



ACTERRA WORKSHOP MANUAL

Models: MX

Foreword

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

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

Maintenance schedules and additional service information are included in the *Acterra® Maintenance Manual*.

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

Refer to www.Daimler-TrucksNorthAmerica.com and www.SterlingTrucks.com for more information, or contact Daimler Trucks North America LLC at the address below.

Environmental Concerns and Recommendations

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

NOTICE: Parts Replacement Considerations

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

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Descriptions of Service Publications

Daimler Trucks North America LLC distributes the following major service publications in paper and electronic (via ServicePro®) formats.

Workshop/Service Manual	Workshop/service manuals contain service and repair information for all vehicle systems and components, except for major components such as engines, transmissions, and rear axles. Each workshop/service manual section is divided into subjects that can include general information, principles of operation, removal, disassembly, assembly, installation, specifications, and troubleshooting.
Maintenance Manual	Maintenance manuals contain routine maintenance procedures and intervals for vehicle components and systems. They have information such as lubrication procedures and tables, fluid replacement procedures, fluid capacities, specifications, and procedures for adjustments and for checking the tightness of fasteners. Maintenance manuals do not contain detailed repair or service information.
Driver's/Operator's Manual	Driver's/operator's manuals contain information needed to enhance the driver's understanding of how to operate and care for the vehicle and its components. Each manual contains a chapter that covers pretrip and post-trip inspections, and daily, weekly, and monthly maintenance of vehicle components. Driver's/operator's manuals do not contain detailed repair or service information.
Service Bulletins	<p>Service bulletins provide the latest service tips, field repairs, product improvements, and related information. Some service bulletins are updates to information in the workshop/service manual. These bulletins take precedence over workshop/service manual information, until the latter is updated; at that time, the bulletin is usually canceled. The service bulletins manual is available only to dealers. When doing service work on a vehicle system or part, check for a valid service bulletin for the latest information on the subject.</p> <p>IMPORTANT: Before using a particular service bulletin, check the current service bulletin validity list to be sure the bulletin is valid.</p>
Parts Technical Bulletins	Parts technical bulletins provide information on parts. These bulletins contain lists of parts and BOMs needed to do replacement and upgrade procedures.

Web-based repair, service, and parts documentation can be accessed using the following applications on the AccessSterling.com website.

ServicePro	ServicePro® provides Web-based access to the most up-to-date versions of the publications listed above. In addition, the Service Solutions feature provides diagnostic assistance with Symptoms Search, by connecting to a large knowledge base gathered from technicians and service personnel. Search results for both documents and service solutions can be narrowed by initially entering vehicle identification data.
PartsPro	PartsPro® is an electronic parts catalog system, showing the specified vehicle's build record.
EZWiring	EZWiring™ makes Freightliner, Sterling, Western Star, Thomas Built Buses, and Freightliner Custom Chassis Corporation products' wiring drawings and floating pin lists available online for viewing and printing. EZWiring can also be accessed from within PartsPro.

Descriptions of Service Publications

Warranty-related service information available on the AccessSterling.com website includes the following documentation.

Recall Campaigns

Recall campaigns cover situations that involve service work or replacement of parts in connection with a recall notice. These campaigns pertain to matters of vehicle safety. All recall campaigns are distributed to dealers; customers receive notices that apply to their vehicles.

Field Service Campaigns

Field service campaigns are concerned with non-safety-related service work or replacement of parts. All field service campaigns are distributed to dealers; customers receive notices that apply to their vehicles.

Page Description

For an example of an *Acterra Workshop Manual* page, see **Fig. 1**.

The diagram shows a page from an Acterra Workshop Manual. Callout A points to the section title 'Threaded Fasteners'. Callout B points to the section number '00.04'. Callout C points to the subject title 'General Instructions'. Callout D points to the manual title 'Acterra Workshop Manual, Supplement 0, April 2000'. Callout E points to the release date 'April 2000'. Callout F points to the subject number '100/1'. Callout G points to the subject page number '277'. The page content includes sections for 'Fastener Replacement', 'Fastener Selection and Installation', 'Fastener Tightening', and 'Thread Locking Compound Application', each with detailed instructions.

Fig. 1, Example of an Acterra Workshop Manual Page

01/20/2000

- A. Section Title
- B. Section Number (made up of the Group Number—first two digits, followed by a sequence number—last two digits)
- C. Subject Title
- D. Manual Title
- E. Release (Supplement) Date
- F. Subject Number
- G. Subject Page Number

f020104

Group No.	Group Title
00	General Information
01	Engine
09	Air Intake
13	Air Compressor
15	Alternators and Starters
20	Engine Cooling/Radiator
25	Clutch
26	Transmission
30	Throttle Control
31	Frame and Frame Components
32	Suspension
33	Front Axle
35	Rear Axle
40	Wheels and Tires
41	Driveline
42	Brakes
46	Steering
47	Fuel
49	Exhaust
54	Electrical, Instruments, and Controls
60	Cab
72	Doors
82	Windshield Wipers and Washer
83	Heater and Air Conditioner
88	Hood, Grille, and Cab Fenders
90	Fire Suppression Systems
91	Seats and Restraint Systems
98	Paint

Vehicle Receipt

Prior to signing for vehicle delivery from a transporter company, the dealer is responsible for checking for transporter-related shortages or damages, and noting these discrepancies on the transporter's delivery receipt.

