LifeCheck V5
User Guide

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LifeCheck v5

An Introduction to LifeCheck

by Chris Drew

Welcome to the user guide for LifeCheck v5 - the Component Lifing System for Motorsport used by all forms of motorsport including Formula 1, IndyCar, GT1, Rallying and ALMS amongst others.

This manual provides details on how to install LifeCheck, and make the best use of what we believe to be the leading component lifing system.

LifeCheck V5

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It has evolved over the last decade from feedback received from these engineers and as such our thanks go out to them for their help and efforts in ensuring that LifeCheck remains the solution for Component Lifing.

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1 Introduction

1.1 Welcome

The LifeCheck software has been developed over a number of years with input from Formula 1, Champ Car, World Rally and Sports Car teams. Its primary purpose is to record the distance run in, kilometers or miles, of life critical components but it also stores details of the current location of parts and can be used to generate reports such as Build Sheets.

This manual covers LifeCheck Version 5. Users of previous versions are advised to read the whole of this manual before upgrading to ensure that they are familiar with any new features introduced as part of this release.

The system allows for one or more users to add details of components to the database, update and edit the component records and obtain reports either on the screen, by printing or by exporting to Microsoft Excel, Adobe Acrobat or XML Paper Specification (XPS) format files. Users are able to interrogate the database to determine the exact location of each part defined within LifeCheck and identify the distance run and life remaining of each, thus allowing accurate picking of the most appropriate part for a specific event.

The details stored for each component include the following:

- Part Number
- Description
- Life Code or Serial Number
- Life Limit (Test)
- Life Limit (Race)
- Distance Run
- Service Intervals (Test)
- Service Intervals (Race)
- Batch and Issue numbers
- Calibration Data

There are also options to store additional data for selected groups of components. These include

- Additional user defined routine checks such as Crack Test, Proof Test etc.
- Weighted or factored Distance Run typically for gearbox parts which are not in use all the time.

The software can be used in conjunction with a Data Tag Reader to read and save codes embedded in proprietary Data Tags. These codes can be sent to, or read from, the Tag Readers internal memory and compared against parts fitted to a chassis.

Each user has a different location which they can sub-divide and additionally certain designated users, typically the Race and Test Teams, have access to separate chassis locations. Within each location multi level sub-assemblies can be stored.

Parts can be added by any of the users and can then be moved individually or in complete assemblies between users or between locations in the same users area.

The program allows individual users to set up displays and defaults to suit their own particular requirements. For example the 'Gearbox' department may elect to display details of Weighted Life by default while the 'QA' department may be more interested in crack and fatigue test values and may

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therefore configure their display to show these values.

2 Getting Started

2.1 Pre-Installation

LifeCheck is a very compact product and as such the installation is a largely automated process. LifeCheck will typically be installed on the computer of each user who will need to access the system, either to administer the software, build chassis configurations, add distance after a race or view the life data stored within LifeCheck. There is no license limitation on the number of computers on which LifeCheck is installed rather the software is licensed by the number of departments which may be defined and optionally on the number of Chassis's and/or Parts which may be defined within the database.

System Requirements

Microsoft SQL Server

LifeCheck uses a **Microsoft SQL Server** database as its back-end data store and as such it is necessary for you to have a suitable Microsoft SQL Server instance installed and configured prior to installing LifeCheck. LifeCheck has been tested against Microsoft SQL Server 2005 and 2008 both the retail version and the free 'Express' versions. If you do not have a Microsoft SQL Server instance available, please download the latest version from the Microsoft web site.

Microsoft .NET 3.5 Framework

LifeCheck has been developed using the Microsoft .NET 3.5 Framework and as such this must be installed on each client PC prior to installing LifeCheck. On most PC's this will already be available but if not it will be installed as part of the LifeCheck installation.

2.2 SQL Server Installation

LifeCheck requires that an existing SQL Server installation be present. LifeCheck may use any version of Microsoft SQL Server from 2005 onwards as its back-end data store however it is recommended that SQL Server 2008 R2 or later is used where possible to provide the greatest functionality. Please refer to the installation notes provided with Microsoft SQL Server for further information.

Where the Link and Detach functionality is required, it is important to note that all instances of SQL Server should have the same instance name. That is if your factory SQL server is called **FACTORY \LifeCheck**, all instances of SQL Server which are to be used as detached database must also use **LifeCheck** as their instance name. In addition, the same version of SQL Server should be used on all systems.

2.3 Installing LifeCheck

Before continuing with the installation, please double-check the requirements in the Pre-Installation section.

To install **LifeCheck**, insert the installation CD into the CDROM drive of the computer. The installation procedure will start automatically. Select the appropriate install option and click next.

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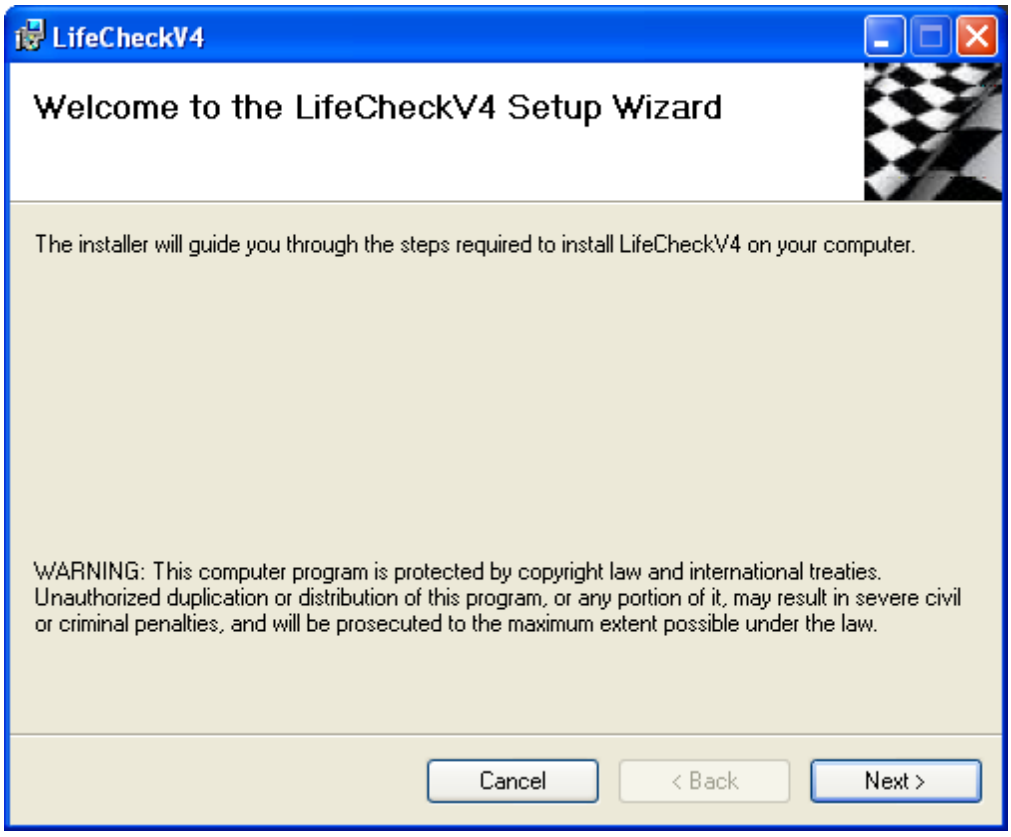
At the welcome screen, click **Next**.



Select the installation folder. By default LifeCheck v4 will install to C:\Program Files\LifeCheck v4\. It is recommended that this is left as the default. Click **Next.**

The installation has now confirmed all your settings, and will install LifeCheck v4 upon clicking **Next.**

Once the installation has completed, click **Close** to exit the install wizard.

2.4 Product Activation

Before **LifeCheck** can be used fully it must be activated. If you do not activate **LifeCheck**, it will run in a limited, evaluation mode and will only allow you to create a limited number of parts within the database. There may also be a time limit on your evaluation period depending on whether or not you have been given an extended evaluation key. Please contact Trenchant Technologies, Ltd to obtain details of your license.

Activating **LifeCheck** can be done either from the License Details startup screen or by clicking Activate on the **About LifeCheck** screen within the product. When unlicensed the screen shown below will appear each time LifeCheck is started and will give details of the license restrictions and allow you to enter the license details directly.

Enter your registered company name, Company ID and Product Key into the appropriate fields and click **Register**. If your key is not accepted, carefully check the values entered. The key comprises of 5 groups of 5 alphanumeric characters. To avoid confusion, the key will always be all upper case and will not contain the letters 'I' or 'O' or the digits '1' or '0'.

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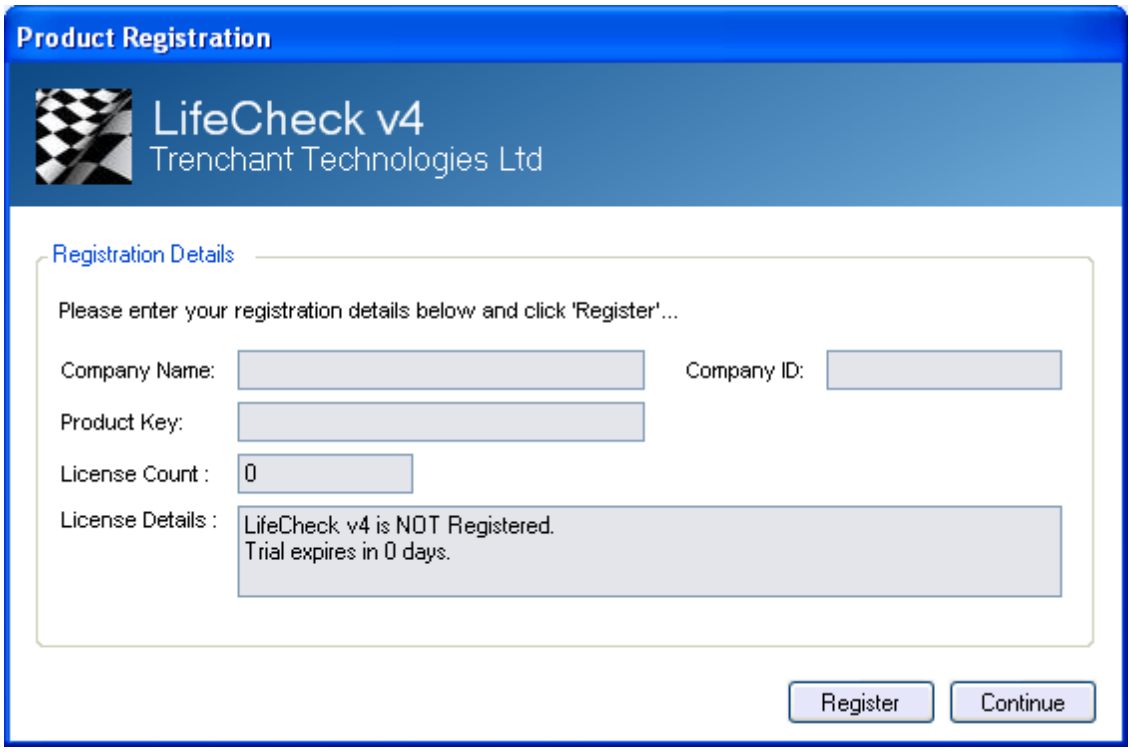

2.5 Starting LifeCheck for the first time

The first time LifeCheck is started it will enter a special mode which allows for a new database to be created or for a connection to be established to an existing LifeCheck v4 database. The following wizard will be displayed - this will guide you through the process of configuring a connection to an existing Microsoft SQL Server instance, creating a blank LifeCheck database and finally importing data from a previous version of LifeCheck.

