

2004 Motorhome and Commercial Chassis Service Manual Supplement

This manual provides information on the diagnosis, the service procedures, the adjustments, and the specifications for the Motorhome and Commercial Chassis Truck. This manual is a supplement to be used in conjunction with the Workhorse Custom Chassis Motorhome and Commercial Chassis Service Manuals and Supplements published previously.

The technicians who understand the material in this manual and in the appropriate Dealer Service Bulletins better serve the vehicle owners.

When this manual refers to a brand name, a part number, or a specific tool, you may use an equivalent product in place of the recommended item. All information, illustrations, and specifications in this manual are based on the latest product information available at the time of publication approval. Workhorse Custom Chassis reserves the right to make changes at any time without notice.

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Error and Suggestion Reporting

If you find an error in a Workhorse service manual, or if you have a suggestion about a Workhorse service manual, we want to hear from you.

When calling, be prepared with the following information:

- Your name
- Your dealership's name
- Your dealership's phone number
- The model year and the vehicle line
- The publication part number (if present)
- The vehicle identification number of the vehicle being worked on
- The service category and page number(s)
- Any applicable electronic information element identification numbers
- A descriptive explanation of your concern

The Workhorse service manual phone personnel will respond to your concerns in the following ways:

- By delivering your concern to the manual's author.
- By eliciting a response from the author.
- By supplying you with an answer to your concerns.

The Workhorse service manual phone personnel will explain how to send in examples or marked-up pages.

Please direct your service manual comments to 877-246-7731.



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Cautions and Notices

Definition of Caution, Notice, and Important

The diagnosis and repair procedures in the Workhorse Service Manual contain both general and specific Cautions, Notices, and Importants.

Workhorse is dedicated to the presentation of service information that helps the technician to diagnose and repair the systems necessary for the proper operation of the vehicle, however, certain procedures may present a hazard to the technician if they are not followed in the recommended manner. Cautions, Notices, and Importants are elements designed to prevent these hazards, however, not all hazards can be foreseen. This information is placed at strategic locations within the service manual. This information is designed to prevent the following from occurring:

- Serious bodily injury to the technician.
- Damage to the vehicle
- Unnecessary vehicle repairs
- Unnecessary component replacement
- Improper repair or replacement of vehicle components. Any caution or notice that appears in general information is referenced from the individual service categories.

CAUTION Defined

When encountering a CAUTION, you will be asked to take a necessary action or not to take a prohibited action. If a CAUTION is not heeded, the following consequences may occur:

- Serious bodily injury to the technician
- Serious bodily injury to other technicians in the workplace area
- Serious bodily injury to the driver and/or passenger(s) of the vehicle, if the vehicle has been improperly repaired

NOTICE Defined

Notices call special attention to a necessary action or to a prohibited action. If a NOTICE is not heeded, the following consequences may occur:

- Damage to the vehicle
- Unnecessary vehicle repairs
- Unnecessary component replacement
- Improper operation or performance of the system or component under repair
- Damage to any systems or components which are dependent upon the proper operation of the system or component under repair
- Improper operation or performance of any systems or components which are dependent upon the proper operation or performance of the system or component under repair
- Damage to fasteners, basic tools, or special tools
- The leakage of coolant, lubricant, or other vital fluids

IMPORTANT Defined

IMPORTANT statements emphasize a necessary characteristic of a diagnostic or repair procedure. IMPORTANT statements are designed to do the following:

- Clarify a procedure
- Present additional information for accomplishing a procedure
- Give insight into the reason or reasons for performing a procedure in the manner recommended
- Present information that will help to accomplish a procedure in a more effective manner
- Present information that gives the technician the benefit of past experience in accomplishing a procedure with greater ease

ABS Handling Caution

Caution: *Certain components in the Antilock Brake System (ABS) are not intended to be serviced individually. Attempting to remove or disconnect certain system components may result in personal injury and/or improper system operation. Only those components with approved removal and installation procedures should be serviced.*

Battery Disconnect Caution

Caution: *Before servicing any electrical component, the ignition key must be in the OFF or LOCK position and all electrical loads must be OFF, unless instructed otherwise in these procedures. If a tool or equipment could easily come in contact with a live exposed electrical terminal, also disconnect the negative battery cable. Failure to follow these precautions may cause personal injury and/or damage to the vehicle or its components.*

Brake Dust Caution

Caution: *Avoid taking the following actions when you service wheel brake parts:*

- Do not grind brake linings.**
- Do not sand brake linings.**
- Do not clean wheel brake parts with a dry brush or with compressed air.**

Some models or aftermarket brake parts may contain asbestos fibers which can become airborne in dust. Breathing dust with asbestos fibers may cause serious bodily harm. Use a water-dampened cloth in order to remove any dust on brake parts. Equipment is available commercially in order to perform this washing function. These wet methods prevent fibers from becoming airborne.

Brake Fluid Caution

Caution: Brake fluid may be irritating to the skin or eyes. In case of contact, take the following actions.

