

Load Xpert – Axle Load Calculation software

Version 7

User guide



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Warning

This software can give ESTIMATED results only. The purpose of this software is to give quick estimated results to help in the early stages of decision. The results of this software should not be used to make any final decision. The accuracy of the estimated results given by this software depends totally on the validity of the inputs from the user.

This software is not intended to replace experienced and knowledgeable personnel. It should be used by qualified personnel with extensive heavy vehicle experience who are able to interpret correctly the results of the software. Accurate computer simulation or field tests should be conducted whenever critical decisions have to be made.

READ CAREFULLY THE ENTIRE USER'S MANUAL BEFORE USING THE SOFTWARE, ESPECIALLY THE TOPIC ON [SOFTWARE LIMITATIONS](#).

READERS ARE CAUTIONED THAT THE USE AND INTERPRETATION OF THE DATA, MATERIAL AND FINDINGS CONTAINED HEREIN IS DONE AT THEIR OWN RISK.

Limitations of Load Xpert

Load Xpert is based on theoretical calculations. Frame deflection is not accounted for in the calculations. Because of that, axle loads calculated may differ from exact (measured) axle loads. It is strongly recommended to validate the results of the software with a weigh scale when starting to use the software in order to know how precise the software's results are. The accuracy of the results are dependent on the accuracy of the information supplied by the user.

The default value for vehicles have been selected using data available in the literature. It should be noted that the vehicle and axle group default values are not current and may not correspond to newer versions available in the market. This database is provided with the software for your convenience only.

READERS ARE CAUTIONED THAT THE USE AND INTERPRETATION OF THE DATA, MATERIAL AND FINDINGS CONTAINED IN THIS SOFTWARE AND USER'S MANUAL ARE DONE AT THEIR OWN RISK.

Overview

Load Xpert is an easy-to-use software tool to estimate axle load distribution of most types of heavy vehicles. The software package can be used in a wide range of applications including trailer design, verification of compliance with size and weight regulations (e.g.: U.S. Bridge Formula), payload positioning, and as a tool for owner operators, truck/trailer dealers and sales personnel.

Load Xpert permits the user to define the vehicle's configuration in an extremely simple manner. The user-friendly graphical interface provides all the options necessary to configure most types of heavy vehicles. Axle load distribution is carried out and displayed in real-time. The software allows the user to move an axle group, the fifth wheel or payloads with a mouse and see the axle loads updated in real-time.

Load Xpert has been packaged with relevant features for the need of major user groups in trucking industry and they are:

- \= Truck and trailer manufacturers, dealers, repair shops, training schools, leasing companies, municipalities, utilities, etc.
- \= Heavy Haul operations with jeep dollies, drop deck trailers, booster axles, etc. It can print Permit Application including vehicle, load and routing information.

The **Load Xpert** installation includes **LX-CAD**. **LX-CAD** is a small standalone drawing software which allows the user to draw the desired look of a unit, load or accessory. The new look created are saved in a Look File that can be read by **Load Xpert**.

System Requirements

Load Xpert requires the following hardware and software:

- \= A personal computer with a 486 or higher processor running Microsoft Windows 95, 98, ME, NT4, 2000, XP, 2003 or Vista
- \= 256 MB of memory
- \= Hard disk space required: 30 MB
- \= 1024x768 or higher resolution monitor
- \= A CD-ROM drive
- \= A compatible mouse or pointing device

Installing the software

To install *Load Xpert* on Microsoft Windows:

Connect the HASP key only after the installation

Insert the CD in the drive and the software installation will be done automatically.

Or

1. Place the *Load Xpert CD* in the CD-ROM drive
2. From the Start button, choose Run
3. Type D:\setup.exe (or replace D: by your CD drive letter) and press OK
4. Follow the on-screen instructions.

NOTE: You need administrator privileges to install the software on Windows NT, 2000 and XP Pro

STANDALONE INSTALLATION (BLUE or USB HASP KEY)

Version 7 of ***Load Xpert*** is copy protected. You will be able to install the software on any number of computers, however, it will run **ONLY** on the computer with the BLUE HASP key plugged in the parallel port. **To run the software on another computer you MUST move the HASP key to the new computer.**

NETWORK SERVER INSTALLATION (RED HASP KEY)

Version 7 of ***Load Xpert*** can work in a network environment. You need to perform the Network Server installation on one computer on the network. The Red Hasp Key has to be connected to that computer. It doesn't need to be your network server. This will allow other workstation on your network to run the software without having a Hasp Key physically connected. Each license that you purchase will allow you to run simultaneously on one more workstation.

NETWORK WORKSTATION INSTALLATION (NO KEY)

Version 7 of ***Load Xpert*** can work in a network environment. Once you have performed the Network Server installation, you can perform the Network Workstation install on all the workstations in your network that will be used with the ***Load Xpert*** software. If you do not want to install the software locally, you can still install from the workstation on the network server by overwriting the previous Network Server install. This will copy all the proper DLL's needed by the software and create the shortcuts in the Start menu. You do not need to have a key connected to the workstation. However, you will be able to run the software only if the number of ***Load Xpert*** running on your network is less than the number of licenses you have purchased. You will be able to use ***Load Xpert*** from a workstation only if you have done a Network Server Install on a computer accessible on your network.

If you have any problem, please contact CIE-TECH Inc. at (450) 923-1458.

Uninstalling the software

The **Load Xpert** software can be uninstalled with the standard Windows Add/Remove Programs from the Control Panel. This will delete program files only. The data files will not be deleted.

Load Xpert Files

Load Xpert needs and creates many different types of files. The following list shows some file extensions that are used by the software and their type:

<u>File extension</u>	<u>File type</u>
.CFG	Vehicle configuration files
.DBU	Unit database files
.DBS	Axle group database files
.DBP	Product database
.DBL	Load database files
.DBT	Load pattern database files
.DBA	Accessory database files
.DBB	Body database files
.LOK	Look files for units (LX-CAD option only)
.LLK	Look files for loads and accessories

Technical Support

Technical support is available to registered users. If you encounter any problem, please refer to this on-line user's manual before calling technical support. Please note that technical support is limited to the use of the **Load Xpert** software and does not include support for Windows or vehicle dynamics. For technical support on Windows or other topics please refer to their respective manuals. If you encounter any bug in the software, please report it to:

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Graphical Display (main screen)

The main graphical display is the focal point of the software which shows a scaled drawing of the complete vehicle. It contains all commands you need to configure your vehicle and also some additional information about the current vehicle. The software will return to this screen after every command.

Each axle group is identified in the drawing by an ID number located just under the axle group. This ID number has to be used whenever you are working with any specific axle group. These ID numbers will automatically change whenever an axle group is added or removed from a unit. Because of this, you must always refer to the graphical display to know the ID number currently attributed to a specific axle. The load carried by each axle group is displayed underneath the ID number. The axle load is similar to what would be observed on a weigh scale for the loaded and connected vehicle. All axle groups of a unit that are linked together with load equalization are displayed in red.

The loads, accessories and compartments on the vehicle are also displayed on the screen with ID numbers. An ID number is preceded by a letter: **L for load, A for accessory and C for compartment.**

Order of Operations

When configuring a vehicle, you must note that the order of operation can affect the results of various calculations.

When you change the position or the weight of an axle group, the horizontal position of the centre of gravity of the unit is recalculated. This is done to take into consideration the influence of the weight of the axle group. In practice, this means that the horizontal position of the centre of gravity that you enter applies to the current axle disposition and weights. Moving an axle group or changing its weight will affect this value. **Therefore, you should position your axle groups and specify their weights before entering the horizontal position of the centre of gravity.**

When you add an axle group to a unit, the weight of the axle is added to the weight of the unit and the position of the centre of gravity is recalculated. In practice, this means that the weight and the position of the centre of gravity of the unit you enter include all axle groups currently on the unit.

When you replace an axle group, the weight of the unit is changed to reflect the weight difference between the old and the new axle groups. If there is a weight difference, the center of gravity position will also be recalculated.

As a general rule, any value that you enter applies to the current vehicle. Changing parameters such as weight and axle group position will result in the recalculation of the value you have entered.

The bare unit weight and its centre of gravity are not affected (or recalculated) when moving, adding, replacing or deleting axle groups.

Base Unit Concept

Version 7 is introducing the Base Unit concept. This concept applies only to users (like manufacturers) who are making some modification to a unit (e.g.: adding a body or an axle group) and doesn't apply to most carriers.

