



Body Builders Layout Book

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E-SERIES

E-SERIES WHAT'S NEW

2022

MODEL YEAR

- Added Guidance for wheelbase modifications with Electronic Stability Control (ESC)
- Neutral Idle Technology is now standard on all E-Series
- Added Aux fuel port location reference
- Updated SUB Mounting Guidelines
- Added Center of Gravity Reference data from IVM
- Wiring changes to SEIC and Customer Access circuits
- Updated Fuel Fill Graphic
- Added California Green House Gas Emission information (CGH)
- Embedded modem is standard on all configurations
- SEIC and Mobile PTO Mode limited to 2000 RPM



Body Builders Layout Book

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E-SERIES

E-SERIES INDEX

2022

MODEL YEAR

E-SERIES

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E-SERIES

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WARNING:

During the product'on and servicing of these vehicles, due care should be taken to avoid damaging of safety or emissions related systems such as the braking system, fuel lines, sensors, catalysts, etc. through contacting them while working on adjacent areas of the vehicle. Inadvertent damage can also occur due to adjacent welding/cutting operations, people standing near/on unprotected systems while performing other tasks.

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Introduction

Important Notices

The information described herein is believed to be correct at the time of publication, but accuracy cannot be guaranteed. Ford reserves the right to discontinue models or change specifications or designs at any time without notice and without incurring any obligation.

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 (IVM) which accompanies each incomplete vehicle.

Regulations such as those issued by the Federal Highway Administration (FHA) 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.

Reference Information

Ford Body Builder Advisory Service Publications

This document is an example of a program-specific Body Builders Layout Book (BBLB) published by the Ford Body Builder Advisory Service (BBAS) team. Each Ford Commercial Truck vehicle line has a similar document that aims to provide detailed information which may be of interest to a subsequent-stage manufacturer or alterer.

The Ford Transit and Transit Connect also have a Body and Equipment Mounting Manual (BEMM), which is a comprehensive resource dedicated to body and equipment mounting information.

Yet another source of program-specific information are the "Vehicle Specification" documents available on the Ford BBAS website. Information typically found in these documents are: vehicle curb and accessory weights, vehicle dimensions, component descriptions, capacities, GAWRs, alternator output, powertrain output and gear ratios.

In addition to the program-specific documents, there are several Ford BBLB documents that contain general best practices or information on specific subjects that span multiple vehicle lines. These include:

- General BBLB - contains Definitions, Design Recommendations and Vehicle Storage Guidelines.
- Snow Plow BBLB
- Pickup Box Removal BBLB

These publications are updated every model year and can be accessed via the web at <https://fordbbas.com> under "Publications". For BBLB and BEMM documents, expand the "Body Builder Layout Book" Section to view all available documents. For Vehicle Specifications, expand the "Vehicle Specifications" section. The website search function can be used to filter for specific content or vehicle line.

Ford Body Builder Advisory Service Bulletins

Occasionally, the Ford BBAS team will create an SVE "Bulletin" to address a specific issue or distribute important information in a timely manner. These documents can be accessed via the web at <https://fordbbas.com> under "Bulletins". The website search function can be used to filter for specific content or vehicle line.

If applicable, information from each SVE bulletin will be incorporated into the appropriate BBLB document the following model year. In some cases, SVE bulletins will continue to be referenced in this document.

Ford Body Builder Advisory Service Contact

The Ford Truck Body Builder Advisory Service may be consulted if questions regarding the completion of Ford commercial vehicles are not adequately addressed in the documentation described above. For assistance call (877) 840-4338 or e-mail via the web at <https://fordbbas.com> under "Contact Us" and select "General Questions".

For Ford vehicle CAD requests, please visit <https://fordbbas.com>, select "Contact Us" and then "CAD Request".

For both Questions and CAD Requests, please be as specific as possible with the request details to assure the most accurate and timely response.

Ford Service Publications

Ford Service Technical Resources (including wiring diagrams, repair manuals and diagnostic tool support) are available by subscription via the Motorcraft website: www.motorcraftservice.com

The following publications are examples of digital and printed 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



Body Builders Layout Book

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E-SERIES

E-SERIES MODEL LINEUP

2022

MODEL YEAR

Model	WB (in.)	Engine	Trans	Maximum GVWR (lbs.)	Max Payload (lbs.)	Spring/GAWR (lbs.) ⁽¹⁾		Base Curb Weight (lbs.)		
						Front Range Min.-Max.	Rear	Front	Rear	Total
E-350 Cutaway	138 SRW	7.3L Premium	6R140	10050	5100	4200	6084	2958	1992	4950
		7.3L Economy	6R140	10050	5100	4050-4200	6084	2958	1992	4950
	138 DRW	7.3L Premium	6R140	11500	6270	4050-4600	7800	3001	2224	5225
		7.3L Economy	6R140	11500	6270	4050-4600	7800	3001	2224	5225
	158 SRW	7.3L Premium	6R140	10050	5030	4200	6084	3039	1973	5012
		7.3L Economy	6R140	10050	5030	4200	6084	3039	1973	5012
E-350 Cutaway	158 DRW	7.3L Premium	6R140	11500	6210	4200-4600	7800	3082	2205	5287
		7.3L Premium	6R140	12500	7210	4200-5000	8500	3082	2205	5287
		7.3L Economy	6R140	11500	6210	4050-4600	7800	3082	2205	5287
		7.3L Economy	6R140	12500	7210	4050-5000	8500	3082	2205	5287
	176 DRW	7.3L Premium	6R140	12500	7200	4200-5000	8500	3148	2149	5297
		7.3L Economy	6R140	12500	7200	4200-5000	8500	3148	2149	5297
E-350 Stripped	138 DRW	7.3L Premium	6R140	11500	6870	4400-4600	7800	2421	2204	4625
		7.3L Economy	6R140	11500	6970	4200-4600	7800	2421	2204	4625
	158 DRW	7.3L Premium	6R140	12500	7820	4600-5000	8500	2480	2198	4678
		7.3L Economy	6R140	12500	7820	4600-5000	8500	2480	2198	4678
	176 DRW	7.3L Premium	6R140	12500	7760	4600-5000	8500	2535	2197	4732
		7.3L Economy	6R140	12500	7760	4600-5000	8500	2535	2197	4732
E-450 Cutaway	158 DRW	7.3L Premium	6R140	14500	8980	5000	9600	3078	2434	5512
		7.3L Premium	6R140	14200	8680	4600	9600	3078	2434	5512
		7.3L Economy	6R140	14000	8480	4400-5000	9600	3078	2434	5512
	176 DRW	7.3L Premium	6R140	14500	8980	5000	9600	3161	2358	5519
		7.3L Premium	6R140	14200	8680	4600	9600	3161	2358	5519
		7.3L Economy	6R140	14000	8480	4400-5000	9600	3161	2358	5519
E-450 Stripped	158 DRW	7.3L Premium	6R140	14500	9690	5000	9600	2531	2274	4805
		7.3L Economy	6R140	14000	9190	4600-5000	9600	2531	2274	4805
	176 DRW	7.3L Premium	6R140	14500	9640	5000	9600	2566	2292	4858
		7.3L Economy	6R140	14000	9140	4600-5000	9600	2566	2292	4858

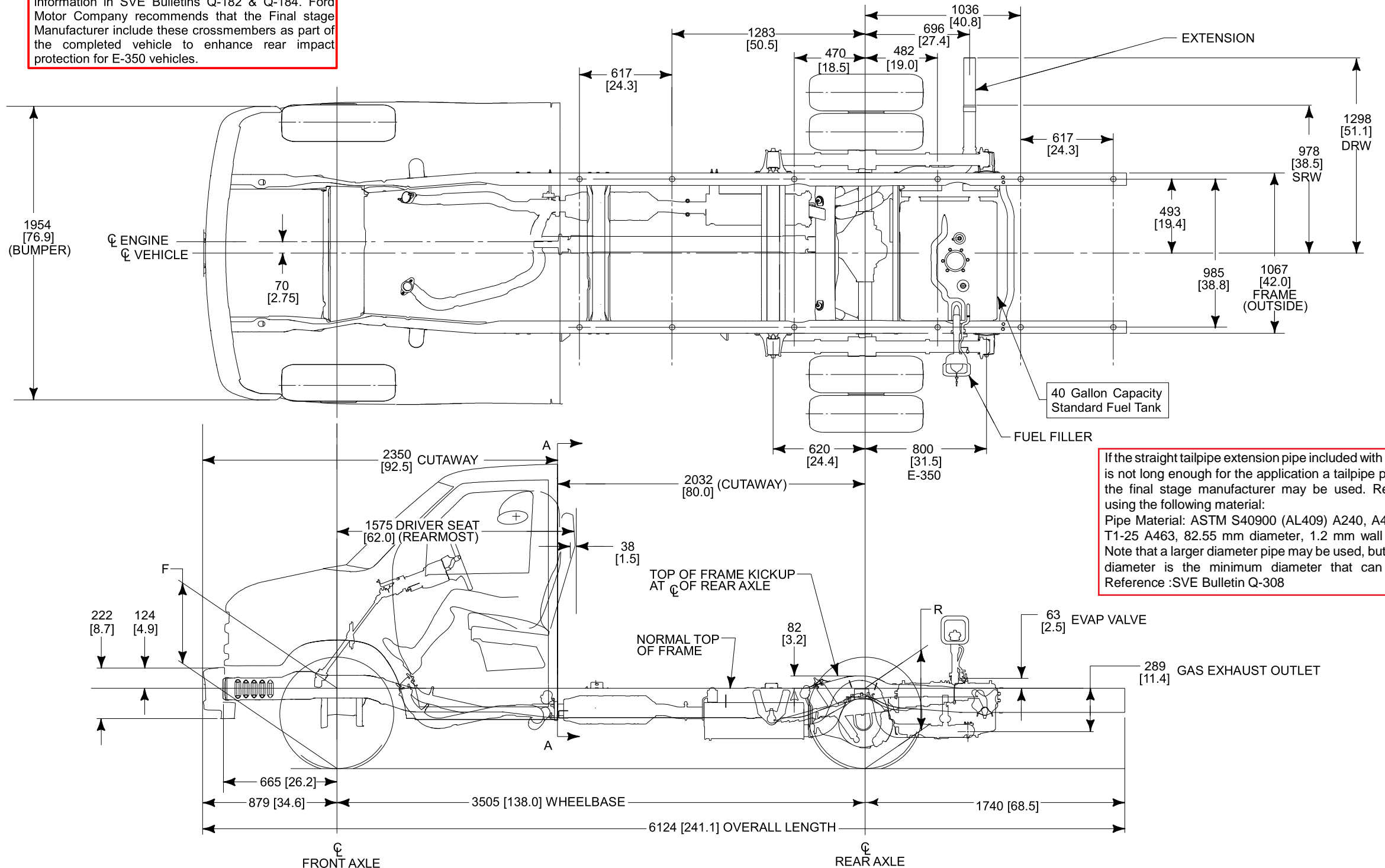
(1) Gross Axle Weight Rating is determined by the rated capacity of the minimum component of the axle system (axle, wheels, tires) of a specific vehicle. Front and rear GAWRs will, in all cases, sum to a number equal to or greater than the GVWR for the particular vehicle. Maximum loaded vehicle (including passengers, equipment and payload) cannot exceed the GVWR or GAWR (front or rear).



E-SERIES DIMENSIONAL DATA

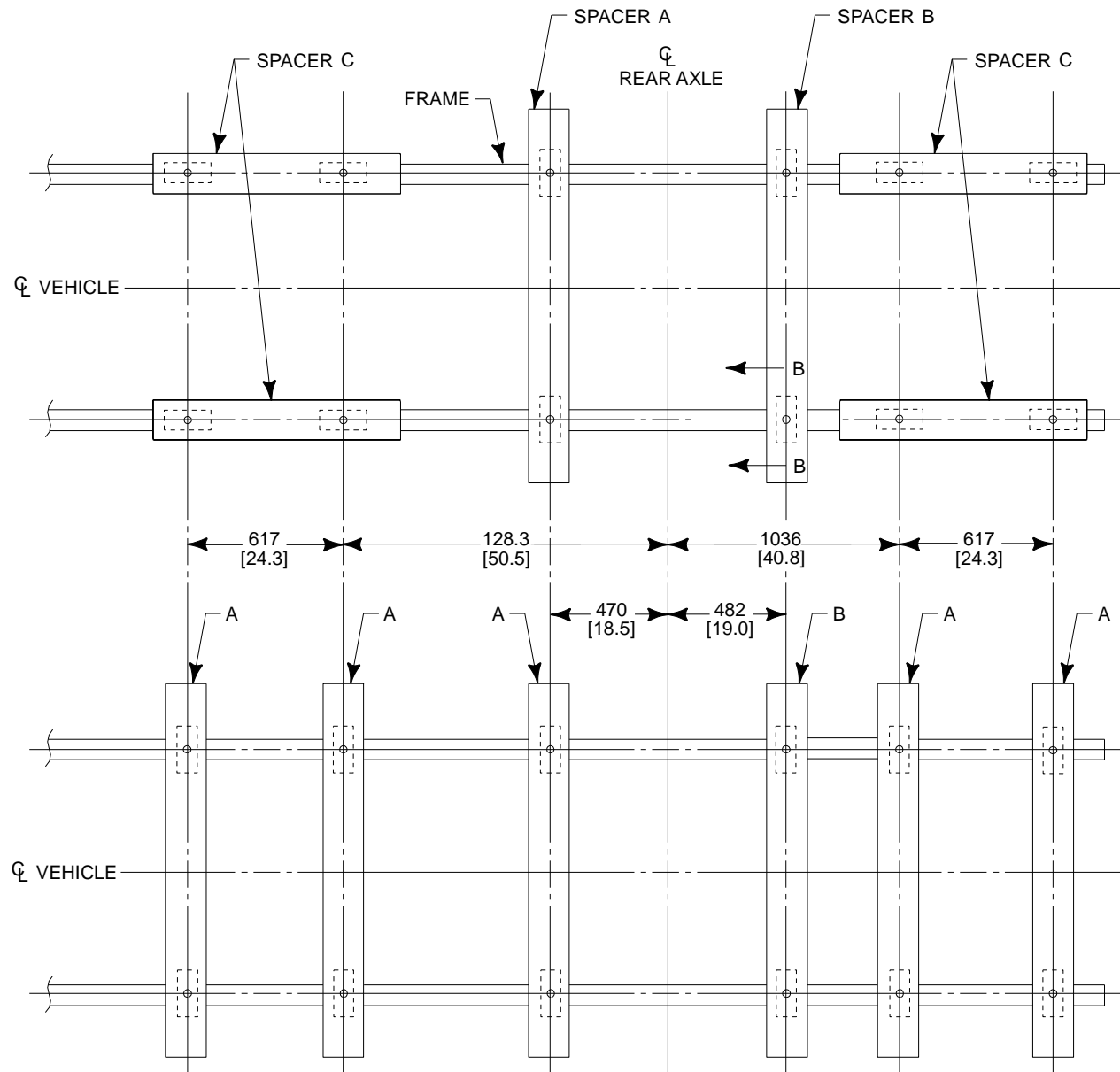
E-350 SUPER DUTY CUTAWAY 138" WB (SRW / DRW)

NOTE: Refer to rear crossmember installation information in SVE Bulletins Q-182 & Q-184. Ford Motor Company recommends that the Final stage Manufacturer include these crossmembers as part of the completed vehicle to enhance rear impact protection for E-350 vehicles.

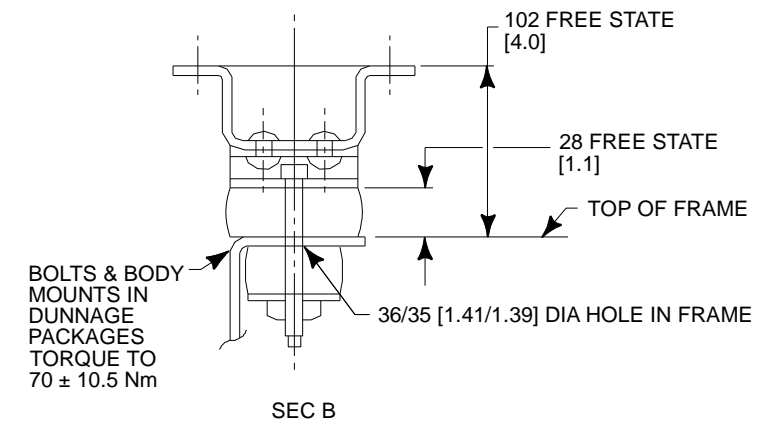
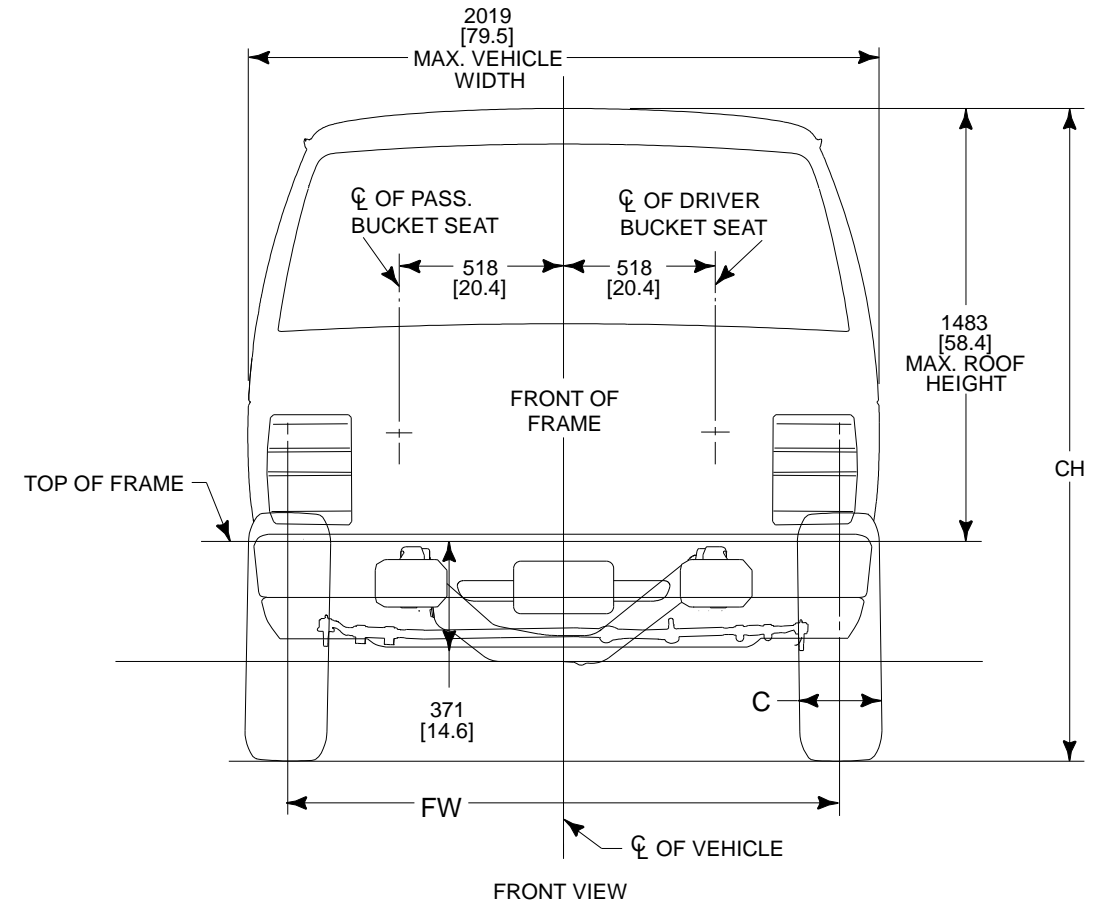


If the straight tailpipe extension pipe included with the vehicle is not long enough for the application a tailpipe provided by the final stage manufacturer may be used. Recommend using the following material:
Pipe Material: ASTM S40900 (AL409) A240, A480, COAT T1-25 A463, 82.55 mm diameter, 1.2 mm wall thickness. Note that a larger diameter pipe may be used, but 82.55 mm diameter is the minimum diameter that can be used. Reference :SVE Bulletin Q-308

E-SERIES DIMENSIONAL DATA E-350 SUPER DUTY CUTAWAY 138" WB (SRW / DRW) (Cont'd)

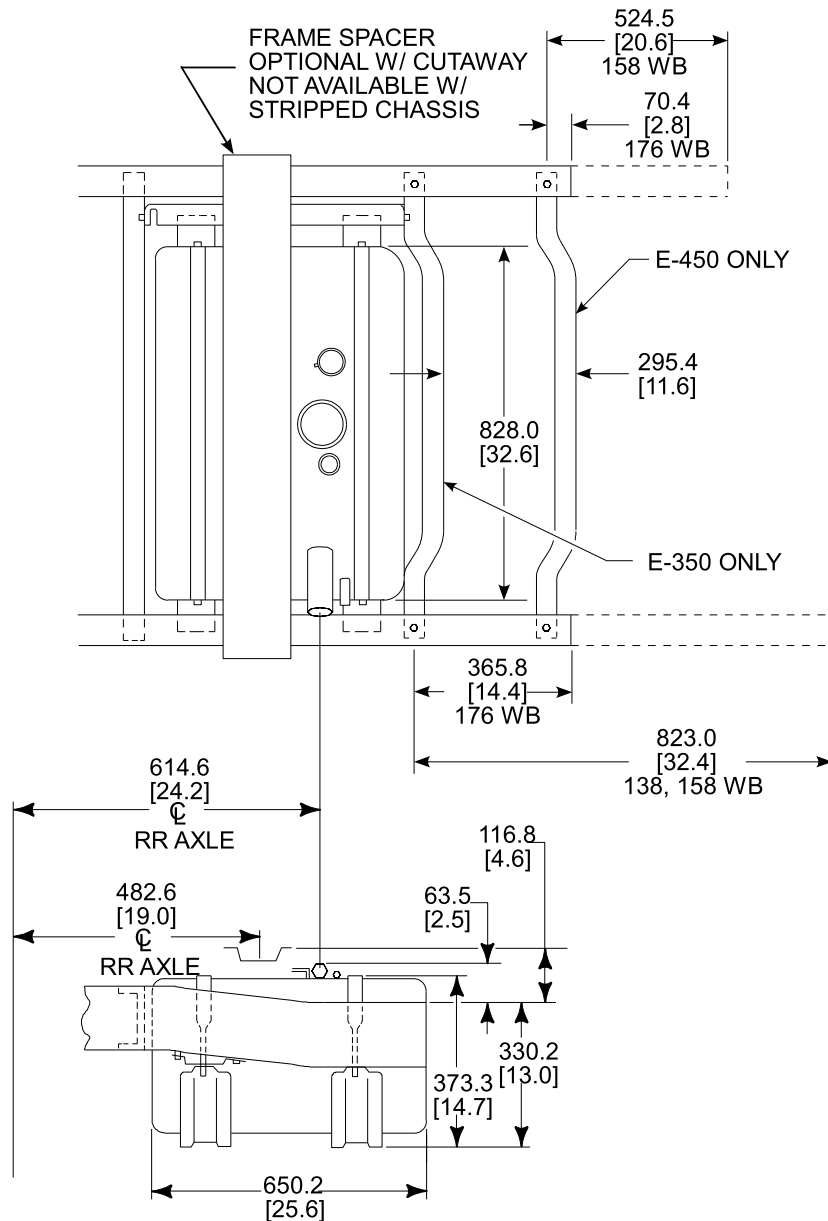


INCLUDES 6 LATERAL FRAME SPACERS WITH 12 BODY MOUNTS. USES SAME FRAME HOLES FOR LONGITUDINAL/LATERAL FRAME SPACER STANDARD SYSTEM.



NOTE — [] DIMENSIONS ARE INCHES.

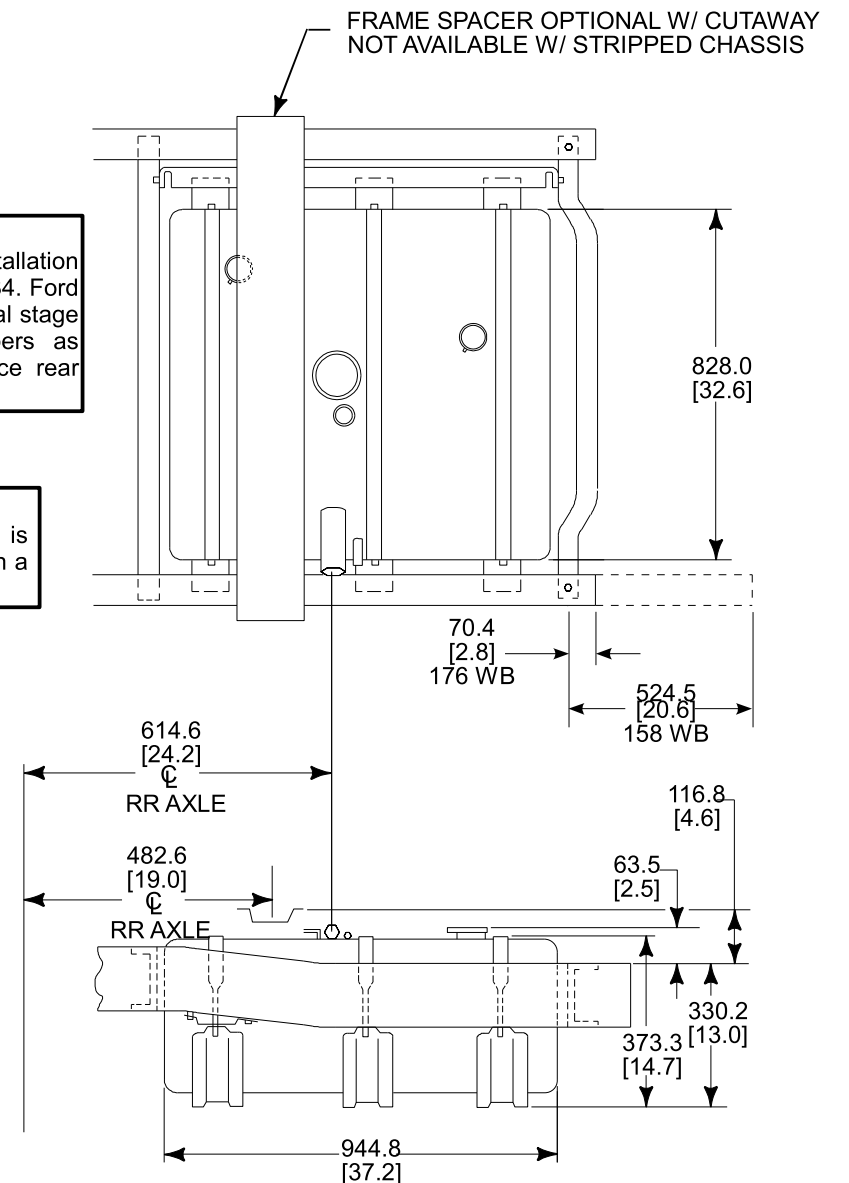
E-SERIES DIMENSIONAL DATA E-350 SUPER DUTY CUTAWAY 138" WB (SRW / DRW)



40 GALLON TANK
E-350: 138", 158", 176" WB
E-450: 158", 176" WB

NOTE:
Refer to rear crossmember installation information in SVE Bulletins Q-182 & Q-184. Ford Motor Company recommends that the Final stage Manufacturer include these crossmembers as part of the completed vehicle to enhance rear impact protection for E-350 vehicles.

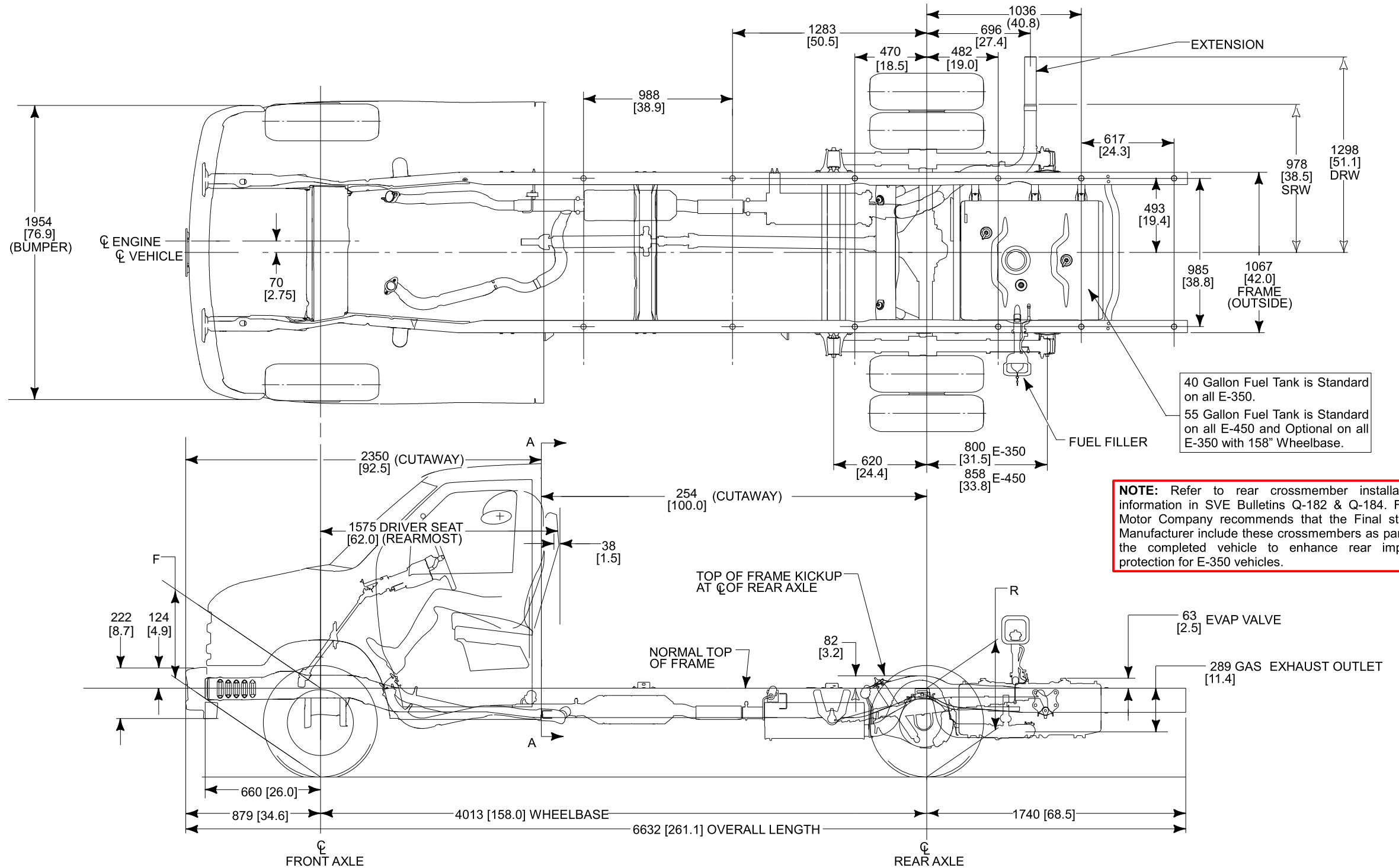
WARNING:
An 18" minimum frame extension is required on the 176" WB frame with a 55 gallon fuel tank.



55 GALLON TANK
E-350: 158" WB
E-450: 158", 176" WB

NOTE — [] DIMENSIONS ARE INCHES.