- Eye contact – rinse eyes thoroughly with water.
- Skin contact – wash skin with soap and water.

Brake Pipe Replacement Caution

Caution: Always use double-walled steel brake pipe when replacing brake pipes. The use of any other pipe is not recommended and may cause brake system failure. Carefully route and retain replacement brake pipes. Always use the correct fasteners and in the original location for replacement brake pipes. Failure to properly route and retain brake pipes may cause damage to the brake pipes and brake system failure.

Clutch Dust Caution

Caution: When servicing clutch parts, do not create dust by grinding or sanding the clutch disc or by cleaning parts with a dry brush or with compressed air. A water-dampened cloth – NOT SOAKED – should be used. The clutch disc contains asbestos fibers which can become airborne if dust is created during servicing. Breathing dust containing asbestos fibers may cause serious bodily harm.

Electric Coolant Fan Caution

Caution: An electric fan under the hood can start up even when the engine is not running and can injure you. Keep hands, clothing and tools away from any underhood electric fan.

Exhaust Gas Recirculation (EGR) Caution

Caution: Avoid breathing fumes and swallowing EGR exhaust gas deposits when removing components for cleaning as bodily injury may result.

Fuel and EVAP Pipe Caution

Caution: In order to reduce the risk of fire and personal injury observe the following items:

- Replace all nylon fuel pipes that are nicked, scratched or damaged during installation, do not attempt to repair the sections of the nylon fuel pipes.
- Do not hammer directly on the fuel harness body clips when installing new fuel pipes. Damage to the nylon pipes may result in a fuel leak.
- Always cover nylon vapor pipes with a wet towel before using a torch near them. Also, never expose the vehicle to temperatures

higher than 115°C (239°F) for more than one hour, or more than 90°C (194°F) for any extended period.

- Apply a few drops of clean engine oil to the male pipe ends before connecting fuel pipe fittings. This will ensure proper reconnection and prevent a possible fuel leak (During normal operation, the O-rings located in the female connector will swell and may prevent proper reconnection if not lubricated.)

Fuel Gauge Leak Caution

Caution: Wrap a shop towel around the fuel pressure connection in order to reduce the risk of fire and personal injury. The towel will absorb any fuel leakage that occurs during the connection of the fuel pressure gauge. Place the towel in an approved container when the connection of the fuel pressure gauge is complete.

Fuel Pipe Fitting Caution

Caution: Always apply a few drops of clean engine oil to the male pipe ends before connecting fuel pipe fittings in order to reduce the risk of fire and personal injury.

This will ensure proper reconnection and prevent a possible fuel leak.

During normal operation, the O-rings located in the female connector will swell and may prevent proper reconnection if not lubricated.

Fuel Storage Caution

Caution: Do not drain the fuel into an open container. Never store the fuel in an open container due to the possibility of a fire or an explosion.

Gasoline/Gasoline Vapors Caution

Caution: Gasoline or gasoline vapors are highly flammable. A fire could occur if an ignition source is present. Never drain or store gasoline or diesel fuel in an open container, due to the possibility of fire or explosion. Have a dry chemical (Class B) fire extinguisher nearby.

Lower O-Ring Removal Caution

Caution: Verify that the lower (small) O-ring of each injector does not remain in the lower manifold in order to reduce the risk of fire and personal injury.

If the O-ring is not removed with the injector, the replacement injector with new O-rings will not seat properly in the injector socket. Improper seating could cause a fuel leak.

Moving Parts and Hot Surfaces Caution

Caution: While working around a running engine, avoid contact with moving parts and hot surfaces to prevent possible bodily injury.

Relieving Fuel Pressure Caution

Caution: Relieve the fuel system pressure before servicing fuel system components in order to reduce the risk of fire and personal injury.

After relieving the system pressure, a small amount of fuel may be released when servicing the fuel lines or connections. In order to reduce the chance of personal injury, cover the regulator and the fuel line fittings with a shop towel before disconnecting. This will catch any fuel that may leak out. Place the towel in an approved container when the disconnection is complete.

Road Test Caution

Caution: Road test a vehicle under safe conditions and while obeying all traffic laws. Do not attempt any maneuvers that could jeopardize vehicle control. Failure to adhere to these precautions could lead to serious personal injury.

Safety Glasses and Compressed Air Caution

Caution: Wear safety glasses when using compressed air in order to prevent eye injury.

Safety Goggles and Fuel Caution

Caution: Always wear safety goggles when working with fuel in order to protect the eyes from fuel splash.

Vehicle Lifting Caution

Caution: To avoid any vehicle damage, serious personal injury or death when components are removed from the vehicle and the vehicle is supported by a hoist, perform the following steps:

- Chain the vehicle to the hoist at the same end as the components that are being removed.
- Support the vehicle at the opposite end from which the components are being removed.

Work Stall Test Caution

Caution: One or more of the following guidelines may apply when performing specific required tests in the work stall:

- When a test requires spinning the drive wheels with the vehicle jacked up, adhere to the following precautions:
 - Do not exceed 56 km/h (35 mph) when spinning one drive wheel with the other drive wheel stopped. This limit is

necessary because the speedometer indicates only one-half the actual vehicle speed under these conditions. Personal injury may result from excessive wheel spinning.