The Base Unit is the unit as you receive it before starting any work on it. For example, a body shop may receive a chassis from an OEM on which they will install a body, lift axle, tail gate, etc. In this example the Base Unit is the chassis as they received it because this is the unit for which they know (or can measure) the tare weights on each axle. Starting with the Base Unit, you can then install extra axle groups, a body, accessories, etc.

In the software, whenever you enter tare weight and center of gravity information, it must be entered for the Base Unit only which mean without body or axle groups that may have been added to the Base Unit.

Mouse-Activated Commands

Several commands can be activated directly by clicking or double clicking the mouse on certain vehicle components. Most of these commands can be canceled by pressing the *ESC* key.

Action

Corresponding command

Single click on an axle group

[Move](#) the selected axle group

Single click on a load

[Move](#) the selected load

Single click on an accessory

[Move](#) the selected accessory

Single click on a compartment

[Edit product](#) in all compartments of that unit

Single click on a fifth wheel

[Change](#) the fifth wheel offset

Ctrl + single click on a fifth wheel

[Change](#) the pintle hook offset

Single click with the right mouse button on a portion of the vehicle

Toggle between Normal and Enlarge view of the vehicle (zoom normal and zoom in)

Single click with the right mouse button when entering dimension

Allow to enter dimension in ft-in

Double click on an axle group

[Edit the selected axle group](#)

Double click on a load

[Edit the selected load](#)

Double click on an accessory

[Edit the selected accessory](#)

Double click on a compartment

[Edit all compartments of that unit](#)

Double click on a fifth wheel

[Edit the dimensions of the unit](#) on which the fifth wheel is mounted

In addition to these commands, you can also move or delete a group of loads/accessories. You must first enclose inside a window all the loads or accessories that you want to move or delete. To do that, first click and hold the mouse on the upper-left corner on your selection window, then move the mouse (still holding down the mouse button) to the lower-right corner and release the mouse button. At this point, you can move the group of loads/accessories, or delete it by pressing the *DEL* key. You can also cancel the operation by pressing the *ESC* key.

Move Load/Accessory/Axle group/5th wheel/Pintle hook

Loads, accessories, axle groups, fifth wheel and pintle hook can be moved using the mouse. Simply click the mouse directly on the "object" you want to move, drag it to the new position using the mouse or the arrow keys, and click the mouse or press *Enter* to accept the new position. You can press *ESC* at anytime to cancel the operation. For pintle hook only, you need to press the Ctrl key before clicking on the pintle hook.

NOTE - During this operation, the position of the "object" is updated and displayed as you move it. The axle loads are also calculated and shown in real-time.

Side View Button

The Side View Button allows you to display the vehicle's side view.

Top View Button

The Top View Button allows you to display the vehicle's top view.

Dimension View Button

The Dimension View Button allows you to display the vehicle's dimensional view.

Max Payload Button

The Max Payload button allows you to calculate what is the maximum payload that your vehicle can carry without exceeding some limits. These limits are the lesser of the [Desired Loads](#) and the [Weight Ratings](#).

Typically, the Desired Loads are the maximum loads allowed in the jurisdiction where the vehicle will be traveling. The Weight ratings are the ratings specified by the vehicle manufacturer.

NOTE: The Maximum Payload can not be calculated for B-Trains.

Desired Loads Information

The desired load dialog box allows you to enter what are the maximum loads that you want to use for the [Maximum Payload](#) calculation.

Desired loads - Allows you to select between U.S. Bridge Formula or User defined desired loads.

FOR USER DEFINED ONLY:

Max desired GVW - Maximum gross vehicle weight allowed

Maximum payload position restricted to center of body - If yes, the maximum payload must be located in the longitudinal centre of the body (e.g. water level load). Otherwise, maximum payload can be anywhere.

Max desired load on axle group #xx - Maximum weight allowed on this axle group

Weight Ratings Information

The weight ratings dialog box allows you to enter what are the weight ratings of your vehicle. These ratings are used for the [Maximum Payload](#) calculation and the [Payload Analysis](#) calculation.

Gross Vehicle Weight Rating GVWR - The gross vehicle weight rating of the unit as specified by the manufacturer

Gross Axle Weight Rating GAWR for axle group #xx - The gross axle weight rating of the axle group as specified by the manufacturer

Payload Analysis Button

The Payload Analysis button allows you to calculate what is the maximum payload that your vehicle can carry without exceeding its [Weight Ratings](#).

NOTE: The Payload Analysis calculation can only be done for straight trucks

View C.G. Info Button

The View C.G. Info button allows you to directly preview the "Vehicle weight & centre of gravity (C.G.)" printout. This printout contains all the information about your vehicle weight and centre of gravity.

Load Xpert always calculated the longitudinal center of gravity (CGX). **Load Xpert** can optionally calculate the lateral (CGY) and vertical (CGZ) centre of gravity. However, for both the CGY and CGZ to be calculated, you must have entered all the optional CGY and CGZ data for all your components (base unit, body, accessories, loads, etc.). If some of the optional CGY or CGZ information is missing, you will see "N/A" on the printout instead of the calculated centre of gravity.

U.S. Bridge Formula Button

The U.S. Bridge Formula Buttons allows you to directly preview the "U.S. Bridge Formula Check" printout. You can also use it to change the [bridge formula options](#).

Lift Axle Up/Down Button

The Lift Axle Up/Down button allows you to set any lift axle on the vehicle to the up or down position. This can also be done using the [Edit Axle](#) command.

Data Module (database)

Load Xpert features built-in database functions that permit you to store and retrieve items: units (tractor, truck, trailer, pup trailer, dolly, etc.), axle groups, loads, accessories, straight truck bodies and product density.

Having all your standard components in the database will greatly simplify the vehicle creation. You will only need to pick the components from the database instead of entering the dimensions and weights all over again.

The DATA MODULE commands permit you to add, edit, remove components from a database and also to create new database.

[Create New item in Database](#)

[Edit item in Database](#)

[Delete from database](#)

[Import item to Database](#)

[Save item on screen to Database](#)

[Current database in use](#)

[Convert Job-File II Database](#)

Create new item in database

This command allows you to create and save to the database any item (unit, body, accessory, load, product). Simply use the CREATE NEW ITEM IN DATABASE command which will guide you through the creation and saving of the item. This command is available by clicking the DATA MODULE button.

Edit item in database

This command allows you to edit (modify) any item (body, accessory, load, product) saved in the database . Simply use the EDIT ITEM IN DATABASE command which will guide you through the editing and saving of the item. This command is available by clicking the DATA MODULE button.

Delete item from database

This command allows you to remove an item (unit, axle group, body, accessory, load, load pattern or product) from the current database. This command is available by clicking the DATA MODULE button.

CAUTION - This command should be used with care because there is no way of retrieving a deleted item.

Import item to database

This command allows you to import into the **Load Xpert** database any available Load, Accessory or Product information from your current computer system. This is done in two steps.

1. From your current computer system, export the information into a text file.
2. From **Load Xpert**, import the text file.

The text file that is created by your computer system needs to follow a pre-defined format. Each line of the file has to correspond to a record (Load, Accessory or Product) in the database. Two types of text files are supported by the **Load Xpert** Import command: "white-space delimited" or "semicolon delimited". In the "white-space delimited" text file, all parameters (or fields) are separated by one or more white space(s) and the **Name** parameter can not contain white spaces. In the "semicolon delimited" text file, all parameters are separated by semicolons and the **Name** parameter can contain white spaces.

All data will be imported in the currently selected database. This command is available by clicking the DATA MODULE button.

IMPORTANT - You must set the desired unit system in **Load Xpert** before importing. **Load Xpert** will consider that all parameters to be imported are in the current unit system.

TEXT FILE FORMAT FOR LOAD OR ACCESSORY DATABASE

Each line of the text file must have these information in the following order:

White-space delimited:

Name Weight Length Height Width C.G. position side_view_shape top_view_shape

Semicolon delimited:

Name,Weight,Length,Height,Width,C.G. position,side_view_shape,top_view_shape

You can refer to the [Edit Load/Accessory](#) command for details about the requested parameters.

For the "side_view_shape" and the "top_view_shape", enter 0 for a Box shape and 1 for an Oval shape.

The last three parameters are optional. However, you can not omit any parameter and go to the next one i.e. you can omit the "top_view_shape" even if you specify the "side_view_shape", but you can not omit the "side_view_shape" if you want to specify the "top_view_shape".