E-SERIES DIMENSIONAL DATA E-350/450 SUPER DUTY CUTAWAY 158" WB (SRW / DRW)

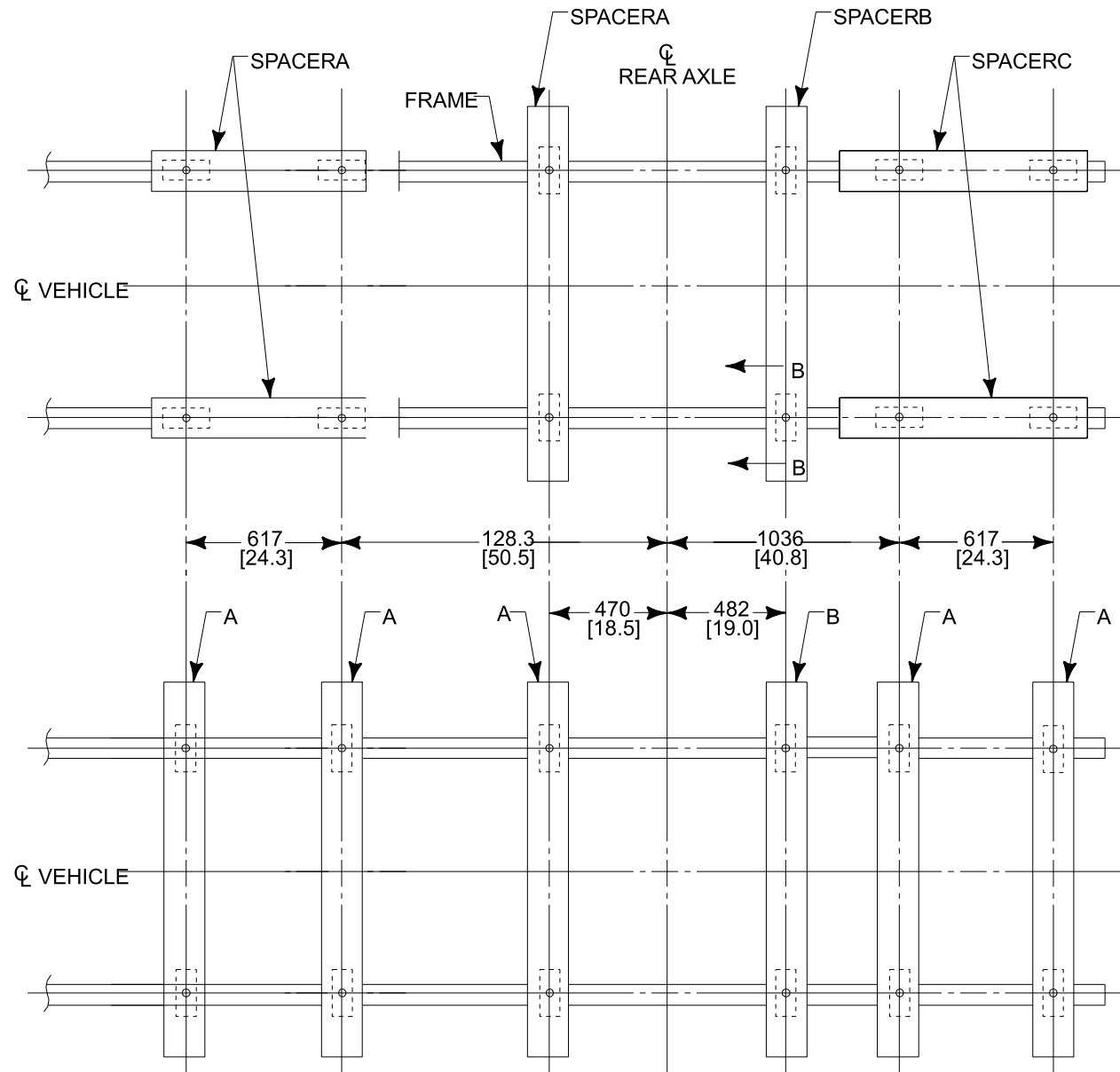


NOTES — [] DIMENSIONS ARE INCHES.
— FOR CA DIMENSION, SEE MODEL LINE UP.

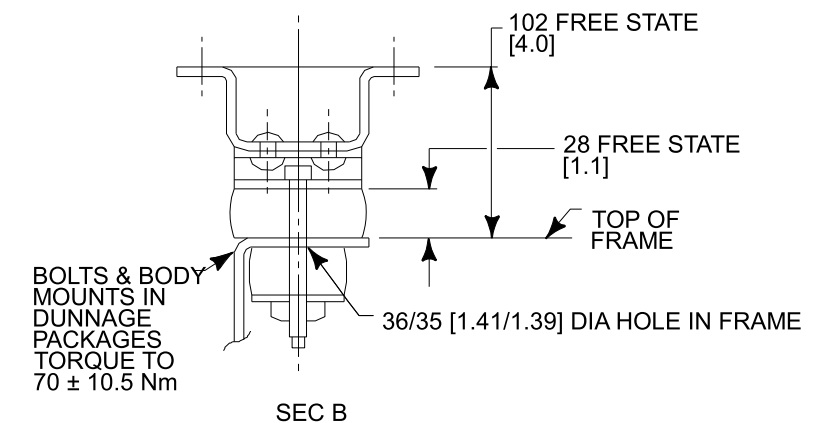
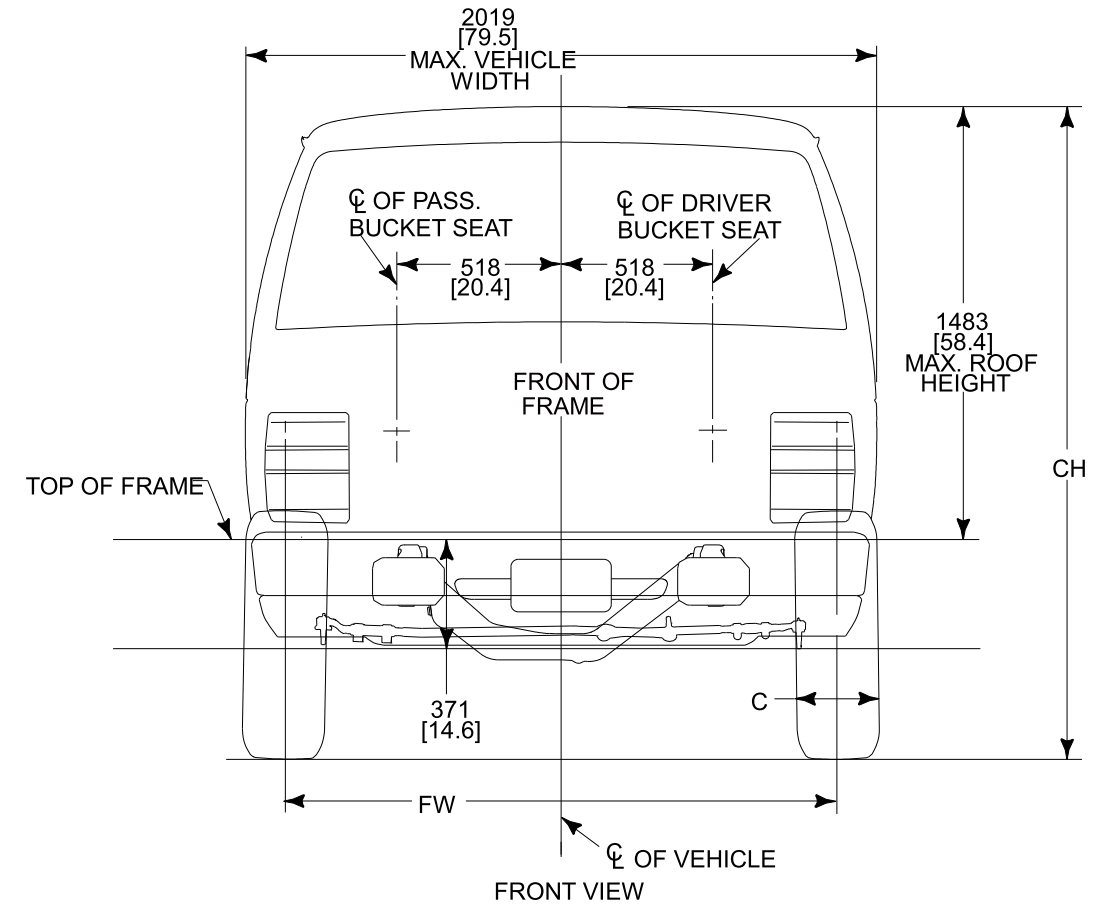
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E-SERIES DIMENSIONAL DATA

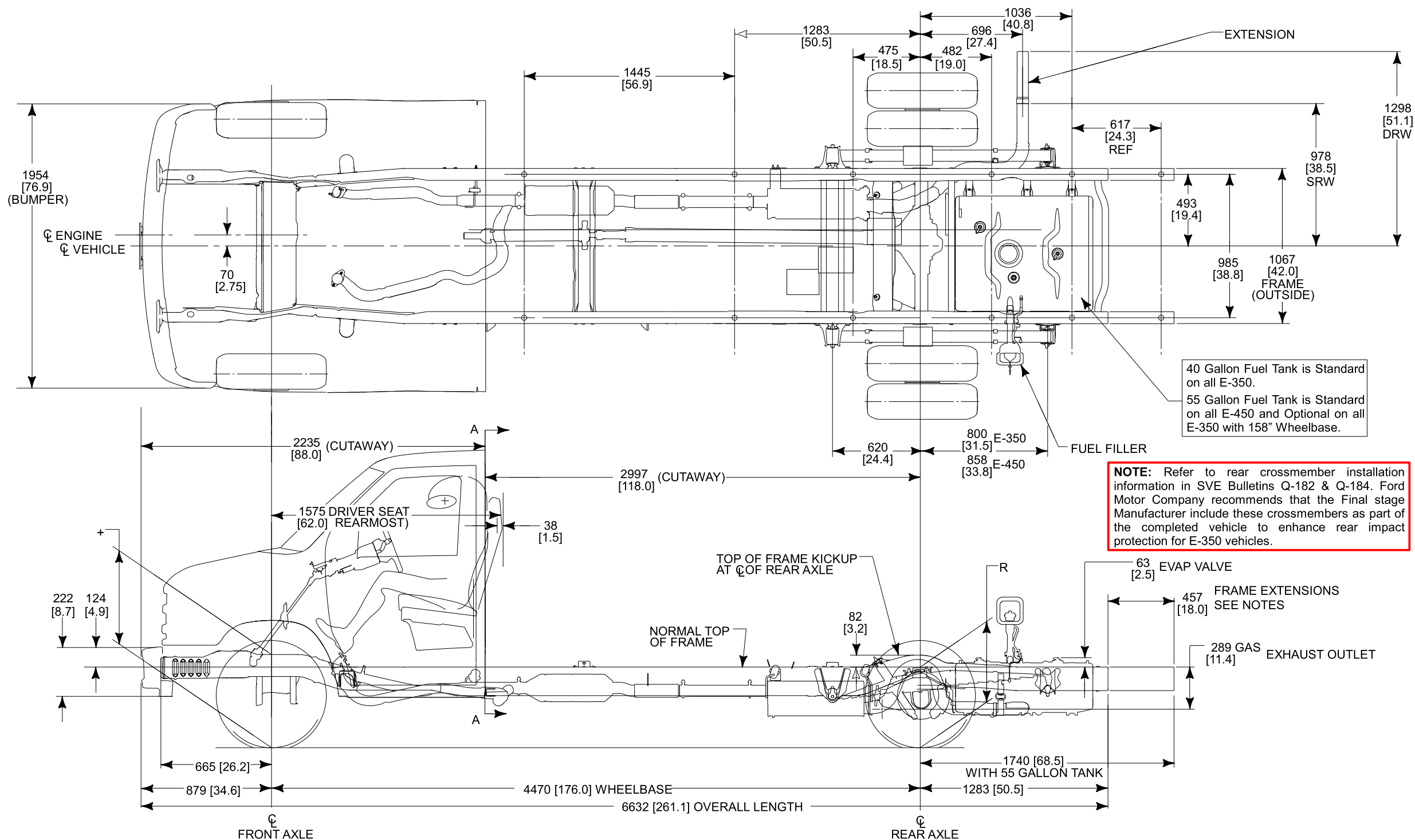
E-350/450 SUPER DUTY CUTAWAY 158" WB (DRW) (Cont'd)



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



NOTE — [] DIMENSIONS ARE INCHES.



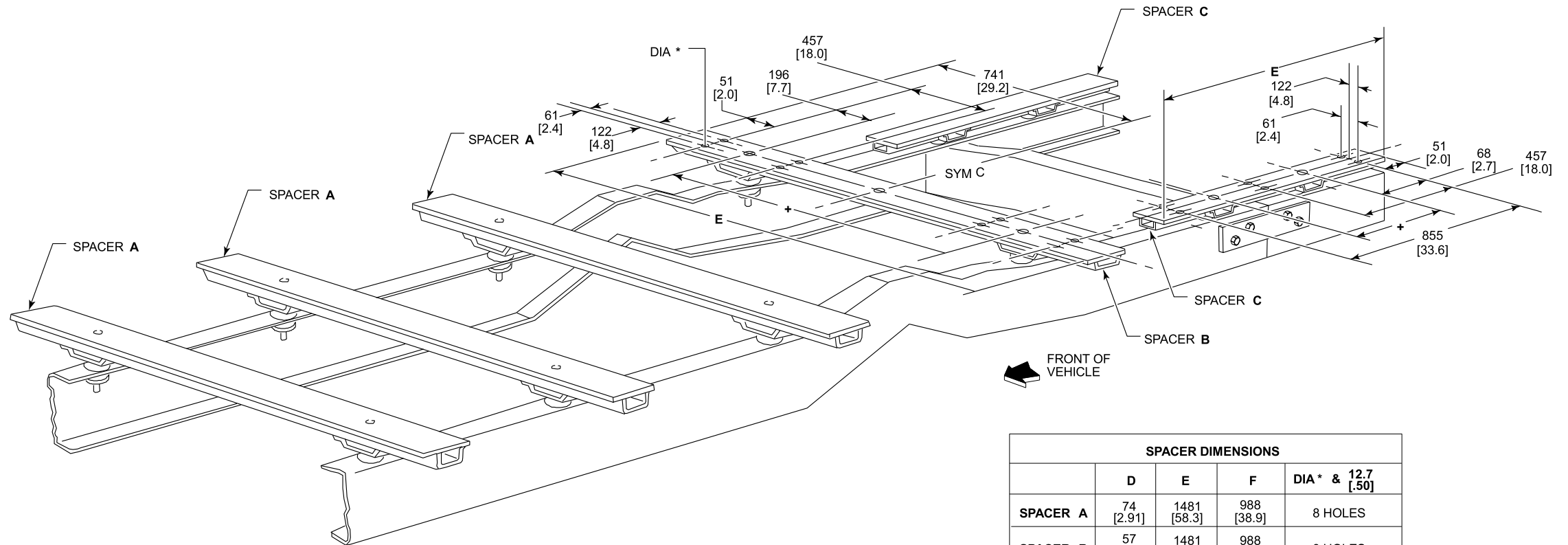
NOTE: Refer to rear crossmember installation information in SVE Bulletins Q-182 & Q-184. Ford Motor Company recommends that the Final stage Manufacturer include these crossmembers as part of the completed vehicle to enhance rear impact protection for E-350 vehicles.

NOTES — [] DIMENSIONS ARE INCHES.
— FOR CA DIMENSION, SEE MODEL LINEUP.

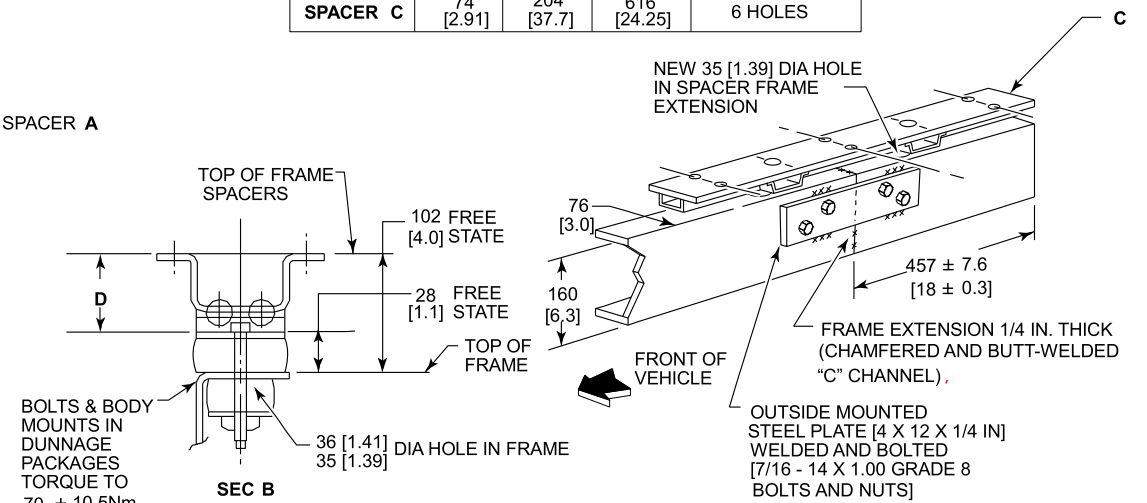
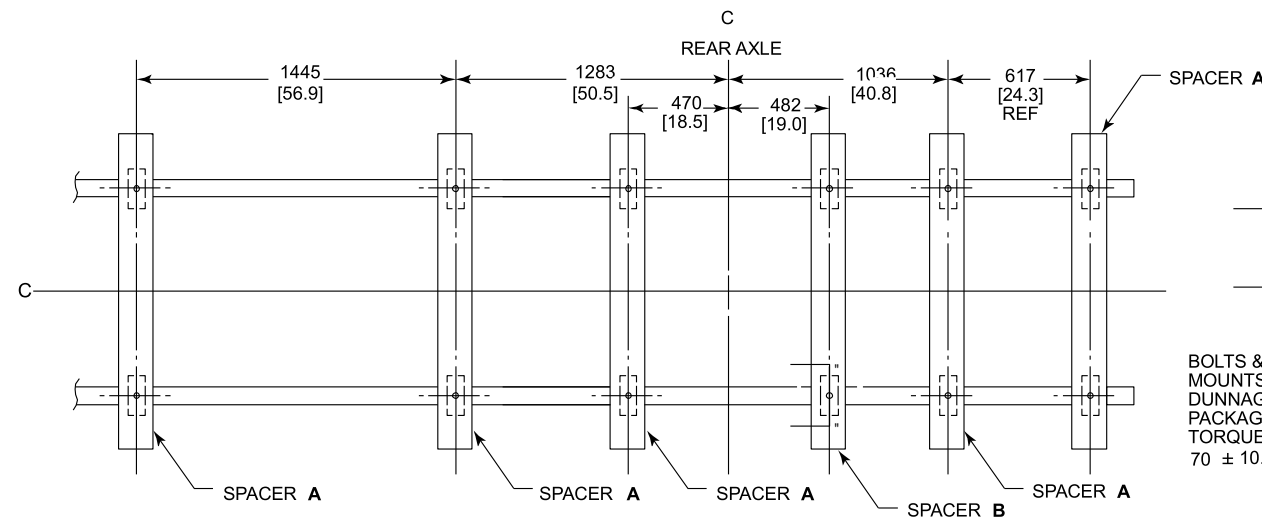
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E-SERIES DIMENSIONAL DATA

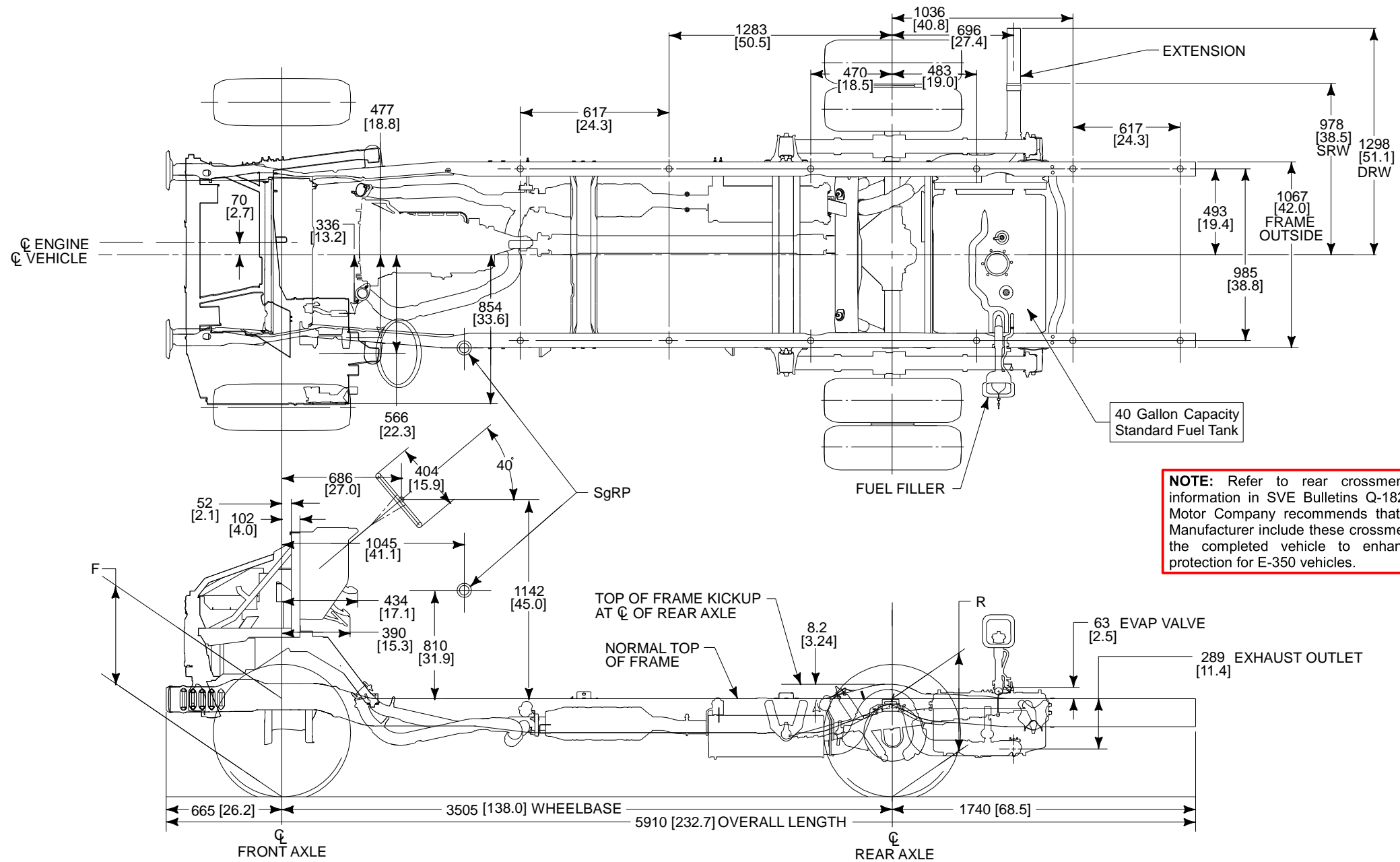
E-350/450 SUPER DUTY CUTAWAY 176" WB (DRW) (Cont'd)



SPACER DIMENSIONS				
	D	E	F	DIA * & 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



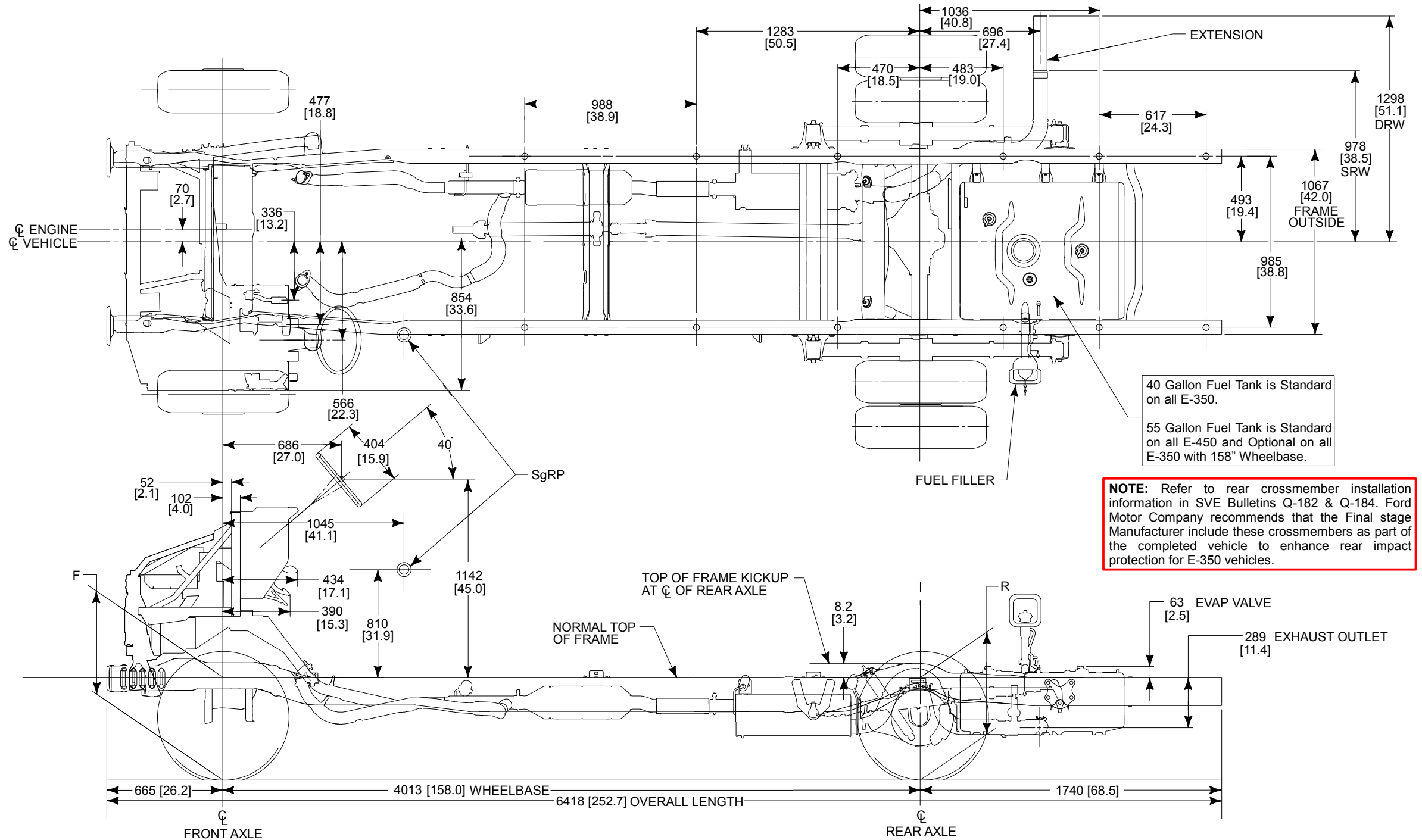
NOTE — [] DIMENSIONS ARE INCHES.



NOTE: Refer to rear crossmember installation information in SVE Bulletins Q-182 & Q-184. Ford Motor Company recommends that the Final stage Manufacturer include these crossmembers as part of the completed vehicle to enhance rear impact protection for E-350 vehicles.

E-SERIES DIMENSIONAL DATA

E-350 SUPER DUTY STRIPPED CHASSIS 158" WB (DRW)



40 Gallon Fuel Tank is Standard on all E-350.

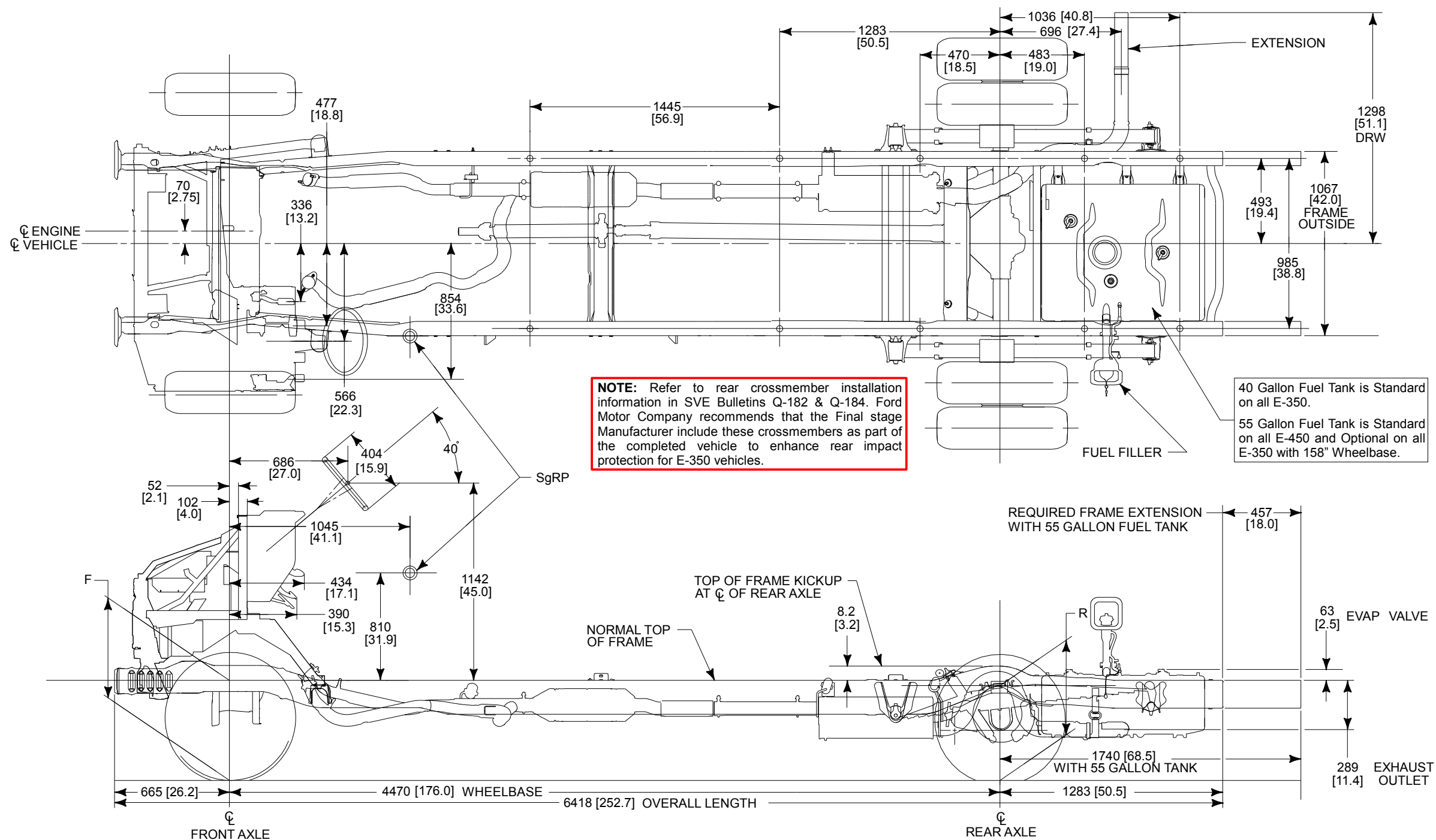
55 Gallon Fuel Tank is Standard on all E-450 and Optional on all E-350 with 158" Wheelbase.

NOTE: Refer to rear crossmember installation information in SVE Bulletins Q-182 & Q-184. Ford Motor Company recommends that the Final stage Manufacturer include these crossmembers as part of the completed vehicle to enhance rear impact protection for E-350 vehicles.

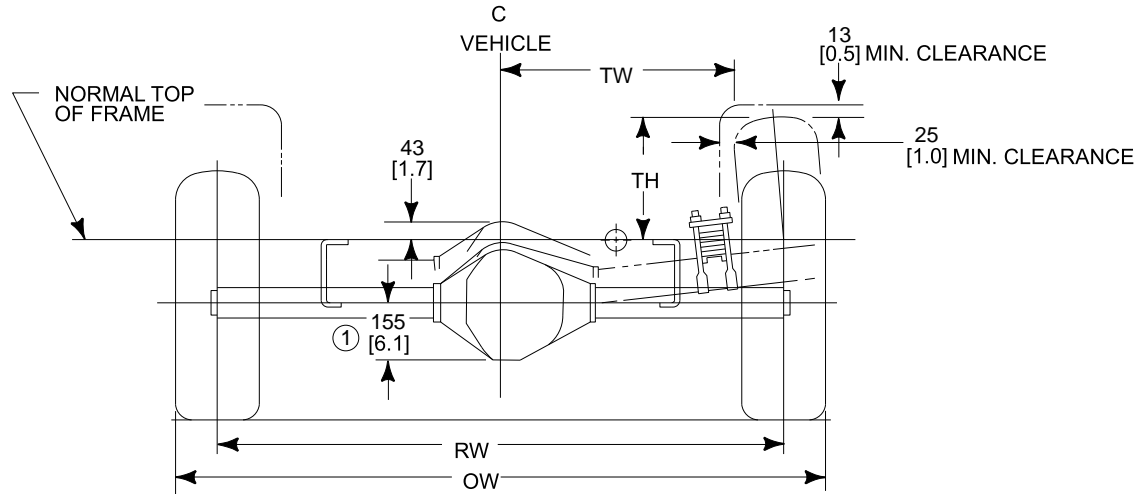
NOTE — [] DIMENSIONS ARE INCHES.

