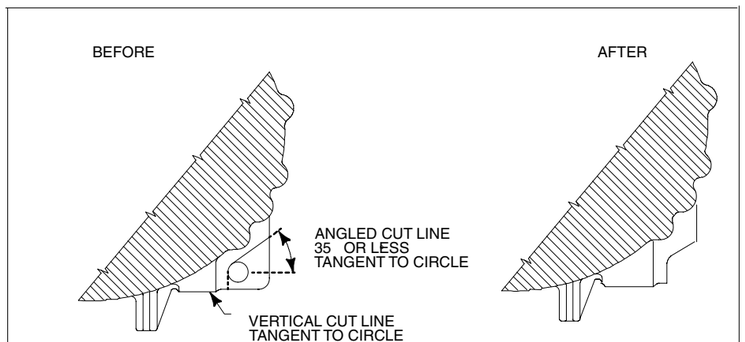


FIGURE 1

BB0443

Instructions for removing M60D case tab (for PTO clearance)
A section of the aluminum tab may be removed as indicated above. Use a mechanical tool only, such as a die grinder. DO NOT use a flame torch of any kind to remove aluminum transmission case material.

NOTES — [ ] DIMENSIONS ARE INCHES.
— M60D USES ALL METRIC FASTENERS EXCEPT FOR COOLER LINES.
— DO NOT SCALE DRAWINGS.
— PTO OPENING IS A STANDARD 6 BOLT SAE #J704B.

POWER TAKE-OFF (PTO)
AUXILIARY IDLE CONTROL — DIESEL ONLY

AUXILIARY IDLE CONTROL KITS

Each kit includes an Auxiliary Powertrain Control Module (APCM), wiring harness, mounting bracket with hardware, operator's card and instruction book. Kits are shipped with the vehicle for customer installation. The APCM wire harness that connects under the instrument panel is not intended to be lengthened. The modules are splash-resistant but not water-proof. The APCM instruction book is also available at www.fleet.ford.com/truckbbas. Look under "Publications" on the homepage.

Auxiliary Idle Control Kits (Diesel Engine Only)

			"Enhanced" or "Full Function" 1999 thru 2004 Model Years		"Limited Function" 1999 thru 2004 Model Years	
			LPO Option Codes: 96P = SD F-Series 961 = E-Series		Unavailable separately Option Code 962 = E-Series	
			Kit P/N	APCM P/N	Kit P/N	APCM P/N
E-Series	Original Mounting Bracket [YC2F-12K526-BA]		XC2F-12B641-AB [XC2Z-12B641-AA]	XC3F-12B640-AA	XC2F-12B641-BB [XC2Z-12B641-BA]	XC3F-12B640-BA
		New Software (Note-1)	XC2F-12B641-AC	XC3F-12B640-AB	XC2F-12B641-BC	XC3F-12B640-BB
	Mounting Bracket Revised for 2000 MY Console		YC2F-12B641-AA	XC3F-12B640-AA	YC2F-12B641-BA	XC3F-12B640-BA
		New Software (Note-1)	YC2F-12B641-AB	XC3F-12B640-AB	YC2F-12B641-BB	XC3F-12B640-BB
F-250/350/450/550			XC3F-12B641-AB [XC3Z-12B641-AA]	XC3F-12B640-AA	XC3F-12B641-BB [XC3Z-12B641-BA]	XC3F-12B640-BA
		New Software (Note-1)	XC3F-12B641-AC	XC3F-12B640-AB	XC3F-12B641-BC	XC3F-12B640-BB

Note-1: The APCM in the kit has new software (2002.5 MY) to resolve invalid RPM setpoint "4100".
FCDS Service Part Numbers are shown in brackets: [XC2Z-12B641-AA]

Carryover Kit Part Numbers 1995.5 thru 1998 Model Years		
Option Code 961 / Included with Ambulance PP		
E-Series	1995-1996 Model Years	F5UF-12B641-AA [F5PF-12B641-BA]
	1997-1998 Model Years	F7UF-12B641-AC [XC2Z-12B641-AA]
F-Series	1995-1997 Model Years	F5TF-12B641-AD [F5PF-12B641-AA]
	1998 Model Years	F81F-12B641-DB [XC3Z-12B641-AA]

POWER TAKE-OFF (PTO)
AUXILIARY IDLE CONTROL — DIESEL ONLY

Vehicle Enabling Conditions (all are required)	Vehicle Disabling Conditions (any one required)
Parking brake applied	Parking brake disengaged
Foot off of service brake	Depressing service brake
Vehicle in PARK (auto. trans.) Foot off of clutch (manual trans.)	Vehicle taken out of PARK Clutch depressed
Foot off of accelerator pedal	
Vehicle speed is 0 mph (stationary)	
Brake lights functional	Brake light circuit disconnected
Engine at stable normal idle speed	

Pigtail Wires “Full Function” APCM Only

All signals are low-current (20 mA nominal) to allow extending the wires to a remote vehicle location.		
Pin Number	**Wire Color**	**Description**
1	Red	Source for remote control switch. A 5-volt DC signal reference output.
2	Orange	ON/Off input for Charge-Protect. Use a normally-open momentary contact switch, UL-recognized, suitable for the required operating environment.
3	Pink	Input for variable or “customized” RPM. Use a potentiometer or similar device to obtain the variable resistance. Example: Duncan-style POT, 10K Ohm ± 20%.
5	Black	Signal return for variable RPM input.
7	Gray	On/Off input for RPM control. Use a normally-open momentary contact switch, UL-recognized, suitable for the required operating environment.
11	Yellow	12-volt DC power take-off output. VBAT source (1A) for PTO circuit solenoid.

Features

FF: Full Function APCM LF: Limited Function APCM			
	FF	**LF**	**Carryover**
LCD Readout (RPM and Voltage)	X	No (1/)	X
RPM Control (1200-2500 RPM range)	X	X	X
RPM Control – Automatically activated at engine start	X		X
Battery Charge Protection (2/) 1100-2500 RPM range for E-Series	X	X	X
Battery Charge Protection – Automatically activated at engine start (3/)	X	X	X
PTO Activation	X		
Link elevated idle with PTO to activate together	X		
Program upper and lower RPM speeds to protect PTO	X		
Remote Control (RPM Control, PTO and Charge Protection)	X		
Programmable to prevent inadvertent activation of Charge Protection or Manual RPM adjustment features.			X

(1/) Separate aftermarket RPM and voltage meters are required to obtain a readout. However, if the APCM is programmed while engine RPM is at or outside its range of 1200 (or 1100) min. to 2500 max. RPM then the APCM will default to one of its limits. Example: Programming while engine is at W.O.T. of near 3400 RPM will result in the APCM recording a 2500 RPM setting.

(2/) Works with automatic or manual transmission.

(3/) Works with automatic transmission only.

POWER TAKE-OFF (PTO)
AUXILIARY IDLE CONTROL — DIESEL ONLY

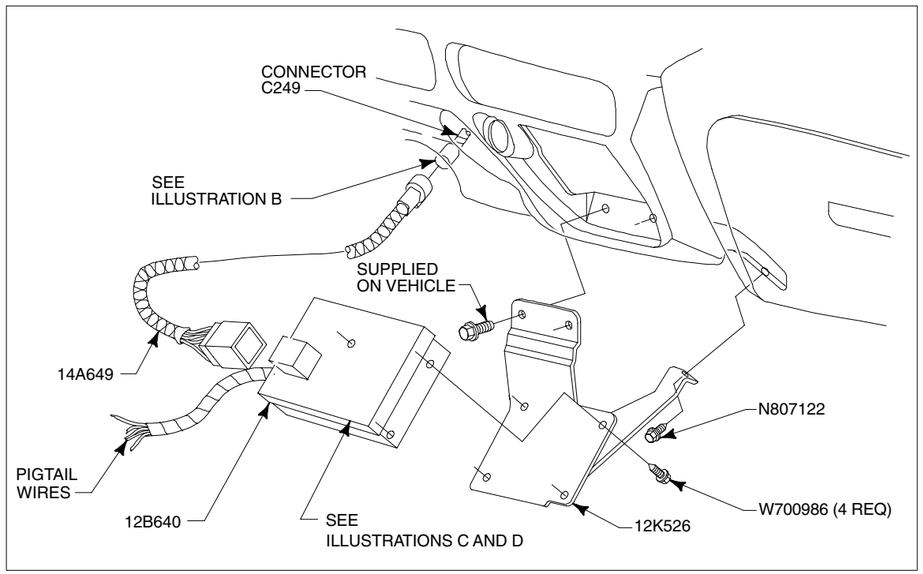


FIGURE A - SUPER DUTY F-SERIES

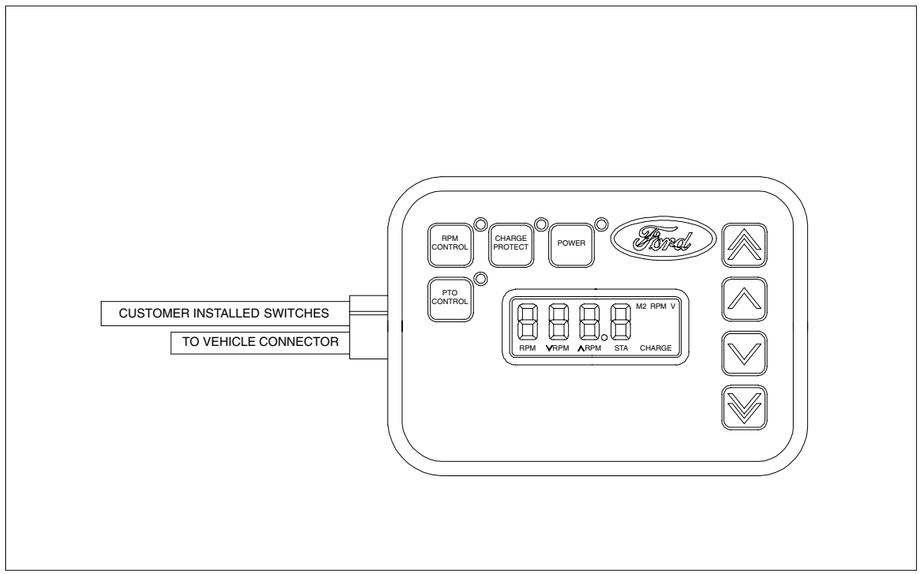


FIGURE C - “FULL FUNCTION” APC MODULE

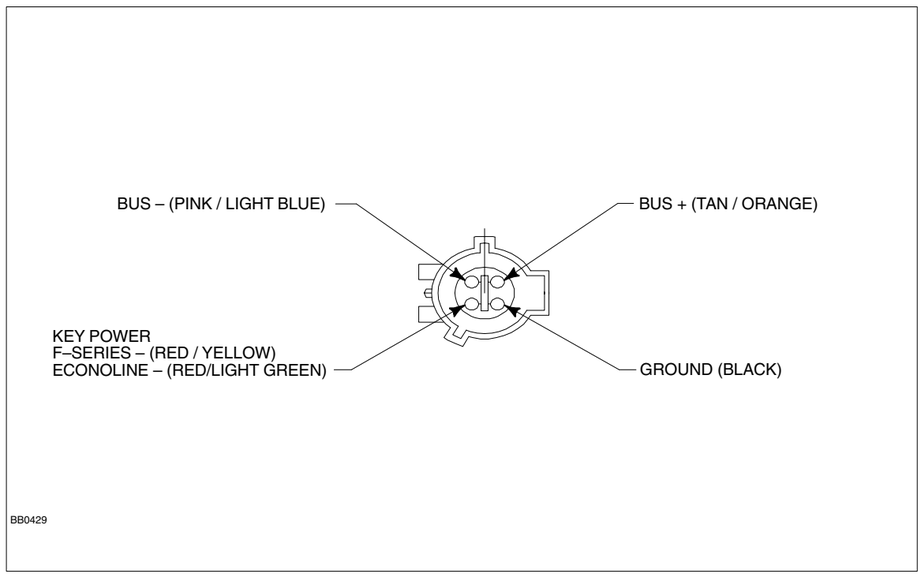


FIGURE B - APC MODULE HARNESS CONNECTOR (VEHICLE SIDE)

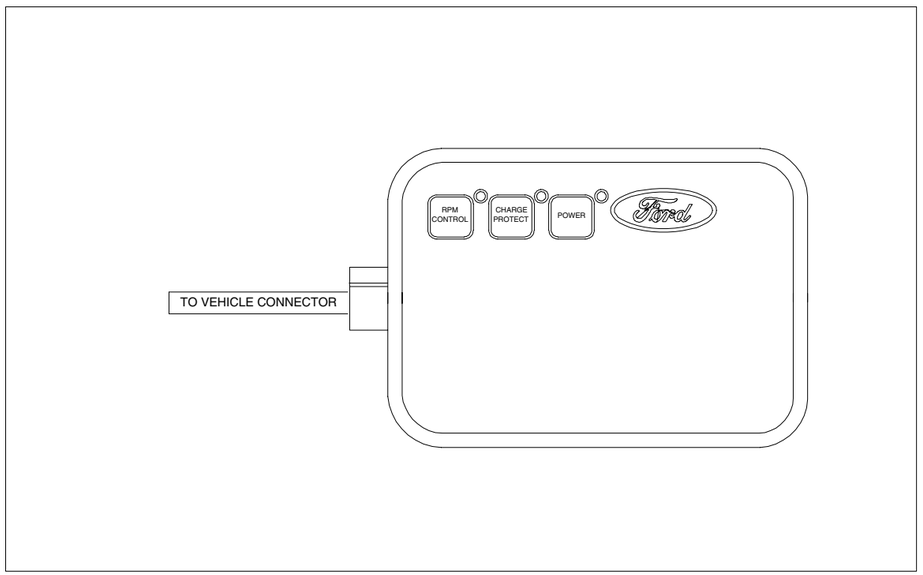


FIGURE D - “LIMITED FUNCTION” APC MODULE

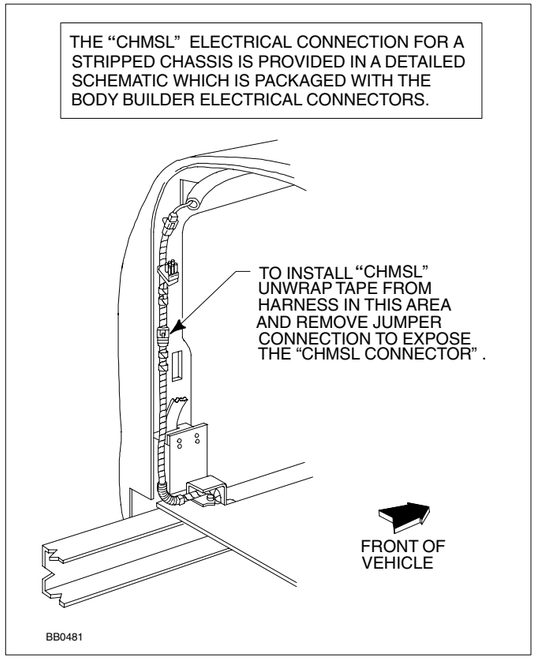
ELECTRICAL WIRING
CUSTOMER ACCESS CIRCUITS

1. Super Duty F-Series and selected E-Series Super Duty vehicles are equipped with a number of conveniently located electrical wiring taps. Most taps are fused, having locations under the instrument panel, in the engine compartment, and at the rear of the frame. Illustrations, schematics and a wiring harness for Trailer Tow is provided in a cardboard box shipped with each vehicle. The circuits at the rear of the frame are provided to support trailer wiring requirements or the Second Unit Body (SUB) additions. The Super Duty F-Series Circuit chart on the page 188 is a brief description of each circuit function, wire gauge, color code and electrical schematic. For E-Series chart see pages 182-183.
2. The Ford starting and the charging system should not be altered.
3. The completed vehicle total electrical load must not exceed the maximum output of the alternator.
4. Do not route or attach electrical wires to fuel lines.
5. Engine compartment wiring must not be rerouted in any manner.
6. The 6.0L diesel engine requires two batteries wired in parallel for proper starting operation and must not be isolated. Do not modify the Glow Plugs Power Circuits.
7. Ford recommends that all additional underhood and underbody wiring:
   - be cross-linked polyethylene, or equivalent, high temperature insulation wire 125° C [257° F] minimum rating.
   - meet SAE specifications J1128 type SXL, GXL or TXL.
   - meet SAE J1127 type SGX or STX for battery cables.
   - be protected with nylon convoluted tubing.
   - be located so as to avoid or minimize restriction of airflow through the engine compartment, underbody and fuel system.
   - be of sufficient length to be properly routed, so as not to interfere with operating zones of such components as throttle or transmission linkage.
   - not be routed near the exhaust system or no other source of high heat; melted insulation can result in electrical shorts and system failure.
   - be routed away from hostile surfaces and sharp edges and be secured in its intended location.
   - be protected by rubber grommets when it passes through body or frame openings. Use customer access pass-thru circuits provided on Super Duty F-Series as shown in Figure B on page 187, to avoid additional openings between passenger and engine compartments.
   - be protected from electrical shorts by fuses or circuit breakers.
   - be routed at least 38 mm [1.5 in] away from engine.
8. Interior wiring not exposed to high temperatures may be SAE approved, general purpose wire.
9. Ground the second unit body to the frame in at least two locations, and if required, add an additional frame to engine ground cable to improve the ground path to the battery.
10. Splicing into circuitry relating to the powertrain control systems is not acceptable because of the adverse effect on the electrical system operation.
11. Batteries must be disconnected before welding to body and chassis components. Note that disconnecting the batteries will result in a memory loss on electronic engine/ transmission controlled vehicles. The vehicle will require several miles of driving in various driving modes to restore its memory and regain optimum operating conditions.
12. Electrical connections exposed to the elements should be appropriately protected.
13. Do not ground the body to the transmission or transmission crossmember.
14. Ignition circuit of any engine should not be altered.
15. Alternator circuit wiring must not be altered by cutting, soldering or splicing.
16. Aero type head lamps are plastic and have protective coatings which can be damaged by solvents or tape. Refer to the *Owner's Guide* for proper cleaning procedures.
17. For convenience Super Duty F-Series has (4) 14 ga. blunt-cut pass thru circuits located under dash near the parking brake pedal and the LH fender apron. E-Series also has (2) 12 ga. pass thru circuits located under dash at 6 pin connector with pigtail (F7UB-14A411-B) and the LH rear of the engine compartment 4 pin connector with pigtail (F4UB-14A411-A). These circuits provide an unfused means to interface with the engine compartment and frame wiring without drilling through the dash panel and installing a wire harness grommet to prevent water leaks. Refer to Figure B, page 187 and 182 for Super Duty F-Series pass thru circuits. Refer to pages 184 and 185 for E-Series pass thru circuits.
18. Center High Mounted Stop Lamp (CHMSL) wiring taps are provided on E-Series Super Duty Cutaway/Chassis Cab/Stripped Chassis and Super Duty F-Series Chassis Cab vehicles. See pages 182 and 188.
19. Electrical bulbs are listed in the *Owner's Manual* Bulb Chart. Check for the "DOT" marking on the bulb base which means the bulb meets U.S. "DOT" standards. Bulbs without the "DOT" marking or that produce different colors other than the original bulbs as listed in the bulb chart, may affect the lamps light output, aim, glare and your safety; in addition, such bulbs may burn out early or damage the lamp.
20. Super Duty F-Series vehicles are equipped with a clean tachometer output (CTO) wiring tap. The tap is designated circuit 76 (LG/WH) and is located under dash near the parking brake pedal. See Figure A, page 187. This tap should be used if a tachometer signal is required. The signal is digital and requires a digital tachometer. The signal pulse rate is half the number of engine cylinders per revolution (i.e., 4 for 5.4L gas, 6.0L Diesel, and 5 for 6.8L gas). E-Series vehicles are also equipped with CTO wiring tap. The tap is designated circuit 648 (WH/PK) and is located under hood near the PCM connector.
21. Super Duty F-Series vehicles equipped with the 6.0L Diesel engine have two additional output wiring taps. The taps are the vehicle speed out (VSO) and throttle position out (TPO). The VSO tap is designated circuit 239 (WH/OG) and the TPO tap is designated circuit 1857 (YE/WH). Both taps are located under dash near the parking brake pedal. The VSO tap signal frequency is 2.22 times the vehicle speed in miles per hour. The TPO tap is a pulse width modulated output from 0 - 100% of 5.1kHz signal.

E-SERIES ELECTRICAL WIRING
CUSTOMER ACCESS CIRCUITS

Circuit Number	Color Code	Wire Gauge	Functional Description
14	BR	14	Marker lamp feed to electric brake controller
43	DB	12	Electric tailer brake controller to trailer
49	O	10	Relay feed ignition run
22	LB/BK	12	Trailer brake controller or B+ feed
52	Y	18**	Fused left hand stop/turn
64	DG	18**	Fused right hand stop/turn
206	W	14*	Ground
511	LG	18	Center high mount or lamp feed stop
962	BR-W	14	Relay feed marker lamps
963	BK-LG	12	Relay feed backup lamps
867	DB	12	Customer pass thru circuits
868	GY-R	12	Customer pass thru circuits
53	BK-LB	18	Courtesy lamps
54	LG-Y	18	Courtesy switch feed
3	LG/W	18	Left turn signal
2	W/LB	18	Right turn signal

* 10 for 7-pin Trailer Tow Connector
** 14 for 7-pin Trailer Tow Connector



E-SERIES SUPER DUTY
CUTAWAY/CHASSIS CAB/STRIPPED CHASSIS

E-SERIES TRAILER TOW WIRING

ELECTRONIC BRAKE CIRCUITS

			RECOMMENDED MAX ALLOWABLE		
			WIRE LENGTH (feet)		
CRKT. COLOR	CODE	DESCRIPTION	14 AWG	12 AWG	10 AWG
Dark Blue	DB	Trailer Electric Brake	50	50	50
Orange	O	Trailer Battery Feed	N/A	20	20
Yellow	Y	Trailer LH Turn/Stop Lamp	50	50	50
Dark Green	DG	Trailer RH Turn/Stop Lamp	50	50	50
White	W	Trailer Ground	N/A	N/A	10 GA only
Brown-White	BR-W	Trailer Run Lamps	50	50	50
Black-Light Green	BK-LG	Trailer Back-Up Lamps	50	50	50

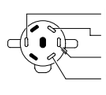
ELECTRONIC BRAKE CIRCUITS

Dark Blue	DB	Trailer Electric Brake
Brown	BR	Vehicle Tail Lamp and Marker Lamp
Red	R	Vehicle Control Feed
Light Green	LG	Vehicle Brake Signal
White	W	Trailer Ground

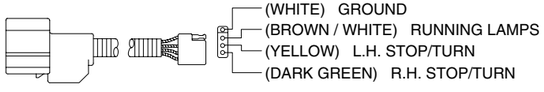
VEHICLE CIRCUIT

Orange-Light Blue	O-LB	Vehicle RH Rear Turn Signal
Light Green-Orange	LG-O	Vehicle LH Rear Turn Signal
Black-Pink	BK-PK	Vehicle Back-Up Lamp Feed
Yellow	Y	Vehicle Battery Feed
White-Purple	W-P	Vehicle Fuse Accessory Feed
White-Light Green	W-LG	Vehicle Tail and Marker Lamp

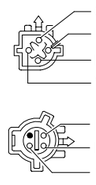
CLASS II to CLASS I
PART # F4TB 12964 A

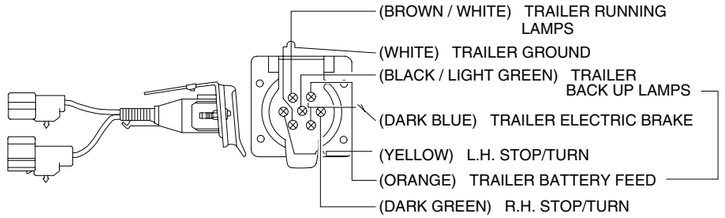


CLASS I
PART # 4C24 13A576 C & D

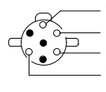


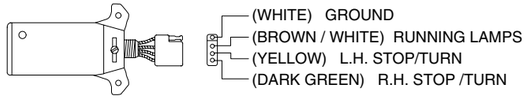
CLASS II WITH PIN TERMINALS
PART # 4C24 14A678 A & B





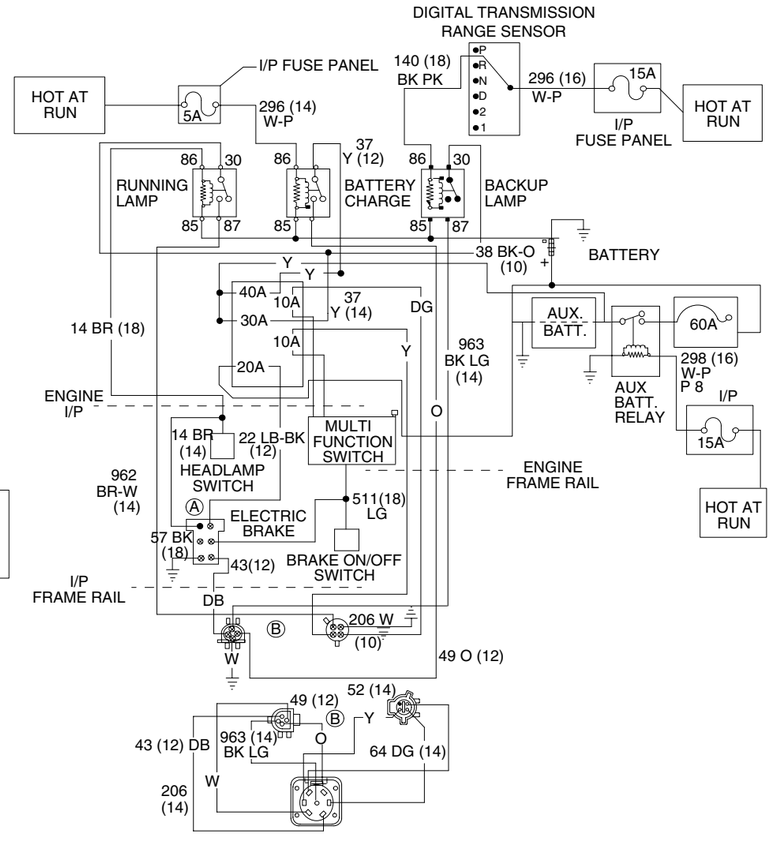
CLASS II WITH PIN TERMINALS TO CLASS I
PART # F2TB 13A576 AA





FORD SERVICE ALTERNATIVES AVAILABLE AT YOUR FORD DEALER
(NOT SUPPLIED WITH TRAILER KIT)

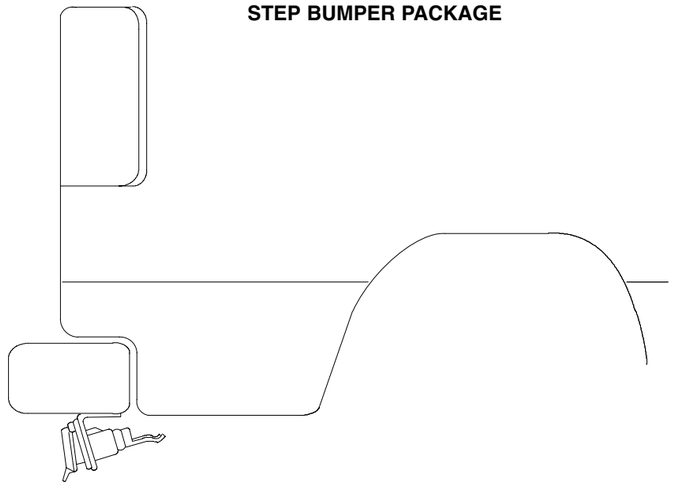
BB0122



E-SERIES TRAILER TOW WIRING

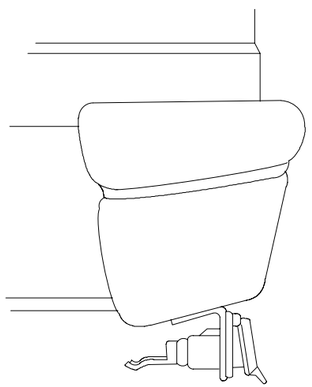
2004
MODEL YEAR

STEP BUMPER PACKAGE

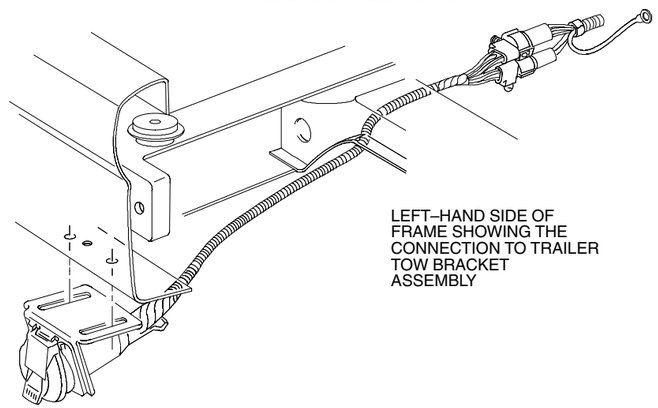


SLIDE TRAILER TOW BRACKET ASSEMBLY TO THE MOST FORWARD POSITION IN VEHICLE. FAILURE TO DO SO MAY RESULT IN BRACKET DAMAGE. THIS APPLIES TO VEHICLES WITH OR WITHOUT A HITCH. THIS NOTE APPLIES TO BOTH THE CONTOUR AND STEP BUMPER PACKAGES.

CONTOUR BUMPER PACKAGE



FRAME CONNECTIONS

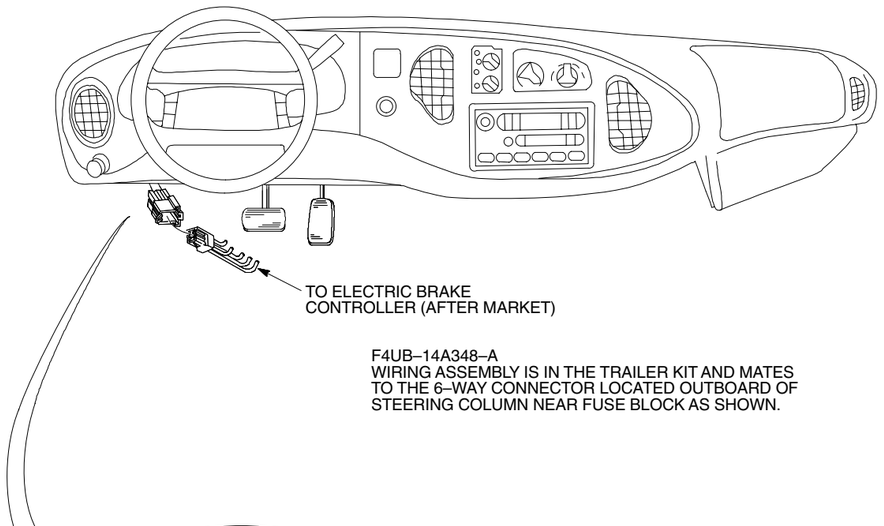


LEFT–HAND SIDE OF FRAME SHOWING THE CONNECTION TO TRAILER TOW BRACKET ASSEMBLY

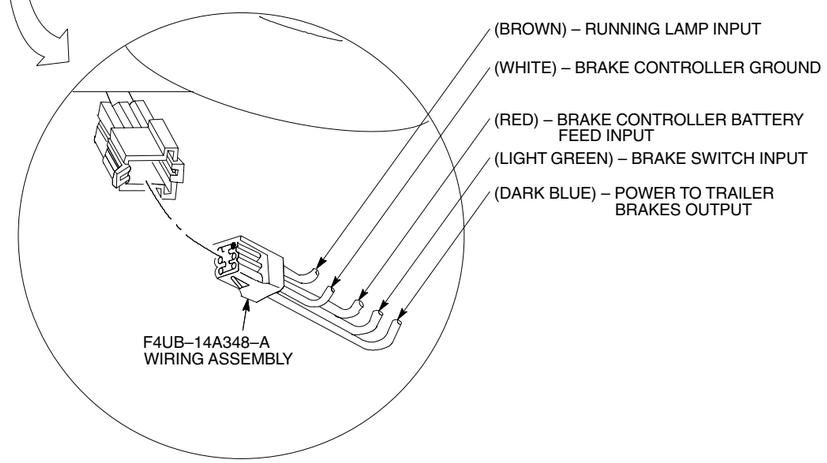
CHECK TRAILER LIGHTS AFTER INSTALLATION TO DETERMINE IF THEY FUNCTION CORRECTLY.
DO NOT OPERATE THE VEHICLE WITH A TRAILER IF A PROBLEM EXISTS.

BB0121

ELECTRIC BRAKE CONTROL



F4UB–14A348–A
WIRING ASSEMBLY IS IN THE TRAILER KIT AND MATES TO THE 6–WAY CONNECTOR LOCATED OUTBOARD OF STEERING COLUMN NEAR FUSE BLOCK AS SHOWN.

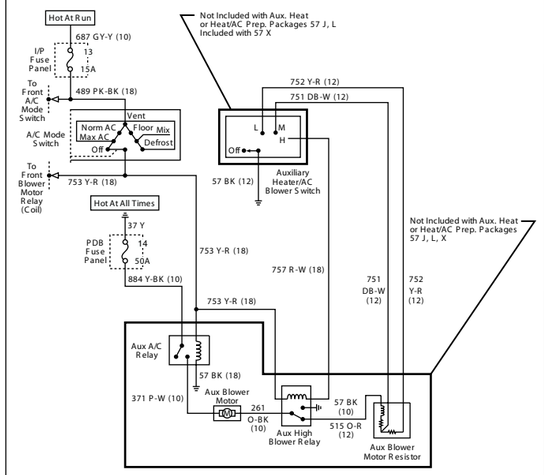


THE BRAKE CONTROLLER BATTERY FEED INPUT IS FUSED TO 30A IN THE ENGINE COMPARTMENT'S DISTRIBUTION BOX.

E-SERIES TRAILER LAMP PLUG AND WIRING

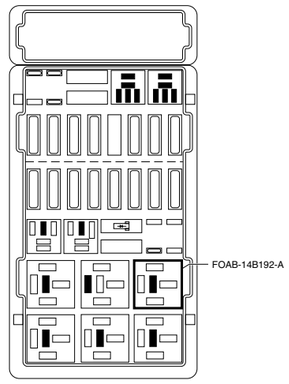
2004
MODEL YEAR

Auxiliary Heater A/C System Schematic



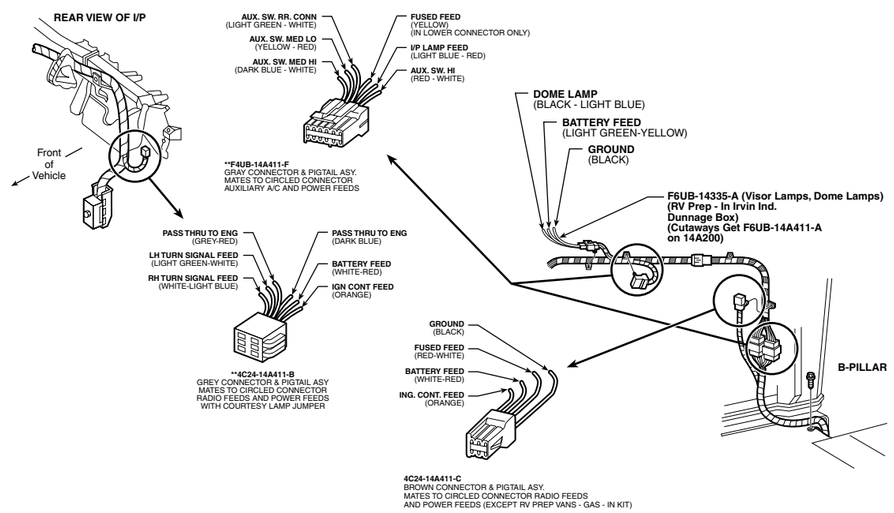
Power Distribution Box

POWER DISTRIBUTION BOX (PDB)
(IN ENGINE COMPARTMENT)
TRAILER TOW RELAY LOCATION

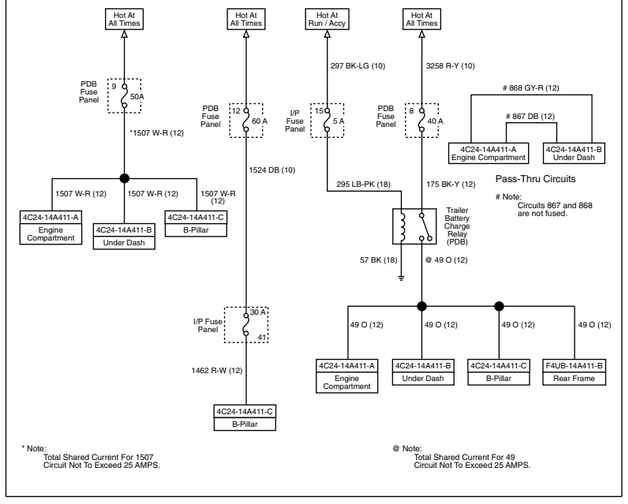


F0AB-14B192-A
Install trailer battery charge relay (in kit) to highlighted area in junction box.

Instrument Panel & B Pillar



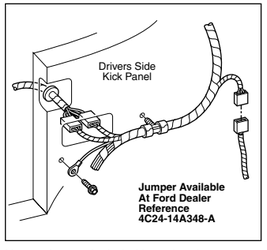
Modified Vehicle Schematic



	Load Name	Circuit Number	Wire Gauge	Circuit Color	Max. Cont. Current	Recommended Wire Length (In Feet) W/O Additional Fusing						
						Cont. Load 20 GA.	Cont. Load 18 GA.	Cont. Load 16 GA.	Cont. Load 14 GA.	Cont. Load 12 GA.	Cont. Load 10 GA.	Cont. Load 8 GA.
4C24-14A411-B	LH Turn Signal/Hazard	3	18	LG - W	2.2 A		80	121	196			
	Battery Feed	*1507	10	W-R	25A					26	42	66
	Ign. Control Feed	@49	12	O	25A					93	148	234
	Pass Thru (Eng)	#867	12	DB	25A	NOT FUSED						
	Pass Thru (Eng)	#868	12	GY-R	25A	NOT FUSED						
	RH Turn Signal/Hazard	2	18	W - LB	2.2 A		81	122	197.5			
4C24-14A411-C	Battery Feed	*1507	12	W-R	25A					20	32	51
	Ign. Control Feed	@49	12	O	25A					91	146	230
	Fused Feed	1462	12	R-W	25A					93	150	237
	Ground	57	10	BK	N/A							
F4UB-14A411-F	I/P Lamp Feed	19	20	LB-R	8A	50	50	50				
	Fused Feed	884	10	Y-BK	10A	(HOT IN LOWER CONNECTOR ONLY)				30	45	
	Aux. Sw. HI	757	18	R-W	8A	(CIRCUIT TO BE USED FOR RELAY GROUND RETURN ONLY)						
	Aux. Sw. Med Lo	752	14	Y-R								
	Aux. Sw. Med. HI	751	12	DB-W								
F6UB-14A411-A	Battery Feed	54	16	LG - Y	3.25 A			82	133.5			
	Dome Lamp (Switched from 54)	53	16	BK - LB	3.25 A			82	133.5			
	Ground	57	18	BK	N/A							

* Note: Total shared current for 1507 circuit not to exceed 25 amps.
@ Note: Total shared current for 49 circuit not to exceed 25 amps.
# Note: Circuits 867 & 868 are not fused.
** Note: Provided in optional vehicle wiring kit.

Electric Brake Controller Connector

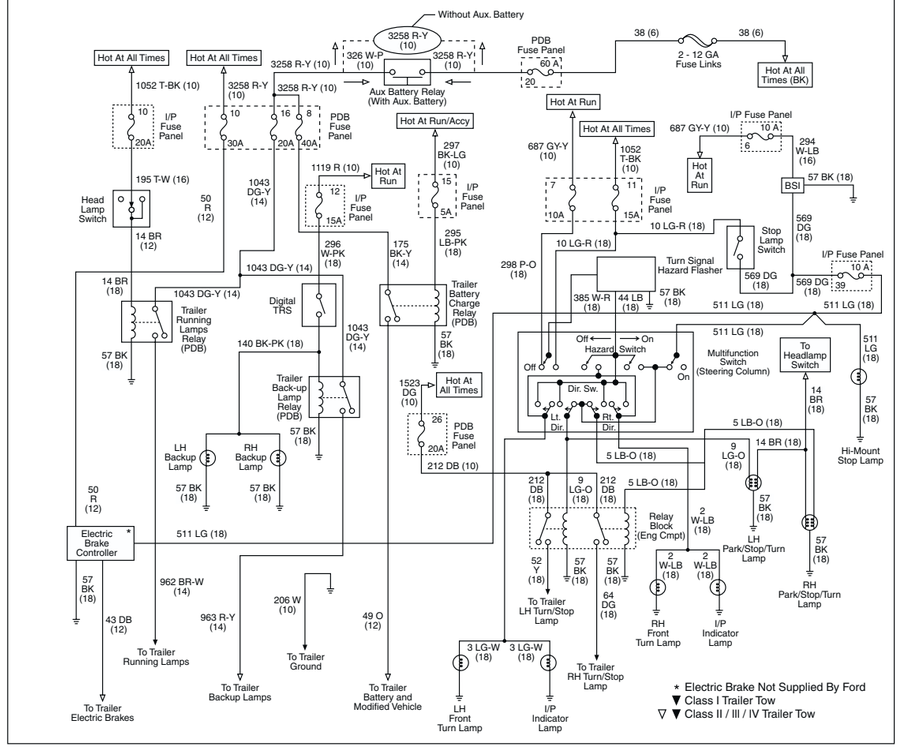


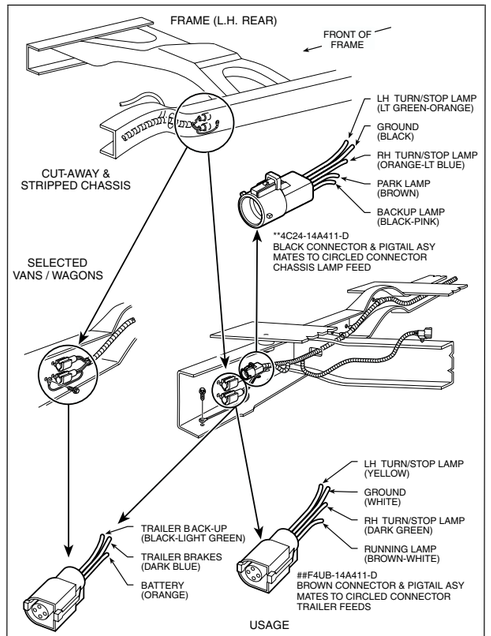
Note: Jumper included in optional trailer tow prep kit. (15A416)

E-SERIES TRAILER LAMP PLUG AND WIRING

2004
MODEL YEAR

Rear Chassis Lamp and Trailer Tow Schematic





USAGE

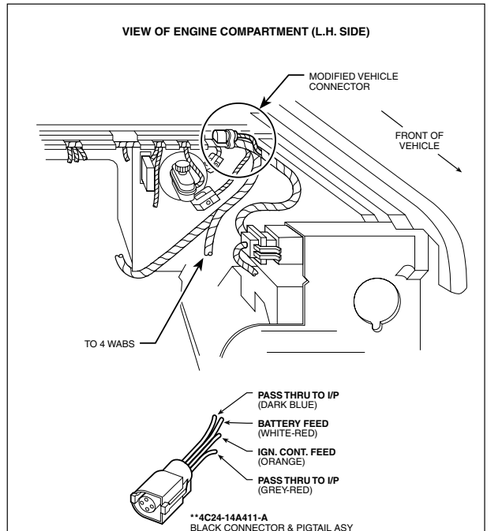
VANS / WAGONS REQUIRE: (1) F4UB-14A411-B

CUT-AWAY / STRIPPED CHASSIS REQUIRE: (1) F4UB-14A411-D

Load Name	Circuit Number	Wire Gauge	Circuit Color	Max. Cont. Current	Recommended Wire Length (In Feet) W/O Additional Fusing					
					Cont. Load 20 GA.	Cont. Load 18 GA.	Cont. Load 16 GA.	Cont. Load 14 GA.	Cont. Load 12 GA.	Cont. Load 10 GA.	Cont. Load 8 GA.
Trailer Tow Battery Feed	* 49	12	O	2.5 AMP					14	23	36
Trailer Tow LH Turn ST LP	52	18	Y	8 AMP		86	129	210			
Trailer Tow RH Turn ST LP	64	18	DG	8 AMP		86	129	210			
Trailer Tow Running Lamp	# 962	14	BN-W	18 AMP				16	26	41	65
Trailer Tow Back - Up Lamp	# 963	12	BN-LG	18 AMP					34	55	86
LH Turn ST LP	**9	14	LG-O	2 AMP	8	13	19	31	48	77	
RH Turn ST LP	**5	14	O-LB	2 AMP	8	13	19	31	48	77	
Park Lamp	**14	18	BR	5 AMP	NR	10	16	25	40	64	
Back - Up Lamp	**140	18	BK-PK	4 AMP	12	19	29	47	75	120	
Ground	**57	18	BK	@23 AMP							

NR (Not recommended) - Do not use, wire gauge is not intended for this application. For the ground circuit, the length and gauge are dependent on the desired load and voltage drop.

* Note: Total shared current for 49 circuit not to exceed 25 amps.
\# Note: Total shared current for 962 & 963 circuit not to exceed 18 amps.
@ Note: 23A is the Max Steady State current at ambient temperature that 18 gauge wire can handle.
** Note: Circuits used with rear body/chassis lamp, not compatible with trailer tow.
Note: Circuits used with trailer lamps not included with this kit. Jumper included in optional trailer tow prep kit. (15A416)



Load Name	Circuit Number	Wire Gauge	Circuit Color	Max. Cont. Current	Recommended Wire Length (In Feet) W/O Additional Fusing					
					Cont. Load 18 GA.	Cont. Load 16 GA.	Cont. Load 14 GA.	Cont. Load 12 GA.	Cont. Load 10 GA.	Cont. Load 8 GA.
Battery Feed	@1507	10	W-R	25 AMP				28	45	71
Ign Control Feed	#49	12	O	25 AMP				95	152	240
Pass Thru (I/P)	*867	12	DB	25 AMP						
Pass Thru (I/P)	*868	12	GY-R	25 AMP						

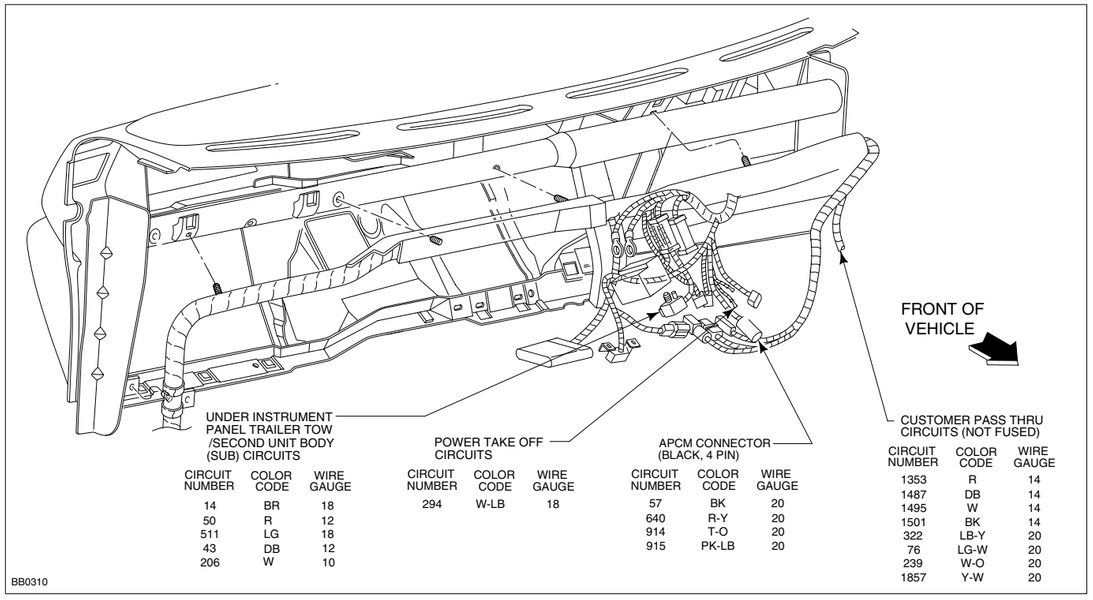
* Note: Circuits 867 and 868 are not fused
\# Note: Total shared current for 49 circuit not to exceed 25 amps.
@ Note: Total shared current for 1507 circuit not to exceed 25 amps.
** Note: Provided in optional vehicle wiring kit.

ELECTRICAL WIRING
POWER TAKE-OFF CIRCUIT INSTALLATION

The Body Builder must provide a PTO Circuit to alert the PCM to PTO operation. Failure to provide this circuit may result in erroneous emission codes, and inadvertent illumination of the “Service Engine Soon” light during PTO operation.

Circuits. 294 (WH/LB) is located in the center of the instrument panel, labeled “Power Take-Off Circuit” (See Figure A). It is easier to access from the front of the instrument panel (IP) by removing the access panel below the steering column (4 quarter turn fasteners).

Splice circuit 294 (WH/LB) to the body builder provided wire that connects to the positive side of the PTO indicator switch or PTO control relay. Splice circuit 322 (LB/YE) located under-dash near the parking brake pedal, to the body builder provided wire that connects to the positive (switched) side of the PTO indicator light. (See Figure C1). In electrically-actuated PTO systems, the wires labeled “Power Take-Off” must be isolated from the wires solenoid or PCM DAMAGE COULD RESULT (See Figure C2).



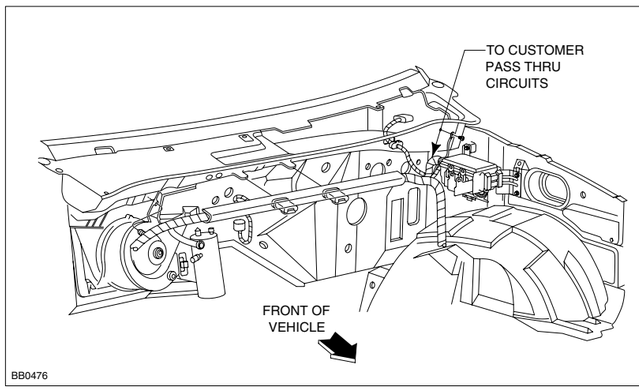
CIRCUIT NUMBER	COLOR CODE	WIRE GAUGE
14	BR	18
50	R	12
511	LG	18
43	DB	12
206	W	10

CIRCUIT NUMBER	COLOR CODE	WIRE GAUGE
294	W-LB	18

CIRCUIT NUMBER	COLOR CODE	WIRE GAUGE
57	BK	20
640	R-Y	20
914	T-O	20
915	PK-LB	20

CIRCUIT NUMBER	COLOR CODE	WIRE GAUGE
1353	R	14
1487	DB	14
1495	W	14
1501	BK	14
322	LB-Y	20
76	LG-W	20
239	W-O	20
1857	Y-W	20

FIGURE A VIEW UNDER DASH SUPER DUTY F-SERIES



CUSTOMER PASS THRU CIRCUITS

CIRCUIT NUMBER	COLOR CODE	WIRE GAUGE
1353	R	14
1487	DB	14
1495	W	14
1501	BK	14

FIGURE B VIEW UNDER HOOD SUPER DUTY F-SERIES

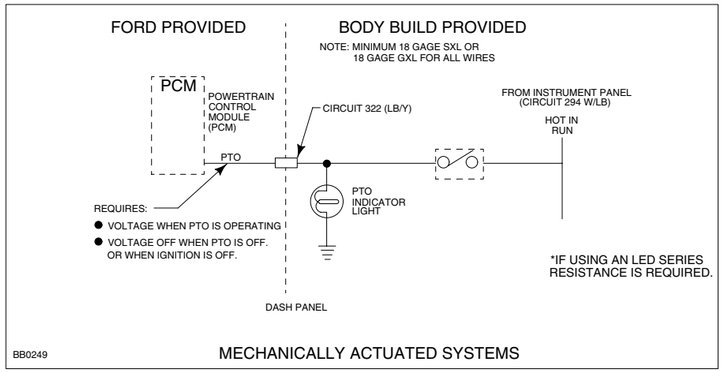


FIGURE C1 SUPER DUTY F-SERIES

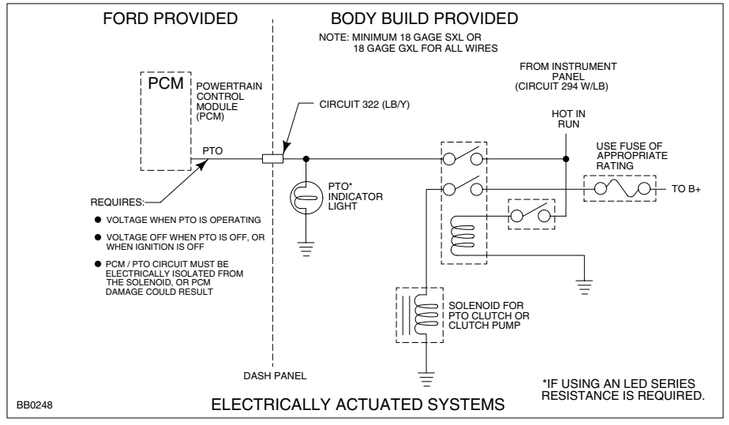
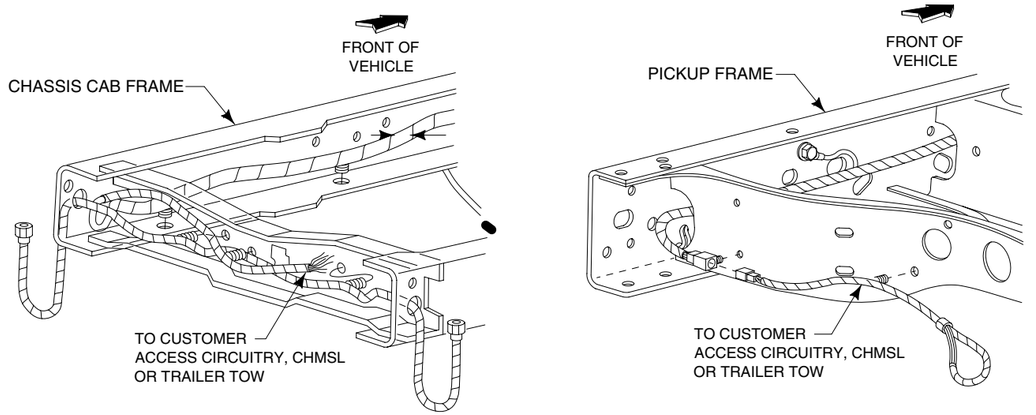


FIGURE C2 SUPER DUTY F-SERIES

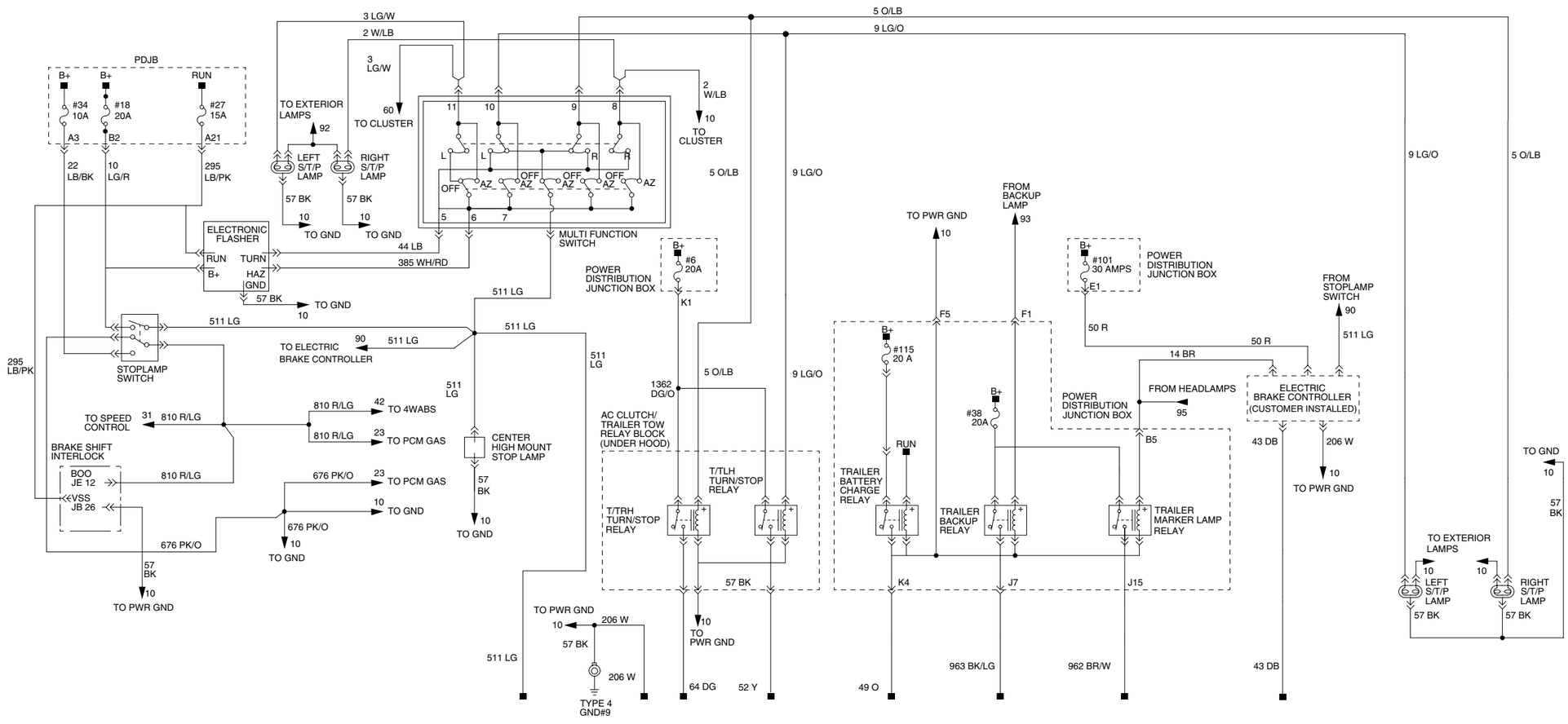
SUPER DUTY F-SERIES
ELECTRICAL WIRING
CUSTOMER ACCESS CIRCUITS

Circuit Number	Color Code	Wire Gauge	Functional Description
14	BR	18	Marker lamp feed to electric brake controller
43	DB	12	Electric tailer brake controller to trailer
49	O	12	Relay feed ignition run
50	R	12	Trailer brake controller or B+ feed
52	Y	16	Left hand stop/turn
64	DG	16	Right hand stop/turn
206	W	16	Ground
294	W-LB	18	Fused hot in run
322	LB-Y	20	Power takeoff relay or switch to powertrain control module (PCM)
511	LG	18	Center high mount or lamp feed stop
962	BR-W	16	Relay feed marker lamps
963	BK-LG	16	Relay feed backup lamps
1353	R	14	Customer pass thru circuits
1487	DB	14	Customer pass thru circuits
1495	W	14	Customer pass thru circuits
1501	BK	14	Customer pass thru circuits



BB0478 2003

ELECTRICAL WIRING
SUPER DUTY F-SERIES — TRAILER TOW
SECOND UNIT BODY WIRING TAP SCHEMATIC

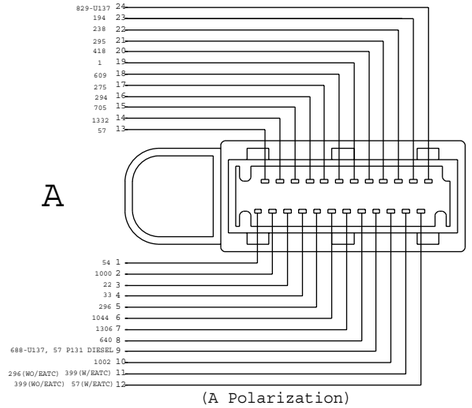


BB0320 2003

NOTE — SEE FIGURE B, PAGE 187 AND 188.