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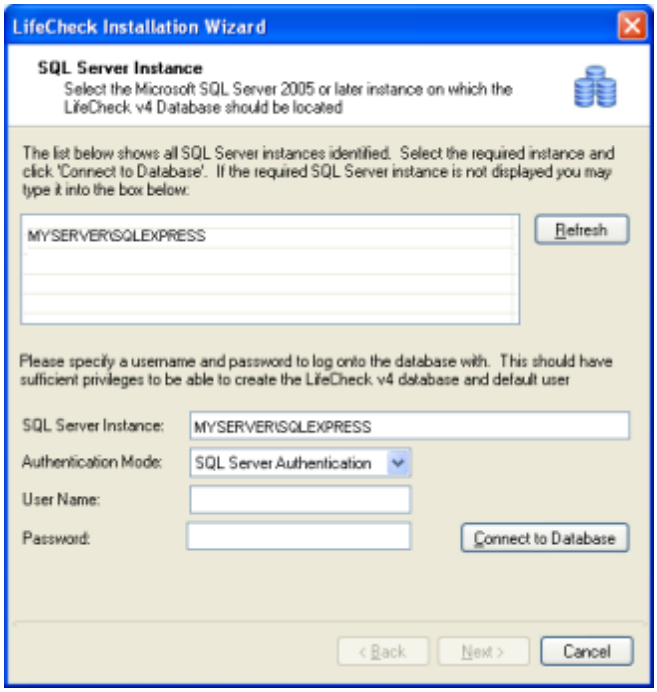
Click **Next** to continue. The following screen will be displayed:-



LifeCheck will attempt to identify any accessible SQL Server instances on your network however if the required instance is not shown, you may type the instance name into the **SQL Server Instance** box. Select whether to use SQL Server or Windows authentication and in the case of the former enter the SQL Server user and password to use. If you are unsure of the required SQL Server details, please consult your system administrator.

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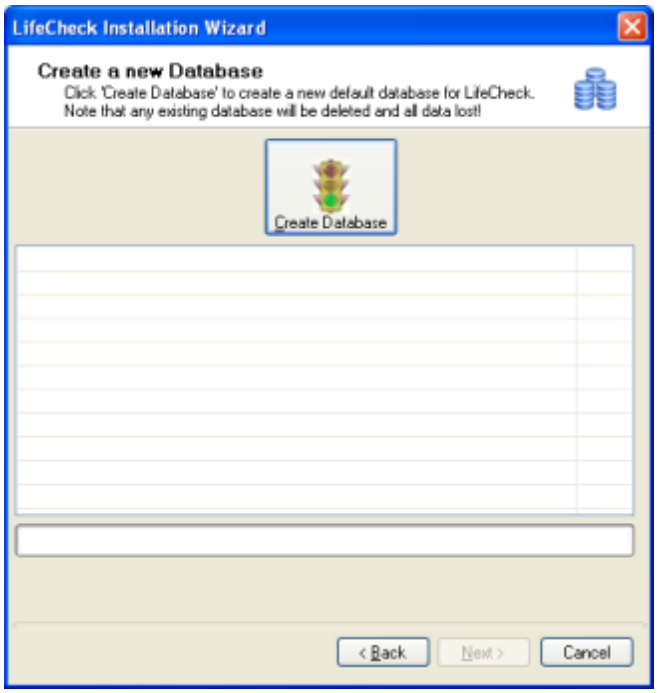
Click **Connect to Database** to test the connection details entered. If the connection was successful, click **Next** to continue. If the connection was successful, but **LifeCheck** detected an existing LifeCheck V4 database on the specified server you will be given the opportunity to select this database and connect to it. If a connection is made to an existing LifeCheck V4 database, the wizard will end.

If an existing database was not found, the following window will be displayed:-



This window allows you to create a new default LifeCheck V4 database. Click **Create Database** to proceed. As the database is being created, LifeCheck will log its progress. The database creation should be fairly quick. If an error occurs, the specific problem will be displayed in the window - please contact Trenchant Technologies, Ltd with details of any error.

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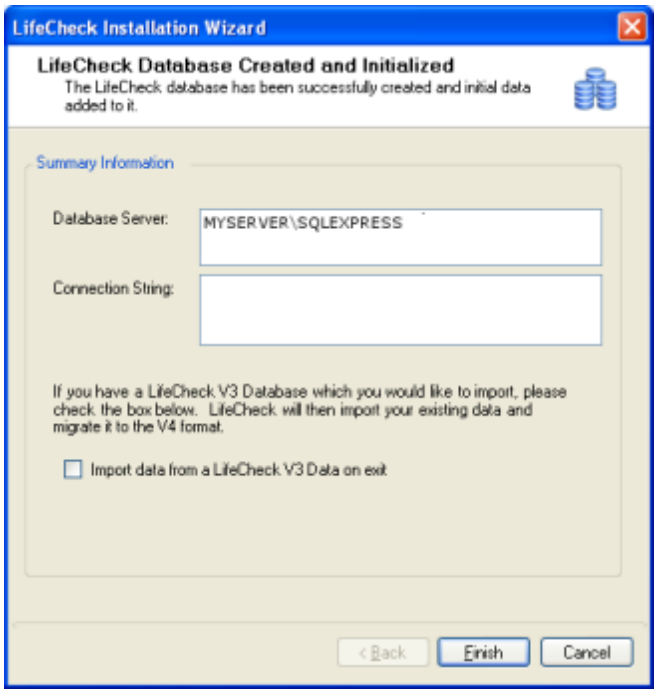

This window details the SQL Server connection parameters and allows you to indicate that data should be imported from a LifeCheck V3 database on exit from the wizard. Click **Finish** to complete the process. You will be returned to the main **LifeCheck** logon screen or to the **Import V3 Data** screen as appropriate.

2.6 Logging in to LifeCheck

On entry to LifeCheck you will be requested to log in to the system under a specific user.

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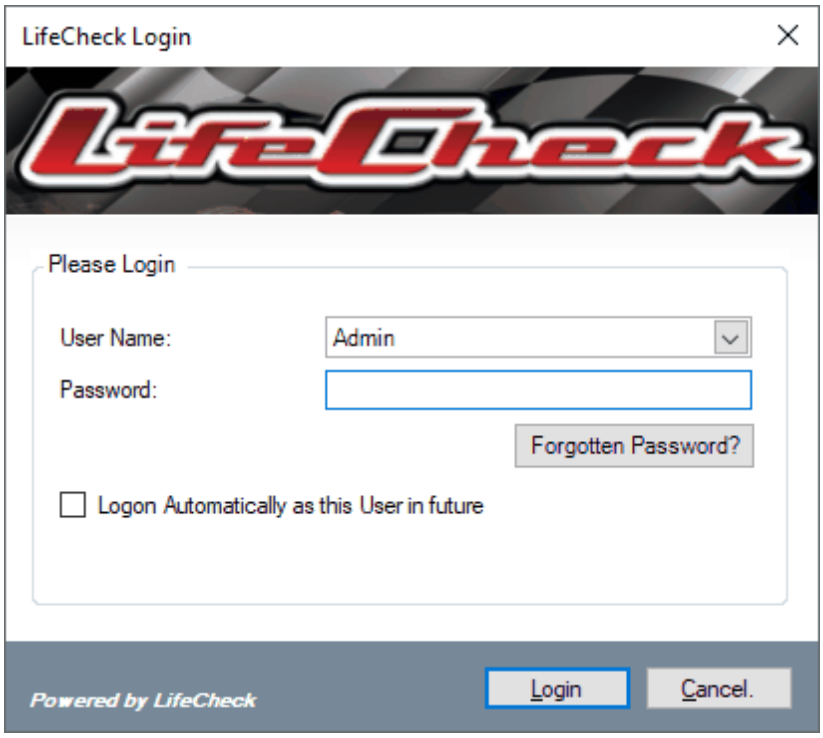

Select the required user from the drop-down list, enter any password and click login. Note that problems can occur if two users are logged in under the same username at the same time. To prevent this, LifeCheck will display an error if it detects that another user is already logged in under the selected username. If you are certain that this is not the case or you are entering just to view data, you may ignore the error and log in regardless. This situation may occur if the PC crashes or LifeCheck is abnormally terminated.

2.6.1 Forgotten Passwords

If a password has been forgotten there are two ways in which this can be corrected. Firstly the Administrator can reset the password for any user from within **Administration > Departments and Users**. Simply click to edit the user with the forgotten password and click **Set Password** to reset it. This can however cause excessive work for the Administrator where there are a large number of users and as such a secondary mechanism is available from the login screen itself by clicking the **Forgotten Password** button. The following window will be displayed if the following conditions have been met.

1. The Email Settings have been defined under **Administration > Email Configuration.**
2. An email address has been set for the selected user (within **Administration > Departments and Users**.