E-SERIES DIMENSIONAL DATA

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

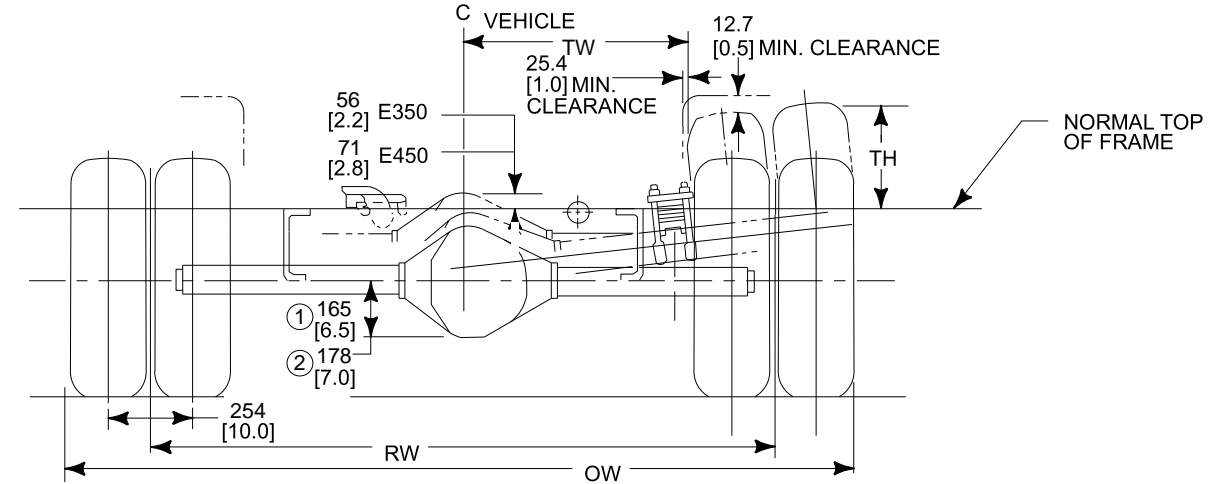


NOTE — [] DIMENSIONS ARE INCHES.



① 7800 LB AXLE USED AT 10,050 LB GVWR
CUTAWAY APPLICATIONS

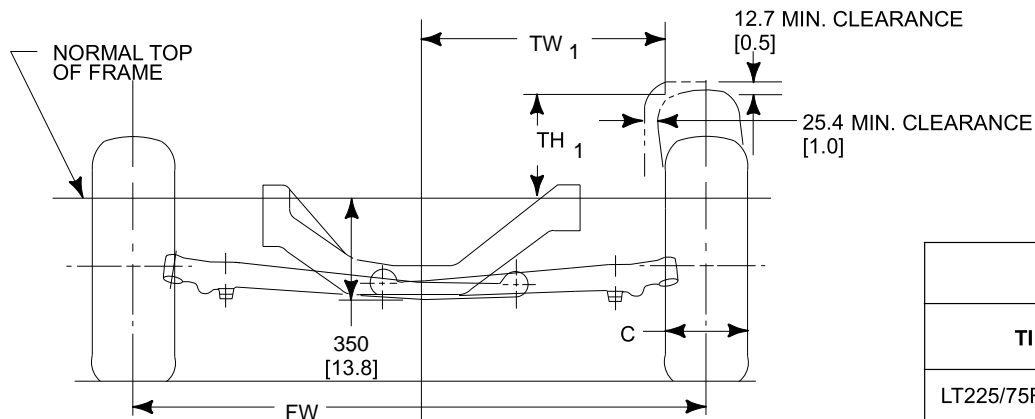
**REAR SUSPENSION (SRW)
REAR VIEW**



① 8500 LB AXLE USED AT 11,500, 12500 LB GVWR

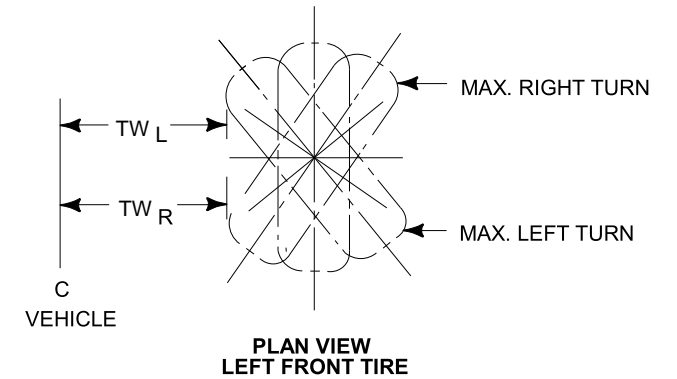
② 9600 LB AXLE USED AT 14,000, 14500 LB GVWR FOR E-450

**REAR SUSPENSION (DRW)
REAR VIEW**



**VEHICLE
FRONT SUSPENSION
FRONT VIEW**

FRONT SUSPENSION				
TIRE	TW ₁	TH ₁	TW _L	TW _R
LT225/75R16E	655 [25.8]	302 [11.9]	549 [21.6]	521 [20.5]
LT245/75R16E	655 [25.8]	320 [12.6]	549 [21.6]	521 [20.5]



**PLAN VIEW
LEFT FRONT TIRE**

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

NOTE — [] DIMENSIONS ARE INCHES.
(Cont'd next page)



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 MAX pounds	COMBINED REAR SPRING CAPACITY RATE pounds	R HEIGHT AT REAR AXLE (1)		CH OVERALL HEIGHT OF VEHICLE (STANDARD SPRINGS) (1) mm [in]	
					STD SPRING	BASE CURB WEIGHT mm [in]	LOADED mm [in]		STD SPRING	BASE CURB WEIGHT mm [in]	LOADED mm [in]	CURB	LOADED
						STD SPRING	STD SPRING			STD SPRING	STD SPRING		
CUTAWAY													
E-350 SD	138	10,050 SRW	LT245/75R16E	4050/4200	4050/4200	577 [22.7]	528 [20.8]	6084	7810	652 [25.7]	576 [22.7]	2099 [82.6]	2040 [80.3]
		11,500 DRW	LT225/75R16E	4050/4600	4600	571 [22.5]	525 [20.7]	7800	8600	658 [25.9]	583 [23.0]	2098 [82.6]	2039 [80.3]
	158	10,050 SRW	LT245/75R16E	4200	4200	600 [23.6]	532 [21.0]	6084	7810	676 [26.5]	576 [22.7]	2121 [83.5]	2040 [80.3]
		11,500 DRW	LT225/75R16E	4050/4600	4050/4600	572 [22.5]	525 [20.7]	7800	8600	657 [25.9]	583 [23.0]	2094 [82.4]	2043 [80.4]
		12,500 DRW		4600/5000	4600/5000	591 [23.3]	523 [20.6]	8500	8600	664 [26.1]	582 [22.9]	2109 [83.0]	2034 [80.1]
	176	12,500 DRW	LT225/75R16E	4600/5000	5000	582 [22.9]	524 [20.6]	8500	8600	665 [26.1]	582 [22.9]	2100 [82.7]	2032 [80.0]
E-450 SD	158	14,000 DRW		LT225/75R16E	4600/5000	4600/5000	592 [23.3]	523 [20.6]	9600	9600	691 [27.2]	608 [23.9]	2118 [83.4]
		14,500 DRW	5000		5000	596 [23.5]	521 [20.5]	9600	9600	691 [27.2]	608 [23.9]	2121 [83.5]	2033 [80.1]
	176	14,000 DRW	4600/5000		4600/5000	586 [23.1]	521 [20.5]	9600	9600	692 [27.2]	608 [23.9]	2112 [83.1]	2042 [80.4]
		14,500 DRW	5000		5000	594 [23.4]	521 [20.5]	9600	9600	692 [27.2]	608 [23.9]	2116 [83.3]	2042 [80.4]
STRIPPED CHASSIS													
E-350 SD	138	11,500 DRW	LT225/75R16E	4200/4600	4600	608 [23.9]	524 [20.7]	7800	7800	657 [25.9]	583 [23.0]	—	—
	158	12,500 DRW		4600/5000	5000	618 [24.3]	523 [20.6]	8500	8500	664 [26.1]	582 [22.9]	—	—
	176	12,500 DRW		4600/5000	5000	616 [24.3]	523 [20.6]	8500	8500	664 [26.1]	582 [22.9]	—	—
E-450 SD	158	14,000 DRW	LT225/75R16E	4600/5000	5000	617 [24.3]	523 [20.6]	9500	9500	693 [27.3]	608 [23.9]	—	—
		14,500 DRW		5000	5000	624 [24.4]	521 [20.5]	9500	9500	693 [27.3]	608 [23.9]	—	—
	176	14,000 DRW		4600/5000	5000	—	522 [20.6]	9500	9500	—	577 [22.7]	—	—
		14,500 DRW		5000	5000	—	521 [20.5]	9500	9500	—	579 [22.8]	—	—

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

SRW - Single Rear Wheels

DRW - Dual Rear Wheels

NOTE — [] DIMENSIONS ARE INCHES.



E-SERIES CENTER OF GRAVITY REFERENCE DATA

Passenger Load (1)	
GVWR	P (kg [lb])
Over 10,000 lb	227 [500]

Passenger Load CG Location		
Configuration	CG _{vp} (2) (mm [in])	CG _{hp} (3) (mm [in])
Cutaways	TBD	1232 [48.5]

Chassis Vertical CG Location (4)	
Configuration	CG _{vc} (5) (mm [in])
E350 Cutaway	711 [28.0]
E450 Cutaway	673 [26.5]
E350/E450 Stripped Chassis	673 [26.5]

Payload CG Location		
Configuration	Wheelbase (in)	CG _{hl} (6) (mm [in])
Cutaway SRW	138	3073 [121]
Cutaway DRW	138	3226 [127]
Commercial With Partition DRW	158	3404 [134]
Commercial No Partition DRW	158	3632 [143]
RV DRW	158	3505 [138]
Commercial DRW	176	4064 [160]
RV DRW	176	3886 [153]

Notes:

1. P – Passenger Load as defined in FMVSS 105
2. CG_{vp} – Vertical CG location of Passenger Load as measured from the Ground
3. CG_{hp} – Horizontal CG location of Passenger Load as measured from the Center of the Front Wheel
4. All values should be considered estimates, if calculated CG values for the completed vehicle are close to limits stated in the applicable IVM, Ford recommends verification of CG by physical measurement of a completed vehicle.
5. CG_{vc} – Vertical CG location of Chassis as measured from the Ground
6. CG_{hl} – Horizontal CG location estimate (midpoint of cargo area), as measured from the Center of the Front Wheel



GUIDELINES FOR MODIFYING FORD TRUCK WHEELBASES EQUIPPED WITH ELECTRONIC STABILITY CONTROL (ESC)

The 2021MY E-Series have ESC (Electronic Stability Control) as standard feature content. Modification of the wheelbase can affect vehicle performance which could result in ABS or Stability Control faults/lights. The ESC system may also have a changed response from the production wheelbase configuration, but still provides acceptable driver assistance. It is the responsibility of the alterer or final stage manufacturer to evaluate modified vehicle configurations to ensure that vehicle performance is acceptable to their customer base.

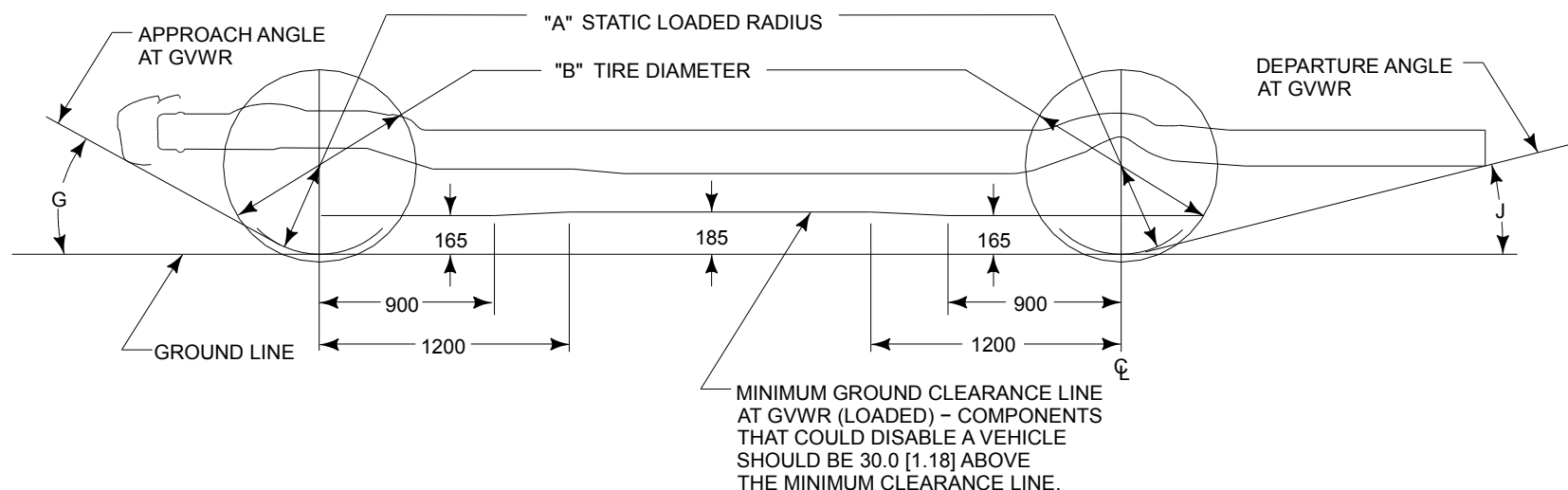
Wheelbase modifications within the noted ranges below may necessitate a reflash of the ABS/ESC module to a new calibration. Any wheelbase outside of the noted ranges below will not be supported with calibrations. The Electronic Stability Control (ESC) feature will be supported when modifying E-Series Wheelbases (WB) as part of the intermediate or final stage upfit

E-Series:

- E-350 10,050 - 11.5K GVWR wheelbases between 138" and 170"
- E-350 12.5K GVWR wheelbases between 152" and 232"
- E-450 wheelbases between 158" and 232"

Special Notes: The chassis wheelbase shall not be modified shorter than the shortest for each model (GVWR offered). For vehicles under 10K GVWR, FMVSS 126 does apply for ESC function and will need to be tested by alterer or final stage manufacturer -refer to the Incomplete Vehicle Manual for specific FMVSS/CMVSS information

E-SERIES GROUND CLEARANCE APPROACH & DEPARTURE ANGLES



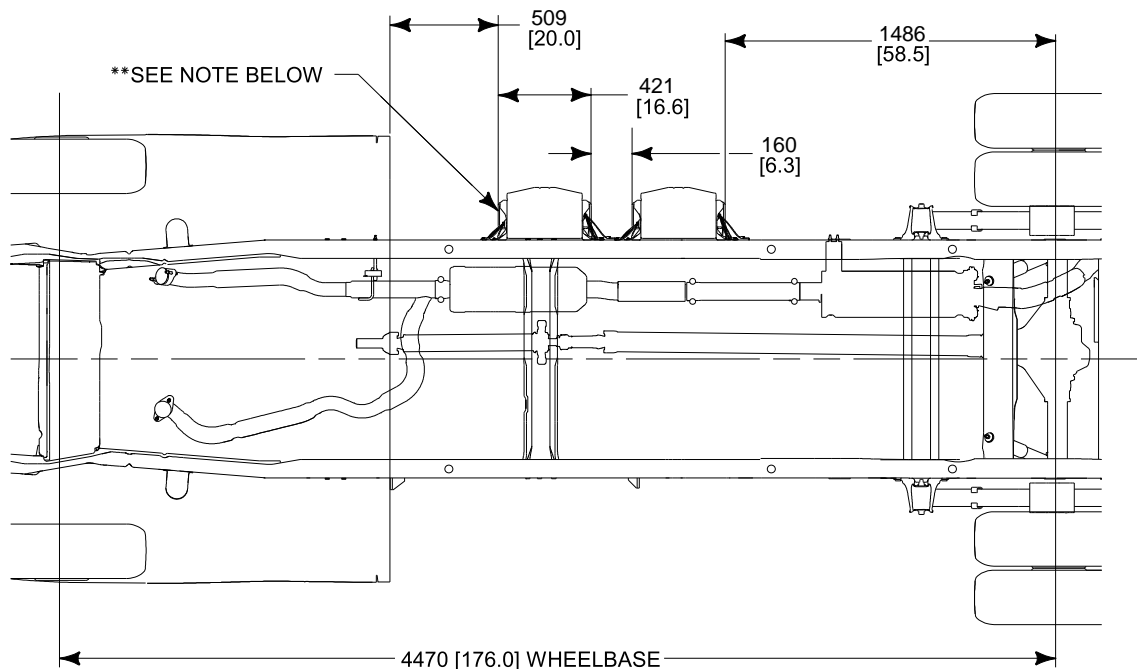
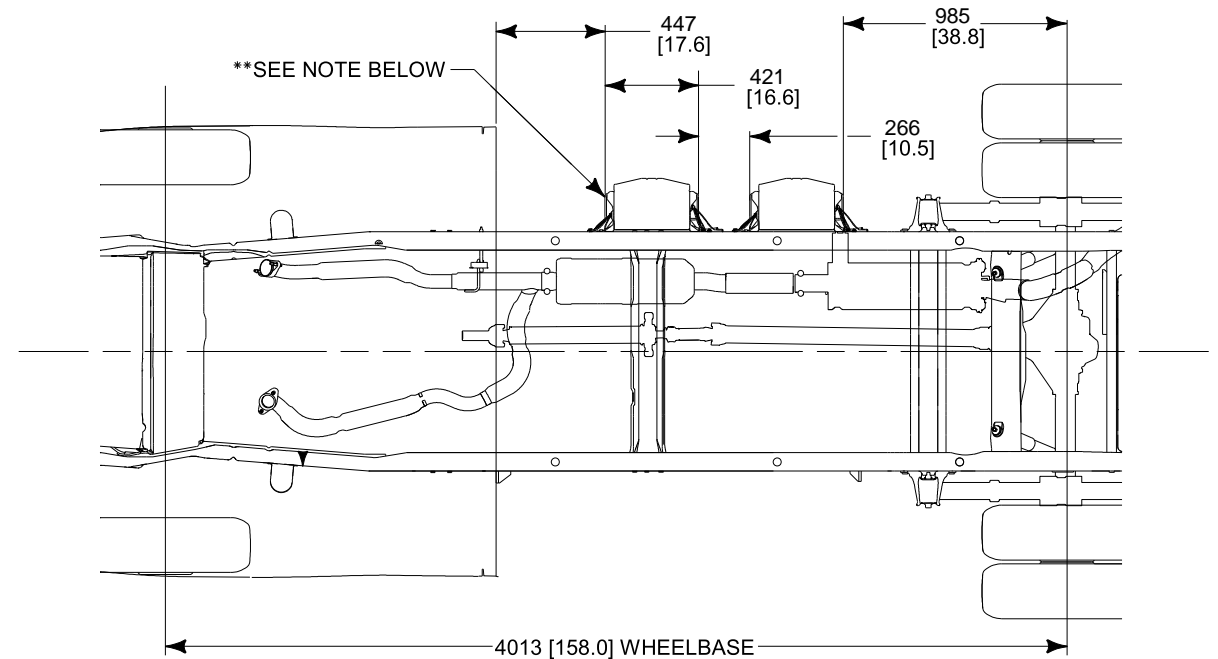
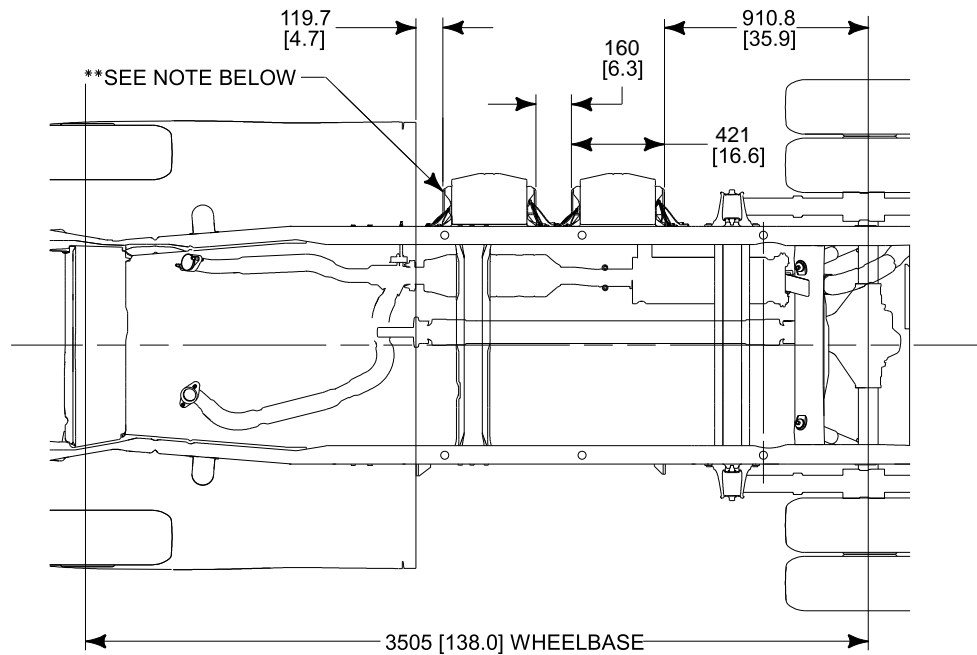
BASE VEHICLE LOADED

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		
		STATIC LOADED RADIUS	MAX. DIAMETER	MAX. SECTION WIDTH	RIM WIDTH	FRONT	REAR	REAR	SPRING	SPRING	APPROACH ANGLE			DEPARTURE ANGLE		
											138" WB	158" WB	176" WB	138" WB	158" WB	176" WB
E-350 Cutaway SRW (Aft-of-Axle Fuel Tank)	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]	21°	N/A	N/A	15°	N/A	N/A
E-350 Cutaway DRW	LT225/75R16E	346 [13.6]	757 [29.8]	236 [9.3]	152 [6.0]	1763 [69.4]	1915 [75.4]	2405 [94.7]	329 [12.9]	684 [26.9]	22°	22°	22°	15°	15° ♦	20° ♦
E-450 Cutaway DRW		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	27°	27°	N/A	16° ♦	21° ♦
E-350 Stripped Chassis DRW		346 [13.6]	757 [29.8]	236 [9.3]	152 [6.0]	1763 [69.4]	1915 [75.4]	2405 [94.7]	329 [12.9]	684 [26.9]	40°	33°	34°	21°	18°	24°
E-450 Stripped Chassis DRW		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	39°	35°	N/A	16° ♦	18° ♦

♦ 55-gallon tank and 18 inch frame extension

NOTE — [] DIMENSIONS ARE INCHES.

E-350/450 DUAL BATTERIES & GASOLINE W/ AUXILIARY BATTERY



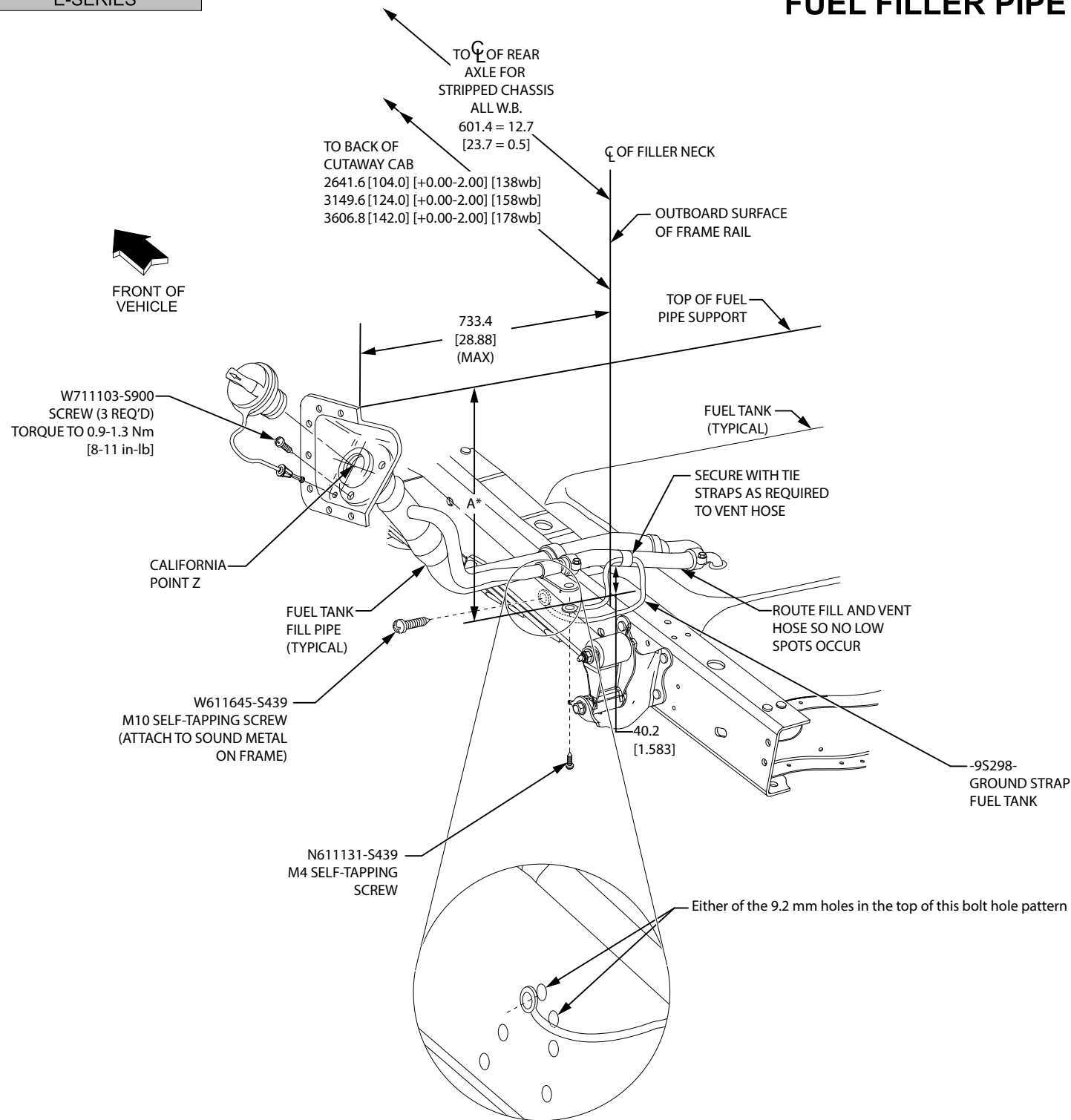
The guidelines below must be followed when repositioning the battery box

- 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
W/ AUXILIARY BATTERY OPTION.

E-SERIES FUEL FILLER PIPE



*Fuel Filler Pipe & Leaf spring were hidden for visibility

Maintain minimum 50 mm [2.0 in] clearance between fuel system components and frame/subframe body structures including floor pan and body cross members. There shall be no sharp edges nor fasteners pointing towards fuel tank.

NOTES:

FACE OF FILLER PIPE SUPPORT TO BE INSTALLED ON BODY IN VERTICAL PLANE

▽ TORQUE ALL WORM GEAR DRIVEN HOSE CLAMPS TO 4.0 - 4.5 Nm. [35 - 40 in-lbs.]

[] DIMENSIONS ARE INCHES

*A - FUEL SYSTEM FILLER HEIGHT
SCHOOL BUS :395 [15.6] MINIMUM
OTHER: 319 [12.6] MINIMUM

▽ CRITICAL CONTROL ITEM

NOTE — [] DIMENSIONS ARE INCHES.

E-SERIES FUEL FILLER PIPE

To use the auxiliary fuel port on the E350-450 Chassis Cab aft-of-axle Fuel tank, a service kit can be obtained from your local Ford dealership parts department

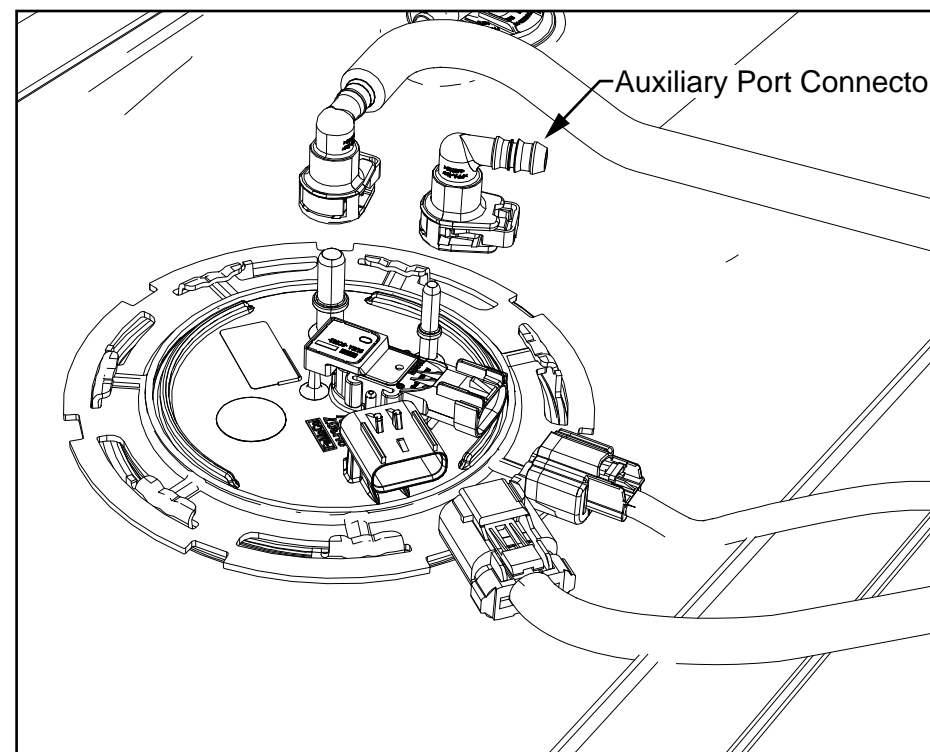
Aux Fuel Port Service Kit Number: 9C2Z-9B210-A

The Kit includes a quick connector, a clamp and tag. Install this kit to allow installed equipment (such as a generator) to use fuel from the vehicle fuel tank.

All E-Series Chassis Cab aft-axle fuel tanks come equipped with an Auxiliary Fuel Port located in the fuel sender unit on the top of the fuel tank. These Aux Fuel Ports can provide a fuel supply to Upfitter-installed equipment such as generators.

Model	Fuel Tank Capacity*	
	40 Gallon	55 Gallon
	Remaining Fuel Volume (Gallons) at Auxiliary Fuel Tube Shut-off	
E-Series (Gasoline)	5.7	7.8

* Fuel Volumes are estimated





SECOND UNIT BODY MOUNTING E-SERIES CUTAWAY

SUB to Frame Mounting Techniques for Cutaway Model

TECHNIQUE #1 - Use of Frame Isolators (also known as Frame Pucks) - Preferred Method

- Ford provides optional SUB mounting isolators (available as a stand alone option and included in the "standard pattern" and "alternate lateral" frame spacer options) which will provide the SUB with some vibration and noise isolation from the frame. The SUB should be attached to these isolators using all the provided locations with the provided fasteners if possible. If alternate bolts are used, they should be M12 PC10.9, and should not extend more than 25.4 mm [1.00 in] below the bottom of the isolator. Fastener torque should be 70 +/- 10.5 Nm.
- The Ford provided rubber isolators are capable of 19.0 mm [0.75 in] movement 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 the cutaway body. The Ford optional isolators and frame spacers will accommodate the recommended fuel fill neck installation 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 12x 34.8 mm [1.37 in] diameter holes on the upper flange of the frame sidemembers for mounting of aftermarket 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. If not already provided by Ford, heat shields may be required for the first two locations behind the cab on RH side to protect the isolators from exhaust heat.
- More information regarding optional frame isolators, optional spacer packages and location of mounting holes can be found in the "Dimensional Data" section of this BBLB.