Example: A paper roll has the following specifications: weight of 2000 (lb), diameter of 35 (in), height of 48 (in), C.G. in the geometrical centre:

White-space delimited: Paper_roll 2000 36 48 36 50 0 1

Semicolon delimited: Paper roll,2000,36,48,36,50,0,1

TEXT FILE FORMAT FOR PRODUCT DATABASE

Each line of the text file must have these information in this order:

White-space delimited:

Name Density

Semicolon delimited:

Name,Density

Save item on screen to database

This command allows you to save in the database any item (unit, axle group, load, accessory, straight truck body or load pattern) that is part of the current vehicle on the screen. Simply use the SAVE ITEM ON SCREEN TO DATABASE command which will guide you through saving the component to the currently selected database. This command is available by clicking the DATA MODULE button.

Current database in use

This command allows you to view what is the currently selected database. You can move the current database to another folder using the MOVE DATABASE button. You can also select a different database by using the SELECT DIFFERENT DATABASE button.

By default, when you install the software for the first time, the current database will be in the same folder as the **Load Xpert** software and most users don't need to change this. Just make sure that the database files along with your complete vehicle files (see [Load Xpert files](#)) are in your backup schedule.

If you want to create an empty database, simply click on the SELECT DIFFERENT DATABASE button and enter the name of a new file. **Load Xpert** will then create a new empty database file.

Convert Job-File II database

This command allows **Load Xpert - JobFile** users to convert the database to the new **Load Xpert - Axle Load Calculation** version 7. Here are the steps to follow:

1. In **Load Xpert - JobFile** version 6.64, click the database button and note down your current database.
2. In **Load Xpert - Axle Load Calculation** 7, click DATA MODULE, CONVERT JOB-FILE II DATABASE and select the file noted in step 1.
3. **Load Xpert** will go through your database and save everything. You will have the option to accept or reject saving of every item in your JobFile database.

This command is only for users of **Load Xpert - JobFile** version 6.64. If you are a Job-File user and don't have the version 6.64, you will need to first download and install the version 6.64 before using this command. Version 6.64 can be downloaded from www.loadxpert.com/jobfile.htm

Select Vehicle (Step 1)

The SELECT VEHICLE button on the toolbar allows you to create new vehicles in three different ways:

1. ASSEMBLE allows you to easily create a new vehicle by assembling existing units (truck, tractor, trailer, etc.) from your database. You will be able to mix and match any tractor, trailer, etc. from the existing units in your database to create a complete vehicle.
2. [OPEN](#) allows you to open an existing (previously saved) vehicle
3. [NEW](#) allows you to create a new assembled vehicle in one step by simply following the wizard instructions

New (Select Vehicle)

The NEW command permits you to easily create a new vehicle in one step. **Load Xpert** will assist you in creating the vehicle by guiding you step-by-step through the process. If you do not complete the process (by pressing the CANCEL button), the vehicle will not be created.

NOTE: You can create a single unit by using the [Data Module](#)

Select a default Vehicle

Use this command to create a new vehicle. Select the type of vehicle you want and **Load Xpert** will create a default vehicle of that type.

NOTE: You can open an existing vehicle with the [Open vehicle file](#) command.

Open Vehicle file

Use this command to open an existing vehicle in a new window. You can open several vehicles simultaneously. Use the Window menu to switch among the multiple vehicles.

File Open dialog box

The following options allow you to specify which file to open:

File Name

Type or select the filename you want to open. This box lists files with the extension you have selected in the List Files of Type box.

List Files of Type

Select the type of file you want to open, *.cfg is the default for vehicle configuration.

Drives

Select the drive in which the file that you want to open is located.

Directories

Select the directory in which the file that you want to open is located.

Close current Vehicle

Use this command to close all windows containing the active vehicle configuration. **Load Xpert** suggests that you save changes to your vehicle before you close it. If you close a vehicle without saving, you lose all changes made since the last time you saved it. Before closing an untitled vehicle, **Load Xpert** displays the [Save Vehicle File As](#) dialog box and suggests that you name and save the vehicle.

Save Vehicle File

Use this command to save the active vehicle configuration to its current name and directory. When you save a vehicle for the first time, **Load Xpert** displays the [Save Vehicle File As](#) dialog box so that you can name your vehicle. If you want to change the name and directory of an existing vehicle before you save it, choose the [Save Vehicle File As](#) command.

Save Vehicle File As

Use this command to save and name the active vehicle configuration. **Load Xpert** displays the [Save Vehicle File As](#) dialog box so that you can name your vehicle.

To save a vehicle with its existing name and directory, use the [Save Vehicle File](#) command.

File Save As dialog box

The following options allow you to specify the name and location of the file you are about to save:

File Name

Type a new filename to save a document with a different name. A filename can contain up to eight characters and an extension of up to three characters. **Load Xpert** adds the extension you specify in the Save File As Type box.

Drives

Select the drive in which you want to store the document.

Directories

Select the directory in which you want to store the document.

Network...

Choose this button to connect to a network location; assign it a new drive letter.

Print Preview

Use this command to display the active document as it would appear when printed. When you choose this command, the main window will be replaced with a print preview window in which one or two pages will be displayed in their printed format. The [Print Preview toolbar](#) offers you options to view either one or two pages at a time; move back and forth through the document; zoom in and out of pages; and initiate a print job.

Print Preview Toolbar

The print preview toolbar offers you the following options:

Print

Brings up the Print dialog box, to start a print job.

Next Page

Preview the next printed page.

Prev Page

Preview the previous printed page.

One Page / Two Page

Preview one or two printed pages at a time.

Zoom In

Takes a closer look at the printed page.

Zoom Out

Takes a larger look at the printed page.

Close

Returns from print preview to the Main Graphical Display.

Print Setup

Use this command to select a printer and a printer connection. This command presents a [Print Setup dialog box](#), where you can specify the printer and its connection.

Print Setup dialog box

The following options allow you to select the destination printer and its connection.

Printer

Select the printer you want to use. Choose the Default Printer; or choose the Specific Printer option and select one of the current installed printers shown in the box. You install printers and configure ports using the Windows Control Panel.

Orientation

Choose Portrait or Landscape.

Paper Size

Select the size of paper that the document is to be printed on.

Paper Source

Some printers offer multiple trays for different paper sources. Specify the tray here.

Options

Displays a dialog box where you can make additional choices about printing, specific to the type of printer you have selected.

Network...

Choose this button to connect to a network location; assign it a new drive letter.

Print

Use this command to print a vehicle. You can select the pages to be printed and enter the text captions that will appear on the printout. This command presents a [Print dialog box](#), where you may specify, the number of copies, the destination printer, and other printer setup options.

NOTE - Best results will be obtained if you setup your printer properly:

- \= Select the highest print quality (or highest DPI).
- \= Set the dithering option accordingly to the selected print quality. This information can be found in the printer setup help. The "*Line Art*" option usually gives good results.
- \= Select the "*Print True Type Fonts as Graphics*" option when possible.

Print dialog box

The following options allow you to specify how the document should be printed:

Printer

This is the active printer and printer connection. Choose the Setup option to change the printer and printer connection.

Setup

Displays a [Print Setup dialog box](#), so that you can select a printer and printer connection.

Copies

Specify the number of copies you want to print for the above page range.

Collate Copies

Prints copies in page number order, instead of separated multiple copies of each page.

Print Quality

Select the quality of the printing. Generally, lower quality printing takes less time to produce.

Print Unit Database

This command allows you to print the list of all units in your current database.

Preview Permit

This command allows you to preview the Permit Application before printing it. Refer to the [Print Preview](#) command for more details. The data printed can be entered using the [Enter Permit Application Data](#) command.

Print Permit

This command allows you to print the Permit Application. The data printed can be entered using the [Enter Permit Application Data](#) command.

Unit System

The UNIT SYSTEM command allows you to change the unit system used in the software. Select the desired unit system in the Unit System dialog box. The units available are:

- \= Length: Inches, meters, centimeters and millimeters
- \= Weight: Pounds and kilograms
- \= Volume: US gal., Imp. gal., Litres, Cubic feet and Cubic meter
- \= Density: Pounds/US gal., Pounds/Imp. gal., Pounds/cubic feet, Pounds/litre, Kg/litre, Kg/cubic meter

The unit system currently in use is displayed in the status bar at the bottom of the *Load Xpert* window.