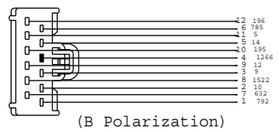
ELECTRICAL WIRING
SUPER DUTY F-SERIES — TRAILER TOW
PDJB CONNECTORS (A THRU M)

A



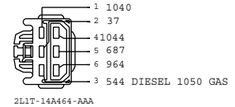
(A Polarization)
24 Way
14401

B



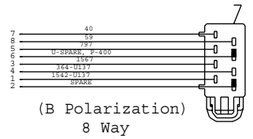
(B Polarization)
12 Way
14401

C



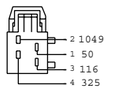
(A Polarization)
6 Way
14401

D



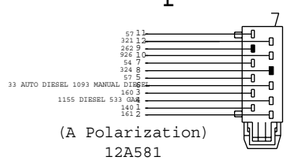
(B Polarization)
8 Way
14401

E



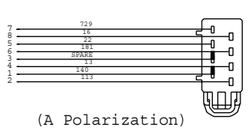
4 Way
14401

F



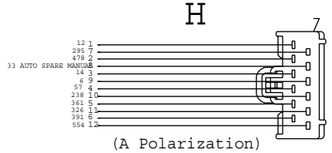
(A Polarization)
12A581
12 Way

G



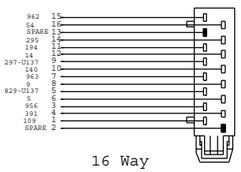
(A Polarization)
8 Way
12A581

H



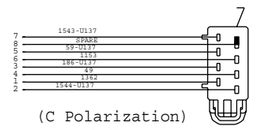
(A Polarization)
12 Way
12A581

J



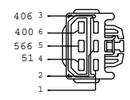
16 Way
14A005

K



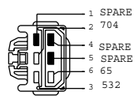
(C Polarization)
8 Way
14A005

L



(B Polarization)
6 Way
14A005

M



(C Polarization)
6 Way
14401

ELECTRICAL WIRING GENERAL PRACTICES

This section provides instructions for the addition of electrical devices to the vehicle electrical system by body builders.

(Vehicles stored on site should have the negative battery cable disconnected to minimize "Dead Battery" situation. This applies to both "incomplete" and "complete" vehicles in storage.)

After all electrical or vehicle modifications, perform the on-board diagnostics as described in the powertrain control/emissions diagnosis manual to clear all diagnostic trouble codes (DTCs). Road test vehicle and rerun the on-board diagnostics to verify that no DTCs are present. If DTCs are generated perform the appropriate diagnostic procedures and repairs. Vehicle operation (engine/transmission) may be affected if DTCs are not serviced.

F/CMVSS, U.S. and Canadian RFI Requirements:

1. All Ford vehicles built and fully completed by Ford, comply with F/CMVSS No. 108, "Lamps, Reflective Devices and Associated Equipment" and other applicable F/CMVSS that affect electrical components. Care must be taken that modifications do not conceal, alter or change components installed or provided by Ford Motor Company to achieve this conformance.
2. Incomplete vehicles (i.e., Chassis Cab, Stripped Chassis, etc.) will conform to the F/CMVSS according to the provisions and conditions stated in the *Incomplete Vehicle Manual* (IVM) attached to each incomplete vehicle.
3. Devices that emit radio frequency (RF) energy, such as AM/FM radios and radio-controlled security systems, marketed for sale or use in the United States are subject to the rules and regulations of the Federal Communications Commission (FCC) 47 CFR Parts 2 and 15.

   These rules specify the following conditions of operation:

   This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

   In addition, the FCC's Rules may require the device to be tested and found to comply with various RF interference emission limits before it may be marketed. The FCC establishes different limits according to the particular use and installation of RF devices. In some cases, a grant of equipment authorization from the FCC also must be obtained before any RF device may be marketed. Labeling with certain FCC information may also be required.

   To ensure continued compliance with the FCC's requirements, the owner, user, custom manufacturer, or service technician must not modify or change the RF device in a manner not expressly approved by Ford Motor Company. Such modifications could void the authority to operate the device.
4. All vehicles powered by spark ignition internal combustion engines (e.g., gasoline or liquid petroleum gas engines) and manufactured in Canada or for sale or use in Canada are subject to the Canadian "Regulations for the Control of Interference to Radio Reception," SOR/75-629, Canada Gazette Part II, Vol. 109, No. 21, November 12, 1975, as amended by SOR/77-860, Canada Gazette Part II, Vol.111, No. 21, November 9, 1977, by SOR/78-727, Canada Gazette Part II, Vol. 112, No. 18, September 27, 1978, and by SOR/80-915, Canada Gazette Part II, Vol. 114, No. 23, December 10, 1980. Violation of these regulations is punishable by fine or imprisonment. Ford-built incomplete vehicles other than stripped chassis are designed and manufactured to be capable of meeting the regulatory requirements or such modifications thereof as may be authorized by the Canadian Department of Communications.

   However, because Ford has no control over how an incomplete vehicle is completed by subsequent stage manufacturers, Ford does not represent that the completed vehicle incorporating the Ford-built components will comply with applicable requirements.

Routing & Clipping:

1. It is strongly recommended that wiring in areas of heavy rework, or in areas where welding operations are to be performed, be removed prior to the rework operations and reinstalled after the rework is completed. If vehicle is equipped with a Powertrain Control Module (PCM), the PCM Module must be disconnected before any electrical welding is performed, otherwise module damage may result. If wire removal is not practical, the wires must be shielded from damage due to the rework and welding heat. All components and wiring should be reinstalled as closely as possible to the way it was installed before removal.
2. Wire routings of newly installed components or wire routing revisions of the Ford harnesses necessitated by reworks must conform to the following:

- Wires routed through holes in sheet metal or castings must have the hole edges protected by a grommet.
- Wires should be routed to avoid metal edges, screws, trim fasteners and abrasive surfaces. When such routings are not possible, protective devices (shields, caps, etc.) must be used to protect the wires and when wires must cross a metal edge the edge should be covered with a protective shield and the wiring fastened within 3 inches of the edge.
- Wires must be routed to provide at least 3 inches clearance to moving parts, unless positively fastened or protected by a conduit.
- Existing heat shields, insulation, and wire shielding/twisting must be maintained.
- Wire routings should avoid areas where temperatures exceed 180° F and a minimum clearance of 6 inches should be maintained from exhaust system components. Where compliance with this requirement is not possible, high temperature insulation and heat shields are required.
- When wiring is routed between two members where relative motion can occur the wiring should be secured to each member, with enough wire slack to allow flexing without damage to the wire.
- Wiring to all circuit components (switches, relays, etc.) in exposed locations must provide a drip loop to prevent moisture from being conducted into the device via the wire connection.
- Routing wires into areas exposed to wheel wash should be avoided. When such routings cannot be avoided, adequate clipping or protective shields are required to protect the wires from stone and ice damage.
- The wire retainers and grommets installed by the assembly plant are usually designed to accommodate only the Ford-installed wires. Additional wiring or tubing should be retained by additional clips. When added wires or tubes are routed through sheet metal panels, new holes, with proper wire protection and sealing, must be used.
- All wiring connections to components of the factory-installed system must be accomplished by using the proper mating wire termination. (Connections on studs and ground connections must use eyelet terminations, connections to female bullets must terminate in male bullets, etc.)

Splice/Repair:

When necessary to splice wire for repair or circuit length revisions, the following guide should be followed:

- Wire ends should be stripped making sure that individual conductor strands are not damaged.
- When soldering, make sure an adequate mechanical joint exists **before** applying solder. Use only rosin core solder — **never** acid core.
- For crimp joints, use butt-type metal barrel fasteners and a proper tool (such as Motorcraft crimp tool S-9796) specifically designated for this type of work.
- Splice joints must be adequately sealed and insulated. Adhesive lined heat shrink tubing is highly recommended to cover soldered and bare, metal barrel, crimp joints. Quality electrical tape can be used inside the vehicle but is not recommended for an outside environment.
- Seal the ends of insulated barrel crimp devices with a silicone grease when in an outside environment.
- The most durable splice joint will be bare metal barrel crimped, flow-soldered and covered with adhesive lined heat shrink tubing. Use this type of joint as often as possible.

Circuit Protection:

1. Modification to existing vehicle wiring should be done only with extreme caution and consideration of effects on the completed vehicle electrical system. Anticipated circuitry should be studied to ensure that adequate circuit protection will exist and that feedback loops are not created.
2. Any added circuitry must be protected either by a base vehicle fuse or breaker, or by a similar device installed by the body builder.
3. When adding loads to a base vehicle protected circuit, make sure that the total electrical load thru the base vehicle fuse or breaker is less than 80% for fuses in the passenger compartment and 60% for fuses under hood or under body of the device rating to prevent nuisance fuse blows.

- Total **current** draw is the sum of the base vehicle circuit current requirement (measured with an ammeter) and the anticipated add-on components current requirements.
- **Never** increase the rating of a factory installed fuse or circuit breaker.
- For added lamp loads, the "Bulb Chart" on page 192 will aid in determination of common lamp current draws.
- It is the body builder's responsibility to use sound engineering judgment when making any modifications to a vehicle, and the body builder is responsible for ensuring that all modifications made are appropriate for the intended vehicle application.

ELECTRICAL:

Guidelines for Powertrain Control System Application

SYSTEM:

All Powertrain Control Module wiring, in particular the 12A581 and 14401, must be a minimum of 2 inches from secondary ignition coil wires and at least 4 inches from the distributor, ignition coil tower, and starter motor (and its wiring) as well as 4 inches from the alternator output wiring.

These clearances apply in particular to all PCM sensor and actuator pigtail wiring.

PCM wires shall not be in the same bundle as other high-current non-PCM circuits (e.g., tachometer wire from coil to Thick Film Ignition Module (TFI), power seat/door lock/window, horn, alternator reg.) for a distance of more than 20 inches.

ELECTRICAL WIRING BULB CHART

If the **total** electrical load on a factory circuit, after the addition of electrical equipment, is less than 80% of the fuse or circuit breaker protection rating in that circuit or less than the capacity of some limiting component (switch, relay, etc.), the items to be added can be connected directly to that circuit. For fuses located in the engine compartment, the electrical load should not exceed 60% of the fuse or circuit breaker protection rating.

If the total electrical load to be added on a factory circuit exceeds the value of the circuit protection, or the value of some limiting component, the items to be added **cannot** be added directly to the circuit.

- Added electrical devices exceeding the current capabilities of the factory wiring system must be controlled through the use of a relay. The coil of the relay can be fed from the factory wiring (now acting as a signal circuit) with the added wiring providing the power feed to the added electrical device through the relay power contacts. (The relay selection is important and depends on current requirements, number of cycles expected in the relay lifetime, whether the relay is to be operated intermittently or for long periods of time, and whether the relay is exposed to weather conditions or is installed in a protected area. When the current requirements of a circuit exceed the capacity of an available relay, more than one relay can be used if the circuit is wired to split the load).
- The factory wiring should not be used as a power feed to the relay power contacts or switches. Battery power is to be supplied from the starter motor solenoid positive terminal for added circuits requiring a maximum of 30 amps or directly from the battery positive terminal for added circuits requiring greater than 30 amps of current.

Caution — Never use the stud on the underhood fuse panel as a junction point.

Circuit protection (fuses or circuit breakers) must be provided for all added wiring. The protection device rating should not exceed the current requirements for the add-on components and should be installed as close to the point of tapped power as possible.

Wire Gage:

1. When adding wiring, the wire gage size should be determined as follows:

- Where wire is spliced to extend a circuit, the added wire should have a gauge at least that of the circuit being lengthened.
- When wire is being added to feed add-on devices, the **Wire Gage Table** on this page should be used. (Note: Current capacity of a given wire varies with temperature and type of insulation. The table, however, represents generally accepted values as a guide).

2. All added underhood or underbody wiring should have a thermostat insulation (such as Hypalon or Cross-linked polyethylene).

   SAE specifications J1128 type SXL, GXL or TXL.

   SAE specifications J1127 type SGX or STX for battery cables.

BULB CHART

BULB TRADE NUMBER	CANDLE POWER	CURRENT @ RATED VOLTAGE
90	6	0.58 Amps @ 13.0V
94	15	1.04 Amps @ 12.8V
97	4	0.69 Amps @ 13.5V
97A	3	0.69 Amps @ 13.5V
161	1	0.19 Amps @ 14.0V
168	3	0.35 Amps @ 14.0V
194	2	0.27 Amps @ 14.0V
211-2	12	0.97 Amps @ 12.8V
214-2	4	0.52 Amps @ 13.5V
561	12	0.97 Amps @ 12.8V
631	6	0.63 Amps @ 14.0V
1076	32	1.80 Amps @ 12.8V
1156	32	2.10 Amps @ 12.8V
1157	32	2.10 Amps @ 12.8V
1157A	3	0.59 Amps @ 14.0V
1157NA	24	2.10 Amps @ 12.8V
1195	50	3.00 Amps @ 12.5V
904	4	0.69 Amps @ 13.5V
906	6	0.69 Amps @ 13.0V
912	12	1.0 Amps @ 12.8V

BULB TRADE NUMBER	CANDLE POWER	CURRENT @ RATED VOLTAGE
89	6	0.58 Amps @ 13.0V
1196	50	3.00 Amps @ 12.5V
1445	0.7	0.12 Amps @ 14.0V
1815	1.4	0.20 Amps @ 14.0V
1816	3	0.33 Amps @ 13.0V
1891	2	0.24 Amps @ 14.0V
1892	0.75	0.12 Amps @ 14.4V
1893	2	0.33 Amps @ 14.0V
1895	2	0.27 Amps @ 14.0V
4001	26,000	3.14 Amps @ 12.8V
4405	50,000	2.58 Amps @ 12.8V
4412	35 Watts	2.74 Amps @ 12.8V
4414	18 Watts	1.41 Amps @ 12.8V
H6054	35-65 Watts	2.94-5.46 Amps @ 12.8V
4415	35 Watts	2.73 Amps @ 12.8V
4416	30 Watts	2.34 Amps @ 12.8V
4435	75,000	2.34 Amps @ 12.8V
1295	50	3.0 Amps @ 12.5V
563	4	0.52 Amps @ 13.5V
37	0.5	0.09 Amps @ 14.0V

WIRE GAGE TABLE

Wire Gage	Maximum Current Capacity (Plastic Insulated Copper Wire)
20	10 Amps
18	15 Amps
16	20 Amps
14	25 Amps
12	30 Amps
10	40 Amps

ELECTRICAL WIRING
ADDING LIGHTS OR ELECTRICAL DEVICES

Although there are many points in the truck electrical system to connect additional circuits certain connection points are recommended for reliability and convenience. This section defines the recommended connection points for each Ford Truck model and the maximum electrical loads allowable. CAUTION: Improper electrical tie-ins may affect vehicle operation (e.g., engine transmission).

After all electrical or vehicle modifications, perform the on-board diagnostics procedures as described in the powertrain control/ emissions diagnosis manual to clear all diagnostic trouble codes (DTCs). Road test vehicle and rerun the on-board diagnostics to verify that no DTCs are present. If DTCs are generated, perform the appropriate diagnostic procedures and repairs. Vehicle operation (engine/transmission) may be affected if DTCs are not serviced.

Alternative connections or wiring practices are not recommended as certain modifications may result in other circuits becoming non-functional. Disconnect the battery negative (ground) cable and remove it from the battery carrier prior to any vehicle modification. Upon completion of body or equipment installation, all wiring should be checked for proper routing, etc. to preclude electrical shorts upon reinstallation of the battery negative cable.

Do not splice into the Powertrain System (PCM-V). Connecting to any component or wires to this system may adversely affect Engine/ Transmission operation.

LIGHTS CONTROLLED BY HEADLAMP SWITCH

The head lamp switch used on the F-150, Super Duty F-Series and E-Series vehicles employs one main 30A maxi fuse for the head lamp system. The left- and right-hand low beam lamps are then fused individually using a 10A fuse located in the instrument panel fuse box (see schematic on page 194) the exterior lamps are fused using a 15A fuse while the interior lamps are fused using a 10A fuse located in the instrument panel fuse box (see schematic on page 194). A connection to any circuit in the system controlled by the head lamp switch must be done using an auxiliary relay. A marker lamp relay circuit 962 for SUB additions is provided for convenience as standard equipment on chassis cabs, optional on pickups. Do not connect to other OEM wires.

E-SERIES

Rear Lights — Splice into circuit #14 (Brown) in crossover harness ar rear of vehicle.

Front Lights — Splice into circuit #14 (Brown) in engine compartment 12A581 wire assembly along right or left fender apron.

LIGHTS CONTROLLED BY STOP LAMP SWITCH AND TURN INDICATOR SWITCH

NOTE: Splicing into the stop lamp switch on vehicles with Electronically Controlled Transmissions can interfere with the proper functioning of PCM, speed control, and anti-lock brake electronic modules. This can:

- Affect EFI engine idle speed quality.
- Do not delete or deactivate the Center High Mount Stop Lamp unless it will be blocked by second unit body.
- Prevent the Powertrain Control Module torque converter clutch from applying at throttle openings less than half throttle.
- Deactivate anti-lock brake system operation
- Prevent the speed control from disengaging upon braking.

If your application involves splicing into the stop lamp switch of a Powertrain Control Module equipped vehicle, please consult the Truck Body Builders Advisory Service website at www.fleet.ford.com/truckbbas/ to obtain a copy of QVM Bulletin #10.

The stop lamp switch that is in use on Ford trucks is a mechanical switch operated by brake pedal. It is designed for maximum loads usually less than the fuse or circuit breaker in the circuit but ample for normal stop lamp loads. The maximum load is 15 amps. Under no circumstances are total loads in excess of this value permissible. (See schematic on page 189).

F-150, SUPER DUTY F-SERIES AND E-SERIES MODELS

Ford trucks are released with a mechanical stop lamp switch mounted on the brake pedal arm for E-Series (mounted on the pedal pin and master cylinder push rod for F-150 and Super Duty F-Series). This switch has a maximum allowable electrical load of 15 amps. If only stop lamp function is desired for the added lights, splice into the circuit #511 light green wire for E-Series. F-150 and Super Duty F-Series between the stop lamp switch and the turn indicator switch. This circuit is provided as standard equipment and is located at the rear of the vehicle.

If both turn signal and stop lamp function are desired for the added lights, splice into the tail lamp loom (circuit #64 dark green for F-150, Super Duty F-Series and E-Series right-hand lights and circuit #52 yellow for F-150, Super (See note below). These circuits are provided as standard equipment and are located at the rear of the vehicle. (See Figure B, Page 187 and page 188 and schematic on page 189).

NOTE:

1. The turn signal switch used on some light trucks has a maximum rated current of 6.5 amps for right and left turning functions and 10.4 amps for stop lamp function. Do not exceed these values on the turn signals.
2. The Super Duty F-Series utilizes an electronic flasher (13550) for the turn signal and emergency flasher system.

ADDED LIGHTS OR ACCESSORIES CONTROLLED BY ADDED SWITCHES

This section describes the connection points for added electrical accessories when these accessories are to be controlled by added switches not a part of the Ford-released vehicle. The added switches and wiring must have sufficient electrical capacity for the accessory load and must be protected by appropriate fuses or circuit breakers. Also, added current draw must not cause total loads to exceed capabilities of the base vehicle wiring.

RADIO FREQUENCY INTERFERENCE (RFI)

During modifications to the vehicle, manufacturers, service technicians, owners and users should take the necessary precautions to maintain the RFI integrity of components. (Both the United States and Canada have RFI regulation in effect). Precautionary procedures and components listed below are examples and do not necessarily represent a complete list.

1. All components required to suppress RFI emissions, which are removed during service, repair, or completion of the vehicle, must be reinstalled in the manner in which they were installed by Ford.
2. Do not modify or change any RF device in a manner not expressly approved by Ford Motor Company.
3. Shields on distributor and ignition coil must remain installed.
4. Replacement spark plugs, ignition wires, ignition coils, distributor caps and distributor rotor must be equivalent in their RFI suppression properties to original equipment.
5. Electrical grounds on all components must be retained.
6. Metallic components installed on the body or chassis must be grounded to the chassis.
7. Electrical circuits added to the vehicle should not be installed near the high tension ignition components.
8. Only “static conductive” accessory drive belts should be used.
9. Fan, water pump, power steering and other belts should be of the OEM type or equivalent that will not build up a static electrical charge.
10. For any completed vehicle, additional measures may be needed to adequately suppress RFI emissions.

CHECK ENGINE WARNING LIGHT

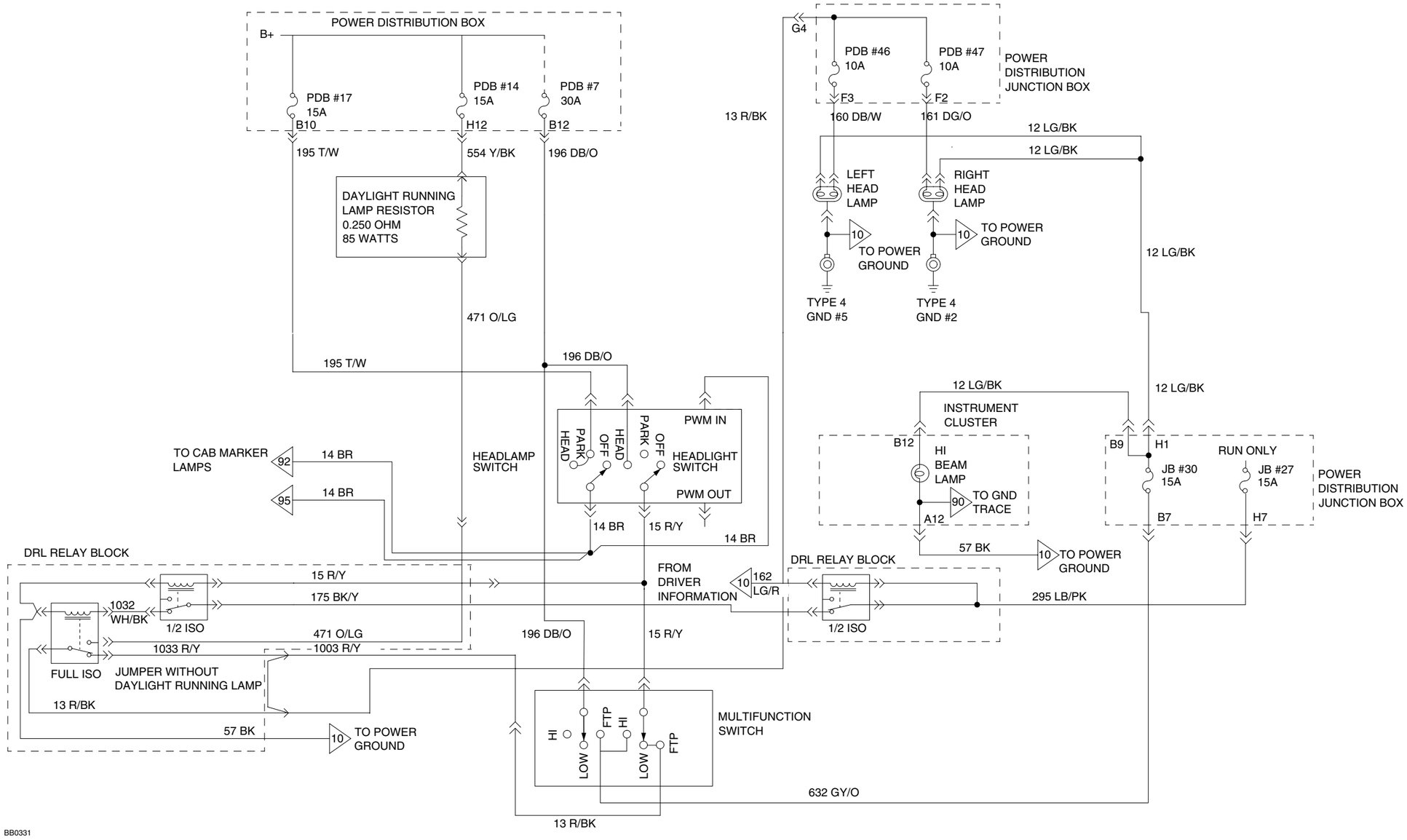
The check engine warning light is a device required on certain vehicles to indicate malfunctions of the Powertrain Control Module. For all vehicles except E-Series Super Duty Stripped Chassis (which is not equipped with a dashboard), if a warning light is required, it is Ford installed and operational. The light is also required for all gasoline powered E-Series Super Duty Stripped Chassis vehicles. The warning lamp is included in the supplied instrument cluster, located in the dunnage box. It should be recognized that this light is a requirement of Emission Certification.

If an alternate instrument cluster is utilized, the final stage manufacturer must install an operational light in the dashboard. This light must glow amber and display the acronym message, “SERVICE ENGINE SOON.”

Once the light has been completed by the final stage manufacturer, proper function can be determined by turning the key to the on position. The light should come on prior to engine cranking and go out when the engine starts. If the light does not come on as above, refer to Section 14 (Quick test step 7 — Diagnostics by Symptom) of Volume H (*Engine and Emission Diagnostic Manual*) of the *Car and Truck Service Manual* for diagnostic procedure.

NOTE: The final stage manufacturer is responsible for ensuring that final vehicle configuration meets all applicable regulatory requirements.

SUPER DUTY F-SERIES — ELECTRICAL WIRING
ADDING LIGHTS OR ELECTRICAL DEVICES



PICKUP BOX REMOVAL/ALTERATIONS DESIGN RECOMMENDATIONS

PART I

Introduction

The following information is presented in three parts for vehicle alterers who intend to remove pickup boxes from certain Rangers and Super Duty F-Series pickup trucks, and install aftermarket second unit bodies on these vehicles. For vehicle alterers in California, see important information on page 199 concerning alteration of vehicles with a GVWR of 8500 lb or less for sale, registration, or use in California.

Part I details those Ranger and Super Duty F-Series pickup models that may be altered by removal of the pickup box and installation of aftermarket second unit bodies and indicates where specific questions should be directed. Part II provides information concerning the obligations and responsibilities of vehicle alterers with respect to United States and Canada Motor Vehicle Safety Standards (F/CMVSS). Part III provides information for vehicle alterers with respect to United States, California, and Canada exhaust emissions, evaporative emissions and RFI requirements, and California requirements with regard to fuel vapor recovery.

RANGER REGULAR CAB PICKUP BOX REMOVAL WILL AFFECT COMPLIANCE WITH THE DYNAMIC PERFORMANCE REQUIREMENTS OF F/CMVSS NO. 214 SIDE IMPACT PROTECTION FOR VEHICLES WITH A GVWR OF 2722 KG (6000 LB) OR LESS.

Vehicle alterers who intend to modify vehicles, as described above, may use the information and conditions provided herein to assist them in determining whether modified vehicles comply with applicable regulatory requirements. Alternatively, the vehicle alterer may desire to employ other limits or conditions than those provided herein. In any case, it is the responsibility of the vehicle alterer to assure compliance and certification of the altered vehicle to the applicable safety and/or emissions (including noise and RFI) requirements. Specific questions concerning compliance and/or certification to safety standards and emissions and fuel economy regulations should be directed to the vehicle alterer's legal counsel or the United States National Highway Traffic Safety Administration (FMVSS and Federal Fuel Economy Standards and requirements), the Canada Ministry of Transport (CMVSS, emissions, and noise regulations), the Canada Department of Communications (Canadian RFI regulations), the United States Environmental Protection Agency (EPA) (United States emission requirements) or the California Air Resources Board (California emissions and fuel vapor recovery requirements), and the vehicle noise emission control authorities, if any, in the state and locality in which the vehicle is sold.

If you have technical, product-related questions concerning some aspect of the vehicle alteration, a representative of Ford Motor Company will be happy to talk with you. Please contact your regional sales office or phone the Ford Truck Body Builders Advisory Service directly at 1-877-840-4338.

Models Available for Pickup Box Removal

The models listed in Table A, page 200 (Super Duty F-Series) and Table A, page 201 (Ranger SuperCab), may be altered by removing the pickup boxes and installing aftermarket second unit bodies. For Ranger SuperCab vehicles available for pickup box removal, Ford Motor Company specifies that they shall be equipped with front and rear stabilizer bars. Limitations on the second unit bodies that may be installed, as well as other vehicle conditions, are also specified in Table A, pages 200-201 and in the Safety/Emissions section beginning on page 15.

PART II

Information Concerning United States and Canada Safety Standards

The vehicle alterer is responsible for certifying the altered vehicle pursuant to Title 49 of the Code of Federal Regulations Sections 567.7 and 568.8 in the United States, or pursuant to Section 9 of the Canadian Motor Vehicles Safety Regulations in Canada. As outlined in these requirements, the vehicle alterer must ascertain which F/CMVSS are affected by the alteration, and subsequently provide certification that the altered vehicle conforms to all affected safety standards. In the information that follows, Ford has endeavored to provide sufficient instructions and guidelines to the vehicle alterer for certifying that the vehicle conforms to all F/CMVSS affected by the vehicle alteration. Information pertaining to Certification Labeling Requirements for the altered vehicle is outlined in page 197.

Federal and Canadian Motor Vehicle Safety Standards Compliance

Conformity to the following FMVSS (FMVSS) and Canadian Motor Vehicle Safety Standards (CMVSS) are affected by the removal of the pickup box and rear bumper and installation of an aftermarket second unit body:

F/CMVSS No. 105[5]	— Hydraulic Brakes
F/CMVSS No. 108	— Lighting Equipment
F/CMVSS No. 111	— Rear view Mirrors
F/CMVSS No. 135[5]	— Light Vehicle Brakes
F/CMVSS No. 204[1]	— Steering Control Rearward Displacement
F/CMVSS No. 208[2]	— Occupant Crash Protection
F/CMVSS No. 212[3]	— Windshield Mounting
F/CMVSS No. 214[3][4]	— Side Impact Protection
F/CMVSS No. 219[3]	— Windshield Zone Intrusion
F/CMVSS No. 301[3]	— Fuel System Integrity

For Motor Company represents that, in the case of a Ranger SuperCab or Super Duty F-Series pickup truck listed in Table A, page 200 (Super Duty F-Series) and Table A, page 201 (Ranger SuperCab), this vehicle, as altered, will conform to the requirements of the previously listed safety standards, provided the vehicle is altered only by the removal of the pickup box (including optional equipment attached to the pickup box) and rear bumper (if so equipped), and the installation of an aftermarket Second Unit Body (SUB) in accordance with the following conditions:

1. The following lighting components must be designed and installed on the altered vehicle in accordance with the requirements of F/CMVSS No. 108, Lamps, Reflective Devices, and Associated Equipment.

Tail Lamps*	Rear Side Marker Lamps
Stop Lamps*	Front and Rear Identification
License Plate Lamps*	Lamps (for vehicles over 80 inches in width)
Back-Up Lamps*	Front and Rear Clearance
Rear Turn Signal Lamps*	Lamps (for vehicles over 80 inches in width)
Rear Side Marker Lamps*	Center High Mounted Stop
Rear Side Reflex Reflectors*	Lamp (if second unit body
Reflectors*	blocks view of the CHMSL on the back of the cab another CHMSL must be added)

The items of lighting equipment (including wiring and power supply) on the cab of the pickup truck must not be removed, modified, replaced, or altered. Further, the second unit body installed by the vehicle alterer must not impair the visibility and conformity to the photometric requirements of the lamps and reflective devices installed on the cab of the pickup truck.

2. The weight (in pounds) of the Second Unit Body (SUB) installed must be within the range specified in Tables A, pages 200-201 corresponding to the particular pickup truck model and not greater than the weight (in pounds) calculated using the following formula:

   SUB WEIGHT LIMIT = Unloaded Vehicle Weight (UVW) – Original Equipment Manufacturer (OEM) Curb Weight + Pickup Box + Options Removed.

Super Duty F-Series

- Step Bumper – 74 lb.
- Pickup Box – see Table A, page 200
- Spare Wheel and Tire – see Table B, page 200

Ranger SuperCab

- Step Bumper – 37 lb.
- Pickup Box – see Table A, page 201
- Spare Wheel and Tire – see Table B, page 201

NOTES —

[1] For vehicles with a GVWR of 10,000 lb or less and an unloaded vehicle weight of 5500 lb or less.

[2] Injury criteria is applicable to vehicles with a GVWR of 8500 lb or less and an unloaded vehicle weight of 5500 lb or less.

[3] Applicable to vehicles with a GVWR of 10,000 lb or less.

[4] Dynamic Performance Requirements apply to MPV, Truck, or a Bus with a GVWR of 2722 Kg (6000lb) or less for FMVSS only.

[5] Standard 135 applied to vehicles with a GVWR of 3500 Kg (7716 lb) or less. Standard 105 applies to vehicles with a GVWR over 3500 Kg (7716 lb).

* These lamps and reflectors are available from Ford in the form of rear lamp assemblies and are the same as those installed on Ford chassis cab models.

PICKUP BOX REMOVAL/ALTERATIONS DESIGN RECOMMENDATIONS

PART II (Cont'd)

Example

A vehicle alterer wants to remove the pickup box and rear step bumper from a Super Duty F-250 Regular Cab (4x4), 137-inch WB model with a 5.4L engine, 4R100 transmission, and air conditioning having a curb weight of 6200 lb and install a 600-pound Second Unit Body (SUB).

First, Table A (on page 200) specifies that the maximum SUB weight is 1800 lb. Since the SUB weight is 600 lb, this condition is satisfied.

Second, the SUB weight must not exceed the SUB WEIGHT LIMIT calculated below:

SUB WEIGHT LIMIT = Maximum Complete Unloaded Vehicle Weight (UVW) minus the unloaded vehicle weight as delivered (OEM) curb weight plus pickup box weight removed plus weight of removed options.

= 6900 – 6200 + 380 + 74

= 1154 lb

The 600 lb SUB is less than 1154 lb and, accordingly, may appropriately be installed as planned.

The vehicle alterer must either select a lighter weight SUB, reduce the OEM accessory weights for the vehicle, or both if the SUB is heavier than the maximum limit.

1. OEM Curb Weight includes Base Vehicle Weight (with full fuel), engine and transmission weight, and all OEM accessory weights ordered or installed (Refer to the appropriate *Truck Source Book* or the CD version of this publication for weight data).
2. Options removed include step bumpers or similar OEM options **permanently** removed from the vehicle.
3. The center of gravity height and overall height of the second unit body installed by the alterer must not exceed the values specified in Table A, pages 200-201 corresponding to the particular pickup model. Center of gravity height and overall height of the second unit body are measured from the top surface of the frame at the rear of the cab.
4. The altered vehicle's unloaded vehicle weight (see Definitions in Safety/Emission section) must not exceed the values designated in Table A pages 200-201 corresponding to the pickup truck's model and non-California engine-transmission combination.
5. These instructions must be followed in the vehicle alteration:

• The following components, as installed by Ford Motor Company, are not to be removed, relocated, altered, or modified in any way:

– Steering column, steering shaft, steering wheel, and related structural components and attachment hardware

– Windshield and windshield mounting system

– Cab and front end structural components, including the roof, pillars, cowl, cowl reinforcements, hood, doors, fenders, hood restrictors and apron reinforcements, and frame and frame reinforcements

– Radio antenna

– Doors and hood mounting, hinging, and latching systems

– Hood and fender ornamentation

– Fuel tank and attachment hardware, including sending unit and vapor valve, fuel tank shield, and in-tank electric fuel pump (for gasoline engine only)

– Fuel lines, routing, and attachments, excluding fuel filler cap, filler pipe, filler hose(s), and filler system attachment hardware, which must be removed and replaced

– Vapor line(s) and carbon canister(s)

– Fuel pump

– Fuel filter and attachment

– Air cleaner assembly

– Safety belts

– Front seat head restraints

– Electrical grounds on all components (must be retained)

– The Powertrain Control Module (PCM), and

– Catalyst and Exhaust System.

• Any alteration or modification made to the vehicle, as manufactured by Ford Motor Company, and any components or structure installed by the vehicle alterer must not result in steering column rearward displacement of more than 5 inches (as defined in F/CMVSS No. 204)[1]; no modification to the Hydraulic Brake System that would affect compliance to F/CMVSS No 105 or 135[5]; an increase in injury potential for front outboard seating positions (as defined in F/CMVSS No. 208)[2]; any additional loss of windshield retention (as defined in F/CMVSS No 212)[3]; any change in the performance requirements of F/CMVSS 214[3][4]; any penetration of the inner surface of the windshield or intrusion into the protected zone (as defined in F/CMVSS No. 219)[3]; or loss of fuel system integrity (as defined in F/CMVSS No. 301)[3]; when the vehicle is tested in any manner specified by applicable provisions of F/CMVSS Nos. 105[5], 135[5], 204[1], 208[2], 212[3], 214[3][4], 219[3], and 301[3], respectively.

NOTE: Federal Motor Vehicle Safety Standard (FMVSS) and Canadian Motor Vehicle Safety Standard (CMVSS) No 204 are not applicable to a vehicle with an unloaded vehicle weight greater than 5500 lb. F/CMVSS No. 208 injury criteria are applicable only to vehicles with a GVWR of 8500 lb or less and an unloaded vehicle weight of 5500 lb or less. Conformity to Federal Motor Vehicle Safety Standard (FMVSS) and Canadian Motor Vehicle Safety Standard (CMVSS) No. 212 and 219 for vehicles having a gross vehicle weight rating (as defined in 49 CFR, Part 571.3) no greater than 10,000 lb, is established for representative vehicles at a vehicle weight provided by Sections S6.1(b) and S7.7(b) of FMVSS No. 212 and 219, respectively, and provided by Sections 5.1 and 8 of CMVSS No. 212 and 219, respectively.

• The second unit body installed shall be mounted securely and so designed that when the altered vehicle is impacted in any manner specified by applicable provisions of F/CMVSS No. 212[3] and 219[3], second unit body deformation or movement relative to the frame does not result in any separation or loss of body attachment to the frame.

• The second unit body installed and the required fuel system components (identified below) shall be located and mounted as follows:

– The second unit body shall be mounted securely and is so designed that when the altered vehicle is tested in any manner specified by applicable provisions of F/CMVSS No. 301[3]:

(a) Second unit body components shall not contact any fuel system component (other than at the points where the fuel system is permanently attached to the second unit body) and

(b) Second unit body deformation or movement relative to the frame shall not cause any fuel system component to be penetrated, disconnected, or otherwise damaged.

– The rear end of the second unit body (excluding the rear bumper) installed shall not extend beyond (overhang) the rear edge of the vehicle frame or frame extension. Any extension of the vehicle frame must be constructed and attached so as to perform as a continuation of the vehicle frame when the altered vehicle is tested in any manner specified by applicable provisions of F/CMVSS No. 301[3].

– See the Design Recommendations, Second Unit Body (SUB) attachment section of this book beginning on page 204 for additional information.

– The fuel filler cap, filler pipe, filler hose(s), and filler system attachment hardware for vehicles with diesel engines and for vehicles with gas engines shall be installed, as shown on Super Duty F-Series, page 131, and shall be securely retained to remain intact when the vehicle is tested in any manner specified by applicable provisions of F/CMVSS NO. 301[3].

NOTES —

[1] For vehicles with a GVWR of 10,000 lb or less and an unloaded vehicle weight of 5500 lb or less.

[2] Injury criteria is applicable to vehicles with a GVWR of 8500 lb or less and an unloaded vehicle weight of 5500 lb or less.

[3] Applicable to vehicles with a GVWR of 10,000 lb or less.

[4] Dynamic Performance Requirements apply to MPV, Truck, or a Bus with a GVWR of 2722 Kg (6000lb) or less for FMVSS only.

[5] Standard 135 applied to vehicles with a GVWR of 3500 Kg (7716 lb) or less. Standard 105 applies to vehicles with a GVWR over 3500 Kg (7716 lb).

PICKUP BOX REMOVAL/ALTERATIONS DESIGN RECOMMENDATIONS

PART II (Cont'd)

- The front end of the second unit body installed shall be located at least three inches rearward of the rearmost point of the cab on Super Duty F-Series, and at least 1.4 inches rearward of the rearmost point of the cab on Ranger SuperCab models.
- The vehicle, as produced by Ford, meets the Center High Mounted Stop Lamp (CHMSL) requirements of Standard 108, Lighting. Compliance to these criteria may be affected by the installation of a Second Unit Body (SUB), if the SUB blocks the view of the CHMSL mounted on the back of the cab. When this happens, the subsequent manufacturer must install a CHMSL on the SUB that meets FMVSS 108. An electrical feed for installation of a CHMSL on the SUB is provided and is located inside the rearmost crossmember near the end of the left frame rail on the Super Duty F-Series models. For the Ranger, directions are given in Ford Bulletin Q-28, CHMSL – Precautions and Guidelines for Adding or Locating.
- The vehicle, as produced by Ford, meets F/CMVSS No. 111. Compliance to F/CMVSS No.111 may be affected, however, by removal of the pickup box and installation of a Second Unit Body (SUB), even though the mirror system has not been altered. A discussion of compliance, with respect to each mirror type, follows:
  - Sail-Mounted Type Outside Mirror on Super Duty F-Series or Ranger Pickup. Provided the mirrors, driver's seat, and cab are not altered, the mirror system will continue to meet Standard No. 111. if the overall width of the Second Unit Body (SUB) is no wider than the pickup box, and if the view of the roadway behind the vehicle through the inside mirror is not totally blocked off. If the SUB blocks the view through the inside mirror, a flat glass mirror is required on the passenger's side in place of the convex mirror on vehicles to be sold in the United States. Vehicles for sale in Canada may be equipped with the convex mirror on the passenger's side when the SUB blocks the view through the inside mirror. If the SUB is wider than the pickup box, both the driver's side and passenger's side mirrors may have to be replaced with mirrors providing a wider view to the rear.
  - Trailer Tow Mirrors on Super Duty F-Series. These mirrors will continue to meet Standard No. 111, provided the mirrors, the driver's seat, and the cab are not altered.
- If the front bumper and bumper mounting system are removed temporarily, the front bumper and bumper mounting system must be reinstalled in accordance with the instructions provided in the *Ford Truck Service Manual*. If the front bumper and bumper mounting system are replaced, the replacement front bumper and bumper mounting system must not result in: steering column rearward displacement of more than 5 inches (as defined in F/CMVSS No. 204)[1]; any increases in injury criteria (as defined in F/CMVSS No. 208)[2]; any additional loss of windshield retention (as defined in F/CMVSS No. 212)[3]; any penetration of the inner surface of the windshield or intrusion into the protected zone (as defined in F/CMVSS No. 219)[3]; or, loss of fuel system integrity (as defined in F/CMVSS No. 301[3]), when the vehicle is impacted in any manner specified by applicable provisions of those standards.

NOTE: The second unit body added by the vehicle alterer may have to conform to other safety standards as well. For example, any glazing used in the second unit body must conform to F/CMVSS No. 205, Glazing Materials. Additionally, if the second unit body is equipped with any passenger seating positions, the following safety standards may be applicable as well:

F/CMVSS No. 206	— Door Locks and Retention
F/CMVSS No. 207	— Seating Systems
F/CMVSS No. 208[2]	— Occupant Crash Protection
F/CMVSS No. 209	— Seat Belt Assemblies
F/CMVSS No. 210	— Seat Belt Anchorages
F/CMVSS No. 214[3][4]	— Side Impact Protection
F/CMVSS No. 302	— Flammability of Interior Materials

With respect to the second unit body installed and the above-mentioned safety standards, it is the responsibility of the vehicle alterer to assure conformity with all applicable requirements.

It is the responsibility of the vehicle alterer to determine which other safety standards, if any, their vehicles must comply with.

NOTE: See statements for F/CMVSS No. 105 and 135, Hydraulic Brake implications of modifications/alterations to completed vehicles, including pickup box removal vehicles on pages 27-35 of the Safety/Emission section.

Certification Labeling Requirements

For altered vehicles in the United States, the vehicle alterer is required to affix an additional label containing the information shown on page 35 of the Safety/Emission section.

NOTE: The safety standard certification label, which is affixed to the driver's door latch pillar of the pickup truck, by Ford Motor Company must not be removed.

For altered vehicles in Canada, the vehicle alterer is required to affix a label containing the information shown on page 52 of the Safety/Emission section.

NOTE: A vehicle alterer may be a manufacturer according to the definition of manufacturer contained in the Canadian Motor Vehicle Safety Act.

PART III

Information concerning United States and Canada Exhaust Emissions, Evaporative Emissions, RFI and Noise, and California Fuel Vapor Recovery Requirements. Refer also to pages 17-25 of the Safety/Emission section.

A. Exhaust and Evaporative Emission Requirements

Ranger SuperCab completed trucks have been certified to the applicable U.S. Federal, California, or Canadian exhaust and evaporative emissions requirements. See page 19 for important information concerning alteration of vehicles with a GVWR of 8500 lb or less that is for sale, registration, or use in California. Federal law specifies that a light-duty truck is any vehicle with a GVWR of 8500 lb or less that has a vehicle curb weight of 6000 lb or less, and a basic vehicle frontal area of 45 square feet or less, which is designed primarily for transporting property (or is a derivative of such a vehicle), or is designed primarily for transporting persons and has a capacity of more than 12 persons, or is available with special features enabling off-street or off-highway operation and use.

All heavy-duty engines (in vehicles having a GVWR of more than 8500 lb for the United States and Canada) have been certified to the applicable U.S. Federal or Canadian exhaust or California exhaust and evaporative emissions requirements for heavy-duty engines. *It is the responsibility of the vehicle alterer to assure compliance of the altered vehicle with the applicable emission requirements.*

Ranger SuperCab and Super Duty F-Series pickup truck models listed in Tables A on pages 200-201, if altered by removal of the pickup box (including items attached to the pickup box), rear bumper (if so equipped), and installation of a second unit body, *may* not require recertification to applicable Federal, California, or Canadian emissions requirements if the following conditions are satisfied:

1. None of the engine emission control hardware furnished with the pickup truck is deleted, modified, or rendered inoperable. A listing of such hardware is provided in the Emission Control Modifications section on page 19 of the Safety/Emission section of this book.

NOTES —

(1) For vehicles with a GVWR of 10,000 lb or less and an unloaded vehicle weight of 5500 lb or less.

(2) Injury criteria is applicable to vehicles with a GVWR of 8500 lb or less and an unloaded vehicle weight of 5500 lb or less.

(3) Applicable to vehicles with a GVWR of 10,000 lb or less.

(4) Dynamic Performance Requirements apply to MPV, Truck, or a Bus with a GVWR of 2722 Kg (6000lb) or less for FMVSS only.

PICKUP BOX REMOVAL/ALTERATIONS DESIGN RECOMMENDATIONS

PART III (Cont'd)

Further, vehicles sold for principal use in high altitude areas must comply with the High Altitude Regulations.

1. A copy of the appropriate *Ford Truck Owner's Guide* and *Warranty Facts Booklet* is installed in the altered pickup truck prior to sale to the ultimate purchaser in order to provide emission systems warranty information and maintenance schedules. **Note**: Whether Ford Motor Company or the alterer is responsible for emission warranty claims depends on, among other things, whether the vehicle failed to comply with applicable warranty provisions because of modifications made by the alterer or because of the original design and manufacture of the vehicle.
2. The Super Duty F-Series fuel filler kit that is supplied with the vehicles ordered with pickup box delete option number 66D or available through Ford dealers, P/N F81Z-9B149-FA (gasoline) or -GA (diesel), must be installed as shown on pages 131 and 154. Filler system attachment hardware for Ranger SuperCab in kit 9B149 is installed as shown on page 202.
3. The alterer does not exceed the limitations listed on Safety/Emission page 19 under "Curb Weight and Frontal Area Restrictions".

Questions concerning requirements and policies, with respect to alterers of completed vehicles, should be directed to body builder's legal counsel, the Environmental Protection Agency, or the California Air Resources Board.

Note: If the weight of the altered vehicle exceeds the maximum unloaded vehicle weight specified in Table A pages 200-201, corresponding to the particular pickup truck model and engine combination, the vehicle alterer is required to certify the vehicle to: F/CMVSS 105 or 135[5], Brakes; F/CMVSS No. 204[1], Steering Control Rearward Displacement; F/CMVSS No.212[3], Windshield Mounting; F/CMVSS No. 214[3][4], Side Impact Protection; and F/CMVSS 219[3], Windshield Zone Intrusion; and F/CMVSS No. 301[3], Fuel System Integrity, in addition to compliance with any other F/CMVSS affected by the vehicle's alteration.

4. For a pickup truck have a GVWR of 10,000 lb or less and catalyst equipped. For vehicles other than those for sale, registration or use in California, the alterer does not add more than 500 lb to the maximum unloaded vehicle weight specified in Table A pages 200-201 corresponding to the particular pickup model.

   (a) **IMPORTANT**: Some of the preceding conditions are based, in part, on statements made by C. N. Freed of the Environmental Protection Agency (EPA) in a letter of July 13, 1979 to M. H. McBride, legal counsel of the Recreation Vehicle Industry Association. That letter explained EPA's policy concerning alterers of complete 1980 and later model year light-duty trucks in the context of EPA's Advisory Circular No. 64 – a March 7, 1977 publication that provides guidance on the need for separate certification of vehicles modified after original manufacture, but prior to sale and delivery to the ultimate purchaser. The maximum second unit body weights provided in tables on pages 200-201 are calculated in accordance with the definition of "maximum vehicle weight" provided in the July 13, 1979 letter.

   The referenced letter provides that alterers of complete light-duty trucks need not recertify such vehicles for emission control purposes if:

   1) the altered vehicles conform, in all material respects, to the design specifications in the original manufacturer's application for certification, and

   2) the weight of the altered vehicle, including the weight of fuel at nominal tank capacity, is no more than 500 lb above the "maximum vehicle weight."

The letter further states that no frontal area restrictions will apply to alterers who comply with conditions (a) and (b) above. Alterers who do not comply with these conditions will be considered manufacturers under the Clean Air Act and will be required to assure that the altered vehicles are certified.

Questions concerning EPA's policies, with respect to alterers of completed vehicles, should be directed to legal counsel or the Environmental Protection Agency.

   (b) **NOTE**: If the weight of the altered vehicle exceeds the maximum unloaded vehicle weight specified in Table A, corresponding to the particular pickup truck model and non-California engine-transmission combination, the vehicle alterer is required to certify the vehicle to: F/CMVSS No. 105 or 135, Brakes; F/CMVSS No. 204, Steering Control Rearward Displacement (if the unloaded vehicle weight is 5500 lb or less); F/CMVSS No. 208, Occupant Crash Protection (if the GVWR is 8500 lb or less and the unloaded vehicle weight is 5500 lb or less); F/CMVSS No.212, Windshield Mounting; F/CMVSS No. 214[3)(4)], Side Impact Protection; F/CMVSS No. 219, Windshield Zone Intrusion; and F/CMVSS No. 301, Fuel System Integrity, in addition to compliance with any other F/CMVSS affected by the vehicle's alteration.

See page 199 for important information concerning alteration of vehicles rated at 8500 lb GVWR or less, for sale, registration, or use in California.

B. High Altitude Emissions

United States Environmental Protection Agency regulations contain unique emission certification requirements for trucks that will be sold or delivered to customers for principal use above 4,000 feet (1219 meters). Certain new vehicles cannot be sold to customers who intend to use them principally at high altitudes. TO AVOID ANY QUESTION OF CERTIFICATION COVERAGE, ORDERS SHOULD SPECIFY WHETHER A HIGH ALTITUDE EMISSION SYSTEM OR A NON-HIGH ALTITUDE EMISSION SYSTEM IS REQUIRED.

C. California Fuel Vapor Recovery

California regulations require that vehicle fuel systems be designed to accommodate a new vapor-recovery fueling nozzle, including unobstructed access to the fill pipe. Fuel filler pipes, installed per Super Duty F-Series, pages 131 and 154, will comply with the "Specifications for Fill Pipes and Openings of Motor Vehicle Fuel Tanks," referenced in Title 13 California Administrative Code, providing no part of the second unit body, as installed, intrudes within a 10-inch radius cylinder which has its axis parallel to the ground, passing through point "Z" and extends outward from the Ford fuel pipe housing component shown in the figure on Super Duty F-Series, pages 131 and 154. Fuel filler pipes, installed using the alternate bracket shown on the figures on Super Duty F-Series, pages 131 and 154, will comply with the above California vapor recovery regulations, provided the second unit body installed does not interfere with the access zone.

D. Radio Frequency Interference (RFI)

1. UNITED STATES RADIO FREQUENCY INTERFERENCE (RFI) INFORMATION

   Devices that emit radio frequency (RF) energy, such as AM/FM radios and radio-controlled theft alarms, marketed for sale or use in the United States, are subject to the rules and regulations of the Federal Communications Commission (FCC) 47 C.F.R. Parts 2 and 15 (1992).

   These rules specify the following conditions of operation:

   > This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) The device must accept any interference received, including interference that may cause undesired operation.

   In addition, the FCC's rules may require the device to be tested and found to comply with various RF interference emissions limits before it may be marketed. The FCC established different limits, according to the particular use and installation of RF devices. In some cases, a grant of equipment authorization from the FCC also must be obtained before and RD device may be marketed.

   To ensure continued compliance with the FCC's requirements, the owner, user, custom manufacturer, or service technician must not modify or change the RF device in a manner not expressly approved by Ford Motor Company. Such modifications could void the authority to operate the device.

NOTES —

(1) For vehicles with a GVWR of 10,000 lb or less and an unloaded vehicle weight of 5500 lb or less.

(2) Injury criteria is applicable to vehicles with a GVWR of 8500 lb or less and an unloaded vehicle weight of 5500 lb or less.

(3) Applicable to vehicles with a GVWR of 10,000 lb or less.

(4) Dynamic Performance Requirements apply to MPV, Truck, or a Bus with a GVWR of 2722 Kg (6000lb) or less for FMVSS only.

(5) F/CMVSS 135 is applicable to vehicles with a GVWR of 3500 Kg (7716 lb) or less. F/CMVSS 105 is applicable to vehicles with GVWR over 3500 Kg (7716 lb).

PICKUP BOX REMOVAL/ALTERATIONS DESIGN RECOMMENDATIONS

2. CANADIAN RADIO FREQUENCY INTERFERENCE (RFI) INFORMATION

   All vehicles powered by spark ignition engines (e.g., gasoline, natural gas, or propane engines) and manufactured in Canada or for sale or use in Canada, are subject to the Canadian "Regulations for the Control of Interference to Radio Reception" per Interference-Causing Equipment Standard (ICES-002) and applicable test method according to "CAN/CSE-C108, 4-M92". Violation of these regulations is punishable by fine or imprisonment. Ford-built vehicles were designed and manufactured to be capable of meeting the regulatory requirements or such modifications, thereof, as may have been authorized by the Department of Communications. However, because Ford has no control over how an altered vehicle is completed by subsequent stage manufacturers, Ford does not represent that the completed vehicle, incorporating the Ford-built components, will comply with applicable requirements.

The following information is supplied to subsequent stage manufacturers to help them avoid increasing the RFI emissions of this vehicle in the course of completing it.

For any altered vehicle, additional measures may be needed to adequately suppress RFI emissions. Affected components could include spark plugs, electronic engine control module, ground straps, ignition component shields, accessory drive belts, and instrument voltage regulator suppressor assembly.

More specifically:

- All components required to suppress RFI emissions, which are removed during service, repair, or completion of the vehicle, must be reinstalled in the manner in which they were installed by Ford.
- Shields on ignition coil must remain installed.
- Replacement of spark plugs, ignition wires, and ignition coil must be equivalent in their RFI suppression properties to original equipment.
- Electrical grounds on all components must be retained.
- Metallic components installed on the body or chassis must be grounded to the chassis.
- Electrical circuits added to the vehicle must not be installed near the high voltage ignition components.
- Only "static conductive" accessory drive belts should be used. Fan, water pump, power steering, and other belts should be on the OEM type or equivalent that will not build up a static electrical charge.
- Engine component wiring must not be rerouted in any manner.
- The Powertrain Control Module (PCM) must not be relocated from the position as installed by Ford Motor Company.

E. Noise

Canadian Motor Vehicle Safety Standard (CMVSS) NO. 1106 prescribes maximum permissible noise levels of 83 dB(A) for "heavy-duty vehicles," with a GVWR between 6001 and 10,000 lb, where such levels are measured in accordance with SAE Standard J986a, "Sound Level for Passenger Cars and Light Trucks" (July, 1972). Under the Canada Motor Vehicle Safety Standards, a "heavy-duty vehicle" is a bus, a Chassis Cab, a multipurpose passenger vehicle, or a truck having a gross vehicle weight rating of more than 6000 lb, but not a passenger car. However, Transport Canada's tabulation of CMVSS indicates that CMVSS No. 1106 does not apply to incomplete vehicles as such.

A pickup truck listed in tables on pages 200-201, if altered only by the removal of the pickup box (including optional equipment attached to the pickup box) and rear bumper (if so equipped), is designed and built to conform to the applicable exterior noise emission limits of CMVSS NO. 1106 (1)(b). The alterer is, of course, responsible for determining that the vehicle, as altered, complies with CMVSS No. 1106.

WARNING — VEHICLE OPERATING TEMPERATURES

Some trucks of Ford Motor Company may exhibit high engine compartment and exhaust system temperatures in some operating modes. Components, including exhaust heat shielding systems, have been installed on some vehicles in our assembly plants in an effort to provide protection against such temperatures. Subsequent aftermarket installers/manufacturers are responsible for providing thermal protection (e.g., underbody heat shields) for any structure/equipment added to the vehicle, and should not remove any components/exhaust heat shielding installed on the vehicles by Ford. Also, the added structure/equipment should not restrict air circulation in the engine compartment or underbody. See applicable sections under "Ambulance Builders Guidelines" on page 220.

Any interior floor underlayment or insulation in the near vicinity of the exhaust system, without benefit of the Ford-provided heat shields, must be capable of withstanding 371° C and 482° C [900° F] in close proximity to the catalyst during normal operating conditions. Additionally, any under chassis-mounted component, within 4 inches of the exhaust system, must be compatible with these temperatures.

IMPORTANT INFORMATION CONCERNING ALTERATION OF VEHICLES WITH A GVWR OF 8500 LB OR LESS FOR SALE, REGISTRATION, OR USE IN CALIFORNIA

Ranger SuperCab pickup trucks, listed in Table A on page 201 and manufactured by Ford Motor Company for sale, registration, or use in California, can be altered by removal of the pickup box (including items attached to the pickup box) and rear bumper (if so equipped) and installation of a second unit body, if all of the following conditions are satisfied.

For additional information concerning noise control laws and regulations issued by the Federal (U.S.) Government, as well as some states and municipalities, see Vehicle Noise Regulations on pages 17-18 of the Safety/Emission section.

1. Conditions numbered 1, 2, 3, and 4 under Section A entitled "Exhaust and Evaporative Emission Requirements" (pages 198-199), and those under Section C, entitled "California Fuel Vapor Recovery" (page 198), as they apply to vehicles with a GVWR of 8500 lb or less.
2. The vehicle alterer does not increase the vehicle's unloaded vehicle weight by more than 10% over the maximum curb weight (unloaded vehicle weight specified in tables on pages 200-201 corresponding to the particular pickup model), does not increase the frontal area by more than 10%, or does not provide a combination increase of weight plus frontal area of more than 14%.

NOTE: The maximum unloaded vehicle weight, specified in tables on pages 200-201 for California, is the curb weight – the basic curb weight plus the weight of options of greater than 33% installation rate.

NOTE: If the weight (in pounds) of the altered vehicle exceed the maximum unloaded vehicle weight specified in tables on pages 200-201, corresponding to the particular pickup truck model, the vehicle alterer is required to certify the vehicle to: F/CMVSS No. 105 or 135, Brakes; F/CMVSS No. 204, Steering Control Rearward Displacement (if the unloaded vehicle weight is 5500 lb or less); F/CMVSS No. 208 (if the unloaded vehicle weight is 55 lb or less); F/CMVSS No. 212, Windshield Mounting; F/CMVSS No. 219, Windshield Zone Intrusion; and F/ CMVSS No. 301, Fuel System Integrity, in addition to any other F/CMVSS to which conformity is affected by the vehicle's alteration.

3. No axle ratio, tire size or tire type changes are made that would increase the drivetrain ratio by more than five percent.

Altered vehicles which do not satisfy these conditions may not be sold, offered, or delivered for sale, or registered in California, unless the altered vehicle is certified by the California Air Resources Board, pursuant to all applicable emissions requirements. The vehicle alterer is responsible for obtaining such certification. Questions regarding these requirements should be directed to your legal counsel or the California Air Resources Board.