TECHNIQUE #2 - Use of Shear Plates w/ Longitudinal Frame

DO NOT WELD SHEAR PLATES TO OEM FRAME

- **Front Shear Plate Attachment:** use two bolts, nuts, and washers in the OEM frame, one bolt, nut and washer with a ¼" equivalent weld bead around three sides of the shear plate and the SUB-mounting frame, skip-welded at the shear plate corners. If front shear plate is not welded to the SUB-mounting frame, two bolts should be used instead of one. SEE FIGURE A
- **Rear Shear Plate Attachment:** use three bolts, nuts, and washers in the OEM frame, one bolt, nut and washer with a ¼" equivalent weld bead around three sides of the shear plate and the SUB-mounting frame, skip-welded at the shear plate corners. If rear shear plate is not welded to the SUB-mounting frame, two bolts should be used instead of one. SEE FIGURE A

TECHNIQUE #3 - Use of Shear Plates w/ Cross Frame

DO NOT WELD SHEAR PLATES TO OEM FRAME

- **Front Shear Plate Attachment:** use two bolts, nuts, and washers in the OEM frame, two bolts, nuts and washers in the SUB-mounting frame. SEE FIGURE B
- **Rear Shear Plate Attachment:** use three bolts, nuts, and washers in the OEM frame, two bolts, nuts, and washers in the SUB-mounting frame. SEE FIGURE B

NOTES for Technique #2 and #3:

- A spacer between the OEM frame and SUB frame should be used and secured in such a manner as to maintain retention during installation and operational use. The spacer should have a slight taper which starts at the front of the SUB frame. SEE FIGURE C
- 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.
- U-bolts must be installed every 2-3 feet between the front and rear shear plates.
- Vertical spacers must be used between the upper and lower frame flanges at each U-bolt to prevent collapse of the flanges. Do not notch the frame flanges to make U-bolt fit. SEE FIGURE C
- U-bolts or attaching hardware should not contact fuel, brake or electrical system components. A shear plate should be utilized if there is insufficient space for a U-bolt to be installed between the frame and fuel tank.
- All threaded fasteners (including U-Bolts) must be either 5/8" Diameter Grade 8, or M16 Property Class 10.9 for metric bolts and M16 Property Class 10 for metric nuts.
- Fastener Torques: 60-65 ft-lb for 5/8" fasteners, 200 +/- 30Nm for M16 fasteners.
- Direct the threaded end of the bolts away from any fuel, brake or electrical system components.
- U-Bolt torque must be checked every six months.
- Note that hard mounting of the SUB to the frame and to the cutaway body may result in noise or vibration issues and/or cutaway body durability issues.

SECOND UNIT BODY MOUNTING E-SERIES CUTAWAY (cont'd)

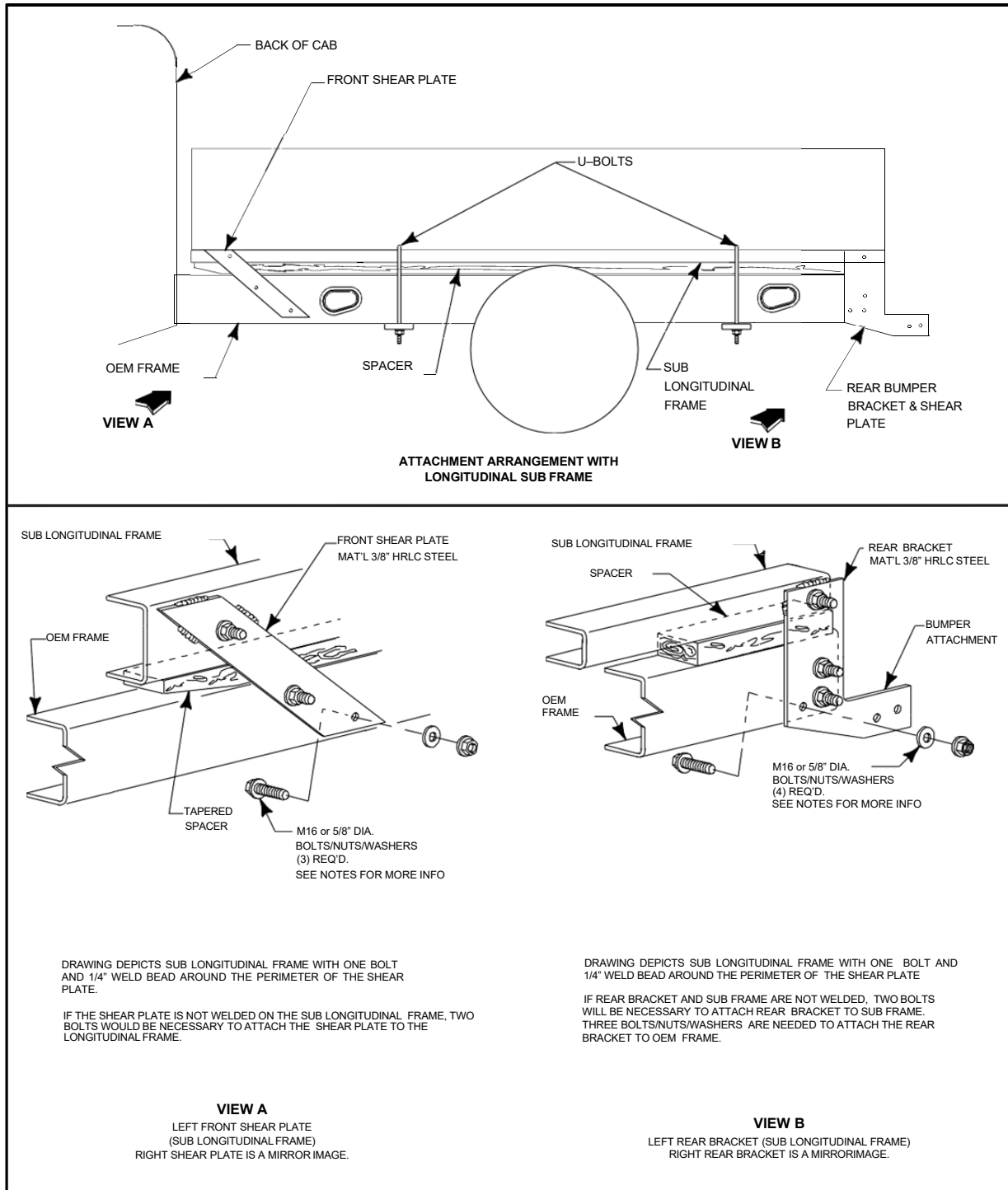


FIGURE A - TECHNIQUE #2
Shear Plates w/ Longitudinal Frame

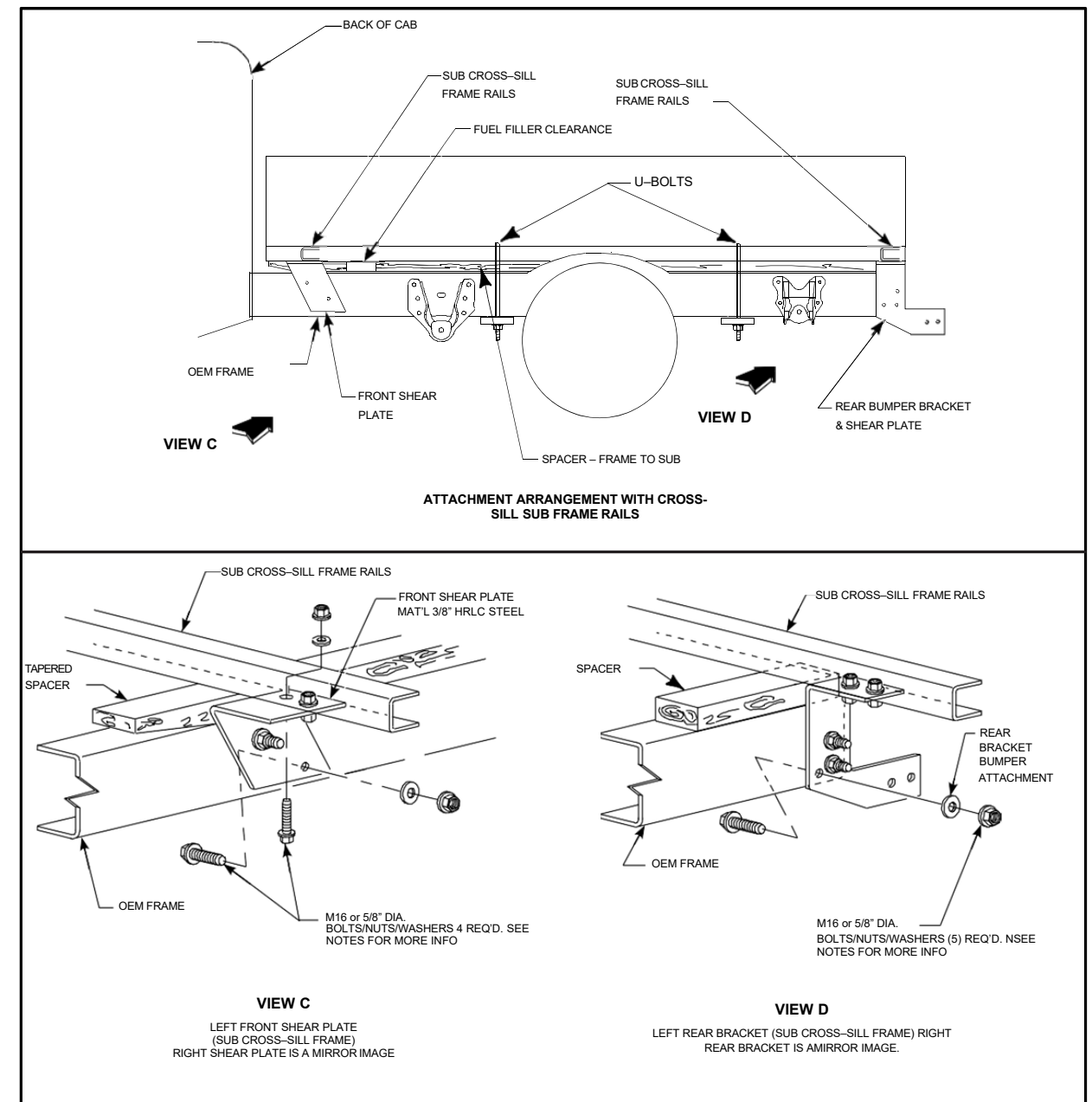


FIGURE B - TECHNIQUE #3
Shear Plates w/ Cross-Frame

SECOND UNIT BODY MOUNTING E-SERIES CUTAWAY (cont'd)

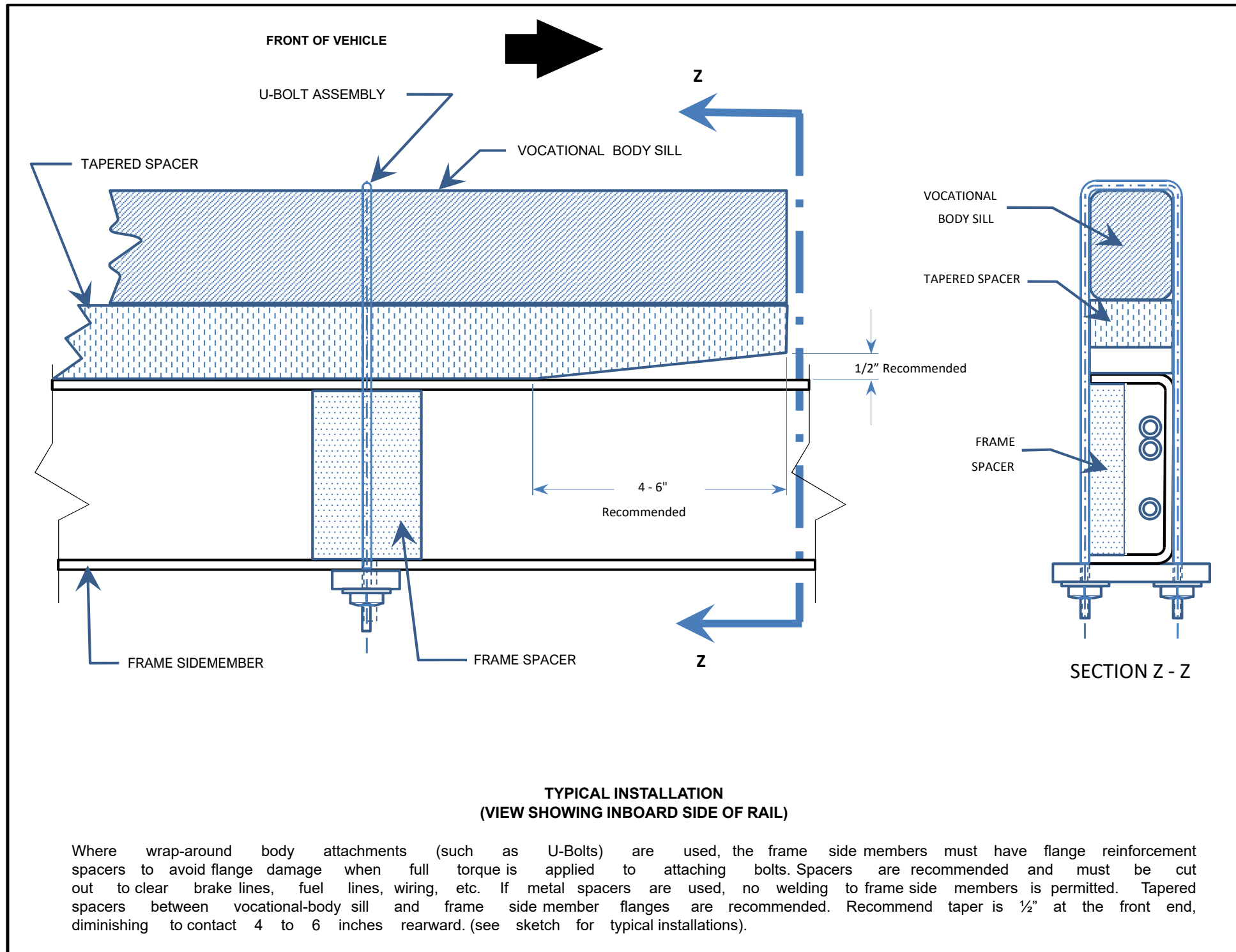


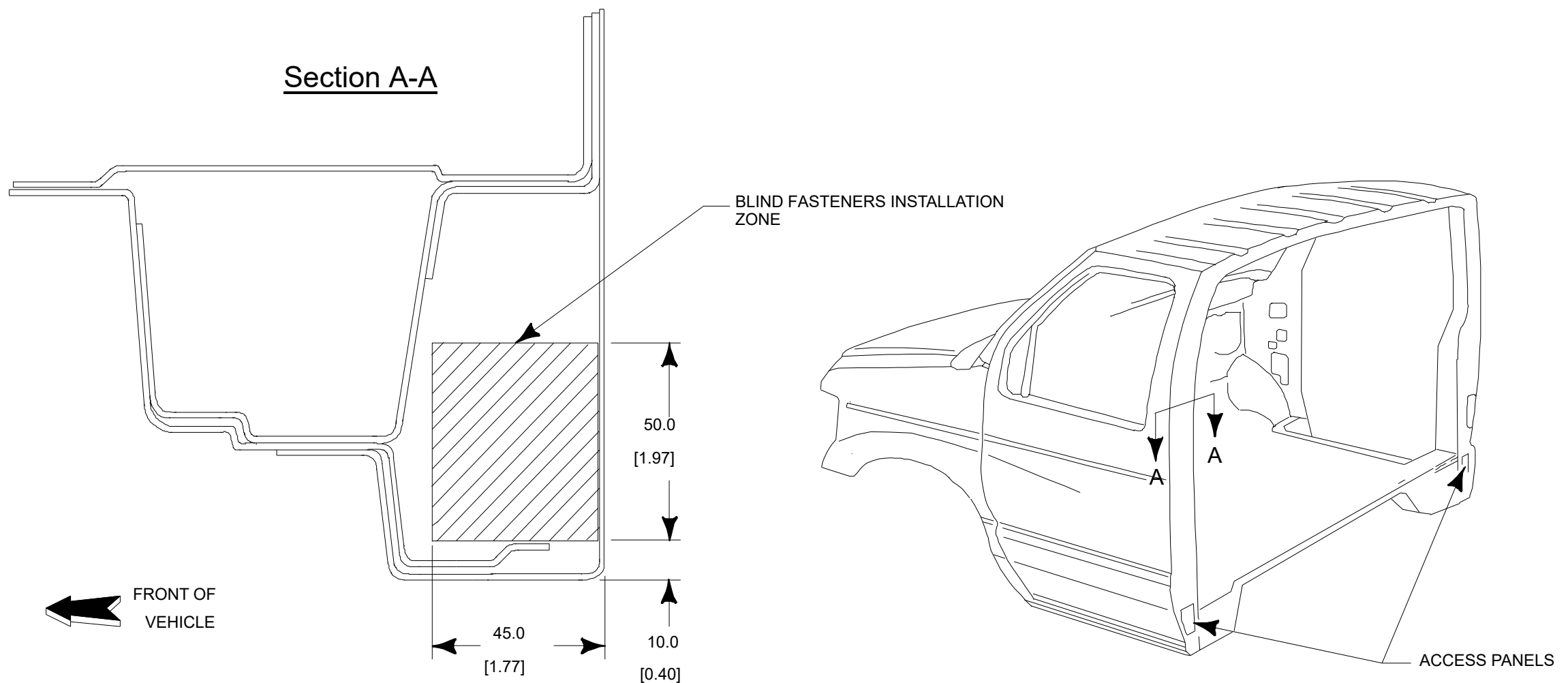
FIGURE C - SUB-MOUNTING SPACERS

SECOND UNIT BODY MOUNTING E-SERIES CUTAWAY (cont'd)

SUB to Cab Attachment Techniques for Cutaway Model

The attachment of the SUB to the cutaway body should consider the following:

- 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.
- 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.
- 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.
- 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.
- 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. 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.



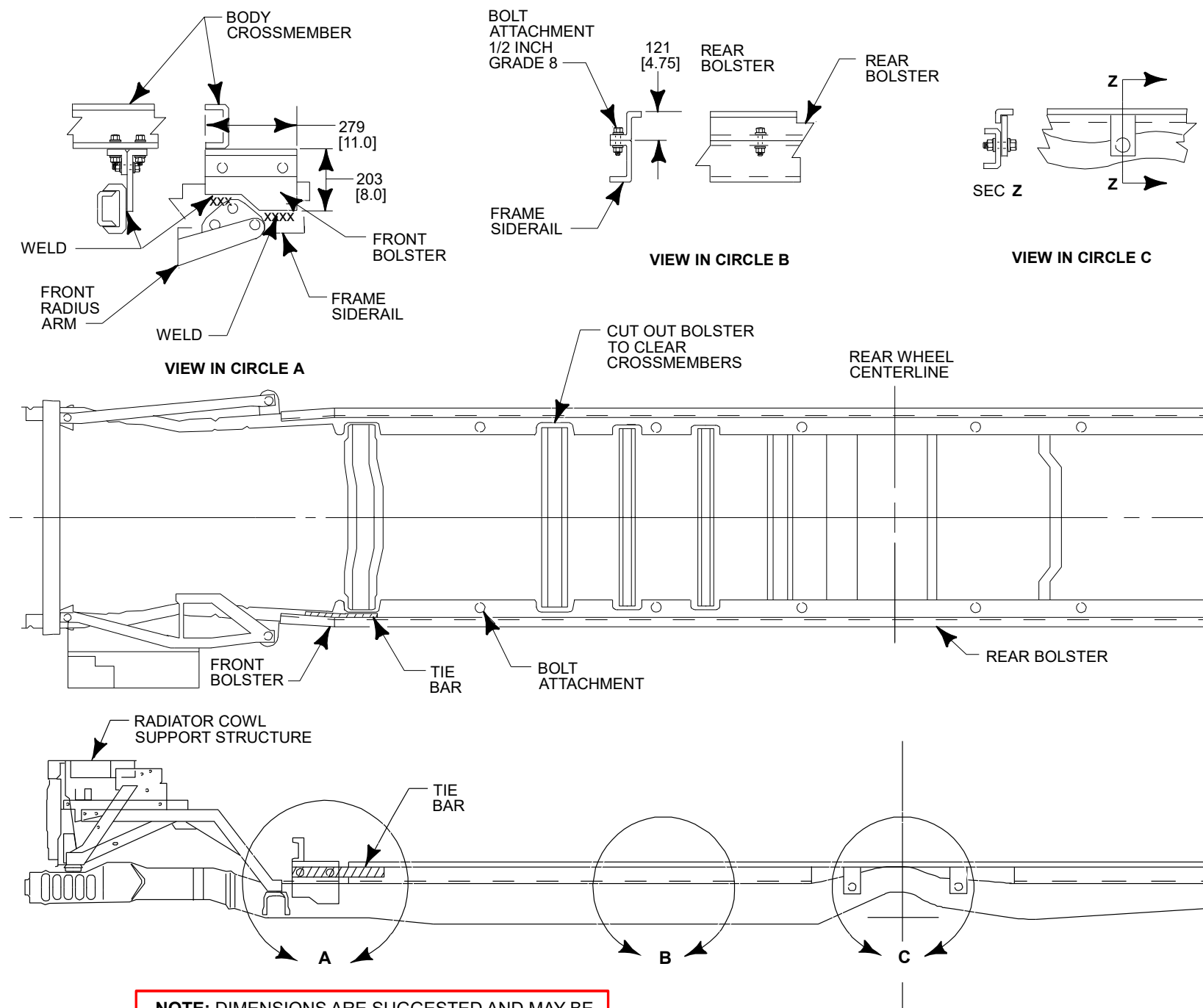
E-SERIES SUPER DUTY CUTAWAY BODY TO SECOND UNIT BODY ATTACHMENT

NOTE — [] DIMENSIONS ARE INCHES.

SECOND UNIT BODY MOUNTING E-SERIES STRIPPED CHASSIS

SUB to Frame Mounting Techniques for Stripped Chassis

- 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 [1.37in] 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.
- 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.
- Refer to the [Design Recommendations -> Frame section](#) of the "General Section BBLB" (available at www.fordbbas.com under "Publications") for guidelines regarding drilling and welding the vehicle frame.



NOTE: DIMENSIONS ARE SUGGESTED AND MAY BE REVISED AT THE BODY BUILDER'S DISCRETION

E-350/450 SUPER DUTY STRIPPED CHASSIS SECOND UNIT BODY INSTALLATION

NOTE — [] DIMENSIONS ARE INCHES.

E-SERIES BACK OF CAB PROFILE DIMENSIONS CUTAWAY BODY SECTION "A"



All 2021MY E-Series vehicles have a 7.3L Gas engine which is certified using the Heavy Duty Engine Protocol (Dyno Cert), and therefore do not require Frontal Area or Unloaded Vehicle Weight Restrictions in order to meet emissions standards. However, there are Frontal Area Restrictions required to maintain optimal vehicle performance in all conditions. If the Frontal Areas in Table A are exceeded, engine output may be reduced in extreme situations to maintain safe operating temperatures. The vehicle may be completed up to the "Standard" max frontal area with no SUB radii restrictions and up to the "Enhanced" max frontal area if the radii restrictions in Figure A (for Cutaways) and Figure B (for Stripped Chassis) are followed.

TABLE A - FRONTAL AREA RESTRICTIONS FOR COMPLETED CUTAWAYS AND STRIPPED CHASSIS

Series	Engine	Final Drive Ratio	Standard Max Frontal Area (no SUB Radii Restrictions) (ft ²)	Enhanced Max Frontal Area (with SUB Radii Restrictions) (1) (ft ²)
E-350	7.3L Economy	4.10	77	84
		4.56	78	85
	7.3L Premium	4.10	79	86
		4.56	82	89
E-450	7.3L Economy	4.56	78	85
	7.3L Premium	4.56	82	89

(1) For vehicles completed with Frontal Area larger than the Standard Max value, radii restrictions shown in Figure A for Cutaways and Figure B for Stripped Chassis will be necessary to maintain optimal vehicle performance

FIGURE A – SECOND UNIT BODY RADII RESTRICTIONS FOR COMPLETED CUTAWAYS

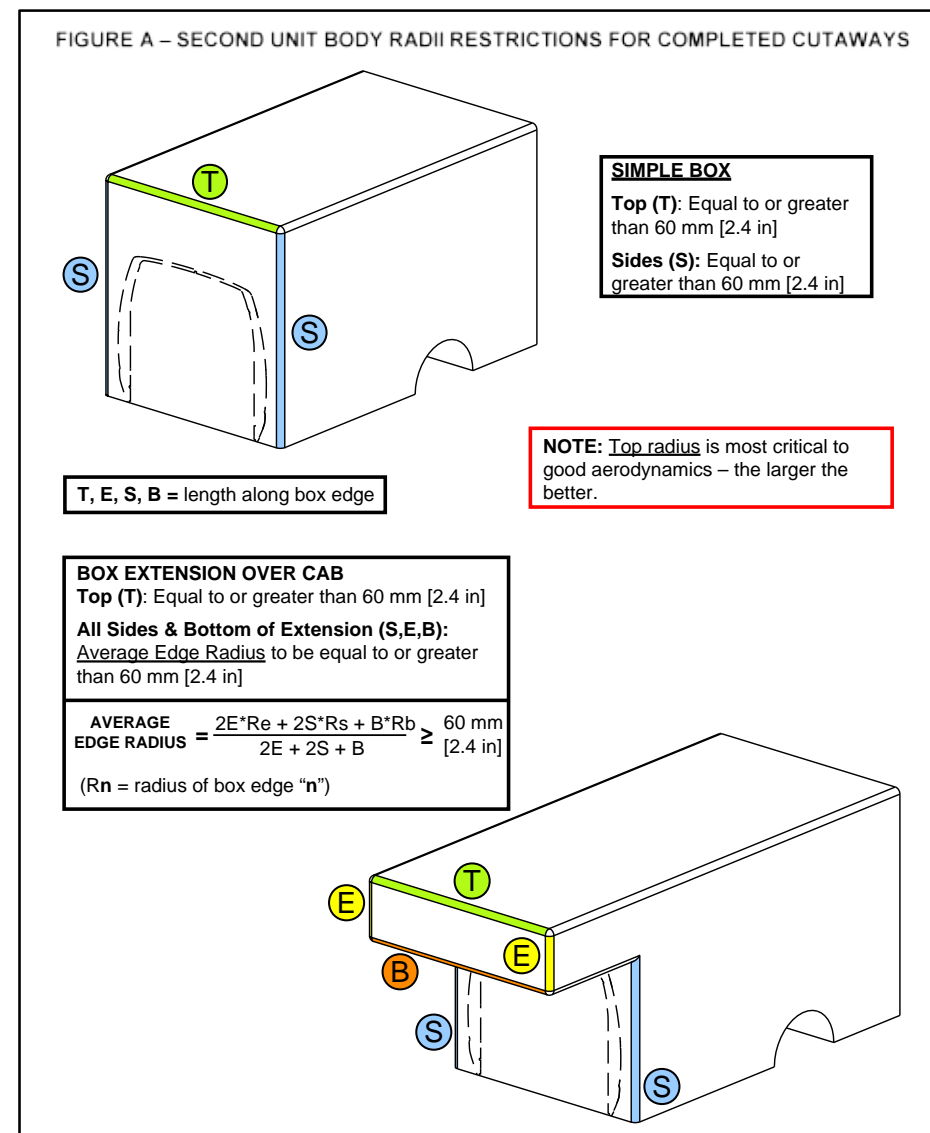
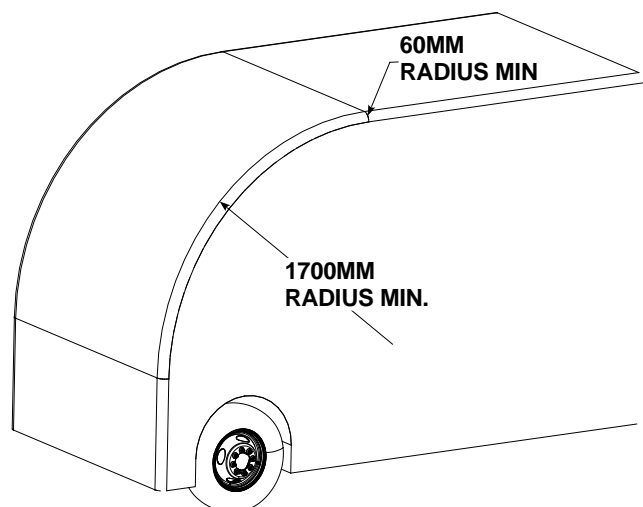


FIGURE B – SECOND UNIT BODY RADII RESTRICTIONS FOR COMPLETED STRIPPED CHASSIS

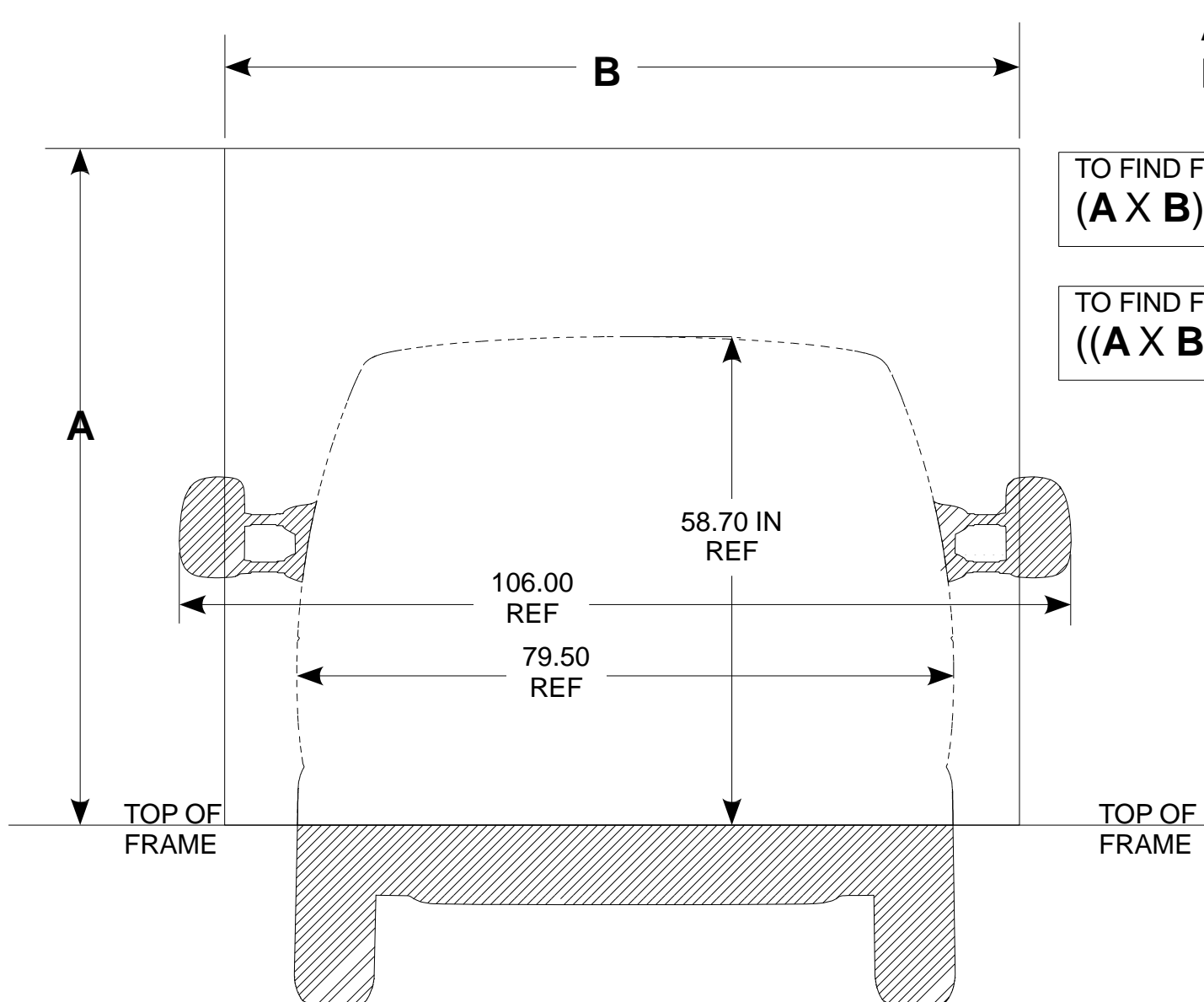


Calculating Frontal Area

Worksheets on pages 24 and 25 are provided to aid the final stage manufacturer in calculating frontal area. Total completed vehicle frontal area is calculated by taking the total frontal area of the Second Unit Body (SUB) and adding the frontal area of the chassis below the top of frame and the mirrors (Shaded area on the worksheet).

The final vehicle manufacturer will need to account for all aftermarket mirrors, equipment and second unit body areas.