The dealer is also responsible for ensuring that the vehicle was built according to the Truck Sales Order/ Invoice.

Refer to Section 3 of the Daimler Trucks North America LLC *Warranty Manual* for details.

Vehicle Storage

There may be times when a vehicle is stored for long periods before customer delivery. To protect all vehicles from deterioration and weather, they must be properly maintained. Adequate protection and storage of new vehicles is the responsibility of the dealer.

Claims arising from loss and damage to improperly stored vehicles will not be reimbursed.

See Section 3 of the Daimler Trucks North America LLC *Warranty Manual* for instructions on storage of new vehicles.

Pre-Delivery Information

All pre-delivery inspections and services must be performed at an authorized Daimler Trucks North America LLC facility, assigned to fully qualified service personnel and recorded on the "New Vehicle Pre-Delivery Inspection" form.

Refer to Section 3 of the Daimler Trucks North America LLC *Warranty Manual* for details.

It is recommended the pre-delivery inspection be performed within 30 days of vehicle receipt.

Hoses and Electrical Wiring Routing Standards

Cooling System

1. Cooling system hoses must clear all moving parts by a minimum of 1/4 inch (6 mm).
2. The 1-inch (25-mm) hose from the surge tank to the engine must be free of sumps and have allowance for engine torque.
3. All hoses from the engine hard pipes must be wrapped in convoluted tubing.
4. Hoses that are protected with convoluted tubing may be secured with tie straps to clear the inner fenders.
5. Cooling system hoses should not be twisted or kinked.
6. Cooling system hoses must be routed at least 6 inches (152 mm) from a heat source if the heat source does not have a heat shield. If a heat shield is provided, the hose must be routed at least 3 inches (76 mm) from the heat source.

HVAC System

1. Cushion clamps are required to support all A/C lines. Butterfly or figure-8 clamps (two cushion clamps) may be used to prevent rubbing or chafing.
2. Heater hoses that are protected with convoluted tubing may be fastened with tie straps. If not protected with convoluted tubing, only cushion clamps or butterfly clamps may be used for heater hoses.
3. A/C lines cannot be secured to air lines, fuel lines, or electrical wires.
4. HVAC hoses should be protected from damage by routing them away from hazards of heat, wheel splash (water, gravel, ice), human traffic, and moving parts of the vehicle.
5. HVAC hoses should be routed away from sharp points and edges (such as nuts, bolts, brackets, and frame rail edges), moveable parts, and sources of abrasion, cutting, pinching, or crushing.

NOTE: If hoses are covered with convoluted tubing, they may touch any of the above.

6. Hoses that are protected with convoluted tubing may come in contact with the bends on frame rails and filters.
7. HVAC hoses must be routed at least 6 inches (152 mm) from a heat source if the heat source does not have a heat shield. If a heat shield is provided, the hose must be routed at least 3 inches (76 mm) from the heat source.
8. All HVAC hoses must be routed so that regularly serviced components, such as fuel filters, fuel/water separators, oil filters, air filters, belts, and fill and drain plugs, are readily accessible for adjustment or replacement without the need to relocate or remove the hoses.
9. All A/C hoses in the engine compartment must have convoluted tubing.
10. If cushion clamps are used over convoluted tubing at existing clamp points, no additional tie straps or tape is needed.
11. When convoluted tubing is installed on the heater hose where it routes past the splash shield on the front right-hand side of the firewall, and if it uses existing clamps, no additional tie straps or tape is needed.

Auxiliary Heater

All auxiliary heater lines are deck-mounted hard piping with rubber hose at both ends. No additional tie straps are required.

Engine Plumbing

1. On vehicles equipped with the Cummins ISM engine and power steering, no additional tie straps or tape are needed if convoluted tubing is installed on the power steering hose where it routes under the frame rail.
2. The engine oil pressure line should not rub or chafe against the Teflon® discharge line.

Electrical Wiring

1. Wires that are bundled together should be fastened at 8- to 12-inch (203- to 305-mm) intervals. If anchor clamps are more than 12 inches (305

Hoses and Electrical Wiring Routing Standards

mm) apart, a tie strap must be used between the anchor clamps.