SUPER DUTY F-SERIES
PICKUP BOX REMOVAL/ALTERATIONS
DESIGN RECOMMENDATIONS

2004 MODEL YEAR

TABLE A – SUPER DUTY F-SERIES MODELS AVAILABLE FOR PICKUP BOX REMOVAL

					Second Unit Body Limits				
					Weight		Max. Height[a/]	Maximum Complete Vehicle UVW [lb][f/]	
	Model	Drive	WB [in]	GVWR [lb]	Min [lb]	Max[b/c/] [lb]	Cg[c/] [in]	5.4L/6.8L Gasoline[g/h/]	6.0L Diesel[h/]
Regular Cab	F-250	4x2	137.0	8800	380	1800	17.6	6400	7050
	F-250	4x4	137.0	8800	380	1800	17.6	6900	7350
	F-350	4x2	137.0	9900[d/]	380	1800	17.6	6400	7050
	F-350	4x4	137.0	9900[d/]	380	1800	17.6	6900	7400
	F-350 DRW	4x2	137.0	11,200[e/]	420	3450	24.0	8300	8300
	F-350 DRW	4x4	137.0	11,200[e/]	420	3450	24.0	8450	8450
Super Cab	F-250	4x2	141.8	8800	340	1800	24.0	6750	7250
	F-250	4x4	141.8	8800	340	1800	24.0	7150	7550
	F-250	4x2	158.0	8800	380	1800	24.0	6850	7250
	F-250	4x4	158.0	8800	380	1800	24.0	7250	7700
	F-350	4x2	141.8	9900[d/]	340	1800	24.0	6750	7250
	F-350	4x4	141.8	9900[d/]	340	1800	24.0	7200	7600
	F-350	4x2	158.0	9900[d/]	380	1800	24.0	6850	7450
	F-350	4x4	158.0	9900[d/]	380	1800	24.0	7250	7750
	F-350 DRW	4x2	158.0	11,200[e/]	420	3450	24.0	8700	8700
	F-350 DRW	4x4	158.0	11,200[e/]	420	3450	24.0	8800	8800
Crew Cab	F-250	4x2	156.2	8800	340	1800	24.0	7000	7450
	F-250	4x4	156.2	8800	340	1800	24.0	7400	7750
	F-250	4x2	172.4	8800	380	1800	24.0	7050	7650
	F-250	4x4	172.4	8800	380	1800	24.0	7475	7900
	F-350	4x2	156.2	9900[d/]	340	1800	24.0	7000	7500
	F-350	4x4	156.2	9900[d/]	340	1800	24.0	7400	7800
	F-350	4x2	172.4	9900[d/]	380	1800	24.0	7100	7650
	F-350	4x4	172.4	9900[d/]	380	1800	24.0	7500	7950
	F-350 DRW	4x2	172.4	11,200[e/]	420	3450	24.0	8950	8950
	F-350 DRW	4x4	172.4	11,200[e/]	420	3450	24.0	9100	9100

a/ Vertical height measured from the top surface of the frame at the rear of the cab.

b/ Maximum Second Unit Body (SUB) weight for any model is the lesser of two values shown below:
- The value listed here or;
- The value determined by: SUB WEIGHT = MAX UVW – (OEM Wet Curb Weight) + Pickup Box + Options Removed.
  Rear step bumer ..... 74 lb
  Spare tire and wheel assembly ..... Table B

c/ Maximum SUB weights and center of gravity (CG) shown in this table are only allowable if F/CMVSS 105 criteria are satisfied per calculation Safety/Emission section of this book.

d/ 9700 lb – California only.

e/ 12,500 lb for diesel. California is 11,000 lb for all engines.

f/ Weight shown is maximum allowable for safety certification. For vehicles with a GVWR greater than 10,000 lb, the listed UVW's are recommended only. Refer also to pages 22-23 of the Safety/Emission section for emission certification weight limitations.

g/ Note that the 5.4L engine and the 6.8L engine, with manual transmission, is not suitable for pickup box removal in California.

h/ Federal/California

i/ 11,500 lb for diesel. California is 11,000 for all engines.

TABLE B – SUPER DUTY F-SERIES TIRE AND WHEEL WEIGHTS

Wheel Size	Wheel (only) Weight [lb]
16 x 7.0 K (Steel Wheel – SRW)	35.0
16 x 6.0 K (Steel Wheel – DRW)	37.0
19.5 x 6.0 RW (Steel Wheel – DRW)	52.0
19.5 x 6.75 K (Steel Wheel – DRW)*	42.5
16 x 7.0 K (Deluxe Aluminum – SRW)	17.0
16 x 7.0 K (Premium Aluminum – SRW)	22.5
16 x 6.0 K (Polished Aluminum – DRW)	20.0
Tire Size	**Tire Weight [lb]**
LT215/85R16	36.6
LT235/85R16	46.0
LT265/75R16	46.0
225/70Rx19.5	60.0
245/70Rx19.5	75.0

* Motor Home

RANGER PICKUP BOX REMOVAL/ALTERATIONS DESIGN RECOMMENDATIONS

TABLE A – RANGER SUPERCAB MODELS AVAILABLE FOR PICKUP BOX REMOVAL

Description	Model	Drive	WB [in]	GVWR [lb]	Second Unit Body Limits				Maximum Complete Vehicle UVWR [lb]
					Weight		Max. Height[a/]		
					Min [lb]	Max[b/c/] [lb]	Cg[c/] [in]	Overall [in]	
SuperCab	XL[d/]	4x2	126	4600	230	1000	11.5	39.75	3950
	XL[d/]	4x2	126	4920	230	1040	11.5	39.75	4150
	XLT[e/]	4x2	126	4760	230	960	11.5	39.75	3910
	XLT[e/]	4x2	126	5020	230	960	11.5	39.75	4070
	Edge[e/]	4x2	126	4840	230	680	11.5	39.75	3990
	XLT[e/]	4x4	126	5080	230	834	11.5	39.75	4208
	XLT[e/]	4x4	126	5260	230	833	11.5	39.75	4208

TABLE B – RANGER TIRE AND WHEEL DATA

Wheel Size		Wheel (only) Weight [lb]
15 x 6.0 JJ	(base argent steel)	20.4
15 x 7.0 JJ	(silver styled steel)	22.6
15 x 7.0 JJ	(silver aluminum)	14.5
15 x 7.0 JJ	(chrome steel)	23.9
16 x 7.0 JJ	(5-spokle cast aluminum)	16.2
15 x 7.0 JJ	(8-hole forged aluminum)	16.9
16 x 7.0 JJ	(5-spoke cast aluminum)	20.5
Tire Size		**Tire Weight [lb]**
P235/75R-15SL		28.2
P225/70R-15SL		24.1
P245/75R-16SL		30.8
31X10.5R15		43.2

a/ Vertical height measured from the top surface of the frame at the rear of the cab.

b/ Maximum Second Unit Body (SUB) weight for any model is the lesser of two values shown below:
- The value listed here or;
- The value determined by: SUB WEIGHT = MAX UVW – (OEM Wet Curb Weight) + Pickup Box + Options Removed.

c/ Maximum SUB weights and center of gravity (CG) shown in this table are only allowable if F/CMVSS 135 criteria are satisfied per calculation Safety/Emission section of this book.

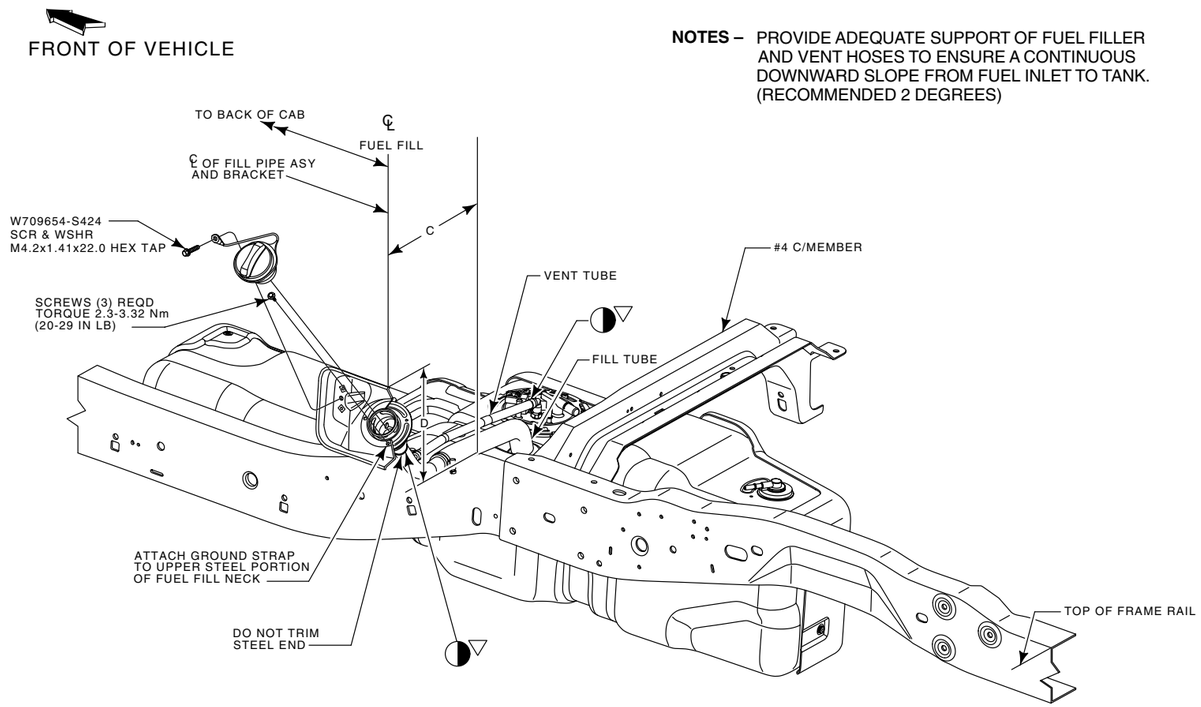
Rear step bumper ..... 37 lb

Spare tire and wheel assembly..... Table B

d/ Models without rear jumpseats.

e/ Models with rear jumpseats.

PICKUP BOX REMOVAL/ALTERATIONS
RANGER FILLER PIPE LOCATION AND DIMENSIONS



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NOTES – PROVIDE ADEQUATE SUPPORT OF FUEL FILLER AND VENT HOSES TO ENSURE A CONTINUOUS DOWNWARD SLOPE FROM FUEL INLET TO TANK. (RECOMMENDED 2 DEGREES)

DIM.		
A	**SUPERCAB**	198 [7.8]
C	**SUPERCAB**	443 [17.4]
D	**SUPERCAB**	224 [8.8]

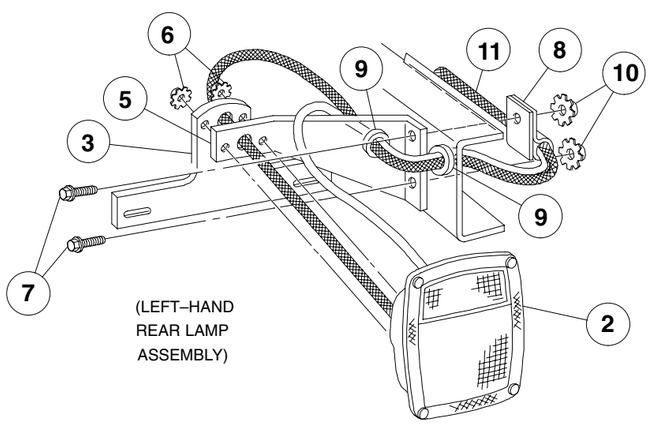
USE COMPONENTS FROM FUEL FILL SYSTEM INSTALLED BY FORD. REMOVE FROM VEHICLE HOSES, CLAMPS AND CAP FOR USE WITH FILL PIPE KIT. USE NEW HOSES, PIPE, STEEL PORTION, TIE-WRAPS AND CLAMPS PROVIDED IN KIT TO CONNECT FUEL FILL SYSTEM FROM TANK TO UNIT BODY AS SHOWN. FUEL FILL AND VENT HOSES PROVIDED IN KIT MAY REQUIRE TRIMMING AS SHOWN IN FIGURE. THE RESULTING TRIMMED FILLER SYSTEM SHOULD PROVIDE A DIRECT DOWNWARD SLOPE TO THE FUEL TANK FROM THE METAL PIPE WHILE AVOIDING KINKS WHICH RESTRICT FUEL FLOW. ADDITIONAL SUPPORT MAY BE REQUIRED TO PREVENT SAGGING OR MIS-ORIENTATION. FAILURE TO DO SO WILL RESULT IN SPRAY OR SPIT-BACK DURING THE FUELING OPERATIONS.

CRITICAL CONTROL ITEM

◑ TORQUE ALL WORM GEAR DRIVEN HOSE CLAMPS TO 2.7-3.7 Nm 24-38 IN-LB

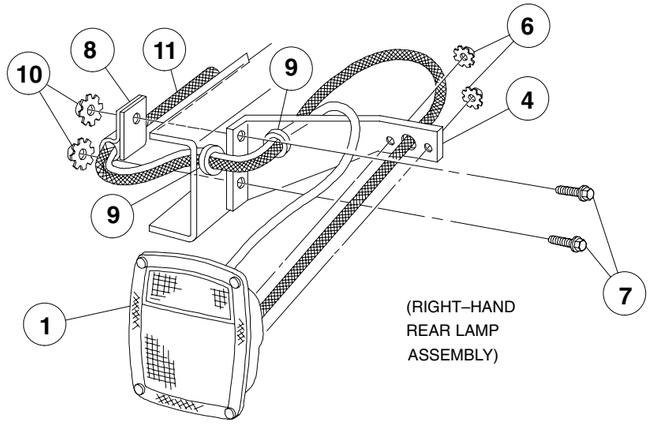
NOTE - [ ] DIMENSIONS ARE INCHES.

PICKUP BOX REMOVAL/ALTERATIONS
RANGER



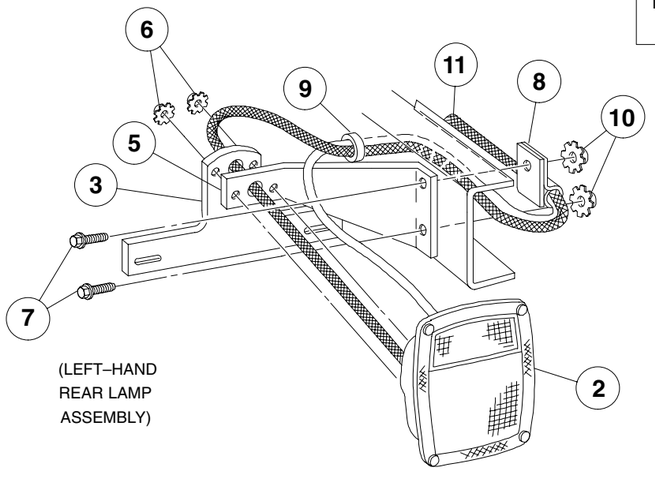
(LEFT–HAND REAR LAMP ASSEMBLY)

INSTALLATION FOR RANGER 4 x 2 MODELS



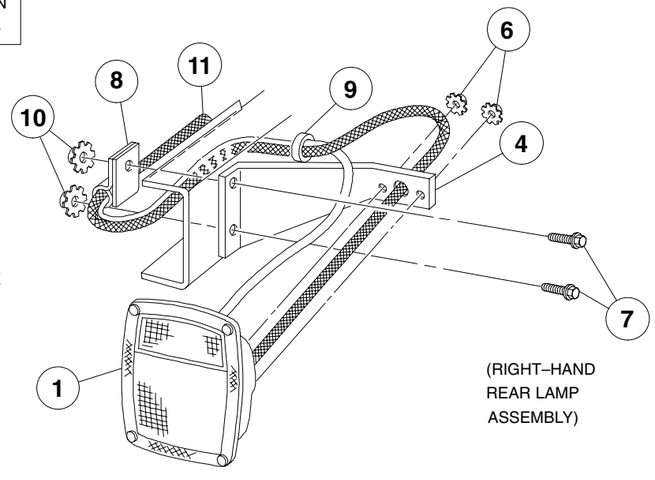
(RIGHT–HAND REAR LAMP ASSEMBLY)

NOTE:
WIRE HARNESS ROUTING DIFFERENCES BETWEEN 4 x 2 AND 4 x 4 MODELS



(LEFT–HAND REAR LAMP ASSEMBLY)

INSTALLATION FOR RANGER 4 x 4 MODELS



(RIGHT–HAND REAR LAMP ASSEMBLY)

SERVICE PART NUMBERS	PART DESCRIPTION
1. E4TZ–13404–C	RIGHT–HAND REAR LAMP ASSEMBLY
2. E4TZ–13405–C	LEFT–HAND REAR LAMP ASSEMBLY
3. C7TZ–13406–A	LICENSE PLATE BRACKET
4. E0TZ–13470–C	RIGHT–HAND MOUNTING BRACKET
5. E0TZ–13471–A	LEFT–HAND MOUNTING BRACKET
6. 34659–S36M	NUT AND WASHER ASSEMBLY (4 REQUIRED) (TORQUE TO 3–7 POUND–FEET)
7. 55653–S36	BOLT (4 REQUIRED)
8. 353473–S36	CLIP (2 REQUIRED)
9. 384646–S	GROMMET (4 REQUIRED FOR 4 x 2 MODELS; 2 REQUIRED 4 x 4 MODELS) (SPLIT LINE IN GROMMET MUST BE AT TOP, IN VERTICAL POSITION)
10. 34661–S36	NUT AND WASHER ASSEMBLY (4 REQUIRED) (TORQUE TO 12–20 POUND–FEET)
11. E3TZ–13A409–A	WIRING HARNESS (CONNECT TO MAIN WIRING ASSEMBLY) – RANGER ONLY

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REAR LAMP ASSEMBLY INSTALLATION AND PARTS LIST

SECOND UNIT BODY MOUNTING DESIGN RECOMMENDATIONS

INFORMATION

The following recommendations are intended to assist in the design of second unit bodies and body mounting systems that will control second unit body movement with respect to the Ford supplied chassis when tested to the procedures specified in F/CMVSS 204(1), 208(2), 212(3), 214(3)(4), 219(3), and 301(3). These recommendations are based on testing and analyses performed by Ford Motor Company.

Second Unit Bodies (SUB) and their body mounting systems may take many forms, and the following recommendations cannot cover all the possibilities. Strict adherence to these recommendations will not ensure that the completed vehicle will comply with F/CMVSS 204(1), 208(2), 212(3), 214(3)(4), 219(3), or 301(3). The final stage manufacturer who installs a second unit body on the chassis is responsible for compliance to the above mentioned regulations. Accordingly, Ford Motor Company cannot represent that these recommendations are appropriate for every specific application of a second unit body, the body mounting system, or act of a subsequent stage manufacturer.

To verify compliance of a particular second unit body and selected body mounting system with F/CMVSS 204(1), 208(2), 212(3), 214(3)(4), 219(3), and 301(3), the testing of a representative vehicle to the applicable procedures of the above regulations is recommended. Questions regarding compliance with F/CMVSS regulations should be directed to your legal counsel, the National Highway Traffic Safety Administration, or Transport Canada.

SECOND UNIT BODY STRUCTURES

The structural design and materials used in the construction of second unit bodies must be sufficient to help control collapse of the body and prevent disengagement from the chassis when tested in accordance with the specifications of F/CMVSS 204(1), 208(2), 212(3), 214(3)(4), 219(3), and 301(3). Steel or aluminum structures are recommended, however, wood or composite materials may require additional reinforcements to provide the structural integrity required for actual crash testing. SUB structures should not exceed beyond (overhang) the end of the chassis (frame side members).

SECOND UNIT BODY FUEL SYSTEM COMPONENTS

SUB floor and bulkhead structures must accommodate the Ford fuel fill system and suggested design clearances. Fill neck locations and all F/CMVSS 301(3) compliance representations for Super Duty F-Series and E-Series vehicles are in the Statements of Conformity section of the *Incomplete Vehicle Manual*. See additional Fuel System Design Recommendations.

SECOND UNIT BODY ELECTRICAL

Some electrical power sources are identified in the Design Recommendations and the F/CMVSS 108 compliance representations in the *Incomplete Vehicle Manual*. For wiring diagrams and additional information see Electrical Wiring pages in the Electrical Section.

UNDERBODY HEAT MANAGEMENT

1. Underbody longitudinal or lateral air movement should not be restricted. Frame spacers designed by the intermediate and final stage manufacturer should provide for adequate airflow over the frame.
2. No portion of the floor pan should drop below the body sills, nor should the underbody structure drop below the top surfaces of the number 3 and 4 crossmembers. These conditions can result in reduced airflow, pinched fuel lines or vapor hoses which can raise the temperature of underbody components and increase fuel system pressure.
3. Any interior floor underlayment or insulation in the near vicinity of the exhaust system, without benefit of the Ford provided heat shields, must be capable of withstanding 371° C [700° F] (and 482° C [700° F] in close proximity to the catalyst) during normal operating conditions. Additionally, any under chassis mounted components within 101.6 mm [4 in] of the exhaust system must be compatible with these temperatures.

   The subsequent stage manufacturer should also consider the following situations, which may have an adverse effect on heat management.

   - Poor vehicle service or lack of maintenance
   - Deviation from a 50/50 ethylene glycol based antifreeze (coolant) to water ratio
   - Exceeding Ford GVW and GCW ratings
   - Malfunctioning systems such as exhaust or engine
   - Altering, changing, removing Ford engine fan and shroud
   - Blocked radiator grille area (spare tire, bicycles, etc.)
   - Use of throttle kickers.
4. Second unit body exterior panels, tool boxes, running boards, structures, or skirting that extend below the bottom of the frame, may affect underbody temperatures. The final stage manufacturer should verify that underbody temperatures of the completed vehicle are compatible with all vehicle's components when under conditions that consider the projected vehicle duty cycle and vehicle loading.
5. Full-width mudflaps should not be installed, as they restrict airflow under the vehicle and can also increase underbody temperatures.
6. Added structure or equipment should not restrict air circulation in the engine compartment/underbody.
7. Added body vents, especially powered vents, should be located away from the fuel filler and venting areas and exhaust to avoid fuel fumes and vapors entering the interior of the vehicle.
8. Use of wood in construction should be eliminated where at all possible. If used, wood should be adequately protected from moisture and heat. Shields should be added if wood is installed near exhaust components.

NOTES —

(1) For vehicles with a GVWR of 10,000 lb or less and an unloaded vehicle weight of 5500 lb or less.

(2) Injury criteria is applicable to vehicles with a GVWR of 8500 lb or less and an unloaded vehicle weight of 5500 lb or less.

(3) Applicable to vehicles with a GVWR of 10,000 lb or less.

(4) Dynamic Performance Requirements apply to MPV, Truck, or a Bus with a GVWR of 2722 Kg (6000lb) or less.

SECOND UNIT BODY MOUNTING DESIGN RECOMMENDATIONS RANGER

2004 MODEL YEAR

RANGER SUB MOUNTING SYSTEM (BRACKET ATTACHMENT METHOD)

Shear plates are a method of SUB attachment that should minimize SUB movement under impact conditions. The following items are critical to the performance of this type of mounting system:

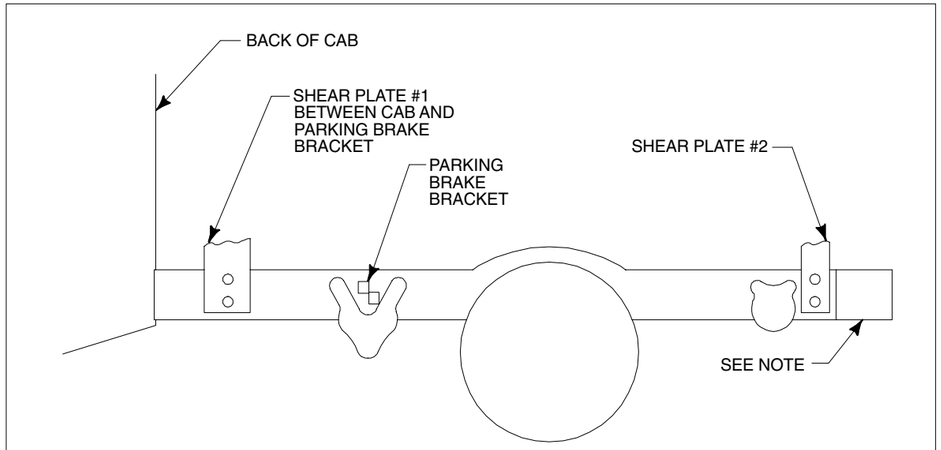
1. The SUB must be minimum 36.0 mm [1.40 in] from the back of the cab.
2. The frame to SUB spacers have a web dimension of 101.6 mm [4 in] minimum and the upper and lower flanges to be 57.0 mm [2.25 in], using 6.35 mm [0.25 in] HRLC steel. The spacer minimum length is 76.2 mm [3 in] for the front spacer and 152.4 mm [6 in] for the rear. These spacers will accommodate the recommended fuel filler pipe clearance provided they are installed 25.4 mm [1 in] or more from any fuel filler pipe. See Figure 1 on the next two pages for additional information.
3. Shear plate recommendations for a second unit body are:
   - 3/8 inch thick HRLC steel material, with a minimum of four fasteners for each shear plate, or two fasteners installed in the frame if the shear plate is welded to the SUB structure. Detailed shear plate design recommendations are shown in the sketches in Figure 1 on this page.
   - Hole size, location, and spacing are shown in the above mentioned sketches.
   - Three shear plates per side – one forward and two rearward of the rear axle.
   - Use 5/8 inch diameter, grade 8 bolts, nuts and washers, four per side to attach shear plates to the frame, see Figure 1. **DO NOT WELD THE SHEAR PLATES TO THE FRAME.**
   - Use 5/8 inch diameter, grade 8 bolts, nuts, and washers, four per side to attach shear plates to the SUB, or equivalent weld.
   - 105-220 ft-lb torque for 5/8 inch nuts
   - Direct the threaded end of bolt away from any fuel, brake, or electrical system component.

RANGER SUB MOUNTING SYSTEM (BRACKET ATTACHMENT METHOD)

This typical system design utilizes the existing eight (four per frame rail) pickup box mounting holes. The typical service body under-structure referenced uses 3 inch front and rear body cross sills. The height of the mounting system is governed by the clearance requirements of the midship fuel tank fuel filler to the front intermediate body cross sill. The mounting system depicted herein represents the minimum floor height achievable for a service body of conventional design.

Various service body designs (larger body cross sills or lower wheel house height) will dictate a higher mounting system in order to provide standard body to chassis (fuel filler and tire) clearances.

This suggested typical system is made up of eight (8) components and associated attaching hardware. A chart on this page and drawings of each component and their installation on the next 2 pages are typical of a service body installation.



NOTE: SHEAR PLATE ATTACHMENT TO FRAME EXTENSION PERMISSIBLE PROVIDED EXTENSION IS CONSTRUCTED AND ATTACHED TO CHASSIS CAB FRAME SO AS TO PERFORM AS A CONTINUATION OF THE VEHICLE FRAME WHEN THE COMPLETED VEHICLE IS TESTED IN ANY MANNER SPECIFIED BY APPLICABLE PROVISIONS OF F/CMVSS NO. 301.

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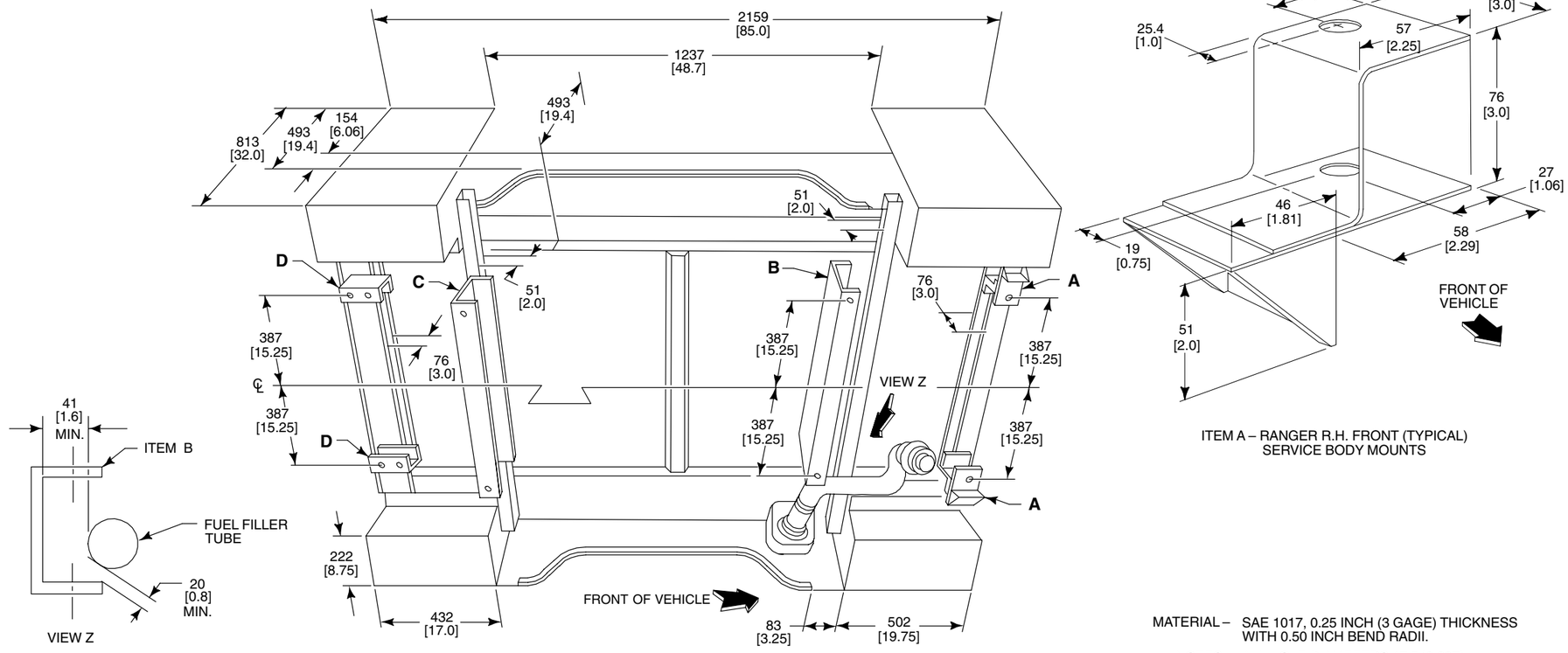
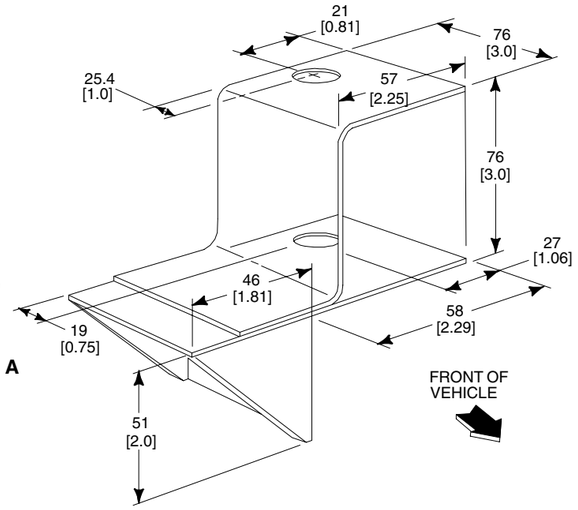
FIGURE 1 - TYPICAL RANGER SHEAR PLATE ATTACHMENT

COMPONENT DESIGNATION	COMPONENT DESCRIPTION	NOTES
Front Service Body Mount (Item A)	A 3" C section with outboard brace (restrainer). LH mount is a mirror image of the RH mount	Weld and bolt to underbody as specified, See Figure 1, Item A on page 206.
Mid-Front Cross Sill Service Body Mount (Item B)	A 4.66" C section 30.5" long	Locate on lower surface body floor by means of hole alignment to P/U box mounting holes in frame siderail upper flange. Weld to floor as specified, see Item B, on page 207.
Mid-Rear Service Body Mount (Item C)	A 3.06" C section 31.90" long	Locate with respect to P/U box mounting holes in frame siderail upper flange. Weld and bolt to rear cross sill of service body as specified, see Item C, on page 207.
Rear Service Body Mount (Item D)	A 1.81" C section. The LH mount is a mirror image of the RH mount.	Locate forward (4.125" C/L) hole with respect to P/U box mounting hole in frame siderail upper flange. Weld and bolt to rear cross sill of service body as specified, see Item D, on page 207.
Attaching Parts, *et.al.*	Use 0.62" diameter grade 8 bolts, nuts, and washers. Minimum length of 1.25" for bolts. Torque to 105-220 ft-lb.	Largest possible flat washers must be utilized on lower side of frame rail flange. Caution: Ensure that the flat washer does not interfere with frame bend radii.

SECOND UNIT BODY MOUNTING DESIGN RECOMMENDATIONS RANGER





ITEM A – RANGER R.H. FRONT (TYPICAL)
SERVICE BODY MOUNTS

MATERIAL – SAE 1017, 0.25 INCH (3 GAGE) THICKNESS WITH 0.50 INCH BEND RADII.

NOTES – ALL HOLE DIAMETERS 17.5 [0.687]

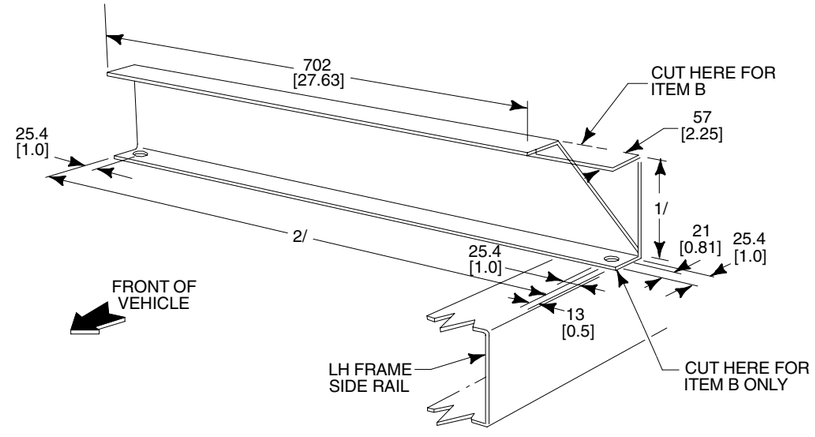
WELD LEADING EDGE OF UPPER FLANGE (2 INCH LONG 0.125 ✳ INCH FILLET) TO BODY FRONT CROSS SILL AND GRADE 8 BOLTS, NUTS AND WASHERS. (L.H. SYMMETRICALLY OPPOSITE)

✳ REFERENCE ONLY, LEG OF FILLET SHOULD NOT EXCEED 0.7 OF THE THICKNESS OF THINNEST MATERIAL TO BE WELDED.

FIGURE 1 - RANGER BRACKET ATTACHMENT METHOD
(Typical Service Body)

NOTE — [ ] DIMENSIONS ARE INCHES.

SECOND UNIT BODY MOUNTING
DESIGN RECOMMENDATIONS
RANGER



ITEMS B & C – RANGER MID–FRONT/REAR CROSS SILL (TYPICAL) SERVICE BODY MOUNT

MATERIAL – SAE 1017, 0.25 INCH (3 GAGE) THICKNESS WITH 0.50 INCH BENT RADII.

NOTES – ALL HOLE DIAMETERS 17.5 [0.687]

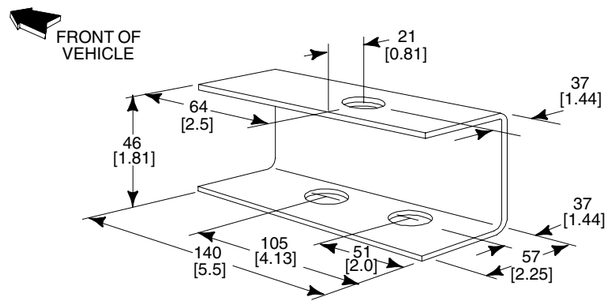
1/HEIGHT
ITEM B 118 [4.66]
ITEM C 78 [3.06]

2/LENGTH
ITEM B 822 [32.375]
ITEM C 810 [31.90]

WELD LEADING EDGE AND RADIUS OF UPPER FLANGE (SIX 2 INCH LONG WITH 3 INCH SPACING 0.125 ✳ INCH FILLET) TO UNDERSIDE OF BODY FLOOR

✳ REFERENCE ONLY LEG OF FILLET SHOULD NOT EXCEED 0.7 OF THE THICKNESS OF THINNEST MATERIAL TO BE WELDED.

BB0244



ITEM D – RANGER R.H. REAR (TYPICAL) SERVICE BODY MOUNT

MATERIAL – SAE 1017, 0.25 INCH (3 GAGE) THICKNESS WITH 0.50 INCH BEND RADII.

NOTES – ALL HOLE DIAMETERS 17.5 [0.687]

WELD REAR EDGE OF UPPER FLANGE (2 INCH LONG 0.125 ✳ INCH FILLET) TO BODY #4 CROSS SILL AND USE 5/8 INCH DIA. GRADE 8 BOLTS, NUTS, AND WASHERS. (LH SYMMETRICALLY OPPOSITE)

✳ REFERENCE ONLY, LEG OF FILLET SHOULD NOT EXCEED 0.7 OF THE THICKNESS OF THE THINNEST MATERIAL TO BE WELDED.

NOTE — [ ] DIMENSIONS ARE INCHES.

SECOND UNIT BODY MOUNTING DESIGN RECOMMENDATIONS E-SERIES CUTAWAY

E-SERIES SUPER DUTY CUTAWAY SUB MOUNTING SYSTEM

Ford provides optional SUB mounting spacers which will isolate the SUB from the frame. The SUB should be attached to these spacers using all the provided holes in the spacer with a suggested minimum 7/16-14 UNC grade 8 fastener. These fasteners should be directed away from any fuel system component or should not extend more than 25.4 mm [1.00 in] below the spacer flange. The location of these spacers is shown on page 58-63. The rubber isolators on the spacers are capable of 19.0 mm [0.75 in] movement in spherical zone from a static (design) position, which is the same for the isolators that mount the Cutaway body to frame. This will minimize squeaks, rattles and water or air leaks at the mounting surface of the SUB, to Cutaway body. The Ford optional spacers will accommodate the recommended fuel fill neck installation as shown on page 72, and a recommended 101.6 mm [4.00 in] minimum clearance between the frame and the bottom of the SUB (except at the rear axle kick-up area).

Vehicles not equipped with the Ford optional spacers have 34.8 mm[1.37 in] diameter holes on the upper flange of the frame sidemembers for body to frame isolators. The density/durometer, size and quantity of these isolators should be based on the SUB weight plus the projected payload of the completed vehicle, within the limits of the GAWRs and GVWR, as determined by the final stage manufacturer.

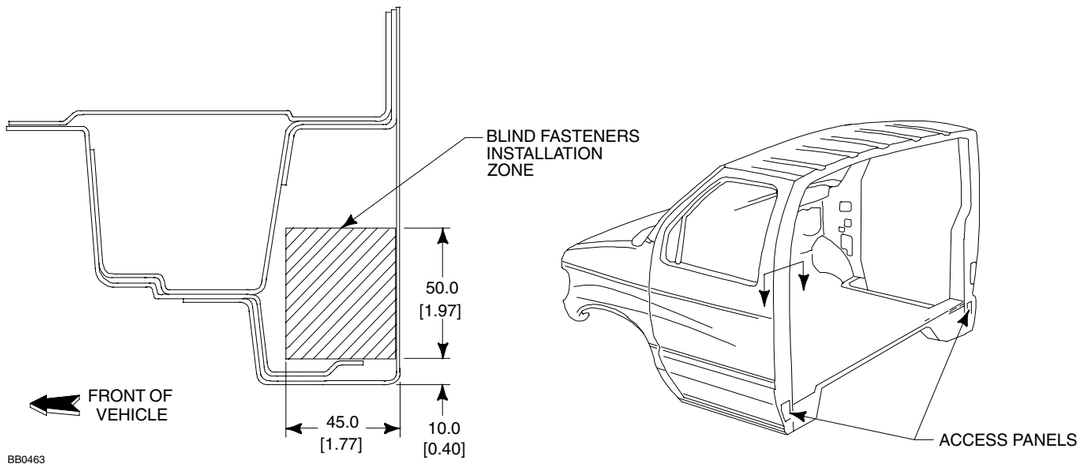
E-450 Super Duty Cutaway and Stripped Chassis vehicles have a transmission mounted parking brake. SUB structures should clear this component by 25.4 mm [1.00 in] minimum.

[176.00 in] WB vehicles equipped with a 55-gallon fuel tank will require a 457 mm [18.00 in] minimum frame extension to provide for an adequate departure angle.

The attachment of the SUB to the Cutaway body should consider the following:

1. Blind installation of self- expanding nut type fasteners can be located in the zone as defined in the figure on this page, and should allow for functional expansion, and be equally spaced. The body edge flange may also be used for fasteners provided the center of the required hole is 1.5 times the hole diameter from the edge of the panel. These recommendations apply to both B-pillar attachment.
2. Removal of the access panel and fasteners at the lower area of the B-pillar will allow for flush mounting of the SUB. This opening should be completely covered and sealed from obvious climatic conditions.
3. Roof attachments should be equally spaced and are permitted on the flange provided. The center of the required holes should be 1.5 times the hole diameter from the edge of the flange.
4. Floor attachments should be equally spaced and are permitted on the flange provided. The center of the required holes should be 1.5 times the hole diameter from the edge of the panel.
5. Washers or doublers should be considered to increase the bearing surface under fasteners to increase joint integrity and to decrease sheet metal fatigue, squeaks, and rattles.
6. Gaskets or sealers installed between the Cutaway body and the SUB should consider the displacement and stabilization of such materials when clamped, and the effect on joint integrity.

Second Unit Body mounting components NOT PROVIDED by Ford must be installed on the frame in areas as shown on page 75.



E-SERIES SUPER DUTY CUTAWAY BODY TO SECOND UNIT BODY ATTACHMENT

NOTE — [ ] DIMENSIONS ARE INCHES.

SECOND UNIT BODY MOUNTING DESIGN RECOMMENDATIONS E-SERIES STRIPPED CHASSIS

2004 MODEL YEAR

E-250/350/450 SUPER DUTY STRIPPED CHASSIS SECOND UNIT BODY

A full length structural body should be attached to the chassis utilizing a system of body bolsters bolted and welded to the chassis frame sidemember as shown on this page.

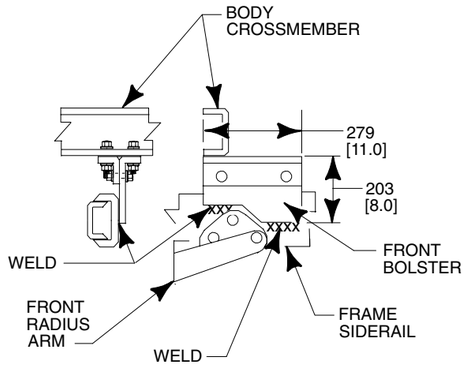
Rear body bolsters extend along the parallel sections of the frame sidemember using the existing 34.8 mm [1.4 in] diameter holes as shown in View B, on this page.

Bolster attachment in the rear axle kick-up area can be accomplished by bolting shear plates to the web of the frame sidemember as shown in View C, on this page. The maximum size hole that may be drilled in the frame web is 19 mm [0.75 in] diameter. Refer to the drilling precautions in the Frame section on page 219.

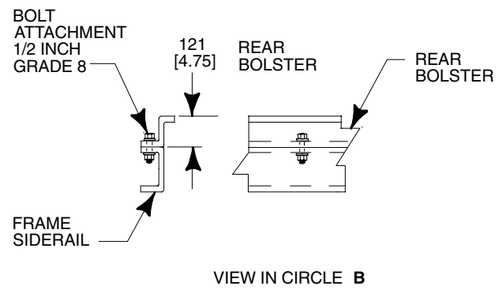
Front body bolsters should be attached to the frame sidemember as far forward as possible. They should be welded to the web of the frame sidemember immediately to the rear of the front radiator and cowl support structure as shown in View A. Front bolsters should not be bolted to the frame sidemember in this area since there is no access to the inside surface sidemember.

Each front bolster should be rigidly connected to the corresponding rear bolster through the body floor or a tie bar.

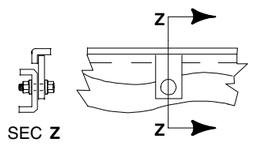
Do not weld to the flanges of the side rail. Refer to the welding precautions in the Frame section on page 219.



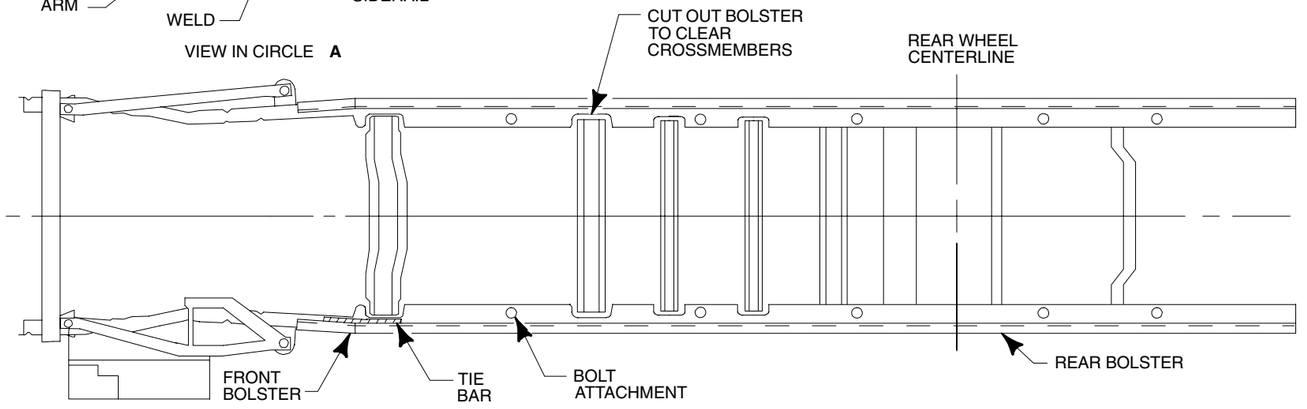
VIEW IN CIRCLE **A**



VIEW IN CIRCLE **B**



VIEW IN CIRCLE **C**



NOTE: DIMENSIONS ARE SUGGESTED AND MAY BE REVISED AT THE BODY BUILDERS DISCRETION.

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E-250/350/450 SUPER DUTY STRIPPED CHASSIS SECOND UNIT BODY INSTALLATION

NOTE — [ ] DIMENSIONS ARE INCHES.

SECOND UNIT BODY MOUNTING DESIGN RECOMMENDATIONS F-SERIES

SUPER DUTY F-SERIES SECOND UNIT BODY (SUB) MOUNTING TECHNIQUES FOR CHASSIS CAB (WIDE FRAME)

The intent of the illustrations shown on the following two pages is to offer an expanded range of Second Unit Body (SUB) mounting design recommendations for Super Duty F-Series trucks with a 1422 mm [56 in] Cab to Axle (CA) design.

SUB Mounting Techniques #1 and #2 for 56" CA with SUB weight 1800 lb or less

These SUB mountings were tested by Ford Motor Company and found to be capable of complying with F/CMVSS requirements. The sketches in Figures A and B on the following page depict the recommended SUB mounting techniques.

SUB Mounting Technique #3 for 56" CA with SUB weight 1800 lb or less

The third mount scheme is a top bolted mounting technique. This top bolted SUB mounting is recommended for the Super Duty F-Series pickup trucks with a 1422 mm [56 in] CA. This technique uses the existing pickup box mounting holes to mount a SUB weighing 1800 lb or less provided the SUB is mounted in a similar fashion to the Ford's pickup box. These mountings should use the same number of OEM fasteners and OEM locations. The sketch which is shown in Figure C on page 212 depicts this technique. Refer to page 132 of Super Duty F-Series section for mounting hole layout.

SUB Mounting Technique #4 for 56" CA with SUB weight 1800 lb or less

This technique embodies the Front and Rear Shear plate attachment as depicted in SUB Mounting Techniques #1 and #2, but requires addition of U-bolts for further attachment. Figures D and F on page 212 depicts this technique.

CHASSIS CAB (NAROW FRAME)

Figures E and F on page 212 show the SUB mounting design recommendations for Super Duty F-Series Trucks with a 60", 84", 108", or 120" Cab to Axle (CA). Prepunched holes are provided to accommodate front shear plates as shown on pages 152-153 of the Super Duty F-Series section.

DETAILS OF THE SECOND UNIT BODY MOUNTING TECHNIQUES

The following SUB mounting design recommendations are methods of attachment intended to minimize SUB movement under crash situations. The following items are important factors in the performance of the system:

1. The forward most surface of the SUB is located at least 76.2 mm [3.0 in] behind the rearmost surface of the cab. Refer to the Statements of Conformity for F/CMVSS 212(1), 219(1), and F/CMVSS 301(1), in the *Incomplete Vehicle Manual*.
2. Spacers between the frame and SUB must provide adequate clearance to the fuel fill system on wide frame or pickup box delete models. Refer to the Statement of Conformity for F/CMVSS 301(1) of the *Incomplete Vehicle Manual* and the Design Recommendations for fuel fill systems on page 214-215 of this book.
3. The following are SUB mounting instructions for a SUB weight of 3960 kg [1800 lb] or less and a 56" CA:

   The frame to SUB spacers must provide adequate space to allow a proper fuel filler pipe installation on pickup box delete models.

   Technique #1; **front shear plate** attachment; use two, 5/8" diameter, grade 8 bolts, nuts, and washers in the OEM frame. One, 5/8" diameter, grade 8 bolt, nut, and washers with a 1/4" equivalent weld bead around three sides of the shear plate and the SUB mounting frame, skip welded at the shear plate corners. See Figure A, View A on page 211. **DO NOT WELD THE SHEAR PLATES TO THE OEM FRAME.**

   Technique #1; **rear shear plate** attachment; use three, 5/8" diameter, grade 8 bolts, nuts, and washers in the OEM frame. One, 5/8" diameter, grade 8 bolt, nut, and washers with a 1/4" equivalent weld bead around three sides of the shear plate and the SUB mounting frame, skip welded at the shear plate corners. See Figure A, View B on page 211.

   Technique #2; **front shear plate** attachment; use two, 5/8" diameter, grade 8 bolts, nuts, and washers in the OEM frame. Two, 5/8" diameter, grade 8 bolt, nut, and washers in the SUB mounting frame. See Figure B, View C on page 211.

   Technique #2; **rear shear plate** attachment; use three, 5/8" diameter, grade 8 bolts, nuts, and washers in the OEM frame. Two, 5/8" diameter, grade 8 bolt, nut, and washers in the SUB mounting frame. See Figure B, View D on page 211.

   Technique #3; **pickup box** attachment; use eight, 5/8" diameter, grade 8 flange nuts and bolts that utilize the existing pickup box holes in the top frame flanges. See Figure C on page 212.

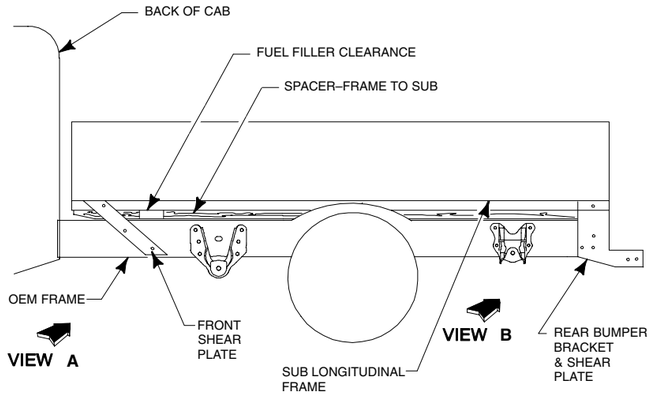
   Technique #4 (56" CA with SUB weight over 1800 lb) use same as Technique #1 except with addition of U-bolts as shown in Figure D on page 212.

   For Super Duty F-Series Chassis Cab vehicles with a 60", 84", 108", or 120" CA, it is recommended that the front shear plate mounting holes, as provided on each chassis, be used. Use the same front and rear shear plate attachment ad Technique #1 or #2 with a 5/8" diameter U-bolt spaced every 24 to 36 inches. See Figure E on page 212. When U-bolts are used, vertical spacers must be between the upper and lower frame flanges at each U-bolt to prevent collapse of the flanges. See Figure F on page 212. U-bolt torque must be checked every six months.

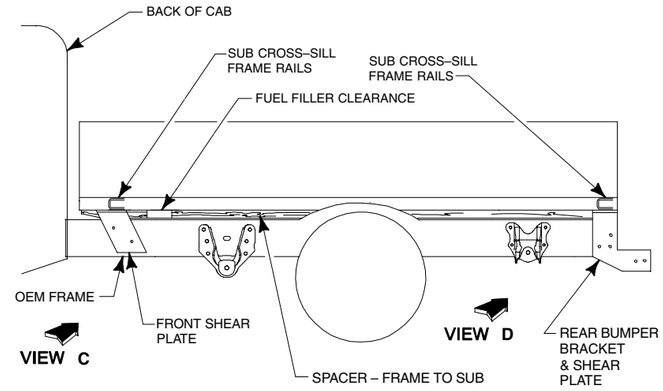
The following items are important factors in the performance of the system:

- The spacer should be secured in such a manner as to maintain retention during installation or during operational use and should have a slight taper which starts at the front of the SUB frame. See figures on page 211.
- Front shear plates should be angled forward approximately 45 to 60 degrees from the horizontal. Front shear plates should be a sufficient distance from the front of the SUB to allow for frame flexing, i.e., front shear plates should be placed behind the tapered section of the spacer.
- Use 5/8" diameter, grade 8 bolts, nuts, and washers that attach the shear plates to the OEM vehicle and SUB frame.
- 60-65 ft-lb torque for the 5/8" diameter, grade 8 bolts, nuts, and washers.
- Direct the threaded end of the bolts away from any fuel, brake or electrical system components.

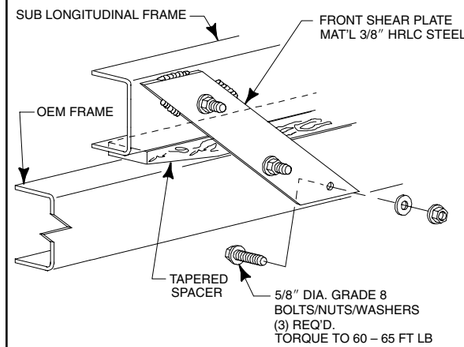
SECOND UNIT BODY MOUNTING DESIGN RECOMMENDATIONS F-SERIES



ATTACHMENT ARRANGEMENT WITH LONGITUDINAL SUB FRAME



ATTACHMENT ARRANGEMENT WITH CROSS–SILL SUB FRAME RAILS

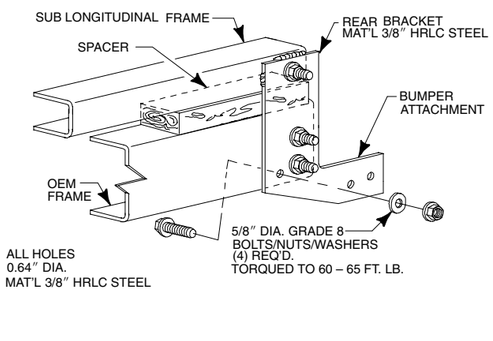


DRAWING DEPICTS SUB LONGITUDINAL FRAME WITH ONE 5/8″ DIA. BOLT AND 1/4″ WELD BEAD AROUND THE PERIMETER OF THE SHEAR PLATE.

IF THE SHEAR PLATE IS NOT WELDED ON THE SUB LONGITUDINAL FRAME, TWO 5/8″ DIA. BOLTS WOULD BE NECESSARY TO ATTACH THE SHEAR PLATE TO THE LONGITUDINAL FRAME.

VIEW A

LEFT FRONT SHEAR PLATE
(SUB LONGITUDINAL FRAME)
RIGHT SHEAR PLATE IS A MIRROR IMAGE.



DRAWING DEPICTS SUB LONGITUDINAL FRAME WITH ONE 5/8″ DIA. BOLT AND 1/4″ WELD BEAD AROUND THE PERIMETER OF THE SHEAR PLATE

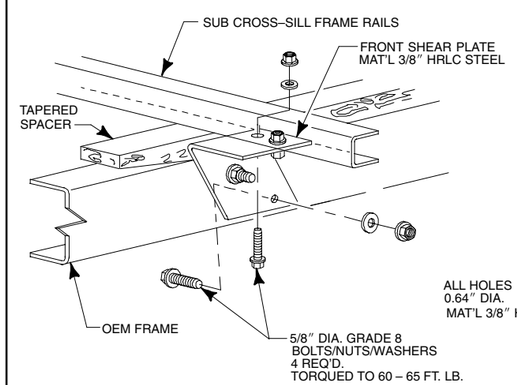
IF REAR BRACKET AND SUB FRAME ARE NOT WELDED TWO 5/8″ DIA. GRADE 8 BOLTS WILL BE NECESSARY TO ATTACH REAR BRACKET TO SUB FRAME. THREE 5/8″ DIA. BOLTS/NUTS/WASHERS ARE NEEDED TO ATTACH THE REAR BRACKET TO OEM FRAME.

VIEW B

LEFT REAR BRACKET (SUB LONGITUDINAL FRAME)
RIGHT REAR BRACKET IS A MIRROR IMAGE.

RECOMMENDED SHEAR PLATE ATTACHMENT FOR SECOND UNIT BODIES WEIGHING 1800 LB OR LESS WITH A 56"CA

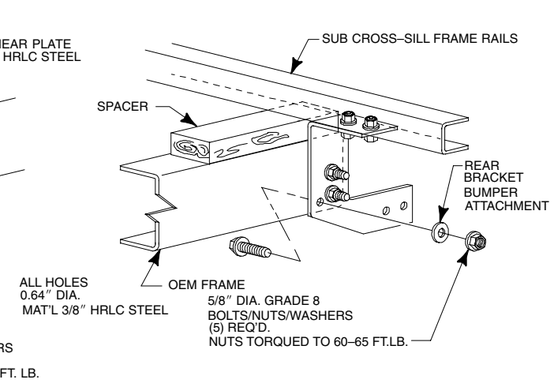
FIGURE A - SUPER DUTY F-SERIES SUB MOUNTING TECHNIQUE #1



DRAWING DEPICTS SUB CROSS–SILL FRAME WITH TWO 5/8″ DIA. BOLTS

VIEW C

LEFT FRONT SHEAR PLATE
(SUB CROSS–SILL FRAME)
RIGHT SHEAR PLATE IS A MIRROR IMAGE



DRAWING DEPICTS SUB CROSS–SILL FRAME WITH TWO 5/8″ DIA. BOLTS ATTACHING THE REAR BRACKET TO SUBFRAME, THREE 5/8″ DIA. GRADE 8 BOLTS/ NUTS/WASHERS/ARE NEEDED TO ATTACH THE REAR BRACKET TO THE OEWM FRAME.BOLTS ATTACHING THE REAR BRACKET

VIEW D

LEFT REAR BRACKET (SUB CROSS–SILL FRAME)
RIGHT REAR BRACKET IS A MIRROR IMAGE.