CAUTION: Changing between unit systems can slightly alter the values you have entered because of round-off errors. For example, if you enter a wheelbase of 130.5 (in) and then switch the unit system to metric, the wheelbase will be converted to 3.315 (m). If you then change back to US units, the wheelbase will be converted to 130.512 (in).

Exit

Use this command to end your *Load Xpert* session. You can also use the Close command on the application control menu. *Load Xpert* prompts you to save documents with unsaved changes.

Add Unit

This command allows you to add a unit to the current vehicle (or create a new vehicle if there is no current vehicle). The unit is added at the end of the current vehicle. *Load Xpert* will not allow you to create any illegal articulation connections. Once you have selected the type of unit you are adding, *Load Xpert* will add a default unit of the selected type and will display the [Edit Unit](#) wizard. Enter the requested information or select an existing unit from the database to complete the operation.

Add Axle Group

This command allows you to add an axle group to the Vehicle. You must first select the unit on which you want to add the axle group. Then *Load Xpert* will add a default axle group and will display the [Edit Axle Group](#) dialog box. Enter the requested information or select an existing axle group from the database to complete the operation.

NOTE - When adding an axle group, the weight of the unit and its overall centre of gravity position are updated.

Add Body

This command allows you add a body to the first unit of the current vehicle. The first unit must be a straight truck with chassis selected as the truck type. *Load Xpert* will display the [Edit Body](#) dialog box. Enter the requested information or select an existing body from the database to complete the operation.

NOTE - When adding a body, the weight of the unit and its overall centre of gravity position are updated.

Add Accessory

NOTE - Accessories can be used to simulate loads that are not part of the payload (e.g.: tool box, lift gate, spare tire, fuel, driver, pumping system, etc.). Accessories are identical to loads except that they will not be computed and displayed as part of the payload in the printout.

This command allows you to add one or more accessories to the current vehicle. You must first select the unit on which you want to add the accessory. Then **Load Xpert** will add a default accessory and will display the [Edit Load/Accessory](#) dialog box. Enter the requested information or select an existing accessory from the database to complete the operation.

When the operation is completed, the accessory will be displayed on the unit with an ID number (e.g. A1) inside its bounding box. Whenever you want to access an accessory, you have to use its ID number. There is no limit on the number of accessories that you can add on a unit.

Copy Accessory

This command allows you to add new accessories by copying one or more existing accessories. This is useful when adding to a vehicle several similar accessories. You must first select the unit on which you want to copy the accessories. The software will then ask you which accessories you want to copy, how many copies you want to add and the longitudinal distance between each copy. All accessories will then be copied automatically on the current unit starting from the original accessory(ies) and going towards the rear of the unit.

NOTE - You cannot copy a accessory from one unit to another. To do that, you must save the accessory in the [load database](#) and then add it from the database to the other unit.

Add Load

This command allows you to add one or more loads to the current vehicle. You must first select the unit on which you want to add the load. Then **Load Xpert** will add a default load and will display the [Edit Load/Accessory](#) dialog box. Enter the requested information or select an existing load from the database to complete the operation.

When the operation is completed, the load will be displayed on the unit with an ID number (e.g. L1) inside its bounding box. Whenever you want to access a load, you have to use its ID number. There is no limit on the number of loads that you can add on a unit.

Copy Load

This command allows you to add new loads by copying one or more existing loads. This is useful when loading a vehicle with several similar loads (e.g.: palettes). You must first select the unit on which you want to copy the loads. The software will then ask you which loads you want to copy, how many copies you want to add and the longitudinal distance between each copy. All loads will then be copied automatically on the current unit starting from the original load(s) and going towards the rear of the unit.

NOTE - You cannot copy a load from one unit to another. To do that, you must save the load in the [load database](#) and then add it from the database to the other unit.

Add Load Pattern

This command allows you to add a load pattern (group of loads) from the load pattern database to the current vehicle. You must first select the unit on which you want to add the load pattern. Then **Load Xpert** will add the load pattern to the vehicle. Finally you must [set the load pattern position](#) using the mouse or the arrow keys. Click the mouse or press *Enter* to complete the operation.

When the operation is completed, all loads of the load pattern will be displayed on the unit and identified with ID numbers (e.g. L1) inside their bounding boxes. Whenever you want to access a load, you have to use its ID number. There is no limit on the number of loads that you can add on a unit.

Add Compartment

This command allows you to add one or more compartments to the current vehicle. You must first select the unit on which you want to add the compartment and the number of compartments to add. Then **Load Xpert** will add default compartments and display the [Edit Compartment](#) dialog box. Enter the requested information to complete the operation.

When the operation is completed, compartments will be drawn on the unit along with compartment ID numbers (e.g. C1) inside their bounding boxes. Whenever you want to access a compartment, you have to use its ID number. There is no limit on the number of compartments that you can add on a unit.

NOTE - Compartments can be added only to straight trucks, semitrailer and pup units.

NOTE - A clean bore tank is considered to have one big compartment that has the dimension of the full tank.

Copy Compartment

This command allows you to add new compartments by copying an existing one. This is useful when a vehicle has several identical compartments. You must first select the unit on which you want to copy the compartment. The software will then ask you which compartment you want to copy, how many copies you want to add and the longitudinal distance between each copy. The compartment will then be copied automatically on the current unit starting from the original compartment and going towards the rear of the unit.

NOTE - You cannot copy a compartment from one unit to another.

Add Product in Compartment

This command allows you to fill each compartment with a different product. You must first select the unit on which you have compartments. **Load Xpert** will then display the [Edit Product](#) dialog box. Enter the requested information to complete the operation.

Edit Unit

This command allows you to edit all aspect of a unit with one simple command. The wizard-like command will go through all aspects of the unit (dimensions, axle groups, tare weights, etc.). You must select first which unit you want to edit and then the software will start the wizard.

This command can be [mouse activated](#).

Tractor Information

REQUIRED DATA

Tractor ID - A unique name describing the tractor that will be used for all database operations. This field also displays all tractors available from the currently loaded unit database. Just click on the desired tractor and it will be retrieved from the [database](#).

Wheelbase WB- The distance from the geometric centre of the steering axle to the geometric centre of the drive axle of the tractor.

Fifth wheel offset FO - Longitudinal distance between the geometrical centre of the drive axle group and the rotation point of the fifth wheel. **This value is positive when the fifth wheel rotation point is ahead of the centre of the drive axle group.**

OPTIONAL DATA

Bumper to axle BA - The distance from the front of the tractor bumper to the centre of the first wheel of the steer axle.

Cab length BBC - The distance from the front of the tractor bumper to the back of the cab. This distance does not include the sleeper, if present.

Cab type - Describes how the cab should be displayed. Does not influence the weight distribution.

Sleeper present? - Check this box to add a sleeper cab to the tractor. Adding a sleeper does not influence the weight distribution.

Length SL - The distance from the back of the cab to the back of the sleeper.

Unit Optional Data

This information will be used only when printing the Permit Application.

Make - The brand name of the unit.

Model - The model name of the unit.

Year - The year the unit was manufactured.

VIN# - The vehicle Identification or serial number of the unit.

License plate number - The license plate number of the unit.

Plate State/Province - The state or province where the license plate of the unit was issued.

Registered Weights - This button allows you to enter the registered weights of your power unit for each state and province.

Straight Truck Information

REQUIRED DATA

Truck ID - A unique name describing the truck that will be used for all database operations. This field also displays all trucks available from the currently loaded unit database. Just click on the desired truck and it will be retrieved from the [database](#).

Wheelbase WB- The distance from the geometric centre of the steering axle to the geometric centre of the drive axle of the truck.

Distance CA - The distance from the back of the cab to the geometrical centre of the drive axle.

Body length BL - Length of the body. For units with Tanker look, BL refers to the length of the tank without the heads.

Distance CB - The distance from the back of the cab to the front of the body. For units with Tanker look, CB is measured from the back of the cab to the front of the tank without the head.

Front Bumper to center of Steer axle BA - The distance from the front of the tractor bumper to the centre of the first wheel of the steer axle.

Hitch distance from center of Drive axle HL - The longitudinal distance between the pintle hook hitch point on the truck and the center of the Drive axle.

Fifth wheel offset FO - Longitudinal distance between the geometrical centre of the trailing axle and the rotation point of the fifth wheel. **This value is positive when the fifth wheel rotation point is ahead of the centre of the trailing axle.**

Truck Type - Describes how the body should be displayed. Does not influence the weight distribution.