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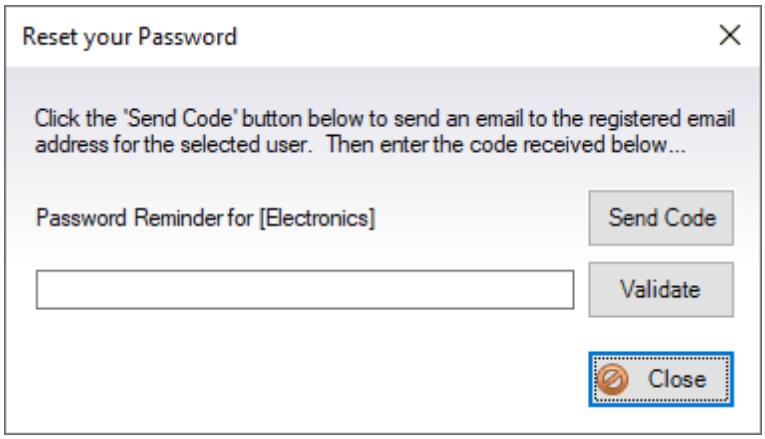

The password reset function will send an email to the address defined for the specified department with a unique code. The user must then enter this code in the box provided and click **Validate** to confirm their identity. On entry of the validation code, the user will be able to reset their password and will subsequently be returned to the login screen. The format of the email sent may be defined under **Administration > Email Configuration.**

2.7 Departments and Users

LifeCheck defines both Departments and Users. You may define any number of departments but the users within those departments are limited by your licence count. A Department provides a limited view of the data in the database making it easier for a user to identify and manipulate those parts in which they are especially interested. For example, a Gearbox department could be defined which would handle gearbox parts. All gearbox parts would initially be located within the Gearbox department and when logged in as Gearbox these would be the parts the user would be able to see.

Each department may have 0 or more **Users** where a user is a specific login to LifeCheck. In this way the **Admin** department may only have a single user whereas the **Gearbox** department many have multiple users and the **Spares** department have no users at all.

Users may be defined as either **Administrators** or **Standard Users**. The major difference between these two types is that Administrators are able to access the Administration functions within LifeCheck and are able to change global settings such as manipulate the list of circuits, sessions or drivers. Standard Users may make changes which affect their view and use of LifeCheck.

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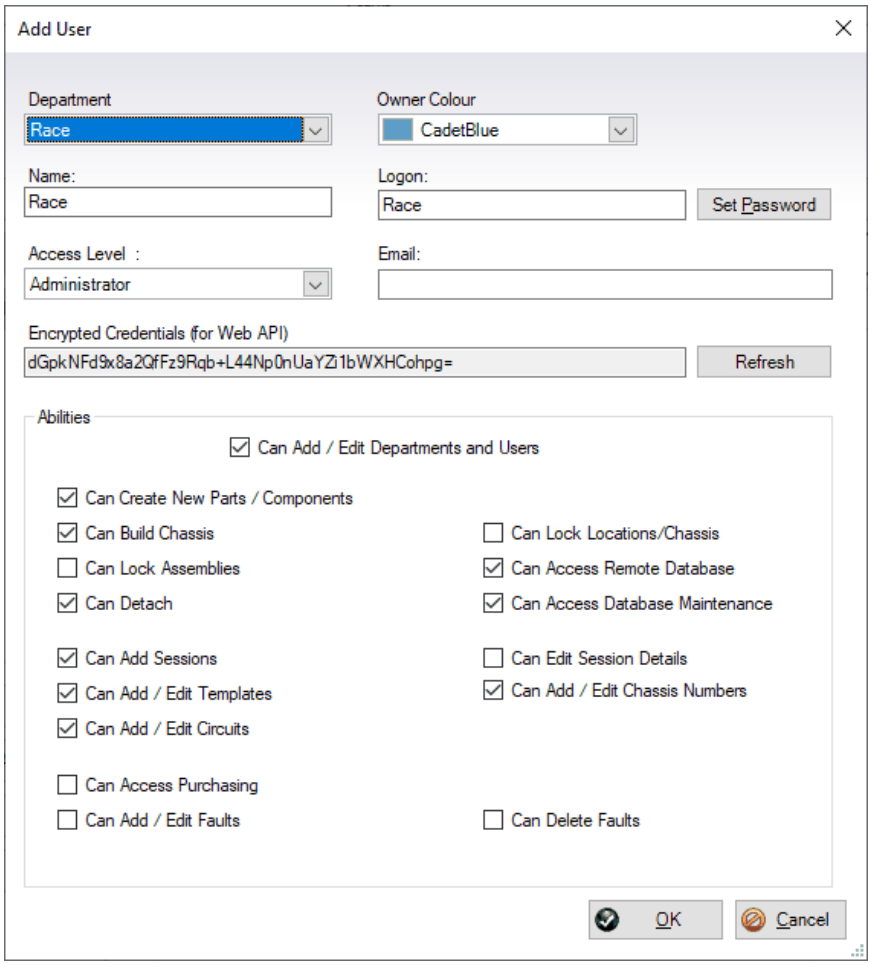

Each User has a number of additional settings which affect the operations they may perform as follows:

- **Can Add / Edit Departments and Users**

This function is only typically set for the main **Admin** user as it allows access to change permissions and other settings for any user defined in LifeCheck.

- **Can Create New Parts and Components**

When set the user is permitted to create new Parts and Components. It is often useful to limit who can create these items to prevent accidentally creating the same part / component multiple times with slightly different party numbers and / or Life codes.

- **Can Build Chassis**

When set this indicates that the User is permitted to move or relocate components onto a chassis. In a controlled environment you may want to limit those users who are able to build the chassis as components added to the chassis will have distance added to them via the **Add Miles** function.

- **Can Lock Locations/Chassis**

When set, this indicates that the user is permitted to lock whole locations and chassis. Locking

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locations and chassis prevents other users from moving other components into or out of the location or chassis which is useful to ensure they are not changed once set for a specific event. Once a location or chassis has been locked it can only be unlocked by the user who initially locked it.

- **Can Lock Assemblies**

When set this indicates that the User is permitted to lock assemblies. Locking of an assembly is useful as it prevents other users from changing an assembly when it has been built so avoiding any possible issues if the assembly is subsequently changed without the original builders knowledge. Once an assembly has been locked it can only be unlocked and hence modified by the user who initially locked it.

- **Can Access Remote Database**

The remote database functions allow a user to detach from the current database and create a new database. This function should be limited to the main administrator as mis-use could result in the loss or over-writing of your live LifeCheck database!

- **Can Detach**

When set this indicates that the User is permitted to enter Detached Mode. In Detached Mode the LifeCheck database is copied to another SQL Server so that it can be used in a stand-alone manner away from the central server. For further details on Detached Mode please refer to the **Linking and Detaching** section later in this manual.

- **Can Access Database Maintenance**

Another function which should be limited to the main Admin user as miss-use can cause severe issues as it allows direct access to run diagnostic functions as well as the ability to directly query and modify the LifeCheck database. In general this function whould only be used in conjunction with LifeCheck support.

- **Can Add Sessions**

When set this indicates that the User is able to use the **Add Sessions** function to record a session run by a chassis. It is recommended that this functionality be limited to avoid the possibility of a session being added to the same chassis multiple times.

- **Can Edit Session Details**

This option allows the user to change various details relating to sessions previously added to a chassis and as such should only be enabled for Admin users and those who are able to add sessions initially. For example, if an incorrect session distance was originally entered, being able to edit the session details allows this to be corrected by changing the session distance.

- **Can Add/ Edit Templates**

When set this indicates that the User is permitted to add and edit both chassis and assembly templates. It is recommended that only specific users are given this access right to prevent accidental changes to templates which can lead to issues when building chassis and assemblies.

- **Can Add/Edit Chassis Numbers**

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This option allows a user to create new chassis or change the details of existing chassis. While this does not perform any irreversible actions, it is recommended to limit this function to Admin users.

- **Can Edit Circuits**

When set this indicates that the User is permitted to add and modify circuit definitions. This is useful if the list of circuits may change frequently.

- **Can Access Purchasing**

When set this indicates that the User is able to use the **Purchasing** functions to create/edit/delete and receive components using the Purchasing module (if licensed)**.**

- **Can Add/Edit Faults**

If the Faults module is licensed, this option allows the user to add new or edit existing faults.

- **Can Delete Faults**

If the Faults module is licensed, this option allows the user to Delete existing faults. As faults deleted in this way cannot be recovered, it is recommended that this option is restricted to Admin users.

Initial Departments

When the LifeCheck database is initially created, a number of default departments are created. These are (depending on the number of licenses purchased) :-

- Admin
- Race
- Electronics
- Hydraulics
- Gearbox
- Aerodynamics
- Composites
- Suspension
- Engine
- Driver Installation

In addition, LifeCheck will create a 'Holding Area' Department. This department is used to hold components which are no longer required such as when they have been scrapped but need to be retained on the system. It is not possible to login under the Holding Department and this department and the locations within it are only visible on the **Relocate** screen.

LifeCheck will also create a single default user in each department up to the licence limit. The names and other attributes of all of the departments and users other than **Holding Area** may be modified on the Administration screen.

2.7.1 Password Policy

By default, LifeCheck allows users to perform most actions subject to a few restrictions listed above and does not enforce each user to set a password. This can be over-ridden and a password policy set under **Administration>Departments and Users.**

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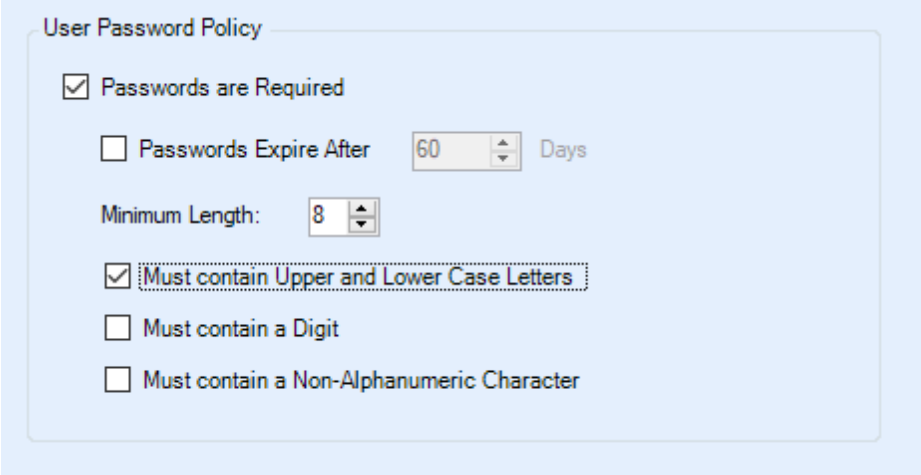

Here we can require a password to be defined for each user and set the minimum requirements for a valid password, for example the password can be set so it must be at least 8 characters in length and contain both upper and lower case characters by configuring the policy as above.

On each login attempt to LifeCheck, the password entered will be validated against the current policy and if found to not match the policy, the user will be asked to set a new password which does conform.