2. Bundles of wires that are located in an exposed area, such as under the cab or outside the frame rail, need to be fastened with heavy-duty cable ties
3. Any wiring that will be exposed to water or heat must be covered with either loom or convoluted tubing. Loom or convoluted tubing need not butt up against Weather Pack® connectors.
4. Any wiring routed across the vehicle, on the engine crossmember, or across the rear of the engine, must be secured with a clamp or tie strap, and covered with either convoluted tubing or a loom.
5. Any wiring that may come into contact with sharp points and edges (such as nuts, bolts, brackets, and frame rail edges), moveable parts, and sources of abrasion, cutting, pinching, or crushing, must be protected by either a loom or convoluted tubing.
6. Unprotected breakouts (individual wires) of up to 8 inches (203 mm) are acceptable as long as these wires are routed safely away from sharp points and edges, moveable parts, and sources of abrasion, cutting, pinching, or crushing.
7. Gray, flame-retardant convoluted tubing may be used to protect wiring in the cab or the chassis. Black nylon convoluted tubing may only be used in the chassis.
8. All wiring must be routed so that regularly serviced components, such as fuel filters, fuel/water separators, oil filters, air filters, belts, and fill and drain plugs, are readily accessible for adjustment or replacement without the need to relocate or remove any wiring.
9. In exposed locations, such as the road light harness near the headlights, loose loops of wire must be secured with tie straps.
10. All wiring should be routed a minimum of 4 inches (102 mm) from the exhaust. In situations where the wiring is less than 4 inches (102 mm) from the exhaust, a heat shield must be placed between the wiring and the exhaust.

Battery Cables

1. Battery cables must be routed along an unobstructed path from the starter to the battery box. The cables must **not** rub or chafe on brackets, tanks, air lines, or fuel lines.
2. Battery cables and electrical wiring cannot be tied or secured to fuel lines, discharge lines, or air lines.
3. Battery cables must have support brackets no more than 30 inches (762 mm) apart. Tie straps must be within 6 inches (152 mm) of both sides of the support brackets, and every 12 inches (305 mm) between the brackets.
4. Battery cables must have convoluted tubing from the frame bracket to the batteries, and from the frame bracket to the starter.

Fuel Lines

1. Fuel lines must not be clamped to A/C lines, battery cables, jumper cables, or any other electrical wiring.
2. Stand-off brackets or clamps may be used to prevent fuel lines from rubbing against the frame.
3. Fuel lines must be routed at least 6 inches (152 mm) from a heat source. If a heat shield is provided, the fuel line must be at least 3 inches (76 mm) from the heat source.
4. Fuel lines that are parallel may be fastened together. Fuel lines that cross or that rub on metal, plastic, or electrical parts, need to be separated with butterfly clamps.

Chassis Air Lines and Brake Hoses

1. Hoses may come in contact with each other if they are parallel, or if they are bundled together.
2. If the hoses lie on the curve or flat surface of a bracket or crossmember, they do not need convoluted tubing.
3. Brake hoses may be clamped at the top of the axle housing, and touch or lie against the axle housing in its path to the brake chamber as this assembly moves together.

Hoses and Electrical Wiring Routing Standards

4. Brake hoses must have slack between the last clamping point on the frame rail and the brake chamber to allow for full range of suspension travel.
5. Brake hoses should have butterfly clamps at breakout points.
6. Air lines and brake hoses that are bundled together should be fastened at 8- to 12-inch (203- to 305-mm) intervals. If anchor clamps are more than 12 inches (305 mm) apart, a tie strap must be used between the anchor clamps. Tie straps may be closer than 12 inches (305 mm) apart.
7. Hoses or lines that may come into contact with the sharp edge of a bracket or frame rail are to be protected by convoluted tubing.
8. Air lines and brake hoses that are parallel may be fastened together. Air lines and brake hoses that cross or that rub on metal, plastic, or electrical parts need to be separated with butterfly clamps.
9. Nylon or STX (wire braid) chassis air lines may be fastened together to prevent rubbing, as long as the lines are stationary.

General Information

U.S. Customary to Metric			Metric to U.S. Customary		
When You Know	Multiply By	To Get	When You Know	Multiply By	To Get
Length					
inches (in)	25.4	millimeters (mm)	0.03937		inches (in)
inches (in)	2.54	centimeters (cm)	0.3937		inches (in)
feet (ft)	0.3048	meters (m)	3.281		feet (ft)
yards (yd)	0.9144	meters (m)	1.094		yards (yd)
miles (mi)	1.609	kilometers (km)	0.6215		miles (mi)
Area					
square inches (in ²)	645.16	square millimeters (mm ²)	0.00155		square inches (in ²)
square inches (in ²)	6.452	square centimeters (cm ²)	0.15		square inches (in ²)
square feet (ft ²)	0.0929	square meters (m ²)	10.764		square feet (ft ²)
Volume					
cubic inches (in ³)	16387.0	cubic millimeters (mm ³)	0.000061		cubic inches (in ³)
cubic inches (in ³)	16.387	cubic centimeters (cm ³)	0.06102		cubic inches (in ³)
cubic inches (in ³)	0.01639	liters (L)	61.024		cubic inches (in ³)
fluid ounces (fl oz)	29.54	milliliters (mL)	0.03381		fluid ounces (fl oz)
pints (pt)	0.47318	liters (L)	2.1134		pints (pt)
quarts (qt)	0.94635	liters (L)	1.0567		quarts (qt)
gallons (gal)	3.7854	liters (L)	0.2642		gallons (gal)
cubic feet (ft ³)	28.317	liters (L)	0.03531		cubic feet (ft ³)
cubic feet (ft ³)	0.02832	cubic meters (m ³)	35.315		cubic feet (ft ³)
Weight/Force					
ounces (av) (oz)	28.35	grams (g)	0.03527		ounces (av) (oz)
pounds (av) (lb)	0.454	kilograms (kg)	2.205		pounds (av) (lb)
U.S. tons (t)	907.18	kilograms (kg)	0.001102		U.S. tons (t)
U.S. tons (t)	0.90718	metric tons (t)	1.1023		U.S. tons (t)
Torque/Work Force					
inch-pounds (lbf-in)	11.298	Newton-centimeters (N-cm)	0.08851		inch-pounds (lbf-in)
foot-pounds (lbf-ft)	1.3558	Newton-meters (N-m)	0.7376		foot-pounds (lbf-ft)
Pressure/Vacuum					
inches of mercury (inHg)	3.37685	kilo Pascals (kPa)	0.29613		inches of mercury (inHg)
pounds per square inch (psi)	6.895	kilo Pascals (kPa)	0.14503		pounds per square inch (psi)