BB0327 **RECOMMENDED SHEAR PLATE ATTACHMENT FOR SECOND UNIT BODIES WEIGHING 1800 LB OR LESS WITH A 56"CA**

FIGURE B - SUPER DUTY F-SERIES SUB MOUNTING TECHNIQUE #2

SECOND UNIT BODY MOUNTING DESIGN RECOMMENDATIONS F-SERIES

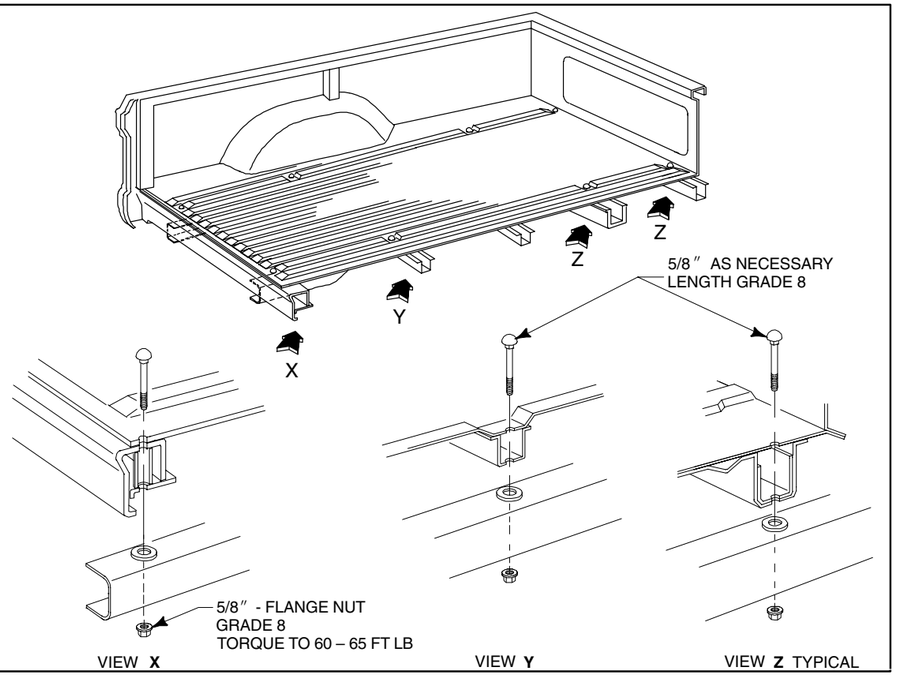


FIGURE C - SUPER DUTY F-SERIES SUB MOUNTING TECHNIQUE #3

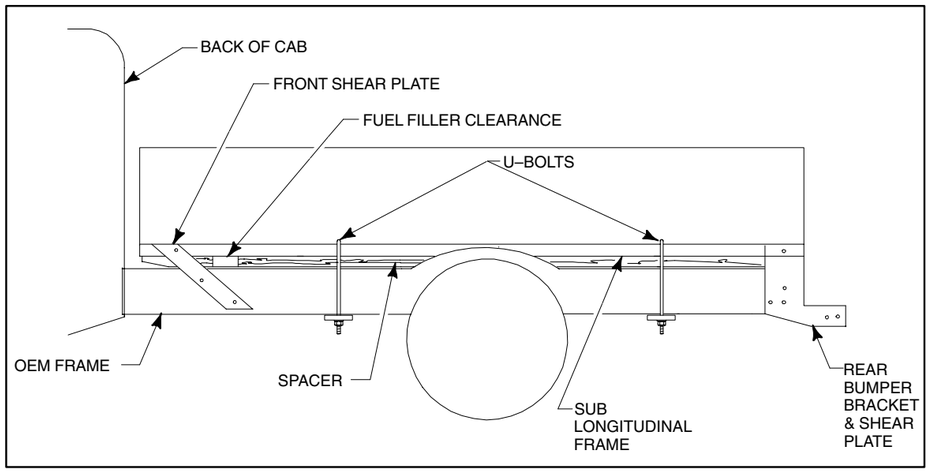


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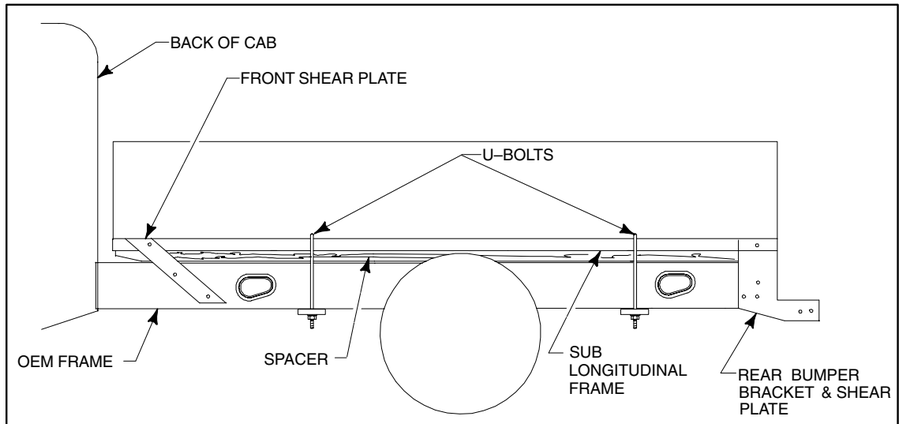
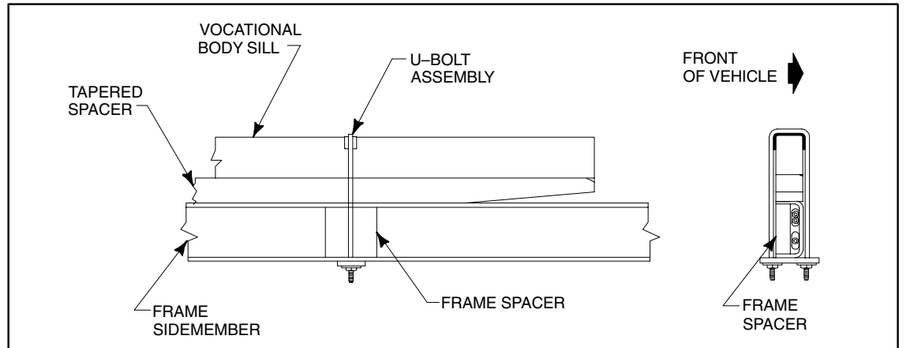
FIGURE D - SUPER DUTY F-SERIES SUB MOUNTING TECHNIQUE #4



Same front and rear shear plate attachment as SUB mounting techniques #1 and #2 with a U-Bolt spaced every 24 to 36 inches. Torque 5/8″ U-bolts to 60-65 Ft. Lb. Do not notch the frame flanges to make the U-bolts fit. Place a spacer in between the OEM frame flanges to provide proper U-bolt torque.

FIGURE E - SUPER DUTY F-SERIES SUB MOUNTING TECHNIQUE #4 FOR 60″, 84″, AND 120″ CA CHASSIS CABS.



Where wrap around body attachments (such as U-Bolts) are used, the frame sidemembers must have flange reinforcement spacers to avoid flange damage when full torque is applied to attaching bolts. Spacers are recommended and must be cut out to clear brake lines, fuel lines, wiring, etc. If metal spacers are used, no welding to frame sidemembers is permitted.

Tapered spacers between vocational-body sill and frame sidemember flanges are recommended. (see sketch for typical installations).

Periodic checking of body attachments for torque retention is highly recommended.

A minimum of one set of shear plates per side is recommended. Also, one set of side shift plates should be attached to vocational-body sills per side.

FIGURE F - SUPER DUTY F-SERIES SUB FRAME SPACER FOR U-BOLT.

FUEL SYSTEM

INFORMATION

The following recommendations are intended to assist in the design and completion of the fuel system capable of meeting the requirements of F/CMVSS 301. These recommendations are based on testing and analysis performed by Ford Motor Company.

Since completed vehicles may take many forms, this list of recommendations cannot cover all possibilities. Strict adherence to these suggestions will not ensure that the completed vehicle will comply with F/CMVSS 301. The responsibility for determining compliance to F/CMVSS 301 regulations is that of the final stage manufacturer. Accordingly, Ford Motor Company makes no representations as to the appropriateness of any particular recommendation in its specific application to a particular design or act of intermediate or final stage manufacture.

To verify compliance with F/CMVSS 301, testing of representative vehicles to applicable F/CMVSS 301 procedures may be necessary. Questions regarding compliance with F/CMVSS regulations should be directed to your legal counsel, the National Highway Traffic Safety Administration, or Transport Canada.

Any alteration or modification of a vehicle's fuel or evaporative system may affect the vehicle's compliance with applicable federal and state emission laws, including on-board diagnostics (OBDII) and evaporative emissions requirements, and may also effect vehicle performance (driveability, idle quality, etc.). Vehicle modifiers are responsible for ensuring that a vehicle, as modified, complies with all applicable emissions regulations and for obtaining any necessary federal or state approval or certification relating to vehicle modification or sale of add-on or auxiliary parts.

WARNING:
BEFORE OPENING THE FUEL SYSTEM ON VEHICLES WITH EFI ENGINES, RELIEVE FUEL PRESSURE BY FOLLOWING THE INSTRUCTIONS IN THE *FORD TRUCK SHOP MANUAL* FOR THE APPROPRIATE MODEL AND MODEL YEAR.

WHEN WELDING NEAR FUEL SYSTEM COMPONENTS, ALL METALIC COMPONENTS SHOULD BE ADEQUATELY SHIELDED AND PROTECTED FROM HEAT OR WELD SPLATTER. ALL NON-METALLIC COMPONENTS SHOULD BE REMOVED.

REMOVAL OR REINSTALLATION OF ANY FORD FUEL SYSTEM COMPONENT SHOULD BE PERFORMED TO THE SPECIFICATIONS AND INSTRUCTIONS FOUND IN THE *FORD TRUCK SHOP MANUAL* FOR THE APPROPRIATE MODEL AND MODEL YEAR. (EXCEPT FOR E-SERIES VAN AFT-OF-AXLE TANK INSTALLATIONS, SEE THE FOLLOWING NOTE).

E-SERIES VAN AFT-OF-AXLE FUEL TANK

A Fuel System Modification Kit is available for some E-Series products for removing the midship fuel tank and adding an aft-of-axle fuel tank. This kit is distributed by:

Transfer Flow Inc.
1444 Fortress Street
Chino, California 95973
Phone: (800) 442-0056
Fax: (530) 892-0382

The installation of this kit is available as a "ship through" from
TDM
13000 Farmington Road
Livonia, Michigan 48150
Phone:(800) 540-3913

NOTE: (1) The modifier is responsible for determining if the vehicle as modified with this kit meets applicable safety & emission regulations and is properly certified.
(2) 2004 E-Series is Lev II Evap Emission. Additional information is available in the *Ford Truck Shop Manual*.

A. NEW FUEL TANKS

1. The fuel tank should be designed with as few openings and connections as possible. Openings and connections generally should be located on the upper surface of the fuel tank.
2. Fuel tanks should be fitted with an evaporation control valve having the means to close if the vehicle is rotated about a longitudinal axis pursuant to F/CMVSS 301.
3. The tank should be of simple configuration minimizing sharp surface transitions and protrusions which may be required for attachment or function.
4. The tank should be strong enough to withstand instantaneous internal pressure imposed in the event of crash situations.
5. Hoses connected to the tank should be sufficiently flexible to permit small movements of the tank relative to fixed mounting surfaces, without rupture or disconnection of such hoses in the event of crash situations.
6. Emission regulations may require an OBDII fuel tank pressure sensor for the evaporative system. Any new fuel tank must be tested and comply with all emission regulations, including evaporative emissions.
7. Package new tank away from heat sources such as exhaust.

B. NEW FUEL TANK RETENTION SYSTEMS

1. The retention system should attach the fuel tank to the frame, between the frame rails, and below the body of the vehicle with sufficient clearance for normal body to frame movement under loaded conditions.
2. A retention system should restrict fuel tank movement in all possible directions to prevent contact or rupture with rigid or sharp objects, and the disconnection of fuel system tubes and hoses under crash conditions. Retention straps should avoid sharp edges and tank supports should be designed with fuel tank compatible surfaces and edges to the fuel tank.
3. System fasteners and attachments should be designed to retain the tank during deflections incurred in crash situations.

C. FUEL FILL SYSTEM

1. Fill system should be sufficiently flexible to prevent possible rupture or disconnection resulting from movement of the fuel tank relative to frame during crash situations. Use the original pickup truck filler if the fill location is similar to the original pickup truck location. For Ranger, user Ranger Fuel Fill Kit 9B149.
2. Any appliance or hardware attachments to the body in the area of a fuel system component should be designed, positioned, and secured so as not to impact any fuel system component during crash situations.
3. The fuel filler opening area of the body should provide adequate sealing from the vehicle interior because holes or cracks in this area may allow fuel vapors to enter the vehicle interior. Openings should be sealed with a product which is fuel resistant. See Figure A on this page.
4. The metal outer end of the fuel fill neck tube provided by Ford must be properly grounded to the chassis to dissipate any electrostatic charge that may be produced and so reduce the possibility of a spark during fueling. A fill neck support made of metal would provide a ground path if directly mounted on the chassis. If the filler neck support is made of plastic or other non-metallic material, a ground strap or wire must connect the metal end of the fuel filler neck and a metal chassis component.

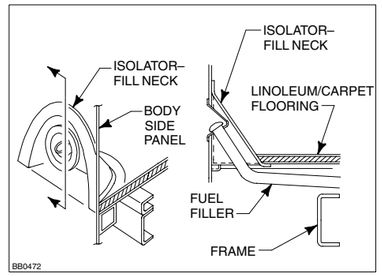


FIGURE A – BODY MOUNTED FUEL FILLER OPENINGS

5. Fill openings should be recessed, and caps, when installed, should be inside the normal body plane.
6. Whenever possible, the fill system should pass under the body rather than through it. Where passing through floors and sides, the fill system should be shielded and have adequate clearance to surrounding structure. Fuel Filler and Vent Hoses should maintain a minimum of one inch clearance to body and surrounding chassis components, except where the hoses and protective sleeve material pass through the designed frame opening.
7. Be sure that the fuel tank filler cap is the correct Ford designated part. Provide adequate hand clearance for cap installation and correct sealing of the cap to filler pipe.
8. The recommended horizontal and vertical locations for the fuel tank filler pipe is shown on page 72 (E-Series), pages 131 and 154 (Super Duty F-Series) and page 202 (Ranger).

SUPER DUTY F-SERIES CHASSIS CAB 60", 84", AND 120" CA		
Standard	Aft Axle Fuel Tank	Kit #F81A-9B149-C
Optional	Midship Fuel Tank	Kit #F81A-9B149-A
BOX DELETE 56" CA		
Standard	Midship Fuel Tank	Kit #F81A-9B149-E

Other parts that can be ordered/purchased separately:

SERVICE PART NUMBERS	PART DESCRIPTION
E0TZ-9040-A	Support (unskirted body)
D702-9A095-A	Label – Unleaded Fuel
E432-9A095-A	Label – Diesel Fuel

C. FUEL FILL SYSTEM (CONT'D)

9. When installing accessories or equipment, avoid exposure of fuel and vapor hoses to surfaces with sharp edges (see Figure A on this page) or high temperature surfaces (near hot exhaust or coolant). Also avoid installations which result in the exposure of these lines to road debris or undercoating, except as specified on page 217.
10. Install or route fuel tank filler hoses and filler vent hoses as follows:
    a. Avoid sags below the horizontal which allow fuel puddling (i.e., avoid sink traps). See Sink Traps in Figure A. Fuel trapped in low spots can be expelled when the cap is removed, even if the tank is nearly empty.
    b. Avoid pinches or kinks, as they restrict fuel filling or venting. Hose length may require adjusting depending on second unit body width. See Kinked Fuel Fill System, Figure A.
    c. Do not place adjacent hardware such that it may cut or otherwise damage the filler neck and vent hoses and cause fuel or vapor leakage (i.e., avoid unfriendly surfaces) see Hostile Surfaces, Figure A.
    d. Keep the flow of fuel continuously downward from the inlet of the fuel filler pipe all the way to the tank.
    e. The filler hose and vent hose must be clear of moving suspension components so as to prevent abrasion which can result in fuel leakage. They should maintain a minimum of 1 inch clearance to body and surrounding chassis components, except where the hoses and protective sleeve material pass through the designed frame opening.
    f. Be certain that all clamps are secure and properly located.
    g. The fuel filler and filler vent hoses should not contain fittings or connections other than those incorporated in the original design, nor should they be interconnected with each other in any way.
    h. Ford released parts should be used.

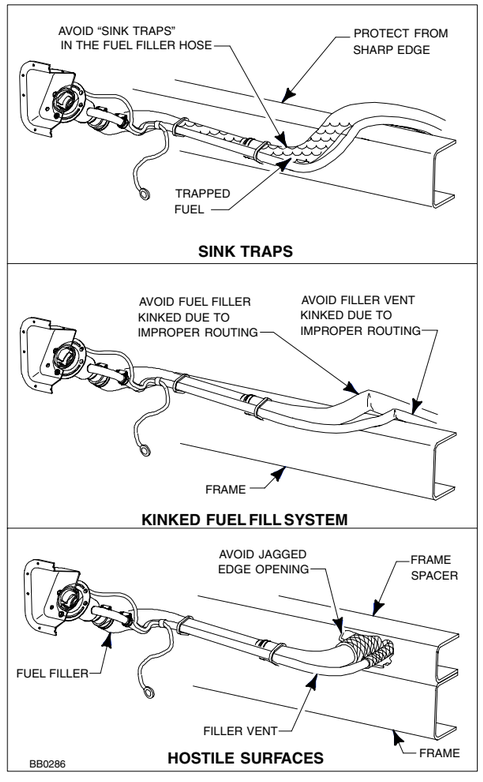


FIGURE A – FUEL FILL SYSTEM INSTALLATION CONDITIONS TO BE AVOIDED

D. FUEL TUBES, HOSES AND PUMPS

1. Do not reroute or change the attachment of fuel lines or fuel vapor hoses. Doing so may alter the vehicle's ability to comply with F/CMVSS 301, Fuel System Integrity, and may adversely affect vehicle performance by increasing the amount of heat absorbed by the fuel system or by restricting its venting.
2. Tubes and hoses should be routed away from and not attached to members that will move or deform during crash situations.
3. Tubes and hoses must be sufficiently flexible to avoid rupture or disconnection resulting from movement of the engine relative to the frame during crash situations.
4. Tubes and hoses should be routed away from hot regions and sharp objects and should be retained adequately to prevent movement into such regions or against such objects.
5. Do not add fuel or vapor line flow restrictors as they can cause engine fuel starvation or abnormally high fuel tank pressures.
6. Do not install auxiliary fuel pumps. This could cause the engine to run rich, producing additional exhaust heat.
7. If the push connectors on nylon fuel lines are disconnected, they must be reconnected as shown in Figure A on the next page, and the retention clip must be discarded and replaced with a new clip as specified in Figure A on the next page.
8. The special removal tool shown in Figure B on the next page must be used to open push connectors installed on flexible fuel lines if the lines need to be disconnected. The appropriate tool is available from Ford Customer Service Division.
9. The push connectors on flexible fuel lines, if disconnected, must be reconnected by snapping them back into position and installing the appropriate retainer as shown in Figure B on the next page.
10. Avoid pinching or kinking of any fuel vapor hose. (See Figure B below).

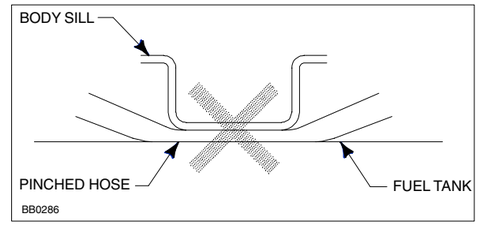


FIGURE B – FUEL VAPOR VENT LINES

11. Each of the fuel lines and fuel vapor hose retention clips provided by Ford must be used in original factory locations to prevent misplacement or movement of the lines.
12. Be certain that the vent valves on top of the fuel tanks are seated and secure; do not dislodge or damage them when mounting the second unit body. If they are unseated, fuel leakage may occur. If damaged, the vapor vent system may not function, resulting in increased fuel tank pressure.
13. If a fuel sender is removed for any reason, use a new gasket when it is reinstalled so as to prevent fuel leaks. Be certain the fuel sender is seated and secure on the top of each fuel tank. Do not step upon or place weight upon the sender during vehicle manufacture. See page 72.
14. Fuel filters installed in the fuel supply line must be of sufficient size to be nonrestrictive to fuel flow and placed so as to be protected from exposure to exhaust heat and physical damage. Ford replacement fuel filters are recommended. Filters are not to be installed in the fuel return line.
15. **Temporary shipping fuel lines are not to be reused**. They should be disposed of in an appropriate manner.
16. Fuel system components which are disconnected during manufacturing should be capped or plugged promptly to prevent possible contamination.
17. When welding near fuel system components, all metallic components must be adequately shielded and protected from heat or weld splatter. All nonmetallic components must be removed.

E. FUEL SYSTEM ACCESS FOR AUXILIARY FUEL POWERED EQUIPMENT

Precautions similar to those described in this Fuel System section should be taken in the design and positioning of a fuel system for auxiliary fuel-powered equipment. The auxiliary fuel-powered equipment should be securely mounted so as to withstand forces during crash situations.

E-Series Super Duty Cutaway/Chassis Cab, Super Duty F-Series, and E-Series Super Duty Stripped Chassis aft-of-axle fuel tanks are equipped with an auxiliary fuel port in the fuel sender unit. The purpose is to provide a fuel supply for fuel powered accessories such as generator sets.

E-Series van vehicles may have an optional auxiliary fuel port which is located on the midship fuel tank sender unit.

Final Stage Manufacturers that utilize the auxiliary fuel port must install a check valve because of Onboard Fuel System Diagnostics (OBDII). The system may affect the vehicle's compliance with applicable Federal/State emissions laws. Additional information is available in Bulletin Q-42. To obtain a copy, log on to www.fleet.ford.com/truckbbas/ and select from the list of Bulletins required.

All auxiliary fuel ports have a safety cap which must remain in place until a fuel consuming accessory is installed.

E-Series van vehicles equipped with the auxiliary fuel port have a braided jumper hose which provides access without removing the fuel tank. A cap removal tool is provided on the jumper line immediately behind the cap and must be removed and reversed before it can be used to remove the cap.

A push connector F7UA-9J274-AA, available from your local Ford dealer, will attach to the auxiliary fuel port and accept a 1/4 inch hose and clamp. See page 72.

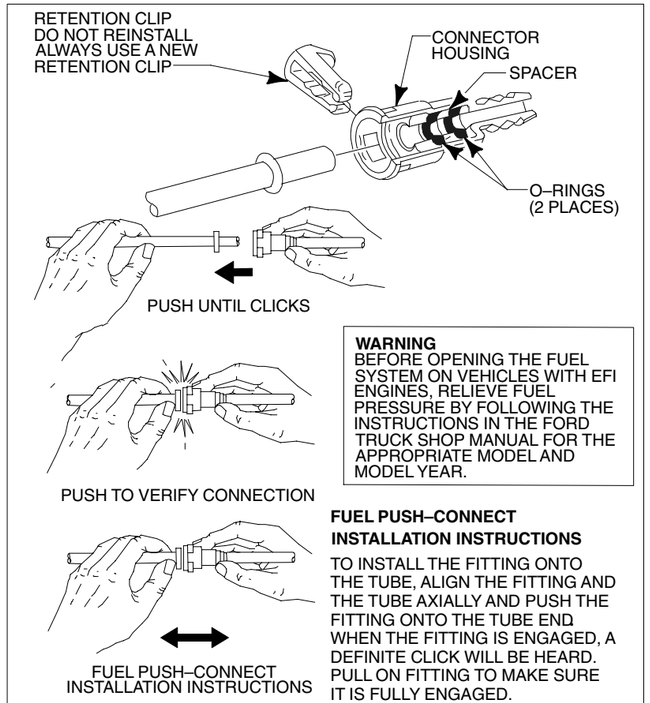


FIGURE A – NYLON FUEL LINE PUSH-CONNECT

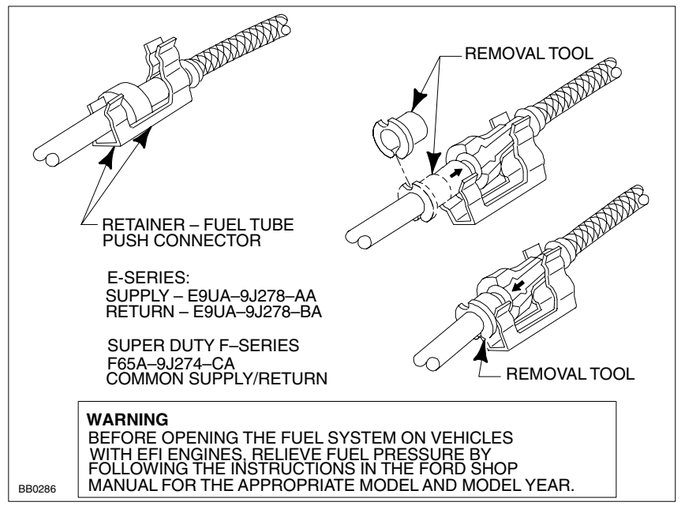
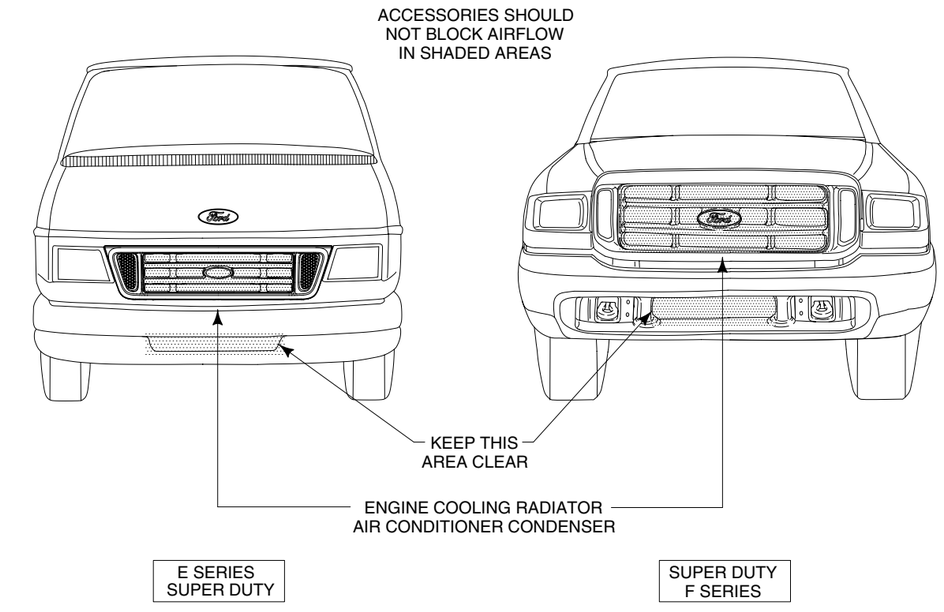


FIGURE B – FLEXIBLE FUEL LINE PUSH-CONNECT

Page 216 DESIGN

COOLING SYSTEM

1. Equipment such as flashing lights and sirens, spare tires or any other accessories should not be installed in the grille area forward of the radiator or air cleaner air inlet. Doing so restricts proper air flow through the radiator and engine compartments. E-Series and Super Duty F-Series are illustrated in the figure below.
2. For proper engine cooling, do not alter, change the locations of, or remove the original equipment fan, fan clutch, or shroud.
3. Maintain a 50/50 mixture of ethylene glycol-based antifreeze-to-water ratio when adding or modifying the heater system or auxiliary heater system. A 60/40 antifreeze-to-water ratio may be necessary during winter months in very cold climates. For the remainder of the year, however, a 50/50 ratio should be maintained.
4. Use worm gear drive clamps only.
5. Upper radiator hoses and heater hoses, which are added or replaces, should be EPDM-Kevlar composition. Lower radiator hoses should be EPDM-Rayon composition.
6. The radiator and fan shroud should not be used as structural members and additional components should not be attached.
7. Revisions to the Front End Accessory Drive System may affect the cooling system/component performance and are not recommended.
8. Do not alter or modify the automatic transmission water bypass system.
9. The minimum radiator grille opening (excluding all grille parts) for the E-Series Stripped Chassis, to provide optimum cooling for the engine, is 300 sq. in.
10. Equipment, hazardous materials markers, or placards must not obstruct the airflow to the radiator or the air cleaner inlet on the E-Series Super Duty Stripped Chassis.
11. The E-Series Super Duty Stripped Chassis engine compartment must be designed to eliminate any air circulation restriction that would affect the air induction or cooling systems. An engine compartment must provide adequate flow-through ventilation to prevent local air temperature from exceeding recommended maximums.



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CLIMATE CONTROL SYSTEM

1. An Auxiliary Heater A/C Connector Package can be either standard or optional on E-Series vehicles for connecting auxiliary climate control systems to the Ford system. The following items are important for the maximum efficiency of the combined systems:
   - The connector tubes are under the floor directly below the driver's seat.
   - The heater supply tube is identified with a white paint dot and should be connected to the lowest connection port on the auxiliary heater core.
   - The A/C connector tubes have a 20 x 1.5-6g metric thread for high pressure and 24 x 2.0-6g metric thread for low pressure.
   - If the vehicle is equipped with the auxiliary heater-air conditioner, do not operate the front A/C system prior to the addition of an auxiliary system. The system oil could settle in the connector tubes and not provide lubrication to the compressor. See Bulletin Q-47. To obtain a copy, log on to www.fleet.ford.com/truckbbas/ and select from the list of Bulletins required.
   - The Ford provided auxiliary blower switch requires an electric relay for high-speed blower operation. Additional detailed information is available in Bulletin Q-19. To obtain a copy, log on to www.fleet.ford.com/truckbbas/ and select from the list of Bulletins required.
2. R134-A charge A/C systems must use PAG-type lubricating oil YN-12-B, Ford part number F2AZ-19577-C. Always use the same refrigerant and lubricating oil as originally equipped by Ford.
3. Maintain a 4% suspended oil ratio in the A/C system for proper compressor lubrication.
4. E-Series A/C and Refrigerant Oil System are classified into the following (3) types:

A/C System	R-134A lb	PAG Oil oz
Front Only (1) Front w/Prep Unit Front & Aux. Unit	2.75 2.75 4.0	9(a) 13 13
(1) **Must add 1-oz Oil for each 4-oz of R-134A above Ford's charge**.		

   A label stating the total refrigerant charge, type of refrigerant (R-134A), and type of compressor lubricant oil (PAG) used, should be affixed in a conspicuous place in the engine compartment.
5. The A/C compressor will cycle during the defrost mode. A refrigerant shut-off valve for the auxiliary system may impair compressor lubrication.
6. R-134A charged A/C systems should use barrier type A/C hose. Barbed fittings and external clamping may not be compatible with this type of hose. Swaged, permanent fittings on this type of hose are recommended.
7. Use only worm gear drive clamps on heater hose.
8. **NEVER ATTACH ANY COMPONENT TO THE TRANSMISSION FILLER AND DIPSTICK TUBE**.
9. Auxiliary heater and air conditioning systems hose routings must consider the following:
   - Dynamic engine roll or any system component which has an operating zone. Make sure there is adequate clearance (e.g., transmission downshift linkage, steering column shift linkage).
   - Do not route heater or A/C hoses directly over or near the exhaust system.
   - Do not route hoses by attaching to the engine.
   - Use only metallic "Y" and "T" type fittings or OEM approved materials.
   - Do not route hose in wheelhouse area.
   - Do not route by sharp edges or moving component parts. There must be shield protection from any potential abrasive source.
   - When routing in stone kickup area, lines should be protected by shields. Minimize use of concentric protective heater hose shields. Limit length of concentric hose shields to 305 mm [12 in] maximum.

E-SERIES STRIP CHASSIS A/C PREP PACKAGE

1. The E-350/450 Chassis, 5.4L and 6.8L engine with A/c prep package comes with a R-134a (non-CFC) air conditioning prep package for use with a Clutch Cycling Orifice Tube (CCOT) controlled A/C system. The package consists of a compressor, condenser and front-end accessory drive.
2. Information on determining air conditioning refrigerant and lubricant quantities are outlined on the Ford Truck Quality Program Guidelines web site http://www.fleet.ford/com/truckbbas/topics/guidebook.html

EXHAUST SYSTEM

WARNING:

VEHICLE OPERATING TEMPERATURES

SOME TRUCKS OF FORD MOTOR COMPANY MAY EXHIBIT HIGH ENGINE COMPARTMENT AND EXHAUST SYSTEM TEMPERATURES IN CERTAIN OPERATING MODES. COMPONENTS, INCLUDING EXHAUST HEAT SHIELDING SYSTEMS, HAVE BEEN INSTALLED AS STANDARD EQUIPMENT ON SOME VEHICLES IN OUR ASSEMBLY PLANTS IN AN EFFORT TO PROVIDE THERMAL PROTECTION AGAINST SUCH TEMPERATURES. AFTERMARKET EQUIPMENT INSTALLERS OR INTERMEDIATE AND FINAL STAGE MANUFACTURERS ARE RESPONSIBLE FOR PROVIDING THERMAL PROTECTION (e.g., UNDERBODY HEAT SHIELDS) FOR ANY STRUCTURE OR EQUIPMENT ADDED TO THE VEHICLE AND SHOULD NOT REMOVE ANY COMPONENTS OR EXHAUST HEAT SHIELDING INSTALLED ON THE VEHICLE BY FORD.

1. Do not substitute exhaust system components or add to those furnished by Ford, except as noted in this section. Such a substitution or addition may adversely affect engine performance or emissions system effectiveness.
2. Do not change the position or routing of the exhaust system components. Such a change may affect the amount of heat transferred to body, chassis, or powertrain components, particularly fuel system components. Specifically, do not add dual exhausts or reroute exhaust components to the left side of the vehicle.
3. Do not remove or modify the existing shields. Ford underbody heat shields are installed on vehicles to provide heat protection for the vehicle floor and body mounting system, and must remain in place on the completed vehicle. (See Figure A.)
4. Exhaust heat shields should be added by a body builder, and should extend far enough beyond the exhaust system components to protect underbody surfaces from heat radiated at any angle. Add shields over the muffler and exhaust pipe kick-up areas.
5. Do not remove Ford furnished exhaust clamps and hangers.
6. An additional exhaust hanger should be installed, if appropriate, to support extended tailpipe length necessitated by body dimensions.
7. Do not make a rigid connection between the exhaust system and the body.
8. Do not apply body undercoating on the fuel tank, fuel fill hose, or fuel fill vent hoses. The extra insulation on these components may cause excessive heat build-up or possible material incompatibility concerns. (See Figure B.)
9. Do not apply body undercoating within twelve inches of the are directly above the exhaust, on any components within twelve inches of the exhaust, or to any part of any exhaust system. Undercoating will smoke or burn if subjected to high heat. (See Figure B.)
10. Extensions to the exhaust outlet pipe should direct exhaust away from the body to minimize the possibility of fumes entering the vehicle. Extensions should also protrude beyond the vertical body surface.
11. Install all underbody plumbing for heaters, air conditioners, and other accessories so that they are not installed against sharp surfaces or jagged edges. Protect from exhaust heat when routing.
12. Use only stainless steel for any exhaust system modifications or additions.
13. Exhaust system revisions should consider thermal expansion of materials and the affect on design clearances.

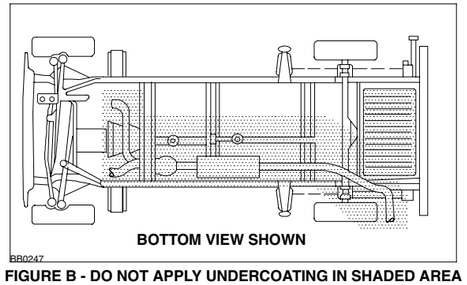


FIGURE B - DO NOT APPLY UNDERCOATING IN SHADED AREA

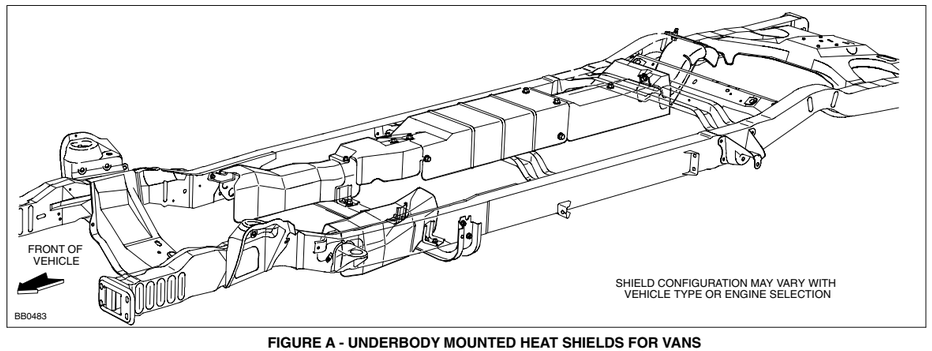


FIGURE A - UNDERBODY MOUNTED HEAT SHIELDS FOR VANS

FORD BODY COMPONENTS

1. Modifications to doors, roof, or body side panels may have an affect on F/CMVSS 208, 210, 212, 214, 219, and 301 compliance. Refer to the Statements of Conformity section in the *Incomplete Vehicle Manual* for compliance representations.
2. Running boards or entry steps should use a mounting system that will attach only to the body. The Ford body to frame isolators allow body movement which may loosen fasteners. A combined frame and body mounting system may cause frame Noise, Vibration, and Harshness (NVH) transfer through such a mounting system into the body.
3. Use a butyl type sealer on trimmed body sheet metal panels to prevent corrosion.
4. Temporary mounting pads may eliminate chipping and scratches when accessories are installed.
5. Select materials which will not have a corrosive action with each other.
6. Additional fresh air vents should be located so that engine exhaust cannot be drawn into the vehicle.
7. When adding holes to the floor of the vehicle, consideration must be given to all components below the floor. The use of drill stops is recommended. A pattern for a floor template, which will locate the E-Series Van fuel tank, is available from the Ford Truck Body Builders Advisory Service.
8. Fasteners added to the floor should not point at the fuel tank or should have an appropriate shield. Components with sharp edges should have an appropriate shield to eliminate the possibility of fuel tank penetration in crash situations.
9. Components added to the E-Series engine cover should allow for easy removal. Refer to the Statements of Conformity in the *Incomplete Vehicle Manual* or Figure A on page 15 of this book for Occupant Protection Zone requirements for the engine cover and other affected areas.
10. The E-Series engine cover seal requires that carpeting and insulation should be installed as shown in Figure C.
11. Power operated windows, a partition, or roof panel systems when added to a vehicle with a GVWR of 4536 [10,000 lb] or less must comply with the requirements of F/CMVSS 118, refer to the Statements of Conformity in the *Incomplete Vehicle Manual*.
12. When a Second Unit Body (SUB) or rear closure panel is attached directly to the cutaway body, difficulty may be experienced when closing doors due to air pressure build up. It is recommended that vent(s) be installed which will allow “ONE WAY” pressure release from the inside of the cab to the outside. Recommended minimum size of the venting is 36 square inches.

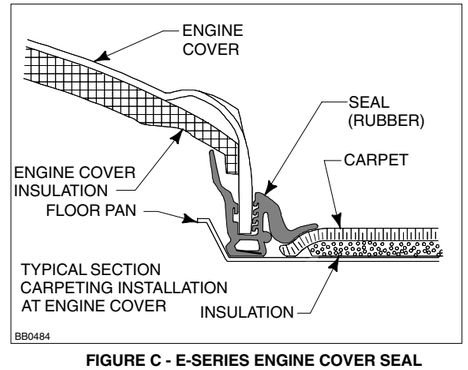


FIGURE C - E-SERIES ENGINE COVER SEAL

WHEELS AND TIRES

WARNING:

SOME AFTERMARKET WHEEL ASSEMBLIES MAY NOT BE COMPATIBLE WITH SOME VEHICLES AND SHOULD NOT BE USED. USE OF INCOMPATIBLE WHEEL ASSEMBLIES MAY RESULT IN WHEEL FRACTURES, SEPARATION, WITH THE POTENTIAL FOR AN ACCIDENT, AND INJURY TO OCCUPANTS. FORD RECOMMENDS THAT ONLY WHEEL ASSEMBLIES APPROVED AND RELEASED BY FORD MOTOR COMPANY FOR THE VEHICLE MODEL SHOULD BE USED.

WARNING:

RE-TORQUE ALL LUG NUTS TO SPECIFICATION. IT IS IMPERATIVE THAT THE DEALER RETORQUE ALL WHEEL LUG NUTS ON ALL VEHICLES PRIOR TO DELIVERY TO THE FINAL VEHICLE PURCHASER. DUAL REAR WHEEL VEHICLES MAY BE SHIPPED WITH THE OUTER REAR WHEELS REMOVED AND, THEREFORE, THE DEALER MUST ENSURE THAT THE LUG NUTS ARE RETORQUED TO THE PROPER SPECIFICATION BEFORE THE VEHICLE IS DELIVERED TO THE FINAL VEHICLE PURCHASER. IMPROPERLY TIGHTENED LUG NUTS COULD LOOSEN AND ALLOW THE WHEEL TO COME OFF WHILE THE VEHICLE IS IN MOTION, CAUSING LOSS OF CONTROL.

1. Use only wheels with the same load capacity, rim width, rim offset, and mounting configuration as those originally installed on the vehicle. Consult an authorized Ford Dealer for correct wheel load capacity, size, and usage. Wheels used must conform to the F/CMVSS 120. The use of any wheel or tire, other than those originally installed on the vehicle as manufactured by Ford, may adversely affect load carrying capacity, handling, bearing life, ride, braking performance, speedometer/odometer accuracy, automatic transmission shift timing, and tire/wheel clearance of the body and chassis.
2. Use only tires with the equivalent load-carrying capacity as those originally installed on the vehicle. Use only tires of a type and size that are recommended by the vehicle manufacturer and are compatible with the wheel installed on the vehicle. Do not over or under inflate tires, always maintain proper tire pressure. Never mix radial, bias-belted, or conventional bias type tires, and avoid mixing P and LT metric tires with alphanumeric tires whenever possible. Consult an authorized Ford Dealer for correct tire load capacity, type, size, and inflation pressure for the vehicle. Tires used must conform to FMVSS 119 (non-passenger car type tires) in the United States, or to the Motor Vehicle Tire Safety Regulations in Canada.
3. If you loosen or remove wheel lug nuts for any reason or have in your possession a vehicle at any of the mileage intervals listed in the Wheel Lug Nut Table below; check the lug nut torque and re-torque to the specifications as listed in the table.

WHEEL LUG NUT TABLE

	MILEAGE		WHEEL LUG NUT TORQUE	
VEHICLE TYPE	**KM**	**MILES**	**Nm**	**Ft/Lb**
E-Series				
E-150	800	500	135	100
E-250/350 SRW	800	500	190	140
E-350/450 DRW	160	100	190	140
	800	500		
F-Series				
Super Duty F-250/350 SRW	800	500	200	145
Super Duty F-350/450/550 DRW	160	100	200	145
	800	500		
Super Duty Class A Motor Home Chassis (F53)	160	100	200	145
	800	500		

SUSPENSION AND STEERING SYSTEM

NOTICE – VEHICLE HANDLING INFORMATION

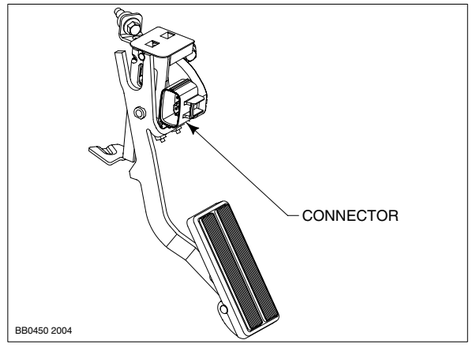
The weight of the body structure and its center of gravity location (both longitudinally and vertically), as well as the weight and positioning of the cargo load, are important to the handling of the completed vehicle. Subsequent stage manufactures should note that matching a body to a chassis in a manner appropriate for the intended use of the vehicle is the responsibility of the final-stage manufacturer. Following the representations in this book or the IVM Manual, with respect to center of gravity locations and body weights for compliance with Federal or Canada Motor Vehicle Safety Standards, is only part of the task of producing a completed vehicle that handles appropriately in service.

IMPORTANT:
The final-stage manufacturer is responsible for verifying that the front wheel toe is within Ford specifications on completed vehicles. The steering wheel clear vision (horizontal or level orientation of the steering wheel) should also be maintained when resetting wheel toe. These specifications are found in the General Suspension section of the *Ford Shop Manual*.

1. Front end alignment warranty policy for incomplete vehicles is based upon the completed vehicle remaining within OEM weight ratings, vehicle attitude, suspension and wheel/tire guidelines, and other characteristics affecting wheel alignment. Exceeding or modifying these restrictions may jeopardize related warranty.
2. Modifications made by subsequent stage manufacturers, particularly those that significantly affect vehicle ride heights, may cause vehicle control problems during excessively sharp turns or other abrupt steering maneuvers, possibly leading to rollover or other accidents that could result in death or serious injury.
3. The steering gear, intermediate shaft, coupling shaft, linkage, column, and steering wheel should not be altered or relocated. Steering linkage travel should not be restricted.
4. Ford front and rear GAWRs and GVWR must not be exceeded.
5. Front or rear suspension components should not be drilled, cut, welded, or relocated for any reason.
6. Welding to the frame in the steering gear area is not recommended.
7. If rear suspension spacers are used between the spring and axle seats to accommodate side-to-side variations, they should not exceed 3/8 inch. The spacers should not exceed the profile of the axle spring seat. Additional spacing may adversely affect driveline angles and axle system package clearance. Also affected are spring stress limits from excessive jounce travel.
8. Do not use any suspension component as a welding ground.
9. When welding or cutting near suspension components, shield and protect all springs and rubber components from heat penetration and welding splatter.
10. Any add-on device mounted on the steering column, shroud, multifunction switch, or gear selector lever, must not affect steering column angles, tilt mechanism (if so equipped), range of operation, or steering column mounting hardware. Any such device must not interfere with steering column collapse stroke travel during crash situations or air bag deployment.

ENGINE

1. Refer to the Emission Control Modifications on Safety/Emission pages 18-21 prior to making modifications to any engine component that could affect the emission certification.
2. Gasoline engine conversion guidelines for Liquefied Petroleum Gas (LPG) or Compressed Natural Gas (CNG) are in the Alternative Fuel pages of Safety/Emission section of this book.
3. The engine should not be operated with the hood up or removed. This may allow excessive unforced air to circulate that could adversely affect the cooling system.
4. Do not use manual throttle kickers
5. When using electric throttle kickers on gasoline engines, set the high idle RPM at as low as possible to obtain the required performance. The idle speed must be set when the engine is at normal operating temperature and under normal load. This RPM setting should be affixed to the vehicle and should be checked after the 2,000 mile brake-in engine tune up. This information should be provided to the purchasers. The addition of throttle kickers may affect electronic transmission operation.
6. An auxiliary crankshaft bearing support is required on all modular gas engines before a FEAD-mounted PTO can be installed. Refer to Power Take-Off Installations page for information.
7. Do not tap into the electrical circuits attached to the Accelerator Pedal Position Sensor (APP) on the accelerator control. Do not bypass the electrical circuits attached to the APP. See figure below for component identification.



8. Installation of a gasoline engine speed governor is permissible, provided the governor design is compatible with each respective throttle body for the individual engine application and it does not exceed specified engine maximum RPM. It must also meet all noise and engine emission requirements. Governor installations may affect electronically controlled transmissions. Contact Ford Truck Body Builders Advisory Service before installing.

DRIVELINE

1. Bulletin Q-14, “Guidelines for Modifying Truck Drivelines,” is available on www.fleet.ford.com/truckbbas/. Any deviation from Ford specifications may adversely affect powertrain system operation including engine and transmission, or component reliability. Subsequent stage manufacturers or installers are responsible to maintain Ford specifications in the completion of such modifications.
2. Rear axle vent and hose, if installed, must not be bent, pinched, or obstructed so that normal “breathing” of the rear axle is provided.
3. On all rear axle assemblies, additional bracket bars or supports must not be welded to the axle assembly. Attachment of any equalizing-type trailer hitch or auxiliary suspension systems (springs) must not be attached to the rear axle assembly.

TRANSMISSION

1. The transmission oil filler tube and dipstick must not be altered by bending, lengthening, or shortening, and must be readily accessible in the engine compartment for checking lubricant level. **NEVER ATTACH ANY COMPONENT TO THE TRANSMISSION FILLER AND DIPSTICK TUBE.**
2. The installed engine angle must not be altered. The relative position of engine and transmission to shift linkage must not be altered.
3. Transmission vent must not be altered, pinched, or collapsed, and the vent opening must not be restricted or relocated.
4. Adequate tool clearance and suitable access openings for transmission adjustments must be provided. Transmission removal provisions must also be considered.
5. Transmission oil cooler lines should not be kinked, bent, or restricted. All oil cooler lines must be properly retained with adequate clips. The truck type external oil cooler must not be “boxed in”, which would restrict adequate air circulation. Use only Ford factory coolers.

Some automatic transmissions are equipped with “Stand Alone” transmissions fluid coolers. Vehicles equipped with this new oil to air cooler (OTA) may not have a transmission fluid cooler in the radiator. The OTA is located in front of the radiator and will require replacement every time the transmission is reworked or replaced. The cooler lines and Cooler Bypass Valve (CBV) must also be cleaned and backflushed.

CAUTION:
FAILURE TO REPLACE THE OTA, BACKFLUSH THE COOLER LINES AND CBV MAY RESULT IN TRANSMISSION ASSEMBLY INTERNAL DAMAGE.

6. Transmission shift cable, transmission outer shift lever, and shift cable bracket must not be altered and must have provisions for adjusting tool clearance. A severe duty shift cable (booted) is available as a service part from a Ford Dealer, for Super Duty F-Series vehicles which experience extensive off-road use.
7. Some automatic transmissions may be equipped with a transmission cooler bypass system. The purpose of the cooler bypass valve is to allow some transmission fluid to bypass the transmission fluid coolers and return to the transmission sump during cold weather operation. This provides a faster transmission fluid warm up and increased lube flow during cold weather operation. Do not remove or modify this system or transmission damage may occur. Do not use the cooler bypass line as a fitting point. Vehicles equipped with transmission cooler bypass will NOT have a hot water feed circuit from the water pump to the radiator tank containing the transmission cooler.

CAUTION:
DO NOT USE THE COOLER BYPASS VALVE (CBV) AS A HANDLE. DAMAGE TO THE CBV AND TRANSMISSION MAY RESULT. THIS ALSO CAUSES LEAKS.

8. Transmission service identification tags must not be removed or destroyed. If the transmission is reworked or replaced, the tag should be attached to new transmission.
9. Electronically controlled automatic transmission wire harness routing location, wire harness locating clips, all heat shielding, and clearance to the exhaust must be maintained as installed from the assembly plant.
10. The manual transmission filler plug should not be obstructed, preventing easy checking of lube level or filling.
11. Body structures should not be less than 1.00 inch from the rectangular vent holes on the top surface of the manual transmission housing.
12. Bulletin Q-14 and Q-18 contain additional detailed information on modifications which may affect transmissions. To obtain a copy, log on to www.fleet.ford.com/truckbbas/ and select from the list of bulletins.

FRAME

1. Holes that would weaken the frame sidemember should not be drilled in the frame. Holes are **not** to be drilled in the sidemember’s top or bottom flange.
2. Holes to mount brackets, out-riggers, and supports, may be drilled in the vertical frame side rail web with the following restrictions:
   - Material between edge of hole and inside of upper or lower flange must not be less than 1.50 inch for low carbon steel (36,000 PSI yield).
   - The minimum edge distance between any two holes up to 0.625 inch diameter must be 1.00 inch. For larger than 0.625 inch diameter holes, the minimum edge distance must be 1.5 times the diameter of the largest hole.
   - 0.75 inch is maximum hole diameter.
   - Avoid close vertical succession of fasteners.
   - All attaching fasteners, including flat washers, must be of high strength steel (Grade 8).
3. When welding is performed anywhere on the vehicle, precautionary measures should be taken to prevent damage to electrical system wiring or components. Prior to welding, any parts which could be damaged by excessive temperatures should be removed or adequately shielded. Also, prior to welding, disconnect both batteries, then the ABS module, then the PCM. The welding ground clamp should be positioned as close to the affected welding area as possible. Computer processors should be removed if welding is to be done within their close proximity. Welding cables should never be allowed to lay on, near, or across any electrical wiring or electronic component during welding. After welding, when parts are cool, carefully inspect wiring and electrical components for shorts or other damage which could draw excessive currents and possibly cause an electrical system short when the battery is reconnected.
4. When welding low carbon steel side rails (36,000 PSI yield strength), emphasis should be placed upon weld application techniques to avoid stress risers that may adversely affect frame operating stresses. When welding within 4 inches of any crossmember rivet, remove the rivets and replace with Grade 8 bolts and nuts.
5. Do not modify or alter the convoluted frame sections in the area behind the front bumper. Modifications or alterations could have an adverse effect on vehicle performance in a crash situation.
6. Wheelbase alteration and frame extension guidelines for and E-Series Super Duty Cutaway are available in Bulletin Q-18, log on to www.fleet.ford.com/truckbbas/ and select from the list of bulletins. Any deviation from the original vehicle specification will become the responsibility of the subsequent stage manufacturer or installer. This may affect transmission operation and durability.
7. Recommend the use of OEM front tow hooks only. See *Ford Towing Manual* FCS-12141-00 for towing instructions.
8. To prevent collapse of the frame side rail flanges, when U-bolts are used for the attachment of bodies to the truck chassis, vertical spacer bars must be used between the upper and lower flanges at each U-bolt.
9. All E-Series Super Duty Cutaways or Stripped Chassis with a 176-inch WB and equipped with a 55-gallon fuel tank will require an 18-inch minimum frame extension to provide for an adequate departure angle fuel tank clearance.
10. School bus rear bumpers should meet the following recommended minimum specifications; height, 203.2 [8.00] under 10,000 lbs and 241.3 [9.50] over 10,000 lbs; 50.8 [2.00] upper and lower flange; 304.8 [12.00] wrap-around; 4.8 [.187] thick. See the *Incomplete Vehicle Manual* for additional information.

JACK

1. Jacks, if installed, must be stowed in an adequate location for customer access.

A FORD VEHICLE IS SUITABLE FOR MANUFACTURE INTO AN AMBULANCE ONLY IF EQUIPPED WITH A FORD AMBULANCE PREPARATION PACKAGE. FORD URGES AMBULANCE MANUFACTURERS TO FOLLOW THE RECOMMENDATIONS FURNISHED IN THE *INCOMPLETE VEHICLE MANUAL*, (AND ANY PERTINENT SUPPLEMENTS), AND THE QUALIFIED VEHICLE MODIFIER (QVM) GUIDELINES.

USING A FORD VEHICLE WITHOUT THE FORD AMBULANCE PREPARATION PACKAGE TO PRODUCE AN AMBULANCE VOIDS THE FORD WARRANTY AND COULD RESULT IN ELEVATED UNDERBODY TEMPERATURES, FUEL OVER-PRESSURIZATION AND THE RISK OF FUEL EXPULSION AND FIRES.

VEHICLES EQUIPPED WITH FORD AMBULANCE PREPARATION PACKAGES HAVE LABELS LOCATED ON (THE INSIDE) DRIVER DOOR LOCK PILLAR THAT STATE THAT THE VEHICLE IS SO EQUIPPED.

INFORMATION

Ford urges careful consideration of the recommendations that follow. They are based on analyses of component and vehicle tests, actual service situations, and engineering judgments. Disregard of these recommendations may affect the durability, reliability, handling and performance characteristics of a completed vehicle and may elevate underbody temperatures and increase the potential for fire, or may affect the safety of the occupants in the event of an accident.

These recommendations are supplemental to U.S. and Canadian Motor Vehicle Safety compliance representations provided in the *Incomplete Vehicle Manual*. Additional information is also provided in this book and *Ford Truck Shop Manual* which may be helpful to subsequent stage manufacturers.

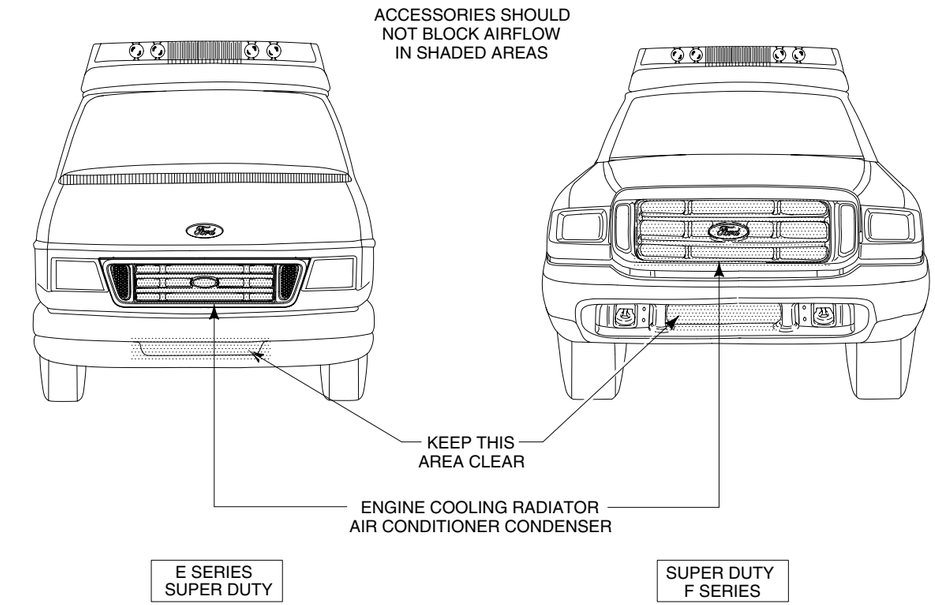
Subsequent stage manufacturers are encouraged to contact the Ford Truck Body Builder Advisory Service if they have any questions concerning these recommendations.

GUIDELINES

1. All Exhaust System and Underbody Heat Management statements on pages 204 and 217 respectively, apply to completed ambulance type vehicles.
2. Data concerning the effect of hood louvers is inconclusive. If a body builder chooses to add them, the opening should be directed rearward to avoid recirculating discharged hot air through the radiator.

NOTE: The vehicle interior vent air enters the passenger compartment at the base of the windshield. Louvers may direct heated air or fumes toward this opening. Removal of the underhood insulation may affect Exterior Noise compliance. See the Exterior Noise information on Safety/Emissions pages 17-18.

3. To deal with higher electrical loads, Ford vehicles with the Ambulance Prep Package are equipped with dual 115 ampere alternators, dual batteries and heavy duty wiring to handle higher electrical loads. Added wiring should be of sufficient capacity to handle the higher current. The alternator should not be modified, altered or replaced.
4. Added Second Unit Body vents, especially powered vents, should be located away from the fuel filler, fuel venting areas and exhaust to avoid fuel fumes and vapors entering the interior of the vehicle.
5. Equipment such as flashing lights and sirens, spare tire, or any other accessories should not be installed in the grille area forward of the radiator or air cleaner air inlet. Doing so restricts proper airflow through the radiator and engine compartment. Lights, speakers, or sirens should not be mounted in the center area of the grille. Equipment should be mounted as far outboard as possible, not to exceed 90 square inches each or 180 square inches combined in area.
6. An ambulance is not to be used as a tow vehicle.



BB0485 2003

NEW VEHICLE STORAGE GUIDELINES

2004 MODEL YEAR

GENERAL

- Store vehicles in a dry, ventilated place; protect from sunlight if possible.
- If vehicles are stored outside, provide regular maintenance against rust and damage.

BODY

- Wash vehicle thoroughly to remove dirt, grease, oil, tar, or mud from exterior surfaces, rear wheel housing, and underside of front fender.
- Periodically wash vehicles stored in exposed locations.
- Touch up exposed raw or primed metal to provide rust protection.
- Cover chrome and stainless steel parts with a thick coat of auto wax to prevent discoloration. Rewax as necessary when the vehicle is washed.
- Lubricate all hoods, door hinges and latches with a light grade oil.

  CAUTION: Keep all rubber parts free from oil and solvents.
- Cover the interior soft trim to prevent fading, if stored in exposed location.

ENGINE

- Start the engine every 15 days and move the vehicle at least 25 feet. Run it al fast idle until it reaches normal operating temperature.
- Shift the transmission into all gears while engine is running at idle speed.

FUEL SYSTEM

- Regularly move vehicles short distances to mix fuel anti-oxidation agents.

NOTE: During extended periods, if vehicle is stored for 60 days or more, gasoline may deteriorate due to oxidation. This can damage rubbers and other polymers in the fuel systems such as fuel pressure regulator diaphragms and fuel line connector seals. It may also clog small orifices. Diesel fuel deterioration in the form of fuel separation, sludge formation, and bacterial growth can cause restrictions in fuel supply lines, filters and sticking of fuel injection systems components.

A commercially available gasoline fuel stabilizer (“Sta-Bil” or equivalent) should be added to gasoline-powered vehicles or a diesel fuel stabilizer (“Fire Prep 100” or equivalent) to diesel-powered vehicles whenever actual or expected storage periods exceed 60 days. The manufacturer’s instructions packaged with product should be followed. The vehicles should then be operated at an idle speed to circulate the additive throughout the fuel system.