OPTIONAL DATA

Rear bumper length B - Distance from the rear end of the body to the rear end of the bumper. For units with Tanker look, B is measured from the rear end of the bumper to the rear end of the tank without the head.

Body height BH - Height of the body measured from bottom to top of the body (not from the ground).

Body width BW - Width of the body. Used only for the Top view operations.

Cab type - Describes the type of cab for displaying. Does not influence the weight distribution.

Sleeper present? - Check this box to add a sleeper cab to the tractor. Adding a sleeper does not influence the weight distribution.

Length SL - The distance from the back of the cab to the back of the sleeper.

Semitrailer Information

REQUIRED DATA

Trailer ID - A unique name describing the trailer that will be used for all database operations. This field also displays all trailers available from the currently loaded unit database. Just click on the desired trailer and it will be retrieved from the [database](#).

Length L - Length of the trailer body. For units with Tanker look, L refers to the length of the tank without the heads.

Kingpin setback SB - Distance from the front of the trailer body to the kingpin. For units with Tanker look, SB is measured from the kingpin to the front of the tank without the head. **This value is positive when the kingpin is behind the front of the trailer body.**

Fifth wheel offset FO - Longitudinal distance between the geometrical centre of the trailing axle and the rotation point of the fifth wheel. **This value is positive when the fifth wheel rotation point is ahead of the centre of the trailing axle.**

Pintle hook from body rear end - The longitudinal distance between the pintle hook hitch point on the semitrailer and the rear end of the body. For units with Tanker look, this is measured from the pintle hook hitch point to the back of the tank without the head. **This value is positive when the pintle hook hitch point is forward of the body rear end.**

Body look - Describes how the body should be drawn. Does not influence the weight distribution.

OPTIONAL DATA

Height H - Height of the trailer body measured from bottom to top of the body (not from the ground).

Width - Width of the trailer body. Used only for the Top view operations.

Top of bed floor height from ground - Height at which the top of the floor is from the ground. This is the reference point to calculate the height from the ground of loads and accessories.

Bumper length B - Distance from the rear end of the body to the rear end of the bumper. For units with Tanker look, B is measured from the rear end of the bumper to the rear end of the tank without the head.

Display landing gear? - Check this box to add a landing gear to the trailer. Does not influence the weight distribution.

Position LG - The distance from the front of the trailer to the landing gear. For units with Tanker look, LG is measured from the landing gear to the front of the tank without the head

Pup Trailer Information

Pup ID - A unique name describing the pup trailer that will be used for all database operations. This field also displays all pup trailers available from the currently loaded unit database. Just click on the desired pup trailer and it will be retrieved from the [database](#).

Length L - Length of the trailer body. For units with Tanker look, L refers to the length of the tank without the heads.

Drawbar length DL - Distance from the drawbar eye to the front of the pup trailer body. For units with Tanker look, DL is measured from the pintle hook to the front of the tank without the head.

Fifth wheel offset FO - Longitudinal distance between the geometrical centre of the last axle group and the rotation point of the fifth wheel. **This value is positive when the fifth wheel rotation point is forward of the centre of the drive axle group.**

Pintle hook from body rear end - The longitudinal distance between the pintle hook hitch point on the pup and the rear end of the body. For units with Tanker look, this is measured from the pintle hook hitch point to the back of the tank without the head. **This value is positive when the pintle hook hitch point is forward of the body rear end.**

Body look - Describes how the body should be drawn. Does not influence the weight distribution.

Dolly Information

Dolly ID - A unique name describing the dolly that will be used for all database operations. This field also displays all dollies which are available from the currently loaded unit database. Just click on the desired dolly and it will be retrieved from the [database](#).

Dolly total weight - Total weight of the dolly.

Distance from front hitch to fifth wheel / center of axle group D - Distance from the front hitch to the fifth wheel of the dolly.

Drop Deck and Jeep Dolly Information

Trailer ID - A unique name describing the trailer that will be used for all database operations. This field also displays all trailers available from the currently loaded unit database. Just click on the desired trailer and it will be retrieved from the [database](#).

Length L - Length of the trailer. The length does not include the booster, if present.

Kingpin setback SB - Distance from the front of the trailer to the kingpin. **This value is positive when the kingpin is behind the front of the trailer body.**

Top of deck height - Height of lower deck section (on which load is resting) from the ground.

Distance A - Length of the front upper deck.

Distance B - Length of the segment that connects the front upper deck to the lower main deck.

Distance C - Length of the lower main deck.

Distance D - Length of the segment that connects the lower main deck to the rear upper deck.

Trailer width - Width of the trailer. Used only for the Top view operations.

Booster Information

Distance from rear end of trailer to rear end of booster L - This distance does not include any portion of the booster that would connect under the double drop deck trailer rear frame.

Axle group position from rear end of trailer D - Longitudinal distance between the geometrical centre of the booster axle group and the rear end of the double drop deck trailer.

Axle group type - The type of the axle group on the booster.

Axle spread S - The longitudinal distance from the first to last axle centres of the booster axle group.

Axle group weight - The total weight of the axle group. This usually includes the weight of the axle itself, the tires, the springs, and the sub-frame assembly. This weight will not be distributed to other axles. It will be completely supported by the axle group itself.

Type of booster - There are three different types of booster available: Common air, Mechanical and Air regulated. The difference between these boosters is in the mechanism used to distribute the load between the trailer and the booster. 1) Common air: the booster axle is load equalized by use of a common air line which is connected to one or more axle groups of the trailer. 2) Mechanical: the booster axle is load equalized through a load equalization beam with one axle group of the trailer. The position of the trunnion of the load equalization beam will dictate the ratio of load shared between the two load equalized axle groups. 3) Air regulated: the load carried by the booster axle is set manually by the operator by adjusting the pressure in the air suspension.

Position of trunnion from mid point of booster axle group A- Distance between the position of the trunnion of the load equalization beam and the geometrical centre of the booster axle. This value is positive when the trunnion is forward of the centre of the booster axle.

Axle load setting - The axle load (at the ground) that an air regulated booster axle is set to support. This setting is usually done through a pressure control valve.

Bridge Information

The term bridge has been adopted in the *Load Xpert* software to define a unit without any axle that is supported at the front and at the rear by other units through articulations. Double gooseneck trailers are an example of a bridge.

You can simulate a long load that rests on the tractor and on a rear dolly (bridge dolly) using a bridge. To do this, you must create a fictitious bridge unit having a weight of one (1) pound and the same length as the load you are carrying. You can then add the load on the bridge unit.

Bridge ID - A unique name describing the bridge that will be used for all database operations. This field also displays all bridges which are available from the currently loaded unit database. Just click on the desired bridge and it will be retrieved from the [database](#).

Length L - Length of the bridge.

Kingpin setback SB - Distance from the front of the bridge to the kingpin (or articulation). **This value is positive when the kingpin is behind the front of the bridge.**

Tare Weight - Total weight of the empty bridge unit.

Centre of gravity position - Longitudinal distance between the front kingpin and the horizontal position of the centre of gravity of the unit. This value must be given for an empty unit. Loads and accessories must be excluded.

Rear articulation position AP - Distance from the rear of the bridge to the rear articulation. **This value is positive when the articulation is ahead of the rear of the bridge.**

Distance A - Length of the front upper deck. Used only with double gooseneck look.

Distance B - Length of the segment that connects the front upper deck to the lower main deck. Used only with double gooseneck look.

Distance C - Length of the lower main deck. Used only with double gooseneck look.

Distance D - Length of the segment that connects the lower main deck to the rear upper deck. Used only with double gooseneck look.

Top of deck height - Height of lower deck section (on which load is resting) from the ground.

Bridge width - Width of the bridge. Used only for the Top view operations.

Look - Describes how the bridge should be drawn. Does not influence the weight distribution.

Bridge Dolly Information

A bridge dolly is a dolly unit used in the *Heavy Haul* version and can only be added at the rear of a bridge unit.

Dolly ID - A unique name describing the dolly that will be used for all database operations. This field also displays all dollies which are available from the currently loaded unit database. Just click on the desired dolly and it will be retrieved from the [database](#).

Length L - Length of the dolly frame.

Articulation position AP - Distance from the rear-end of the dolly frame to the articulation. **This value is positive when the articulation is forward of the rear-end of the dolly frame.**

Width - Width of the bridge dolly. Used only for the Top view operations.

Crane Information

VERY IMPORTANT - The software does not perform any axle load calculation on cranes. Only the weigh scale readings that you have entered are displayed for your convenience.