When You Know	Subtract	Then Divide By	To Get	When You Know	Multiply By	Then Add	To Get
degrees Fahrenheit (°F)	32	1.8	degrees Celsius (°C)	degrees Celsius (°C)	1.8	32	degrees Fahrenheit (°F)

VIN for Vehicles Built through April 30, 2000

IMPORTANT: See **Subject 060** for the vehicle identification numbering system for vehicles built May 1, 2000, or later.

Federal Motor Vehicle Safety Standard 115 specifies that all vehicles sold in the U.S. be assigned a 17-character Vehicle Identification Number (VIN). Using a combination of letters and numerals, the VIN defines the manufacturer, model, and major characteristics of the vehicle. See **Table 1** for the character positions of a typical Sterling VIN, 480ALEBDXWA345678.

The VIN can be found on the Vehicle Specification Decal (see the driver's manual for decal location) and stamped on the outside of the left-hand frame rail about 24 to 40 inches (60 to 100 cm) aft of the front axle centerline. On Sterling vehicles built before July 1998, the VIN is stamped on the frame rail near the front axle position.

IMPORTANT: A new VIN-code structure will be used for all vehicles built after April 30, 2000. Character positions 1 through 4 and 9 through 17 are nearly the same in both versions, but positions 5 through 8 have been assigned slightly different parameters. As a result, the build date of a vehicle must be determined before the VIN can be decoded.

For all vehicles, a check digit (9th character) is determined by assignment of weighted values to the other 16 characters. These weighted values are processed through a series of equations designed to check validity of the VIN and to detect VIN alteration.

NOTE: Always specify the VIN when ordering parts.

Seventeen-Character Vehicle Identification Number (VIN)																		
Typical VIN	4	8	0	A	L	E	B	D	X	W	A	3	4	5	6	7	8	
Character Position	1, 2, 3	4	5	6, 7	8	9	10	11	12 thru 17									
Decoding Table *	Table 2	Table 3	Table 4	Table 5	Table 6	—	Table 7	Table 8	—									
Code Description																		
Manufacturer, Make, Vehicle Type																		
Chassis, Front Axle Position, Brakes																		
Vehicle Model Series, Cab																		
Engine Model, Horsepower Range																		
Gross Vehicle Weight Rating (GVWR)																		
Check Digit																		
Vehicle Model Year																		
Plant of Manufacture																		
Production Number																		

* For corresponding decoding information, see the applicable tables in this subject.

Table 1, Seventeen-Character Vehicle Identification Number (VIN)

VIN Positions 1, 2, and 3 (Manufacturer, Make, Vehicle Type)			
Code	Vehicle Manufacturer	Vehicle Make	Vehicle Type
2FW	Sterling, Canada-built	Sterling	Truck-Tractor
2FZ	Sterling, Canada-built	Sterling	Incomplete Vehicle
480	Sterling, U.S.-built	Sterling	Truck-Tractor

00.03

Vehicle Identification Numbering System

VIN for Vehicles Built through April 30, 2000

VIN Positions 1, 2, and 3 (Manufacturer, Make, Vehicle Type)			
Code	Vehicle Manufacturer	Vehicle Make	Vehicle Type
49H	Sterling, U.S.-built	Sterling	Incomplete Vehicle

Table 2, VIN Positions 1, 2, and 3 (Manufacturer, Make, Vehicle Type)