A volatile, corrosion inhibitor (NOx Rust VCI 105" or equivalent) added to the fuel will protect the fuel tank inner surface from corrosion. Follow instructions packaged with product.

COOLING SYSTEM

- Maintain appropriate antifreeze protection against freezing temperatures.
- Only use coolant as recommended in your vehicle owners manual.

BATTERY

- Check and recharge as necessary.
- Keep connections clean and covered with light coat of grease.

BRAKES

- Make sure brakes and the parking brake are fully released.

TIRES

- Maintain recommended air pressures.

MISCELLANEOUS

- Verify that all linkages, cables, clevis pins, and levers under the vehicle are covered with grease to prevent rust.
- Move trucks at least 25 feet every 15 days to lubricate working parts and prevent corrosion.

TRANSMISSION

- Run engine to normal operating temperature.
- Shift the transmission into all gears with engine running at idle speed.
- Check fluid level and condition (no water contamination, etc.).
- Stripped Chassis vehicles – cover transmission to prevent water from entering through the vent.

GUIDELINES FOR SECOND UNIT BODY INSTALLATION ON FORD PRODUCED DEDICATED NATURAL GAS VEHICLE (NGV) E-SERIES CUTAWAY/CHASSIS CAB

Ford produces a Super Duty Cutaway/Chassis Cab Dedicated Natural Gas Vehicle (NGV), which comes from the factory capable of running on Compressed Natural Gas (CNG).

The vehicle is equipped with a 3-tank CNG fuel system, which consists of one midship tank and two aft-of-axle tanks.

When installing a Second Unit Body (SUB), the precautions and instructions as described on these pages must be followed.

- The body shall provide adequate strength and anti-deformation characteristics to withstand NGV-1 breakaway force from the fill station with no vehicle fuel system leakage.

Definition of a Dedicated NGV: Vehicle operates on CNG fuel only, no gasoline on board. The engine has upgraded components or enhanced durability while operating on the gaseous fuel.

- Removing, detaching or altering any component of the CNG fuel system should only be done by an authorized Ford Dealer, properly Ford trained personnel or OEM fuel system installer.
- Do not weld on CNG tanks or attachment brackets.
- If it is necessary to place the vehicle in a paint-curing oven to cure paint on a SUB, all the fuel from the CNG system (tanks, lines, etc.) must be removed prior to curing. The vehicle and it's components should not be subjected to temperatures in excess of 180 ambient degrees F.
- Do not pressurize the fuel system with anything but nitrogen or natural gas.

The vehicle must adhere to the same requirements and criteria as the gasoline E-450 Cutaway/Chassis Cab unless otherwise stated in the E-450 Cutaway/Chassis Cab NGV portion of this publication.

A minimum of 25.4 mm [1.0 in] clearance is required between any part of the fuel system and the surrounding components.

Installation of Ford supplied in-body tank kit:

- Any tanks that are added by the SUB installer must utilize the inertia switch and have a solenoid activated tank valve.
- Underbody or cargo area tanks must be shielded. Shields must have drain holes.
- If tanks are mounted inside the vehicle, the tank neck and all connections must be enclosed in a gas tight housing and be vented outside the vehicle.

The subsequent stage manufacturer is responsible for ensuring that all applicable requirements are met, including Federal/Canadian Motor Vehicle Safety Standards (F/CMVSS) regulations. The completed vehicles must be in accordance with all federal, state, provincial and local regulations and industry standards regarding new vehicles including, but not limited to, those issued by:

- *Ford Truck Body Builders Layout Book*
- *Ford Incomplete Vehicle Manual (IVM)*
- *Ford Truck Quality Program Guidelines*

Do not assume that this is a complete list but rather a sample of the many resources that contain the requirements that your vehicle must meet once it is complete.

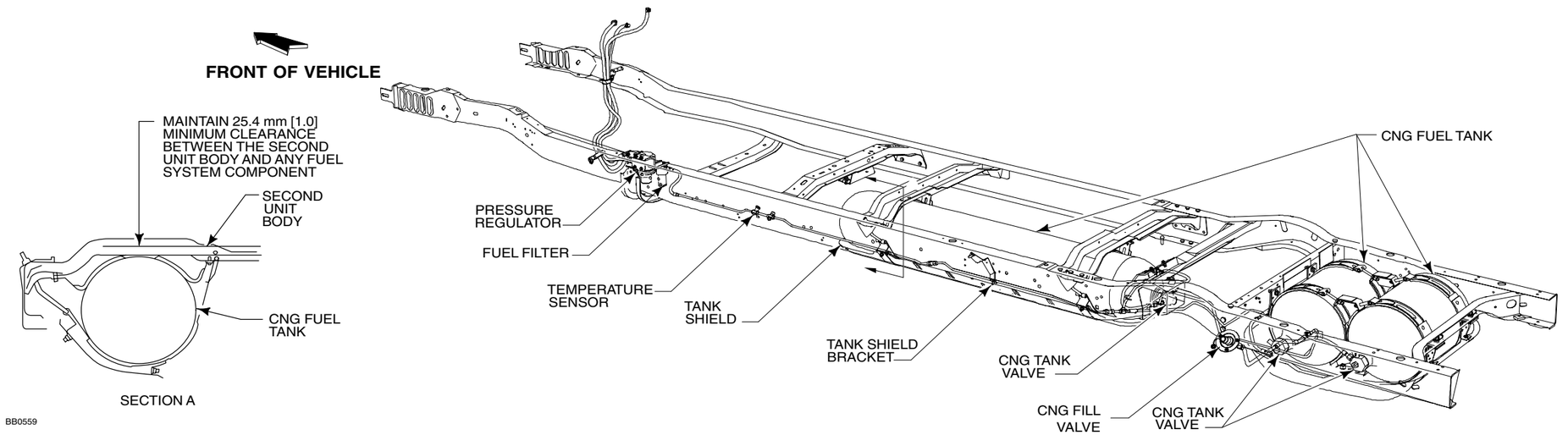
Fuel lines and tanks must be vented according to the proper fuel venting procedure before tapping into the fuel system.

- Refer to the *Ford Service Manual* for the recommended fuel system venting procedure if required.
- **Warning:** High Pressure Fuel System.
  Service Pressure: 3600 PSI @ 70 F.

The completed weight of any vehicle must not exceed the rated GAWRs or GVWR with full fuel and allowance for passengers and rated cargo.

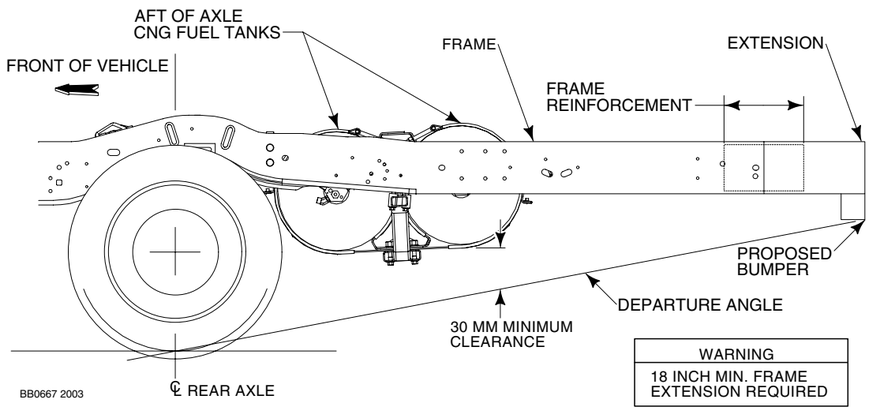
- The spacers required between the frame and Second Unit Body must be included in the center of gravity and Second Unit Body weight.

The accessory reserve capacity (ARC), or accessory reserve load, of new Ford vehicles must not be exceeded for either the front axle, rear axle and/or total vehicle with the installation of additional gaseous fuel system components.



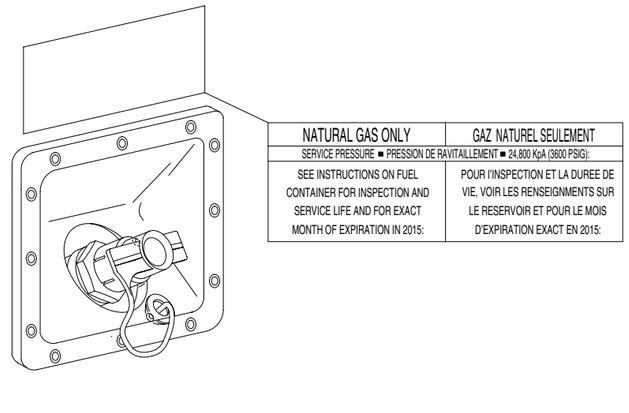
NOTE — [ ] DIMENSIONS ARE INCHES.

GUIDELINES FOR SECOND UNIT BODY INSTALLATION ON FORD PRODUCED DEDICATED NATURAL GAS VEHICLE (NGV) E-SERIES CUTAWAY/CHASSIS CAB

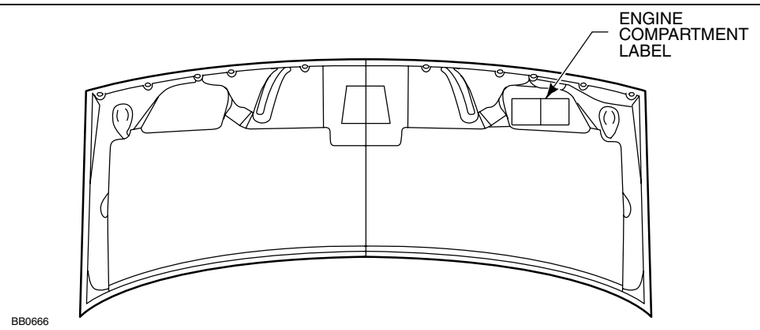


Minimum Ground Clearance (Departure Angle) for Completed Vehicles with Aft Axle CNG Tanks

Any tank and shield package designed to mount under the Ford body must be at least 30 mm above the break-over and departure zones. Take no action which would degrade ground clearance beyond that which is sold and released by Ford Motor Company. Refer to E-350/450 Cutaway/Chassis Cab Truck data 176" WB for Frame Extension dimensional information.



Every vehicle powered by CNG gas must bear a label located at the fueling connection receptacle and shall include the following:
1. Identification as a CNG-fueled vehicle.
2. System service pressure.
3. Container retest date(s) or expiration date.
   (If additional tanks are added to the fuel system, the label must be supplemented to reflect the earliest date of all tanks on the vehicle)



Engine Compartment Label

Every vehicle powered by CNG gas must bear a label located in the engine compartment and shall include the following:
1. Identification as a CNG-fueled vehicle.
2. System service pressure.
3. Installer's name or company.
4. Container retest date(s) or expiration date.
5. Total container water volume in gallons (liters).
   (Label will be affixed under hood upon delivery)

If additional fuel tanks are added to the fuel system, a supplemental sticker must be affixed in this location as well. The supplemental sticker must contain the following:
1. Additional System Volume (added volume and total).
2. Service pressure (must not be altered from 3600 psi @ 70 F).
3. Installer's name or company.

CNG Label

Every vehicle powered by CNG gas must be identified with a weather resistant diamond-shaped label located on an exterior vertical, or near vertical surface, on the lower right rear of the vehicle, inboard from any other markings. The label must not be installed on the bumper. The label shall be approximately 120 mm [4¾ in] long by 893 mm [3¼ in] high. The marking shall consist of a border and the letters "CNG" 25 mm [1 in] minimum height centered in the diamond of silver or white reflective luminous material on a blue background.

F-650 SUPER DUTY REGULAR CAB
MODEL LINEUP

				STANDARD			MAXIMUM	BASE CURB WEIGHT		
SUPER DUTY F-SERIES MODEL	SERIES CODE	WHEELBASE Inches	CA Inches	ENGINE liters	STANDARD TRANSMISSION	GVWR pounds	PAYLOAD pounds	FRONT pounds	REAR pounds	TOTAL pounds
REGULAR CHASSIS CAB										
F-650 ProLoader 4x2	F65	158	84	Powerstroke	Fuller FS-5205A 5-SPD Manual	22,000	14,070	5345	2584	7929
	F65	182	108	Powerstroke	Fuller FS-5205A 5-SPD Manual	22,000	13,975	5451	2571	8022
	F65	194	120	Powerstroke	Fuller FS-5205A 5-SPD Manual	22,000	13,925	5519	2554	8073
	F65	218	144	Powerstroke	Fuller FS-5205A 5-SPD Manual	22,000	13,850	5632	2518	8150
	F65	242	168	Powerstroke	Fuller FS-5205A 5-SPD Manual	22,000	13,700	5729	2571	8300
F-650 4x2	F65	158	84	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,835	5365	2798	8163
	F65	176	102	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,680	5419	2898	8317
	F65	182	108	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,665	5449	2884	8333
	F65	194	120	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,600	5512	2888	8400
	F65	200	126	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,580	5543	2874	8417
	F65	212	138	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,530	5597	2869	8466
	F65	218	144	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,515	5627	2855	8482
	F65	224	150	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,465	5640	2895	8535
	F65	230	156	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,445	5671	2880	8551
	F65	242	168	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,360	5725	2915	8640
	F65	260	186	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,255	5792	2952	8744

Maximum Payload includes weight of driver, passengers and optional equipment.

Base curb weight is with standard equipment only.

F-750 SUPER DUTY REGULAR CAB MODEL LINEUP

SUPER DUTY F-SERIES MODEL	SERIES CODE	WHEELBASE Inches	CA Inches	STANDARD ENGINE liters	STANDARD TRANSMISSION	GVWR pounds	MAXIMUM PAYLOAD pounds	BASE CURB WEIGHT FRONT pounds	BASE CURB WEIGHT REAR pounds	BASE CURB WEIGHT TOTAL pounds
REGULAR CHASSIS CAB										
F-750 4x2	F75	158	84	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	22,440	5637	2922	8559
	F75	176	102	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	22,260	5690	3050	8740
	F75	182	108	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	22,235	5723	3038	8761
	F75	194	120	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	22,160	5789	3048	8837
	F75	200	126	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	22,140	5821	3036	8857
	F75	212	138	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	22,080	5877	3039	8916
	F75	218	144	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	22,060	5910	3026	8936
	F75	224	150	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	22,000	5924	3072	8996
	F75	230	156	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,985	5956	3059	9015
	F75	242	168	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,880	6011	3107	9118
	F75	260	186	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,755	6079	3164	9243
F-750 Severe Service 4x2	F75	158	84	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,965	6066	2965	9031
	F75	176	102	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,775	6119	3104	9223
	F75	182	108	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,755	6152	3092	9244
	F75	194	120	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,675	6219	3105	9324
	F75	200	126	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,655	6252	3093	9345
	F75	212	138	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,590	6310	3099	9409
	F75	218	144	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,570	6343	3087	9430
	F75	224	150	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,505	6357	3135	9492
	F75	230	156	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,485	6390	3123	9513
	F75	242	168	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,375	6445	3176	9621
	F75	260	186	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,245	6514	3241	9755

Maximum Payload includes weight of driver, passengers and optional equipment.
Base curb weight is with standard equipment only.

F-650 SUPER DUTY SUPER CAB
MODEL LINEUP

SUPER DUTY F-SERIES MODEL	SERIES CODE	WHEELBASE Inches	CA Inches	STANDARD ENGINE liters	STANDARD TRANSMISSION	GVWR pounds	MAXIMUM PAYLOAD pounds	BASE CURB WEIGHT FRONT pounds	BASE CURB WEIGHT REAR pounds	BASE CURB WEIGHT TOTAL pounds
SUPER CAB CHASSIS CAB										
F-650 ProLoader 4x2	F65	155	60	Powerstroke	Fuller FS-5205A 5-SPD Manual	22,000	13,965	5500	2532	8032
	F65	179	84	Powerstroke	Fuller FS-5205A 5-SPD Manual	22,000	13,825	5596	2579	8175
	F65	203	108	Powerstroke	Fuller FS-5205A 5-SPD Manual	22,000	13,710	5717	2570	8287
	F65	239	144	Powerstroke	Fuller FS-5205A 5-SPD Manual	22,000	13,585	5902	2513	8415
F-650 4x2	F65	167	72	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,620	5553	2827	8380
	F65	179	82	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,560	5607	2833	8440
	F65	197	102	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,415	5684	2901	8585
	F65	203	108	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,395	5716	2886	8602
	F65	215	120	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,350	5773	2875	8648
	F65	221	126	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,335	5805	2860	8665
	F65	233	138	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,285	5861	2853	8714
	F65	239	144	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,250	5899	2851	8750
	F65	245	150	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,195	5915	2889	8804
	F65	251	156	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,180	5946	2874	8820
	F65	263	168	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,110	5994	2894	8888
	F65	281	186	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,005	6064	2928	8992

Maximum Payload includes weight of driver, passengers and optional equipment.
Base curb weight is with standard equipment only.

F-750 SUPER DUTY SUPER CAB MODEL LINEUP

SUPER DUTY F-SERIES MODEL	SERIES CODE	WHEELBASE Inches	CA Inches	STANDARD ENGINE liters	STANDARD TRANSMISSION	GVWR pounds	MAXIMUM PAYLOAD pounds	BASE CURB WEIGHT FRONT pounds	BASE CURB WEIGHT REAR pounds	BASE CURB WEIGHT TOTAL pounds
SUPER CAB CHASSIS CAB										
F-750 4x2	F75	167	72	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	22,220	5827	2953	8780
	F75	179	84	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	22,145	5884	2969	8853
	F75	197	102	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,975	5962	3059	9021
	F75	203	108	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,955	5996	3045	9041
	F75	215	120	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,900	6056	3041	9097
	F75	221	126	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,880	6089	3028	9117
	F75	233	138	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,820	6148	3028	9176
	F75	239	144	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,780	6188	3028	9216
	F75	245	150	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,725	6204	3071	9275
	F75	251	156	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,700	6238	3058	9296
	F75	263	168	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,620	6286	3092	9378
F-750 Severe Service 4x2	F75	179	84	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,665	6314	3017	9331
	F75	197	102	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,490	6394	3115	9509
	F75	203	108	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,470	6428	3101	9529
	F75	215	120	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,410	6489	3100	9589
	F75	221	126	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,390	6523	3087	9610
	F75	233	138	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,325	6583	3091	9674
	F75	239	144	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,285	6624	3091	9715
	F75	245	150	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,220	6640	3137	9777
	F75	251	156	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,200	6674	3124	9798
	F75	263	168	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,110	6723	3163	9886

Maximum Payload includes weight of driver, passengers and optional equipment.
Base curb weight is with standard equipment only.

F-650 SUPER DUTY CREW CAB MODEL LINEUP

SUPER DUTY F-SERIES MODEL	SERIES CODE	WHEELBASE Inches	CA Inches	STANDARD ENGINE liters	STANDARD TRANSMISSION	GVWR pounds	MAXIMUM PAYLOAD pounds	BASE CURB WEIGHT FRONT pounds	BASE CURB WEIGHT REAR pounds	BASE CURB WEIGHT TOTAL pounds
CREW CAB CHASSIS CAB										
F-650 ProLoader 4x2	F65	170	60	Powerstroke	Fuller FS-5205A 5-SPD Manual	22,000	13,795	5683	2518	8201
	F65	194	84	Powerstroke	Fuller FS-5205A 5-SPD Manual	22,000	13,635	5791	2572	8363
	F65	218	108	Powerstroke	Fuller FS-5205A 5-SPD Manual	22,000	13,545	5905	2550	8455
	F65	254	144	Powerstroke	Fuller FS-5205A 5-SPD Manual	22,000	13,355	6069	2573	8642
F-650 4x2	F65	182	72	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,445	5738	2813	8551
	F65	194	84	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,365	5803	2828	8631
	F65	212	102	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,240	5874	2882	8756
	F65	218	108	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,225	5906	2867	8773
	F65	230	120	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,180	5964	2856	8820
	F65	236	126	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,160	5995	2842	8837
	F65	248	138	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,095	6060	2845	8905
	F65	254	144	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,075	6092	2831	8923
	F65	260	150	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,025	6108	2867	8975
	F65	266	156	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	17,005	6139	2852	8991
	F65	278	168	Powerstroke	Fuller FS-5205A 5-SPD Manual	26,000	16,940	6188	2871	9059

Maximum Payload includes weight of driver, passengers and optional equipment.
Base curb weight is with standard equipment only.

F-750 SUPER DUTY CREW CAB MODEL LINEUP

SUPER DUTY F-SERIES MODEL	SERIES CODE	WHEELBASE Inches	CA Inches	STANDARD ENGINE liters	STANDARD TRANSMISSION	GVWR pounds	MAXIMUM PAYLOAD pounds	BASE CURB WEIGHT FRONT pounds	BASE CURB WEIGHT REAR pounds	BASE CURB WEIGHT TOTAL pounds
CREW CAB CHASSIS CAB										
F-750 4x2	F75	182	72	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	22,040	6017	2943	8960
	F75	194	84	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,945	6084	2969	9053
	F75	212	102	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,800	6157	3043	9200
	F75	218	108	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,780	6190	3030	9220
	F75	230	120	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,720	6251	3025	9276
	F75	236	126	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,700	6284	3012	9296
	F75	248	138	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,620	6352	3024	9376
	F75	254	144	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,605	6385	3010	9395
	F75	260	150	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,545	6402	3053	9455
	F75	266	156	Powerstroke	Fuller FS-5205A 5-SPD Manual	31,000	21,525	6435	3040	9475
F-750 Severe Service 4x2	F75	194	84	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,465	6517	3018	9535
	F75	212	102	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,305	6590	3101	9691
	F75	218	108	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,285	6624	3088	9712
	F75	230	120	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,225	6686	3086	9772
	F75	236	126	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,205	6720	3074	9794
	F75	248	138	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,120	6789	3088	9877
	F75	254	144	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,100	6822	3075	9897
	F75	260	150	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,040	6840	3120	9960
	F75	266	156	Caterpillar 7.2L 3126E	Fuller FS-6406A 6-SPD Manual	31,000	21,015	6874	3107	9981

Maximum Payload includes weight of driver, passengers and optional equipment.
Base curb weight is with standard equipment only.

DIMENSIONAL DATA
F-650/F-750 SUPER DUTY

TABLE A

FRONT RIDE HEIGHTS (FH)								STANDARD CAB		SUPER CAB		CREW CAB	
	GVWR	FRONT AXLE	SPRING CAPACITY	EMPTY mm [in] STD CAB	EMPTY mm [in] SUPER CAB	EMPTY mm [in] CREW CAB	LOADED mm [in] ALL CABS	CAB HEIGHT VALUE "A" EMPTY	CAB HEIGHT VALUE "A" LOADED	CAB HEIGHT VALUE "A" EMPTY	CAB HEIGHT VALUE "A" LOADED	CAB HEIGHT VALUE "A" EMPTY	CAB HEIGHT VALUE "A" LOADED
650 4x2	24,000 - 28,500	8,500	8,500	921.4 [36.3]	919.8 [36.2]	918.6 [36.2]	853.2 [33.6]	2358.9 [92.9]	2290.7 [90.2]	2366.1 [93.2]	2299.5 [90.5]	2378.0 [93.6]	2312.7 [91.0]
	25,000- 30,000	10,000	10,000	954.2 [37.6]	952.9 [37.5]	951.9 [37.5]	882.2 [34.7]	2391.7 [94.2]	2319.6 [91.3]	2399.2 [94.5]	2328.5 [91.7]	2411.4 [94.9]	2341.6 [92.2]
750 4x2	33,500	10,000	10,000	957.4 [37.7]	956.1 [37.6]	955.1 [37.6]	885.3 [34.9]	2394.9 [94.3]	2322.8 [91.4]	2402.4 [94.6]	2331.6 [91.8]	2414.5 [95.1]	2344.8 [92.3]
	35,500	12,000	12,000	969.2 [38.2]	968.0 [38.1]	967.2 [38.1]	885.6 [34.9]	2406.6 [94.7]	2323.1 [91.5]	2414.3 [95.1]	2331.9 [91.8]	2426.6 [95.5]	2345.0 [92.3]
	36,700	13,200	13,200	963.6 [37.9]	962.8 [37.9]	962.1 [37.9]	887.7 [34.9]	2401.1 [94.5]	2325.1 [91.5]	2409.1 [94.8]	2334.0 [91.9]	2421.5 [95.3]	2347.1 [92.4]
ProLoader	22,000 - 26,000	8,500	8,500	805.8 [31.7]	804.2 [31.7}	803.0 [31.6]	738.9 [29.1]	2243.3 [88.3]	2176.4 [85.7]	2250.5 [88.6]	2185.2 [86.0]	2262.4 [89.1]	2198.4 [86.5]

Reference pages 12 - 14 for "A" dimension location

TABL E B

REAR RIDE HEIGHT (RH)						
	GVWR	REAR AXLE	SPRING CAPACITY	EMPTY mm [in]	LOADED mm [in]	SUSP TYPE
650 4x2	24,000	15,500	15,500	959.8 [37.8]	890.6 [35.1]	MULTI-LEAF
	26,000	19,000	18,500	1000.6 [39.4]	903.8 [35.6	MULTI-LEAF
	27,000	19,000	18,500	969.6 [38.2	969.6 [38.2	Air (9.25")
	28,500	21,000	20,000	1004.6 [39.6]	895.0 [35.2]	MULTI-LEAF
750 4x2	28,500 - 36,700	21,000- 23,000	20,000- 23,000	972.8 [38.3]	972.8 [38.3]	Air (9.25")
	35,500- 36,700	23,500	23,500	1026.8 [40.4]	918.8 [36.2]	MULTI-LEAF
ProLoader	22,000	13,500	13,500	825.5 [32.5]	771.5 [30.4]	MULTI-LEAF
	24,000	15,500	15,500	898.2 [35.4]	801.4 [31.6]	MULTI-LEAF
	27,000	17,500	18,500	849.3 [33.4]	772.5 [30.4]	MULTI-LEAF
	20,500- 27,000	13,500- 17,500	12,000- 18,500	755.0 [29.7]	755.0 [29.7]	Air (5.3")

Front and rear ride heights are based off of standard equipment configuration.
ProLoader heights use Goodyear 245/70R 19.5 (Load Range:G) G159 and 9.125" x 3.062" x 0.312" (231.8mm x 77.8mmx8.0mm) frame rails.
650 4x2 heights use Goodyear 10R22.5 (Load Range:F) G159 and 10.125" x 3.062" x 0.312" (257.2mm x 77.8mm x 8.0mm) frame rails.
750 4x2 heights use Goodyear 10R22.5 (Load Range:G) G24 and 10.25" x 3.092" x 0.375" (260.4mm x 78.5mm x9.5mm) frame rails

TABLE C

REGULAR CAB					
WB	BA*	CF	C A	AF	OAL*
3,400 [134]	1,000 [39.4]	2,504 [98.6]	1,514 [59.6]	990 [39]	5,390 [212.2]
3,710 [146]	1,000 [39.4]	2,814 [110.8]	1,824 [71.8]	990 [39]	5,700 [224.4]
4,010 [158]	1,000 [39.4]	3,724 [146.6]	2,124 [83.6]	1,600 [63]	6,610 [260.2]
4,010 [158]	1,000 [39.4]	3,114 [122.6]	2,124 [83.6]	990 [39]	6,000 [236.2]
4,010 [158]	1,000 [39.4]	3,364 [132.4]	2,124 [83.6]	1,240 [49]	6,250 [246.1]
4,470 [176]	1,000 [39.4]	4,364 [171.8]	2,584 [101.7]	1,780 [70]	7,250 [285.4]
4,620 [182]	1,000 [39.4]	4,644 [182.8]	2,734 [107.6]	1,910 [75]	7,530 [296.5]
4,620 [182]	1,000 [39.4]	4,514 [177.7]	2,734 [107.6]	1,780 [70]	7,400 [291.3]
4,930 [194]	1,000 [39.4]	4,954 [195.0]	3,044 [119.8]	1,910 [75]	7,840 [308.7]
5,080 [200]	1,000 [39.4]	5,104 [200.9]	3,194 [125.7]	1,910 [75]	7,990 [314.6]
5,380 [212]	1,000 [39.4]	5,554 [218.7]	3,494 [137.6]	2,060 [81]	8,440 [332.3]
5,540 [218]	1,000 [39.4]	5,714 [225.0]	3,654 [143.9]	2,060 [81]	8,600 [338.6]
5,690 [224]	1,000 [39.4]	6,014 [236.8]	3,804 [149.8]	2,210 [87]	8,900 [350.4]
5,840 [230]	1,000 [39.4]	6,164 [242.7]	3,954 [155.7]	2,210 [87]	9,050 [356.3]
6,150 [242]	1,000 [39.4]	6,804 [267.9]	4,264 [167.9]	2,540 [100]	9,690 [381.5]
6,600 [260]	1,000 [39.4]	7,764 [305.7]	4,714 [185.6]	3,050 [120]	10,650 [419.3]
SUPER CAB					
3,940 [155]	1,000 [39.4]	2,515 [99.0]	1,525 [60.0]	990 [39]	5,930 [233.5]
4,240 [167]	1,000 [39.4]	2,815 [110.8]	1,825 [71.9]	990 [39]	6,230 [245.3]
4,550 [179]	1,000 [39.4]	3,375 [132.9]	2,135 [84.1]	1,240 [49]	6,790 [267.3]
4,550 [179]	1,000 [39.4]	3,735 [147.0]	2,135 [84.1]	1,600 [63]	7,150 [281.5]
4,550 [179]	1,000 [39.4]	3,125 [123.0]	2,135 [84.1]	990 [39]	6,540 [257.5]
5,000 [197]	1,000 [39.4]	4,365 [171.9]	2,585 [101.8]	1,780 [70]	7,780 [306.3]
5,160 [203]	1,000 [39.4]	4,525 [178.1]	2,745 [108.1]	1,780 [70]	7,940 [312.6]
5,160 [203]	1,000 [39.4]	4,655 [183.3]	2,745 [108.1]	1,910 [75]	8,070 [317.7]
5,460 [215]	1,000 [39.4]	4,955 [195.1]	3,045 [119.9]	1,910 [75]	8,370 [329.5]
5,610 [221]	1,000 [39.4]	5,105 [201.0]	3,195 [125.8]	1,910 [75]	8,520 [335.4]
5,920 [233]	1,000 [39.4]	5,565 [219.1]	3,505 [138.0]	2,060 [81]	8,980 [353.5]
6,070 [239]	1,000 [39.4]	5,715 [225.0]	3,655 [143.9]	2,060 [81]	9,130 [359.4]
6,220 [245]	1,000 [39.4]	6,015 [236.8]	3,805 [149.8]	2,210 [87]	9,430 [371.3]
6,380 [251]	1,000 [39.4]	6,175 [243.1]	3,965 [156.1]	2,210 [87]	9,590 [377.6]
6,680 [263]	1,000 [39.4]	6,805 [267.9]	4,265 [167.9]	2,540 [100]	10,220 [402.4]
7,140 [281]	1,000 [39.4]	7,775 [306.1]	4,725 [186.0]	3,050 [120]	11,190 [440.6]
CREW CAB					
4,320 [170]	1,000 [39.4]	2,526 [99.4]	1,536 [60.5]	990 [39]	6,310 [248.4]
4,620 [182]	1,000 [39.4]	2,826 [111.3]	1,836 [72.3]	990 [39]	6,610 [260.2]
4,930 [194]	1,000 [39.4]	3,386 [133.3]	2,146 [84.5]	1,240 [49]	7,170 [282.3]
4,930 [194]	1,000 [39.4]	3,746 [147.5]	2,146 [84.5]	1,600 [63]	7,530 [296.5]
4,930 [194]	1,000 [39.4]	3,136 [123.5]	2,146 [84.5]	990 [39]	6,920 [272.4]
5,380 [212]	1,000 [39.4]	4,376 [172.3]	2,596 [102.2]	1,780 [70]	8,160 [321.3]
5,540 [218]	1,000 [39.4]	4,536 [178.6]	2,756 [108.5]	1,780 [70]	8,320 [327.6]
5,540 [218]	1,000 [39.4]	4,666 [183.7]	2,756 [108.5]	1,910 [75]	8,450 [332.7]
5,840 [230]	1,000 [39.4]	4,966 [195.5]	3,056 [120.3]	1,910 [75]	8,750 [344.5]
5,990 [236]	1,000 [39.4]	5,116 [201.4]	3,206 [126.2]	1,910 [75]	8,900 [350.4]
6,300 [248]	1,000 [39.4]	5,576 [219.5]	3,516 [138.4]	2,060 [81]	9,360 [368.5]
6,450 [254]	1,000 [39.4]	5,726 [225.4]	3,666 [144.3]	2,060 [81]	9,510 [374.4]
6,450 [254]	1,000 [39.4]	6,106 [240.4]	3,666 [144.3]	2,440 [96]	9,890 [389.4]
6,600 [260]	1,000 [39.4]	6,026 [237.2]	3,816 [150.2]	2,210 [87]	9,810 [386.2]
6,760 [266]	1,000 [39.4]	6,186 [243.5]	3,976 [156.5]	2,210 [87]	9,970 [392.5]
7,060 [278]	1,000 [39.4]	6,816 [268.3]	4,276 [168.3]	2,540 [100]	10,600 [417.3]

*WITH FRAME EXTENSIONS ADD 485 [19/1] TO THE BA & OAL. THIS NUMBER IS TO THE BUMPER FACE. THE BUMPER LIP EXTENDS AN ADDITIONAL 12.7 [0.5].

NOTE — [ ] DIMENSIONS ARE INCHES.

F-650/F-750 SUPER DUTY SPRING CAPACITIES

FRONT SPRING IDENTIFICATION AND CAPACITY RATINGS

SUPER DUTY		TOTAL NO. OF LEAVES	TOTAL SPRING PACK THICKNESS AT PAD - IN	ONE SPRING CAPACITY AT PAD - LBS	ONE SPRING CAPACITY AT GROUND - LBS	FRONT SUSPENSION CAPACITY AT GROUND i.e. SPRINGS/BRACKETS LBS
F650	F750					
S	-	2	2.44	3,825	4,250	8,500
O*	S	2	2.65	4,500	5,000	10,000
-	O	2	2.65	5,400	6,000	12,000
-	O	2	2.65	5,490	6,600	13,200

*NOT AVAILABLE F650 ProLoader

REAR SPRING IDENTIFICATION AND CAPACITY RATINGS

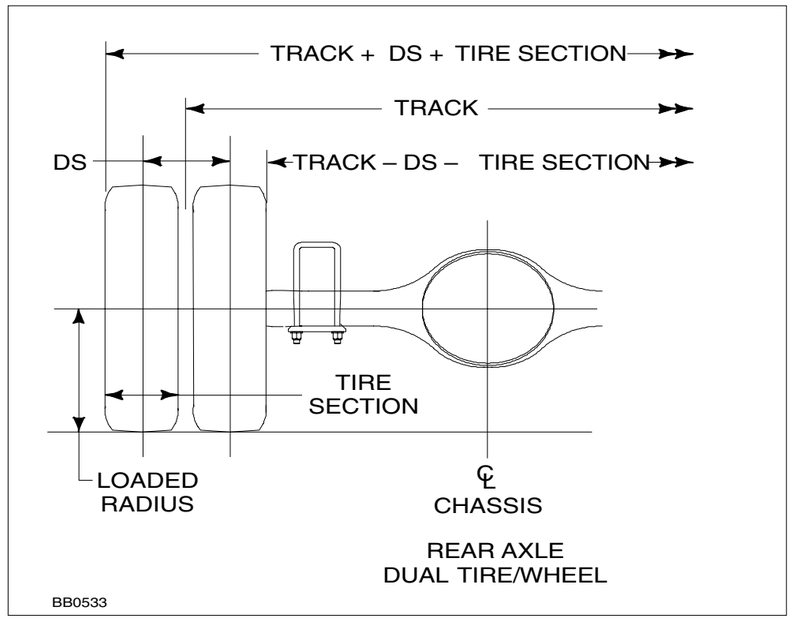
		PER AXLE END						
SUPER DUTY		TOTAL NO. OF LEAVES MAIN SPRING	TOTAL SPRING PACK THICKNESS AT PAD - IN	MAIN SPRING CAPACITY AT PAD - LBS	MAIN SPRING CAPACITY AT GROUND - LBS	AUXILIARY SPRING CAPACITY AT PAD - LBS (1)	MAIN & AUXILIARY COMBINATION CAPACITY AT PAD - LBS	FULL SUSPENSION CAPACITY AT GROUND i.e. SPRINGS/BRACKETS LBS
F650	F750							
O	-	10	4.86	6,800	7,750	4500(1)	6,800	15,500
S	-	10	6.31	8,200	9,250	4500(1)	8,200	18,500
O	-	12	6.31	8,200	10,000	4500(1)	8,200	20,000
-	S	12	6.65	10,400	11,750	4500(1)	10,400	23,500
ProLoader								
S	-	9	4.82	5,450	6,750	-	-	13,500
O	-	10	6.31	8,200	9,250	-	-	18,500
O	-	10	4.86	6,800	7,750	-	-	15,500

(1) AUXILIARY SPRING IS FOR LOAD STABILIZATION ONLY

REAR AIR SUSPENSION IDENTIFICATION AND CAPACITY RATINGS

		PER AXLE END				
SUPER DUTY		AIR SPRING DIMENSIONS	MAIN SPRING CAPACITY AT PAD LBS	MAIN SPRING CAPACITY AT GROUND LBS	PRESSURE AT RATED LOAD PSI	FULL SUSPENSION CAPACITY AT GROUND LBS
F650	F750					
O	-	16.35" High x 12.28" Diameter	8,150	9,250	62	18,500
O	O	16.35" High x 12.28" Diameter	8,900	10,000	68	20,000
ProLoader						
O	-	15.28" High x 10.60" Diameter		6,000	53	12,000
O	-	15.28" High x 10.60" Diameter	6,650	7,750	53	15,500
O	-	15.28" High x 12.28" Diameter	8,150	9,250	62	18,500

F-650/F-750 SUPER DUTY
AXLE TRACK



FRONT AXLE TRACK

DISC WHEEL	WHEEL TYPE	DISC THICKNESS mm [in]	WHEEL OFFSET mm [in]	FRONT AXLE TRACK - mm BRAKE TYPE AIR	FRONT AXLE TRACK - mm BRAKE TYPE HYD
19.5X6.75 STL	8H	11.1 [0.44]	142 [5.60]	2,108 [83.0]	-
19.5X7.5 ALUM	8H	22.2 [0.88]	159 [6.25]	2,097 [82.6]	-
19.5X7.5 ALUM	10H	22.2 [0.88]	159 [6.25]	-	2,061 [81.2]
22.5X7.5 STL	10H	9.5 [0.38]	164 [6.44]	2,032 [80.0]	2,026 [79.8]
22.58.25 STL	10H	11.1 [0.44]	168 [6.62]	2,026 [79.8]	2,020 [79.5]
22.58.25 ALUM	10H	22.5 [0.89]	167 [6.59]	2,051 [80.7]	2,044 [80.5]

REAR AXLE TRACK

DISC WHEEL	WHEEL TYPE	DISC THICKNESS mm [in]	WHEEL OFFSET mm [in]	DUAL SPACE (DS) mm [in]	REAR AXLE TRACK - mm / Dana® Spicer® Axles: 203090S, 20390D, 21060D, 23082T BRAKE TYPE AIR	203090S, 20390D, 21060D, 23082T BRAKE TYPE HYD	17060S, 19060S, 21060S, 19055T, M190-T, M210-T BRAKE TYPE AIR	17060S, 19060S, 21060S, 19055T, M190-T, M210-T BRAKE TYPE HYD	S135-S, S150S BRAKE TYPE AIR	S135-S, S150S BRAKE TYPE HYD
19.5X6.75 STL	8H	11.1 [0.44]	142 [5.60]	284 [11.2]	-	-	-	1,834 [72.2]	-	1,803 [71.0]
19.5X7.5 ALUM	8H	22.2 [0.88]	159 [6.25]	318 [12.5]	-	-	-	1,857 [73.1]	-	1,826 [71.9]
19.5X7.5 ALUM	10H	22.2 [0.88]	159 [6.25]	318 [12.5]	-	-	1,857 [73.1]	-	-	-
22.5X7.5 STL	10H	9.5 [0.38]	164 [6.44]	327 [12.9]	1,834 [72.2]	-	1,832 [72.1]	1,832 [72.1]	-	-
22.5X8.25 STL	10H	11.1 [0.44]	168 [6.62]	336 [13.2]	1,837 [72.3]	-	1,835 [72.2]	1,835 [72.2]	-	-
22.5X8.25 ALUM	10H	22.5 [0.89]	167 [6.59]	335 [13.2]	1,862 [73.3]	-	1,860 [73.2]	1,860 [73.2]	-	-

F-650/F-750 SUPER DUTY
TIRE DIMENSION TABLE

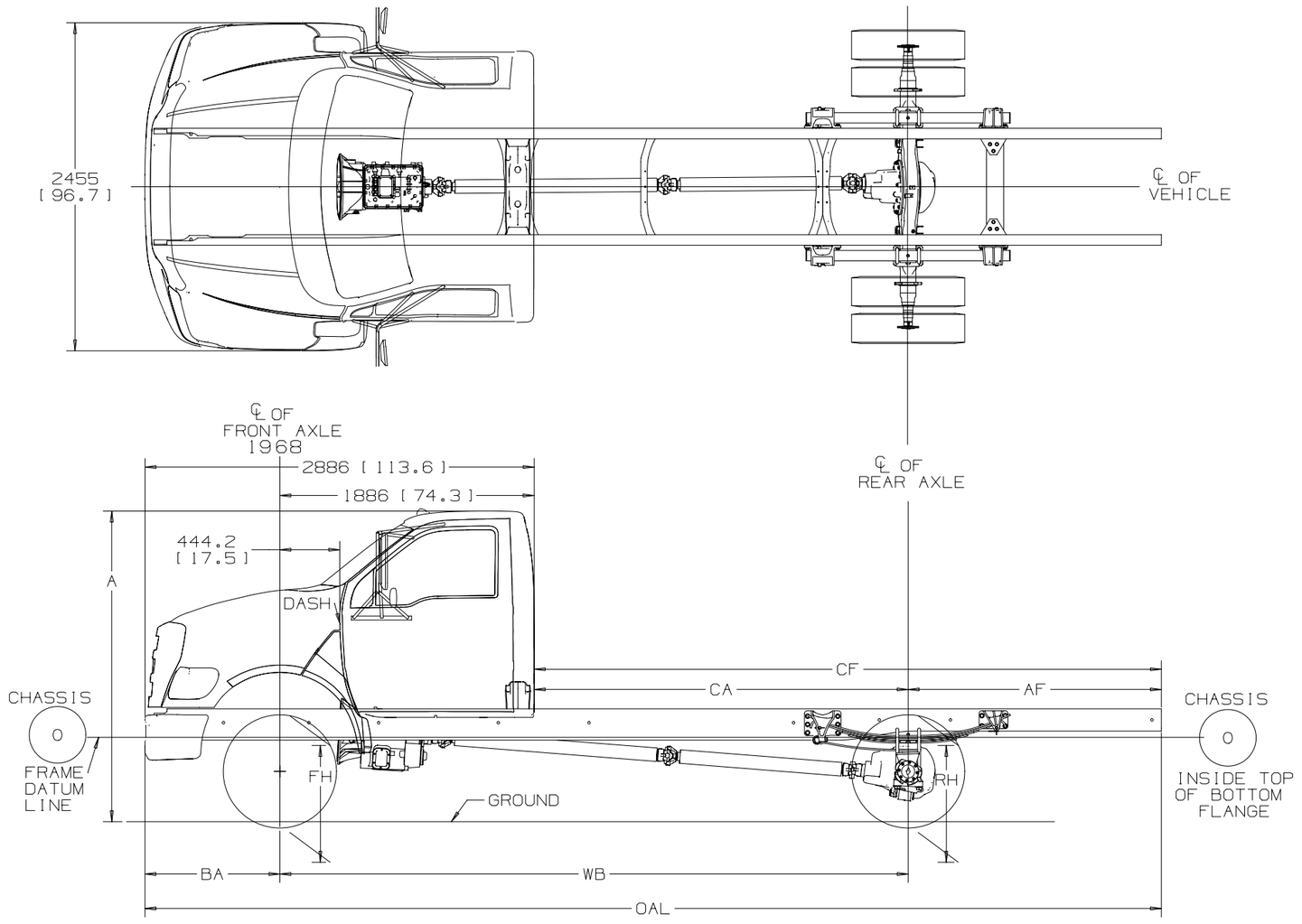
TIRE SIZE	DESC.	MAX OUTSIDE DIAMETER mm [in]	LOADED RADIUS mm [in]	MAX. TIRE SECTION mm [in]	REVS PER MILE
9R22.5 F	G159	975 [38.4]	457 [18.0]	251 [9.9]	541
9R22.5 F	G124	980 [38.6]	460 [18.1]	251 [9.9]	538
10R22.5 F	G159	1019 [40.1]	478 [18.8]	279 [11.0]	518
10R22.5 F	G186	1026 [40.4]	480 [18.9]	279 [11.0]	514
10R22.5 F	G124	1026 [40.4]	483 [19.0]	279 [11.0]	514
10R22.5 F	XDE M/S	1021 [40.2]	478 [18.8]	287 [11.3]	515
10R22.5 F	XZE	1019 [40.1]	475 [18.7]	287 [11.3]	520
10R22.5 G	G159	1019 [40.1]	478 [18.8]	279 [11.0]	518
10R22.5 G	G124	1026 [40.4]	483 [19.0]	279 [11.0]	514
10R22.5 G	XDE M/S	1021 [40.2]	478 [18.8]	287 [11.3]	515
10R22.5 G	XZE	1019 [40.1]	475 [18.7]	287 [11.3]	520
11R22.5 G	G159	1054 [41.5]	493 [19.4]	307 [12.1]	501
11R22.5 G	G164 RTD	1062 [41.8]	498 [19.6]	302 [11.9]	499
11R22.5 G	G397 LHS	1049 [41.3]	493 [19.4]	302 [11.9]	503
11R22.5 G	G302 FED	1067 [42.0]	500 [19.7]	302 [11.9]	497
11R22.5 G	G362	1067 [42.0]	503 [19.8]	302 [11.9]	497
11R22.5 G	G328	1067 [42.0]	503 [19.8]	302 [11.9]	497
11R22.5 G	G167A	1067 [42.0]	500 [19.7]	300 [11.8]	497
11R22.5 G	XDE M/S	1057 [41.6]	490 [19.3]	315 [12.4]	498
11R22.5 G	XZA2	1049 [41.3]	490 [19.3]	305 [12.0]	501
11R22.5 G	XDA2	1064 [41.9]	495 [19.5]	305 [12.0]	499
11R22.5 G	XDN	1064 [41.9]	495 [19.5]	305 [12.0]	500
11R22.5 G	XZA-1+	1049 [41.3]	490 [19.3]	305 [12.0]	501
11R22.5 G	XDHT	1064 [41.9]	495 [19.5]	305 [12.0]	500
11R22.5 G	XZE	1044 [41.1]	490 [19.3]	315 [12.4]	501
11R22.5 H	G167A	1067 [42.0]	500 [19.7]	300 [11.8]	497
11R22.5 H	G177	1074 [42.3]	500 [19.7]	305 [12.0]	493
11R22.5 H	G286	1064 [41.9]	498 [19.6]	305 [12.0]	496
11R22.5 H	G159	1054 [41.5]	493 [19.4]	307 [12.1]	501
11R22.5 H	G186	1062 [41.8]	495 [19.5]	305 [12.0]	497
11R22.5 H	G164 RTD	1062 [41.8]	498 [19.6]	302 [11.9]	499
11R22.5 H	G244 MSD	1067 [42.0]	503 [19.8]	302 [11.9]	497
11R22.5 H	XZE	1052 [41.4]	490 [19.3]	315 [12.4]	497
12R22.5 H	G286	1092 [43.0]	508 [20.0]	318 [12.5]	483
12R22.5 H	G159	1090 [42.9]	511 [20.1]	318 [12.5]	484
12R22.5 H	G167A	1097 [43.2]	513 [20.2]	323 [12.7]	483
12R22.5 H	G124	1095 [43.1]	513 [20.2]	315 [12.4]	482
12R22.5 H	G244 MSD	1105 [43.5]	518 [20.4]	312 [12.3]	480
12R22.5 H	G177	1110 [43.7]	521 [20.5]	312 [12.3]	478

TIRE SIZE	DESC.	MAX OUTSIDE DIAMETER mm [in]	LOADED RADIUS mm [in]	MAX. TIRE SECTION mm [in]	REVS PER MILE
225/70R19.5 F	G159	815 [32.1]	381 [15.0]	246 [9.7]	644
235/80R22.5 G	XZE	953 [37.5]	442 [17.4]	259 [10.2]	554
245/70R19.5 F	G159	838 [33.0]	389 [15.3]	277 [10.9]	629
245/70R19.5 F	G124	846 [33.3]	394 [15.5]	254 [10.0]	626
245/70R19.5 F	XZE	851 [33.5]	384 [15.1]	272 [10.7]	621
245/70R19.5 G	G159	838 [33.0]	389 [15.3]	277 [10.9]	629
245/70R19.5 G	G124	848 [33.4]	396 [15.6]	277 [10.9]	626
245/70R19.5 H	XDE M/S	859 [33.8]	399 [15.7]	267 [10.5]	614
245/70R19.5 H	XZE	853 [33.6]	396 [15.6]	269 [10.6]	619
245/75R22.5 G	G124	947 [37.3]	442 [17.4]	267 [10.5]	557
245/75R22.5 G	G159	940 [37.0]	437 [17.2]	264 [10.4]	561
255/70R22.5 H	G124	932 [36.7]	434 [17.1]	272 [10.7]	564
255/70R22.5 H	G159	930 [36.6]	434 [17.1]	269 [10.6]	568
255/80R22.5 G	XZE	980 [38.6]	455 [17.9]	279 [11.0]	538
265/70R19.5 G	G159	864 [34.0]	404 [15.9]	279 [11.0]	606
265/75R22.5 G	G124	983 [38.7]	462 [18.2]	277 [10.9]	537
265/75R22.5 G	G159	983 [38.7]	457 [18.0]	274 [10.8]	537
275/80R22.5 G	XZA2	1016 [40.0]	472 [18.6]	305 [12.0]	518
275/80R22.5 G	XDA2	1034 [40.7]	480 [18.9]	305 [12.0]	514
275/80R22.5 G	XZA-1+	1021 [40.2]	475 [18.7]	305 [12.0]	516
275/80R22.5 G	XDHT	1034 [40.7]	480 [18.9]	305 [12.0]	513
275/80R22.5 G	XZE	1008 [39.7]	467 [18.4]	310 [12.2]	516
275/80R22.5 G	XD4	1036 [40.8]	483 [19.0]	305 [12.0]	509
295/75R22.5 G	G167A	1036 [40.8]	483 [19.0]	302 [11.9]	512
295/75R22.5 G	G159	1026 [40.4]	475 [18.7]	310 [12.2]	514
295/75R22.5 G	G164 RTD	1029 [40.5]	485 [19.1]	307 [12.1]	515
295/75R22.5 G	G372 LHD	1039 [40.9]	485 [19.1]	307 [12.1]	508
295/75R22.5 G	G397 LHS	1019 [40.1]	475 [18.7]	307 [12.1]	518
295/75R22.5 G	G362	1036 [40.8]	485 [19.1]	307 [12.1]	512
295/75R22.5 G	G328	1036 [40.8]	485 [19.1]	307 [12.1]	512
295/80R22.5 H	G391	1049 [41.3]	333 [13.1]	490 [19.3]	503

F-650/F-750 SUPER DUTY
WHEEL & TIRE RATINGS

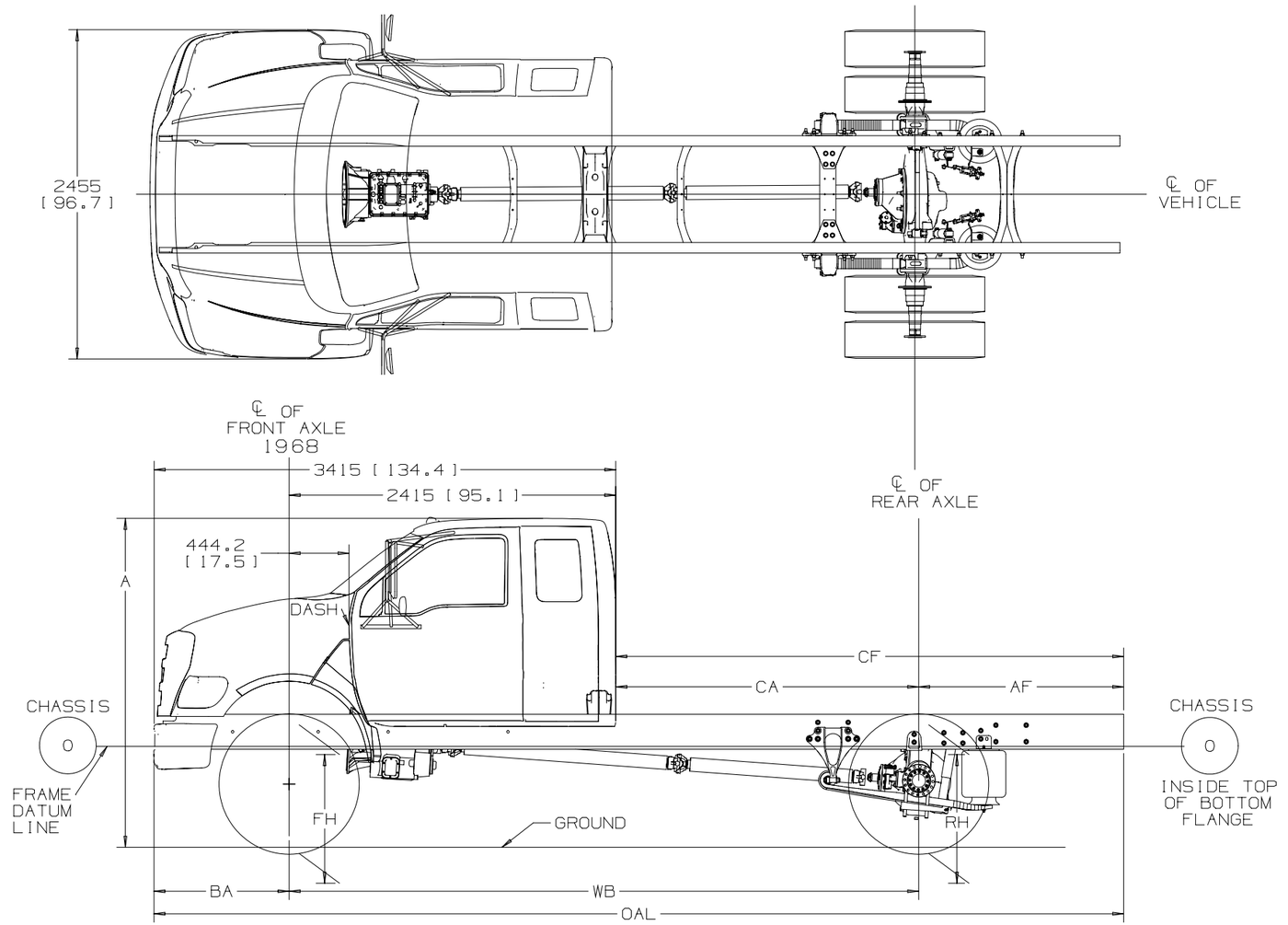
DESCRIPTION		GOODYEAR				MICHELIN			
		FRONT		REAR		FRONT		REAR	
WHEEL	TIRE	LOAD/AXLE		LOAD/AXLE		LOAD/AXLE		LOAD/AXLE	
		LBS	PSI	LBS	PSI	LBS	PSI	LBS	PSI
19.5x6.75 STL	225/70R19.5 F	7,280	95	13,660	95	-	-	-	-
	245/70R19.5 F	8,160	85	15,500	85	8,160	90	15,440	90
	245/70R19.5 G	9,090	100	17,500	100	-	-	-	-
	245/70R19.5 H	-	-	-	-	9,630	115	18,120	115
	265/70R19.5 G	10,000	115	19,440	115	-	-	-	-
19.5x7.50 ALUM	245/70R19.5 F	8,160	85	15,500	85	8,160	90	15,440	90
	245/70R19.5 G	9,090	100	17,500	100	-	-	-	-
	245/70R19.5 H	-	-	-	-	9,880	120	18,700	115
	265/70R19.5 G	10,710	120	19,440	115	-	-	-	-
22.5x7.50 STL	9R22.5 F	9,000	105	15,800	95	-	-	-	-
	10R22.5 F	10,300	100	19,500	100	10,300	95	18,960	95
	10R22.5 G	11,360	115	21,000	115	11,360	105	20,320	105
	11R22.5 G	12,350	105	23,000	105	12,350	100	23,000	100
	11R22.5 H	12,400	120	23,200	110	12,400	115	23,800	115
	235/80R22.5 G	-	-	-	-	9,350	90	17,640	90
	245/75R22.5 G	9,350	110	17,640	110	-	-	-	-
	255/70R22.5 H	11,020	115	20,280	115	-	-	-	-
	255/80R22.5 G	-	-	-	-	10,410	95	19,240	95
	265/75R22.5 G	10,410	110	19,220	100	-	-	-	-
	275/80R22.5 G	-	-	-	-	12,350	100	22,700	100
22.5x8.25 STL	11R22.5 G	12,350	105	23,000	105	12,350	100	23,000	100
22.5x8.25 ALUM	11R22.5 H	13,220	120	23,200	110	13,220	115	23,800	115
	12R22.5 H	14,600	115	27,000	115	-	-	-	-
	255/70R22.5 H	11,020	115	20,280	115	-	-	-	-
	255/80R22.5 G	-	-	-	-	10,410	95	19,240	95
	265/75R22.5 G	10,410	110	19,220	100	-	-	-	-
	275/80R22.5 G	-	-	-	-	12,350	100	22,700	100
	295/75R22.5 G	12,350	110	22,700	100	-	-	-	-
	295/80R22.5 H	14,600	120	27,760	120	-	-	-	-

DIMENSIONAL DATA
F-650 SUPER DUTY ProLoader
REGULAR CAB CHASSIS



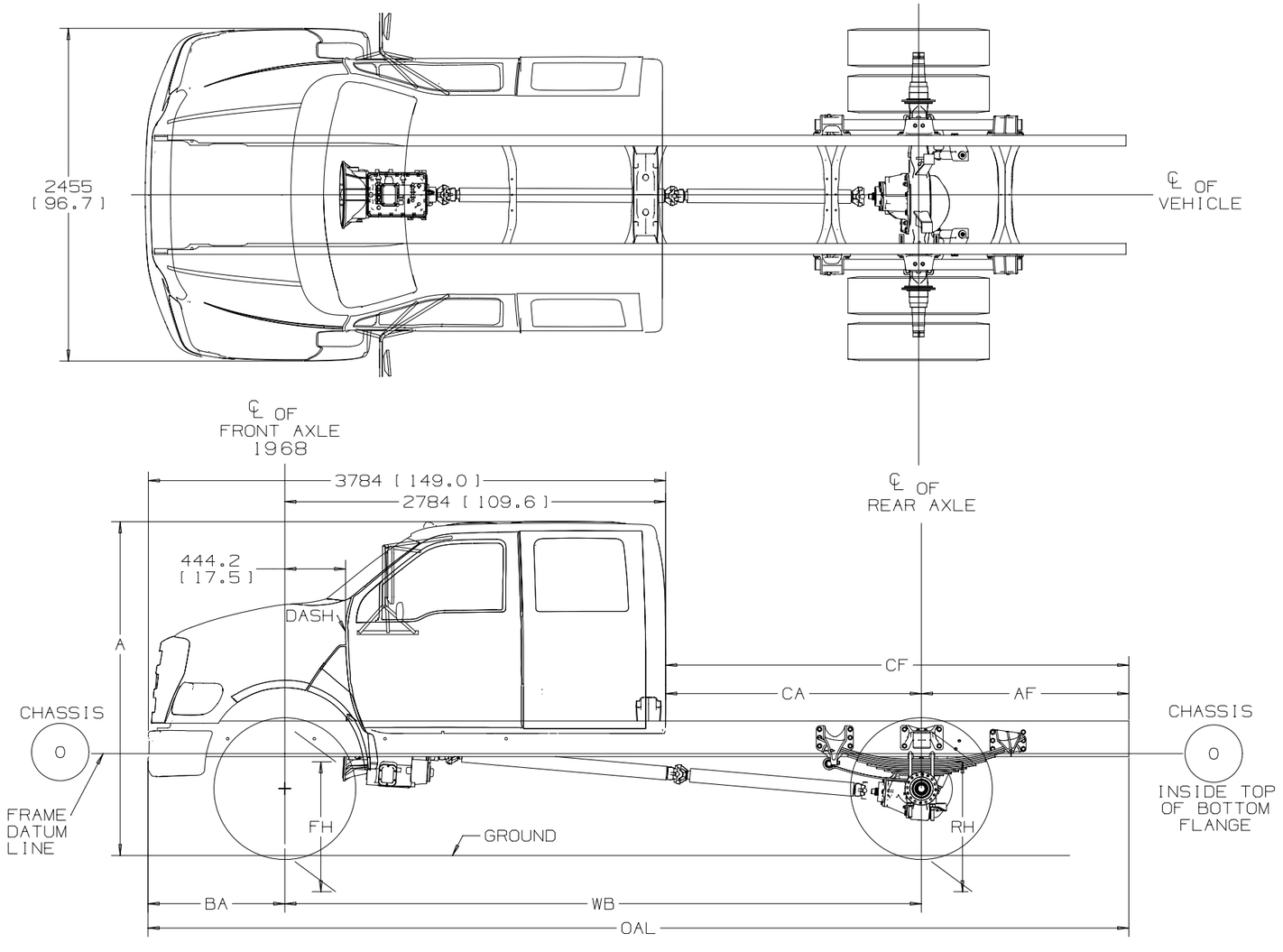
NOTES — [ ] DIMENSIONS ARE INCHES.
— **WB, BA, CA, AF, CF, OAL** DIMENSIONS SHOWN ON PAGE 230, TABLE C.
— **FH, RH,** & **A** SHOWN ON PAGE 230, TABLES A AND B.