3 The Basics

3.1 Identification of Parts

It is important within LifeCheck to appreciate the difference between a **Part** and a **Component**. A Part is simply a placeholder definition of an item or assembly which may be located on a chassis. A Component is a physical instance of that part and will typically be uniquely identified by its **Life Code**. Whereas there will only be a single definition of a specific part, there can be multiple component instances of that Part. Components may be placed in different locations within LifeCheck and added to a chassis whereas Parts cannot.

A Part is identified within LifeCheck by its **Part Number, Manufacturer Part Number** and **Description** and will be grouped into **Sections** to allow them to be more easily located.

Part Number

Each Part defined within LifeCheck must have a unique Part Number. The Part Number itself may be any combination of alphanumeric characters up to 255 characters in length.

Manufacturer Part Number

Each Part may optionally have a manufacturer part number associated with it. This is for informational purposes only and allows a Part to have both an internally allocated part number while allowing a manufacturer assigned number to also be maintained.

Description

The part description is for informational purposes only and may be any combination of alphanumeric characters up to 255 characters in length.

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3.1.1 Part Types

Each Part will also have a type set for it. The Part Type may be one of

- Standard Part
- Assembly
- Sundry
- Wheel
- Wheel Set
- Service Kit
- Non-Car

3.1.1.1 Assemblies

Assembly indicates that component instances of this part may have child components. These may themselves be assemblies (sub-assemblies) or standard parts. In this way the full structure of a part can be defined in a hierarchical structure with assemblies, sub-assemblies, sub-sub-assemblies and so on.

3.1.1.2 Standard Parts

Standard parts are those which cannot have children - that is component instances of this part may not have child components beneath them.

3.1.1.3 Sundries

Sundry parts are parts for which individual instances of the part are not recorded, rather an instance of a sundry consists of the part number and a count. Typically sundry parts will be items such as nuts, washers, 'O' rings etc which it may be useful to keep some record of within LifeCheck for inventory purposes. Sundry parts cannot be lifed. They can however be moved between locations in the same way as any other part.

Over time you may end up with multiple lines for a single sundry item as the sundry is 'split' into smaller counts. For example you may have 'M6 NAS Bolt x10' and 'M6 NAS Bolt x25' either in the same or different locations. These individual lines may be merged into a single line by selecting them in any of the trees, right-clicking and selecting **Merge Sundry** from the menu displayed. Note that sundries located on a chassis may not be merged in this way as that would change the chassis build.

3.1.1.4 Wheels and Wheel Sets

Wheels and Wheel Sets similar to assemblies in that either may contain other components. They do however have special functionality related to their use which is detailed later in this manual. Wheels should only be located within a wheel set. Both are however assemblies which means it is possible to have additional components, such as wheel nuts, within a wheel.

3.1.1.5 Service Kits

A service kit is a group of components which should be replaced (on a chassis) as part of a service. When servicing a chassis as a whole it may be that the service items are to be applied to various parts of the chassis and where multiple items are to be replaced it can be time-consuming to find these in the chassis build. The idea of a ‘Service Kit’ is to define the individual items to be replaced and bring them together in a ‘Service kit’ which can then be applied to the chassis or a branch thereof. ‘Applying’ a service kit will loop through the items in the kit, find the matching items in the chassis build and replace them.

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3.1.1.6 Non-Car Parts

Non-car parts are as they sound parts which should be maintained within the LifeCheck database for completeness but which will never be placed on to a chassis. This may include Pit Equipment for example jacks and wheel guns or any other related items as required. These parts are by default hidden on the 'Parts View' to limit the number of parts displayed and also to prevent them from being placed on a chassis but can be used in conjunction with an enhanced ‘Show’ menu on the parts view to allow car and non-car parts to be held in the database but hide non-car parts other than when needed.

3.1.2 Sub-Assemblies

Parts can also be defined as being a sub-assembly. Sub-Assemblies allow the physical structure of the car to be duplicated within LifeCheck as parts can be attached to a sub-assembly and moved as a unit. Note that it is also possible to locate a sub-assembly beneath another sub-assembly to build more complex structures. There is no limit to the number of levels of sub-assembly that can be used but some procedures may become slow if many levels are used. A maximum of 3 or 4 levels is suggested. The only difference between a Part and a Sub-Assembly is that components may be located beneath a sub-assembly but not beneath an instance of a part.

Parts, Assemblies and Components may be quickly identified within the LifeCheck views by the icon displayed for each as shown below:

Assembly
Part
Component

3.1.3 Lifed and non-lifed Parts

Depending on the license purchased (see licensing at the end of this manual), LifeCheck may create a part as being either lifed or not lifed. In the case of a lifed part, all component instances of that part will inherit the life limits set for the part and their life will 'tick down' as distance is added to them. Non-Lifed parts are useful in two main ways.

Firstly, a non-lifed part can be used to ensure completeness of the chassis build as even though distance will not be recorded for component instances, history records will be created if the component is located on a chassis which then has distance added to it.

Secondly, a non-lifed part is useful as a place holder for an assembly. As an example consider a rear suspension assembly. The assembly itself is nothing more than a collection of components and may not be lifed independent of those components. To simplify the display, a non-lifed assembly part could therefore be defined to act as the container into which the various components and assemblies which make up the rear suspension would be added.

3.1.4 Part Class

A Part Class enables one or more parts to be treated as equivalent within the LifeCheck system. For example, a car may require 7 gears to be added to it but which gears is not important and will vary from race to race. This is important when dealing with Specifications and Chassis Templates as these rely on LifeCheck being able to match a part on the chassis to a part defined in the Specification or Template. Without Part Classes this process would be flawed as a change to the gears installed on the chassis would result in the chassis no longer matching the specification or template.

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The solution is to define a **Part Class** of (say) **Gear Ratios** and set this as the part class for all gear rations defined. Now when the chassis is validated against a specification or template it will match so long as the correct **number** of **Gear Ratios** has been installed on the chassis irrespective of the specific gears selected. This technique should be used where 2 or more parts are interchangeable such as torsion/anti-roll bars, wheels, front wings etc.

3.2 Structuring your Chassis

As the number of parts and components defined within LifeCheck increases so does the complexity of the task of maintaining these items, ensuring that they are in the correct locations and can be moved easily on and off of a chassis. Key to this process is ensuring that the structure defined within LifeCheck mirrors that of your chassis making identification of parts and assemblies far easier.

LifeCheck supports this process via the use of non-lifed assemblies, lifed and non-lifed parts. As an example take the case of a gearbox. A typical gearbox will consist of a case, cluster, differential and oil pump. Each of these items will be comprised of a number of individual components. Without structure it would be difficult to move a specific gear cluster between gearboxes or even locate a specific gearbox onto a chassis. This could be simplified within LifeCheck by mirroring the gearbox structure as in:

Part Number	**Description**	**Type**
01-FRONT SUSPENSION	FRONT SUSPENSION	Non-Lifed Assembly
TTL-AS-0099878	FUPRT Assembly	Lifed Assembly
TTL-AS-0099821	FLWB Assembly	Lifed Assembly
02-REAR SUSPENSION	REAR ASSEMBLY	Non-Lifed Assembly
03-GEARBOX	Gearbox	Non-Lifed Assembly
TTL-GB-001233434	Gearbox main case	Non-Lifed Assembly
TTL-GB-1776552	Gear Cluster	Non-Lifed Assembly
TTL-GB-7776528	Differential	Lifed Assembly
TTL-GB-7665290	Oil Pump	Lifed Assembly

Note in the example above that the top level parts have been given a numeric prefix. This is often useful for top level parts which are being used as 'containers' and do not physically exist. For example you may have a part whose name is '01 FRONT SUSPENSION' and whose purpose is solely to act as a container beneath which assemblies, sub-assemblies and components which make up the Front Suspension can be located. These containers are often held within your Bill of Materials as sections and simply help to better structure the chassis. By using a numeric prefix you can define the order of these containers within the LifeCheck views as they are by default sorted by part number.

3.3 Components

Simply put, a Component is a single instance of a Part. All components must be assigned a Life Code when created. This applies to component instances of both lifed and non-lifed parts as the Life Code is used as an index into the database and as such must be unique for a part.

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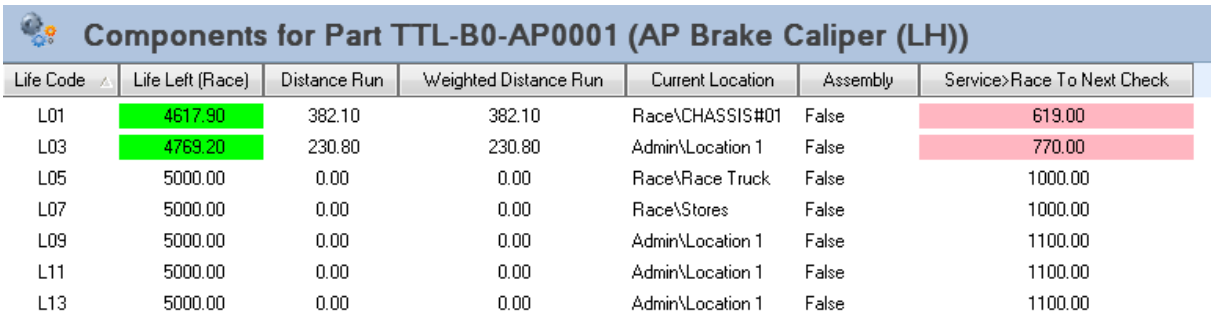

Components for Part TTL-B0-AP0001 (AP Brake Caliper (LH))

Life Code	Life Left (Race)	Distance Run	Weighted Distance Run	Current Location	Assembly	Service>Race To Next Check
L01	4617.90	382.10	382.10	Race\CHASSIS#01	False	619.00
L03	4769.20	230.80	230.80	Admin\Location 1	False	770.00
L05	5000.00	0.00	0.00	Race\Race Truck	False	1000.00
L07	5000.00	0.00	0.00	Race\Stores	False	1000.00
L09	5000.00	0.00	0.00	Admin\Location 1	False	1100.00
L11	5000.00	0.00	0.00	Admin\Location 1	False	1100.00
L13	5000.00	0.00	0.00	Admin\Location 1	False	1100.00

In the example shown above we have 7 instances of the **TTL-B0-AP001** part with life codes L01, L03, L05, L07 ,L09, L11 and L13. From this display it is possible to identify which instance has the most life left and hence which would be most suitable for the next race.