E-SERIES - SRW FRONT SURFACE AREA WORKSHEET CHASSIS CAB / CUTAWAY



A = BOX HEIGHT IN INCHES

B = BOX WIDTH IN INCHES

TO FIND FRONT SURFACE AREA IN SQ INCHES
(A X B) + 1240.7 =

TO FIND FRONT SURFACE AREA IN SQ FEET
((A X B) / 144) + 8.62 =

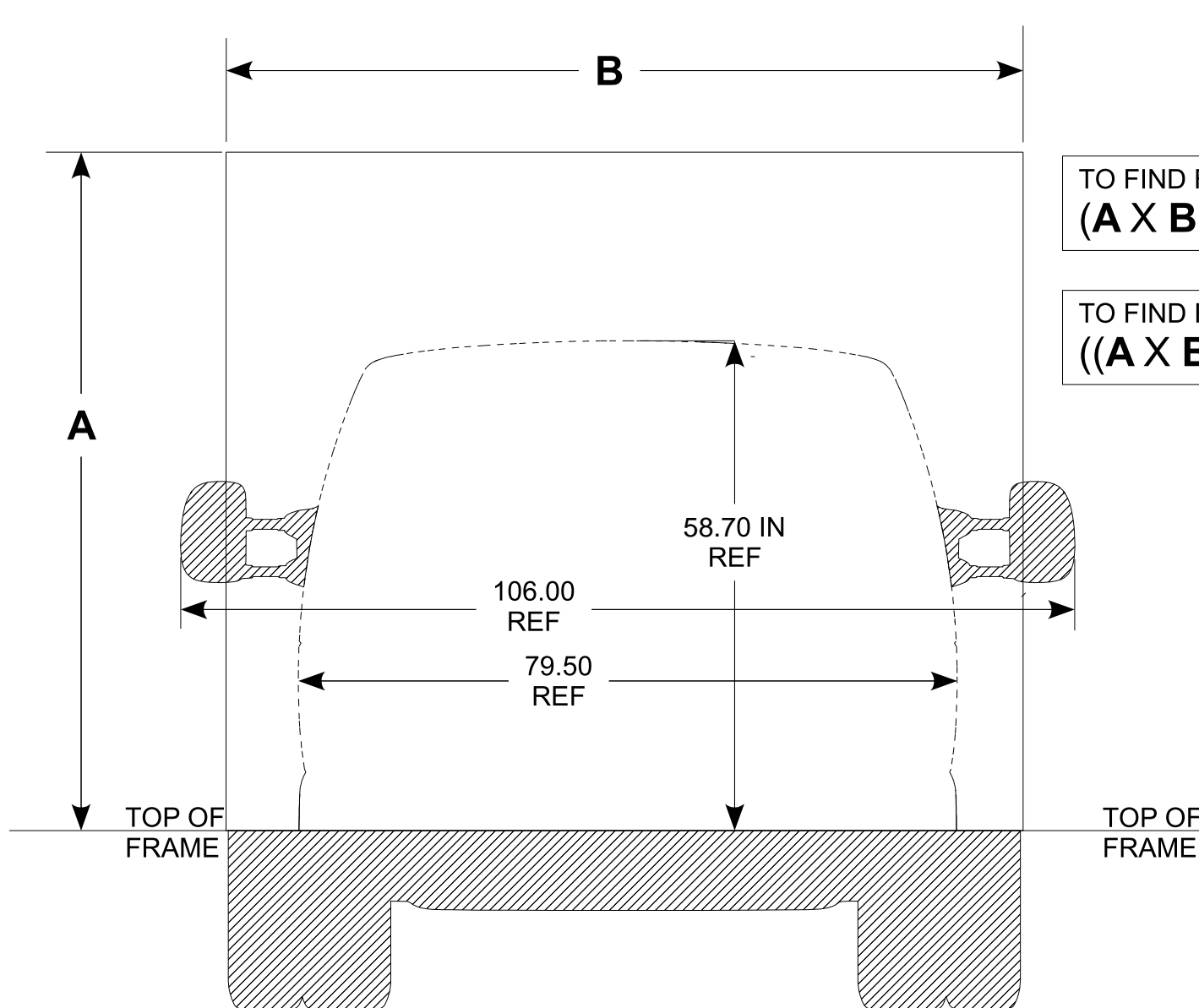
BELOW FRAME SHADED AREA EQUALS
 $624293 / (25.4 \times 25.4) = 967.6560 \text{ SQ. IN.}$
 $967.6560 / (12 \times 12) = 6.7198 \text{ SQ. FT.}$

MIRROR SHADED AREA EQUALS
 $(88087.6 \times 2) / (25.4 \times 25.4) = 273.0721 \text{ SQ. IN.}$
 $273.0721 / (12 \times 12) = 1.8963 \text{ SQ. FT.}$

TOTAL SHADED AREA EQUALS
 $800468.2 / (25.4 \times 25.4) = 1240.7281 \text{ SQ. IN.}$
 $1429.6698 / (12 \times 12) = 8.6161 \text{ SQ. FT.}$

NOTE — DIMENSIONS ARE INCHES.

E-SERIES - DRW FRONT SURFACE AREA WORKSHEET CHASSIS CAB / CUTAWAY



A = BOX HEIGHT IN INCHES

B = BOX WIDTH IN INCHES

TO FIND FRONT SURFACE AREA IN SQ INCHES
(A X B) + 1632.1 =

TO FIND FRONT SURFACE AREA IN SQ FEET
((A X B) / 144) + 11.33 =

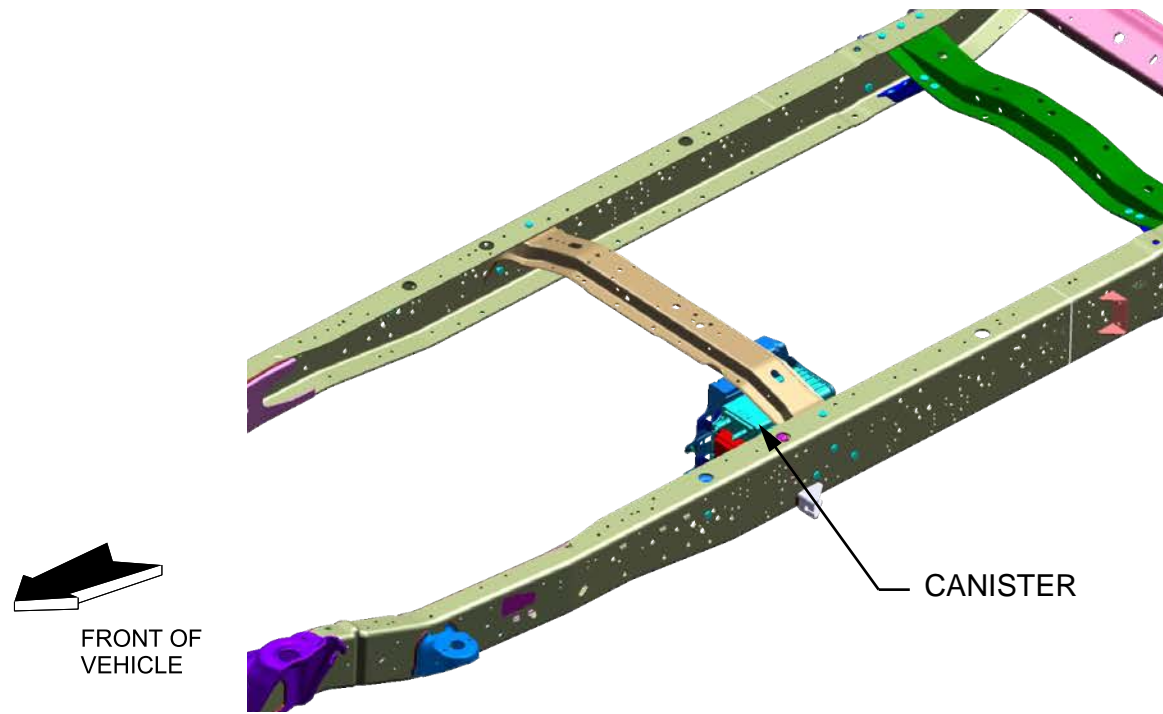
BELOW FRAME SHADED AREA EQUALS
876808.0 / (25.4 X 25.4) = 1359.0551 SQ. IN.
1359.0551 / (12 X 12) = 9.4379 SQ. FT.

MIRROR SHADED AREA EQUALS
(88087.6 X 2) / (25.4 X 25.4) = 273.0721 SQ. IN.
273.0721 / (12 X 12) = 1.8963 SQ. FT.

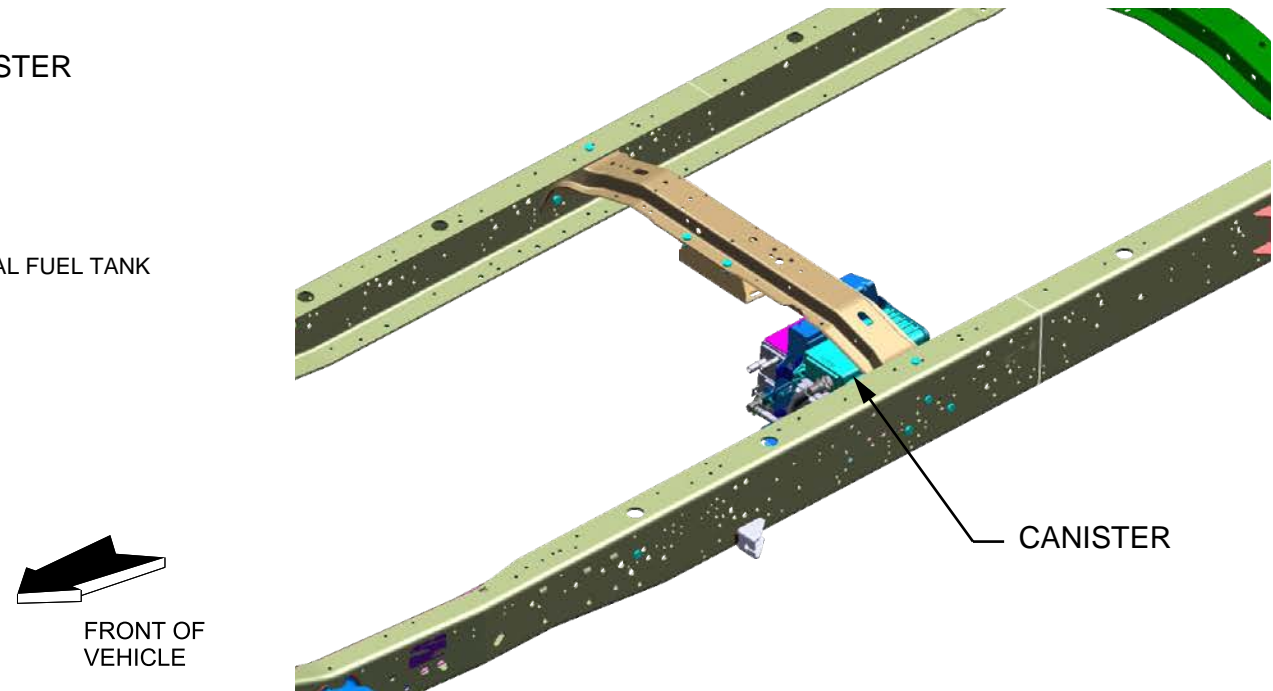
TOTAL SHADED AREA EQUALS
1052983.2 / (25.4 X 25.4) = 1632.1272 SQ. IN.
1632.1272 / (12 X 12) = 11.3342 SQ. FT.

NOTE — DIMENSIONS ARE INCHES.

AFT-OF-AXLE FUEL TANK EVAPORATIVE EMISSIONS CANISTER LOCATION CUTAWAY



SINGLE CANISTER VARIANT THAT GOES ON VEHICLES WITH THE 40 GAL FUEL TANK



DUAL CANISTER VARIANT THAT GOES ON VEHICLES WITH THE 55 GAL FUEL TANK



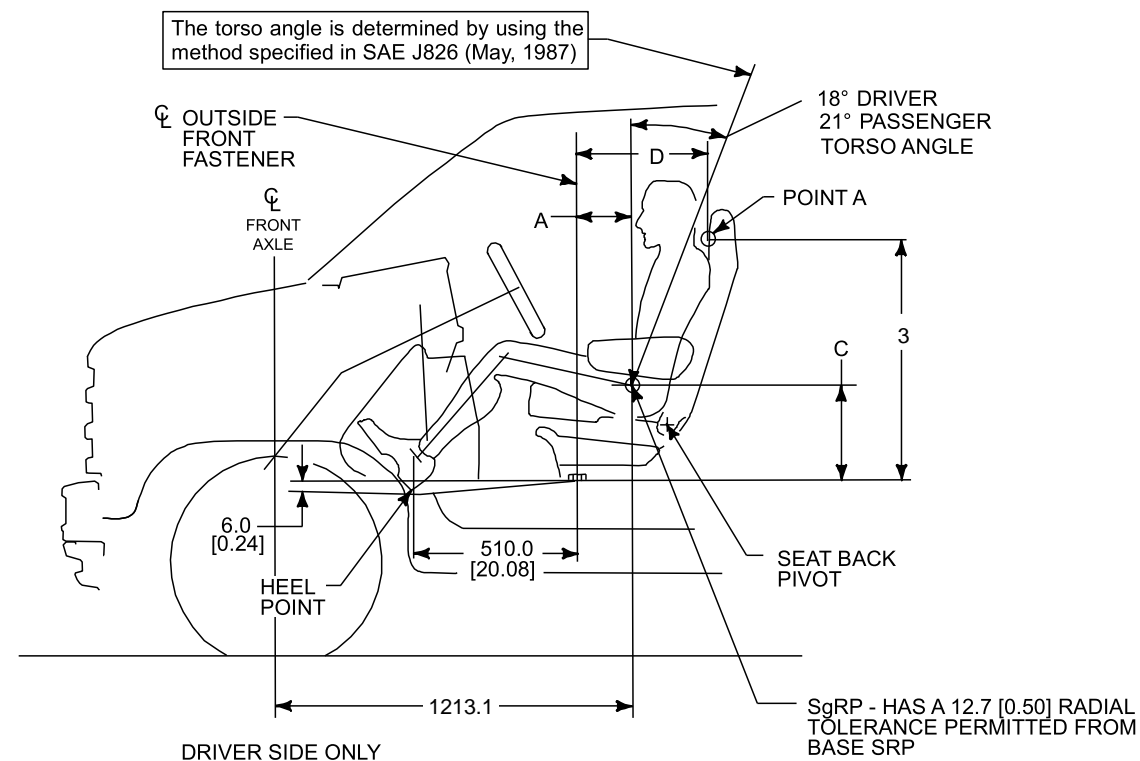
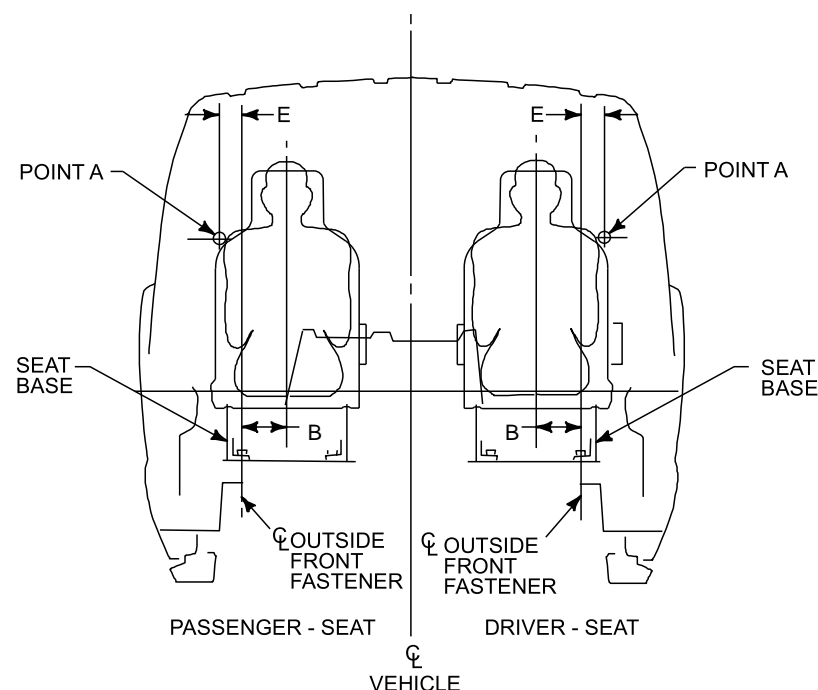
E-SERIES CLIMATE CONTROL GREEN HOUSE GAS EVAPORATIVE EMISSIONS

Pursuant to California regulation 17 CCR §95663, the specific leakage for this vehicle (as built by Ford Motor Company) is shown in the table below (see “J2727 Leakage Value” column). If the vehicle air conditioning system is modified in any way, or air conditioning systems are added, the intermediate or final-stage manufacturer must calculate the final system leakage. If desired, the spreadsheet used by Ford to calculate the J2727 Leakage is available, and can be edited to reflect the modified system. Please contact Ford BBAS to request a copy of the vehicle line specific GHG Evaporative Emissions Worksheet: <https://fordbbas.com>

MY	Vehicle Line	Features/Models	Evaporator	Engine	Refrigerant	Charge Size of A/C System (kg)	J2727 Leakage Value (g/yr)	Max Allowed Leakage
2022	E-Series	w/ aux prep pack	Single	7.3L Gas	R-134a	1.531	10.3	22.9
2022	E-Series	w/o aux prep pack	Single	7.3L Gas	R-134a	0.850	9.3	12.7

E-SERIES SEAT POSITION

E-250/350/450 SUPER DUTY CUTAWAY



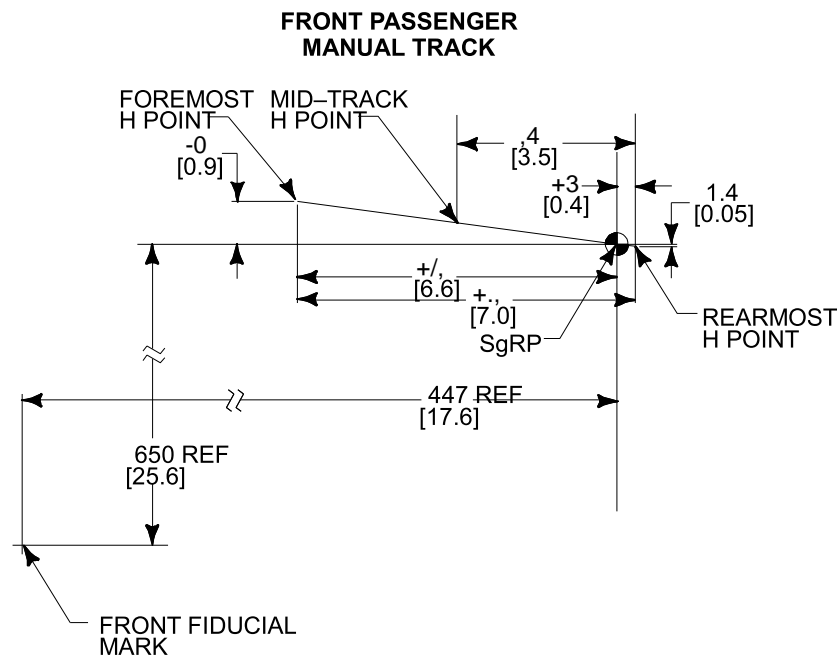
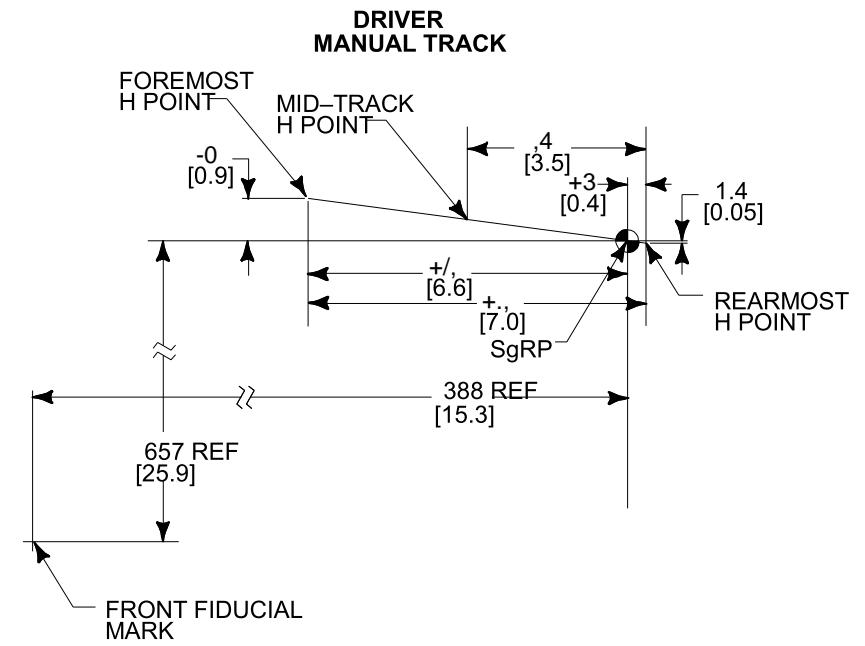
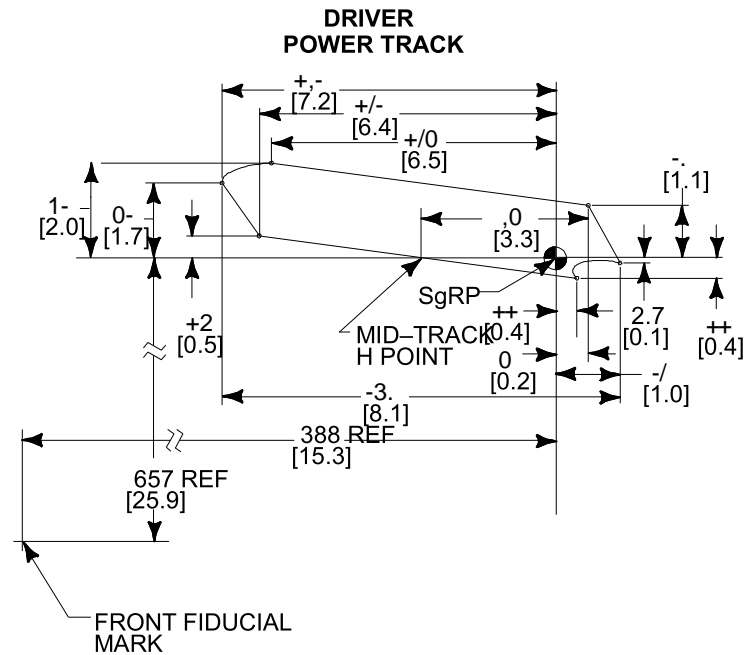
IMPORTANT:

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.

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)		
SEAT	A	%	C	D	E	F
DRIVER	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	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	DIMENSION
FRONT COMPARTMENT		
L34	MAXIMUM EFFECTIVE LEG ROOM – FRONT	1015 [40.0]
W3	SHOULDER ROOM – FRONT	1729 [68.1]
W5	HIP ROOM – FRONT	1667 [65.6]
W117	BODY WIDTH AT H-POINT	1996 [78.6]
H61	EFFECTIVE HEAD ROOM – FRONT	1070 [42.1]

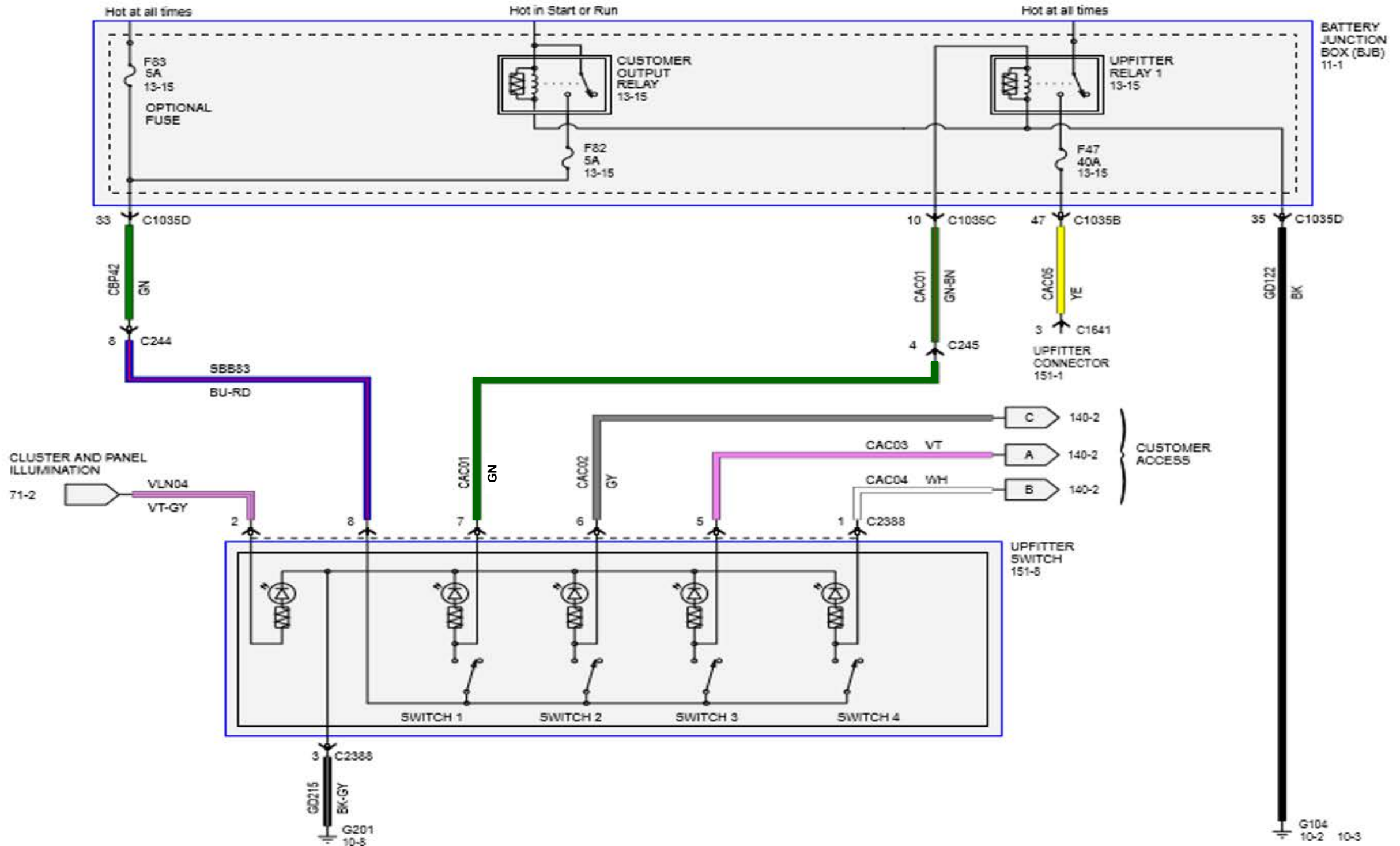
NOTE — [] DIMENSIONS ARE INCHES.

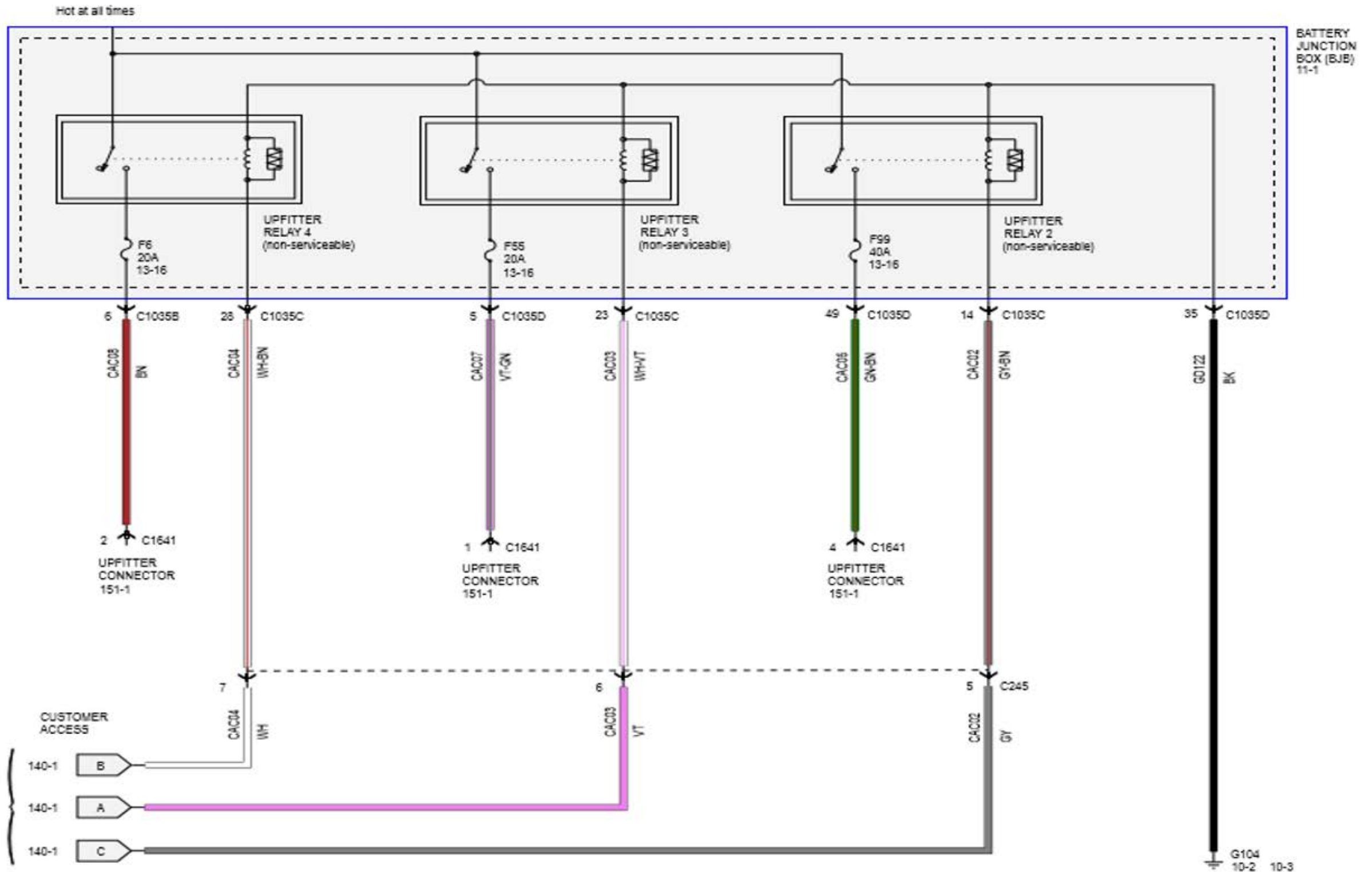


NOTES — [] DIMENSIONS ARE INCHES.

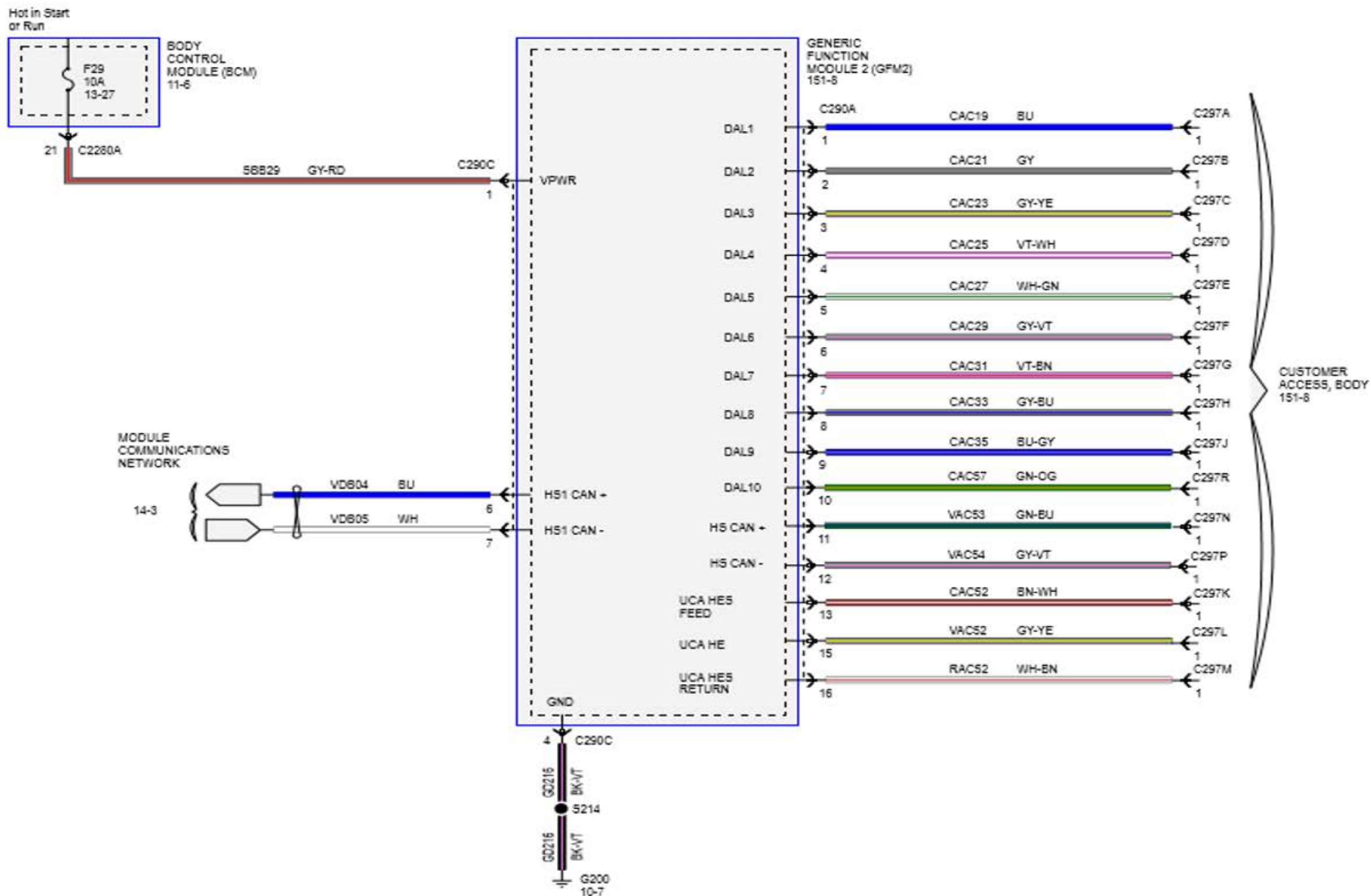
THIS SEAT INFORMATION IS PROVIDED TO ASSIST IN THE INSTALLATION OF SEATS OTHER THAN FORD INSTALLED SEATS AND TO HELP PRESERVE THE INTENDED PERFORMANCE OF THE SAFETY AND ERGONOMIC FEATURES OF THE E-SERIES. THE MID-TRACK H-POINT LOCATION MUST BE MAINTAINED IN ORDER TO COMPLY WITH F/CMVSS 208 AIRBAG REQUIREMENTS.