DIMENSIONAL DATA
F-650 SUPER DUTY DOCK HEIGHT
SUPER CAB CHASSIS



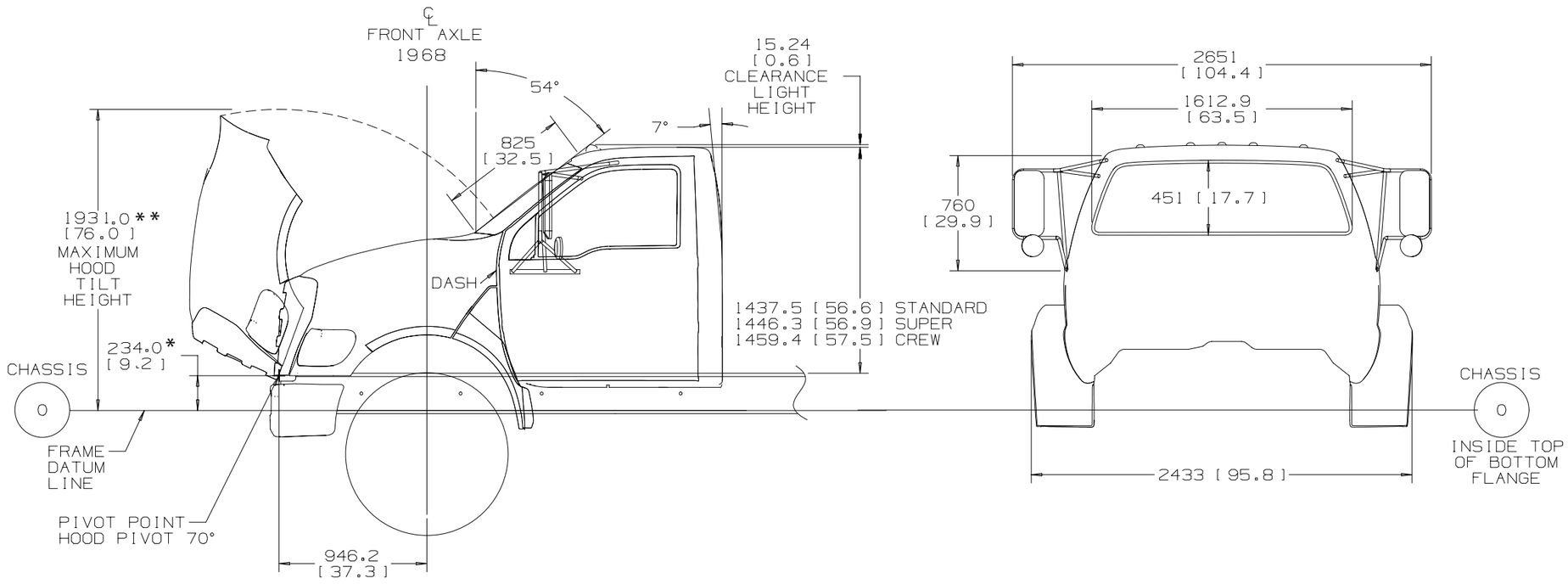
NOTES — [ ] DIMENSIONS ARE INCHES.
— **WB, BA, CA, AF, CF, OAL** DIMENSIONS SHOWN ON PAGE 230, TABLE C.
— **FH, RH,** & **A** SHOWN ON PAGE 230, TABLES A AND B.

DIMENSIONAL DATA
F-750 SUPER DUTY
CREW CAB CHASSIS



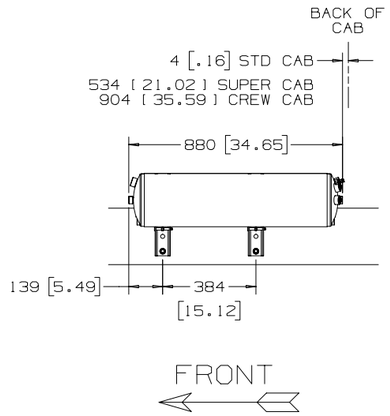
NOTES — [ ] DIMENSIONS ARE INCHES.
— **WB, BA, CA, AF, CF, OAL** DIMENSIONS SHOWN ON PAGE 230, TABLE C.
— **FH, RH,** & **A** SHOWN ON PAGE 230, TABLES A AND B.

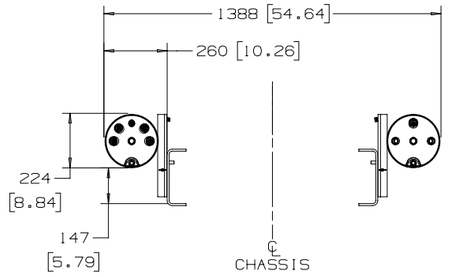
DIMENSIONAL DATA
F-650/F-750 SUPER DUTY
HOOD TILT & BACK OF CAB

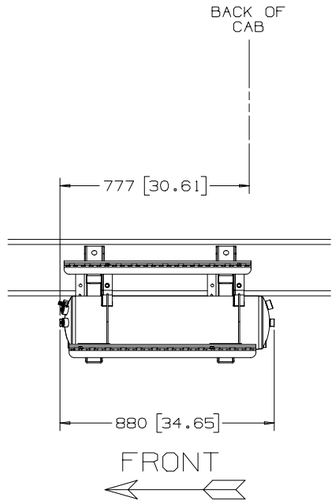


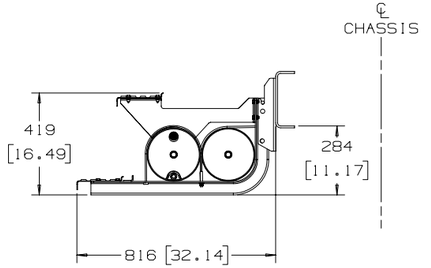
NOTES — [ ] DIMENSIONS ARE INCHES.
— TOP-OF-FRAME TO TOP-OF-CAB HEIGHT BASED OFF OF 10.125" X 3.062" X 0.312" (257.2MM X 77.8MM X 8.0MM) FRAME RAILS.
* — WITH FIXED GRILL HOOD AND CROSSMEMBER, PIVOT POINT HEIGHT IS 274 [10.8].
* * — WITH FIXED GRILL HOOD AND CROSSMEMBER, MAXIMUM HOOD TILT HEIGHT IS 1959 [77.1]

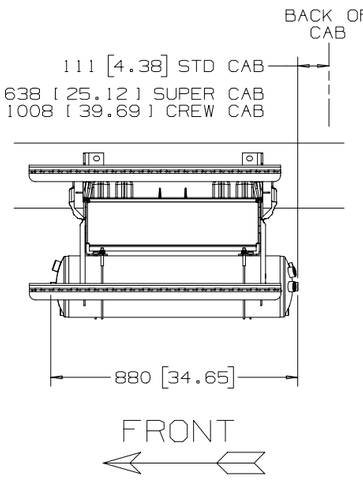
F-650/F-750 SUPER DUTY
AIR TANK LOCATION

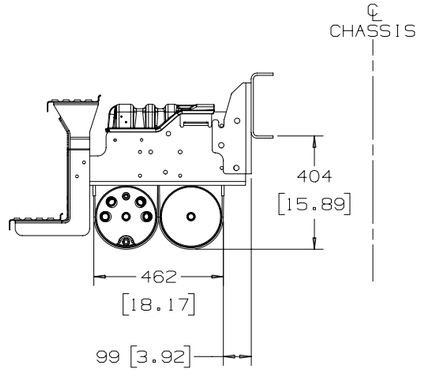






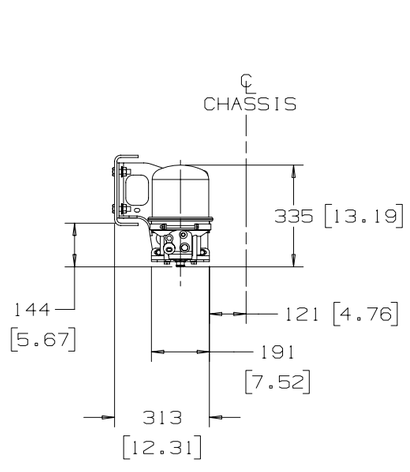


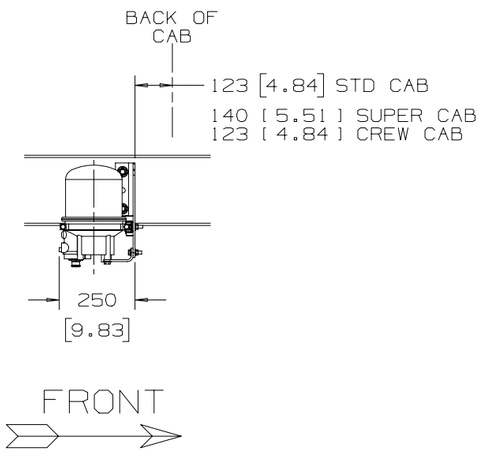


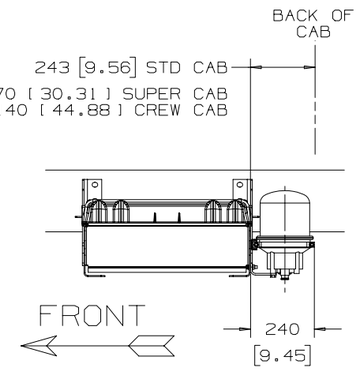


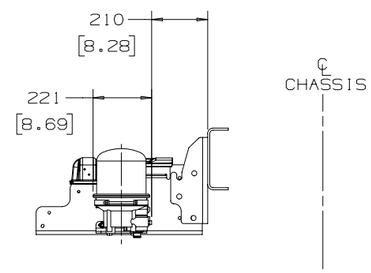
NOTE — [ ] DIMENSIONS ARE INCHES.

F-650/F-750 SUPER DUTY
AIR DRYER LOCATION



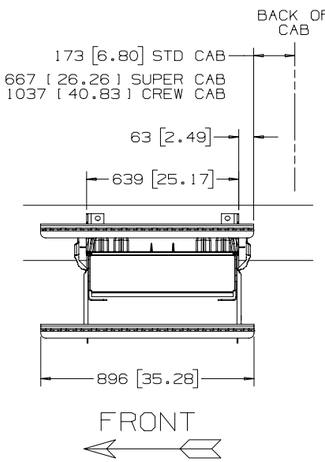


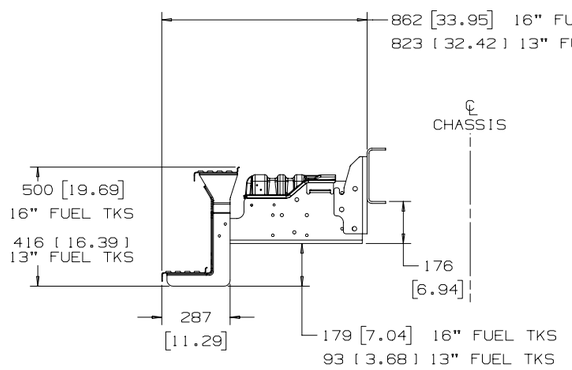




NOTE — [ ] DIMENSIONS ARE INCHES.

F-650/F-750 SUPER DUTY
BATTERY BOX LOCATION

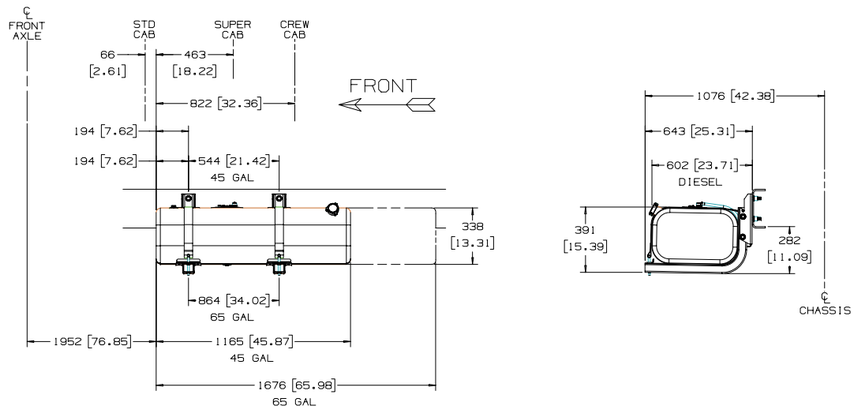




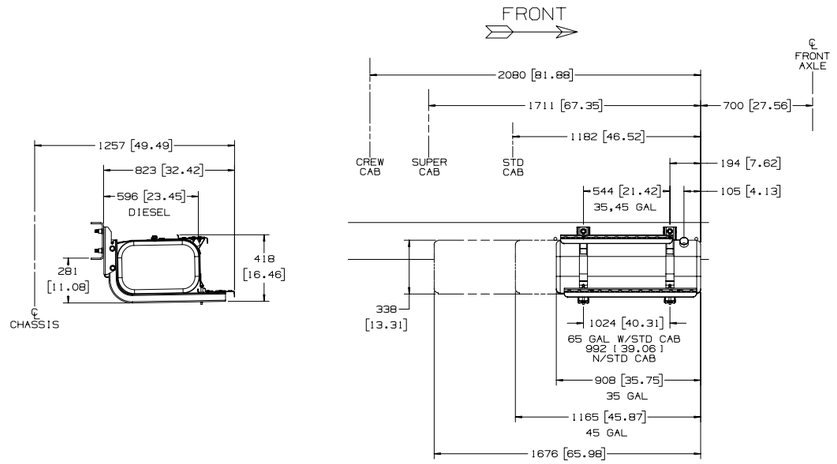
NOTE — [ ] DIMENSIONS ARE INCHES.

F-650/F-750 SUPER DUTY ProLoader
FUEL TANK LOCATION

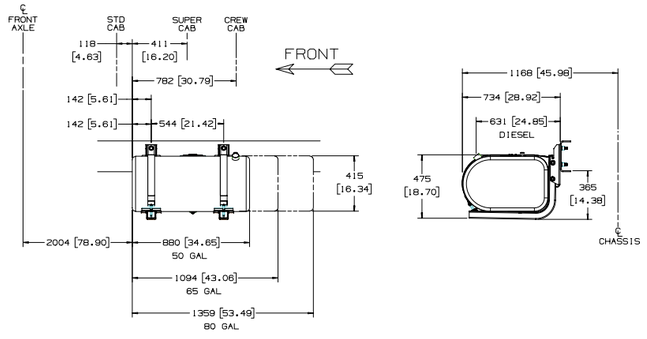
LEFT SIDE SHALLOW FUEL TANKS



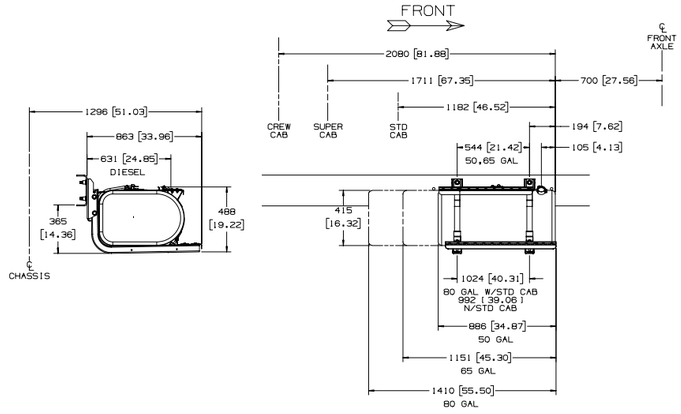
RIGHT SIDE SHALLOW FUEL TANKS



LEFT SIDE DEEP FUEL TANKS

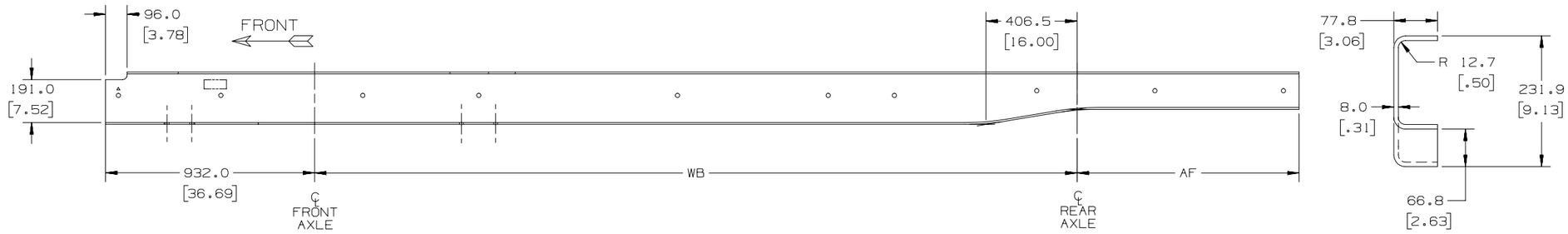


RIGHT SIDE DEEP FUEL TANKS



NOTE — [ ] DIMENSIONS ARE INCHES.

F-650 SUPER DUTY ProLoader
FRAME



REGULAR CAB		SUPER CAB		CREW CAB	
WB mm [in]	AF mm [in]	WB mm [in]	AF mm [in]	WB mm [in]	AF mm [in]
3,400 [134]	990 [39]	3,940 [155]	990 [39]	4,320 [170]	990 [39]
4,010 [158]	1,600 [63]	4,550 [179]	1,600 [63]	4,930 [194]	1,600 [63]
4,620 [182]	1,910 [75]	5,160 [203]	1,910 [75]	5,540 [218]	1,910 [75]
4,930 [194]	1,910 [75]	6,070 [239]	2,060 [81]	6,450 [254]	2,440 [96]
5,540 [218]	2,060 [81]	-	-	-	-
6,150 [242]	2,540 [100]	-	-	-	-

THICKNESS SIDEMEMBER mm [in]	SECTION MODULUS CUBIC INCH	TYPE FRAME	MAX GVWR LBS
8.0 [0.312]	10.74	9.125"	29,000

FRAME MODIFICATION RECOMMENDATIONS

NO HOLES PERMITTED IN SIDE MEMBER FLANGES

HOLES TO MOUNT BRACKETS, OUTRIGGERS AND SUPPORTS MAY BE DRILLED IN THE VERTICAL SIDE RAIL WEB WITH THE FOLLOWING RESTRICTIONS:

MATERIAL BETWEEN EDGE OF HOLE AND INSIDE OF UPPER OR LOWER FLANGE MUST NOT BE LESS THAN 2.00”.

THE MINIMUM EDGE DISTANCE BETWEEN ANY TWO HOLES UP TO 5/8” IN DIAMETER MUST BE 1.00”. FOR HOLES LARGER THAN 5/8” IN DIAMETER THE MINIMUM EDGE DISTANCE MUST BE 1.5 TIMES THE DIAMETER OF THE LARGEST HOLE.

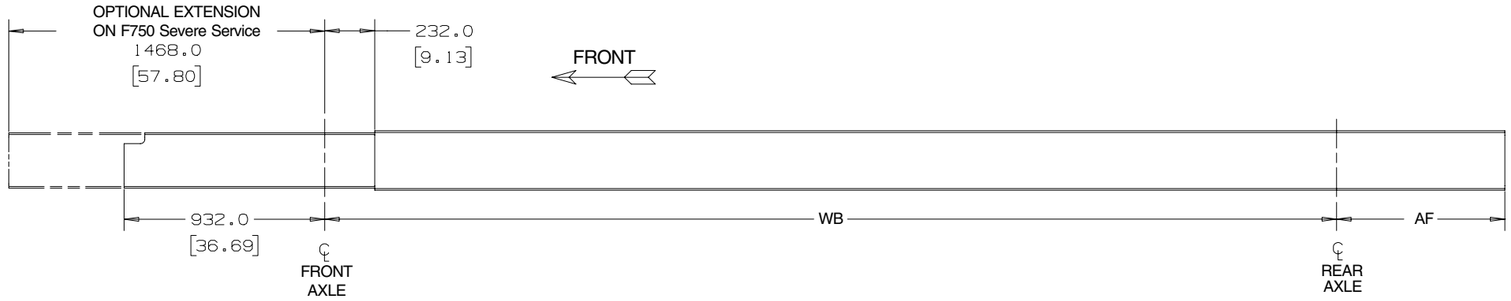
NO HOLES TO EXCEED .75” IN DIAMETER.

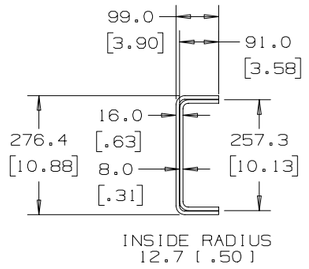
ADDITION OF HOLES TO CROSSMEMBER IS NOT RECOMMENDED.

WELDING OF CROSSMEMBER IS NOT RECOMMENDED.

NO WELDING PERMITTED ON FRAME SIDE MEMBERS.

F-750 SUPER DUTY
WITH REINFORCEMENT — FRAME





F-750 WITH REINFORCEMENT

REGULAR CAB		SUPER CAB		CREW CAB	
WB mm [in]	AF mm [in]	WB mm [in]	AF mm [in]	WB mm [in]	AF mm [in]
3,710 [146]*	990 [39]*	4,240 [167]*	990 [39]*	4,620 [182]*	990 [39]*
4,010 [158]	990 [39]	4,550 [179]	990 [39]	4,930 [194]	990 [39]
4,010 [158]	1,240 [49]	4,550 [179]	1,240 [49]	4,930 [194]	1,240 [49]
4,470 [176]	1,780 [70]	5,000 [197]	1,780 [70]	5,380 [212]	1,780 [70]
4,620 [182]	1,780 [70]	5,160 [203]	1,780 [70]	5,540 [218]	1,780 [70]
4,930 [194]	1,910 [75]	5,460 [215]	1,910 [75]	5,840 [230]	1,910 [75]
5,080 [200]	1,910 [75]	5,610 [221]	1,910 [75]	5,990 [236]	1,910 [75]
5,380 [212]	2,060 [81]	5,920 [233]	2,060 [81]	6,300 [248]	2,060 [81]
5,540 [218]	2,060 [81]	6,070 [239]	2,060 [81]	6,450 [254]	2,060 [81]
5,690 [224]	2,210 [87]	6,220 [245]	2,210 [87]	6,600 [260]	2,210 [87]
5,840 [230]	2,210 [87]	6,380 [251]	2,210 [87]	6,760 [266]	2,210 [87]
6,150 [242]	2,540 [100]	6,680 [263]	2,540 [100]	-	-
6,600 [260]	3,050 [120]	-	-	-	-

*Not Available on F-750 Severe Service

F-750 WITH REINFORCEMENT

THICKNESS REINFORCEMENT mm [in]	THICKNESS SIDEMEMBER mm [in]	SECTION MODULUS CUBIC INCH	TYPE FRAME	MAX GVWR LBS
8.0 [0.312]	8.0 [0.31]	29.84	10.125"	33,000

FRAME MODIFICATION RECOMMENDATIONS

NO HOLES PERMITTED IN SIDE MEMBER FLANGES

HOLES TO MOUNT BRACKETS, OUTRIGGERS AND SUPPORTS MAY BE DRILLED IN THE VERTICAL SIDE RAIL WEB WITH THE FOLLOWING RESTRICTIONS:

MATERIAL BETWEEN EDGE OF HOLE AND INSIDE OF UPPER OR LOWER FLANGE MUST NOT BE LESS THAN 2.00”.

THE MINIMUM EDGE DISTANCE BETWEEN ANY TWO HOLES UP TO 5/8” IN DIAMETER MUST BE 1.00”. FOR HOLES LARGER THAN 5/8” IN DIAMETER THE MINIMUM EDGE DISTANCE MUST BE 1.5 TIMES THE DIAMETER OF THE LARGEST HOLE.

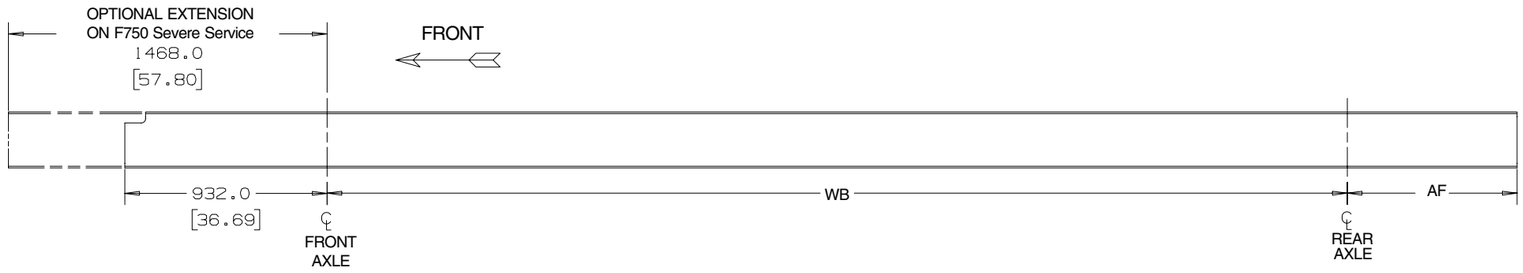
NO HOLES TO EXCEED .75” IN DIAMETER.

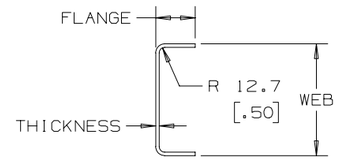
ADDITION OF HOLES TO CROSSMEMBER IS NOT RECOMMENDED.

WELDING OF CROSSMEMBER IS NOT RECOMMENDED.

NO WELDING PERMITTED ON FRAME SIDE MEMBERS.

F-650 DOCK HEIGHT & F-750 SUPER DUTY WITHOUT REINFORCEMENT — FRAME





REGULAR CAB		SUPER CAB		CREW CAB	
WB mm [in]	AF mm [in]	WB mm [in]	AF mm [in]	WB mm [in]	AF mm [in]
3,710 [146]*	990 [39]*	4,240 [167]*	990 [39]*	4,620 [182]*	990 [39]*
4,010 [158]	990 [39]	4,550 [179]	990 [39]	4,930 [194]	990 [39]
4,010 [158]	1,240 [49]	4,550 [179]	1,240 [49]	4,930 [194]	1,240 [49]
4,470 [176]	1,780 [70]	5,000 [197]	1,780 [70]	5,380 [212]	1,780 [70]
4,620 [182]	1,780 [70]	5,160 [203]	1,780 [70]	5,540 [218]	1,780 [70]
4,930 [194]	1,910 [75]	5,460 [215]	1,910 [75]	5,840 [230]	1,910 [75]
5,080 [200]	1,910 [75]	5,610 [221]	1,910 [75]	5,990 [236]	1,910 [75]
5,380 [212]	2,060 [81]	5,920 [233]	2,060 [81]	6,300 [248]	2,060 [81]
5,540 [218]	2,060 [81]	6,070 [239]	2,060 [81]	6,450 [254]	2,060 [81]
5,690 [224]	2,210 [87]	6,220 [245]	2,210 [87]	6,600 [260]	2,210 [87]
5,840 [230]	2,210 [87]	6,380 [251]	2,210 [87]	6,760 [266]	2,210 [87]
6,150 [242]	2,540 [100]	6,680 [263]	2,540 [100]	7,060 [278]**	2,540 [100]**
6,600 [260]	3,050 [120]	7,140 [281]**	3,050 [120]**	-	-

*Not Available on F-750 Severe Service **Only Available on F-650 Dock Height

	THICKNESS SIDEMEMBER mm [in]	WEB SIDEMEMBER mm [in]	FLANGE SIDEMEMBER mm [in]	SECTION MODULUS CUBIC INCH	TYPE FRAME	MAX GVWR LBS
F650 DH	8.0 [0.31]	231.8 [9.13]	77.8 [3.06]	10.74	9.125"	25,999
F650 DH	8.0 [0.31]	257.2 [10.13]	77.8 [3.06]	12.64	10.125"	33,000
F650 DH, F750 PD, F750 S	8.0 [0.31]	257.2 [10.13]	91.0 [3.58]	14.18	10.125"	33,000
F750 PD	9.5 [0.38]	260.4 [10.25]	78.5 [3.09]	15.14	10.250"	33,000
F750 PD, F750 S	9.5 [0.38]	260.4 [10.25]	91.7 [3.61]	16.98	10.250"	33,000
F750 PD, F750 S	11.1 [0.44]	263.5 [10.38]	94.1 [3.71]	20.11	10.375"	33,000

DH = Dock Height
PD = Pickup & Delivery
S = Severe Service

FRAME MODIFICATION RECOMMENDATIONS

NO HOLES PERMITTED IN SIDE MEMBER FLANGES

HOLES TO MOUNT BRACKETS, OUTRIGGERS AND SUPPORTS MAY BE DRILLED IN THE VERTICAL SIDE RAIL WEB WITH THE FOLLOWING RESTRICTIONS:

MATERIAL BETWEEN EDGE OF HOLE AND INSIDE OF UPPER OR LOWER FLANGE MUST NOT BE LESS THAN 2.00”.

THE MINIMUM EDGE DISTANCE BETWEEN ANY TWO HOLES UP TO 5/8” IN DIAMETER MUST BE 1.00”. FOR HOLES LARGER THAN 5/8” IN DIAMETER THE MINIMUM EDGE DISTANCE MUST BE 1.5 TIMES THE DIAMETER OF THE LARGEST HOLE.

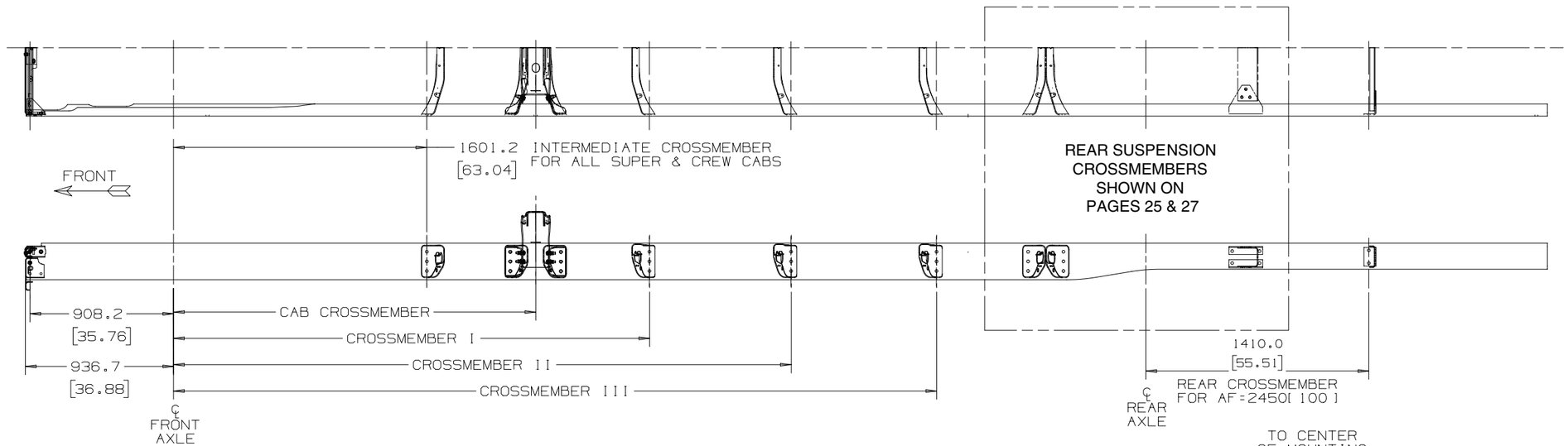
NO HOLES TO EXCEED .75” IN DIAMETER.

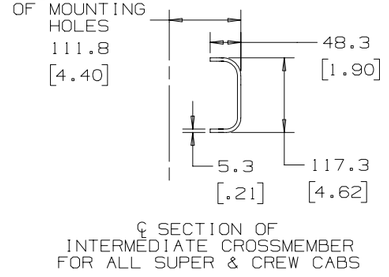
ADDITION OF HOLES TO CROSSMEMBER IS NOT RECOMMENDED.

WELDING OF CROSSMEMBER IS NOT RECOMMENDED.

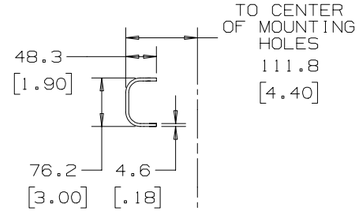
NO WELDING PERMITTED ON FRAME SIDE MEMBERS.

F-650 SUPER DUTY ProLoader
CROSSMEMBER DATA





℄ SECTION OF
INTERMEDIATE CROSSMEMBER
FOR ALL SUPER & CREW CABS



CAB CROSSMEMBER	
REGULAR CAB	1762 [69.4]
SUPER CAB	2290 [90.2]
CREW CAB	2658 [104.6]

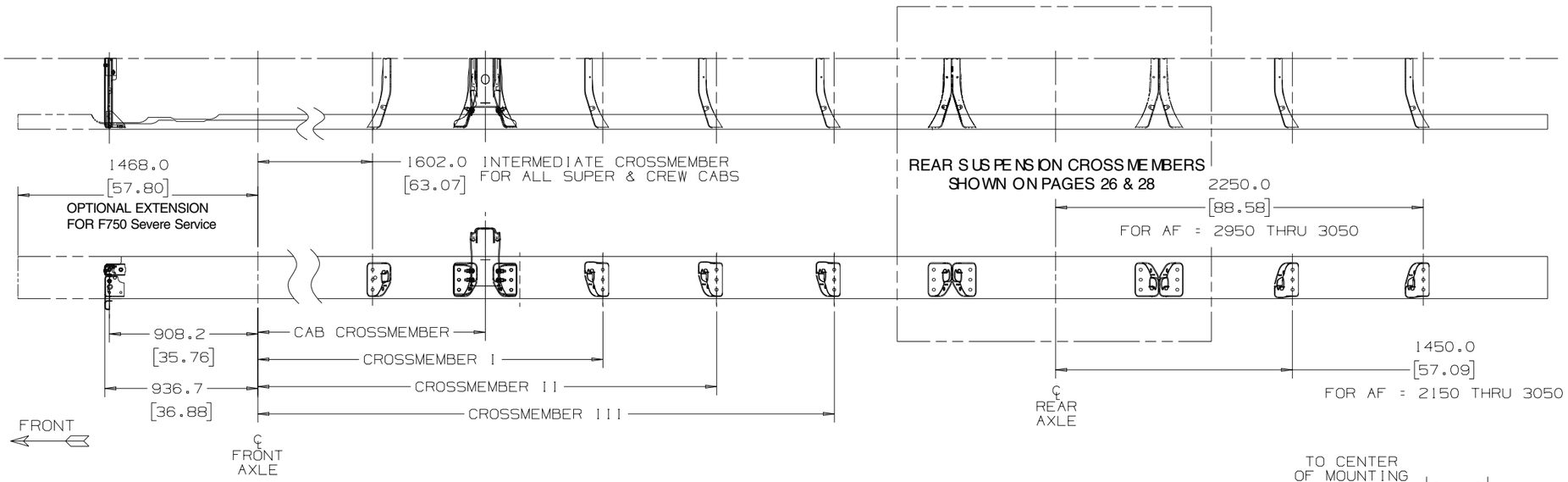
REGULAR CAB	CROSSMEMBER		
WB RANGE	I	II	III
3400	-	-	-
4010	2562 [100.9]	-	-
4620	2786 [109.7]	-	-
4930 (I6)	3010 [118.5]	-	-
4930 (V8)	2562 [100.9]	3234 [127.3]	-
5540	2786 [109.7]	4130 [162.6]	-
6150 (I6)	3010 [118.5]	4578 [180.2]	-
6150 (V8)	2562 [100.9]	3458 [136.1]	4578 [180.2]

SUPER CAB	CROSSMEMBER	
WB RANGE	I	II
3940	-	-
4550	3010 [118.5]	-
5160	3010 [118.5]	3682 [145.0]
6070 (I6)	3010 [118.5]	4578 [180.2]
6070 (V8)	3458 [136.1]	4578 [180.2]

CREW CAB	CROSSMEMBER	
WB RANGE	I	II
4320	-	-
4930	3458 [136.1]	-
5540	3906 [153.8]	-
6450	3458 [136.1]	4578 [180.2]

NOTE — [ ] DIMENSIONS ARE INCHES.

F-650 DOCK HEIGHT / F-750 SUPER DUTY CROSSMEMBER DATA



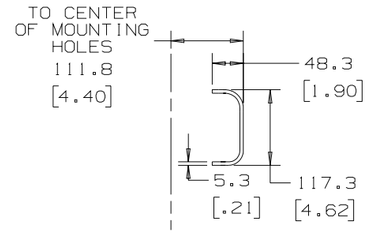
CAB CROSSMEMBER

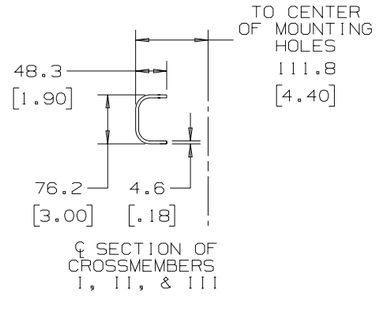
REGULAR CAB	1762 [69.4]
SUPER CAB	2290 [90.2]
CREW CAB	2658 [104.6]

REGULAR CAB	CROSSMEMBER		
WB RANGE	I	II	III
3400	-	-	-
3710	2338 [92.0]	-	-
4010	2562 [100.9]	-	-
4470, 4620	2786 [109.7]	-	-
4930 (I6)	3010 [118.5]	-	-
4930 (V8)	2562 [100.9]	3234 [127.3]	-
5080, 5380	2786 [109.7]	3682 [145.0]	-
5540, 5690, 5840	2786 [109.7]	4130 [162.6]	-
6150 (I6)	3010 [118.5]	4578 [180.2]	-
6150 (V8)	2562 [100.9]	3458 [136.1]	4578 [180.2]
6600	2786 [109.7]	3906 [153.8]	5026 [197.9]

SUPER CAB	CROSSMEMBER		
WB RANGE	I	II	III
3940, 4240	-	-	-
4550	3010 [118.5]	-	-
5000, 5160	3010 [118.5]	3682 [145.0]	-
5460, 5610, 5920	3010 [118.5]	4130 [162.6]	-
6070, 6220, 6380 (I6)	3010 [118.5]	4578 [180.2]	-
6070, 6220, 6380 (V8)	3458 [136.1]	4578 [180.2]	-
6680	3010 [118.5]	3906 [153.8]	5026 [197.9]
7140	3010 [118.5]	4130 [162.6]	5698 [224.3]

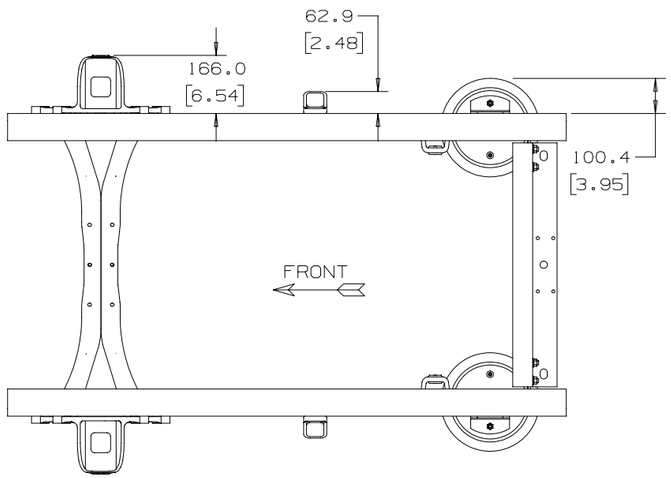
CREW CAB	CROSSMEMBER	
WB RANGE	I	II
4320, 4620	-	-
4930	3458 [136.1]	-
5380	3682 [145.0]	-
5540	3906 [153.8]	-
5840, 5990	4354 171.4]	-
6300, 6450	3458 [136.1]	4578 [180.2]
6600, 6760	3906 [153.8]	5026 [197.9]
7060	4130 [162.6]	5250 [206.7]

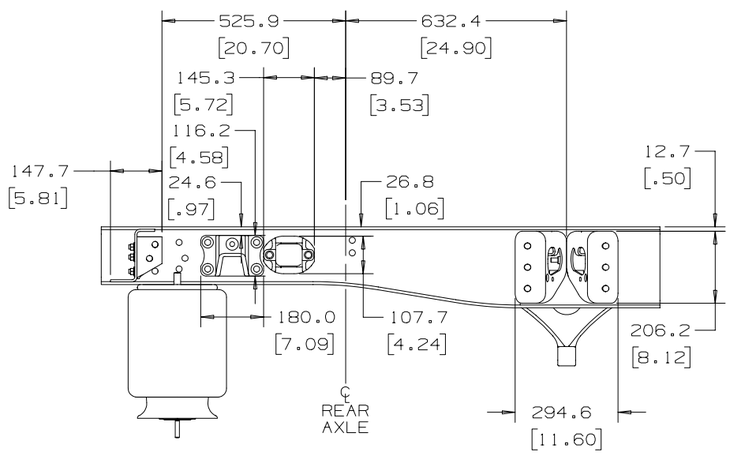




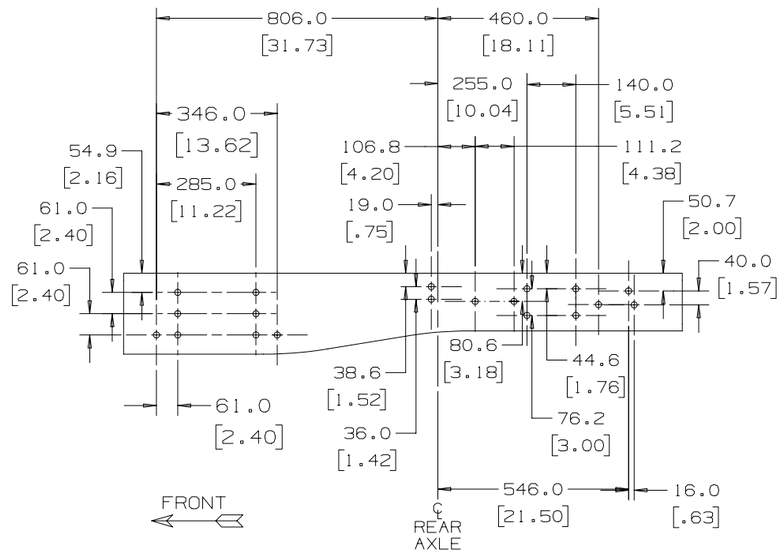
NOTE — [ ] DIMENSIONS ARE INCHES.

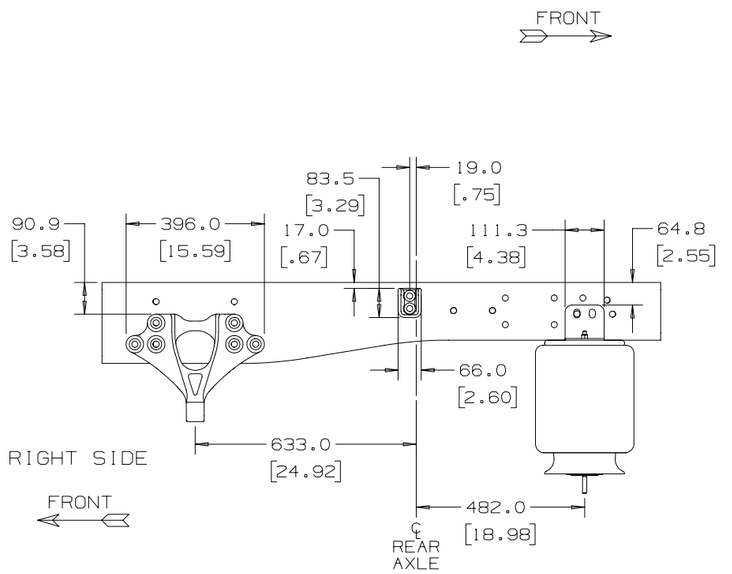
F-650 SUPER DUTY ProLoader
AIR SUSPENSION





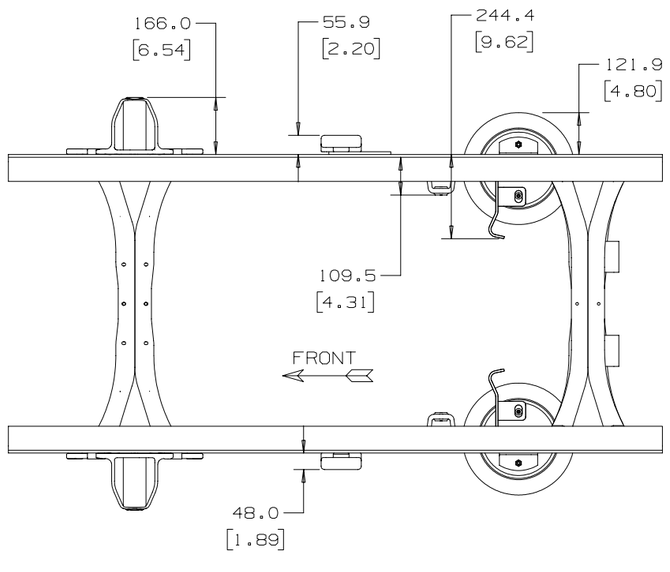
INSIDE LEFT SIDE RAIL

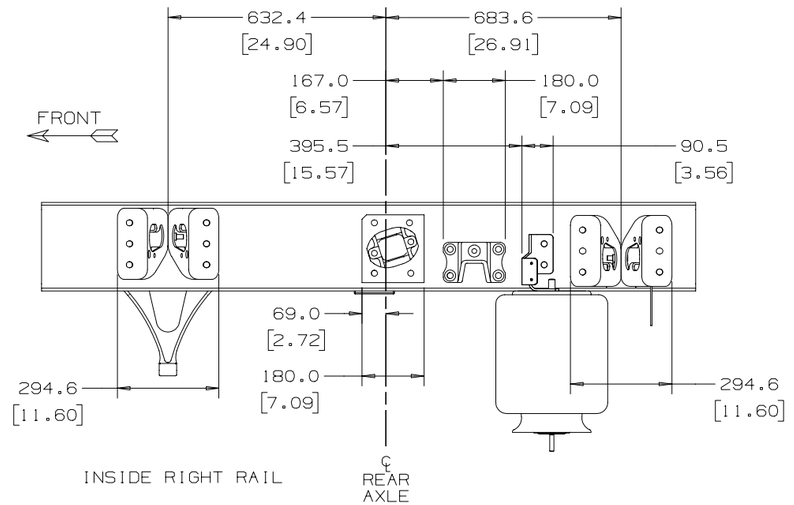


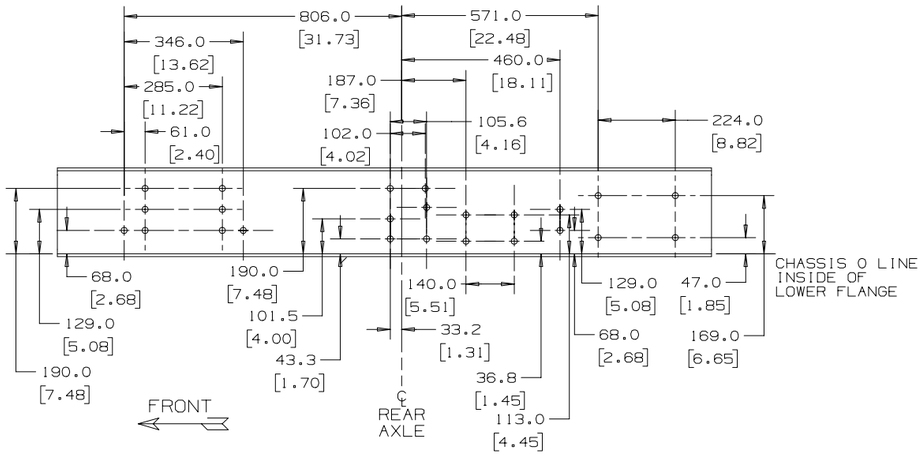


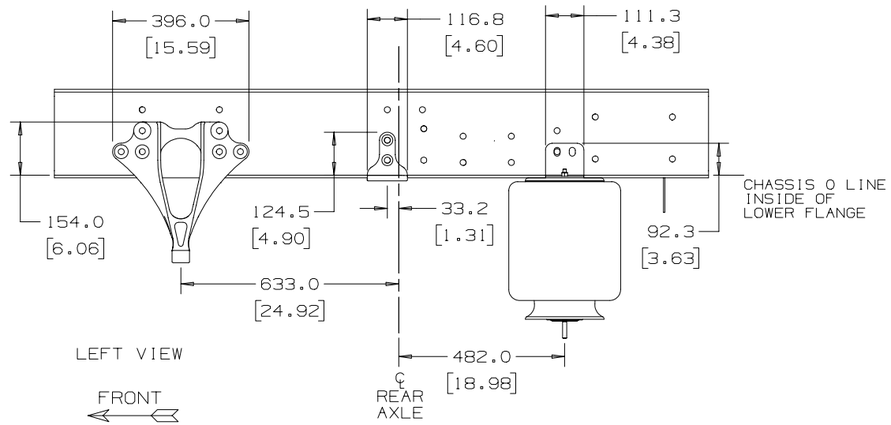
NOTE — [ ] DIMENSIONS ARE INCHES.

F-650 DOCK HEIGHT / F-750 SUPER DUTY
AIR SUSPENSION



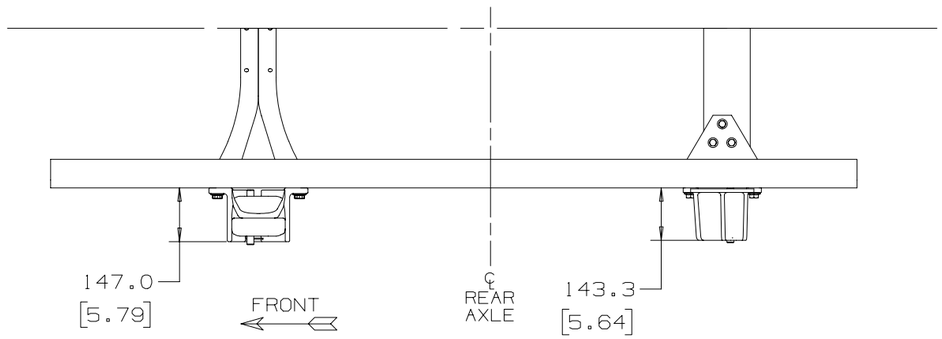


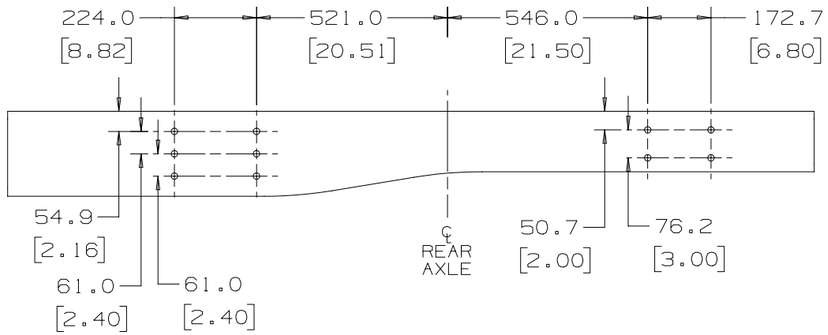


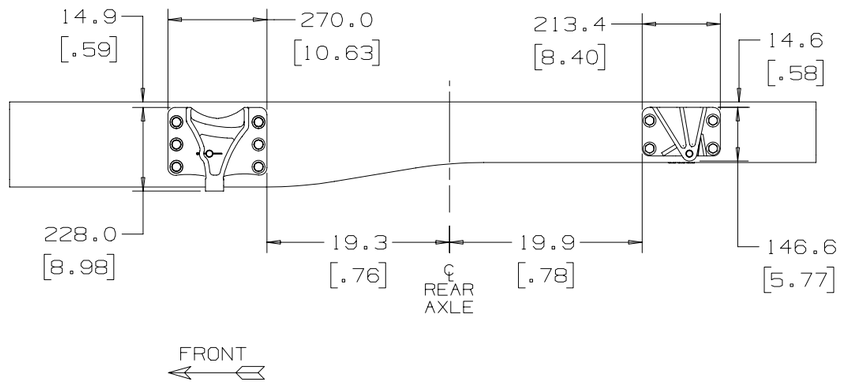


NOTE — [ ] DIMENSIONS ARE INCHES.

F-650 ProLoader
SPRING SUSPENSION

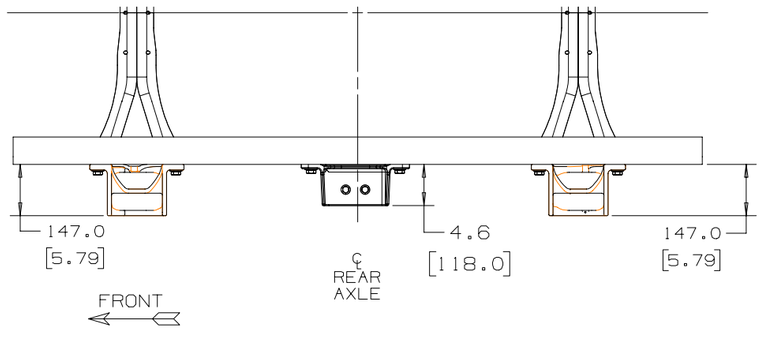


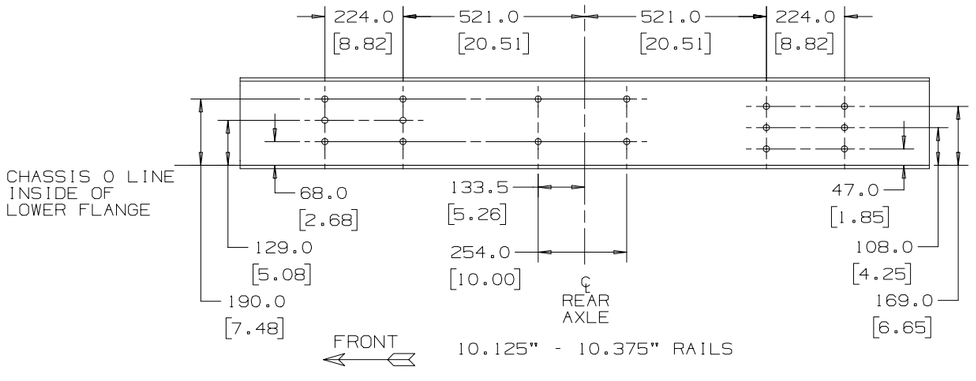


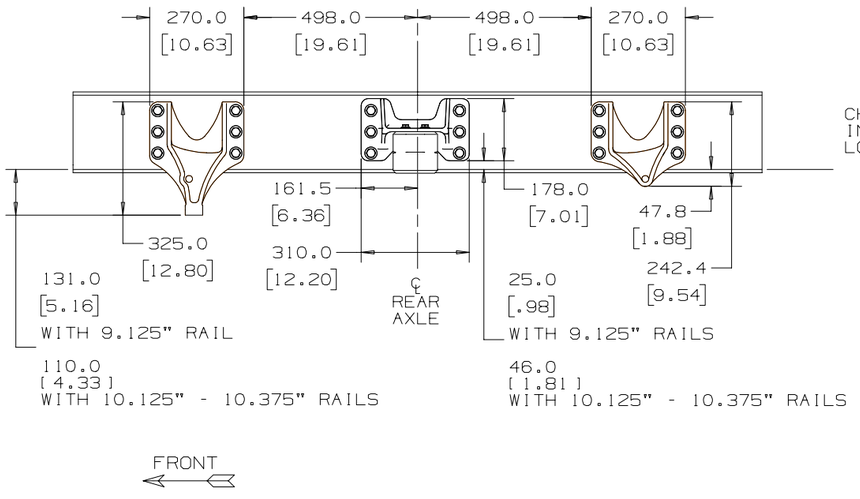


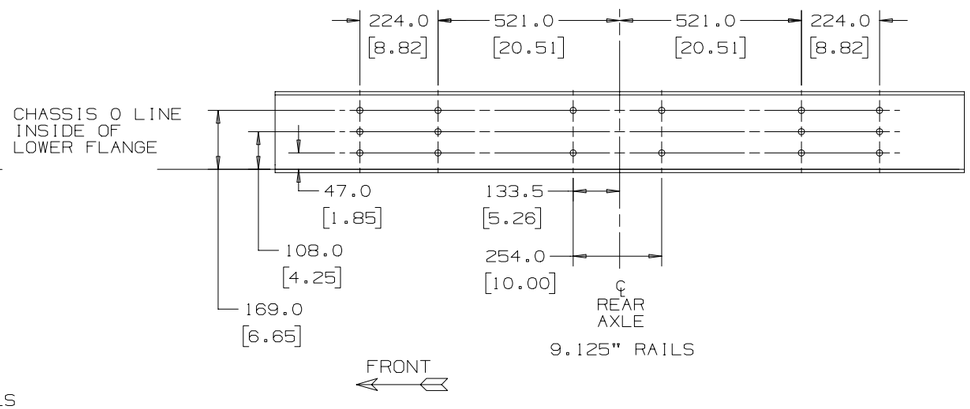
NOTE — [ ] DIMENSIONS ARE INCHES.