- If all of the drive wheels are spinning at the same speed, do not exceed 112 km/h (70 mph). Personal injury may result from excessive wheel spinning.
 - All persons should stay clear of the rotating components and the balance weight areas in order to avoid possible personal injury.
 - When running an engine in the repair stall for an extended period of time, use care not to overheat the engine and the transmission.
- When a test requires jacking up the vehicle and running with the wheels and brake rotors removed, adhere to the following precautions:
- Support the suspension of all drive wheels at normal ride height.
 - Do not apply the brake with the brake rotors removed.
 - Do not place the transmission in PARK with the drive wheels still spinning.
 - Turn Off the ignition in order to stop the powertrain components from spinning.

Belt Dressing Notice

Notice: Do not use belt dressing on the drive belt. Belt dressing causes the breakdown of the composition of the drive belt. Failure to follow this recommendation will damage the drive belt.

Component Fastener Tightening Notice

Notice: Replacement components must be the correct part number for the application. Components requiring the use of the thread locking compound, lubricants, corrosion inhibitors, or sealants are identified in the service procedure. Some replacement components may come with these coatings already applied. Do not use these coatings on components unless specified. These coatings can affect the final torque, which may affect the operation of the component. Use the correct torque specification when installing components in order to avoid damage.

Defective Scan Tool Notice

Notice: Do not use a scan tool that displays faulty data. Report the scan tool problem to the manufacturer. Use of a faulty scan tool can result in misdiagnosis and unnecessary parts replacement.

Emission Modification Notice

Notice: Modifications made to the following can affect the vehicle's emission controls and may cause the

Malfunction Indicator Lamp (MIL), Check Engine or Service Engine Soon lamp to illuminate:

- The Engine
- The Transmission
- The Exhaust
- The Fuel system

Replacement tires that do not meet the same Tire Performance Criteria (TPC) of the original tires can also affect the vehicle's emission controls. This may also cause the Malfunction Indicator Lamp (MIL), Check Engine or Service Engine Soon lamp to illuminate.

Modifications to these systems or the installation of incorrect TPC tires could lead to repairs that are not covered by the manufacturer's warranty. This may also cause a required Emission Inspection/Maintenance test to fail.

Engine Emission Notice

Notice: Modifications made to the engine or its individual components can effect the vehicle's emission controls and may cause the Malfunction Indicator Lamp (MIL), Check Engine, or Service Engine Soon lamp to illuminate. Modifications may also cause the vehicle to fail a required Emission Inspection/Maintenance test.

Fastener Notice

Notice: Use the correct fastener in the correct location. Replacement fasteners must be the correct part number for that application. Fasteners requiring replacement or fasteners requiring the use of thread locking compound or sealant are identified in the service procedure. Do not use paints, lubricants, or corrosion inhibitors on fasteners or fastener joint surfaces unless specified. These coatings affect fastener torque and joint clamping force and may damage the fastener. Use the correct tightening sequence and specifications when installing fasteners in order to avoid damage to parts and systems.

Fuel Injector Notice

Notice: Use care in removing the fuel injectors in order to prevent damage to the fuel injector electrical connector pins or the fuel injector nozzles. Do not immerse the fuel injector in any type of cleaner. The fuel injector is an electrical component and may be damaged by this cleaning method.

Fuel Line Connection Cleaning Notice

Notice: Clean all of the following areas before performing any disconnections in order to avoid possible contamination in the system:

- The fuel pipe connections
- The hose connections
- The areas surrounding the connections

Fuel Pressure Notice

Notice: Do not allow the fuel pressure to exceed the specified value because damage to the fuel pressure regulator or the fuel pressure gauge may result.

Handling Electronic Throttle Control Components Notice

Notice: Handle the electronic throttle control components carefully. Use cleanliness in order to prevent damage. Do not drop the electronic throttle control components. Do not roughly handle the electronic throttle control components. Do not immerse the electronic throttle components in cleaning solvents of any type.

Handling ESD Sensitive Parts Notice

Notice: Electrostatic discharge (ESD) can damage many solid-state electrical components. ESD susceptible components may or may not be labeled with the ESD symbol. Handle all electrical components carefully. Use the following precautions in order to avoid ESD damage:

- Touch a metal ground point in order to remove your body's static charge before servicing any electronic component; especially after sliding across the vehicle seat.
- Do not touch exposed terminals. Terminals may connect to circuits susceptible to ESD damage.
- Do not allow tools to contact exposed terminals when servicing connectors.
- Do not remove components from their protective packaging until required to do so.
- Avoid the following actions unless required by the diagnostic procedure:
 - Jumpering or grounding of the components or connectors.
 - Connecting test equipment probes to components or connectors. Connect the ground lead first when using test probes.
- Ground the protective packaging of any component before opening. Do not rest solid-state components on metal workbenches, or on top of TVs, radios, or other electrical devices.