ELECTRICAL WIRING E-SERIES CUSTOMER ACCESS CIRCUITS

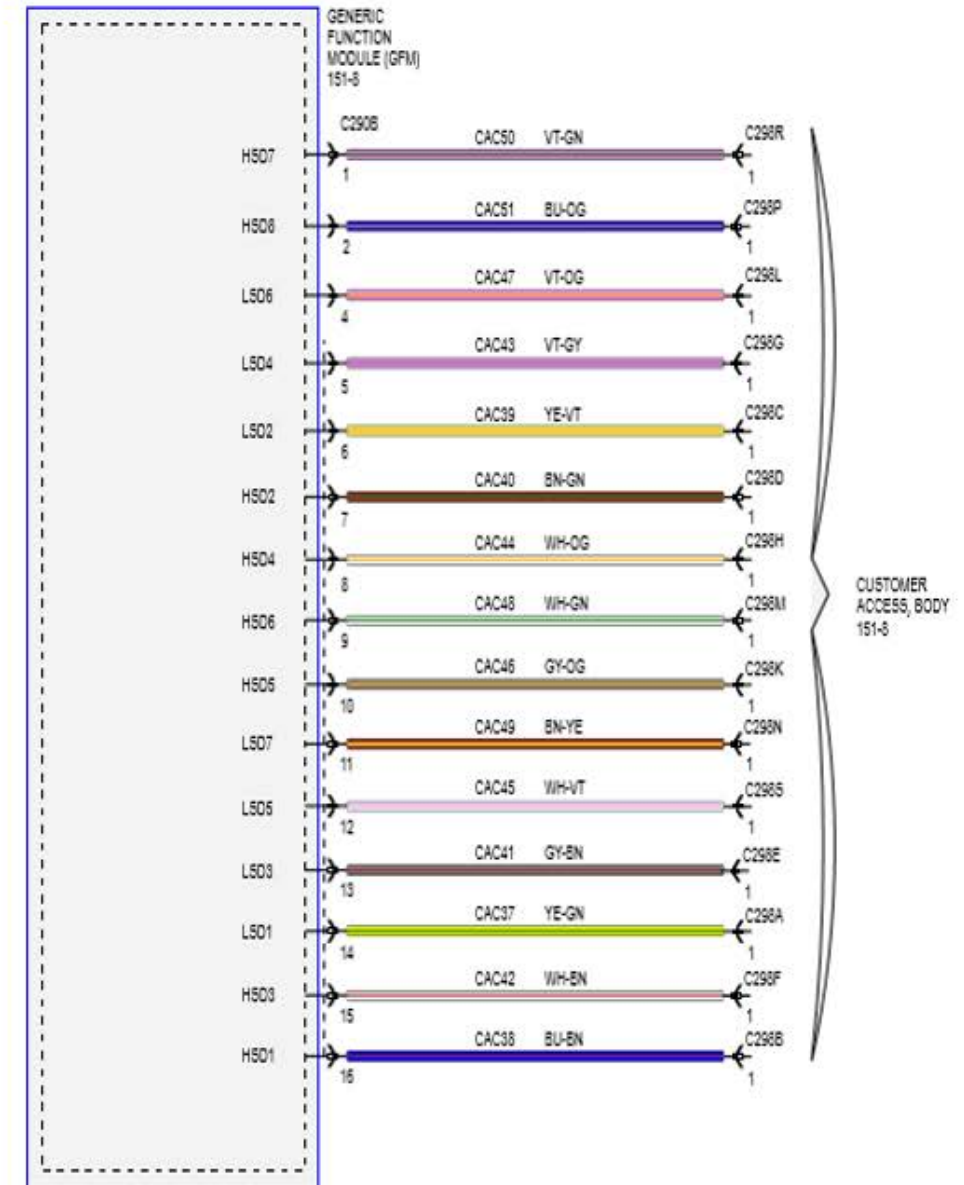
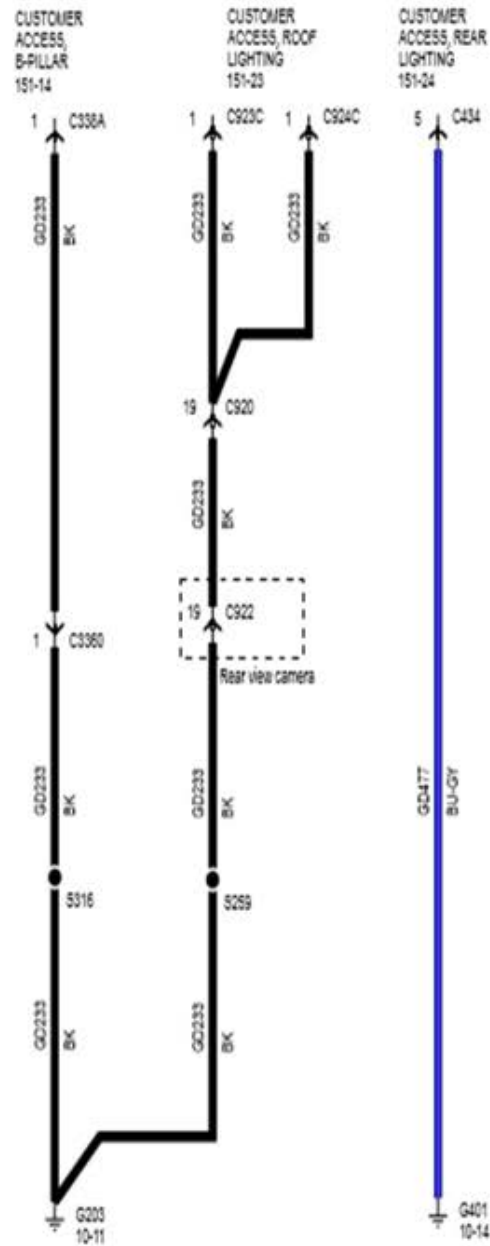
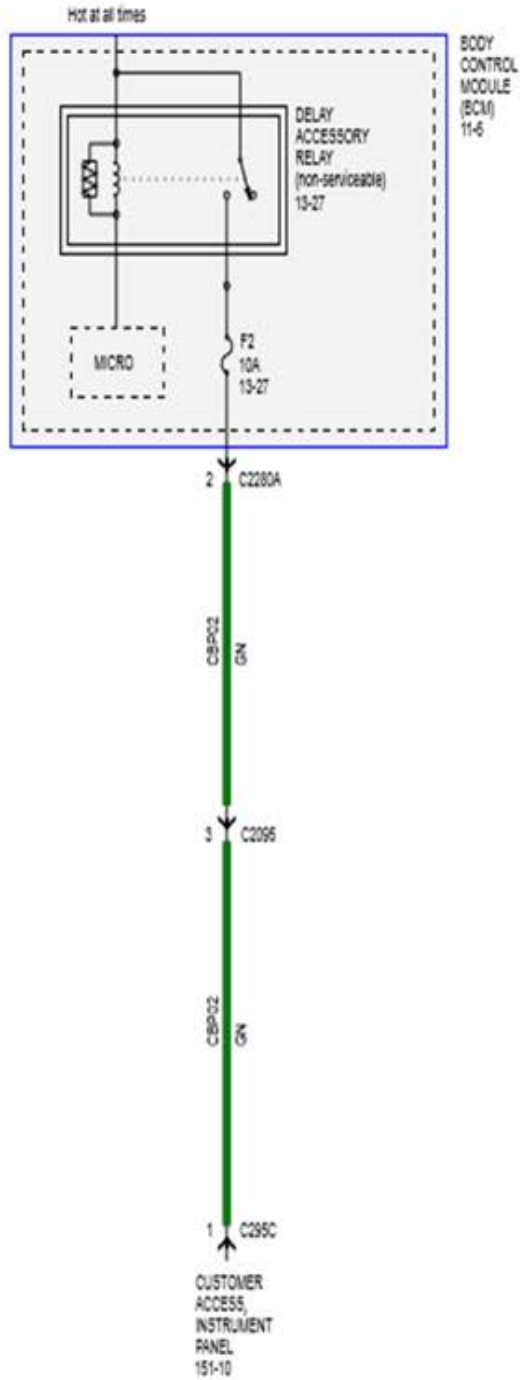




ELECTRICAL WIRING E-SERIES CUSTOMER ACCESS CIRCUITS

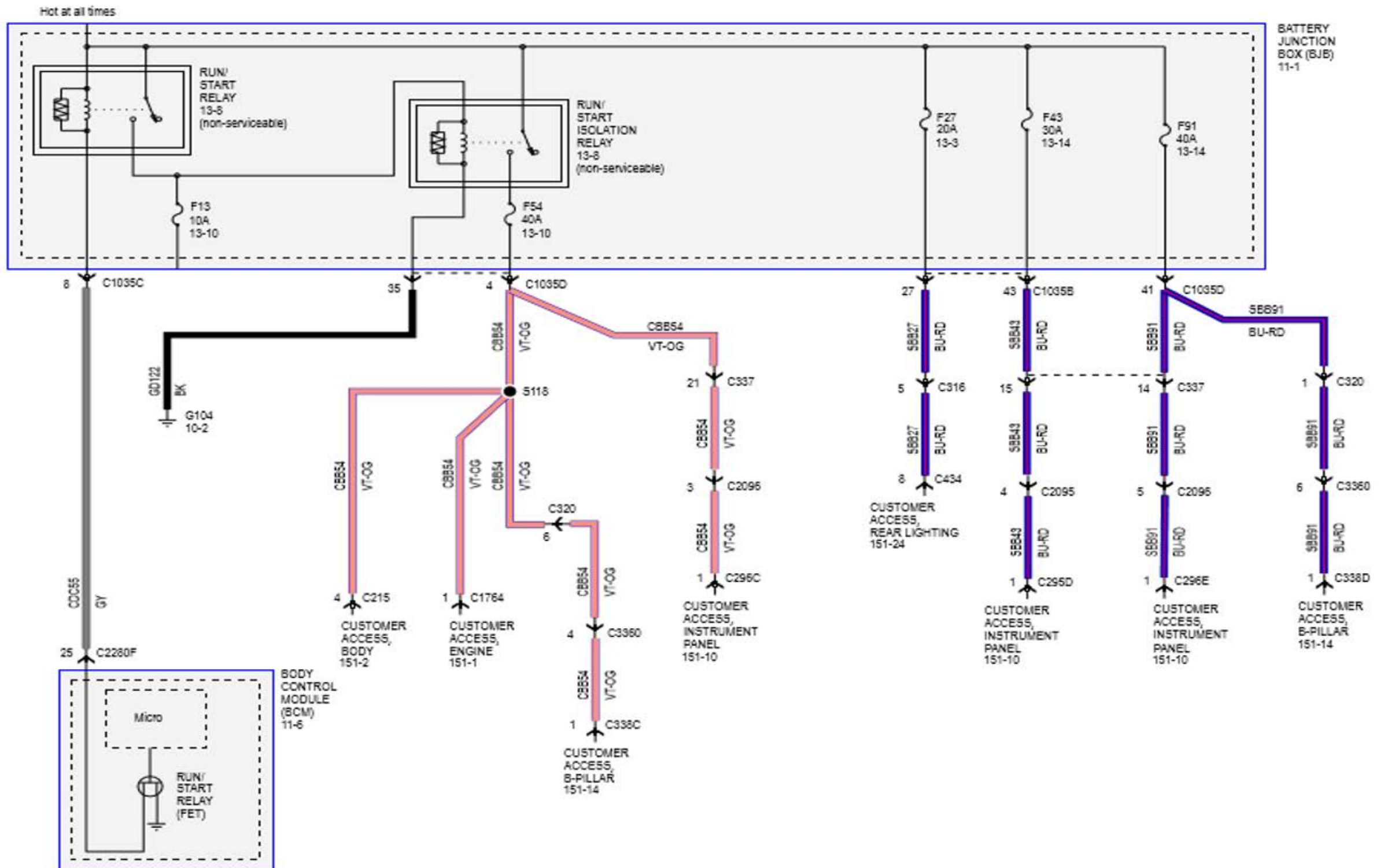


ELECTRICAL WIRING E-SERIES CUSTOMER ACCESS CIRCUITS



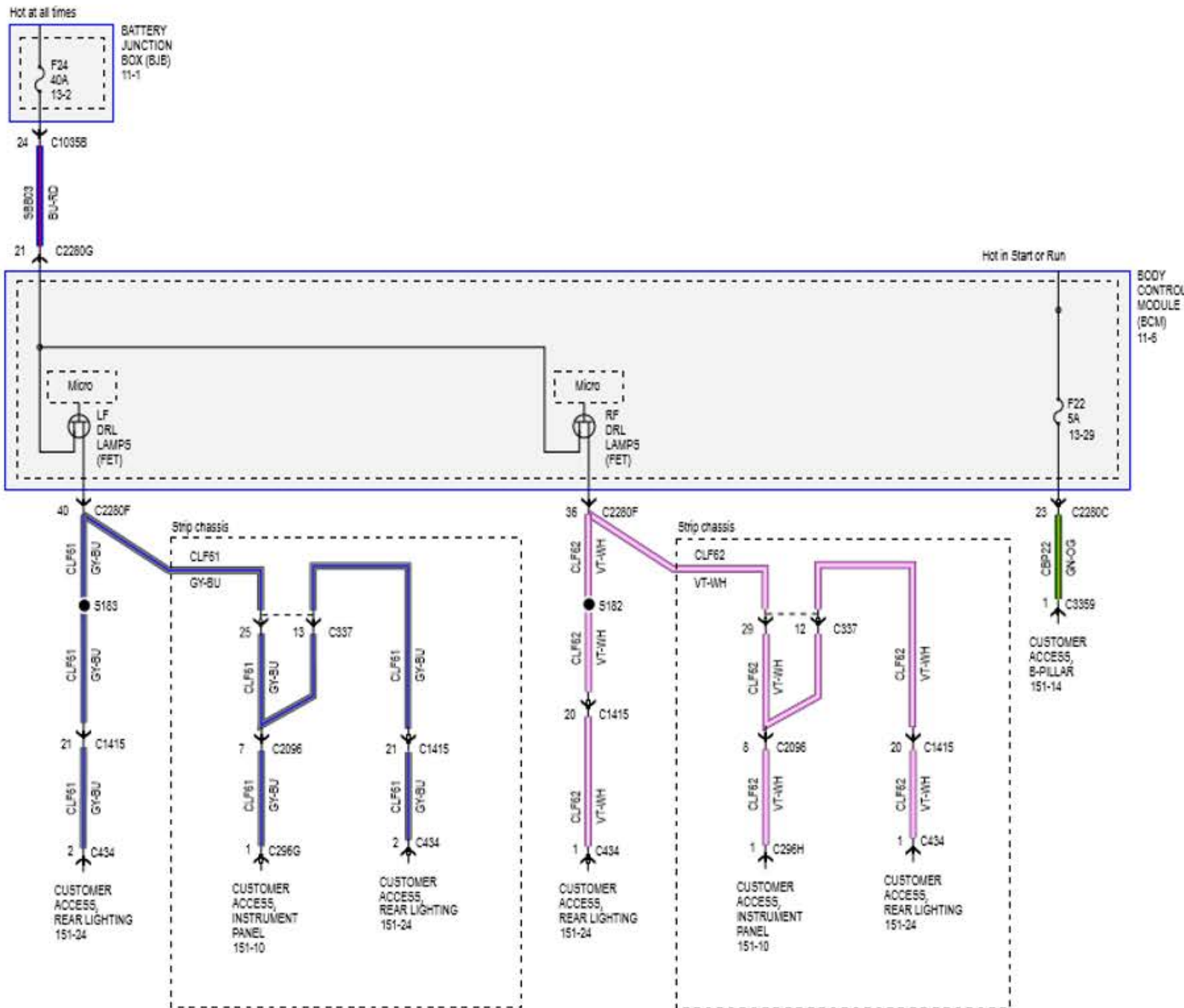
ELECTRICAL WIRING

E-SERIES CUSTOMER ACCESS CIRCUITS



ELECTRICAL WIRING

E-SERIES CUSTOMER ACCESS CIRCUITS



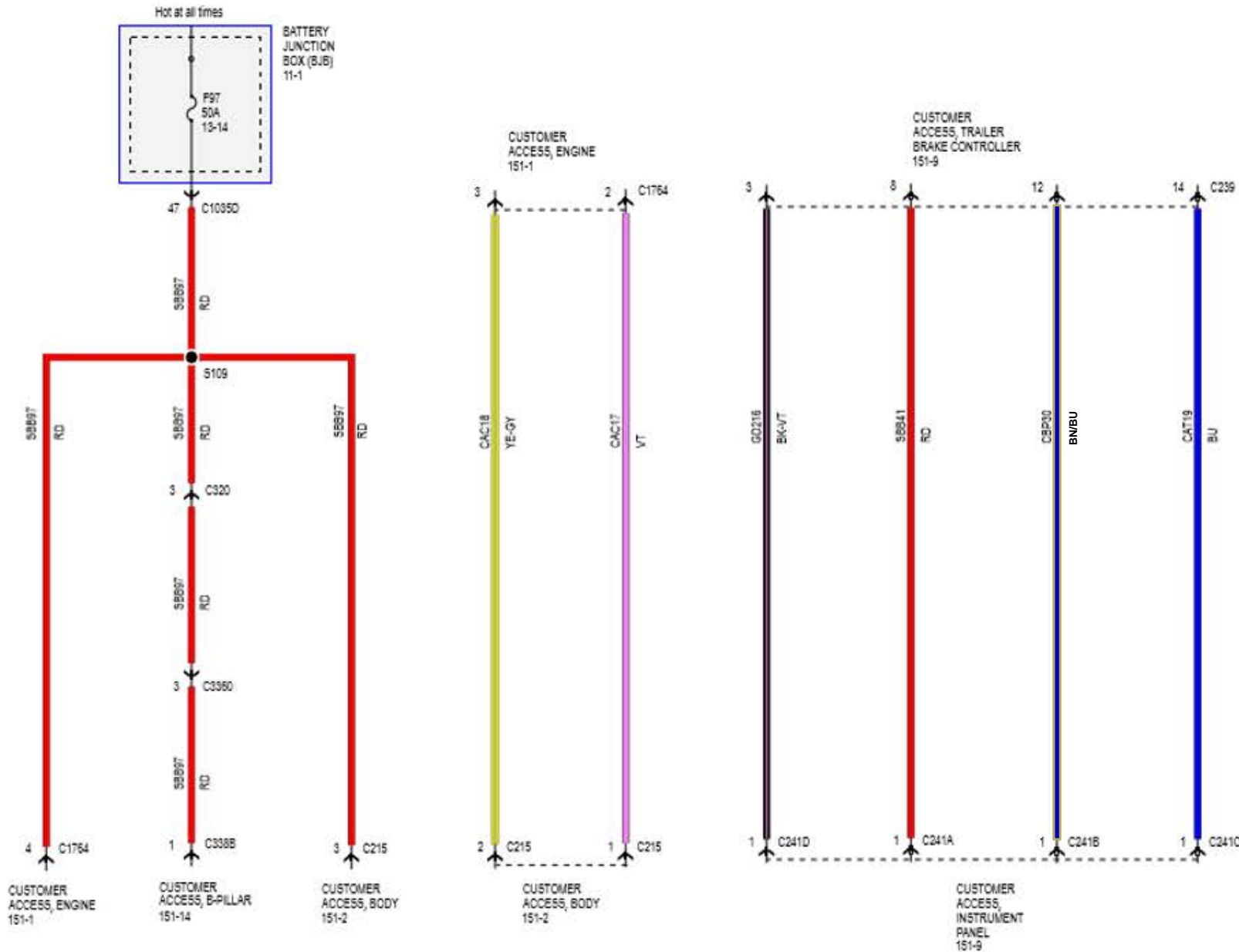
C3359

14A005

CUSTOMER ACCESS, B-PILLAR (part# N/A)

Pin	Circuit	Gauge	Circuit Function	Qualifier
1	CBP22 (GN-OG)	20	FUSE - 22 OR CIRCUIT BREAKER	
2	VME12 (BN-WH)	18	CTRL MOD. - AUDIO # SPEAKER RIGHT REAR (WOOFER) +	
3	RME12 (BN-BU)	18	CTRL MOD. - AUDIO # SPEAKER RIGHT REAR (WOOFER) -	
4	VLN33 (GY-VT)	20	CTRL MOD. - INTERIOR/COURTESY LAMP DIMMING (THEATRE)	
5	CPL36 (GN)	20	SWITCH - LATCH REAR DRIVER SIDE # AJAR (INCL SLIDING DOOR)	
6	CLN18 (GY-YE)	20	BATT SAVE/DEMAND LP	
7	-	-	Not Used	
8	RME09 (BN-YE)	18	CTRL MOD. - AUDIO # SPEAKER LEFT REAR (WOOFER) -	
9	VME09 (WH-GN)	18	CTRL MOD. - AUDIO # SPEAKER LEFT REAR (WOOFER) +	
10	CBB56 (BU-GN)	18	FUSE - 56 OR CIRCUIT BREAKER	
11	-	-	Not Used	
12	CPL13 (BN-GN)	18	CTRL MOD. - DOOR LOCK # ALL UNLOCK	
13	CPL11 (GY-BN)	18	CTRL MOD. - DOOR LOCK # ALL LOCK	
14	-	-	Not Used	
15	CLS23 (GY-OG)	20	CTRL MOD. - TURN LAMP LEFT REAR	
16	CLS27 (GN-OG)	20	CTRL MOD. - TURN LAMP RIGHT REAR	
17	-	-	Not Used	
18	-	-	Not Used	
19	-	-	Not Used	
20	-	-	Not Used	

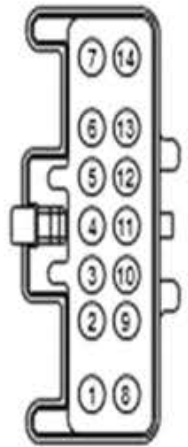
ELECTRICAL WIRING E-SERIES CUSTOMER ACCESS CIRCUITS



C239

14C210

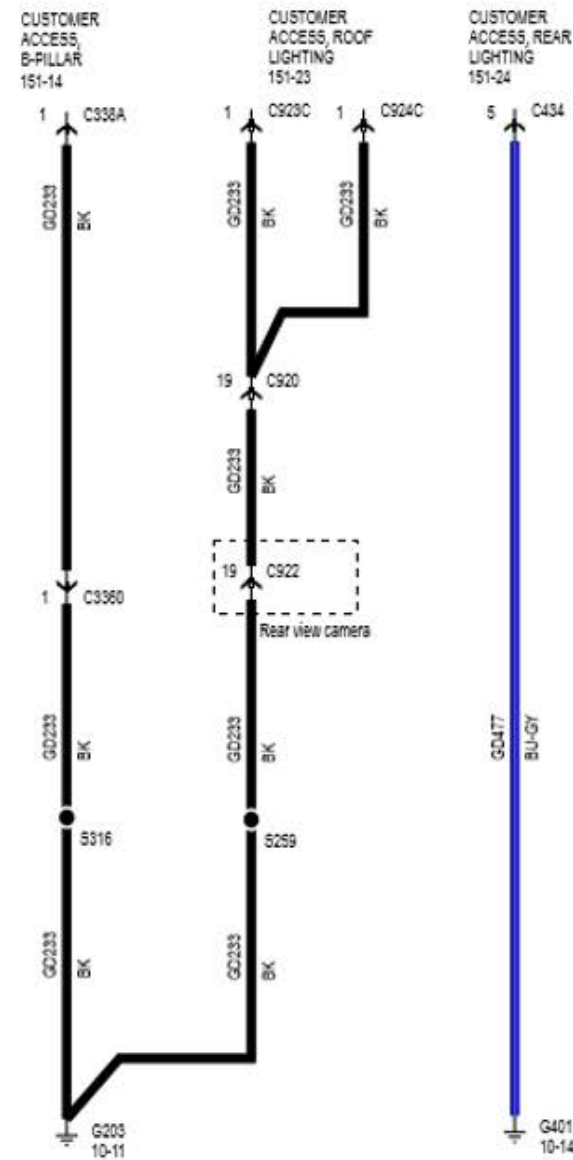
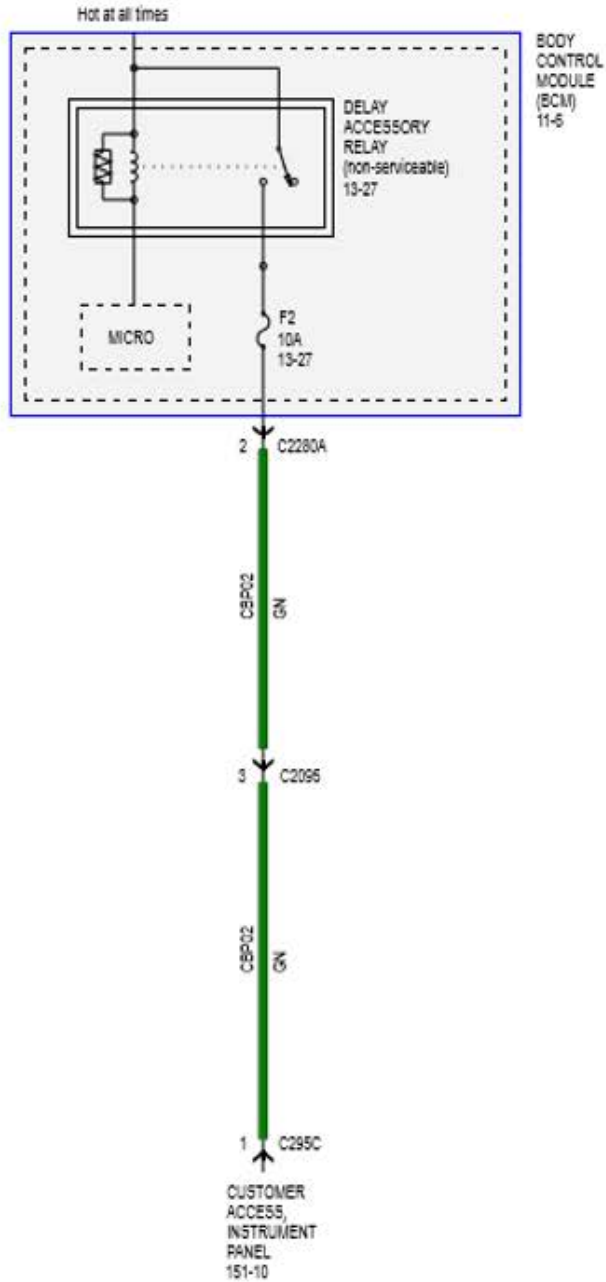
CUSTOMER ACCESS, TRAILER
BRAKE CONTROLLER (part# N/A)



Pin	Circuit	Gauge	Circuit Function	Qualifier
1	-	-	Not Used	
2	-	-	Not Used	
3	GD216 (BK-VT)	15	GROUND - INSTRUMENT PANEL STRUCTURE # 3RD POINT	
4	-	-	Not Used	
5	-	-	Not Used	
6	-	-	Not Used	
7	-	-	Not Used	
8	SBB41 (RD)	9	FUSE - 41 OR CIRCUIT BREAKER	
9	-	-	Not Used	
10	-	-	Not Used	
11	-	-	Not Used	
12	CBP30(BN-BU)	20	FUSE - 30 OR CIRCUIT BREAKER	
13	-	-	Not Used	
14	CAT19 (BU)	9	CTRL MOD. - TRAILER TOW# BRAKES (COLOR TO SAE 1239)	

ELECTRICAL WIRING

E-SERIES CUSTOMER ACCESS CIRCUITS



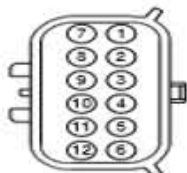
14406
CUSTOMER ACCESS, REAR
LIGHTING (part# N/A)



Pin	Circuit	Circuit Function
1	CBB95(BN/BU)	FUSE 95 OR CIRCUIT BREAKER
2	CLN18 (GY/YE)	BATT SAVE/DEMAND LAMP
3	CLS10 (GN/BN)	CTRL MOD REVERSE LAMPS ENGINE
4	CLS27 (GY/OG)	CTRL MOD RIGHT REAR TURN LAMPS
5	CLS23 (GN/OG)	CTRL MOD LEFT REAR TURN LAMPS
6	CLF61 (GY/BU)	CTRL MOD LEFT REAR STOP/TURN LAMPS
7	CLF62 (VT/WH)	CTRL MOD RIGHT REAR STOP/TURN LAMPS
8	SBB27 (BU/RD)	FUSE 27 OR CIRCUIT BREAKER
9	EMPTY	EMPTY
10	EMPTY	EMPTY
11	CLS05 (BU/GY)	PARK LAMPS ENGINE
12	GD477 (BU/GY)	GND FRAME LEFT REAR

ELECTRICAL WIRING E-SERIES CUSTOMER ACCESS CIRCUITS

12A581
CUSTOMER ACCESS, ENGINE (part#
N/A)



Pin	Circuit	Gauge	Circuit Function	Qualifier
1	CE140 (BN)	22	CTRL MOD. - POWERTRAIN # BATTERY CHARGE PROTECT INDICATOR (BCHPL) (BCPIL)	
2	CE326 (BU-WH)	22	CTRL MOD. - POWERTRAIN # POWER TAKE OFF OK INDICATOR (PTO_OKAY) (PTO_IND)	
3	CE912 (YE-GN)	22	SWITCH - POWER TAKE OFF REQUEST 1 (PTO) (PTORS1)	
4	CE913 (BU)	22	SWITCH - POWER TAKE OFF IDLE CONTROL 1 (PTOIC)	
5	CE926 (VT-BN)	22	SWITCH - BATTERY CHARGE PROTECT MODE (BCPSW)	
6	CE933 (BU-OG)	22	SWITCH - POWER TAKE OFF REQUEST 2 (PTORS2)	
7	CET21 (GN-OG)	22	CTRL MOD. - POWERTRAIN # TRANSMISSION RANGE OUTPUT NEUTRAL (TRO-N)	
8	CET22 (GY-BN)	22	CTRL MOD. - POWERTRAIN # TRANSMISSION RANGE OUTPUT PARK (TRO-P)	
9	LE423 (GN-VT)	22	CTRL MOD. - POWERTRAIN # VOLTAGE REFERENCE ENGINE (VREF) (E-VREF) (VREF1)	
10	RE405 (GN-WH)	22	CTRL MOD. - POWERTRAIN # SIGNAL RETURN ENGINE (E-SIGRTN) (SIGRTN-A)	
11	VE925 (GN)	22	SWITCH - POWER TAKE OFF RPM ADJUST (PTO_RPM)	
12	VMC05 (VT-OG)	22	CTRL MOD. - VEHICLE SPEED OUTPUT (VSOUT)	

C494

14406

CUSTOMER ACCESS, FRAME (part#
N/A)

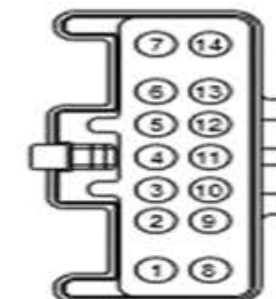


Pin	Circuit	Gauge	Circuit Function	Qualifier
1	CAT14 (OG)	9	RELAY - TRAILER TOW BATTERY CHARGING (COLOR TO SAE 1239)	
2	CAT03 (GY-BN)	16	CTRL MOD. - TRAILER TOW # BACKUP LAMPS	
3	-	-	Not Used	
4	CAT19 (BU)	9	CTRL MOD. - TRAILER TOW # BRAKES (COLOR TO SAE 1239)	