F-650 DOCK HEIGHT / F-750 SUPER DUTY
SPRING SUSPENSION



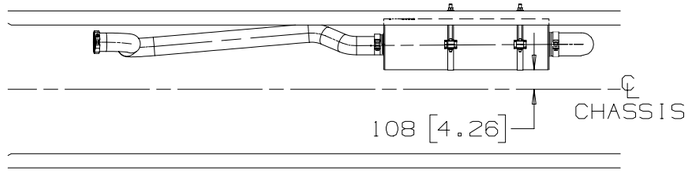


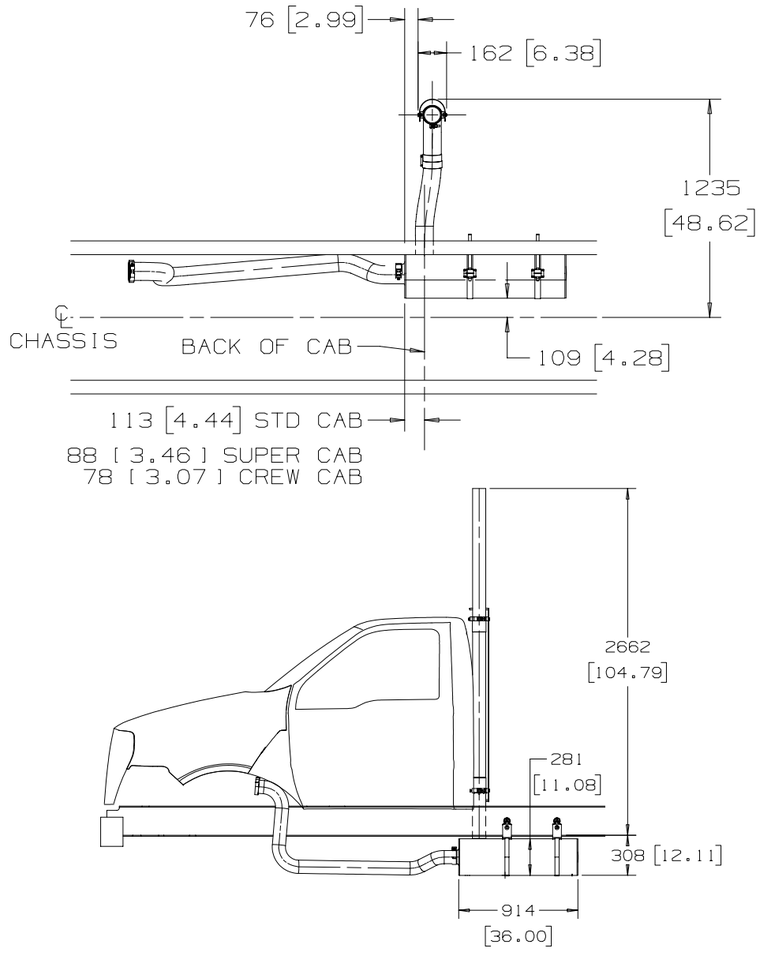


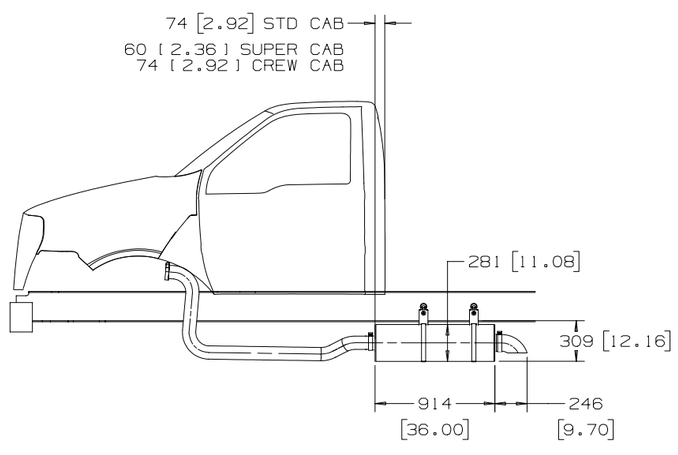


NOTE — [ ] DIMENSIONS ARE INCHES.

F-650/F-750 SUPER DUTY
EXHAUST SYSTEM DATA
CAT 3126B – DIESEL

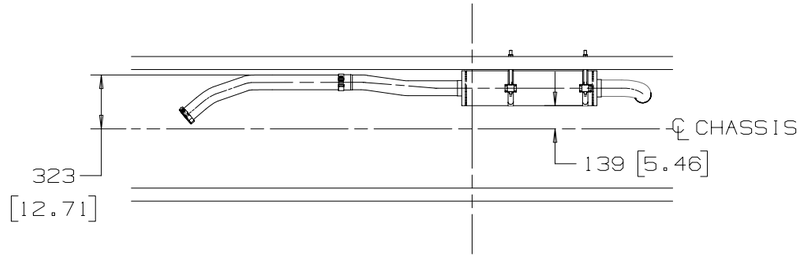


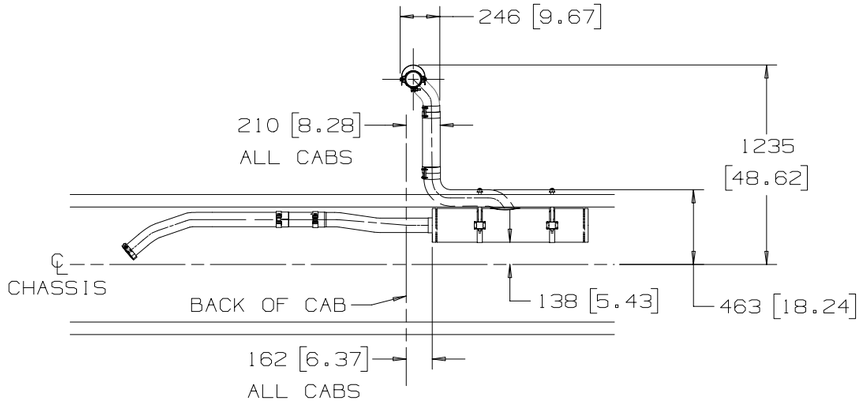


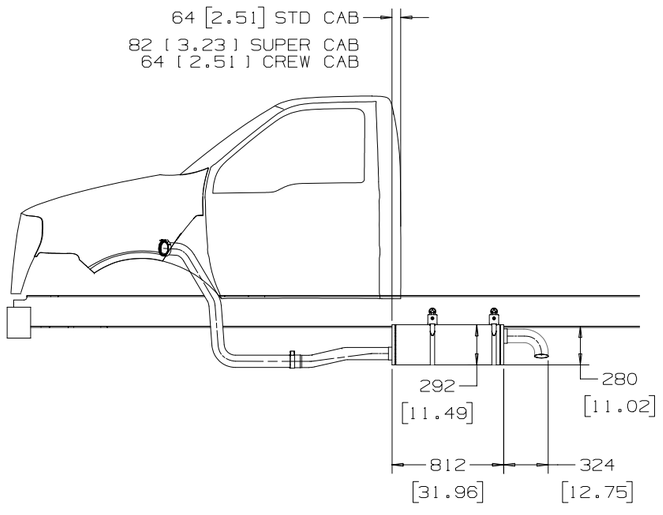


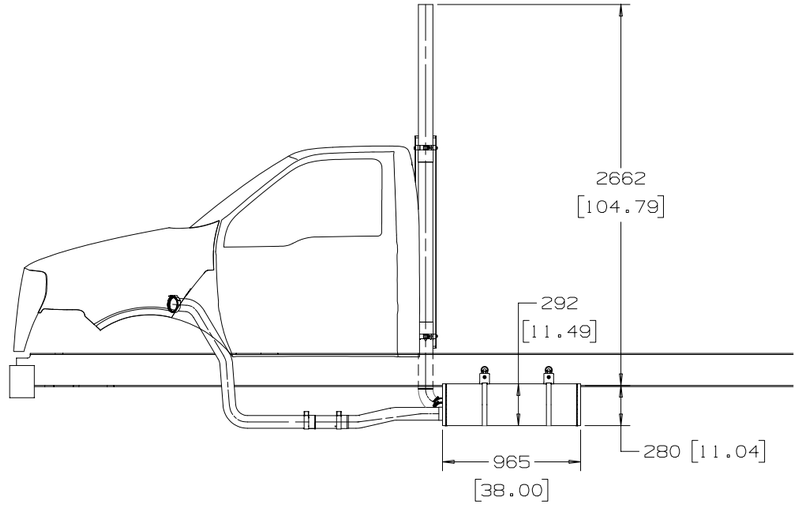
NOTES — ALTERATIONS OF EXHAUST SYSTEM MAY REQUIRE EMISSIONS RECERTIFICATION AND NOISE TESTING TO DETERMINE COMPLIANCE TO FEDERAL AND/OR LOCAL EMISSIONS AND NOISE STANDARDS.
— FOR SAFETY/EMISSION NOTES AND DECALS, AND NOISE RESTRICTIONS, SEE THE SAFETY AND EMISSIONS SECTION.
— [ ] DIMENSIONS ARE INCHES.

F-650/F-750 SUPER DUTY
EXHAUST SYSTEM DATA
POWERSTROKE V8 – DIESEL



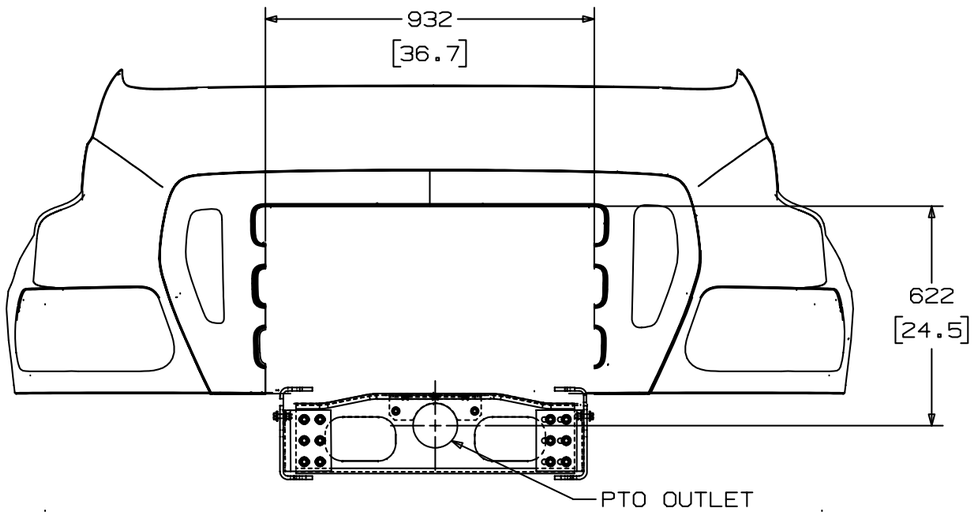




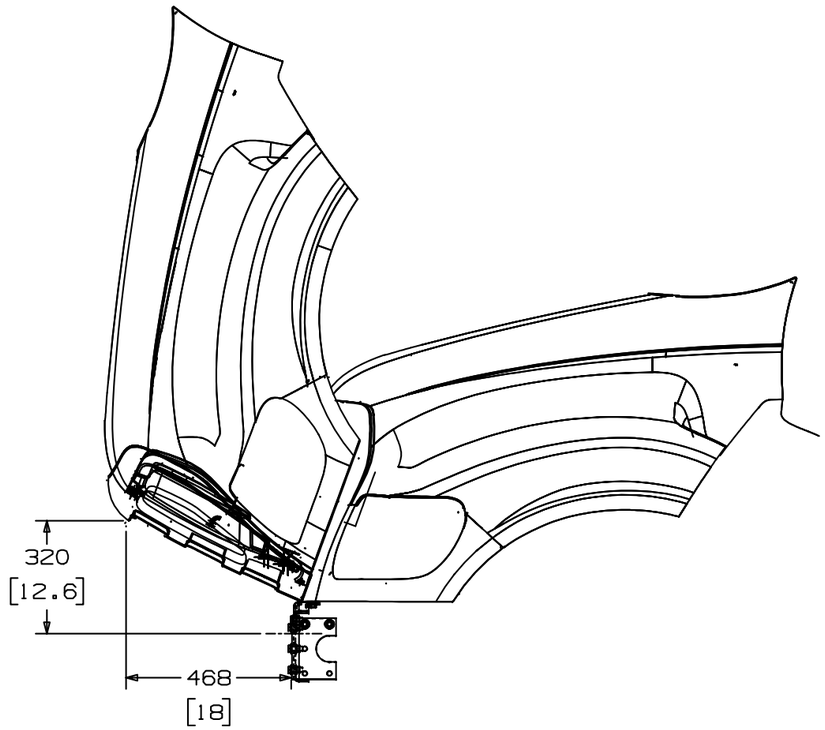


NOTES — ALTERATIONS OF EXHAUST SYSTEM MAY REQUIRE EMISSIONS RECERTIFICATION AND NOISE TESTING TO DETERMINE COMPLIANCE TO FEDERAL AND/OR LOCAL EMISSIONS AND NOISE STANDARDS.
— FOR SAFETY/EMISSION NOTES AND DECALS, AND NOISE RESTRICTIONS, SEE THE SAFETY AND EMISSIONS SECTION.
— [ ] DIMENSIONS ARE INCHES.

F-650/F-750 SUPER DUTY
FIXED GRILLE (FRONT PTO) INSTALLATION



FIXED GRILL OPENING
WITH HOOD IN DRIVING POSITION



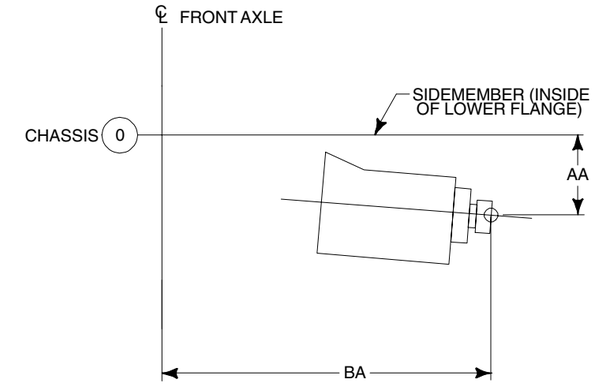
OPTIONAL EQUIPMENT CLEARANCE
WITH HOOD RAISED

NOTE — [ ] DIMENSIONS ARE INCHES.

F-650/F-750 SUPER DUTY
U-JOINT LOCATION/SIZE
CAT 3126E AND POWER STROKE DIESEL V8

MAIN TRANSMISSION PTO			
ENGINE	MAIN TRANSMISSIONS	CENTERLINE OF U-JOINT	
		AA	BA
CAT 3126E	MD-3060P	40 [1.59]	1,491 [58.69]
	MD-3560P	41 [1.63]	1,503 [59.16]
	MD-3066P	41 [1.63]	1,503 [59.16]
	2000P	34 [1.32]	1,407 [55.41]
	2400	34 [1.32]	1,407 [55.41]
	FS-5205A	26 [1.02]	1,313 [51.68]
	RT-8908LL	49 [1.94]	1,599 [62.96]
	FR-9210B	43 [1.68]	1,519 [59.79]
	FS-5406A	29 [1.13]	1,350 [53.13]
	FS-6406A	31 [1.20]	1,371 [53.97]
	ES066-7B	45 [1.79]	1,553 [61.14]
	ES056-7B	44 [1.73]	1,534 [60.41]
POWER STROKE DIESEL V8	2000P	8 [0.30]*	1,249 [49.19]
	2400	8 [0.30]*	1,249 [49.19]
	FS-5205A	13 [0.53]*	1,155 [45.46]
	FS-5406A	11 [0.44]*	1,192 [46.92]
	FS-6406A	10 [0.39]*	1,213 [47.75]
	ES066-7B	1 [0.05]	1,395 [54.93]
	ES056-7B	0 [0.00]	1,377 [54.20]

* ABOVE INSIDE OF LOWER FLANGE



BB0523

TYPICAL TRANSMISSION

TRANS	U-JOINT	CAT 3126E	FORD V8 DIESEL
MD-3060	SPL100	210 HP	-
	SPL140	230-300 HP	-
MD-3506P	SPL100	210 HP	-
	SPL140	230-300 HP	-
MD-3066P	SPL140	300 HP	-
2000P	SPL100	207-230 HP	200-230 HP
2400	SPL100	207-230 HP	200-230 HP
FS-5205A	SPL100	190-210 HP	200 HP
RT-8908LL	SPL140	250-275 HP	-
FR-9210B	SPL140	275-300 HP	-
FS-5406A	SPL100	190-210 HP	200-230 HP
FS-6406A	SPL100	-	215 HP
	SPL140	210-250 HP	230 HP
ES066-7B	SPL140	210-250 HP	215-230 HP
ES056-7B	SPL100	207-210 HP	200-230 HP

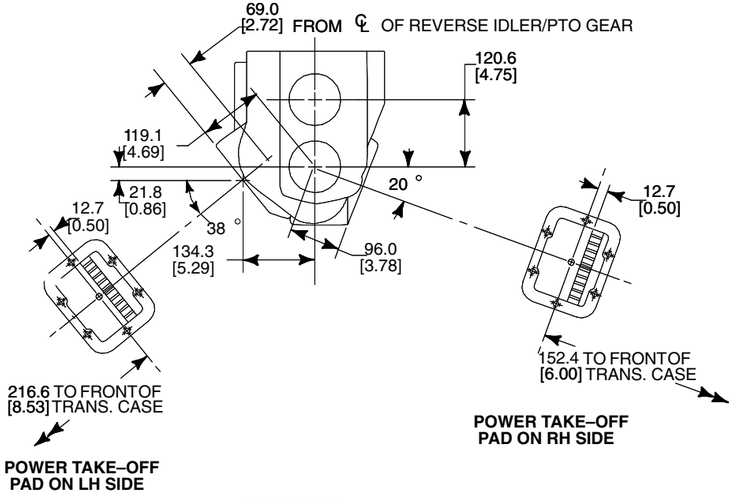
NOTE — [ ] DIMENSIONS ARE INCHES.

F-650/F-750 SUPER DUTY
TRANSMISSION PTO INFORMATION
CAT 3126B AND POWERSTROKE V8

CLEARANCE FOR RECOMMENDED PTO OPENING		MAIN TRANSMISSION PTO	
LH	**RH**	**ENGINE**	**MAIN TRANSMISSION**
YES	YES	CAT 3126B	MD-3000
YES	NO		FS-5406A
YES	NO		FS-6406A
YES	YES		ES556-7B
YES	YES		ES066-7B
YES	YES		ALLISON 2000/2400
YES	YES	Powerstroke V8	FS-5205A
YES	YES		FS-5406A
YES	YES		ES52-7B

NOTE:
CERTAIN PTO'S DO NOT CONFORM TO RECOMMENDED S.A.E. ENVELOPES; THEREFORE, A "NO CLEARANCE" STATEMENT DOES NOT NECESSARILY PRECLUDE INSTALLATION OF ALL PTO'S.

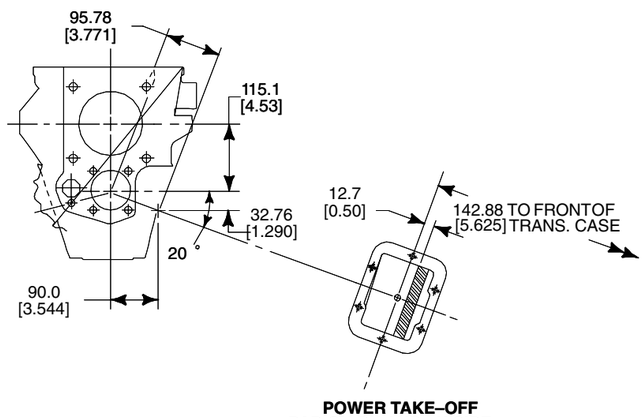
F-650/F-750 SUPER DUTY
POWER TAKE-OFF DATA



REAR VIEW

5 SPEED EATON FS–5205 A

GEAR DATA	RIGHT SIDE	LEFT SIDE
	FS-5205A	FS-5205A
Number of Teeth	33	19
Diametral Pitch	7.0"	6.1"
Pitch Diameter	5.4884"	3.2880"
Pressure Angle	25°	25°
Helix Angle R.H.	31°	19°
RPM @ 1000 RPM of Engine	460	435



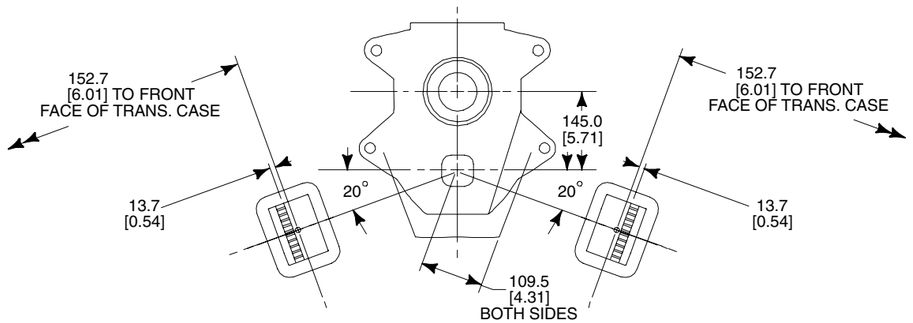
REAR VIEW

5 SPEED EATON FS–4205 A

GEAR DATA	FS-4205A
Number of Teeth	28
Diametral Pitch	6.1"
Pitch Diameter	5.248"
Pressure Angle	20° 30'
Helix Angle R.H.	29°
RPM @ 1000 Engine RPM	459

NOTE — [ ] DIMENSIONS ARE INCHES.

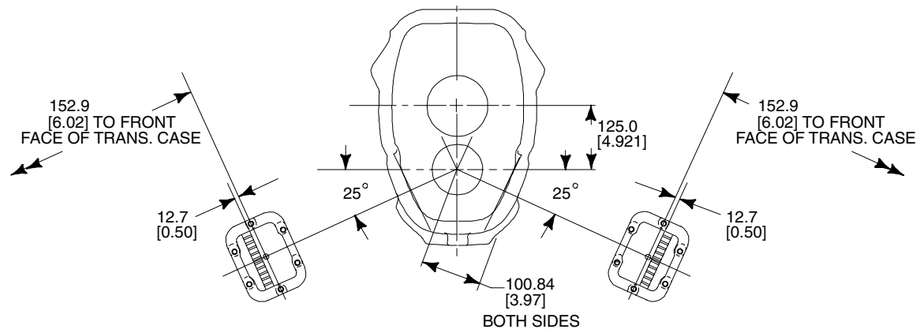
F-650/F-750 SUPER DUTY
POWER TAKE-OFF DATA



EATON TRANSMISSIONS

6 SPEED FS–5306A/N
FS–6306A/N

GEAR DATA	FS-5406A FS-6406A	FS-5406N FS-6406N
Number of Teeth	38	39
Normal Diameteral Pitch	6.35"	6.65"
Pitch Diameter	6.454"	6.650"
Normal Pressure Angle	20°	20°
Helix Angle R.H.	22.0° R.H.	21.5° R.H.
RPM @ 1000 RPM of Engine	522	532



SPICER TRANSMISSIONS

7 SPEED ES56–7B
ESO66–7B

GEAR DATA	ES56-7B	ESO66-7B
Number of Teeth	**34**	
Normal Diameteral Pitch	7.00"	
Pitch Diameter	5.1370"	5.1071"
Normal Pressure Angle	22.500°	17.500°
Helix Angle R.H.	19.000° R.H.	18.000°
RPM @ 1000 RPM of Engine	488	658

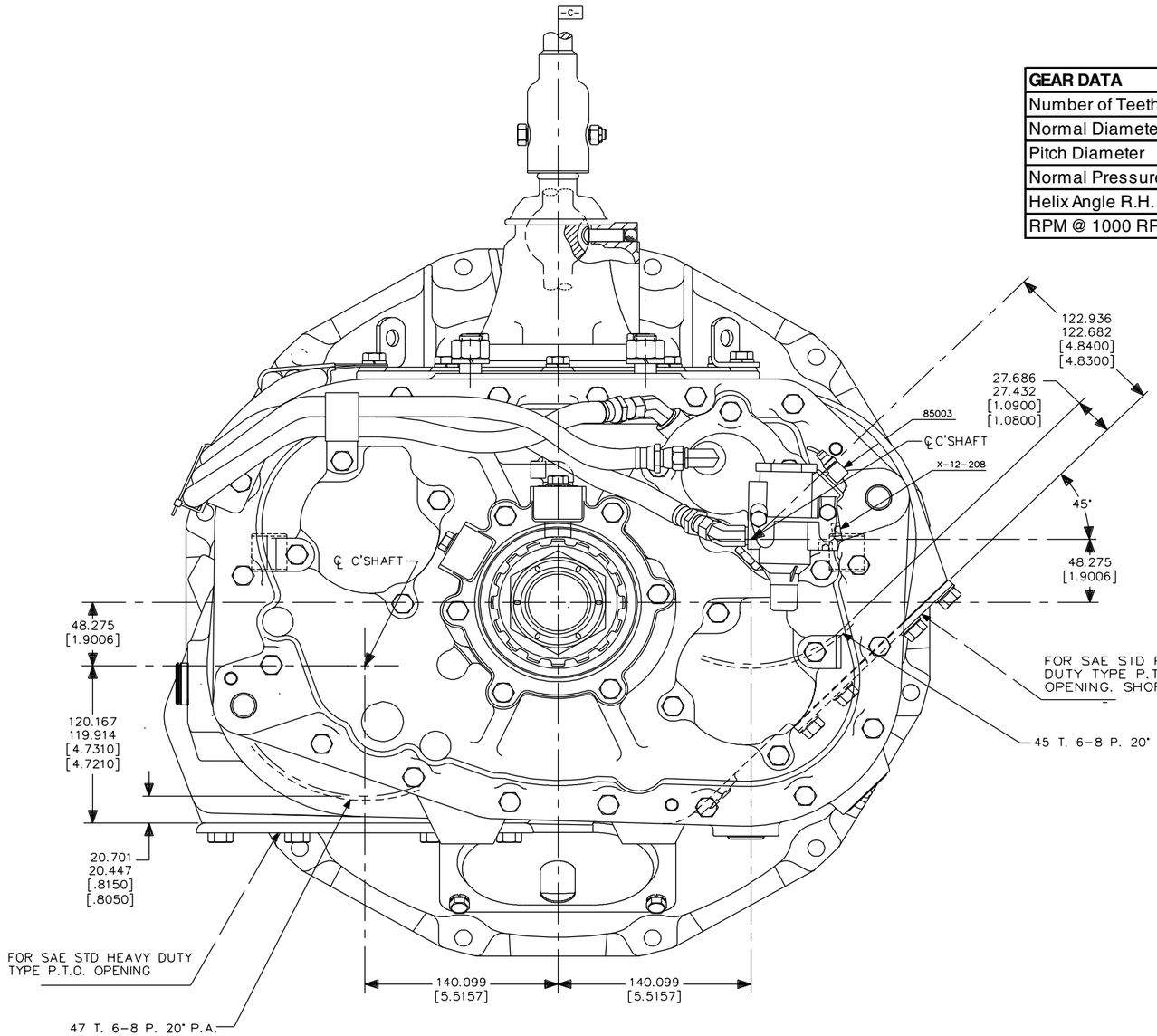
NOTE: THE INSTALLATION OF A TRANSMISSION SUPPORT IS REQUIRED WHEN A PTO IS INSTALLED ON A SPRICER TRANSMISSION ES56-7B OR ES066-7B.

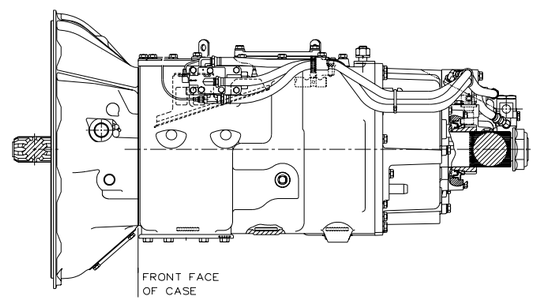
NOTE — [ ] DIMENSIONS ARE INCHES.

F-650/F-750 SUPER DUTY
POWER TAKE-OFF DATA
10 SPEED EATON FR-9210A

2004
MODEL YEAR

GEAR DATA	RIGHT SIDE FR-9210A	BOTTOM SIDE FR-9210A
Number of Teeth	45	47
Normal Diameteral Pitch	6.0"	
Pitch Diameter	7.833"	7.500"
Normal Pressure Angle	20°	20°
Helix Angle R.H.	0°	0°
RPM @ 1000 RPM of Engine	839	





95.4 [3.76] FROM CENTER OF PTO OPENING
TO FRONT OF TRANS. CASE ON BOTH SIDES

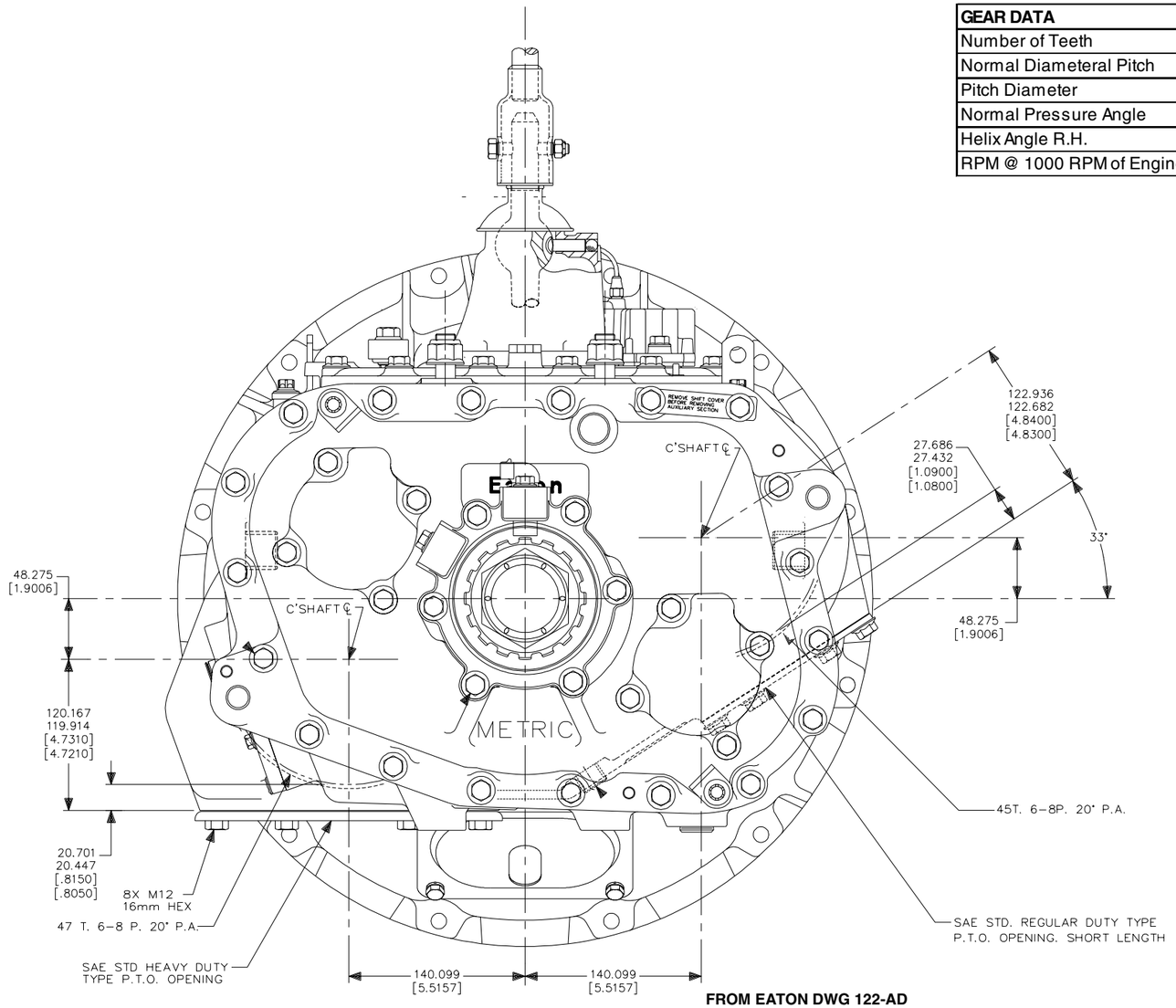
FROM EATON DWG 141-AD

NOTE — [ ] DIMENSIONS ARE INCHES.

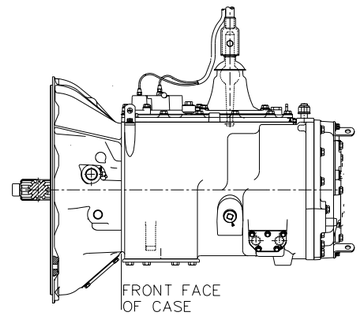
F-650/F-750 SUPER DUTY
POWER TAKE-OFF DATA
10 SPEED EATON RT-8908LL

2004
MODEL YEAR

GEAR DATA	RIGHT SIDE RT-8908LL	BOTTOM SIDE RT-8908LL
Number of Teeth	45	47
Normal Diameteral Pitch	6.0"	
Pitch Diameter	7.833"	7.500"
Normal Pressure Angle	20°	20°
Helix Angle R.H.	0°	0°
RPM @ 1000 RPM of Engine	696	



FROM EATON DWG 122-AD



96.5 [3.80] FROM CENTER OF PTO OPENING
TO FRONT OF TRANS. CASE ON BOTH SIDES

NOTE — [ ] DIMENSIONS ARE INCHES.

F-650/F-750 SUPER DUTY
ALLISON TRANSMISSION

Up to date Allison Transmission data for body builders is available via the Internet or your Allison Dealer.

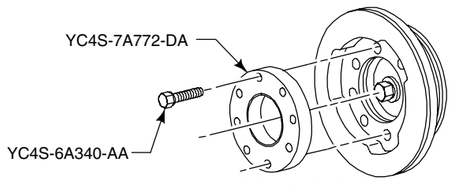
Find your nearest Allison Dealer at http://www.allisontransmission.com or call the Allison Help Line at 1-800-252-5ATD

Body Builder Information via the Internet.

To access information via the Internet, a body builder must have access to the Allison Extranet. A user ID and password for the Allison Extranet can be set-up by calling the Allison Technical Assistance Center at 1-800-252-5283. Once you have a user ID and password:

1. Access the Allison Transmission website at http://www.allisontransmission.com
2. Select Extranet and login.
3. Select “Tech Data Books”
4. Select either “1000 & 2000 Series” or “MD 3000 Series” depending on what was provided with your Ford vehicle
5. Power Take off information is in “Section F – Power Take Off (PTO) Provision”
6. Installation Drawings are listed in the individual manuals, but must be looked up under the “Installations Drawings” link on the “Tech Data Books” page.

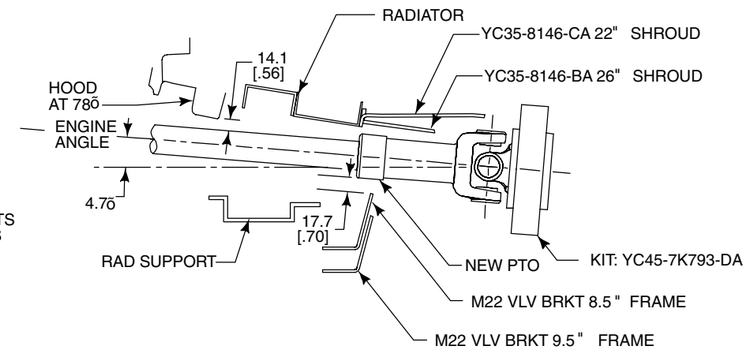
F-650/F-750 SUPER DUTY
ENGINE POWER TAKE-OFF CRANKSHAFT DAMPER



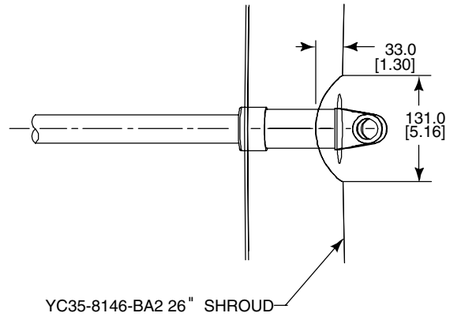
CAT 3126 ENGINE

MAX. TORQUE REQUIREMENTS FOR PTO COMPONENTS DEPENDENT ON RATING OF SPECIFIC COMNPONENTS (FULL RATED ENGINE TORQUE AVAILABLE)

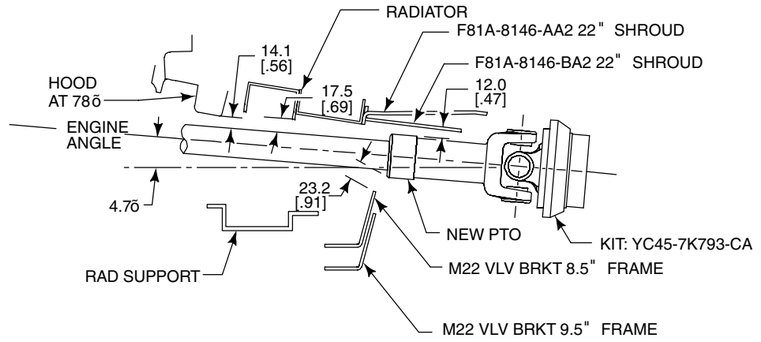
KIT - YC4S-7K793-DA (Caterpillar 3126)		
Part Number	Description	Quantity
YC4S-7A772-DA	Adapter Plate	1
YC4S-6A340-AA	M10-1.5x40 bolt	8
SK YC4S-5N025-AA	Instruction Sheet	1



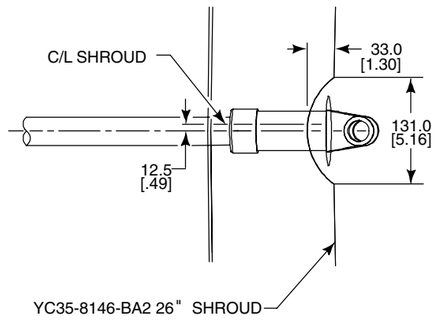
CATERPILLAR PTO SHAFT CLEARANCES
(SIDE VIEW)
RECOMMENDED CLEARANCE IS 12 mm
TO SURROUNDING COMPONENTS



FAN SHROUD CLEARANCE
(TOP VIEW)



CATERPILLAR PTO SHAFT CLEARANCES
(SIDE VIEW)
RECOMMENDED CLEARANCE IS 12 mm
TO SURROUNDING COMPONENTS



FAN SHROUD CLEARANCE

NOTES — FRONT PTO IS NOT AVAILABLE ON NAVISTAR ENGINES.
PTO SHAFT INSTALLATION NOTE: PTO SHAFT ANGLE IS TO BE A MINIMUM OF 2 DEGREES RELATIVE TO ENGINE ANGLE IN EITHER SIDE OR PLAN VIEWS.
— [ ] DIMENSIONS ARE INCHES.

F-650/F-750 SUPER DUTY
ELECTRICAL WIRING
CUSTOMER ACCESS CIRCUIT INSTALLATION

WIRING INSTALLATION GUIDELINES

Although there are many points in the truck electrical system to connect additional circuits, certain connection points are recommended for reliability and convenience. This section defines the recommended connection points for each Ford Truck model and the maximum electrical loads allowable. CAUTION: Improper electrical tie-ins may affect vehicle operation (i.e., engine / transmission).

After all electrical or vehicle modifications, perform the on-board diagnostics procedures as described in the powertrain control/emissions diagnosis manual to clear all diagnostic trouble codes (DTC's). Road test vehicle and rerun the on-board diagnostics to verify that no DTC's are present. If DTC's are generated perform the appropriate diagnostic procedures and repairs. Vehicle operation (engine/transmission) may be affected if DTC's are not serviced.

Alternative connections or wiring practices are not recommended as certain modifications may result in other circuits becoming non-functional. Disconnect the battery negative (ground) cable and remove it from the battery carrier prior to any vehicle modification. Upon completion of body or equipment installation, all wiring should be checked for proper routing, etc. to preclude electrical shorts upon reinstallation of the battery negative cable.

Do not splice into the Powertrain System (ECM). Connecting to any component or wires or this system may adversely affect Engine/Transmission operation.

Listed below are recommended wiring installation guidelines.

1. Most taps are fused, having locations under the instrument panel, in the engine compartment, and on the frame.
2. The Ford starting and the charging system should not be altered.
3. The completed vehicle total electrical load must not exceed the maximum output of the alternator.
4. Do not route or attach electrical wires to fuel lines.
5. Engine compartment wiring must not be rerouted in any manner.
6. The electronic Powertrain Control Module (PCM) requires battery power to be supplied at all times so as to maintain the keep alive memory. Keep this in mind when installing load disconnect switches or solenoids.
7. The diesel engine requires two batteries wired in parallel for proper starting operation and must not be isolated. Do not modify the Glow Plugs Power Circuit.
8. Ford recommends that all additional under hood and underbody wiring:
   - be cross-linked polyethylene, or equivalent, high temperature insulation wire 125°C [257°F] minimum rating.
   - meet SAE specifications J1128 type SXL, GXL or TXL.
   - meet SAE J1127 type SGX or STX for battery cables.
   - be protected with nylon convoluted tubing.
   - be located so as to avoid or minimize restriction of airflow through the engine compartment, underbody and fuel system.
   - be of sufficient length to be properly routed, so as not to interfere with operating zones of such components as throttle or transmission linkage.
   - not be routed near the exhaust system or any other source of high heat; melted insulation can result in electrical shorts and system failure.
   - be routed away from hostile surfaces and sharp edges and be secured in its intended location.
   - be protected by rubber grommets when it passes through body or frame openings. Use customer access pass-thru circuits provided between cab and engine compartment and cab and frame (to avoid additional openings between passenger and engine compartments). Refer to page 265 Figures A and B for additional information.
   - be protected from electrical shorts by fuses or circuit breakers.
   - use load distribution chart for air/hydraulic brake vehicles when determining wire length and gauge; charts shown on page 264.
9. Interior wiring not exposed to high temperatures may be SAE approved, general purpose wire.
10. Ground the second unit body to the frame in at least two locations, and if required, add an additional frame to engine ground cable to improve the ground path to the battery.
11. Splicing into circuitry relating to the powertrain control systems is not acceptable because of the adverse effect on the electronic system operation.
12. Before welding to the body or chassis, disconnect the batteries, ABS models, and ECM. Note that disconnecting the batteries will result in a memory loss on electronic engine/ transmission controlled vehicles. The vehicle will require several miles of driving in various driving modes to restore its memory and regain optimum operating conditions. This includes knowledge of PTO capability on the automatic transmissions with PTO opening.
13. Electrical connections exposed to the elements should be appropriately protected.
14. Do not ground the body to the transmission or transmission crossmember.
15. Ignition circuit of any engine should not be altered.
16. Alternator circuit wiring must not be altered by cutting, soldering, or splicing.
17. Aero type headlamps are plastic and have protective coatings which can be damaged by solvents or tape. Refer to the *Owner Guide* for proper cleaning procedures.
18. Added wiring must have sufficient electrical capacity for the accessory load and must be protected by appropriate fuse or circuit breaker. The current draw must not cause the total loads to exceed capabilities of the base vehicle wiring.

RADIO FREQUENCY INTERFERENCE (RFI)

During modifications to the vehicle, manufacturers, service technicians, owners and users should take the necessary precautions to maintain the RFI integrity of components. (Both the United States and Canada have RFI regulation in effect). Precautionary procedures and components listed below are examples and do not necessarily represent a complete list.

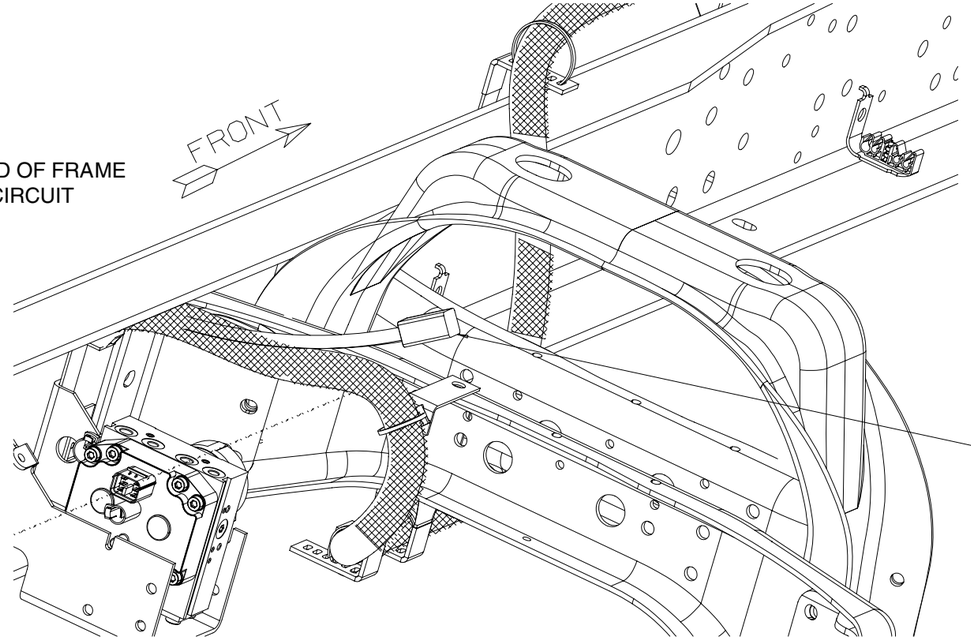
1. All components required to suppress RFI emissions, which are removed during service, repair, or completion of the vehicle, must be reinstalled in the manner in which they were installed by Ford.
2. Do not modify or change any RF device in a manner not expressly approved by Ford Motor Company.
3. Electrical grounds on all components must be retained.
4. Metallic components installed on the body or chassis must be grounded to the chassis.
5. Electrical circuits added to the vehicle should not be installed near the high tension ignition components.
6. Only "static conductive" accessory drive belts should be used.
7. Fan, water pump, power steering and other belts should be of the OEM type or equivalent that will not build up a static electrical charge.
8. For any completed vehicle, additional measures may be needed to adequately suppress RFI emissions.
9. Shield on the injector wiring must remain installed.

F-650/F-750 SUPER DUTY
BODY BUILDER LOAD DISTRIBUTION

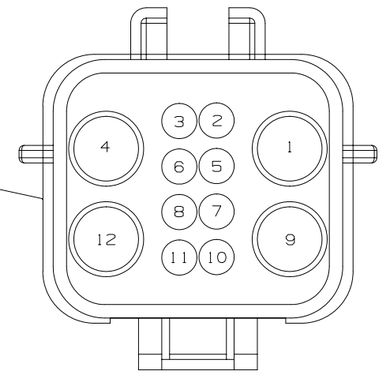
CIRCUIT DESCRIPTION	LOCATION	FUSE SIZE (AMPS)	MAX FUSE LOAD BY BODY BUILDER	TYPE	HARNESS	CIRCUIT #	CONNECTOR CAVITY	CIRCUIT COLOR	CIRCUIT GAUGE	RECOMMENDED INSULATION
GROUND	-	-	-	-	PT08-54297[2]	57	1	BK	1 4	GXL
GROUND	-	-	-	-	PT08-54297[2]	57	3	BK	1 4	GXL
PARK	PDB #111	30	21	MAXIFUSE	PT08-54297[2]	962	12	BN-WH	14	GXL
BACKUP	PDB #116	30	10[1]	MAXIFUSE	PT08-54297[2]	963	9	BK-LG	14	GXL
LH STOP/TURN	PDB #116	30	10[1]	MAXIFUSE	PT08-54297[2]	52	5	YE	14	GXL
RH STOP/TURN	PDB #116	30	10[1]	MAXIFUSE	PT08-54297[2]	64	2	DG	14	GXL
STOP (CAT ENGINE)	PDB #117	20	13	MAXIFUSE	PT08-54297[2]	123	4	RD	14	GXL
STOP (POWER STROKE V8 ENGINE)	PDB # 15	7.5	5.5[1]	MINIFUSE	PT08-54297[2]	123	4	RD	14	GXL
DASH PANEL PASS THRU CIRCUIT	-	-	-	-	PT08-54297[2]	43	10	DB	14	GXL
DASH PANEL PASS THRU CIRCUIT	-	-	-	-	PT08-54297[2]	49	6	OG	14	GXL

[1] SUM OF LOADS FOR BACKUP, STOP, LH STOP/TURN AND RH STOP/TURN LAMPS NOT TO EXCEED 21 AMPS.
[2] THE PROPER HARNESS CAN BE DETERMINED BY LOOKING AT PT08-54297 FOR PDB INFORMATION, PT08-54149 FOR BACK OF CAB, AND PT08-54150 FOR END OF FRAME.

BACK OF CAB SHOWN. END OF FRAME OPTION CONTAINS SAME CIRCUIT CONFIGURATION.



CONNECTOR VIEWED FROM TERMINAL INSERTION END. MATING CONNECTOR P/N: 3576268C1.



F-650/F-750 SUPER DUTY — ELECTRICAL WIRING
CUSTOMER ACCESS CIRCUIT INSTALLATION

POWER TRAIN/DASH PANEL PASS-THRU

The Engine Compartment has two takeouts for customer access which are near the power distribution box. Figure A shows the location of each takeout and a table which defines each circuit's function, wire gage, and color.

Power Train circuits support engine electronic control module features (CAT 3126 only). Power Train circuits terminate with a 12-way connector. The part number of this connector is 3549412C1 and its mating connector part number is 3576268C1.

Dash Panel Pass-Thru circuits are blunt cut and the ends are protected with heat shrink tubing.

Refer to the CAT 3126 Applications and Installation Guide for wiring schematic configuration.

Figure B shows the location of the customer access circuits which are adjacent to the OBDII diagnostic connector in the center of the instrument panel; the circuits are labeled “Customer Access”. These circuits are blunt cut and the ends are protected with heat shrink tubing.

The bundle contains:

- six dash panel pass-thru circuits
- vehicle speed
- a dedicated run feed

The vehicle speed output is configured to 30,000 pulses/mile.

The dedicated run only feed is fused in the power distribution box (PDB) #102 by 20A. Figure C is a schematic of the circuit.

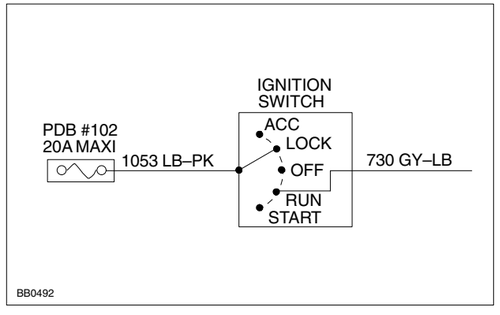
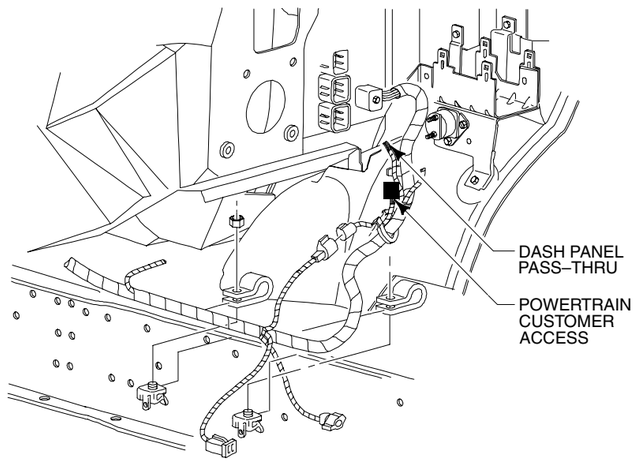


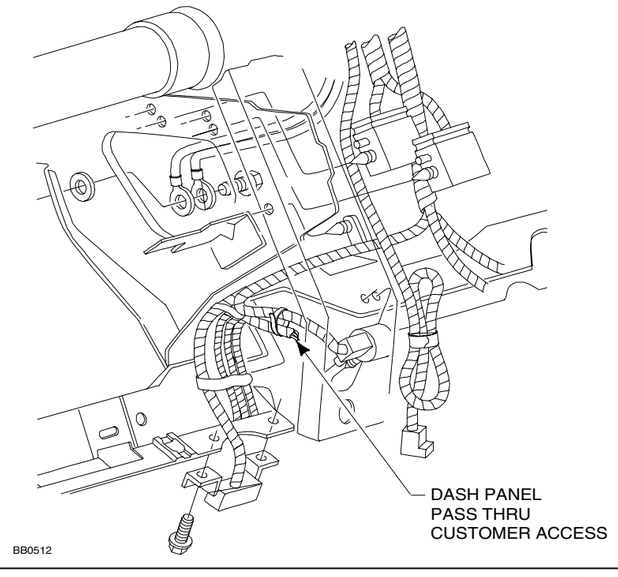
Figure C



Power Train Customer Access					
Engine	Pin # at Engine ECU	Circuit Number	Color Code	Wire Gauge	Description
Cat 3126E	56	900	BK	18	PTO on/off switch
	58	921	GY-OG	18	PTO set resume
	60	922	WH-RD	18	PTO set resume
	3	766	GBK-LG	18	PTO sensor common
	30	80	BK-OG	18	PTO mode lamp
	68	1283	TN-YE	18	PTO remote accelerator position input
	40	312	OG-WH	18	Fast idle enable switch

Dash Panel Pass-Thru Circuits		
Circuit Number	Color Code	Wire Gauge
838	LG-VT	14
839	LG-WH	14
845	TN-BK	14
870	VT-YE	14

Figure A



Circuit Number	Color Code	Wire Gauge	Description
43	DB	14	Dash Panel Pass Thru - LH Frame
49	OG	14	Dash Panel Pass Thru - LH Frame
838	LG-VT	14	Dash Panel Pass Thru - Engine Compartment
839	LG-WH	14	Dash Panel Pass Thru - Engine Compartment
845	TN-BK	14	Dash Panel Pass Thru - Engine Compartment
870	VT-YE	14	Dash Panel Pass Thru - Engine Compartment
679	GY-BK	20	Dash Panel Pass Thru - GEM 30K
730	GY-LB	10	Dash Panel Pass Thru - Ignition Switch

Figure B

F-650/F-750 SUPER DUTY ENGINE SPEED CONTROL FOR POWER TAKE-OFF (PTO) APPLICATIONS

There are 3 different engine speed control features available for vehicle vocations:

Preset Engine Speed Control
Variable Engine Speed Control
Mobile Variable Engine Speed Control

The first two features require a non-moving (stationary) vehicle for operation. The “Preset”feature always controls engine speed to a previously programmed value, while the “Variable”feature permits a desired engine speed to be selected via the in-cab or remote mounted switches. The “Mobile Variable”feature is the same as the “Variable”feature, with the exception that the vehicle can be moving or stationary during PTO operation.

Table 1 lists the programmable parameters that apply to these three PTO Engine Speed Control features. For each programmable parameter, this table shows the minimum and maximum permissible values that can be programmed, engineering units, and the resolution (increment) applicable for a particular parameter.

Table 1 — Programmable Parameter Attributes for PTO Engine Speed Control

Programmable Parameter Name	Programmable Parameter Attributes			
Master Diagnostic Tool Variable Name	**Units**	**Lower Limit**	**Upper Limit**	**Increment**
PTO: Power Take Off Mode	N/A	0	3	1
PTO: In-Cab Mode	N/A	0	3	1
PTO: In-Cab Control	N/A	0	1	1
PTO: Preset RPM 1 (Set)	RPM	LOW IDLE	GOVERNED SPEED	1
PTO: Preset RPM 2 (Resume)	RPM	LOW IDLE	GOVERNED SPEED	1
PTO: Max RPM	RPM	LOW IDLE	GOVERNED SPEED	1
PTO: RPM Ramp Rate	RPM/SEC	1	1500	1
PTO: Max VS	MPH	2	20	1

Preset Engine Speed Control

This feature provides two pre-determined engine speed settings (besides idle) for equipment operation. Preset Engine Speed Control satisfies the majority of the intended engine speed control applications. Use Preset Engine Speed Control when a constant engine speed is required to operate equipment.

Typical operation of this system requires the operator to perform the following steps:

1. activate the system
2. select the desired engine speed using the SET/COAST or RESUME/ACCEL switch. The SET/COAST switch requests one preset speed setting; the RESUME/ACCEL switch requests the other preset speed. Once one of these switches has been pressed, engine speed will begin ramping to the previously programmed engine speed setpoint.

The desired engine speed set-point can be field-programmed to any speed between low idle and governed engine speed. Preset Engine Speed Control operates only while the vehicle is stationary. Manipulation of cab located sensor inputs (i.e., Neutral safety, Service Brake, or Clutch Pedal) will cause the engine speed control to disengage.

Table 2 summarizes the operation of preset engine speed control. The columns are labeled with the switch being used. The first row discusses what happens when the switch contacts are momentarily closed. The second row discusses the effect of held switches (continuous contact) or multiple use of the same switch.

Table 2 - Preset Engine Speed Control Switch Use

	ON	OFF	SET/COAST	RESUME/ ACCEL	BRAKE	CLUTCH
Single Press (Momentary Contact)	Enables engine speed control	Disables engine speed control	Sets the desired engine speed to the "Set" Switch RPM	Sets the desired engine speed to the "Resume" Switch RPM	Deactivates engine speed control and establishes a stanby state. Engine speed returns to low idle rpm.	Deactivates engine speed control and establishes a stanby state. Engine speed returns to low idle rpm.
Held Switch (Continuous Contact)	Enables engine speed control	Disables engine speed control	Same 1	Same 1	The change in brake status establishes the standby	The change in brake status establishes the standby

NOTE: 1 The held switch acts like the switch is being “hit”multiple times.

Operation of Preset Engine Speed Control

When control over engine speed is not needed outside the vehicle’s cab, the in-cab switches can be used to activate engine speed control and select the desired engine speed.

Press the CRUISE “ON”Switch to enable engine speed control. Note: This switch is located on the dash panel. See Figure 1. NOTE: There is no indication to the user that the Cruiser ON switch has been depressed. Next, select the desired engine speed using either the SET/COAST or the RESUME/ACCEL switch. The engine speed acceleration will be limited according to the value programmed for the parameter PTO RPM Ramp Rate. This acceleration limit should be programmed as required to minimize stress on auxiliary equipment drive links.

F-650/F-750 SUPER DUTY
ENGINE SPEED CONTROL FOR
POWER TAKE-OFF (PTO) APPLICATIONS

Engine speed will be reduced to idle by any of the following actions:

CRUISE “OFF” switch is pressed
Brake pedal is pressed
Clutch pedal is pressed
Automatic transmission is shifted out of neutral (NOT RECOMMENDED)

WARNING!
SHIFT OF AUTOMATIC TRANSMISSION FROM NEUTRAL TO FORWARD OR REVERSE GEAR WHILE OPERATING ANY PTO MODE IS NOT RECOMMENDED; VEHICLE MAY LURCH FORWARD WHEN TRANSMISSION IS PLACED IN GEAR DUE TO INCREASED POWER OUTPUT OF THE ENGINE WHICH IS OPERATING AT THE ELEVATED ENGINE SPEED.

Warning: To avoid sudden, unexpected vehicle movement and possible personal injury:

Always fully set the parking brake when using the Preset PTO Engine Speed Control Feature.

Do not abort the Preset Engine Speed Control Feature by shifting an automatic transmission from neutral gear into a forward or reverse gear.

Turn off the engine when you leave the vehicle. Never leave the vehicle unattended with the engine running.

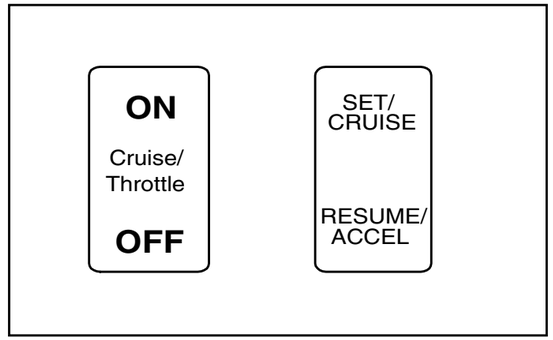


Figure 1 – (STANDARD) In-Cab Switches Located On Dash Panel

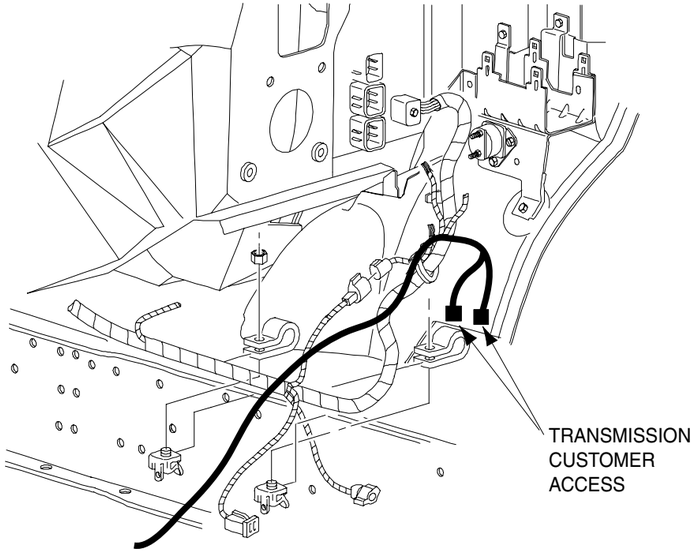
F-650/F-750 SUPER DUTY
WTEC MD AUTO TRANSMISSION

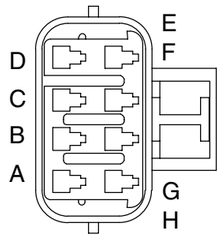
Body builder I/O connections for the Allison MD transmissions are located near the front dash panel between the engine and the driver's side wheel well. The table below gives the circuit and connector cavity information. See the vehicle circuit diagram book for a complete circuit diagram of the transmission wiring and for connector and terminal part numbers.