3.4 Sections

Sections are identified by a unique name and each category can be subdivided, sub-divisions being identified by their name also. Grouping parts into sections is not essential but is useful when sorting in the Show Life screen. Since all parts have to be allocated to a section at least one must be entered before any parts can be added. Sections are also useful when identifying accident damaged parts as when adding distance to a chassis it is possible to flag specific sections as having been affected by an accident. Components within the accident affected sections can then be easily identified and checked as appropriate before being re-used.

Examples of sections might be **Front Suspension Inboard** and **Front Suspension Outboard**.

Sections have been deprecated in later versions of LifeCheck as they are typically replaced by sections created within the Chassis Builder.

3.5 Locations

Each Department has at least two locations for storing parts and is able to set up extra locations for their own use. LifeCheck will create two default locations for each department as the database is created and will name them simply **Location 1** and **Location 2**. These names may be modified and additional locations created in the **Administration** area of LifeCheck. Locations are specific to each department, components moved to a location for one department will not be visible by other departments even if they have the same named department. The exception to this rule are **Shared Locations** detailed below.

LifeCheck will also create 5 'special' locations beneath the **Holding Area** department. These are :-

- Holding
- Obsolete
- Archive
- Quarantine 1
- Quarantine 2

The names of these locations may be changed within the Administration area of LifeCheck. Components located within these locations will not be visible in any of the LifeCheck views other than **Relocate** assuming the **Holding Area** department has been selected. Components which are no longer required can be moved to one of these locations to remove them from all reports and views. For example, when a part is out of life it could be moved to the **Holding Area** before ultimately being deleted from the system

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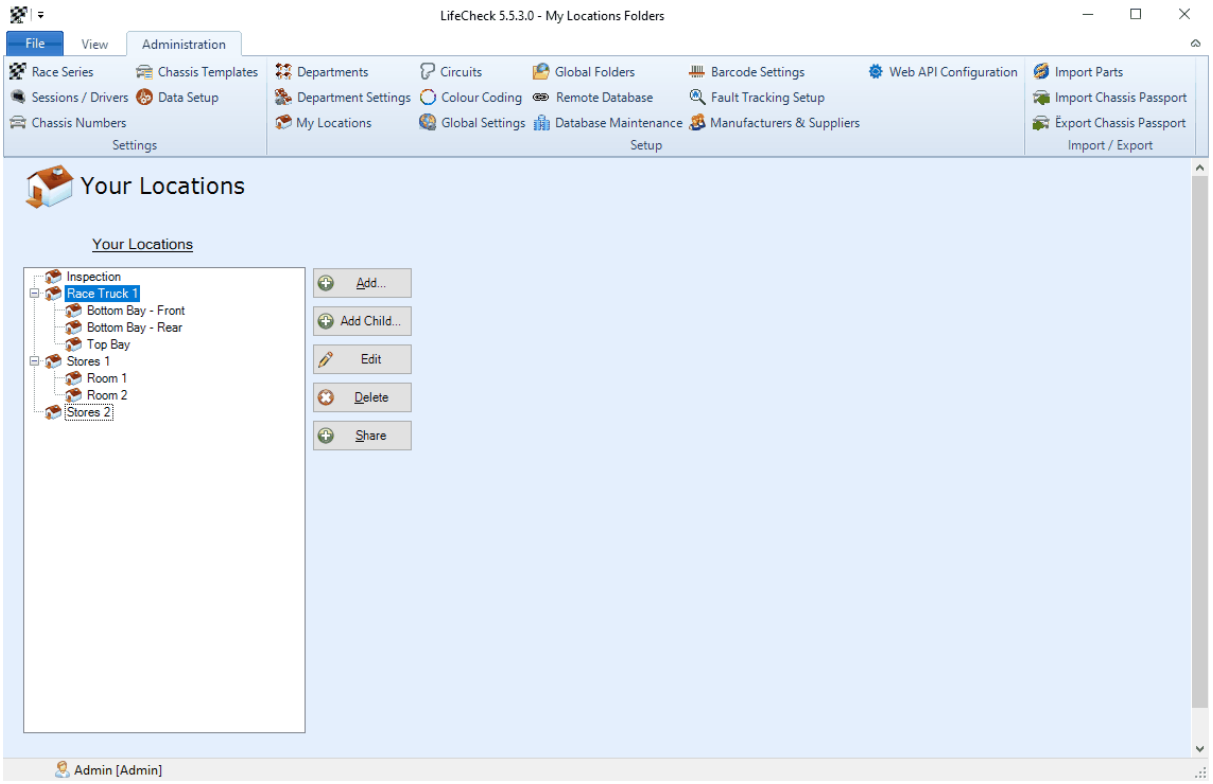
as it is discarded.

Locations are by default specific to the Department for which they have been created. for example it is possible to have a 'Stores' location beneath the Administrator department and beneath the 'Engine' department and these are in fact different locations. Components located within **Administration>Stores** are not visible when **Engine>Stores** is selected or vice-versa. It is however often useful to have locations which are visible to all users - in LifeCheck these are referred to as **Shared Locations**. Shared Locations behave in much the same way as non-shared locations and can be defined on the **Administration>Departments** tab.

Locations (both shared and non-shared) may also have 0 or more child locations. These are created by clicking the 'Add Child Location' button on the appropriate page after selecting the parent location. The names of child locations must be unique within thier parent location but may be duplicated for other departments or may duplicate a top-level location.

3.5.1 Sub-locations

Each location may also have 0 or more sub-locations noting that only a single level of sub-locations is supported. The names of these sub-locations must be unique within their parent location but may be duplicated in ther locations and/or departments. Sub-locations are often useful in allowing physical locations to be mapped directly to locations within LifeCheck.



Sub-locations are available for both departments specific and shared locations.

3.5.2 Shared Locations

Shared Locations are defined under Administration>Departments and as such can only be created or modified by the Administrator. Shared locations as their name implies are common across all

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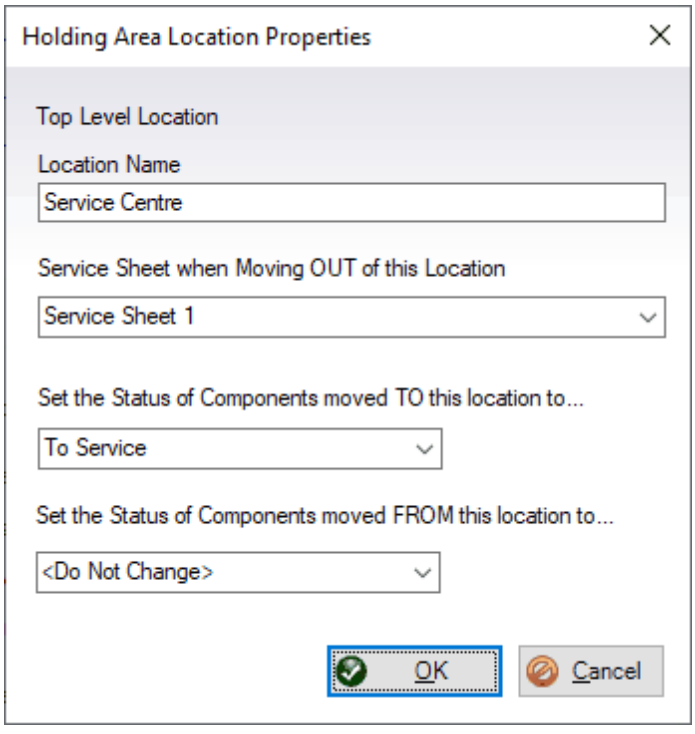
departments and components moved into a shared location will be visible to all departments. This can be very useful when defining for example a 'Stores' location. It is useful if all departments share the same Stores location so they are all sharing the same component inventory. Although not recommended, Shared Locations may duplicate names used for other locations (but not other Shared Locations).

3.5.3 The Holding Department

The Holding Department is a special department into which components may be moved when they are either no longer required or for other reasons should not be displayed within the standard LifeCheck Views. Components located within the Holding Department will not be visible other than when explicitly selected on the Re-Locate Components View. Re-locate components allows these components to be brought back into the mainstream.

Within the Holding Department are 5 pre-defined locations which are initially named : Holding, Obsolete, Archive and 2 Quarantine locations. The names of these locations can be changed on the Global Settings tab in the Administration area. You may also define additional holding area locations as required.

As components move in to or out of the holding area locations, it is possible to automatically perform various actions. For example, when moving a component OUT OF a holding area location your procedures may require the completion of a service sheet to detail what checks have been performed. This can be done on a location by location basis as shown below.



In the above example, a holding area department named 'Service Centre' has been defined. As components are moved IN to the service centre, their status is automatically set to 'To Service' and as components are moved out of the location a service sheet must be completed. Note however that if using the 'Swap' function the specified status will NOT be set if a new status is specified as part of the Swap.

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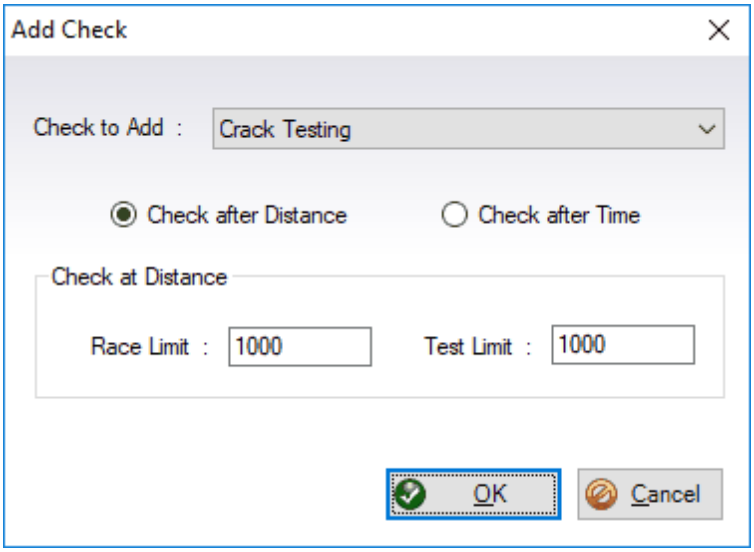
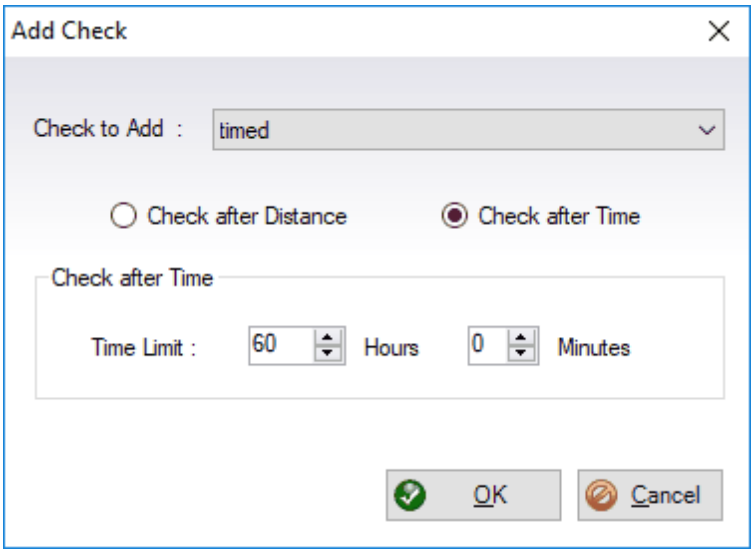
3.6 Custom Checks

As well as the basic life limits, LifeCheck also allows additional checks to be defined for components such as 'Fatigue' or 'Crack Testing'. These checks are defined and maintained within the administrative area of LifeCheck however their current values may be displayed on any of the screens which display details of a component. A special internal check of 'Service' is always defined and cannot be deleted.