VIN Position 4 (Chassis, Front Axle Position, Brakes)			
Code	Chassis	Front Axle Position	Brakes
A	4 x 2 Truck	Forward	Hydraulic
B	8 x 4 Truck-Tractor	Setback	Air
C	6 x 6 Truck-Tractor	Setback	Air
D	4 x 4 Truck	Setback	Hydraulic
E	4 x 4 Truck	Setback	Air
F	8 x 4 Truck	Forward	Air
G	8 x 4 Truck-Tractor	Forward	Air
H	4 x 2 Truck	Forward	Air
J	10 x 4 Truck	All	Air
K	4 x 2 Truck-Tractor	Forward	Air
L	6 x 2 Truck	Forward	Air
M	6 x 2 Truck-Tractor	Forward	Air
N	6 x 4 Truck	Forward	Air
P	6 x 4 Truck-Tractor	Forward	Air
R	10 x 6 Truck	Forward	Air
S	10 x 6 Truck-Tractor	Forward	Air
T	6 x 6 Truck	Setback	Air
U	8 x 6 Truck	All	Air
V	8 x 6 Truck-Tractor	All	Air
W	4 x 2 Truck-Tractor	Setback	Air
X	6 x 4 Truck	Setback	Air
Y	6 x 4 Truck-Tractor	Setback	Air
Z	6 x 2 Truck	Setback	Air
1	4 x 2 Truck	Forward	Air/Hydraulic
2	4 x 4 Truck	Setback	Air
3	4 x 2 Truck	Setback	Hydraulic
4	8 x 4 Truck	Setback	Air
5	6 x 2 Truck-Tractor	Setback	Air
6	4 x 2 Truck	Setback	Air

VIN Position 4 (Chassis, Front Axle Position, Brakes)			
Code	Chassis	Front Axle Position	Brakes
7	Glider	Setback	Air
8	Glider	Forward	Air
9	4 x 2 Truck	Setback	Air/Hydraulic
0	Glider	Setback	Hydraulic

Table 3, VIN Position 4 (Chassis, Front Axle Position, Brakes)

VIN Position 5 (Vehicle Model Series, Cab)	
Code	Sterling Models
A	L7500 series
B	L8500 series
C	L9501
D	L8511
E	L9500 series
F	L9522
G	A9522
H	A9500 series
J	A9513
K	L9513
L	L8501
M	L8513
N	L9511
R	L7501
S	ST9500
W	SC8000
2	SC6000
7	SC7000

Table 4, VIN Position 5 (Vehicle Model Series, Cab)

VIN for Vehicles Built through April 30, 2000

VIN Positions 6 and 7 (Engine Manufacturer, Model, Horsepower Range)			
Code	Engine Manufacturer	Engine Model	HP Range
AY	Cummins	NTC / N14	207–251
BY	Cummins	NTC / N14	254–310
CX	Detroit Diesel	S-60, 11.1 L	331–402
CY	Cummins	NTC / N14	315–385
DY	Cummins	NTC / N14	389–475
DZ	Cummins	N14	476–580
EB	Caterpillar	C10 / 3176J	225–275
EC	Caterpillar	C10 / 3176J	276–335
ED	Caterpillar	C10 / 3176J	336–407
FA	Cummins	6BT 5.9 (diesel) / ISB	185–224
FB	Cummins	6BT 5.9 (diesel) / ISB	225–275
FF	Cummins	6BT 5.9/ ISB	153–184
JA	Caterpillar	CFE / 3126 (diesel)	185–224
JB	Caterpillar	CFE / 3126 (diesel)	225–275
JC	Caterpillar	CFE / 3126 (diesel)	276–335
JF	Caterpillar	CFE / 3126 (diesel)	153–184
KY	Cummins	L10	225–275
LA	Cummins	6C 8.3 (diesel) / ISC	185–224
LB	Cummins	6C 8.3 (diesel) / ISC	225–275
LC	Cummins	6C 8.3 (diesel) / ISC	276–335
LE	Cummins	ISC	336–407
MC	Cummins	M11 / ISM	276–335
MD	Cummins	M11 / ISM	336–407
PY	Detroit Diesel	S-60, 11.1 L	275–330
RY	Caterpillar	3406	270–330
SE	Detroit Diesel	S-60, 12.7 L	408–495
SY	Caterpillar	3406	333–407
UY	Caterpillar	3306	225–275
VY	Caterpillar	3406	225–269
WD	Caterpillar	C12 / 3176L	336–407
WE	Caterpillar	C12 / 3176L	408–495
WY	Caterpillar	3306	276–335
XY	Caterpillar	3406	408–495
XZ	Caterpillar	3406	496–605
YY	Detroit Diesel	S-60, 11.1 L	225–274
ZY	Detroit Diesel	S-60, 12.7 L	333–407

VIN for Vehicles Built through April 30, 2000

VIN Positions 6 and 7 (Engine Manufacturer, Model, Horsepower Range)			
Code	Engine Manufacturer	Engine Model	HP Range
0Y	No Engine	—	—

Table 5, VIN Positions 6 and 7 (Engine Manufacturer, Model, Horsepower Range)