Handling IAC Valve Notice

Notice: if the IAC valve has been in service: DO NOT push or pull on the IAC valve pintle. The force required to move the pintle may damage the threads on the worm drive. Also, DO NOT soak the IAC valve in any liquid cleaner or solvent, as damage may result.

Heated Oxygen and Oxygen Sensor Notice

Notice: Do not remove this pigtail from either the heated oxygen sensor (HO2S) or the oxygen sensor (O2S). Removing the pigtail or the connector will affect sensor operation.

Handle the oxygen sensor carefully. Do not drop the HO₂S. Keep the in-line electrical connector and the louvered end free of grease, dirt, or other contaminants. Do not use cleaning solvents of any type.

Do not repair the wiring, connector or terminals. Replace the oxygen sensor if the pigtail wiring, connector, or terminal is damaged.

This external clean air reference is obtained by way of the oxygen sensor signal and heater wires. Any attempt to repair the wires, connectors, or terminals could result in the obstruction of the air reference and degraded sensor performance.

The following guidelines should be used when servicing the heated oxygen sensor:

- Do not apply contact cleaner or other materials to the sensor or vehicle harness connectors. These materials may get into the sensor causing poor performance.
- Do not damage the sensor pigtail and harness wires in such a way that the wires inside are exposed. This could provide a path for foreign materials to enter the sensor and cause performance problems.
- Ensure the sensor or vehicle lead wires should not be bent sharply or kinked. Sharp bends or kinks could block the reference air path through the lead wire.
- Do not remove or defeat the oxygen sensor ground wire (where applicable). Vehicles that utilize the ground wired sensor may rely on this ground as the only ground contact to the sensor. Removal of the ground wire will cause poor engine performance.
- Ensure that the peripheral seal remains intact on the vehicle harness connector in order to prevent damage due to water intrusion. The engine harness may be repaired using Packard's Crimp and Splice Seals Terminal Repair Kit. Under no circumstances should repairs be soldered since this could result in the air reference being obstructed.

Ignition OFF When Disconnecting Battery Notice

Notice: Always turn the ignition OFF when connecting or disconnecting battery cables, battery chargers, or jumper cables. Failing to do so may damage the Powertrain Control Module (PCM) or other electronic components.

Low Pressure Gas Source Notice

Notice: Use the EVAP Pressure/Purge Diagnostic Station J 41413 in order to provide a clean, dry, low pressure gas source. Do not substitute any other pressurized gas source. Damage may result to the EVAP system.

Nylon Fuel Lines Notice

Notice: Do not attempt to straighten any kinked nylon fuel lines. Replace any kinked nylon fuel feed or return pipes in order to prevent damage to the vehicle.

OBD II System Description Notice

Notice: The OBD II symbol is used on the circuit diagrams in order to alert the technician that the circuit is essential for proper OBD II emission control circuit operation. Any circuit which, if it fails causes the Malfunction Indicator Lamp (MIL) to turn on, is identified as an OBD II circuit.

PCM and ESD Notice

Notice: Do not touch the connector pins or soldered components on the circuit board in order to prevent possible electrostatic discharge (ESD) damage to the PCM.

Quick Connect Fittings Notice

Notice: If necessary, remove rust or burrs from the fuel pipes with an emery cloth. Use a radial motion with the fuel pipe end in order to prevent damage to the O-ring sealing surface. Use a clean shop towel in order to wipe off the male tube ends. Inspect all the connections for dirt and burrs. Clean or replace the components and assemblies as required.

Single Cylinder Flooding Notice

Notice: In order to prevent flooding of a single cylinder and possible engine damage, relieve the fuel pressure before performing the fuel injector coil test procedure.

Wheel Nut or Stud Notice

Notice: Stud-piloted hubs' inner and outer stud nuts used on the right side of the vehicle have right-hand threads. Inner and outer nuts are stamped with the letter L to signify left or R to signify right. Care should be exercised to prevent trying to use the wrong thread nut as damage to the stud threads could occur.

INTRODUCTION

This supplement contains information specific to the 2004 model year chassis. Some updates may have been included in previous years' production but may not have been detailed in the Service Manual.

Unless specific service procedures are indicated, refer to the previous Service Manual or Service Manual Supplements for information on testing and R&R of components.

Vehicle Identification Numbering System

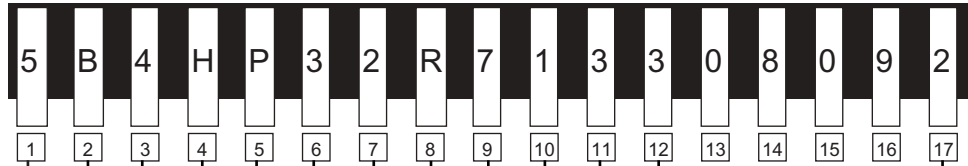
Refer to the following pages for the 2004 VIN system.



WORKHORSE 2004 COMMERCIAL CHASSIS, MOTOR HOME CHASSIS AND INTEGRATED VEHICLE VEHICLE IDENTIFICATION NUMBERING SYSTEM

GVW - A GVW Holdings Company

TYPICAL VIN



POSITION NO.