Crane ID - A unique name describing the crane that will be used for all database operations. This field also displays all cranes available from the currently loaded unit database. Just click on the desired crane and it will be retrieved from the [database](#).

Length L - Length of the crane from the front bumper to rear bumper.

Bumper to axle BA - The distance from the front of the crane bumper to the centre of the first wheel of the first steer axle.

Wheelbase WB - The distance from the geometric centre of the steering axle to the geometric centre of the first drive axle of the crane.

Cab length BBC - The distance from the front of the crane bumper to the back of the driving cab. This distance does not include the engine cabin.

Distance SL - The distance from the back of the driving cab to the back of engine cabin.

Distance A - The distance from the front of the boom cab to the front of the boom.

Distance B - Length of the boom.

Distance C - The distance from the front of the boom cab to its rear.

Distance D - The distance from the front of the boom cab to the back bumper of the crane.

Width - Width of the crane.

Boom orientation - Describes how the boom is oriented, either forward or backward.

Edit Body

REQUIRED DATA

Body name - A unique name describing the body that will be used for all database operations. This field also displays available bodies in the currently loaded body database. Just click on the desired body and it will be retrieved from the [database](#).

Body weight - Total weight of the body.

Body length BL - Length of the body. For units with Tanker look, BL refers to the length of the tank without the heads.

Cab to Body CB - The distance from the back of the cab to the front of the body. For units with Tanker look, CB is measured from the back of the cab to the front of the tank without the head.

Horizontal centre of gravity position in percentage of Body length (%) - Position of the centre of mass of the body from the front of the body in percentage of the body length.

Body centre of gravity position (%) = 100 (body centre of mass position) / (body length)

Body width - Width of the body. Used only for the Top view operations.

Body height BH - Height of the body measured from bottom to top of the body (not from the ground).

OPTIONAL DATA CENTRE OF GRAVITY INFO

Top of bed floor height from ground BFH - Height of body floor measured from the ground

Center of gravity CG-Z from to of bed floor - Center of gravity height of body measured above bed floor. Positive when above bed floor

Center of gravity CG-Y from center line of Body - Center of gravity lateral position measured from center line of Body. Positive towards right of vehicle

Edit Hitch Load

This function allows you to enter a weight that is applied to the hitch of the straight truck. The hitch load is used to simulate the weight that would be transferred to the truck by a fictitious trailer.

The hitch load can only be used with straight trucks without any additional unit. If you add an additional unit to the straight truck (e.g.: trailer, dolly, etc.), the hitch load that you have entered will be ignored and reset back to 0.

Hitch Load - Amount of weight transferred to the truck by a fictitious trailer.

Edit Axle Group

Some of the data below may be editable only when using the [Edit Unit](#) command or for axle groups that were added to the [Base Unit](#).

This command allows you to define axle groups on the current vehicle. You must select the axle group that you want to edit and the software will display the Axle Group Information dialog box.

This command can be [mouse activated](#).

REQUIRED DATA

Axle group name - A unique name describing the axle group that will be used for all database operations. This field also displays all axle groups of the selected type available from the currently loaded unit database. Just click on the desired axle group and it will be retrieved from the [database](#).

Axle group type - The type of axle group.

Axle spread S - The longitudinal distance from the first to last axle centres of an axle group.

Axle group weight - The total weight of the axle group. This usually includes the weight of the axle itself, the tires, the springs, and the sub-frame assembly. This weight will not be distributed to other axles. It will be completely supported by the axle group itself. **This value is required only if you have used the Bare Weight option for the unit or if you are planning to change the position of this axle group (with the mouse or with the Edit Axle Group command).**

Axle group position D - Longitudinal distance between the geometrical centre of an axle group and the front axle or the kingpin.

Load setting - The axle load (at the ground) that a liftable axle is set to support. On a vehicle, this setting is usually done through a pressure control valve.

Axle lifted - Check this box if you want a liftable axle to be lifted. When lifted, the weight of the liftable axle group is redistributed to other axle groups.

OPTIONAL DATA

This information will be used only when printing the Permit Application.

Tires - Number of tires that are mounted on each axle of the axle group. Select *Dual* when there are two sets of tires side by side on each side of an axle. Select *Single* when there is only one tire on each side of an axle. Select *Quad* when there are four sets of tires side by side on each side of an axle. Usually, the steer axle group has *Single* tires and other axles have *Dual* tires.

Tire width - The width of one tire on this axle group.

Tire rating - The rated capacity of the tire as indicated on the side of the tire.

Tire size - The tire size as indicated on the side of the tire.

Axle width - The width of the axle.

Axle rating - The smallest load rating of all axle group components: axle, brakes, suspension, etc.

Edit Load Equalization

This command allows you to link two or more axle groups together for the purpose of load equalization. The load carried by all load equalized axle groups will be equally distributed between all individual axles. You can not have more than one independent load equalization link in a given unit. You must first select the unit on which you want to add load equalization. The software will display the Load Equalization dialog box. Just check the boxes corresponding to axle groups that should be load equalized.

Edit Load / Accessory

REQUIRED DATA

This command allows you to edit some or all of the load / accessory parameters. You must first select the unit on which the load / accessory you want to edit is located. Then you select which load / accessory you want to edit and the software will display the Load / Accessory Information dialog box.

This command can be [mouse activated](#).

Name - A unique name describing the load / accessory that will be used for all database operations. This field also displays all loads / accessories available from the currently loaded unit database. Just click on the desired load / accessory and it will be retrieved from the [database](#).

Weight - The weight of the load / accessory.

Length L - Length of the load / accessory (for loads / accessories with circular shape in the side view or the top view, L refers to the diameter).

Width W - Width of the load / accessory (for loads / accessories with circular shape in the top view, W refers to the diameter). Used only for Top view operations.

Height H - Height of the load / accessory (for loads / accessories with circular shape in the side view, H refers to the diameter).

Position X - For accessories: distance from the front of the accessory to the back of the cab (tractors and trucks) or to the front of the unit (semitrailer, pup trailer, etc.). For loads: distance from the front of the load to the back of the cab (tractors) or to the front of the unit body (trucks, semitrailers, pup trailers, etc.).

Position Y - Distance from the centre of the load / accessory to the centerline of the vehicle. Positive when load / accessory is on the right side of the vehicle. Use only for Top view operations.

Position Z - For accessories: distance from the bottom of the accessory to the top of the frame (tractors and trucks) or to the top of the bed floor (semitrailers and pup trailers, etc.). For loads: distance from the bottom of the load to the top of the frame (tractors) or to the top of the bed floor (trucks, semitrailers and pup trailers, etc.).

CG-X - Position of the centre of mass of the load / accessory from the front of the load / accessory in percentage of the load / accessory length.

$$\text{Load / accessory centre of gravity position (\%)} = 100 (\text{accessory centre of mass position}) / (\text{load / accessory length})$$

Label for printout - This label will be displayed on the load/accessory instead of the regular legend (L1, L2,... or A1, A2, ...) when printed out.

Shape - Shape of the load / accessory.

OPTIONAL DATA

CG-Y - Position of the centre of mass of the load / accessory from the left side of the load / accessory in percentage of the load / accessory width.

$$\text{Load / accessory centre of gravity position (\%)} = 100 (\text{accessory centre of mass position}) / (\text{load / accessory width})$$

CG-Z - Position of the centre of mass of the load / accessory from the bottom of the load / accessory in percentage of the load / accessory height.

$$\text{Load / accessory centre of gravity position (\%)} = 100 (\text{accessory centre of mass position}) / (\text{load / accessory height})$$

Make - The brand name of the load.

Model - The model number of the load.

Serial number - The serial number of the load.

Edit Compartment

This command can be [mouse activated](#).

This command allows you to define compartments on a unit. You must first select the unit on which the compartment you want to edit is located. Then the software will display the Compartment Information dialog box.

Length L - Compartment length (Length excludes the heads on either end).

Distance X - Distance between the compartment you are editing and the previous compartments, measured without the heads. In the case of the first compartment, the distance is measured from the front of the compartment (without the head) to the front of the tank (without the head).

Capacity - Maximum compartment volume.

Edit Product in Compartment

This command can be [mouse activated](#).

This command allows you to define the product in each compartment of a unit. You must first select the unit on which the product you want to edit is located. Then the software will display the Product Information dialog box.

Product ID - Name or ID of product. A product can be selected from the [product database](#).

Density - Density of the product in the compartment.