VIN Position 8 (Gross Vehicle Weight Rating)		
Code	lb	kg
A	26,001–33,000	11 794–14 968
B	33,001 or over	14 969 or over
C	19,501–26,000	8846–11 793
D	16,001–19,500	7258–8845
2	6001–10,000	2722–4536
3	10,001–14,000	4537–6350
4	14,001–16,000	6351–7257
9	N/A: Incomplete Vehicle or Glider	

Table 6, VIN Position 8 (Gross Vehicle Weight Rating)

VIN Position 10 (Vehicle Model Year)	
Code	Model Year
N	1992
P	1993
R	1994
S	1995
T	1996
V	1997
W	1998
X	1999
Y	2000

Table 7, VIN Position 10 (Vehicle Model Year)

VIN Position 11 (Plant of Manufacture)	
Code	Plant of Manufacture
A	St. Thomas, Ontario
H	Mt. Holly, North Carolina

Table 8, VIN Position 11 (Plant of Manufacture)

VIN for Vehicles Built from May 1, 2000

IMPORTANT: See [Subject 050](#) for the vehicle identification numbering system for vehicles built before May 1, 2000.

Federal Motor Vehicle Safety Standard 115 specifies that all vehicles sold in the U.S. be assigned a 17-character Vehicle Identification Number (VIN). Using a combination of letters and numerals, the VIN defines the manufacturer, model, and major characteristics of the vehicle. See [Table 1](#) for the character positions of a typical Sterling VIN, 2FZPABAV11AA12345.

The VIN can be found on the Vehicle Specification Decal (see the driver's manual for decal location) and stamped on the outside of the frame rails about 24 to 40 inches (60 to 100 cm) aft of the front axle centerline.

IMPORTANT: A revised VIN-code structure will be used for all vehicles built after April 30, 2000. As a result, the build date of a vehicle must be determined before the VIN can be decoded.

Character positions 1 through 4 and 9 through 17 are nearly the same in both versions, but positions 5 through 8 have been assigned slightly different parameters.

Another new feature is that each product line has its own model list; that is, positions 5 and 6 are product-specific. For example, the code AB in positions 5 and 6 for a Sterling vehicle indicates an SC7000 Cargo. Code AB in the same position for a Freightliner vehicle represents an FLD112.

For all vehicles, a check digit (9th character) is determined by assignment of weighted values to the other 16 characters. These weighted values are processed through a series of equations designed to check validity of the VIN and to detect VIN alteration.

NOTE: Always specify the VIN when ordering parts.

Seventeen-Character Vehicle Identification Number (VIN)								
Typical VIN	2 F Z	P	A B	A V	1	1	A	A 1 2 3 4 5
Character Position	1, 2, 3	4	5, 6	7, 8	9	10	11	12-17
Code Description	World Manufacturer Identification	Chassis Configuration	Model, Cab, GVWR	Engine, Brakes	Check Digit Calculation	Model Year	Build Location	Production Serial Number
Decoding Table *	Table 2	Table 3	Table 4	Table 5	—	Table 6	Table 7	—

* For corresponding decoding information, see the applicable tables in this subject.

Table 1, Seventeen-Character Vehicle Identification Number (VIN)

VIN Positions 1, 2, and 3 (World Manufacturer Identification)			
Code	Vehicle Manufacturer	Vehicle Make	Vehicle Type
2FW	Sterling, Canada-built	Sterling	Truck-Tractor
2FZ	Sterling, Canada-built	Sterling	Incomplete Vehicle
480	Sterling, U.S.-built	Sterling	Truck-Tractor
49H	Sterling, U.S.-built	Sterling	Incomplete Vehicle

Table 2, VIN Positions 1, 2, and 3 (World Manufacturer Identification)

VIN Position 4 (Chassis Configuration)	
Code	Chassis
A	4 x 2 Truck
B	4 x 2 Truck-Tractor

VIN Position 4 (Chassis Configuration)	
Code	Chassis
D	4 x 4 Truck
E	4 x 4 Truck-Tractor

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VIN Position 4 (Chassis Configuration)	
Code	Chassis
F	6 x 2 Truck
G	6 x 2 Truck-Tractor
H	6 x 4 Truck
J	6 x 4 Truck-Tractor
K	6 x 6 Truck
L	6 x 6 Truck-Tractor
M	8 x 4 Truck
N	8 x 4 Truck-Tractor
P	8 x 6 Truck
R	8 x 6 Truck-Tractor
S	10 x 4 Truck
T	10 x 4 Truck-Tractor
U	10 x 6 Truck-Tractor
V	10 x 6 Truck-Tractor
X	Glider

Table 3, VIN Position 4 (Chassis, Front Axle Position, Brakes)

VIN Positions 5 and 6 (Model, Cab, Class/GVWR)			
Code	Model	Cab	Class (GVWR)
AA	SC7000 Cargo	COE	Class 6 *
AB	SC7000 Cargo	COE	Class 7 †
AC	SC7000 Cargo	COE	Class 8 ‡
AD	SC8000 Cargo	COE	Class 7
AE	SC8000 Cargo	COE	Class 8
AF	M5500 Acterra	Conventional	Class 5 §
AG	M6500 Acterra	Conventional	Class 5
AH	M6500 Acterra	Conventional	Class 6
AJ	M7500 Acterra	Conventional	Class 6
AK	M7500 Acterra	Conventional	Class 7
AL	M8500 Acterra	Conventional	Class 6
AM	M8500 Acterra	Conventional	Class 7
AN	M8500 Acterra	Conventional	Class 8