1-2-3 WORLD MAKE IDENTIFIER

DIGIT 1 = 5	WORKHORSE
DIGIT 2 = B	INCOMPLETE VEHICLE
DIGIT 2 = T	COMPLETE VEHICLE (FasTrack)
DIGIT 3 = 4	

12 - 17 PRODUCTION SEQUENCE NUMBER

Starting VIN = 5B4HP32R7X3308092
Starting VIN = 5T4HP31R2Y3322171

4 GVWR/BRAKE SYSTEMS

CODE	GVWR RANGE (IN POUNDS)	BRAKE SYSTEM
G	8001 - 9000	HYDRAULIC
H	9001 - 10000	HYDRAULIC
J	10001 - 14000	HYDRAULIC
K	14001 - 16000	HYDRAULIC
L	16001 - 19500	HYDRAULIC
M	19501 - 26000	HYDRAULIC
N	26001 - 33000	AIR

11 PLANT

3	UNION CITY, INDIANA
4	HAGERSTOWN, INDIANA

5 LINE & CHASSIS TYPE

P	FORWARD CONTROL	4 X 2
R	REAR DIESEL PUSHER	4 X 2

10 MODEL YEAR

CODE	YEAR
X	1999
Y	2000
1	2001
2	2002
3	2003
4	2004
5	2005
6	2006
7	2007

6 SERIES

CODE	SERIES DESCRIPTION
1	W72 FRONT WHEEL DRIVE BUS
2	3/4 TON NOMINAL
3	1 TON NOMINAL (P42 & P32 PRIOR TO MODEL YEAR 2001)
4	P42 STEP VAN
5	P32 MOTORHOME CHASSIS FRONT ENGINE
6	W22 MOTORHOME CHASSIS FRONT ENGINE
7	W52 COMMERCIAL CHASSIS FRONT ENGINE
8	W82 MOTORHOME CHASSIS FRONT ENGINE
9	R20 REAR DIESEL PUSHER RV
A	W24 MOTORHOME CHASSIS FRONT ENGINE
B	RE21 REAR DIESEL PUSHER CHASSIS BUS

9 CHECK DIGIT

7 BODY DESCRIPTION

CODE	LINE
1	STEP VAN
2	COMMERCIAL CHASSIS
3	TRANSIT BUS CHASSIS
4	MOTOR COACH CHASSIS
5	SHUTTLE BUS CHASSIS
7	MOTOR HOME CHASSIS
8	BUS CHASSIS

8 ENGINE TYPE

CODE	A	B	C	F	G	J	P	R	U	V	W	X	Y
ENGINE OPTION	L5B	L6B	L3B	L65	L18	L29	L4B	L31	LQ4	LR4	L35	LU3	L57
DISPL.(L)	8.3TI	8.9TI	5.9TI	6.5T	8.1	7.4	3.9TI	5.7	6.0	4.8	4.3	4.3	6.5
CYLINDERS	I6	I6	I6	V8	V8	V8	I4	V8	V8	V8	V6	V6	V8
FUEL SYSTEM*	DSL	DSL	DSL	DSL	MFI	MFI	DSL	CPI	MFI	MFI	CPI	MFI	DSL
PRODUCED IN	U.S.	U.S.	U.S.	U.S.	U.S.	U.S.	U.K.	U.S.	U.S.	U.S.	U.S.	U.S.	U.S.