Checks are identified by their unique name and may be assigned to zero or more Parts within the database typically as the component is created or subsequently via the Part Properties window. Once assigned to a part, the check is then defined for each component instance of that part.

Checks may be defined with a limit based on either distance or time and may have both a Race and Test limit.





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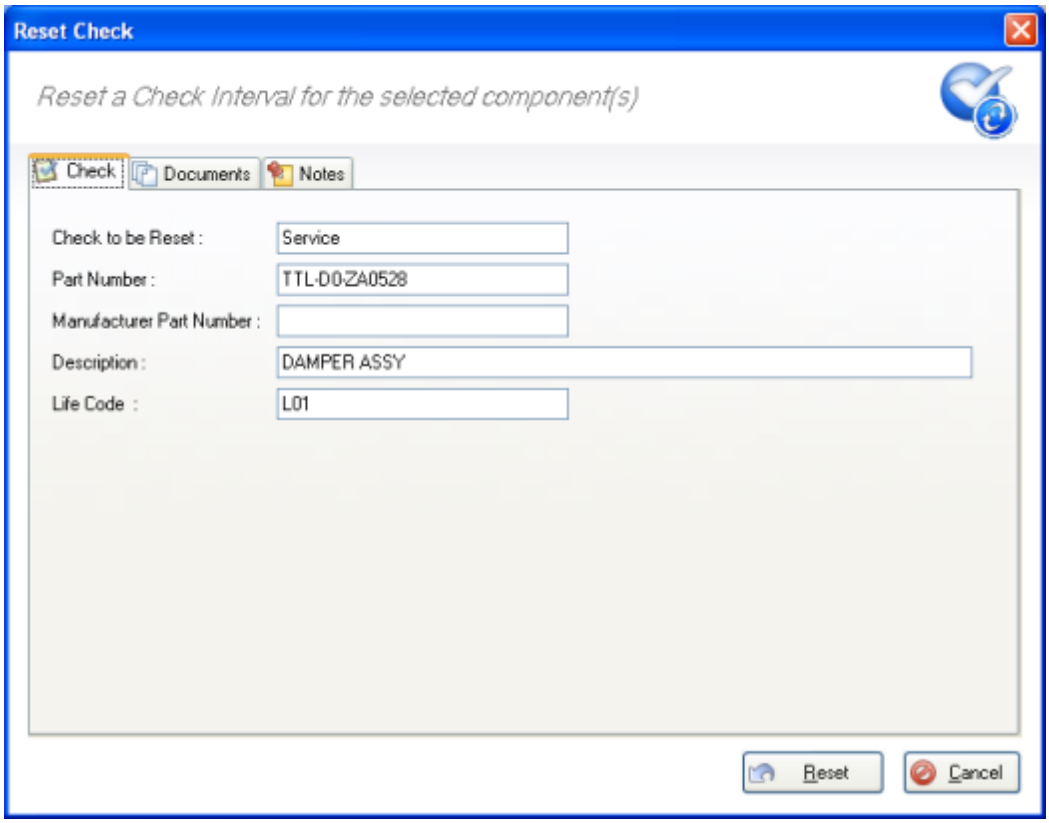
3.6.1 Resetting a Check

A check may be **reset** after it has been actioned - for example after a component has been serviced, the **Service** check would be reset either by right-clicking the component and selecting **Reset Check** from the menu displayed or from the **Checks** tab displayed under **Component Properties**. When a Check is reset the following window is displayed:-



In this case the check in question is a **Service** however all checks are handled in a similar way. The **Reset Check** window displays the name of the check to be reset ('Service') and details of the selected component(s). It is also possible to add Documents and Notes to the Reset Check event and these may be viewed at a later date under Component History. See Document and Notes for further details. Once any documents have been attached and any notes created, click **Reset** to reset the check for the selected component(s).

It is also possible to reset a check for a group of components. For example, to service all of the brake calipers on the system, display the Parts View and select the appropriate Part Number in the left hand view. The right hand pane will then display all instances of the selected part (brake caliper). Select the calipers which are to be serviced, right click and select **Reset Check**. A window similar that above will be shown however LifeCheck will report that multiple components have been selected. Note that where multiple components are reset in this way, any documents and/or notes will be associated with each component in turn.

3.6.2 Service Sheets

As components within LifeCheck are 'serviced' it is often useful to be able to complete a service sheet to confirm the actions which were performed during the service.

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Service sheets comprise of a number of questions, grouped into categories and sub-categories each requiring a 'Yes/No' answer. As a service is reset any defined service sheet will be identified and a relevant form displayed for the user to complete. The completed service sheet will be stored against the component for later review. For further details on service sheets please refer to Part Properties and Service Sheets

3.7 Component Factors

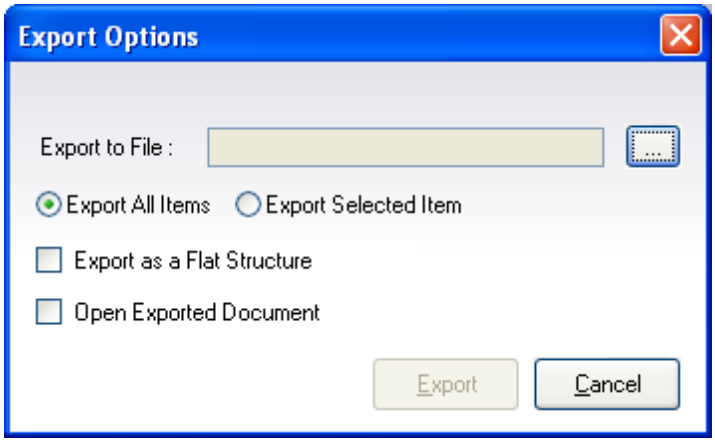
Component factors are useful when a specific part is not in use for the total distance covered by the chassis. For example a gear ratio will only actually be in use for a percentage of the time and as such should be given a factor. The names of Factors are defined under Administration>Factors and can be defined on a circuit-by-circuit basis under Administration>Circuits. Typically however the exact factors will not be known until after the end of a session and will frequently be obtained via telemetry data. In this case the exact factor value may be entered when adding distance to a chassis using the Add Distance screen.

Each component will maintain its own factored distance run based on the total distance run and the factor value specified for each session run. The component also has a **Run Factored Limit** which will define the maximum distance which the component may run taking any factors specified into account.

3.8 Exporting Data

In most of the views within LifeCheck the displayed data can be exported in a variety of formats by right-clicking within a pane and selecting export from the context menu which will be displayed. LifeCheck supports exporting data in Microsoft Excel (.XLS), Adobe Acrobat (.PDF) and XML Paper Specification (.XPS) formats.

On clicking to export data from a view, the following window will be displayed with additional options that will affect the way in which the data is exported.



Export to File

This is the name of the file to which the data should be exported. Click the button to the right to browse for a folder into which the exported data file will be written. The selected path will be displayed.

Export All Items / Export Selected Items

When **Export all Items** is selected, LifeCheck will export all of the items displayed within the pane,

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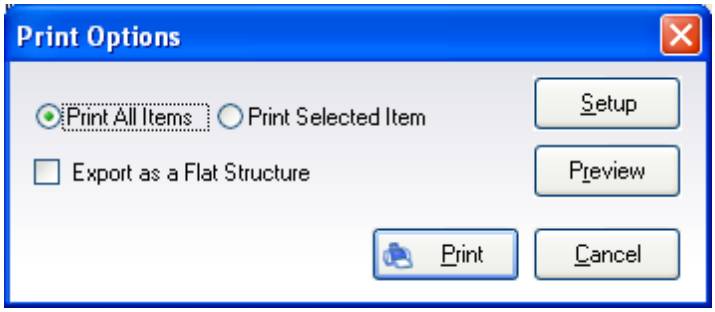
whether visible or not. Where a hierarchical structure is being displayed, it will first be fully expanded to ensure that all items within the hierarchy are exported. If **Export Selected Item** is selected, LifeCheck will only export the item which is currently selected and any child items.

Export as a Flat Structure

By default, LifeCheck will mimic the on-screen display and will export the data in a hierarchical manner. When viewed within Excel for example, the data can be expanded and contracted in a similar fashion to how it was on screen. It some instances however this can result in data which is more difficult to read. Exporting as a flat structure still includes all items but they are not nested. Child items will appear after their parent but no expansion/contraction of the exported data will be possible.

3.9 Printing Reports

In a similar way to exporting data from the views within LifeCheck you may also print reports directly by right-clicking within a view and selecting **Print...** The following screen will be displayed to allow you to specify additional options.



Print All Items / Print Selected Items
When **Print all Items** is selected, LifeCheck will print all of the items displayed within the pane, whether visible or not. Where a hierarchical structure is being displayed, it will first be fully expanded to ensure that all items within the hierarchy are exported. If **Print Selected Item** is selected, LifeCheck will only print the item which is currently selected and any child items.

Print as a Flat Structure
By default, LifeCheck will mimic the on-screen display and will print the data in a hierarchical manner with child items nested (and indented) below their parent. It some instances however this can result in data which is more difficult to read. Printing as a flat structure still includes all items but they are not nested or indented. Child items will appear after their parent but no expansion/contraction of the exported data will be possible.

The report may be previewed before printing by clicking on the **Preview** button. The layout and other properties of the printer may be set prior to printing by clicking the **Setup** button.