VIN Positions 5 and 6 (Model, Cab, Class/GVWR)			
Code	Model	Cab	Class (GVWR)
AP	L7500 Series	Conventional	Class 5
AR	L7500 Series	Conventional	Class 6
AS	L7500 Series	Conventional	Class 7
AT	L7500 Series	Conventional	Class 8
AU	L7500 Series Glider	Conventional	Glider
AV	L8500 Series	COE	Class 7
AW	L8500 Series	COE	Class 8
AX	L8500 Series Glider	COE	Glider
AY	L9500 Series	Conventional	Class 7
AZ	L9500 Series	Conventional	Class 8
A1	L9500 Series Glider	Conventional	Glider
A2	A9500 Series	Conventional	Class 7
A3	A9500 Series	Conventional	Class 8
A4	A9500 Series Glider	Conventional	Glider
A5	ST9500 Series	Conventional	Class 7
A6	ST9500 Series	Conventional	Class 8
A7	ST9500 Series Glider	Conventional	Glider
A8	L7501	Conventional	Class 6
A9	L7501	Conventional	Class 7
A0	L7501	Conventional	Class 8
BA	L8501	Conventional	Class 6
BB	L8501	Conventional	Class 7
BC	L8501	Conventional	Class 8
BD	L8511	Conventional	Class 7
BE	L8511	Conventional	Class 8
BF	L8513	Conventional	Class 7
BG	L8513	Conventional	Class 8
BH	L9501	Conventional	Class 7
BJ	L9501	Conventional	
BK	L9511	Conventional	Class 7
BL	L9511	Conventional	Class 8
BM	L9513	Conventional	Class 7
BN	L9513	Conventional	Class 8

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VIN Positions 5 and 6 (Model, Cab, Class/GVWR)			
Code	Model	Cab	Class (GVWR)
BP	A9522	Conventional	Class 7
BR	A9522	Conventional	Class 8
BS	L9522	Conventional	Class 7
BT	L9522	Conventional	Class 8
BU	T-2	COE	Class 7
BV	T-2	COE	Class 8

VIN Positions 5 and 6 (Model, Cab, Class/GVWR)			
Code	Model	Cab	Class (GVWR)
BW	L9513	Conventional	Class 7
BX	L9513	Conventional	Class 8

* Class 6 GVWR is 19,501–26,000 lb.
 † Class 7 GVWR is 26,001–33,000 lb.
 ‡ Class 8 GVWR is 33,001 lb and over.
 § Class 5 GVWR is 16,001–19,500 lb.

Table 4, VIN Positions 5 and 6 (Model, Cab, Class/GVWR)

VIN Positions 7 and 8 (Engine, Brakes)					
Code	Engine	Fuel	Displacement (L)	Configuration	Brakes
AA	Caterpillar 3176	Diesel	10.3	I-6	Air
AB	Caterpillar 3176	Diesel	10.3	I-6	Hydraulic
AC	Caterpillar 3176	Diesel	10.3	I-6	Air/Hydraulic
AD	Caterpillar 3406	Diesel	14.6	I-6	Air
AE	Caterpillar 3406	Diesel	14.6	I-6	Hydraulic
AF	Caterpillar 3406	Diesel	14.6	I-6	Air/Hydraulic
AG	Caterpillar 3406E	Diesel	15.8	I-6	Air
AH	Caterpillar 3406E	Diesel	15.8	I-6	Hydraulic
AJ	Caterpillar 3406E	Diesel	15.8	I-6	Air/Hydraulic
AK	Caterpillar 3126/CFE	Diesel	7.2	I-6	Air
AL	Caterpillar 3126/CFE	Diesel	7.2	I-6	Hydraulic
AM	Caterpillar 3126/CFE	Diesel	7.2	I-6	Air/Hydraulic
AN	Caterpillar C10	Diesel	10.3	I-6	Air
AP	Caterpillar C10	Diesel	10.3	I-6	Hydraulic
AR	Caterpillar C10	Diesel	10.3	I-6	Air/Hydraulic
AS	Caterpillar C12	Diesel	12.0	I-6	Air
AT	Caterpillar C12	Diesel	12.0	I-6	Hydraulic
AU	Caterpillar C12	Diesel	12.0	I-6	Air/Hydraulic
AV	Caterpillar C15	Diesel	14.6	I-6	Air
AW	Caterpillar C15	Diesel	14.6	I-6	Hydraulic
AX	Caterpillar C15	Diesel	14.6	I-6	Air/Hydraulic