* LEGEND
 CPI=CENTRAL PORT FUEL INJECTION DSL=DIESEL
 MFI=MULTIPOINT FUEL INJECTION T=TURBO
 TI=TURBO INTERCOOLER

MOTORHOME/COMMERCIAL CHASSIS & FASTRAK BODY OPTION DESCRIPTIONS

004	REAR AXLE 4.78 RATIO	C7B	GVW RATING 17,000 LBS.
005	REAR AXLE 4.56 RATIO	C7D	GVW RATING 18,000 LBS.
006	REAR AXLE 4.63 RATIO	C7E	GVW RATING 11,000 LBS.
007	REAR AXLE 5.38 RATIO	C7L	GVW RATING 12,000 LBS.
058	REAR AXLE 5.13 RATIO	C7M	GVW RATING 14,100 LBS.
066	REAR AXLE 4.10 RATIO	C7N	GVW RATING 12,300 LBS.
17P	WHEEL COLOR SILVER	C7P	GVW RATING 16,000 LBS.
2EC	TIRE FRONT-LT215/85R 16/E	C7R	GVW RATING 16,500 LBS.
2HI	TIRE FRONT-LT225/75R 16/E	C7V	GVW 20,700 LBS.
2HS	TIRE FRONT-LT225/75R 16/D	C7W	GVW RATING 15,000 LBS.
2TN	TIRE FRONT-225/70R 19.5/F	C7X	GVW RATING 22,000 LBS.
2TU	TIRE FRONT-8.00R-19.5/F	CD4	WIPER SYSTEM WINDSHIELD, PULSE
2TX	TIRE FRONT-8.00R-19.5/F	CW8	MEXICO BASE EQUIPMENT
3EC	TIRE REAR-LT215/85R 16/E	DR1	VEHICLE DERATING C7L TO C7A
3ED	TIRE REAR-LT215/85R 16/E	DR3	VEHICLE DERATING C7E TO C7A
3HI	TIRE REAR-LT225/75R 16/E	DR5	VEHICLE DERATING C7M TO C7L
3HS	TIRE REAR-LT225/75R 16/D	EFI	ELECTRONIC FUEL INJECTOR
3TA	TIRE REAR-225/70R 19.5/F	EJ0	SHIPPED LOOSE PARTS (UTILIMASTER)
3TN	TIRE REAR-225/70R 19.5/F	EJ1	SHIPPED LOOSE PARTS (BLUEBIRD)
3TU	TIRE REAR-8.00R-19.5/F	EJ2	SHIPPED LOOSE PARTS (FLEETWOOD)
3TW	TIRE REAR-8.00R-19.5/F BL	EJ4	SHIPPED LOOSE PARTS (GRUMMAN-OLSON)
3TX	TIRE REAR-8.00R-19.5/F BL	EJ6	SHIPPED LOOSE PARTS (HOLIDAY RAMBLER)
40P	WHEEL COLOR WHITE	EJ7	SHIPPED LOOSE PARTS (UCBC)
41P	WHEEL COLOR BLACK	EK0	SHIPPED LOOSE PARTS (FOUR WINDS)
4EC	TIRE SPARE-LT215/85R 16/E	EK3	SHIPPED LOOSE PARTS (COMPLETE)
4ED	TIRE SPARE-LT215/85R 16/E	EL6	SHIPPED LOOSE PARTS (CARPENTER / CROWN)
4HI	TIRE SPARE-LT225/75R 16/E	EMY	ENGINE MODEL YEAR FLAG
4HS	TIRE SPARE-LT225/75R 16/D	EN2	HVAC SYSTEM PROVISIONS - DELETE
4K1	STEERING WHEEL 18" [457.2]	ENV	HVAC SYS PROVISIONS
4TA	TIRE SPARE-225/70R 19.5/F	EXP	EXPORT I.E.S.
4TN	TIRE SPARE-225/70R 19.5/F	FA1	FRONT SUSPENSION 5500 LBS.
4TU	TIRE SPARE-8.00R-19.5/F	FE9	CERTIFICATION EMISSION, FEDERAL
4TW	TIRE SPARE-8.00R-19.5/F	FK4	SUSPENSION FRONT 4400 LB, I-BEAM