4 LifeCheck Views

The data maintained within the LifeCheck database may be viewed in a number of ways. The different views may be selected using the application ribbon view tab.

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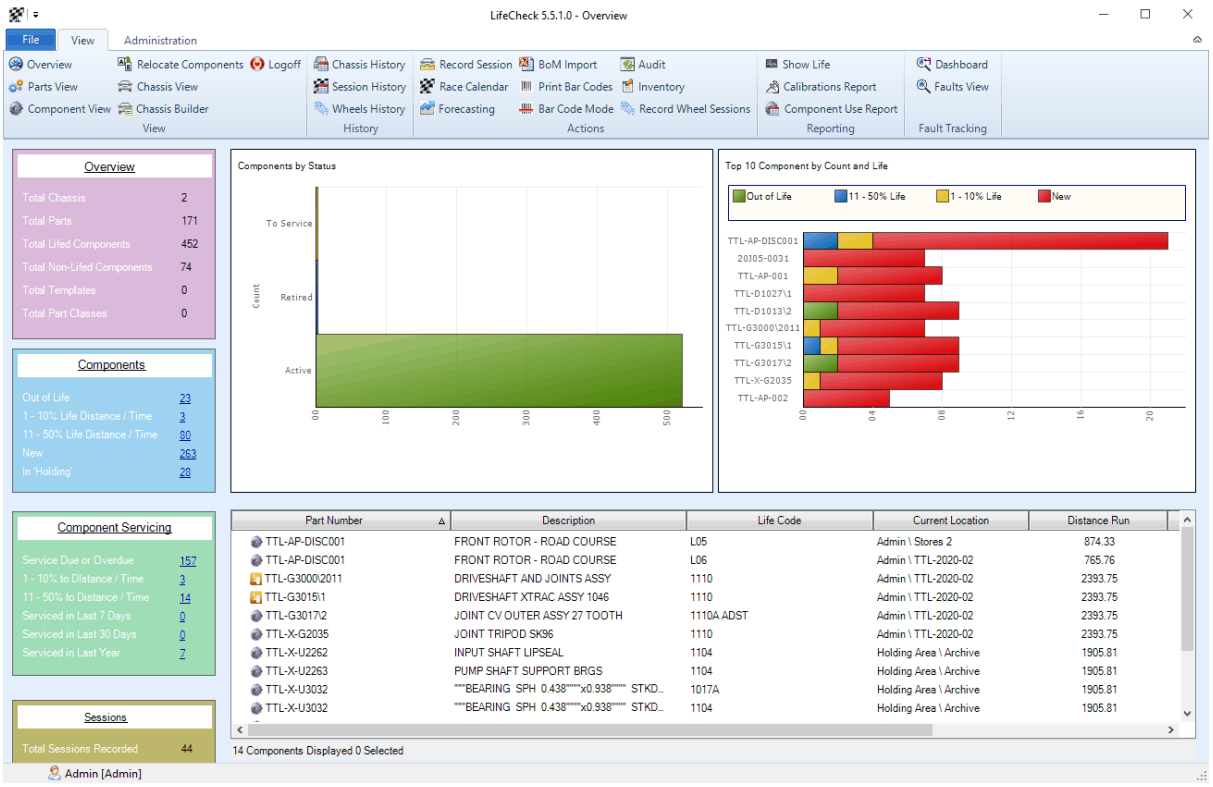
4.1 Overview

The overview screen provides some generic statistical information relating to the parts and components maintained within the LifeCheck database. It is accessed using the **Overview** menu option.



Notice that the values displayed within the **Components** and **Component Servicing** panels are shown as links - by clicking a value in one of these panels the components matching the criteria will be displayed in the Components Panel. This behaves in the same way as all other component displays and supports such action as column choosing and data export.

4.2 Parts View

The **Parts View** allows all of the parts or part classes defined within LifeCheck to be viewed as a list and simplifies the identification of the component instances of that part. By clicking on a part, the right hand pane will display the details of all component instances allowing you to quickly locate all of the components.

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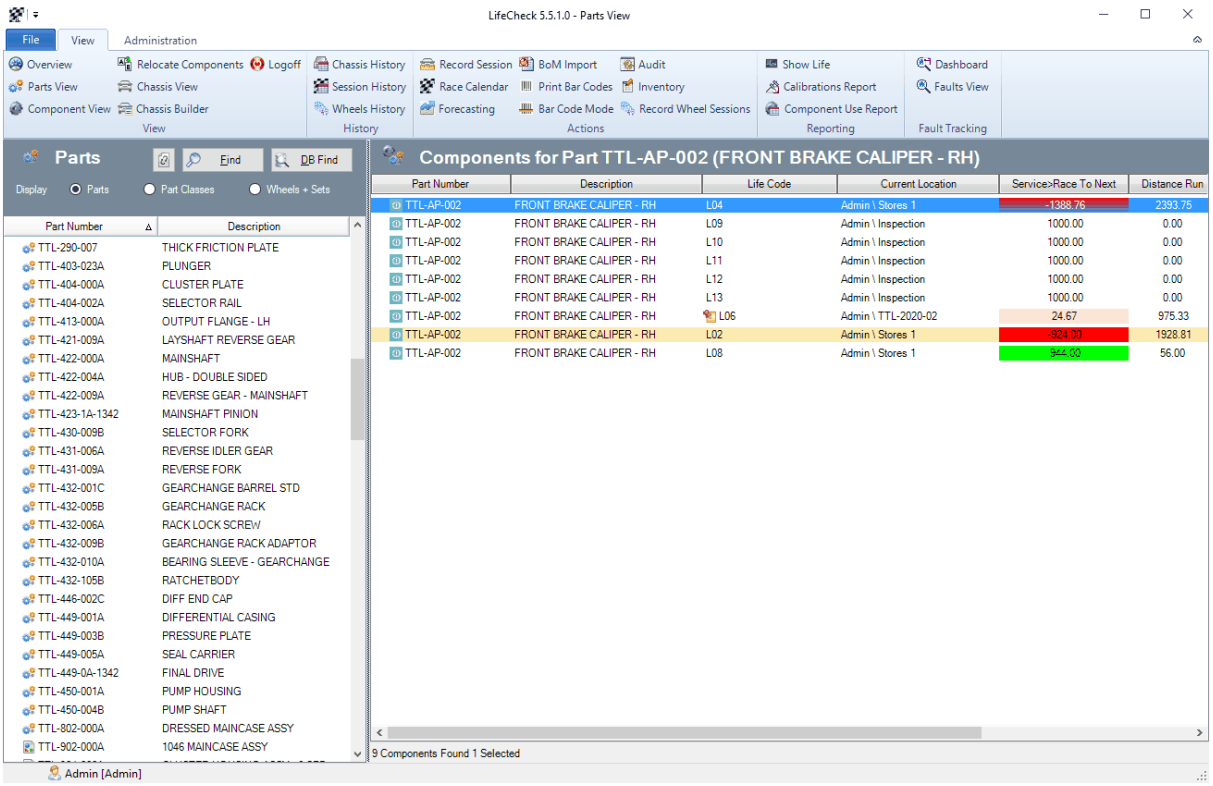

The Parts View may be configured to display all instances of parts as above; Part Classes or Wheels and Wheel Sets (where enabled).

When displaying Part Classes the left hand pane will display a list of part classes defined within the database. These may be expanded to display the individual parts which are defined as having the selected part class. Selecting the part class itself will cause the right hand pane to display all components which are of the selected part class. Selecting a specific part within the part class will cause the right hand pane to display all components which are of the selected part.

When displaying Wheels and Sets the left hand pane will display those parts defined as being of type **Wheel** or **Wheel Set** and the right hand pane will display instances (components) of the selected item.

Left Hand Pane Context Menu

Right-clicking a part in the left hand pane will display a context sensitive menu :-

Delete

Use this option to delete parts from the database subject to confirmation. This option should be used with care as deleting a part will also delete all component instances of that part and also any associated history. As such this operation cannot be reversed. See Deleting Parts and Components for details.

Show > Non-Lifed Assemblies
Non-Lifed Parts
Parts with No Instances
Sundry Parts

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These options allow the parts displayed to be further filtered. When checked, parts of the checked type will be included in the view. By default all except **Sundry Parts** are checked and will therefore be displayed,

New Component

This will invoke the Add Component window to begin the process of creating a new component instance of the currently selected part.

View Purchase Orders

If the Purchasing module has been licensed, this option will jump to the **Purchasing View** to display any purchase orders which have been created for the selected Part. This allows you to quickly identify where and when parts were ordered.

Properties

This will display the Part Properties window for the currently selected part.

Right Hand Pane Context Menu

Right-clicking a part in the right hand pane will display a context sensitive menu :-

Goto Component
Use this option to jump to the Component View to display the location containing the currently selected component which will be highlighted.

Delete Component
Use this option to delete parts from the database subject to confirmation. This option should be used with care as deleting a part will also delete all component instances of that part and also any associated history. As such this operation cannot be reversed. See Deleting Parts and Components for details.

Choose Columns
Select the Columns which are to be displayed within this view. See Selecting View Columns for details.

Export
Exports the contents of this view in a variety of formats. See Exporting Data for further details

Print
This option allows the contents of the view to be sent directly to a printer in the form of a report. See Printing Reports for details.

Reset Check
this option allows a check to be reset for the selected component(s). See Custom Checks for details.

Properties
This will display the Component Properties window for the currently selected component.