C239

14C210

CUSTOMER ACCESS, TRAILER
BRAKE CONTROLLER (part# N/A)



Pin	Circuit	Gauge	Circuit Function	Qualifier
1	-	-	Not Used	
2	-	-	Not Used	
3	GD216 (BK-VT)	15	GROUND - INSTRUMENT PANEL STRUCTURE # 3RD POINT	
4	-	-	Not Used	
5	-	-	Not Used	
6	-	-	Not Used	
7	-	-	Not Used	
8	SBB41 (RD)	9	FUSE - 41 OR CIRCUIT BREAKER	
9	-	-	Not Used	
10	-	-	Not Used	
11	-	-	Not Used	
12	CBB95 (BN/GU)	20	BOO FEED	
13	-	-	Not Used	
14	CAT19 (BU)	9	CTRL MOD. - TRAILER TOW # BRAKES (COLOR TO SAE 1239)	

C4098

13A576

TRAILER TOW CONNECTOR (part#
N/A)



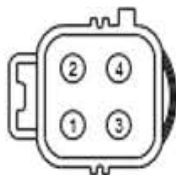
Pin	Circuit	Gauge	Circuit Function	Qualifier
1	CAT09 (GN)	18	CTRL MOD. - TRAILER TOW # TURN SIGNAL RIGHT (COLOR TO SAE 1239)	
2	CAT06 (YE)	18	CTRL MOD. - TRAILER TOW # TURN SIGNAL LEFT (COLOR TO SAE 1239)	
3	CAT17 (BN)	15	RELAY - TRAILER TOW PARK LAMPS (COLOR TO SAE 1239)	
4	RAT08 (WH)	15	CTRL MOD. - TRAILER TOW # RETURN (USA ONLY, COLOR TO SAE 1239 EXCEPTION TO PSF)	

ELECTRICAL WIRING E-SERIES CUSTOMER ACCESS CIRCUITS

C1764

12A581

CUSTOMER ACCESS, ENGINE (part# N/A)

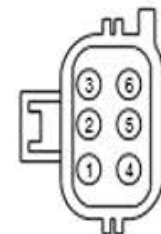


Pin	Circuit	Gauge	Circuit Function	Qualifier
1	CBB54 (VT-OG)	9	FUSE - 54 OR CIRCUIT BREAKER	
2	CAC17 (VT)	9	WIRE - UPFITTER CUSTOMER ACCESS #5	
3	CAC18 (YE-GY)	9	WIRE - UPFITTER CUSTOMER ACCESS #6	
4	SBB97 (RD)	5	FUSE - 97 OR CIRCUIT BREAKER	

C2300

12A581

CUSTOMER ACCESS, WIPER (part# N/A)



Pin	Circuit	Gauge	Circuit Function	Qualifier
1	CRW03 (VT-WH)	12	RELAY - FRONT WIPER	
2	CRW08 (VT-OG)	12	SWITCH - FRONT WIPER HIGH (H)	
3	CRW18 (GY-BN)	12	CTRL MOD. - FRONT WIPER LOW	
4	CRW14 (BU-WH)	18	CTRL MOD. - FRONT WASHER	
5	CRW25 (BU-GY)	12	RELAY - FRONT WIPER PARK	
6	GD122 (BK)	12	GROUND - FENDER FRONT LEFT # 3RD POINT	

C3389

12A581

CUSTOMER ACCESS, POWER POINT/USB (part# N/A)

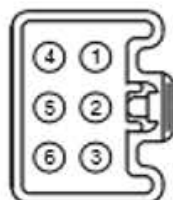


Pin	Circuit	Gauge	Circuit Function	Qualifier
1	CBB56 (BU-GN)	14	FUSE - 56 OR CIRCUIT BREAKER	
2	CBB12 (GN-WH)	14	FUSE - 12 OR CIRCUIT BREAKER	
3	CBB58 (GY-OG)	20	FUSE - 58 OR CIRCUIT BREAKER	
4	-	-	Not Used	

C3358

14A005

CUSTOMER ACCESS, AUXILIARY A/C (part# N/A)



Pin	Circuit	Gauge	Circuit Function	Qualifier
1	CHA07 (BU-GY)	9	SWITCH - AUX. BLOWER # POSITION MEDIUM / MEDIUM LOW	
2	CH435 (VT-GY)	20	SWITCH - CLIMATE MODE # BLOWER	
3	GD233 (BK)	9	GROUND - COWL SIDE/PILLAR A LEFT	
4	SBB52 (GN-RD)	9	FUSE - 52 OR CIRCUIT BREAKER	
5	CHA08 (GN-OG)	20	SWITCH - AUX. BLOWER # POSITION HIGH	
6	CHA06 (YE-VT)	15	SWITCH - AUX. BLOWER # POSITION LOW	

C234

12A581

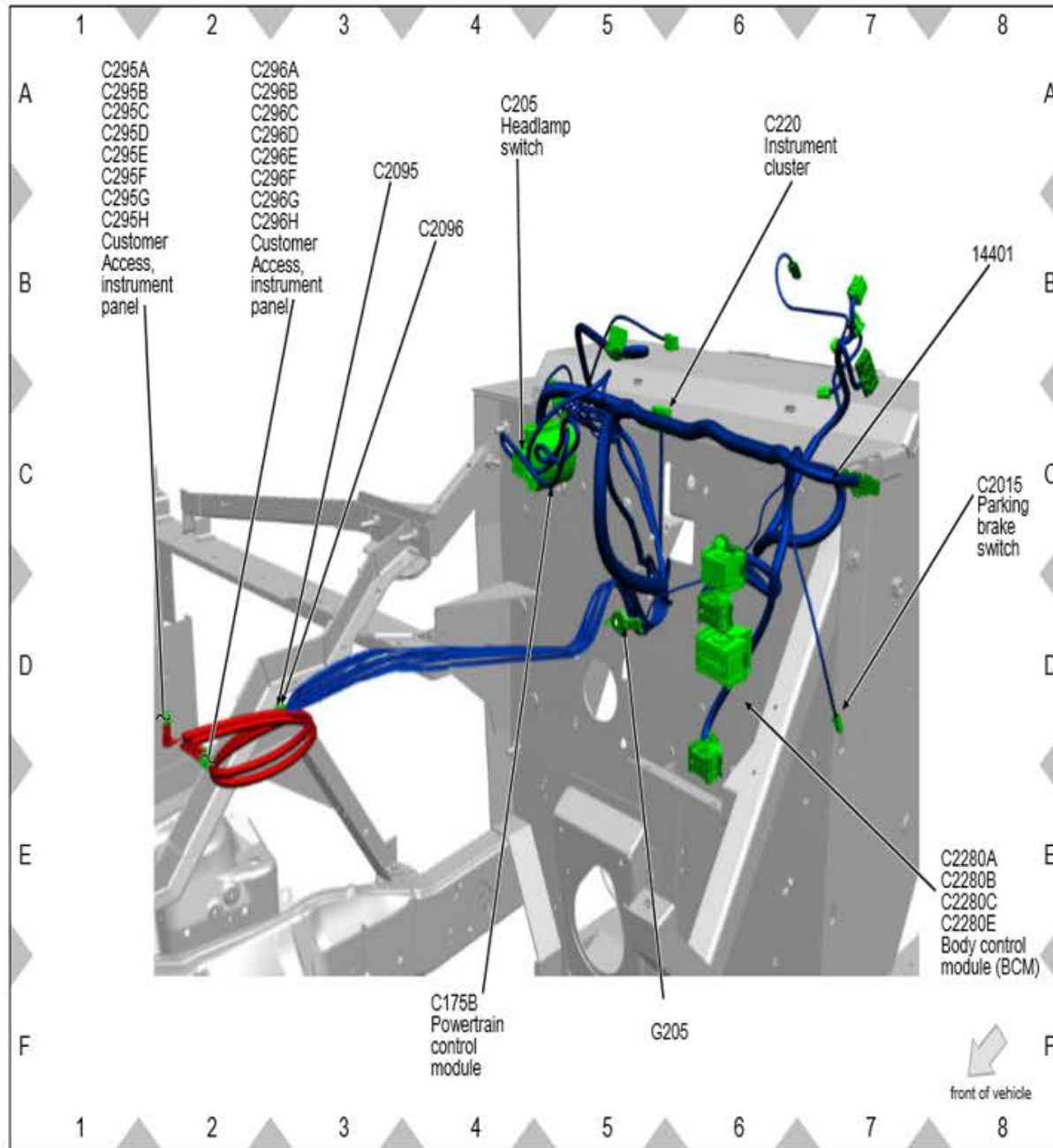
CUSTOMER ACCESS, A/C (part# N/A)



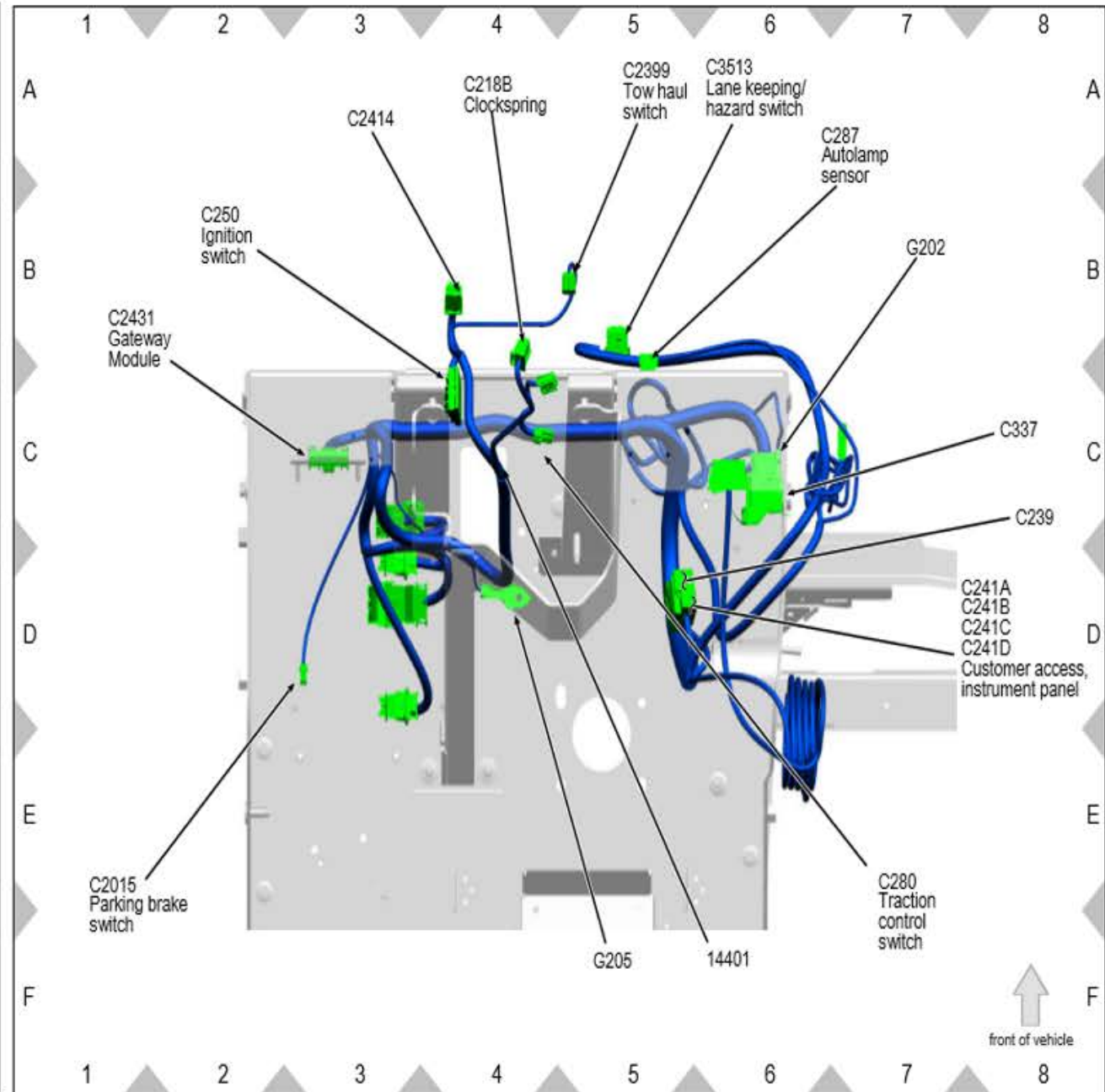
Pin	Circuit	Gauge	Circuit Function	Qualifier
1	CH302 (WH-BN)	16	CTRL MOD. - POWERTRAIN # A/C CLUTCH CONTROL RELAY / WOT AC CUTOFF (ACCR)	
2	CH434 (GY-YE)	16	SWITCH - CLIMATE MODE # AC	
3	CH421 (GY)	16	SWITCH - A/C COMPRESSOR CYCLING (ACCS)	
4	CH302 (WH-BN)	16	CTRL MOD. - POWERTRAIN # A/C CLUTCH CONTROL RELAY / WOT AC CUTOFF (ACCR)	

ELECTRICAL WIRING E-SERIES WIRING CONNECTOR LOCATIONS

BEHIND DASH PANEL - STRIPPED CHASSIS



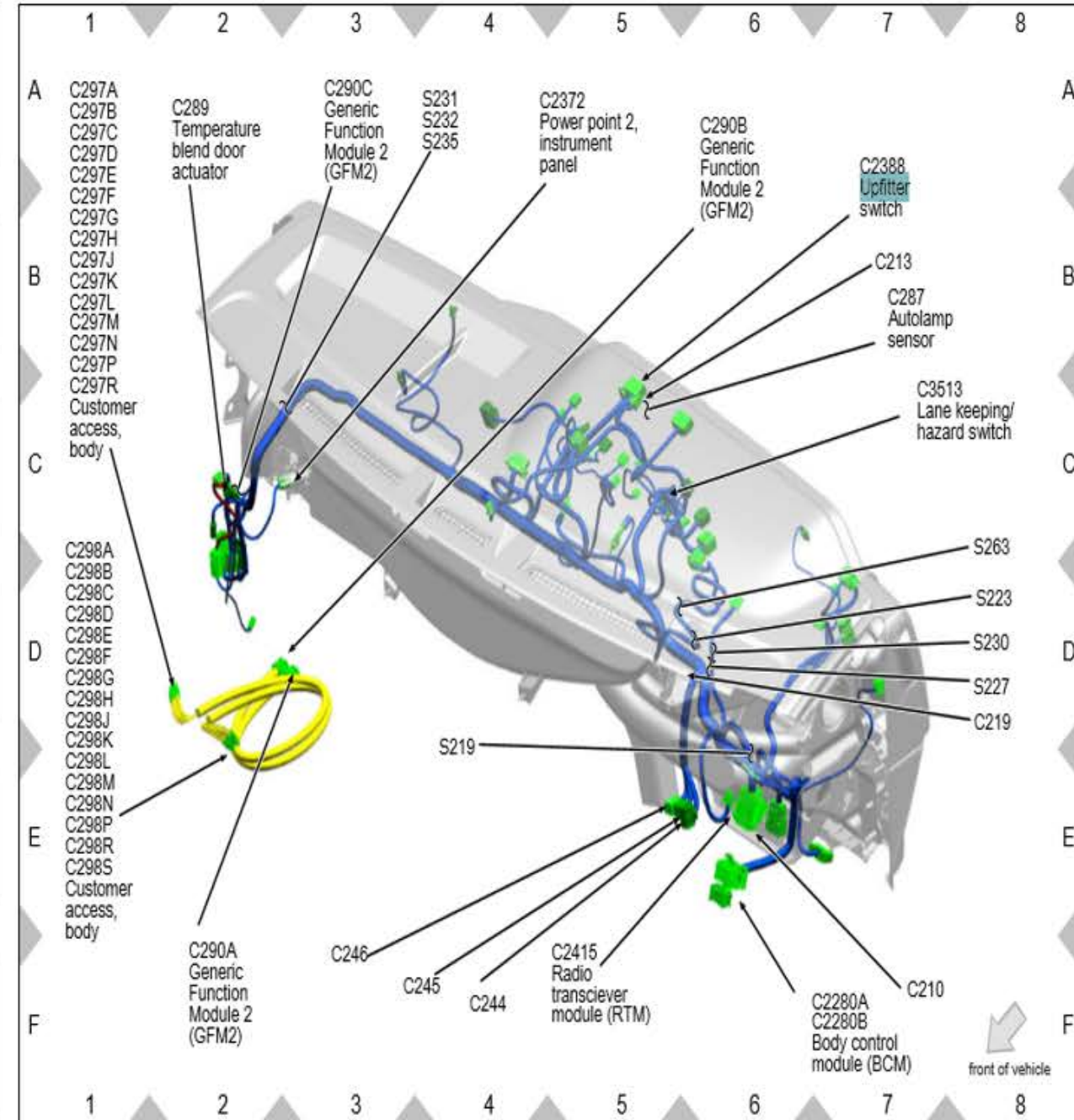
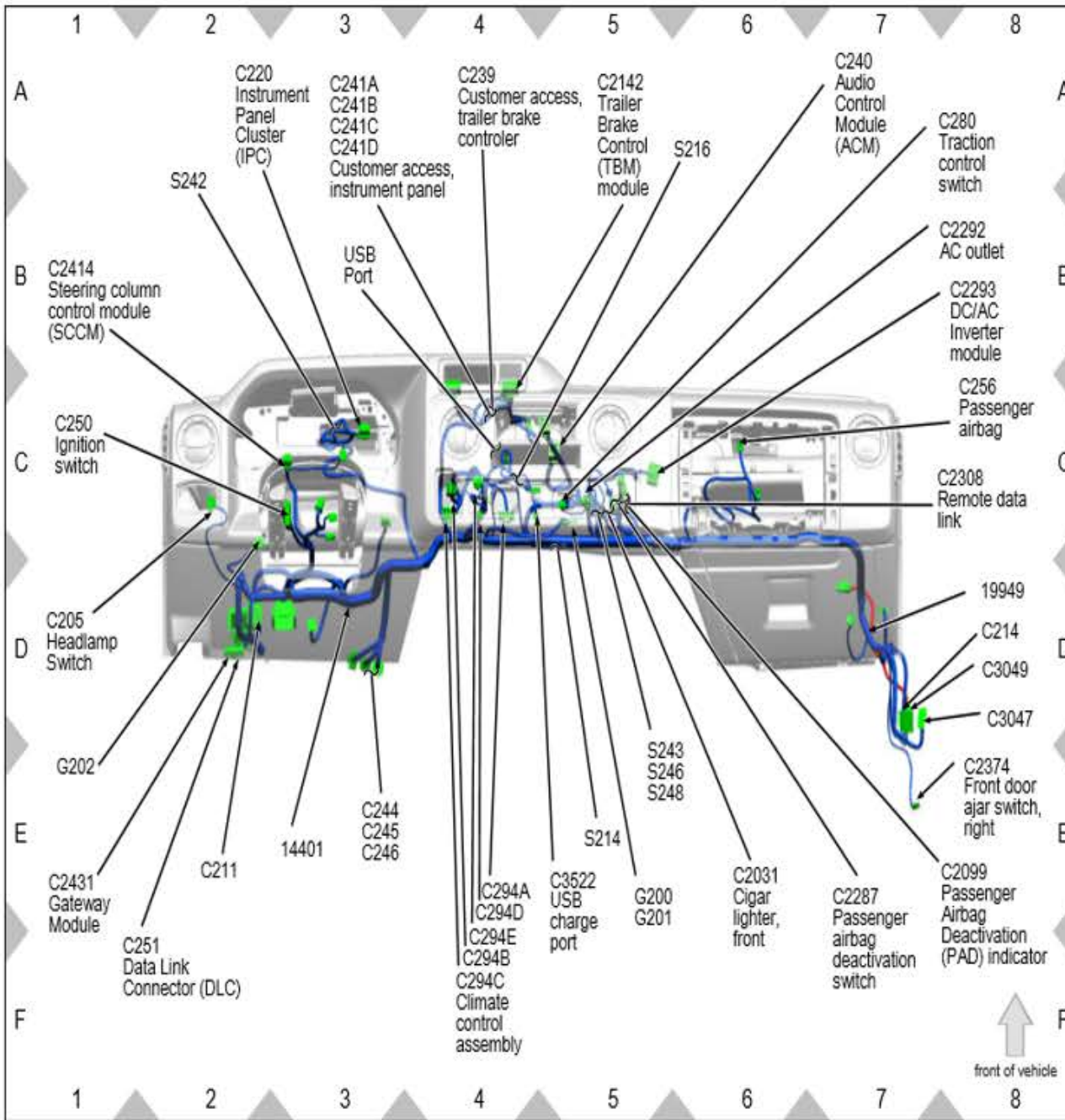
DASH PANEL - STRIPPED CHASSIS



ELECTRICAL WIRING E-SERIES WIRING CONNECTOR LOCATIONS

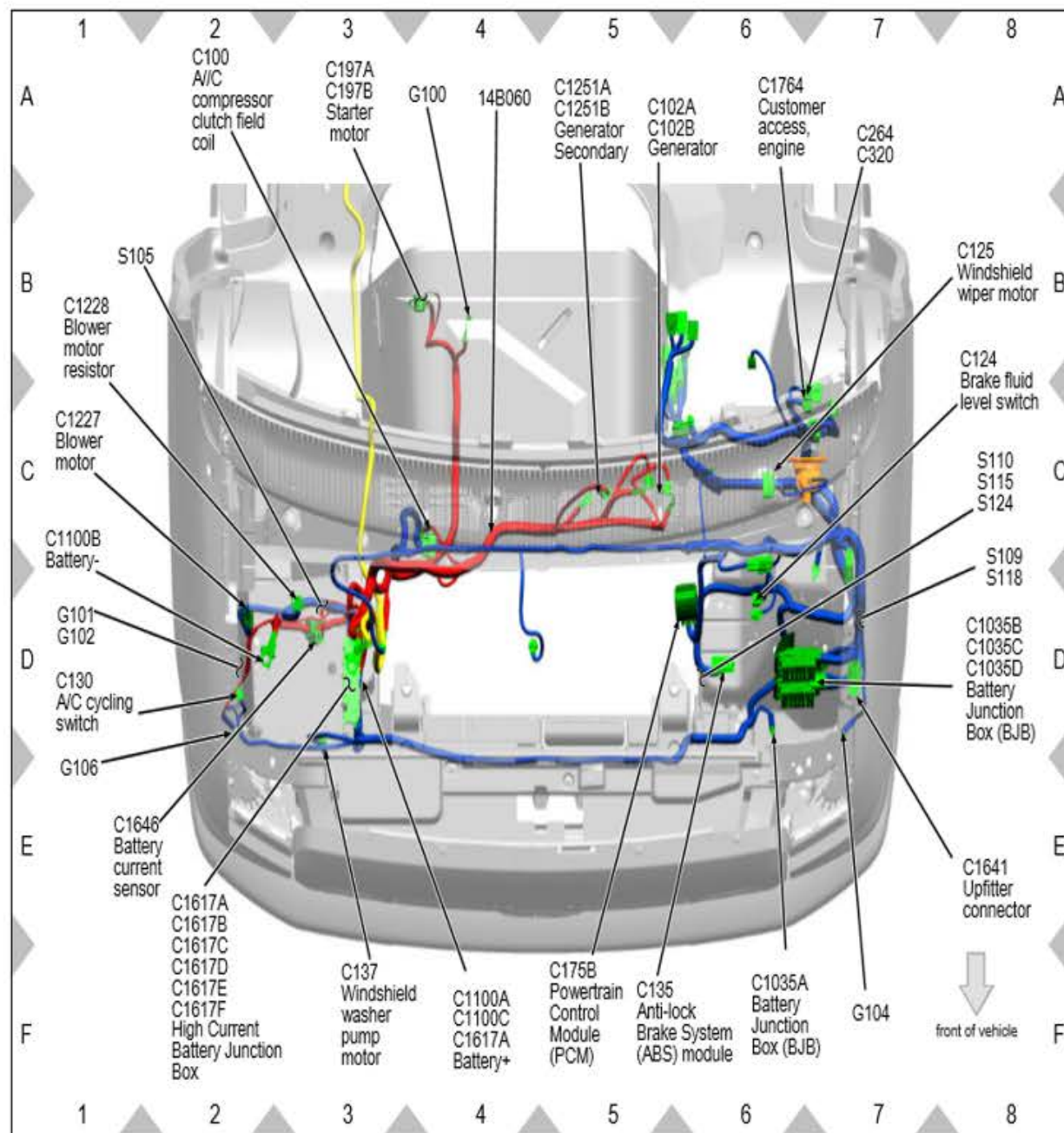
DASH PANEL-CUTAWAY

BEHIND DASH PANEL-CUTAWAY

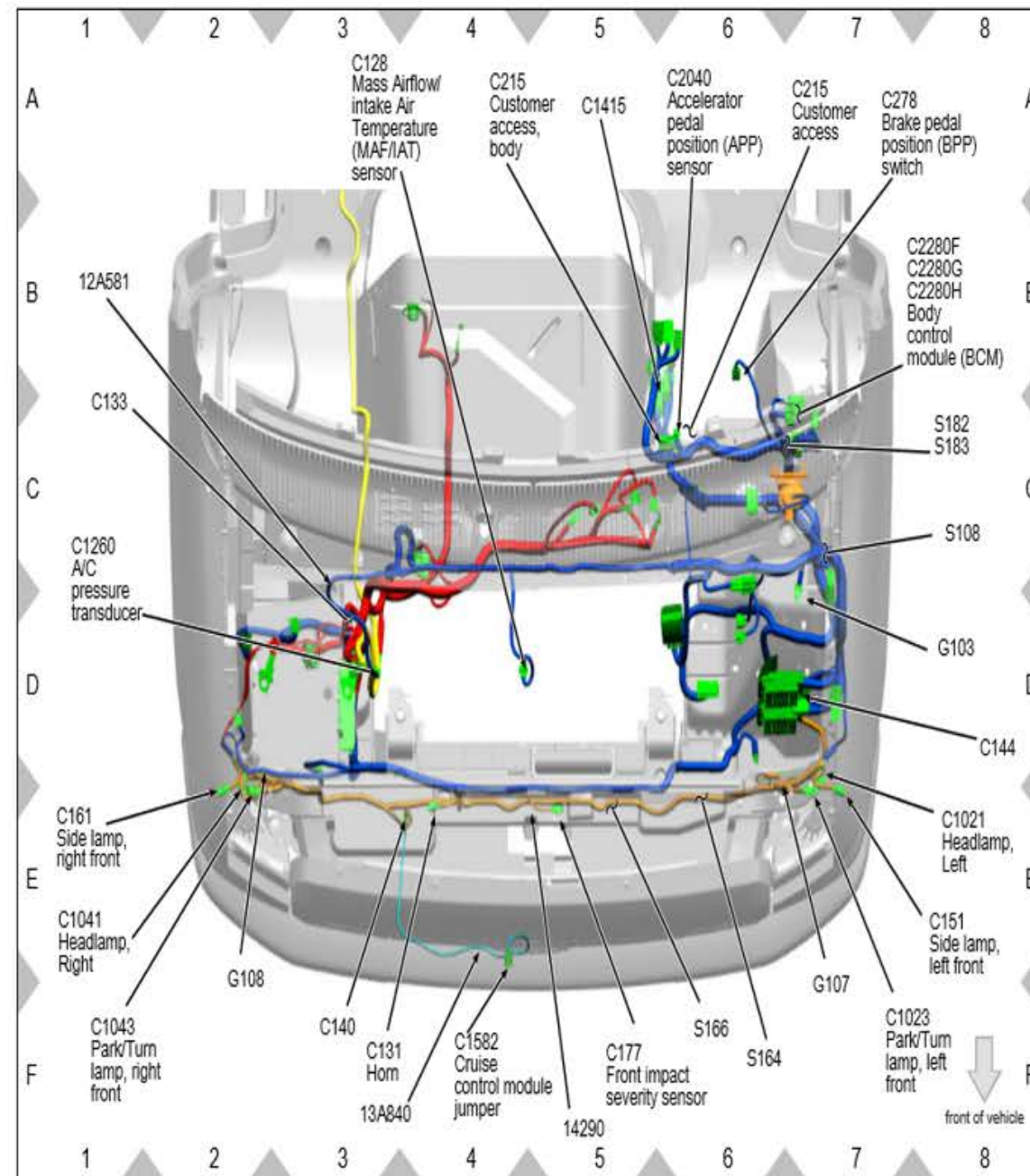


ELECTRICAL WIRING E-SERIES WIRING CONNECTOR LOCATIONS

Engine compartment - Cutaway (1 of 2)



Engine compartment- Cutaway (2 of 2)



Operating Modes

Stationary Elevated Idle Control mode

- Operates in Park at elevated engine speed.
- Intended to be commanded ONLY by applying battery voltage to certain customer-access blunt-cut wire circuits, and adding a target-speed resistor, and is only available when the vehicle road speed signal is zero
- Includes a circuit which changes from open-circuit to ground when enablers are met that may be used to turn on an indicator lamp while providing battery power to an aftermarket PTO clutch or solenoid
- Engine speed ramp-rates are configurable, by means of an Service tool, for all powertrains.
 - o Default ramp-rate for all powertrains is 200 RPM/second.
 - o Configurable ramp rates are as follows:
- Gas: 100 – 1000 RPM/sec (in 100 RPM/sec increments)

Typical SEIC Engagement Sequence for TorqShift™ PTO

1. 12V is applied to PTQ REQ1 circuit.
2. PCM looks for the following enabling conditions:
 - Parking brake applied.
 - Foot off of service brake
 - Vehicle in PARK (or NEUTRAL)
 - Foot off of accelerator pedal
 - Vehicle speed is 0 mph (stationary)
 - Engine at a stable base idle speed
 - Transmission Oil Temp above 20° F
 - 7.3L - Engine Coolant Temperature (ECT) 20° F minimum.

Battery Charge Protect (BCP):

-When 12V is applied to the BCP SW circuit, the engine speed goes immediately to 600. From this state, the PCM uses battery voltage as well as ambient air temp., engine oil temperature information to raise engine speed higher to maintain battery charge. Maximum engine speed in BCP mode is 1200 rpm. Loss of an operating condition after BCP is engaged will require the BCP switch to be cycled before BCP will re-engage.

- BCP CANNOT BE ACTIVE WHEN SEIC OR PTO MODES ARE ACTIVE
- A Resistor must be installed between PTO REF and PTO RPM for both Diesel and Gasoline engines.

Typical Battery Charge Protect Mode Engagement Sequence:

1. 12V applied to BCP SW circuit
 2. PCM looks for the following enabling conditions:
 - Parking brake applied.
 - Foot off of service brake
 - Vehicle in PARK (or NEUTRAL)
 - Foot off of accelerator pedal
 - Vehicle speed is 0 mph (stationary)
 - Engine at a stable base idle speed
 - Transmission Oil Temp above 20° F
 - 7.3L - Engine Coolant Temperature (ECT) 20° F minimum.
 3. PCM looks for a valid voltage between 0.2 to 4.7 Volts on the PTO RPM circuit
 4. Vehicle idle fluctuates slightly as PCM enters BCP mode
 5. The BCP LP circuit changes from open-circuit to ground. This is intended to provide a ground path for a BCP indicator lamp
- NOTE:** BCP is a smart system. Engine idle will not increase unless the vehicle senses an increase in electrical demand. Under periods of low electrical demand, the operator may not notice any change in engine RPM. It is recommended that the modifier install an indicator lamp to alert the operator that BCP is properly engaged.

Additional notes:

Adaptive Cooling

This PCM strategy automatically restricts engine power when it senses an over-temperature condition, and may interrupt the SEIC-PTO operation. Typically, the over-temperature condition it reacts to will also show up on the temperature gage on the instrument panel. Elevated engine speed, typical of SEIC operation, may help avoid Adaptive Cooling occurrence due to the resultant additional engine and transmission coolant flow. However, depending on the auxiliary PTO power being demanded, 900 rpm may not be enough to prevent the power train from entering Adaptive Cooling mode, but 1500 rpm may.

Input Resistor

ALL modes (SEIC, PTO) require usage of an input resistor. The resistor value may be obtained in Tables A & B.