4TX	TIRE SPARE-8.00R-19.5/F	FK5	SUSPENSION FRONT 5000 LB, I-BEAM
5D2	COOLING SYSTEM ENG OIL AUX	FL5	SUSPENSION FRONT 3650 LB, INDEPENDENT-LOW
5D7	BUMPER, FRT, FINISH PAINT DELETE	FL6	SUSPENSION FRONT 4400 LB, INDEPENDENT
5H0	PROVISION CLEAN POWER SOURCE	FL7	SUSPENSION FRONT 5000 LB, INDEPENDENT
5J0	EQUIPMENT R-134A A/C SYS W/O PRECHARGE	FL9	SUSPENSION FRONT 5500 LB, INDEPENDENT
5K0	DAYTIME RUNNING LIGHT-DELETE	FM5	AXLE FRONT 4,400 LBS.
5K1	DAYTIME RUNNING LAMPS	FN3	AXLE FRONT 4,000 LBS.
5K2	EQUIPMENT SCHOOL BUS, HEAVY DUTY	FN5	AXLE FRONT 4,500 LBS.
5K6	BUMPER FRT EXTRA WIDE, BLACK	FN6	AXLE FRONT 5,000 LBS.
5N0	LEVER PARKING BRAKE (HAND APPLY)	FN8	AXLE FRONT 5,500 LBS.
5N7	CABLE BATTERY POSITIVE (EXTENDED LENGTH)	FN9	AXLE FRONT 6,000 LBS.
7Y8	BATTERY 1250 CCA	FP5	AXLE FRONT 8,500 LBS.
84P	WHEEL COLOR GRAY	FPA	FLOOR PLAN A-COMMERCIAL
8B6	HOSE RADIATOR (SPECIAL)	FPB	FLOOR PLAN B-COMMERCIAL
8D5	HEADLAMPS SINGLE RECTANGULAR	FST	FASTRACK PROCESSING OPTION
8H5	BUMPER FRT DELETE	FSW	FRONT SUSPENSION 6,000 LBS.
8K2	GENERATOR 200 AMP	FTY	FRONT AXLE WIDE TRACK
8R2	VALVE LONG STEM 3 3/8"	FV4	FRONT SUSPENSION 7,500 LBS.
8R3	VALVE METAL	FV5	FRONT SUSPENSION 8,000 LBS.
8R4	VALVE ASM FLOW THROUGH	GL1	AXLE REAR 7900 LBS. CAPACITY
8T2	HEADLAMPS DUAL, RECTANGULAR	GL2	AXLE REAR 10000 LBS. CAPACITY
8T8	SHIELD FUEL TANK, DELETE (SEO)	GL4	AXLE REAR 11000 LBS. CAPACITY
8W0	HVAC SYSTEM PROVISIONS ENGINE DRESS & COMPRESSOR	GL6	AXLE REAR 12,000 LBS. CAPACITY
8W1	EVER TRANS. SHIFTER (REMOTE DA MT)	GL7	AXLE REAR 13,500 LBS. CAPACITY
8W2	DASH MOUNTED TRANS. SHIFT SELE	GL8	AXLE REAR 15,500 LBS. CAPACITY
8Y1	ALARM ENGINE W/ LIGHT	GN5	SUSPENSION REAR 6,200 LBS.
8Y2	BATTERY 690 CCA (DUAL) (SEO)	GN6	SUSPENSION REAR 7,500 LBS.
9H4	FUEL TANK 151L, 40 G,W/AUX FUEL DRAW C/MNT	GN7	SUSPENSION REAR 8,000 LBS.
9Q6	HEAVY DUTY REAR SPRING LH. SIDE	GP4	SUSPENSION REAR 11,000 LBS.
B3D	EQUIPMENT SCHOOL BUS	GP5	SUSPENSION REAR 11,800 LBS.
B3M	EQUIPMENT SCHOOL BUS, DELUXE	GQ4	REAR SUSPENSION 12,000 LBS.
C3D	GVW RATING 14,800 LBS.	GQ5	REAR SUSPENSION 13,500 LBS.
C6E	VW RATING 9,400 LBS.	GQ6	REAR SUSPENSION 14,500 LBS.
C7A	GVW RATING 10,000 LBS.	GR1	REAR SUSPENSION 5,300 LBS., STANDARD