Volume - Volume of product carried in that compartment. The volume must be equal to or lower than the compartment capacity.

CGX position - Position of the centre of gravity of the compartment product from the front of the compartment in percentage of the compartment length.

Compartment c.g. position (%) = 100 (compartment centre of mass position) / (compartment length)

CGZ position - Height of the centre of gravity of the compartment product *measured from the ground*.

Edit Unit Weight & C.G. (centre of gravity)

IMPORTANT - *Load Xpert* can properly calculate the weight distribution of your vehicle only if you provide accurate weight and centre of gravity position of each unit. To facilitate your job, *Load Xpert* provides several methods to input these data.

This command allows you to define the weight and the centre of gravity of your empty units. Four different methods for defining the weight and centre of gravity position are available:

1. [Tare weights of empty and connected Vehicle](#)
2. [Tare weights of Base Unit](#)
3. [Bare weight and centre of gravity](#)
4. [Total weight and centre of gravity](#)

Tare Weights of Empty and Connected Vehicle Information

This option is used to enter weight information of all units of your vehicle in one step. You need to drive your vehicle on a weigh scale and measure weigh scale readings of each individual axle groups. You will also need to know the tare weight of each unit of your vehicle except for the last (rearmost) one. From these values, *Load Xpert* will calculate the weight and longitudinal centre of gravity of each unit. This is the most appropriate option for a vehicle that can be weighed on a weigh scale.

This option doesn't allow you to enter the CGY and CGZ information.

NOTE - During the weighing operation, all liftable axles must be lifted and the vehicle must be empty.

NOTE - All axle loads will be recalculated automatically by the software when you modify the vehicle configuration (e.g.: moving, replacing, adding or deleting axle groups).

BOOSTER NOTE - In the case of a booster axle which is load equalized with the trailer axle, the software will automatically adjust (if necessary) the weight of the axle groups in order to satisfy the weigh scale readings that you have entered.

Empty weight of unit #xx - Tare weight of the unit.

Tare weight on axle group #xx - Load carried by this axle group as indicated by the weigh scale.

Tare Weights of Base Unit Information

REQUIRED DATA

This option is used to enter weight information of your [Base Unit](#). You need to drive your empty and unconnected unit on a weigh scale and measure the weigh scale readings of each individual axle groups. You may also need to know the tare weight of the empty unit. From these values, **Load Xpert** will calculate the weight and longitudinal centre of gravity of each unit. This option is very useful for a vehicle that can be weighed on a weigh scale.

NOTE - During the weighing operation, all liftable axles must be lifted and the vehicle must be empty.

CAUTION - Never measure axle weight of a unit standing on its landing gear. This will give wrong results.

NOTE - Weigh scale readings will be recalculated automatically by the software when you modify the vehicle configuration (e.g.: moving, replacing, adding or deleting axle groups).

BOOSTER NOTE - In the case of a booster axle which is load equalized with the trailer axle, the software will automatically adjust (if necessary) the weight of the axle groups in order to satisfy the weigh scale readings that you have entered.

Empty weight of unit #xx - Tare weight of the unit.

Tare weight on axle group #xx - Load carried by this axle group as indicated by the weigh scale.

Optional C.G. Info

Top of frame height from ground FH - For straight trucks only, height of the top surface of the frame measured from the ground

Bed floor height from ground BFH - Height of the floor loading surface measured from the ground

Center of gravity height from ground CG-Z - Height of the center of gravity of the base unit measured from the ground

C.G position from center line of vehicle CG-Y - Lateral position of the center of gravity of the base unit measured from the center line of the vehicle. Positive towards the right of the vehicle.

Unit Bare Weight and C.G. Information

This option is used to enter the weight and centre of gravity of the bare unit. The bare unit is defined as the unit without any axle groups, accessories, loads or compartments. This option is very useful for trailer units when the weight and centre of gravity of the body alone are known. Other concentrated loads such as kingpin plate, doors, etc., on the units can be simulated using [accessories](#). **Load Xpert** will then calculate the combined centre of gravity of the bare unit, accessories, loads, compartments and axle groups.

NOTE - Bare weight and its C.G. are not affected by some vehicle modification (e.g. moving, replacing, adding or deleting axle groups).

Unit bare weight - Weight of the bare empty unit. The unit weight does not include weight of axle groups, loads, accessories or compartments.

Horizontal position of centre of gravity X - Longitudinal distance between the front axle or kingpin and the horizontal position of the centre of gravity of the unit. This value must be given for a bare empty unit without including axle groups, loads, accessories or compartments on the unit.

Unit Total Weight and C.G. Information

This option is used when the weight and centre of gravity of the unit including all axle groups (but not including any load, accessory or compartment) are known.

NOTE - Total weight and its C.G. will be recalculated automatically by the software when vehicle modifications are made (e.g.: moving, replacing, adding or deleting axle groups).

Unit total weight - Weight of the empty unit. The unit weight includes weight of all axle groups mounted on the unit but excludes loads, accessories and compartments.

Position of unit centre of gravity X - Longitudinal distance between the front axle or kingpin and the horizontal position of the centre of gravity of the unit. This value must be given for an empty unit with all axle groups mounted on the unit. However, loads, accessories and compartments must be excluded.

Edit Print Captions

This command allows you to enter the print captions that will appear on the print preview and the printouts. The captions are also saved with the assembled vehicle (cfg file).

Edit Custom Look

The CUSTOM LOOK command can be used in conjunction with the **LX-CAD** software to modify standard looks of vehicles, loads and accessories in **Load Xpert**. The CUSTOM LOOK command will permit you to select the look file that contains the new appearance of the unit, load or accessory. Once selected, **Load Xpert** will display the new look for that particular unit, load or accessory, replacing the standard look. The RESET LOOK command is used to restore the standard look.

For trailers, **Load Xpert** will be able to proportionally stretch horizontal dimensions of the original look file to fit any trailer dimensions. However, tractors, straight trucks and pup trailers cannot be stretched. This means that the new

look must be originally drawn (in **LX-CAD**) to the exact dimensions as the unit whose look you intend to modify. Failure to do that will result in mismatched dimensional lines on the printout and disproportional display of the unit.

For Loads and accessories, **Load Xpert** will scale the look to fit the length of the load or accessory. The height of the load or accessory will be automatically adjusted to fit the aspect ratio of the look.

For more information, consult the **LX-CAD** user manual.

Edit Reset Look

The RESET LOOK command is used to reset the look of a unit, load or accessory to the standard **Load Xpert** look.

Edit Setup for AutoLoad and AutoFill

IMPORTANT - You need the optional **AutoFill** or **AutoLoad** software to use this command.

The SETUP FOR AUTOFILL/AUTOLOAD command is used to provide information on slideable fifth wheel, slideable axle groups and vehicle interior dimensions for use in **AutoFill** or **AutoLoad** payload maximization software. Using this command, you can define the minimum and maximum positions of slideable fifth wheel and slideable axle groups, their corresponding position increments and the vehicle interior dimensions. These values are used by **AutoFill** and **AutoLoad** during payload optimization. **If you do not use the command to enter the requested information, AutoFill and AutoLoad will not be able to optimize fifth wheel and axle groups positions.**

Edit Undo

The UNDO command permits you to reverse the last change you have made to a vehicle.

NOTE - You can undo only the last change that you have made.

Edit Redo

The REDO command permits you to redo the last change that was undone using the UNDO command.

NOTE - You can redo only the last change undone with UNDO.

Del Unit

The DEL UNIT command lets you delete a unit from the vehicle. If the unit you are deleting is not in the database and has never been saved in a configuration file, it will be definitively lost.

Del Axle Group

The DEL AXLE GROUP command is used to delete an axle from the vehicle. You just have to select the axle to be deleted by specifying its ID number. When you are deleting an axle, the weight and the overall centre of gravity position are updated.

If you delete an axle group that was part of the [Base Unit](#), the software will ask you to verify the tare weight of the new base unit.

Del Body

The DEL BODY command allows you to delete the body from a straight truck.

Del Load / Accessory / Compartment

This command can be used to delete loads, accessories or compartments from the vehicle. You just have to specify the ID numbers of the loads, accessories or compartments you want to delete.

The DEL LOAD and DEL ACCESSORIES commands can be [mouse activated](#).

U.S. Interstate Bridge Formula Options

This command allows you to set the options that will be used throughout the software when doing U.S. bridge formula checks.