Cavity	Circuit Number	Color Code	Wire Gauge	Description
Connector Number 7205				
A	161	DG-OG	18	Signal Return
B	114	LB-YE	18	Neutral Indicator PTO
C	Plug	-	-	-
D	112	BK-YE	18	PTO Enable
E	Plug	-	-	-
F	167	BN-OG	18	Output Speed
G	105	RD-WH	18	Sump Temp
H	137	YE-BK	18	Service Brake Status
Connector Number 7206				
A	155	GY-RD	18	Aux Range Inhibit
B	117	PK-BK	18	Auto Neutral for PTO
C	161	DG-OG	18	Signal Return
D	118	PK-OG	18	Fire Truck Pump Mode
E	153	VT-YE	18	Aux Hold
F	177	WH	18	Direction Change Enable
G	Plug	-	-	-
H	Plug	-	-	-

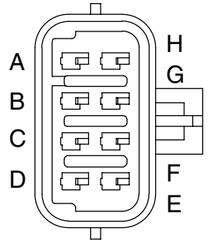
NOTE: See Allison technical manual for suggested circuit design.

Connectors are located near the front dash panel between the engine and the driver's side wheel well.





7205



7206

Harness Connectors
Viewed from Mating End

Connectors 7505 and 7206 have their mating connectors attached filled with cavity plugs. To use connectors, remove cavity plugs and use the following:

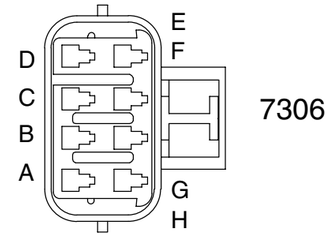
Mating Connector for 7205	
Connector	**Connector Lock**
352874C1	352873C1
Terminals	**Wire Gauge**
1667742C1	16, 18, 20
Cavity Seals	**Wire Gauge**
1661872C1	16, 18, 20
Mating Connector for 7206	
Connector	**Connector Lock**
352872C1	352873C1
Terminals	**Wire Gauge**
1661875C1	16, 18, 20
Cavity Seals	**Wire Gauge**
1661872C1	16, 18, 20

F-650/F-750 SUPER DUTY — ELECTRICAL WIRING
ALLISON 2000/2400 TRANSMISSION

Body builder I/O connection for the Allison transmissions are located near the front dash panel between the engine and the driver's side wheel well. The table below gives the circuit and connector cavity information. See the vehicle circuit diagram book for a complete circuit diagram of the transmission wiring and for connector and terminal part numbers.

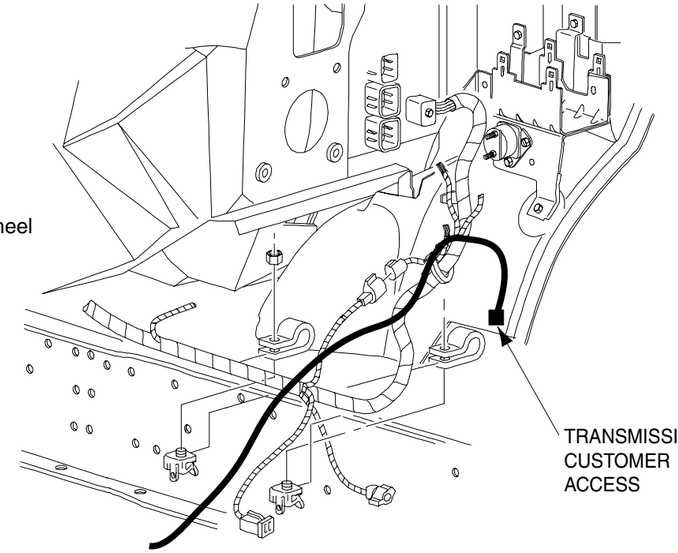
Cavity	Circuit Number	Color Code	Wire Gauge	Description
Connector Number 7306				
A	128	VT-YE	18	Signal Return
B	106	VT-YE	18	PT0 Enable Input
C	119	PK-YE	18	PT0 Enable Output
D	126	VT-YE	18	Non-Zero Crossing Speedo
E	111	BK-OG	18	Auxiliary Function Range Inhibit
F	108	BN-LB	18	Automatic Neutral for PTO
G	121	YE-BK	18	Range Indicator
H	122	YE-BK	18	Output Speed Indicator

NOTE: See Allison technical manual for suggested circuit design.



Harness Connector
Viewed from Mating End

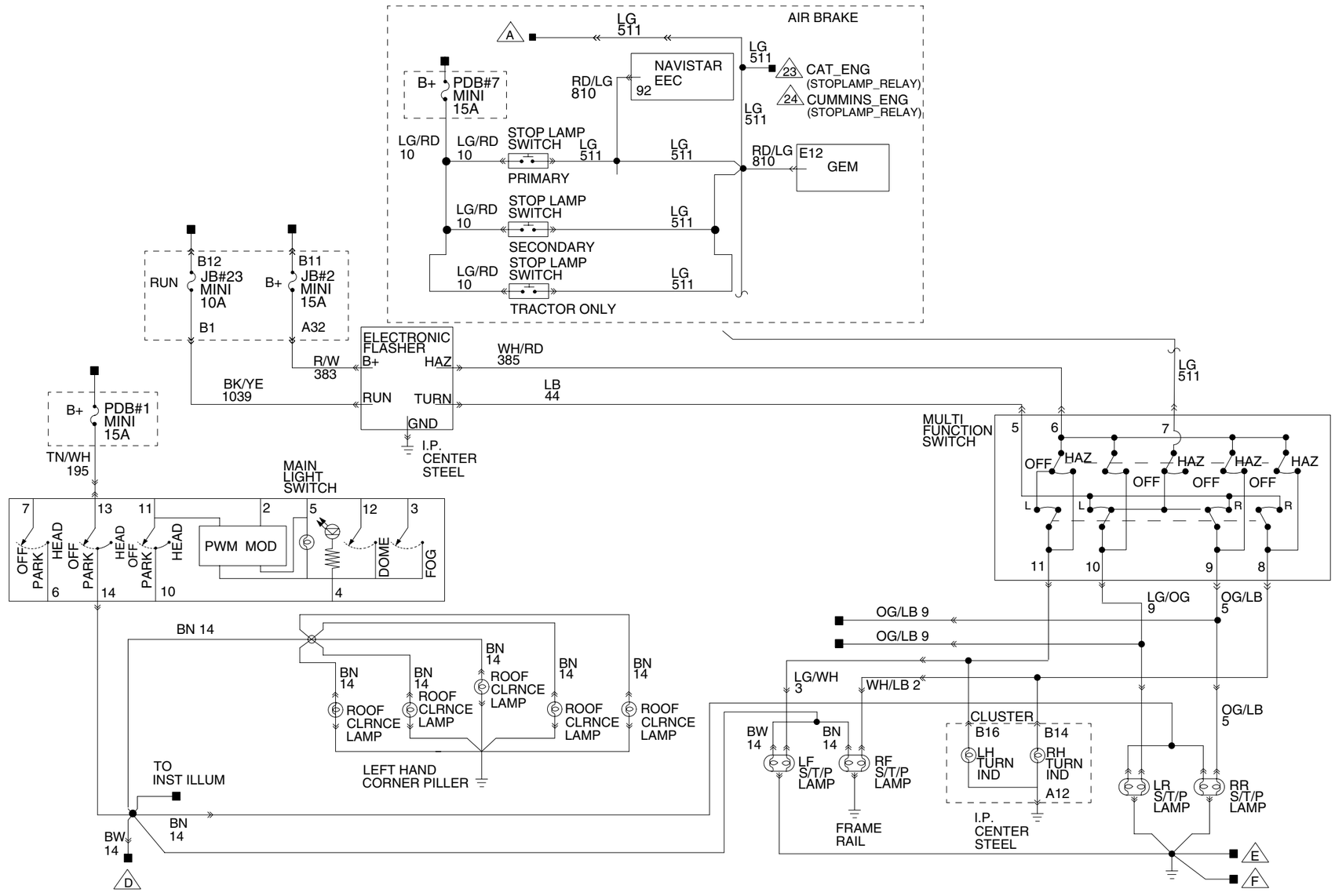
Connector is located near the front dash panel between the engine and the driver's side wheel well



Connector 7306 has its mating connector attached filled with cavity plugs. To use connector, remove cavity plugs and use the following:

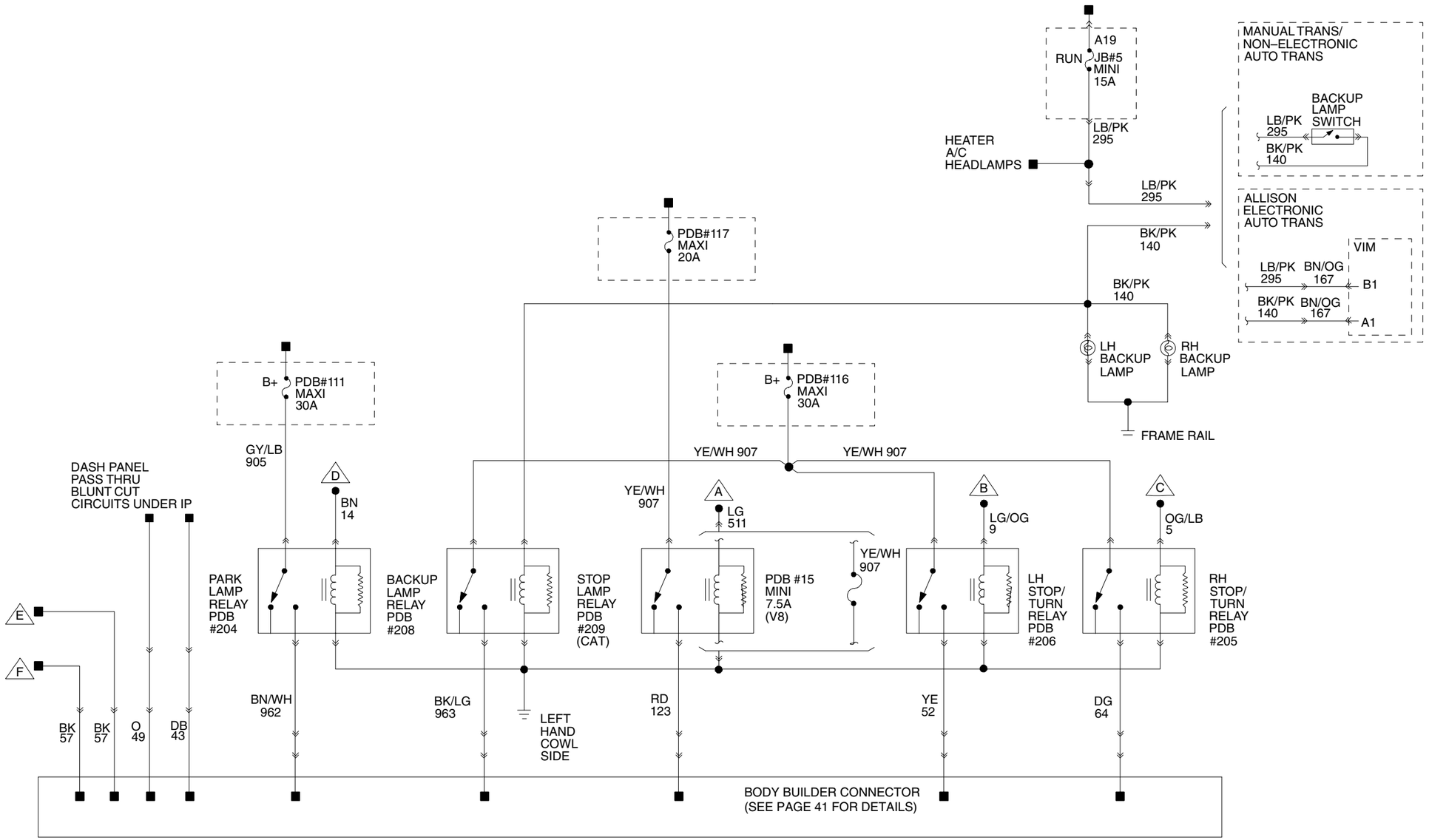
Mating Connector for 7306M	
Connector	**Connector Lock**
352874C1	352873C1
Terminals	**Wire Gauge**
1667742C1	16, 18, 20
Cavity Seals	**Wire Gauge**
1661872C1	16,1 8, 20

F-650/F-750 SUPER DUTY ELECTRICAL WIRING TRAILER TOW SCHEMATIC



NOTE — SCHEMATIC CONTINUED ON NEXT PAGE.

F-650/F-750 SUPER DUTY
ELECTRICAL WIRING
TRAILER TOW SCHEMATIC (Continued)



F-650/F-750 SUPER DUTY
TRAILER TOW CABLE

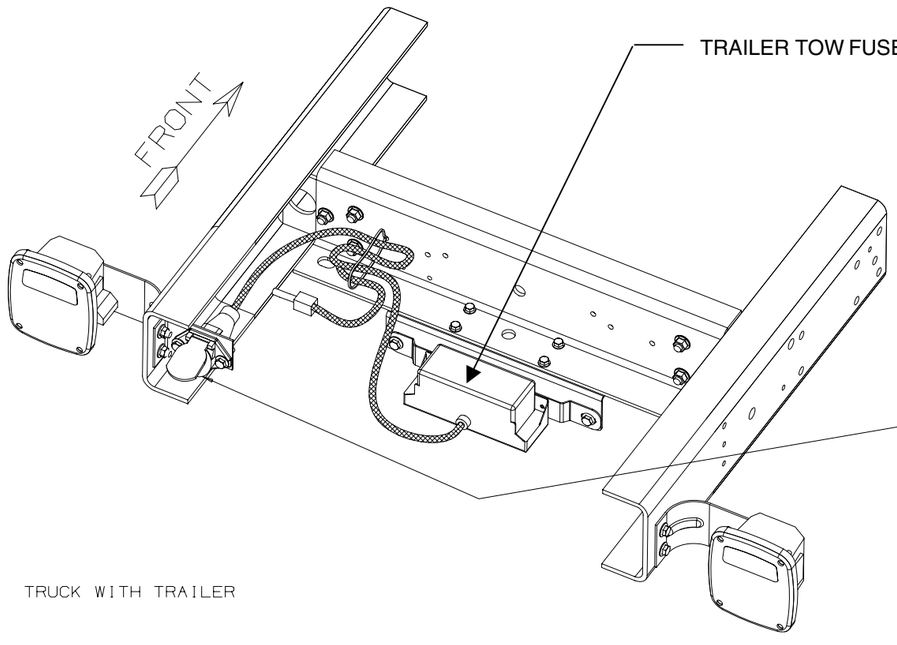
CIRCUIT DESCRIPTION	LOCATION	FUSE SIZE (AMPS)	MAX FUSE LOAD BY BODY BUILDER	TYPE	HARNESS	CIRCUIT #	CIRCUIT COLOR	CIRCUIT GAUGE	RECOMMENDED INSULATION
GROUND	-	-	-	-	PT08-54297(3)	206	WH	8	GXL
TAIL	FUSE #2	30	10(1)	MAXIFUSE	PT08-54297(3)	962	BN-WH	12	GXL
LH STOP/TURN	FUSE #4	30	10(2)	MAXIFUSE	PT08-54297(3)	52	YE	12	GXL
RH STOP/TURN	FUSE #4	30	10(2)	MAXIFUSE	PT08-54297(3)	64	DG	12	GXL
STOP	FUSE #3	20	21	MAXIFUSE	PT08-54297(3)	123	RD	10	GXL
SIDE MARKER	FUSE #2	30	10(1)	MAXIFUSE	PT08-54297(3)	464	BK-PK	12	GXL
ABS FEED (RUN ONLY)	FUSE #1	30	21	MAXIFUSE	PT08-54292	212	DB	10	GXL

(1) SUM OF LOADS FOR SIDE MARKER AND TAIL LAMPS NOT TO EXCEED 21 AMPS.

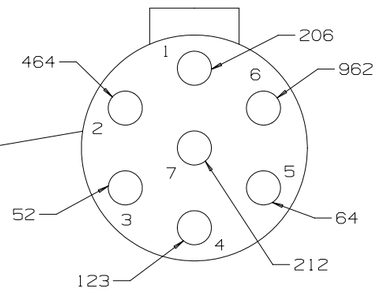
(2) SUM OF LOADS FOR SIDE LH STOP/TURN AND RH/STOP TURN LAMPS NOT TO EXCEED 21 AMPS.

(3) THE PROPER HARNESS CAN BE DETERMINED BY LOOKING AT PT08-54297 FOR PDB INFORMATION, PT08-54149 FOR BACK OF CAB, AND PT08-54150 FOR END OF FRAME.

END OF FRAME SHOWN. BACK OF CAB OPTION CONTAINS SAME CIRCUIT CONFIGURATION.

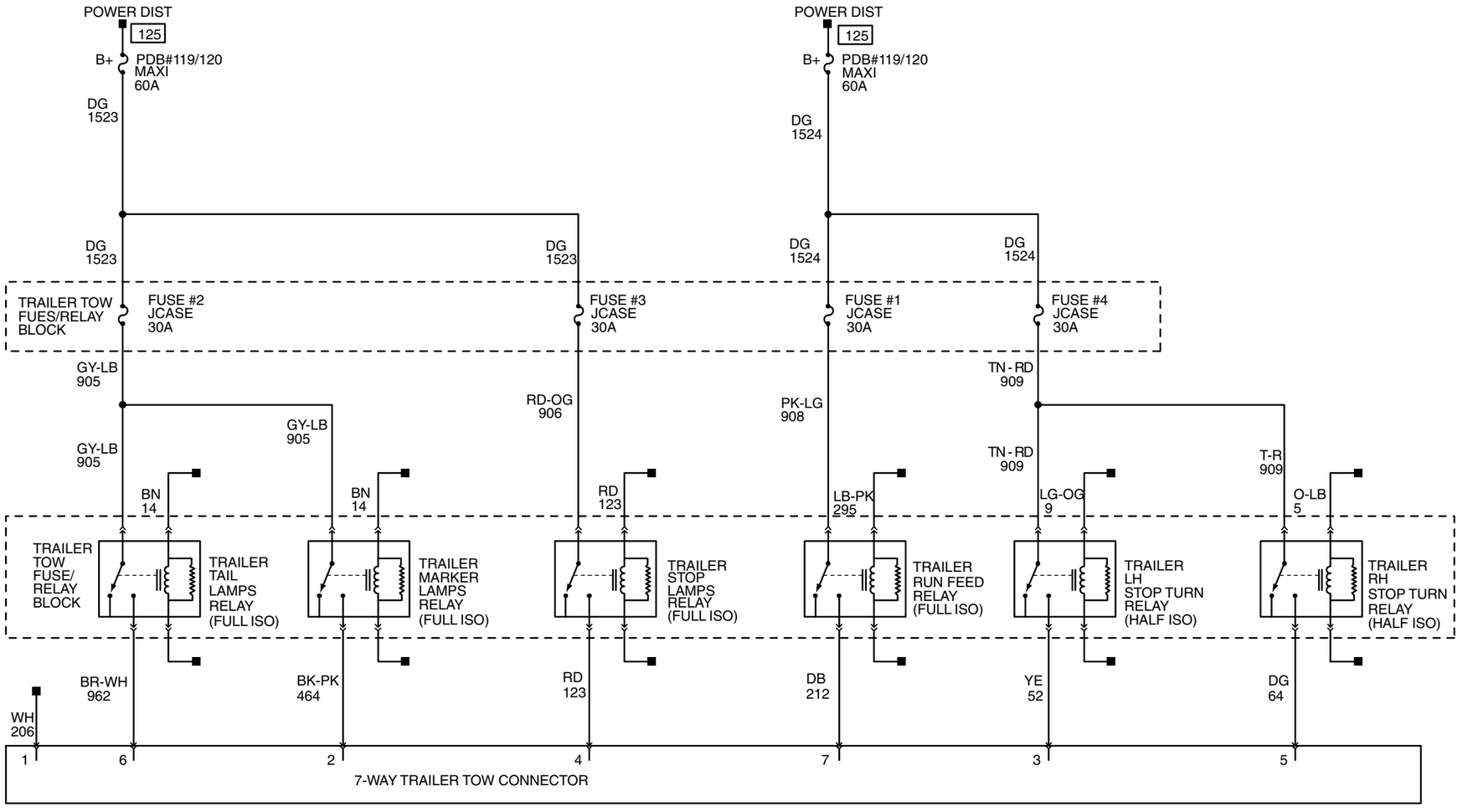


CONNECTOR VIEWED FROM MATING END.



LOCATED AT REAR OF VEHICLE

F-650/F-750 SUPER DUTY — AIR BRAKE FOR TRAILER TOW CABLE



F-650/F-750 SUPER DUTY
ELECTRICAL WIRING/GENERAL PRACTICES

This section provides instructions for the addition of electrical devices to the vehicle electrical system by body builders.

(Vehicles stored on site should have the positive battery cable disconnected to minimize "Dead battery" situation. This applies to both "incomplete" and "complete" vehicles in storage.)

After all electrical or vehicle modifications, perform the on-board diagnostics procedures as described in the powertrain control/emissions diagnosis manual to clear all diagnostic trouble codes (DTC's). Road test vehicle and rerun the on-board diagnostics to verify that no DTC's are present. If DTCs are generated perform the appropriate diagnostic procedures and repairs. Vehicle operation (engine/transmission) may be affected if DTC's are not serviced.

F/CMVSS, U.S. and Canadian RFI Requirements:

1. All Ford vehicles built and fully completed by Ford, comply with F/CMVSS No. 108, "Lamps, Reflective Devices and Associated Equipment" and other applicable F/CMVSS that affect electrical components.
2. Incomplete vehicles (i.e., Chassis Cab, Stripped Chassis, etc.) will conform to the F/CMVSS according to the provisions and conditions stated in the Incomplete Vehicle Manual (IVM) attached to each incomplete vehicle. Care must be taken that modifications do not conceal, alter or change components installed or provided by Ford Motor Company to achieve this conformance.
3. Devices that emit radio frequency (RF) energy, such as AM/FM radios and radio-controlled security systems, marketed for sale or use in the United States are subject to the rules and regulations of the Federal Communications Commission (FCC) 47 CFR Parts 2 and 15.

   These rules specify the following conditions of operation:

   This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

   In addition, the FCC's Rules may require the device to be tested and found to comply with various RF interference emission limits before it may be marketed. The FCC establishes different limits according to the particular use and installation of RF devices. In some cases, a grant of equipment authorization from the FCC also must be obtained before any RF device may be marketed. Labelling with certain FCC information may also be required.

   To insure continued compliance with the FCC's requirements, the owner, user, custom manufacturer, or service technician must not modify or change the RF device in a manner not expressly approved by Ford Motor Company. Such modifications could void the authority to operate the device.
4. All vehicles manufactured in Canada or for sale or use in Canada are subject to the Canadian "Regulations for the Control of Interference to Radio Reception," SOR/75-629, Canada Gazette Part II, Vol. 109, No. 21, November 12, 1975, as amended by SOR/77-860, Canada Gazette Part II, Vol. 111, No. 21, November 9, 1977, by SOR/78-727, Canada Gazette Part II, Vol. 112, No. 18, September 27, 1978, and by SOR/80-915, Canada Gazette Part II, Vol. 114, No. 23, December 10, 1980. Violation of these regulations is punishable by fine or imprisonment. Ford-built incomplete vehicles other than stripped chassis are designed and manufactured to be capable of meeting the regulatory requirements or such modifications thereof as may be authorized by the Canadian Department of Communications.

   However, because Ford has no control over how an incomplete vehicle is completed by subsequent stage manufacturers, Ford does not represent that the completed vehicle incorporating the Ford-built components will comply with applicable requirements.

Routing & Clipping:

1. It is strongly recommended that wiring in areas of heavy rework, or in areas where welding operations are to be performed, be removed prior to the rework operations and reinstalled after the rework is completed. If vehicle is equipped with an Electronic Engine Control System ECM / ECV Module must be disconnected before any electrical welding is performed, otherwise module damage may result. If wire removal is not practical, the wires must be shielded from damage due to the rework and welding heat. All components and wiring should be reinstalled as closely as possible to the way it was installed before removal.
2. Wire routings of newly installed components or wire routing revisions of the Ford harnesses necessitated by reworks must conform to the following:

- Wires routed through holes in sheet metal or castings must have the hole edges protected by a grommet.
- Wires should be routed to avoid metal edges, screws, trim fasteners and abrasive surfaces. When such routings are not possible, protective devices (shields, caps, etc.) must be used to protect the wires and when wires must cross a metal edge the edge should be covered with a protective shield and the wiring fastened within 3 inches on each side of the edge.
- Wires must be routed to provide at least 3 inches clearance to moving parts, unless positively fastened or protected by a conduit.
- Existing heat shields, insulation, and wire shielding/twisting must be maintained.
- Wire routings should avoid areas where temperatures exceed 180 F and a minimum clearance of 6 inches should be maintained from exhaust system components. Where compliance with this requirement is not possible, high temperature insulation and heat shields are required.
- When wiring is routed between two members where relative motion can occur, the wiring should be secured to each member, with enough wire slack to allow flexing without damage to the wire.
- Wiring to all circuit components (switches, relays, etc.) in exposed locations must provide a drip loop to prevent moisture from being conducted into the device via the wire connection.
- Routing wires into areas exposed to wheel wash should be avoided. When such routings cannot be avoided, adequate clipping or protective shields are required to protect the wires from stone and ice damage.
- The wire retainers and grommets installed by the assembly plant are usually designed to accommodate only the Ford-installed wires. Additional wiring or tubing should be retained by additional clips. When added wires or tubes are routed through sheet metal panels, new holes, with proper wire protection and sealing, must be used.
- All wiring connections to components of the factory-installed system must be accomplished by using the proper mating wire termination. (Connections on studs and ground connections must use eyelet terminations, connections to female bullets must terminate in male bullets, etc.)

Splice/Repair:

When necessary to splice wire for repair or circuit length revisions, the following guide should be followed:

- Wire ends should be stripped making sure that individual conductor strands are not damaged.
- When soldering, make sure an adequate mechanical joint exists **before** applying solder. Use only rosin core solder — **never** acid core.
- For crimp joints, use butt-type metal barrel fasteners and a proper tool (such as Motorcraft crimp tool S-9796) specifically designed for this type of work.
- Splice joints must be adequately sealed and insulated. Adhesive lined heat shrink tubing is highly recommended to cover soldered and bare, metal barrel, crimp joints. Quality electrical tape can be used inside the vehicle but is not recommended for an outside environment.
- Seal the ends of insulated barrel crimp devices with a silicone grease when in an outside environment.
- The most durable splice joint will be bare metal barrel crimped, flow-soldered and covered with adhesive lined heat shrink tubing. Use this type of joint as often as possible.

Circuit Protection:

1. Modification to existing vehicle wiring should be done only with extreme caution and consideration of effects on the completed vehicle electrical system. Anticipated circuitry should be studied to ensure that adequate circuit protection will exist and that feedback loops are not created.
2. Any added circuitry must be protected either by a base vehicle fuse or breaker, or by a similar device installed by the body builder.
3. When adding loads to a base vehicle protected circuit, make sure that the total electrical load thru the base vehicle fuse or breaker is less than 80% for fuses in the passenger compartment and 60% for fuses underhood or under body of the device rating to prevent nuisance fuse blows.

- Total **current** draw is the sum of the base vehicle circuit current requirement (measured with an ammeter) and the anticipated add-on components current requirements.
- **Never** increase the rating of a factory installed fuse or circuit breaker.
  - For added lamp loads, the "Bulb Chart" on the next page will aid in determination of common lamp current draws.

F-650/F-750 SUPER DUTY
ELECTRICAL WIRING/BULB CHART

If the **total** electrical load on a factory circuit, after the addition of electrical equipment, is less than 88 % of the fuse or circuit breaker protection rating in that circuit or less than the capacity of some limiting component (Switch, Relay, etc.), the items to be added can be connected directly to that circuit.

If the total electrical load to be added on a factory circuit exceed the value of the circuit protection, or the value of some limiting component, the items to be added **canno**t be added directly to the circuit.

Added electrical devices exceeding the current capabilities of the factory wiring system must be controlled through the use of a relay or switch. The coil of the relay can be fed from the factory wiring (now acting as a signal circuit) with the added wiring providing the power feed to the added electrical device through the relay power contacts. (The relay selection is important and depends on current requirements, number of cycles expected in the relay lifetime, whether the relay is to be operated intermittently or for long periods of time, and whether the relay is exposed to weather conditions or is installed in a protected area. When the current requirements of a circuit exceed the capacity of an available relay, more than one relay can be used if the circuit is wired to split the load).

The factory wiring should not be used as a power feed to the relay power contacts or switches. Battery power is to be supplied from the starter motor solenoid positive terminal for added circuits requiring a maximum of 30 Amps or directly from the battery positive terminal for added circuits requiring greater than 30 Amps of current.

Caution — Never use the stud on the underhood fuse panel as a junction point.

Circuit protection (fuses or circuit breakers) must be provided for all added wiring. The protection device rating should not exceed the current requirements for the add-on components and should be installed as close to the point as possible.

WIRE GAGE:

1. When adding wiring, the wire gage size should be determined as follows:

   Where wire is spliced to extend a circuit, the added wire should have a gauge at least that of the circuit being lengthened.

   Where wire is being added to feed add-on devices, the **Wire Gage Table** on this page should be used. (note: Current capacity of a given wire varies with temperature and type of insulation. The table, however, represents generally accepted values as a guide).

2. All added underhood or underbody wiring should have a thermoset insulation (such as Hypalon or Cross-linked polyethylene).

   SAE specifications J1128 type SXL, GXL or TXL.

   SAE specifications J1127 type SGX or STX for battery cables.

WIRE GAGE TABLE

WIRE GAGE	MAXIMUM CURRENT CAPACITY (PLASTIC INSULATED COPPER WIRE)
20	10 Amps
18	15 Amps
16	20 Amps
14	25 Amps
12	30 Amps
10	40 Amps

BULB CHART

BULB TRADE NUMBER	CANDLE POWER	CURRENT @ RATED VOLTAGE	BULB TRADE NUMBER	CANDLE POWER	CURRENT @ RATED VOLTAGE
90	6	0.58 Amps @ 13.0V	1196	50	3.00 Amps @ 12.5V
94	15	1.04 Amps @ 12 .8V	1445	0.7	0.14 Amps @ 14.4V
97	4	0.69 Amps @ 13.5V	1815	1.4	0.20 Amps @ 14.4V
97A	3	0.69 Amps @ 13.5V	1816	3	0.33 Amps @ 13.0V
105	12	1.00 Amps @	1891	2	0.24 Amps @ 14.0V
161	1	0.19 Amps @14.0	1892	0.75	0.12 Amps @ 14.0V
168	3	0.35 Amps @ 14.0V	1893	2	0.33 Amps @ 14.0V
194	2	0.72 amps @ 14.0V	1895	2	0.27 Amps @ 14.0V
211-2	12	0.97 amps @ 12.8	4000	37.5, 60 Watts	3.14. 5.04 Amps @ 12.8V
212-2	6	0.74 Amps @ 13.5V	4001	26,000	3.14 Amps @ 12.8V
214-2	4	0.50 Amps @ 13.5V	4405	50,000	2.58 Amps @ 12.8V
561	12	0.97 Amps @ 12.8V	4412	35 Watts	2.74 Amps @ 12.8V
582	6	0.74 Amps @ 13.5V	4414	18 Watts	1.41 Amps @ 12.8V
631	6	0.63 Amps @ 12.8V	H6054	35, 65 Watts	2.94, 5.46 Amps @ 14.0V
1076	32	1.80 Amps @ 12.8V	4415	35 Watts	2.73 Amps @ 12.8V
1156	32	2.10 Amps @ 12.8V	4416	30 Watts	2.34 Amps @ 12.8V
1157	32	2.10 Amps @ 12.8V	4435	75,000	2.34 Amps @ 12.8V
1157	3	0.59 Amps @ 14.0V	6015	27,500 Low 30,000 Hi	4.10, 4.97 Amps @ 12.8V
1157 NA	24	2.10 Amps @ 12.8V	6014	27,500 Low 30,000 Hi	4.20, 4.97 Amps @ 12.8V
1157 NA	2.2	0.59 Amps @ 14.0V	6112	40, 50 Watts	3.10. 3.91 Amps @ 12.8V
1178	4	0.69 Amps @ 13.5V	1295	50	3.0 @ 12.5
1195	50	3.00 Amps @ 12.5V	563	4	0.50
904	4	0.69 Amps @ 13.5	37	0.5	0.09 @ 14.0
906	6	0.69 Amps @ 13.0	2162	0.5	0.1 @ 14.0
912	12	1.0 Amps @ 12.8			
89	6	0.58 Amps @ 13.0			
1095	4	0.51 Amps @ 14.0			

F-650/F-750 SUPER DUTY
POWERTRAIN CONTROL SYSTEM APPLICATION

ELECTRICAL:
Guidelines for Powertrain Control System Application

SYSTEM:
ECM (Engine Control Module) wires shall not be in the same bundle as other high-current non-ECM circuits (e.g., tachometer wire from coil to TFI, power seat/door lock/window, horn, alternator reg.) for a distance of more than 20 inches.

COMPONENTS:
BOO Brake on/off Switch: Supplies the processor a signal for converter clutch operation. A connection here may have an adverse effect on transmission operation. Refer to the Trailer Tow Section on page 272.

CAUTION Any connection to the ECM-V system (i.e., wiring, components) or alterations to the system may adversely affect vehicle operation (transmission and/or engine).

BARO Barometer: Must be physically in a higher location than the intake manifold and angled with the vacuum nipple at least 4 degrees downwards. BARO has no vacuum line.

APS Throttle Position Sensor: Supplies a throttle position signal to the ECM processor. Do not tap into or splice any wire to the TP sensor.

VSS Vehicle Speed Sensor: Similar to the engine speed signal, must not be altered. Do not tap into or splice any wire to the VSS. If an additional vehicle speed signal is required.

SPEEDOMETER
The vehicle speedometer receives the calibrated speed signal (square wave) from the **GEM** through Circuit 679 (GY/BK). The speed input to the **GEM** is provided by the (Speed Sensor) in the transmission through Circuit 353 (LB) and Circuit 676 (PK/O). The square tooth tone wheel in the transmission is attached to the ring gear. A variable reluctance sensor is mounted to the rear transmission housing with a precise air gap with respect to the tone wheel. These two components make up the VSS (Speed Sensor). The trans case has a fixed mounting boss for the variable reluctance sensor and therefore the air gap is non-adjustable.

TONE RING SIZE
All factory tone wheels have 16 teeth for every rear axle ratio offered. If the rear axle is changed, the **GEM** must be reconfigured to reflect the correct vehicle speed. The tone ring size parameter is a required input when reconfiguring the **GEM**.

Calculating Tone Ring Size

CONSTANT = axle ratio x 16.

If CONSTANT is a two digit number, then the tone ring size is prefaced by 000 plus CONSTANT.

Example:
If axle ratio = 4
Then constant = 4 x 16 = 64
Tone Ring Size = 00064

If CONSTANT is a three digit number, then the tone ring size is prefaced by 00 plus CONSTANT.

Example:
If axle ratio = 7
Then constant = 7 x 16 =112
Tone Ring Size = 00112

F-650/F-750 SUPER DUTY
POWERTRAIN CONTROL SYSTEM APPLICATION

TIRE SIZE

If the tires are changed, it is necessary to configure the GEM to reflect the correct vehicle speed.

The tire manufacturer may be able to provide the revolutions per mile value if it is not on page 233.

If the tire make and size are not listed, the tire revolutions per mile can be calculated.

Position the vehicle on level ground, load with the standard weight for the specific application, and inflate the tires to the recommended pressure (ensure that the tires are cold). Measure the rear tire height from the ground to the top of the tire in inches. Ensure an accurate reading to the nearest 1/8 inch. Divide 20,168 by the tire height in inches to get the tire revolutions per mile.
EXAMPLE: Measured tire height = 33 inches. 20168/33 = 611 Rev/Mile

Once the tire revolutions per mile value is known, proceed to the GEM Configuration.

REQUIRED TOOLS - GEM CONFIGURATION

Rotunda New Generation Star (NGS) Tester.

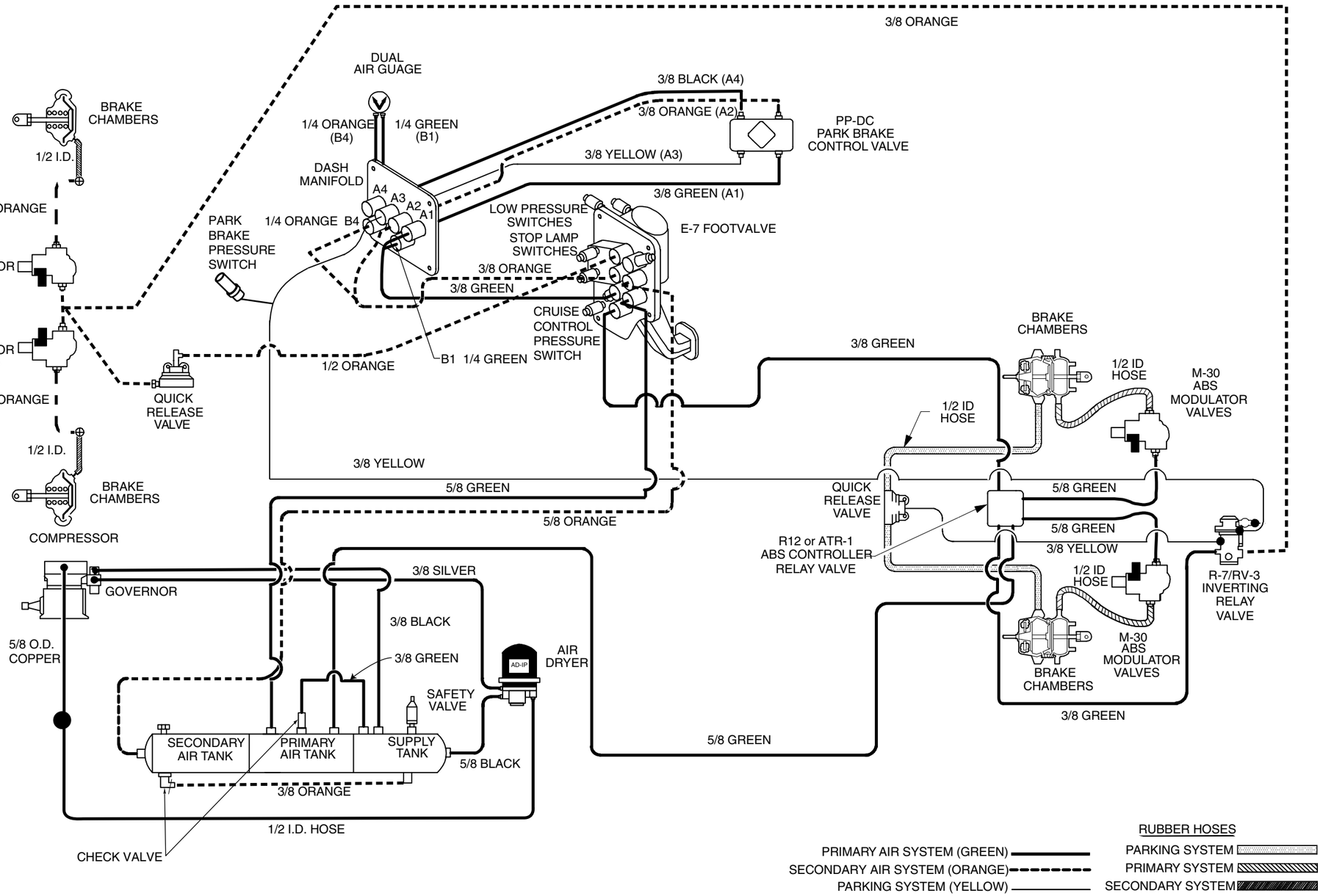
Ford Service Function (FSF) Program Card Version 3.2 or newer.

The Rotunda New Generation Star (NGS) Tester and the Ford Service Function (FSF) Program Card can be obtained from Hickok Electrical Instrument Company by contacting (216) 541-8060 Extension 225. If your company has an account with Rotunda, contact Rotunda - OTC Division at 1-800-533-5338.

GEM CONFIGURATION

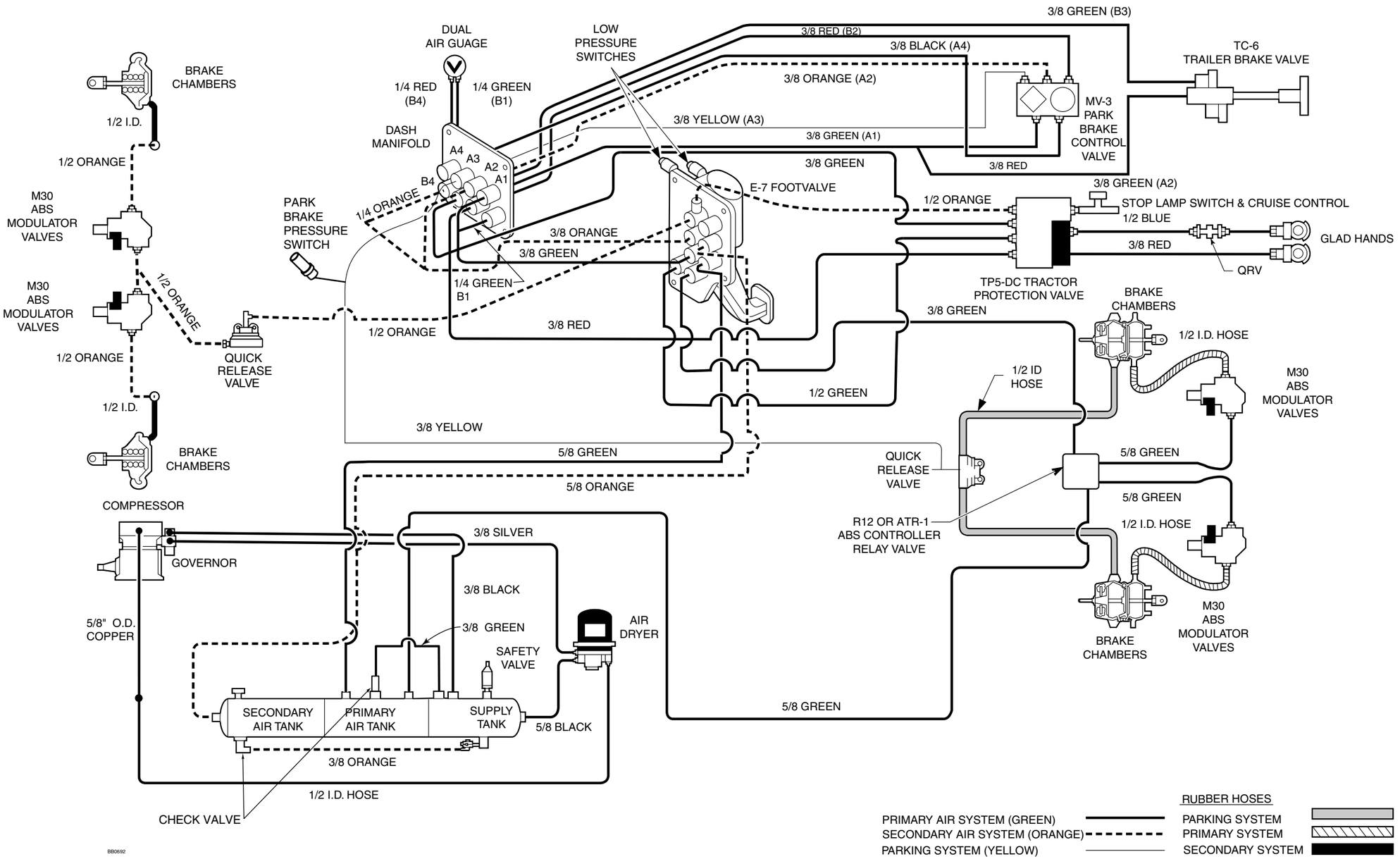
1. Ensure that all harness connectors are connected to the module that requires configuration.
2. Plug the NGS tester into the data link connector located below and to the right of the steering column.
3. Actuate the ignition switch to the RUN position (engine off).
4. Insert the Ford Service Function (FSF) Program Card into the Rotunda New Generation Star (NGS) Tester.
5. Highlight LANGUAGE and press trigger to select.
6. Highlight SERVICE BAY FUNCTIONS and press trigger to select.
7. Highlight module GEM and press trigger to select.
8. Highlight TIRE SIZE/AXLE RATIO CONFIG and press trigger to select.
9. Select TIRE SIZE by pressing the trigger button. Use the dial to select the custom revolutions/mile entry and press the trigger button. Enter two zero's using the number buttons and enter the 3-digit revolutions/mile value for the desired tire using the number buttons. See Tire Size Section for input parameter.
10. Using the dial, select TONE RING SIZE and press the trigger button. Use the dial to select the rear axle ratio and press the trigger button If the rear axle ratio is not present, use the dial to select #of teeth and press the trigger button. Enter the TONE RING SIZE of the desired axle ratio using the number buttons. See Tone Ring Size Section for input parameter.
11. Using the dial, select OPTION and press the trigger button. Use the dial to select N/A and press the trigger button.
12. Using the dial, select VEHICLE and press the trigger button. Use the dial to select F650/750 and press the trigger button. If option is not present, select F250/350.
13. Press done (numeric 8 button) and the module will be programmed with the above data entered. To reprogram, repeat the above procedure.

F-650/F-750 SUPER DUTY
AIR BRAKE SYSTEM SCHEMATIC
WITH ABS AND CRUISE CONTROL

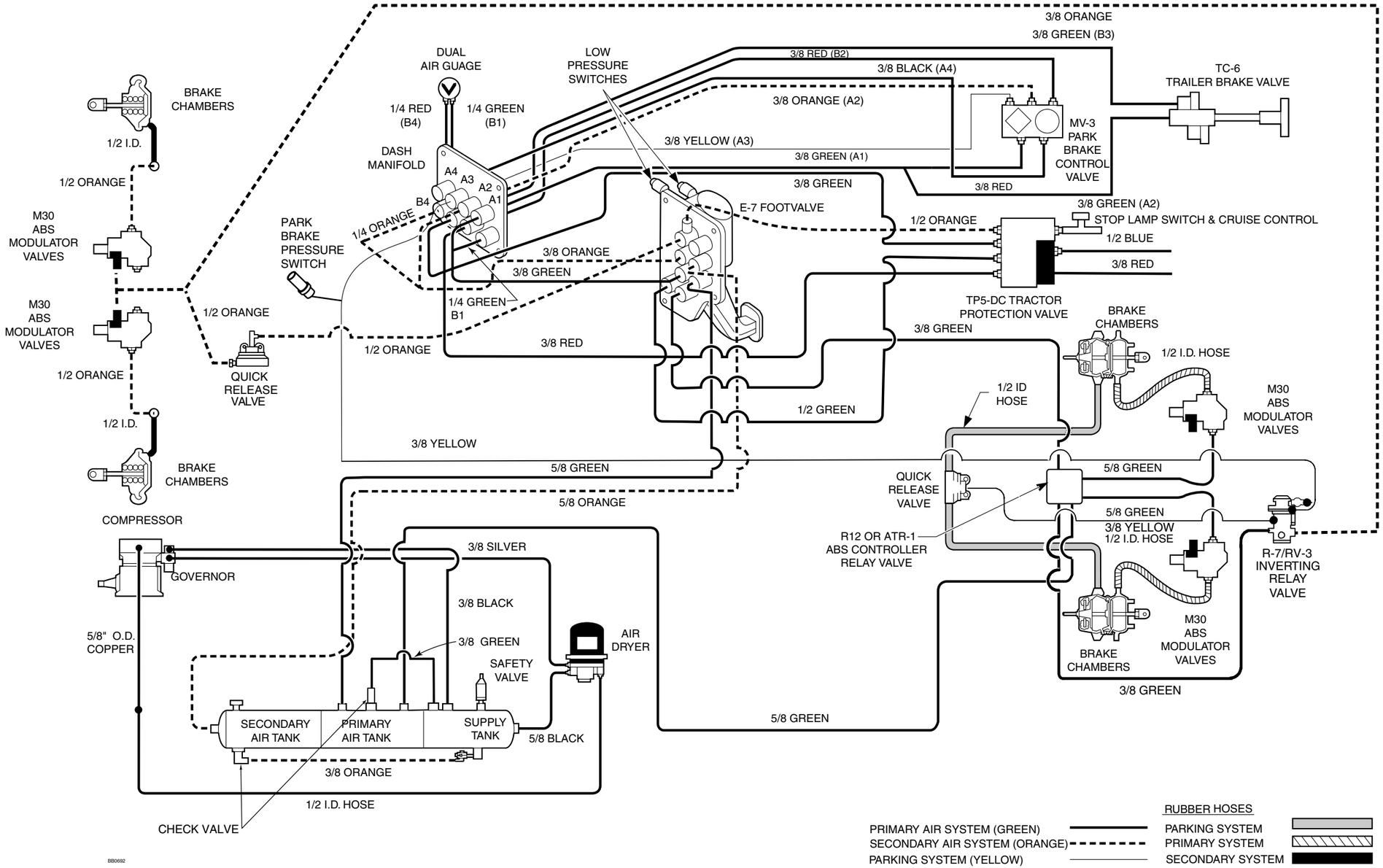


F-650/F-750 SUPER DUTY
AIR BRAKE SYSTEM SCHEMATIC
WITH ABS AND TRACTOR PACKAGE

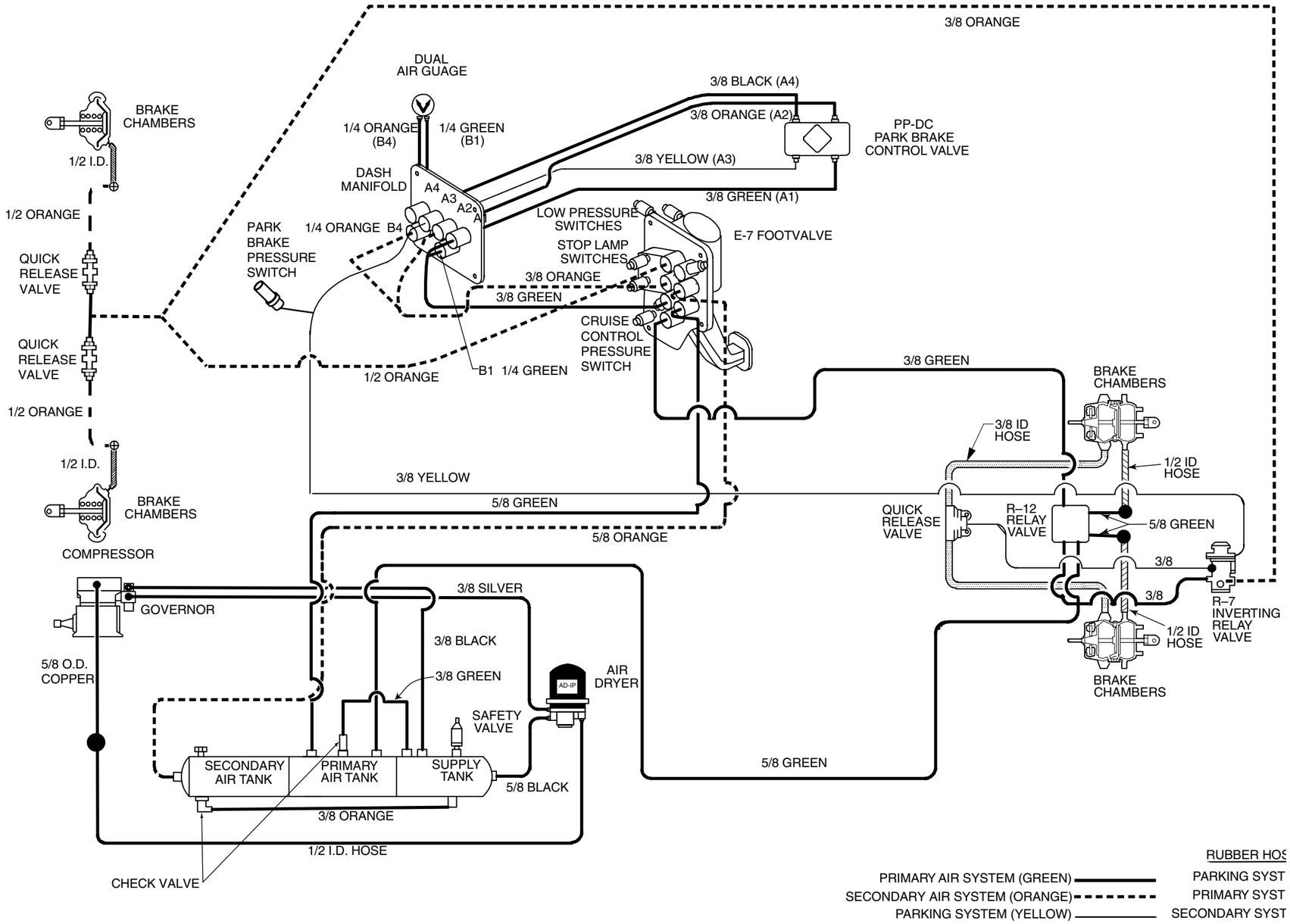
2004
MODEL YEAR



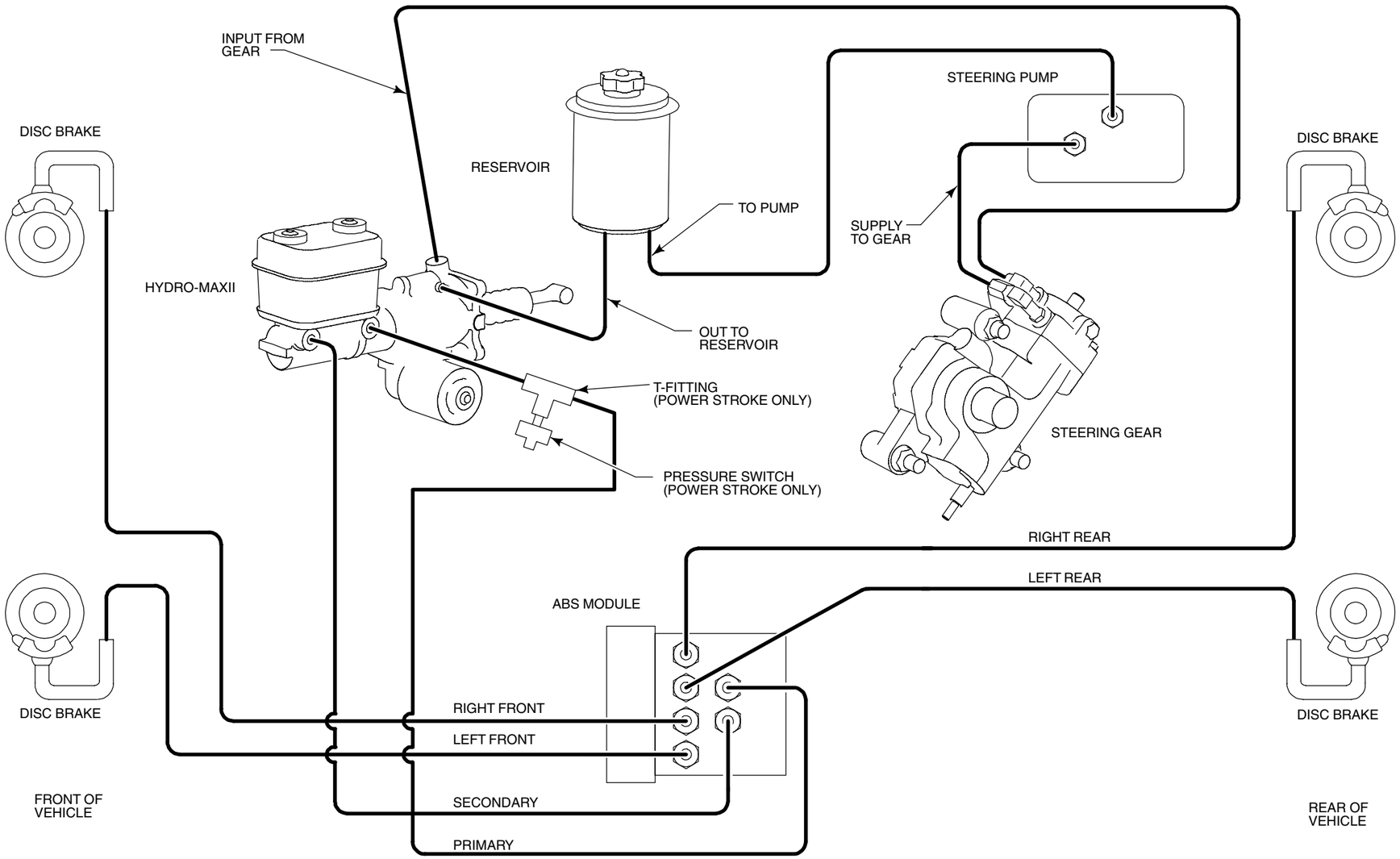
F-650/F-750 SUPER DUTY
AIR BRAKE SYSTEM SCHEMATIC
WITH ABS AND TRAILER PACKAGE



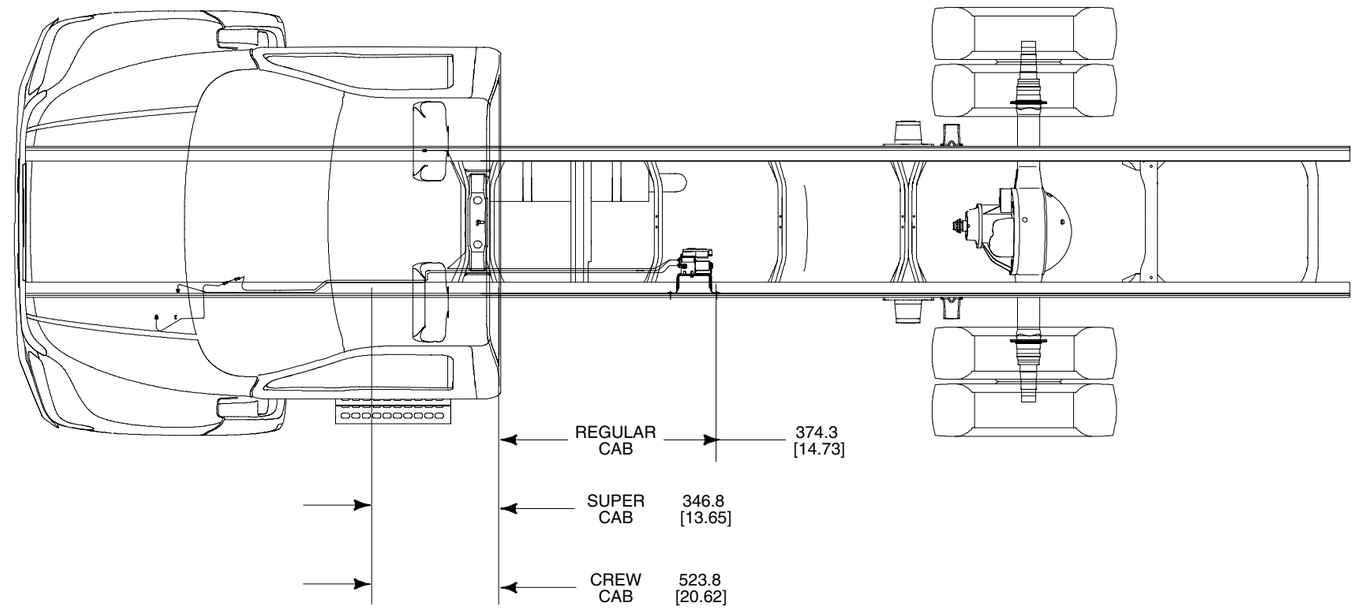
F-650/F-750 SUPER DUTY
AIR BRAKE SYSTEM SCHEMATIC
WITHOUT ABS (NON-US)



F-650/F-750 SUPER DUTY
TYPICAL HYDRAULIC BRAKE SYSTEM SCHEMATIC



F-650/F-750 SUPER DUTY
TYPICAL HYDRAULIC ABS MODULE LOCATION



NOTE — [ ] DIMENSIONS ARE INCHES.