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VIN Positions 7 and 8 (Engine, Brakes)					
Code	Engine	Fuel	Displacement (L)	Configuration	Brakes
AY	Caterpillar C16	Diesel	15.8	I-6	Air
AZ	Caterpillar C16	Diesel	15.8	I-6	Hydraulic
A1	Caterpillar C16	Diesel	15.8	I-6	Air/Hydraulic
A2	Cummins L10	Diesel	10.8	I-6	Air
A3	Cummins L10	Diesel	10.8	I-6	Hydraulic
A4	Cummins L10	Diesel	10.8	I-6	Air/Hydraulic
A5	Cummins M11	Diesel	10.8	I-6	Air
A6	Cummins M11	Diesel	10.8	I-6	Hydraulic
A7	Cummins M11	Diesel	10.8	I-6	Air/Hydraulic
A8	Cummins ISM	Diesel	10.8	I-6	Air
A9	Cummins ISM	Diesel	10.8	I-6	Hydraulic
A0	Cummins ISM	Diesel	10.8	I-6	Air/Hydraulic
BA	Cummins NTC	Diesel	14.0	I-6	Air
BB	Cummins NTC	Diesel	14.0	I-6	Hydraulic
BC	Cummins NTC	Diesel	14.0	I-6	Air/Hydraulic
BD	Cummins N14	Diesel	14.0	I-6	Air
BE	Cummins N14	Diesel	14.0	I-6	Hydraulic
BF	Cummins N14	Diesel	14.0	I-6	Air/Hydraulic
BG	Cummins ISX/Signature	Diesel	14.9	I-6	Air
BH	Cummins ISX/Signature	Diesel	14.9	I-6	Hydraulic
BJ	Cummins ISX/Signature	Diesel	14.9	I-6	Air/Hydraulic
BK	Cummins C8.3	Diesel	8.3	I-6	Air
BL	Cummins C8.3	Diesel	8.3	I-6	Hydraulic
BM	Cummins C8.3	Diesel	8.3	I-6	Air/Hydraulic
BN	Cummins B5.9	Diesel	5.9	I-6	Air
BP	Cummins B5.9	Diesel	5.9	I-6	Hydraulic
BR	Cummins B5.9	Diesel	5.9	I-6	Air/Hydraulic
BS	Cummins ISC	Diesel	8.3	I-6	Air
BT	Cummins ISC	Diesel	8.3	I-6	Hydraulic
BU	Cummins ISC	Diesel	8.3	I-6	Air/Hydraulic

Vehicle Identification Numbering System

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VIN Positions 7 and 8 (Engine, Brakes)					
Code	Engine	Fuel	Displacement (L)	Configuration	Brakes
BV	Cummins ISB	Diesel	5.9	I-6	Air
BW	Cummins ISB	Diesel	5.9	I-6	Hydraulic
BX	Cummins ISB	Diesel	5.9	I-6	Air/Hydraulic
BY	Cummins B5.9	Propane	5.9	I-6	Air
BZ	Cummins B5.9	Propane	5.9	I-6	Hydraulic
B1	Cummins B5.9	Propane	5.9	I-6	Air/Hydraulic
B2	Cummins B5.9	Natural Gas	5.9	I-6	Air
B3	Cummins B5.9	Natural Gas	5.9	I-6	Hydraulic
B4	Cummins B5.9	Natural Gas	5.9	I-6	Air/Hydraulic
B5	Cummins C8.3	Natural Gas	8.3	I-6	Air
B6	Cummins C8.3	Natural Gas	8.3	I-6	Hydraulic
B7	Cummins C8.3	Natural Gas	8.3	I-6	Air/Hydraulic
B8	Detroit Series 50	Diesel	8.5	I-4	Air
B9	Detroit Series 50	Diesel	8.5	I-4	Hydraulic
B0	Detroit Series 50	Diesel	8.5	I-4	Air/Hydraulic
CA	Detroit Series 55	Diesel	12.0	I-6	Air
CB	Detroit Series 55	Diesel	12.0	I-6	Hydraulic
CC	Detroit Series 55	Diesel	12.0	I-6	Air/Hydraulic
CD	Detroit Series 60	Diesel	11.1	I-6	Air
CE	Detroit Series 60	Diesel	11.1	I-6	Hydraulic
CF	Detroit Series 60	Diesel	11.1	I-6	Air/Hydraulic
CG	Detroit Series 60	Diesel	12.7	I-6	Air
CH	Detroit Series 60	Diesel	12.7	I-6	Hydraulic
CJ	Detroit Series 60	Diesel	12.7	I-6	Air/Hydraulic
CK	Detroit Series 60	Diesel	14.0	I-6	Air
CL	Detroit Series 60	Diesel	14.0	I-6	Hydraulic
CM	Detroit Series 60	Diesel	14.0	I-6	Air/Hydraulic
CN	Mercedes-Benz MBE900	Diesel	4.3	I-4	Air
CP	Mercedes-Benz MBE900	Diesel	4.3	I-4	Hydraulic
CR	Mercedes-Benz MBE900	Diesel	4.3	I-4	Air/Hydraulic