U.S. Interstate Bridge Formula Check

IMPORTANT - This command is based on information contained in the publication #FHWA-MC-94-007 of the U.S. Federal Highway Administration.

This command is used to verify if the current vehicle complies with the U.S. Bridge formula for Interstate Highway. If your vehicle does not comply with the bridge formula, the software will display all bridge violations.

NOTE - This command will also be able to verify vehicles with gross weight exceeding 80 000 (lb) - allowed in certain states.

Enter Permit Printout Data

This command allows you to easily enter step-by-step all extra information needed for the Permit Application Request.

Company Information

The COMPANY INFORMATION dialog box allows you to enter the name, address, phone number, etc. of your company. You can also enter your State DOT's account numbers by pressing the ENTER STATE DOT ACCOUNT # button. All this information will be used for the Permit Request Printout. You can also store this information in the software database. Just press the ADD TO DATABASE button and the information on the screen will be saved in the database. To remove from the database, select the entry you want to delete and press the REMOVE FROM DATABASE button.

Account Numbers Information

The ACCOUNT NUMBERS dialog box allows you to enter your account numbers for each state and province. This information will be stored along with the Company Information when you press the ADD TO DATABASE button in the Company information dialog box.

Account / Insurance Information

The ACCOUNT / INSURANCE dialog box permits you to enter:

- 1) Information regarding the permit company or DOT where you are applying for a permit.
- 2) Insurance information.

This information will appear on the Permit Request Printout. You can also store this information in the software database. Just press the ADD TO DATABASE button and the information on the screen will be saved in the database. To remove from the database, select the entry you want to delete and press the REMOVE FROM DATABASE button.

Credit Card Information

The CREDIT CARD INFORMATION dialog box allows you to enter your credit card information that will appear on the Permit Request Printout.

Overall Information

The OVERALL INFORMATION dialog box allows you to enter vehicle's overall length, height, width and weight and payload overhang distance. This information will appear on the Permit Request Printout. Instead of you entering manually each one of these info, you may alternatively use the values automatically available from **Load Xpert** by pressing the COPY LOAD XPERT VALUES button.

Axle Load Requested for Permit Information

The Axle Load Requested dialog box allows you to enter the axle loads that you are requesting for the permit. If you wish to use the axle loads calculated by **Load Xpert**, press the COPY LOAD XPERT VALUES button.

Routes Information

The ROUTES dialog box permits you to enter the routing information that will appear on the Permit Application Request. You can store a trip in the database by pressing the ADD TO DATABASE button. You can delete a trip in the database by selecting it and then pressing the REMOVE FROM DATABASE button.

Select Language

This command allows you to select a different language to be used in the software. When you select a different language, you need to exit and restart the software before it takes effect.

Load Xpert Options

This command allows you to set different operating options for *Load Xpert*.

Display axle on top view - If you check this, the axle and tires will be visible from the top view. Otherwise, you will not see the axle groups on the top view

Move hitch with drive axle for Straight trucks - If you check this, the distance between the hitch and the drive axle will stay the same when dragging the drive axle with the mouse. Otherwise, the hitch position will not change.

Draw normal Compartment on Unit with LX-CAD custom look - If you check this, the appearance of the compartment on unit with a custom *LX-CAD* look will be the same as on regular unit. Otherwise, the compartment are draw smaller at the top of the tank to leave space a the bottom of the tank for the custom look.

New Window

Use this command to open a new window with the same contents as the active window. You can open multiple windows to display different views of the vehicle at the same time. If you change the contents in one window, all other windows containing the same vehicle will reflect those changes. When you open a new window, it becomes the active window and is displayed on top of all other opened windows.

NOTE - To see both views of the vehicle, follow these instructions:

- \= Use the New Window command from the Window menu to open a new window of your vehicle.
- \= Use the [Tile](#) command from the Window menu to place both windows properly.
- \= Click on the top window to make it current.
- \= Use the [Top View](#) command to switch the current window to a Top view.

Cascade

Use this command to arrange multiple opened windows in an overlapped fashion.

Title

Use this command to arrange multiple opened windows in a non-overlapped fashion.

Glossary

This section contains description on general terms used in the **Load Xpert** software and user's manual.

A-Dolly - A converter dolly that is towed from a single hitch on the centre line of the towing unit.

A-Train - A combination vehicle consisting of a tractor and semitrailer coupled to one or two full trailers which are fitted with a single drawbar. Most commonly, the full trailers are comprised of semitrailers coupled to A-dolly converters.

Articulated Vehicle - A combination vehicle with one or more points of articulation.

Axle - An assembly of two or more wheels whose centres are in one vertical plane and which are transmitting weight to the road.

Axle group - Any number of axles on a tractor, semitrailer or full trailer that have their consecutive centres equally spaced and employ a means of axle load equalization (see also Single, Liftable, Belly, Tandem and Tridem axles)

Axle Spacing - The longitudinal distance between any two consecutive axle centres of an axle group.

Axle Spread - The longitudinal distance from first to last axle centres of an axle group.

B-Dolly - A rigid framed converter dolly with two drawbars that is towed from two hitches placed in a horizontal transverse line on the towing trailer. The axle on a B-dolly incorporates a self-steering mechanism. Two trailers connected together with a B-dolly are referred to as a C-Train.

B-Train - A combination vehicle consisting of a tractor and two or three semitrailers, where each towed trailer is hitched to a fifth wheel on the frame of the preceding trailer.

Bed floor - Floor of a semitrailer or full trailer on which the payload is resting.

Belly axle - A single axle, usually air suspended and retractable, which is located ahead of the fixed axle group at the rear of a semitrailer.

C-Train - A combination vehicle consisting of a tractor and semitrailer followed by one or two additional semitrailers converted to full trailers with B-dolly converters.

Centre of Gravity - A fixed point through which the resultant force of gravitational attraction acts. For heavy vehicles, higher the C.G. position in the vertical plane, less stable they will be.

Drawbar - A longitudinal structural member connecting one trailer to another.

Fifth wheel - A plate with a latching mechanism used to connect a semitrailer to a tractor or converter dolly (see also kingpin). The fifth wheel is mounted on the front unit (tractor or lead B-train semitrailer).

Kingpin - A metal pin located on a plate mounted on the underside of the frame of a semitrailer which couples with the locking mechanism of a fifth wheel to permit towing.

Liftable axle - An air suspended axle located on a tractor, semitrailer or trailer which can be retracted or lifted from contact with the road. The suspension provides a means of adjusting the axle load that will be supported by the

liftable axle (usually a pressure control valve). If the axle load supported by the axle can not be adjusted, the axle is then called a single axle instead of a liftable axle.

Pintle Hook - A hitching device located on the rear of a semitrailer or trailer which couples to a tow eye on a dolly drawbar.

Quad axle - A group of four symmetrically spaced axles on a tractor, semitrailer or trailer which employ an axle load equalization mechanism.

Self Steering axle - An axle whose wheels may articulate, or steer, under the action of forces developed between the tire and road surface.

Single axle - An axle fixed to a tractor, semitrailer or trailer which is independently suspended and which does not provide any means of adjusting the axle load supported by the axle. It is also not retractable.

Straight Truck - A single unit freight-carrying body (vehicle).

Tandem axle - A group of two axles that provide a means of equalization of the loading on each axle.

Tridem axle - A group of three symmetrically spaced axles on a tractor, semitrailer or trailer which employ an axle load equalization mechanism.

Triple axle - A combination of three single or liftable axles on a semitrailer or trailer that are symmetrically spaced and that do not provide load equalization.

Truck - See Straight Truck.

Unconnected unit - Unit that is not coupled to any other unit that would influence its axle load distribution. [For example, if you want to measure the axle load distribution of each unconnected unit of a tractor-semitrailer configuration, you must: uncouple the tractor from the semitrailer; measure the axle loads of the tractor unit alone; recouple the tractor and the semitrailer and measure the axle loads of the trailer. You can measure the axle loads of the trailer coupled to the tractor because the tractor unit does not affect the axle load distribution of the trailer unit.]

Unit - A unit is one individual vehicle of a vehicle configuration. A tractor is a unit, a semitrailer is another unit and a dolly is also a unit. All units coupled together form a vehicle configuration.

Wheelbase - The distance from the front axle (for straight trucks and tractors) or kingpin (for trailers) to the geometric centre of the rear wheels of a vehicle. When the rear wheels are part of an axle group (tandem or tridem), the wheelbase extends from the front axle or kingpin to the geometric centre of the rear axle group.