GSA	GENERAL SERVICES ADMIN	U02750	60" SWING REAR DOORS
GTM	GTM AXLE INTERMEDIATE TRACK	U02751	74" SWING REAR DOORS
GTY A	XLE WIDE TRACK	U02752	74"ROLL UP REAR DOORS
HPR	HEADLAMPS DUAL, RECTANGULAR	U02753	LH SEALED DRIVERS DOOR
J71	PARKING BRAKE POWER OPERATED	U02754	AM/FM RADIO
JB8	BRAKE POWER, DISC/DRUM, 10000 LBS	U02755	AIR CONDITIONING
JF9	BRAKE HYD POWER, 4 WHEEL DISC	U02756	ALUM PRTN W/ CENTER DOOR
JL9	PWR, FRT&RR DISC, ANTILOCK, 4SEN	U02757	3/4" PLWD PRTN W/ CENTER DOOR
K05	HEATER ENG BLOCK	U02758	83" SWING REAR DOORS
K34	CRUISE CONTROL AUTOMATIC ELECTRONIC	U02759	83"ROLL UP REAR DOORS
K55	FUEL SENDER LOW LUBRICITY	U18	SPEEDOMETER INST KILO
K68	GENERATOR 105 AMP	UA1	BATTERY HIGH CAPACITY WET
KC4	COOLING SYSTEM ENG OIL	UC2	SPEEDOMETER INST, KILO & MILES,
KG8	ALTERNATOR 130 AMP	KILO	ODOMETER
KL5	MODIFICATION ENGINE, NATURAL GAS	UC3	SPEEDOMETER MILES
KYR	65 MPH CALIBRATION	UJ1	INDICATOR SYSTEM, BRAKE WARNING
KYV	80 MPH CALIBRATION	V14	COOLER OIL TRANSMISSION AUX
KYW	75 MPH CALIBRATION	V70	HOOK TOW, FRAME MOUNTED
L18	ENGINE GAS, 8 CYL, 8.1L, MFI	V97	VEHICLE PREPERATION EXPORT
L29	ENGINE GAS, 8 CYL, 7.4L, MFI	VCL	CERTIFICATION EMISSION, CLEANFUEL FLEET
L31	ENGINE GAS, 8 CYL, 5.7L, CPI	VD1	PROVISION OPTIONS EUROPE
L35	ENGINE GAS, 6 CYL, 4.3L, CPI	VD2	EUROPEAN WARRANTY PROVISION
L3B	ENGINE DIESEL, 6 CYL, 5.9L, TURBO	VE4	LABEL,EXPORT DIESEL ENGINE SMOKE
L4B	ENGINE DIESEL, 4 CYL, 3.9L, TURBO, HO		STANDARD
L5B	ENGINE DIESEL, 6 CYL, 8.3L, TURBO	VG8	VEHICLE BUYER NOTICE LABEL
L57	ENGINE DIESEL, 8 CYL, 6.5L, HO	VH6	BUMPER FRT BLACK
L6B	ENGINE DIESEL, 6 CYL, 8.9L, TURBO	VJ3	LABEL, PLATE ECE APPROVAL & VEHICLE
L65	ENGINE DIESEL, 8 CYL, 6.5L, TURBO, HO	VKL	BUMPER FRT EXTRA WIDE WHITE
LQ4	ENGINE GAS, 8 CYL, 6.0L MFI	W88	EQUIPMENT NON SCHOOL BUS
LR4	ENGINE GAS, 4.8L MFI	W90	EQUIPMENT SCHOOL BUS MANDATORY
LU3	ENGINE GAS, 4.3L MFI	WEX	MOTORHOME MANUFACTURERS OPTION
M74	TRANSMISSION AUTO 5 SPD, SERIES 1000	WX7	WIRING PROVISIONS-EUROPEAN
MN8	TRANSMISSION AUTO 4 SPD, HMD, 4L85-E	WX8	WIRING PROVISIONS-SXL WIRE
MT1	TRANSMISSION AUTO 4 SPD, HMD, 4L80-E	XEC	TIRE FRONT LT215/85R16/E
MW3	TRANSMISSION MAN 5 SPD, NVG, 109MM, 5.6 1ST, O/D	XHF	TIRE FRONT LT225/75R16/E
NA7	EMISSION SYSTEM EUROPEAN	XHH	TIRE FRONT LT245/75R16/E
NA9	EVAPORATIVE SYSTEM EMISSION	XRL	TIRE FRONT 235/80R22.5/G
NB6	EMISSION SYSTEM CALIFORNIA, TIER 1	XTH	TIRE FRONT 245/70R 19.5/F
NB8	EMISSION OVERRIDE CALIFORNIA SYSTEM	XTI	TIRE FRONT 245/70R 19.5/G
NC7	EMISSION OVERRIDE FEDERAL SYSTEM	XTN	TIRE FRONT 225/70R 19.5/F
NF2	EMISSION SYSTEM FEDERAL, TIER 1	XTV	TIRE FRONT 8.00R19.5/E
NF4	EMISSION SYSTEM CLEAN FUEL FLEET	XWG	TIRE FRONT 7.50R16/D
NG1	CERTIFICATION EMISSION, GEOGRAPHICALLY RESTRICTED	XYK	TIRE FRONT LT215/85R16/D
NG5	REGISTRATION EMISSION, CERTIFICATION, FIFTY STATE	YEC	TIRE REAR-LT215/85R16/E
NJ3	FUEL TANK, 113.5L, 30 GAL C/MNT	YF5	CERTIFICATION EMISSION CALIFORNIA
NJ8	FUEL TANK, 151L, 40 GAL C/MNT	YHF	TIRE REAR LT225/75R16/E
NJ9	FUEL TANK, 294L, 75 GAL, LH OR RH FILL C/MNT	YHH	TIRE REAR LT245/75R16/E
NN4	FUEL TANK, 227L, 60 GAL C/MNT	YRL	TIRE REAR 235/80R22.5/G
NN6	EMISSION OVERRIDE DIESEL FUEL, EXPORT	YTH	TIRE REAR 245/70R19.5/F
Q34	WHEEL SPARE 19.5 X 6	YTI	TIRE REAR 245/70R19.5/G
RV1	ENGINE UPCHARGE 8100 VORTEC	YTN	TIRE REAR 225/70R19.5/F
S2S	TIRE BRAND REAR-UNIROYAL LAREDO	YTV	TIRE REAR 8.00R19.5/E
S3S	TIRE BRAND REAR-MICHELIN XRV	YWG	TIRE REAR 7.50R16/D
S4A	TIRE BRAND REAR GOODYEAR	YYK	TIRE REAR LT215/85R16/D
S4N	TIRE BRAND REAR BRIDGESTONE	YYL	TIRE REAR LT215/85R16/D
S5N	TIRE BRAND REAR-GOODYEAR	Z49	EXPORT CANADIAN MANDATORY BASE EQUIPMENT
SDI	DRIVERS ISLAND PROVISIONS	ZEC	TIRE SPARE LT215/85R16/E
T98	STAMPING VEHICLE IDENTIFICATION NUMBER	ZHF	TIRE SPARE LT225/75R16/E
TAM	FLEET SALES ARAMARK	ZHH	TIRE SPARE LT245/75R16/E
TCT	FLEET SALES CORNWALL TOOLS	ZRL	TIRE SPARE 235/80R22.5/G
TET	FLEET SALES CINCINNATI MILACRON	ZTH	TIRE SPARE 245/70R19.5/F
TFL	FLEET SALES FRITO LAY	ZTI	TIRE SPARE 245/70R19.5/G
TMT	FLEET SALES MAC TOOL	ZTN	TIRE SPARE 225/70R19.5/F
TST	FLEET SALES SNAP ON TOOLS	ZTV	TIRE SPARE 8.00R19.5/E
TUS	FLEET SALES USPS	ZVG	TIRE SPARE 7.50R16/D
U02749	PASSENGER SEAT	ZYK	TIRE SPARE LT215/85R16/D
		ZYL	TIRE SPARE LT215/85R16/D