7.3L Gasoline SEIC / BCP

Vehicle Conditions to Enable SEIC (all are required)	Vehicle Conditions that Disable SEIC (any one required - See Note-1)	SEIC	BCP
Parking brake applied.	Parking brake disengaged.	Yes	Yes
Foot off of service brake	Depressing service brake	Yes	Yes
Vehicle in PARK (or NEUTRAL)	Vehicle take out of PARK (or NEUTRAL)	Yes	Yes
Foot off of accelerator pedal	Accelerator pedal depressed	Yes	Yes
Vehicle speed is 0 mph (stationary)	Vehicle speed is not 0 mph (stationary)	Yes	Yes
Engine at a stable base idle speed		Yes	Yes
Transmission Oil Temp above 20°F	Transmission Oil Temperature (TOT) exceeds 240°F.	Yes	Yes
Engine Coolant Temperature (ECT) 20° F minimum (6.7L)	Engine Coolant Temperature (ECT) exceeds 230° F	Yes	No
Engine Coolant Temperature (ECT) 20 degree F minimum. (7.3L)	Engine Coolant Temperature Limit (ECT) 230 degree F maximum	Yes	Yes
	Catalyst Temperature Limit	Yes	Yes

Note 1: A “change-of-state” at the “PTO REQ1” input (for Stationary Elevated Idle Control non-Split Shaft), or for both “PTO REQ1 and PTO REQ2” inputs (for Stationary Elevated Idle Control Split Shaft) is required to re-invoke Stationary Elevated Idle Control. When a disable is seen by the PCM, the Stationary Elevated Idle Control function is de-activated, the “PTO RELAY” output circuit changes from a “ground-source” to “open-circuit”, and engine speed returns to base idle. To re-activate Stationary Elevated Idle Control, the operator must open the PTO Switch to the “PTO REQ1” and “PTO REQ2” inputs, then close the PTO Switch again to the “PTO REQ1” or “PTO REQ1 and PTO REQ2” inputs.

Note 2: A “change-of-state” at the “BCP SW” input is required to re-invoke Battery Charge Protect. When a disable is seen by the PCM, the Battery Charge Protect function is de-activated, the “BCP LP” output circuit changes from a “ground-source” to “open-circuit”, and engine speed returns to base idle. To re-activate Battery Charge Protect, the operator must open the Battery Charge Protect Switch to the “BCP SW” input, then close the Battery Charge Protect Switch again to the “BCP SW” input.

Note 3: See Split-Shaft Mode Description

E-Series – 7.3L Gasoline Engine PCM				
Wire Color	Wire Tag	Circuit No.	Circuit Int ent	Descript ion
Yellow / Green	PTOREQ1	CE912	INPUT(VPWR)	PCM Pin
				<ul style="list-style-type: none"> •Applying vehicle battery voltage to this wire initiates SEIC Stationary Mode process. •Signals TorqShift™ transmission to enter SEIC Stationary Mode strategy. •Verifies safety enablers. •Turns off OBD and other emission-related monitoring. •Elevates engine speed to target found at PTO-RPM circuit. •Invokes the PTO relay circuit when safety enablers are met. •Looks for the target engine speed requested at the PTO_RPM circuit using a resistor or POT
Blue / Orange	PTOREQ2	CE933	INPUT(VPWR)	PCM Pin
				<ul style="list-style-type: none"> •Applying vehicle battery voltage to this wire initiates Mobile PTO Mode. •Signals TorqShift™ transmission to enter Mobile mode strategy. •Verifies safety enablers. •Turns off OBD and other emission-related monitoring. •Invokes the PTO relay circuit when safety enablers are met. •Requires valid resistance on PTO_RPM input for system to function
Blue / White	PTORLY	CE326	OUTPUT	PCM Pin
				<ul style="list-style-type: none"> •A low-side driver, changing from "open-circuit" to "ground" indicating that the engine is ready for PTO operation to begin and that a PTO load may be applied. •Intended for powering a PTO indicator lamp, or turn on a relay coil (not to exceed 1amp).LED lights require adding a resistor in series.
Green	PTORPM	CE925	INPUT(resistor)	PCM Pin
				<ul style="list-style-type: none"> •Requires the addition of a resistor or potentiometer for any SEIC / PTO mode. •Resistor / potentiometer selection determines the fixed or variable engine target speed. •Combine in circuit with PTO_VREF (+5VDC). •Speed range available: 910 rpm to 2400 rpm
Green / Violet	PTO VREF	LE423	Reference Voltage	PCM Pin
				<ul style="list-style-type: none"> •A +5-volt reference, buffered against shorts to ground or power, used to complete the resistor circuit for engine speed selection.
Green / White	SIGRTN_A	RE405	PCM Ground	PCM Pin
				<ul style="list-style-type: none"> •A ground reference, buffered, used to complete the resistor circuit for engine speed selection.
Violet / Brown	BCP SW	CE926	INPUT(VPWR)	PCM Pin
				<ul style="list-style-type: none"> •Applying vehicle battery voltage to this wire begins BCP. •BCP regulates engine speed between 600 to 1200 rpm to maintain required charge system voltage
Brown	BCPIL	CE140	OUTPUT	PCM Pin
				<ul style="list-style-type: none"> •A low-side driver, changing from "open-circuit" to "ground" indicating that BCP is in effect. •Intended for powering an LED lamp (40mA max.).

E-Series – 7.3L Gasoline Engine CUSTOMER ACCESS SIGNAL CIRCUITS -

Wire Color	Wire Tag	Circuit No.	Circuit Intent	Description
Gray / Brown	TRO P	CET22	OUTPUT PARK-Only	- An output from the PCM that indicates when the Transmission Range Sensor is indicating that the Transmission is in the Park Position. The Low Side driver (160mA max.) in the PCM will pull this output to ground when active (Transmission is in the PARK Position). To properly reference this output, the customer supplied external controller/device needs to pull this output up to VPWR with a 680 Ohm resistor. Thus when the output is active, the voltage at this output will be 0 volts. When this output is not active, the output will be pulled up to VPWR by the 680 Ohm pull up resistor.E47
Green / Orange	TRO N	CET21	OUTPUT NEUTRAL-Only	- An output from the PCM that indicates when the Transmission Range Sensor is indicating that the Transmission is in the Neutral Position. The Low Side driver (160mA max.) in the PCM will pull this output to ground when active (Transmission is in the Neutral Position). To properly reference this output, the customer supplied external controller/device needs to pull this output up to VPWR with a 680 Ohm resistor. Thus when the output is active, the voltage at this output will be 0 volts. When this output is not active, the output will be pulled up to VPWR by the 680 Ohm pull up resistor.
Violet / Orange	VS OUT	VMC05	OUTPUT Vehicle Speed	- An output from the PCM that provides 8000 pulses per mile signal with a 50% duty cycle. The low side driver in the PCM will switch the output off and on (off will allow the output to be pulled up close to VPWR), (on will put the output to 0 volts).
Blue	CTO	CE93	OUTPUT Engine Speed	- An output from the PCM that indicates a Clean Tachometer Output to provide an indication of engine RPM. The low side driver in the PCM will switch the output off and on (off will allow the output to be pulled up close to VPWR), (on will put the output to 0 volts), at a Frequency = (Engine RPM's * Number of cylinders) / 120, with a duty cycle of 50%. The customer-supplied external controller should have a high-impedance input such that it does not impact the PCM's ability to provide a Clean Tach Out signal.
White / Violet	PARK BRAKE	CMC25	OUTPUT Park Brake	- Ground Output Signal wire NOTE: The Body Control Module (BCM) park brake input also uses this signal. The BCM park brake input cannot source any current. The body builder must provide a high impedance circuit (such as a Field Effect Transistor) with a 20 kilo-ohm or larger resistor to prevent faulting the Body Control Module. See schematic in the Body Builder Layout Book.

Gas Resistor Chart (0.1 Volt resistor chart)

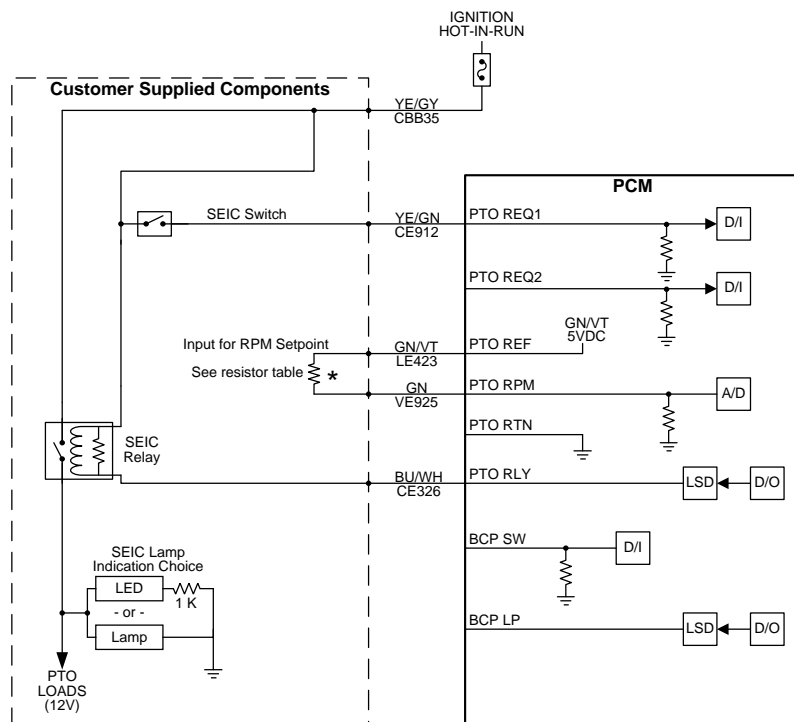
	PTO_RPM Input Voltage	Resistor	GAS SEIC PTO Engine RPM	GAS Mobile PTO Engine RPM Speed	GAS Mobile PTO Min Engine Base Idle Speed
Voltage out of range low	0.00	n/a	n/a	n/a	n/a
	0.10	n/a	n/a	n/a	n/a
	0.20	n/a	n/a	n/a	n/a
Voltage dead band	0.30	73633	700	900	750
Usable voltage range	0.40	54050	700	900	750
	0.50	42300	743	1040	750
	0.60	34467	785	1180	750
	0.70	28871	828	1320	750
	0.80	24675	870	1460	750
	0.90	21411	913	1600	750
	1.00	18800	955	1740	750
	1.10	16664	998	1880	750
	1.20	14883	1040	2020	750
	1.30	13377	1083	2160	750
	1.40	12086	1125	2300	750
	1.50	10967	1168	2440	750
	1.60	9988	1210	2580	750
	1.70	9124	1253	2720	750
	1.80	8356	1295	2860	750
	1.90	7668	1338	3000	750
	2.00	7050	1380	3140	750
	2.10	6490	1423	3280	750
	2.20	5982	1465	3420	750
	2.30	5517	1508	3560	750
	2.40	5092	1550	3700	750
	2.50	4700	1593	3840	750
	2.60	4338	1635	3980	750
	2.70	4004	1678	4120	750
	2.80	3693	1720	4260	750
	2.90	3403	1763	4400	750
	3.00	3133	1805	4540	750
	3.10	2881	1848	4680	750
	3.20	2644	1890	4820	750
	3.30	2421	1933	4960	750
	3.40	2212	1975	5100	750
	3.50	2014	2000	5240	750
	3.60	1828	2000	5380	750
	3.70	1651	2000	5520	750
	3.80	1484	2000	5660	750
	3.90	1326	2000	5800	750
	4.00	1175	2000	5940	750
	4.10	1032	2000	6080	750
	4.20	895	2000	6220	750
	4.30	765	2000	6360	750
	4.40	641	2000	6500	750

Gas Resistor Chart (100 Rpm Resistor chart)

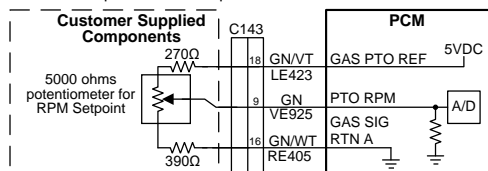
Engine Target Speed (RPM)	Resistor (Ohms)	Voltage (volts)
700	54050	0.40
800	32291	0.64
900	22293	0.87
1000	16550	1.11
1100	12822	1.34
1200	10207	1.58
1300	8271	1.81
1400	6780	2.05
1500	5596	2.28
1600	4634	2.52
1700	3836	2.75
1800	3164	2.99
1900	2590	3.22
2000	2094	3.46
2000	1661	3.69
2000	1281	3.93
2000	943	4.16
2000	641	4.4

Note: For Battery Charge Protect, must choose a resistor to keep the PTO_RPM input voltage in the "Usable Range" (0.4 to 4.4 volts)

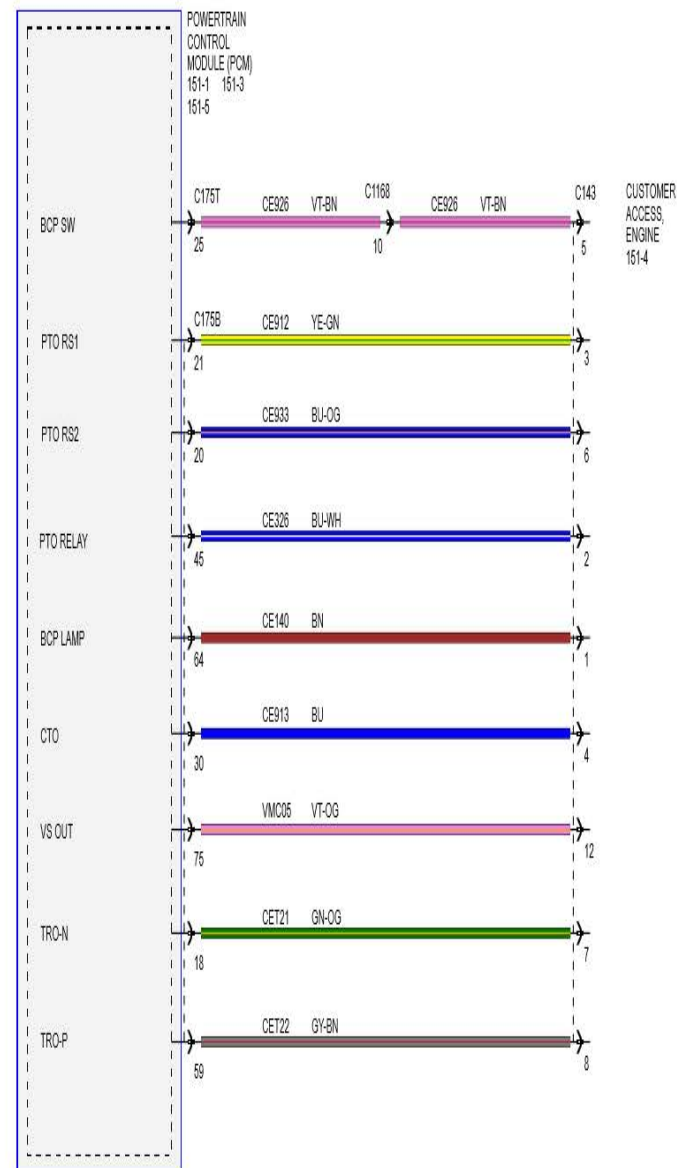
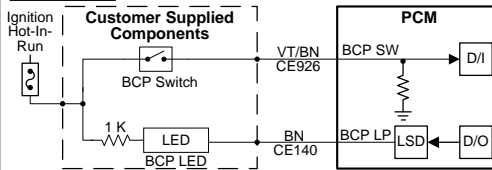
SEIC and BCP Interface 2021 E-SERIES 7.3L Gasoline



*Alternate input for RPM Setpoint



BCP Interface

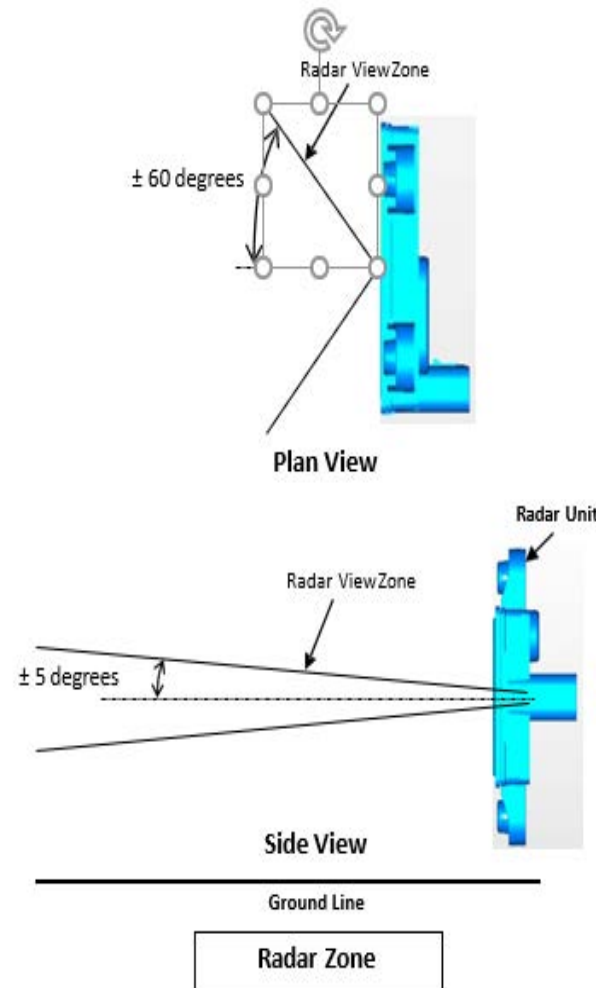


- NOT RECOMMEND RELOCATING CAMERA OR RADAR
- ADAS HARDWARE CANNOT BE ADDED TO VEHICLE POST PRODUCTION.
- VERIFY LOCATION WHEN USING AFTERMARKET HOOD MOUNTED MIRRORS WHICH COULD POSSIBLY INTERFERE WITH CAMERA "FIELD OF VIEW"
- NOT RECOMMEND EQUIPPING VEHICLES WITH WINCH SYSTEMS, CONES, CABLES, LICENSE PLATES (CENTER) WHICH COULD POSSIBLY OBSTRUCT/INTERFERE WITH RADAR AND CAMERA "FIELD OF VIEW"
- NOT RECOMMEND APPLYING PAINT OR DECALS TO RADAR OR COVER WHICH COULD POSSIBLY OBSTRUCT/INTERFERE RADAR FIELD OF VIEW
- NOT RECOMMEND APPLYING DECALS OR OBJECTS TO THE FRONT OF WINDSHIELD WHICH COULD POSSIBLY OBSTRUCT/INTERFERE CAMERA "FIELD OF VIEW." OVER ROOF SYSTEMS THAT EXTEND FORWARD OF WINDSHIELD ENSURE THAT IT DOES NOT INTERFERE WITH CAMERA "FIELD OF VIEW".
- NOT RECOMMEND USING AFTERMARKET SUSPENSION COMPONENTS (E.G. ADDING AIR RIDE, HELPER SPRINGS, LIFT KITS, ETC.) WHICH COULD POSSIBLY OBSTRUCT/INTERFERE RADAR AND CAMERA FIELD OF VIEW ZONES
- NOT RECOMMEND USING FRONT BUMPER SYSTEM TO PUSH OTHER OBJECTS/VEHICLES THIS IS TO PREVENT ANY DAMAGE OR MISALIGNMENT TO RADAR AND COVER.
- NOT RECOMMEND MODIFYING OR REPLACING FACTORY EQUIPPED BUMPER WITH AFTERMARKET SOURCED BUMPERS WHICH MAY INTERFERE WITH RADAR "FIELD OF VIEW".
- IF THE CAMERA OR RADAR IS BLOCKED DUE TO ACCUMULATION OF DIRT, ICE, OR SNOW IN "FIELD OF VIEW" - VEHICLE WILL DISPLAY BLOCKAGE MESSAGE IN CLUSTER. ONCE BLOCKAGE IS REMOVED, BLOCKAGE MESSAGE WILL STOP BEING DISPLAYED.
- SNOW PLOW EQUIPPED VEHICLES WILL HAVE A FEATURE IN CLUSTER TO TURN OFF ADAS.

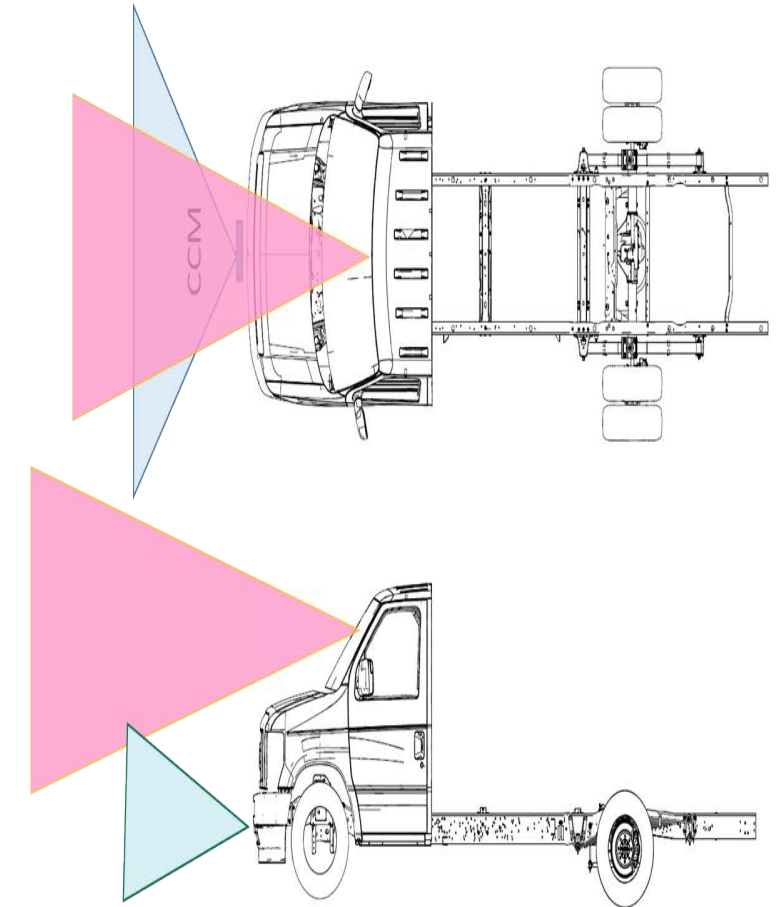
INSTALLED EQUIPMENT SHOULD NOT INFRINGE ON THE RADAR AND CAMERA VIEW ZONES. THE FOLLOWING 3D CAD FILES ARE AVAILABLE BY REQUEST AT [FORDBBAS.COM](https://fordbbas.com)

Radar FOV: FNA6220421

Camera FOV: FNA6352226



E-SERIES ADAS FIELD OF VIEW

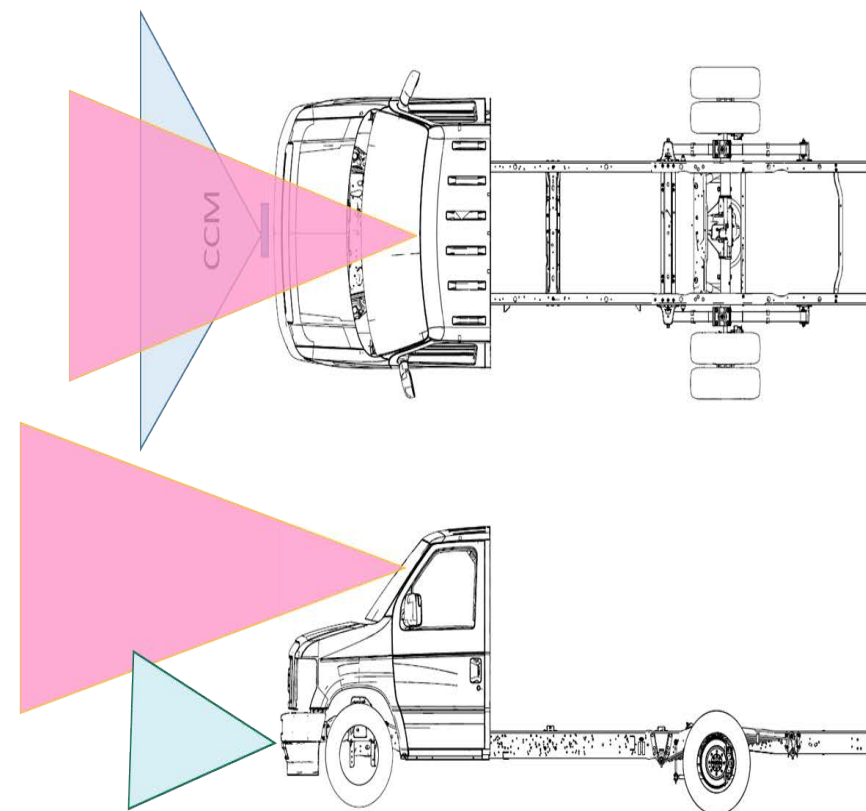


LOCATION OF **RADAR** AND **CAMERA** ON THE E-SERIES ARE FIXED. PACKAGE INFORMATION IS FOR GENERAL REFERENCE. **RADAR SHOULD NOT BE MOVED OR ADJUSTED FROM "AS BUILT" LOCATION AND ALIGNMENT, UNLESS THE ATTITUDE OR RIDE HEIGHT IS SIGNIFICANTLY ALTERED.** THE INTERMEDIATE / FINAL STAGE MANUFACTURER IS RESPONSIBLE FOR VERIFYING THAT THE LANE KEEPING SYSTEM CAMERA SENSOR IS PROPERLY CALIBRATED WITHIN FORD SPECIFICATIONS ONCE VEHICLES ARE COMPLETED. RADAR COVER CANNOT BE PAINTED OR REPLACED WITH AFTERMARKET COMPONENT.

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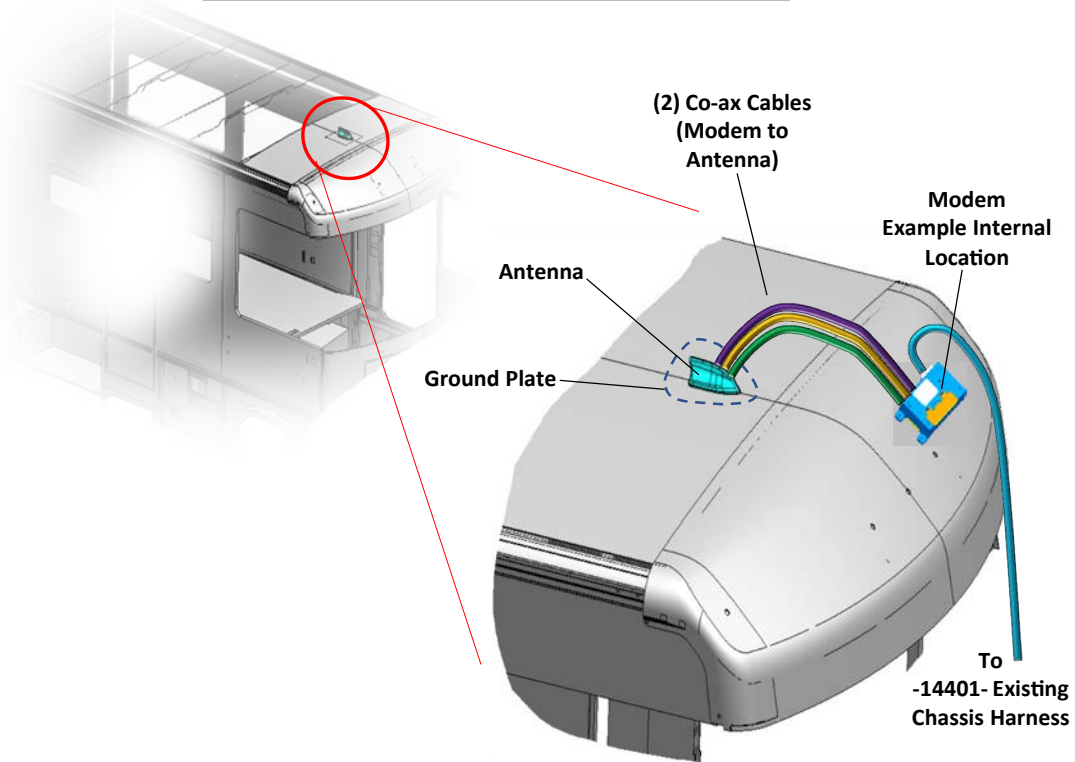
E-SERIES ADAS FIELD OF VIEW



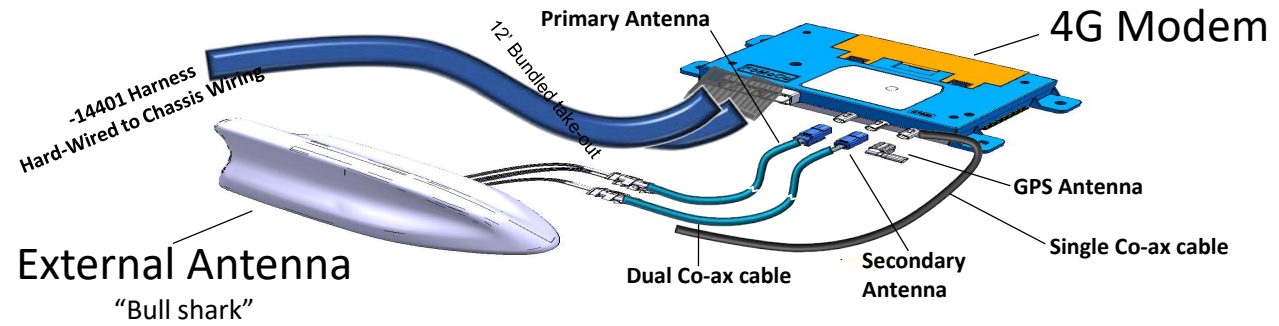
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Recommended installation for mounting GPS antenna and modem to make sure optimum performance is achieved for the WIFI--- Please see SVE Bulletin Q321 for more details

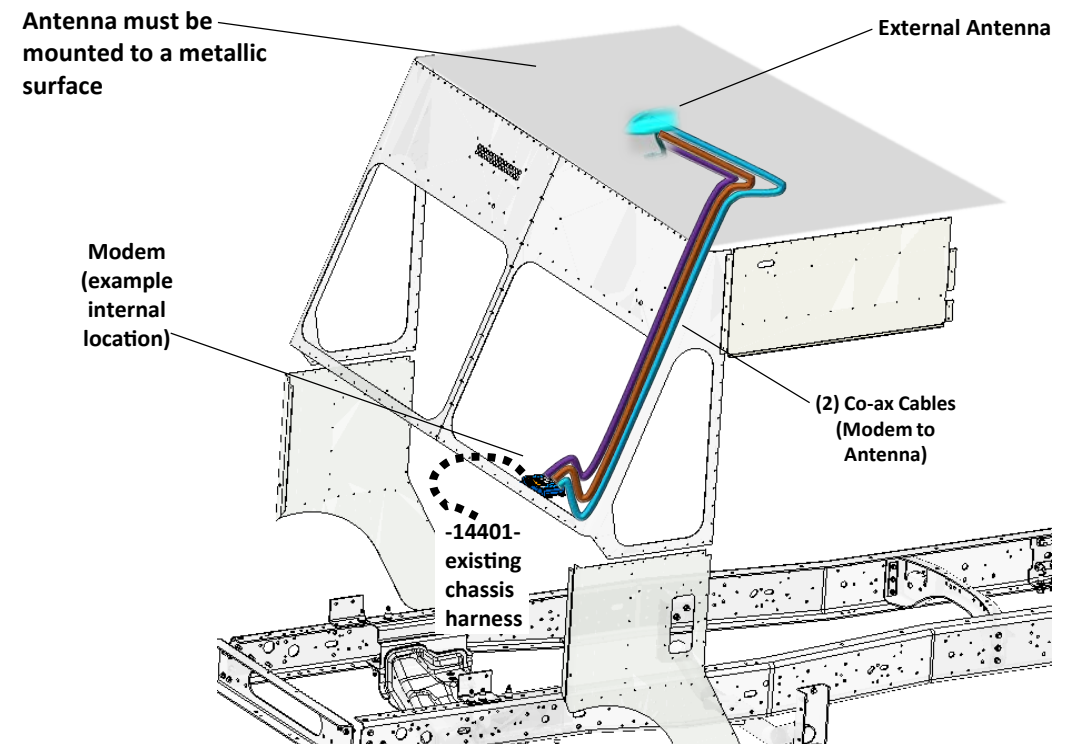
MOTORHOME CHASSIS MOUNTING EXAMPLE



Note: For vehicles with Non-Metallic surface there must be an exposed RF Performance Pad (Metal Ground Plate)



COMMERCIAL CHASSIS MOUNTING EXAMPLE





Body Builders Layout Book

E-SERIES

2022
MODEL YEAR

CHANGE CONTROL INDEX

LTRS	REVISIONS				
ORIGINATOR	CHECKER	ENGR APP	MATL APP		
CHNC24-000000-BBLB-AA-01-FNA-ECN/2			INITIAL RELEASE		
RELEASED			20200918		
KVINOTH4	RWAGNE43	SLAZARZ	--		