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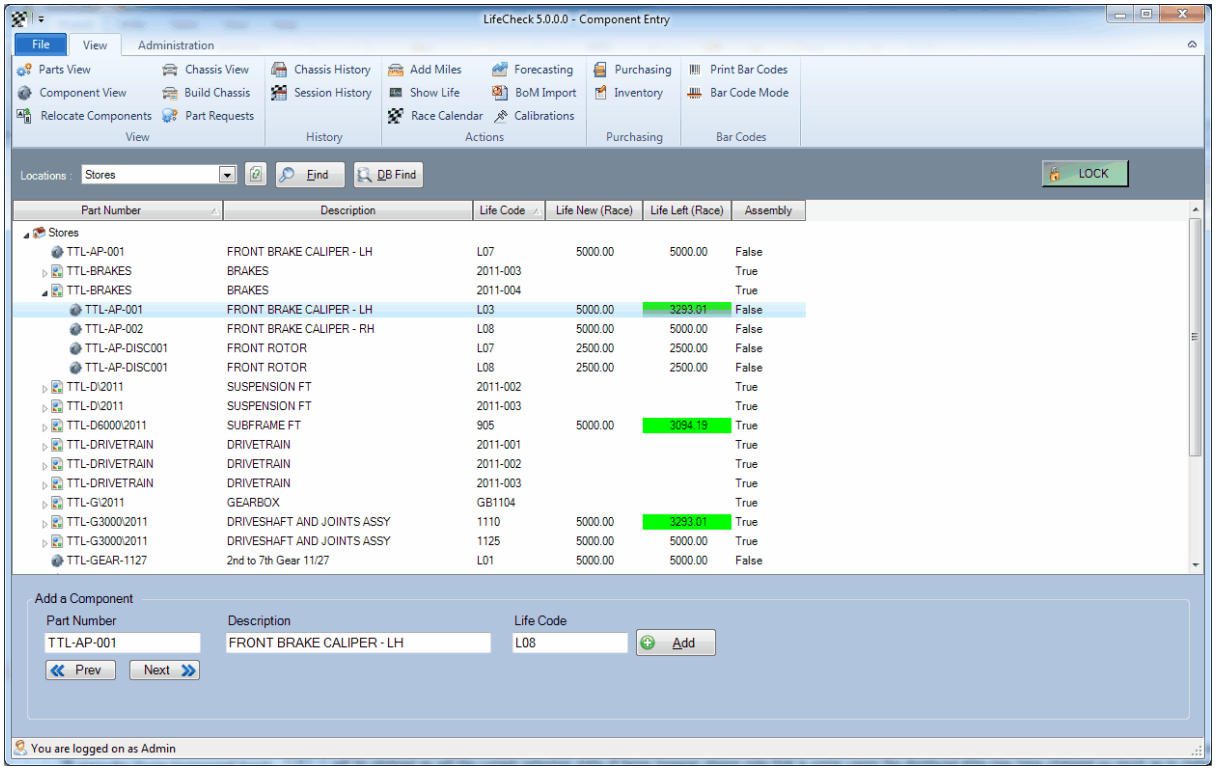
4.3 Component View

The **Component View** within LifeCheck displays a list of components which are currently positioned within the selected location. The required location may be selected via the **Locations** drop-down list which will contain all of the locations defined for the currently logged-in department.



At times the data may become stale owing to changes made elsewhere, to refresh the current view, click the button. LifeCheck will re-read the displayed data from the database and update the display. Where possible, the existing state of any expanded items will be retained as will the current selection state of items however please note that in some cases the displayed data may have changed so much as to make this impossible.

The **Component View** is also the main view in which new parts and/or components may be created. It is also possible to create new components on the **Parts View** screen. For details on adding parts and components, please refer to Creating new Parts and Components later in this manual.

Right-clicking a component in the view will display a context sensitive menu :-

Swap Component
This allows the currently displayed component to be 'swapped' with another instance of the component. See Using the 'Swap Component' Functionality for more details.

Delete Component
Use this option to delete parts from the database subject to confirmation. This option should be used with care as deleting a component will also delete any associated history. As such this operation cannot be reversed. See Deleting Parts and Components for details.

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Expand All
Expand all branches in the displayed hierarchy - note that this can take some time where there are a large number of components in a multi-level hierarchy to display.

Contract All
Contract **all** branches in the displayed hierarchy.

Choose Columns
Select the Columns which are to be displayed within this view. See Selecting View Columns for details.

Export Data To...
Exports the contents of this view in a variety of formats. See Exporting Data for further details

Print
This option allows the contents of the view to be sent directly to a printer in the form of a report. See Printing Reports for details.

Reset Check
this option allows a check to be reset for the selected component(s). See Custom Checks for details.

Properties
This will display the Component Properties window for the currently selected component.

4.3.1 Limiting Component Display Numbers

Where a large number of components have been imported it is possible for a single location to contain an excessive number of components at the same level which may result in performance issues. To handle this, LifeCheck allows the definition of the maximum number of components which may be displayed at any level. If exceeded, LifeCheck will only display up to that number. This defaults to 3000 and is set within **Administration>Global Settings.** If the number of components at any single level exceeds the count set, LifeCheck will display a warning and will only display the maximum number of rows to avoid excessive refresh times. This obviously means that in certain, rare, situations you may not be able to see all of the components residing in a location without first filtering those components.

4.3.2 Filtering Component Display

As a result of exceeding the maximum number of rows which may be displayed or simply to reduce the components displayed at any time, the Component View, Re-locate View and Chassis Views may all be filtered to show only a sub-set of the components available (at the top most level). This is done using a new option of **Filter Displayed Components** added to the right click options menu.

This option allows a full or partial search string to be defined which will be used to filter the display to only show those components with a part number containing the specified filter string. Note this is case insensitive. Any filter string can be cleared by using the right click option and deleting the filter string. For example if the file string is set to 'TTL-AP', only those components with part numbers containing the text 'TTL-AP' will be displayed. The top location node will have any filter set displayed to its right to ensure it is always clear that the display has been filtered.

4.4 Relocate Components

The **Relocate Components** screen is the primary place where components may be moved between departments and locations, added or removed from a chassis and built into more complex assemblies.

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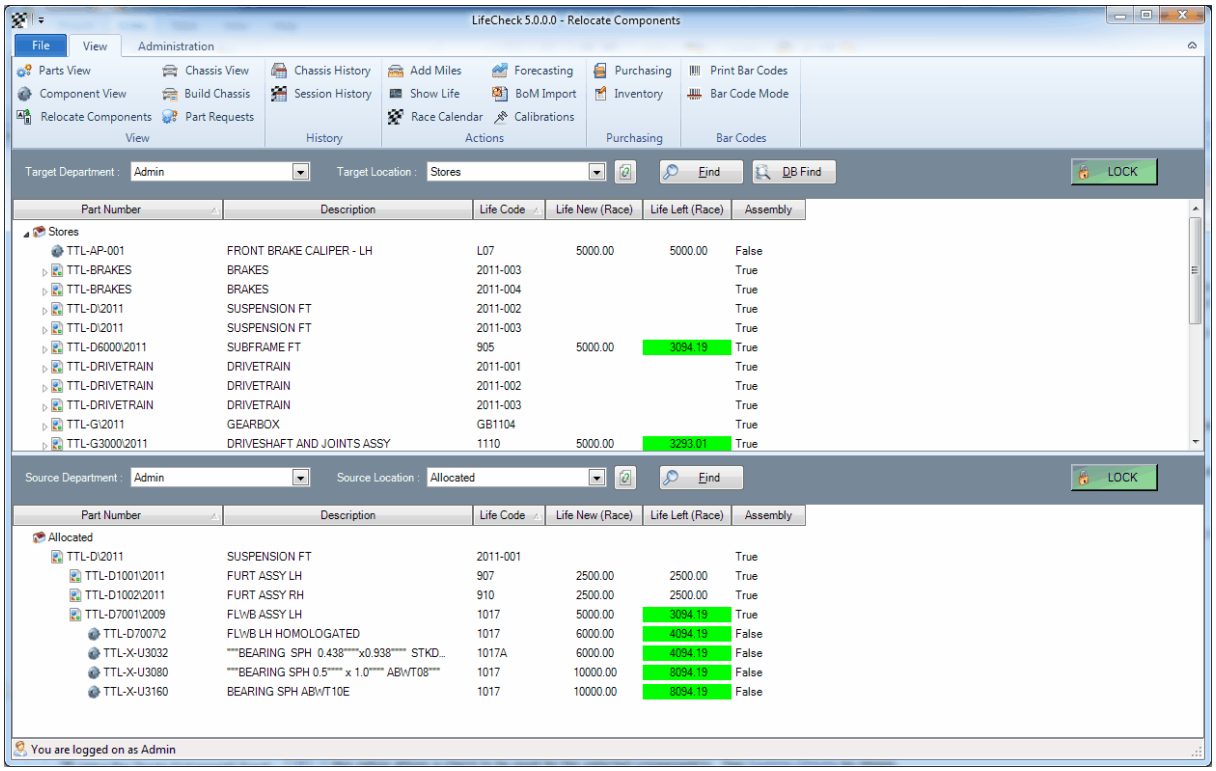

To move a component or group of components, select them in one of the two views and drag them to the required location. Components may only be located beneath a location or an assembly. Hovering over an assembly will open that assembly allowing the dragged components to be placed at any level within the hierarchy. Components may also be moved within the same view in a similar way.

Holding the **CTRL** key while clicking items will select the items clicked on. Holding **SHIFT** will select all items between the selected item and that clicked on. This allows multiple components to be acted on in a similar operation. Dragging an assembly will also drag all components beneath that assembly.

Right-clicking a component in either pane will display a context sensitive menu :-

Send Component
This option allows the currently selected component to be 'Sent To' an assembly previously selected in the alternate pane. If an assembly has not been selected, this option will have no effect.

Move Components Here
This option is the reverse of the above as it moves components selected in the alternate pane to be parented below the currently selected assembly.

Swap Component
This allows the currently displayed component to be 'swapped' with another instance of the component. See Using the 'Swap Component' Functionality for more details.

Delete Component
Use this option to delete parts from the database subject to confirmation. This option should be used with care as deleting a part will also delete all component instances of that part and also any associated history. As such this operation cannot be reversed. See Deleting Parts and Components for details.

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Expand All
Expand all branches in the displayed hierarchy - note that this can take some time where there are a large number of components in a multi-level hierarchy to display.

Contract All
Contract **all** branches in the displayed hierarchy.

Choose Columns
Select the Columns which are to be displayed within this view. See Selecting View Columns for details.

Export Data To...
Exports the contents of this view in a variety of formats. See Exporting Data for further details

Print
This option allows the contents of the view to be sent directly to a printer in the form of a report. See Printing Reports for details.

Reset Check
this option allows a check to be reset for the selected component(s). See Custom Checks for details.

Properties
This will display the Component Properties window for the currently selected component.

The re-locate components view may be switched to display the 2 panes with a vertical rather than a horizontal orientation by clicking the **orientation** button at the base of the window.

4.5 Chassis View

The **Chassis View** allows all of the components located on the selected chassis to be viewed in their entirety. While selecting a chassis within the Relocate Components view will show only those components on the chassis belonging to the selected department, the Chassis View will display all components located on the chassis irrespective of which department they are physically in. The Chassis View is of particular importance to the LifeCheck Administrator as it allows the whole chassis to be viewed before adding distance ensuring that all departments have defined their portion of the chassis.

It is also a great place to make quick changes to the chassis as it supports the Swap Component functionality - need a new nose cone to be fitted, quickly swap the fitted cone with a new one with just a single click.

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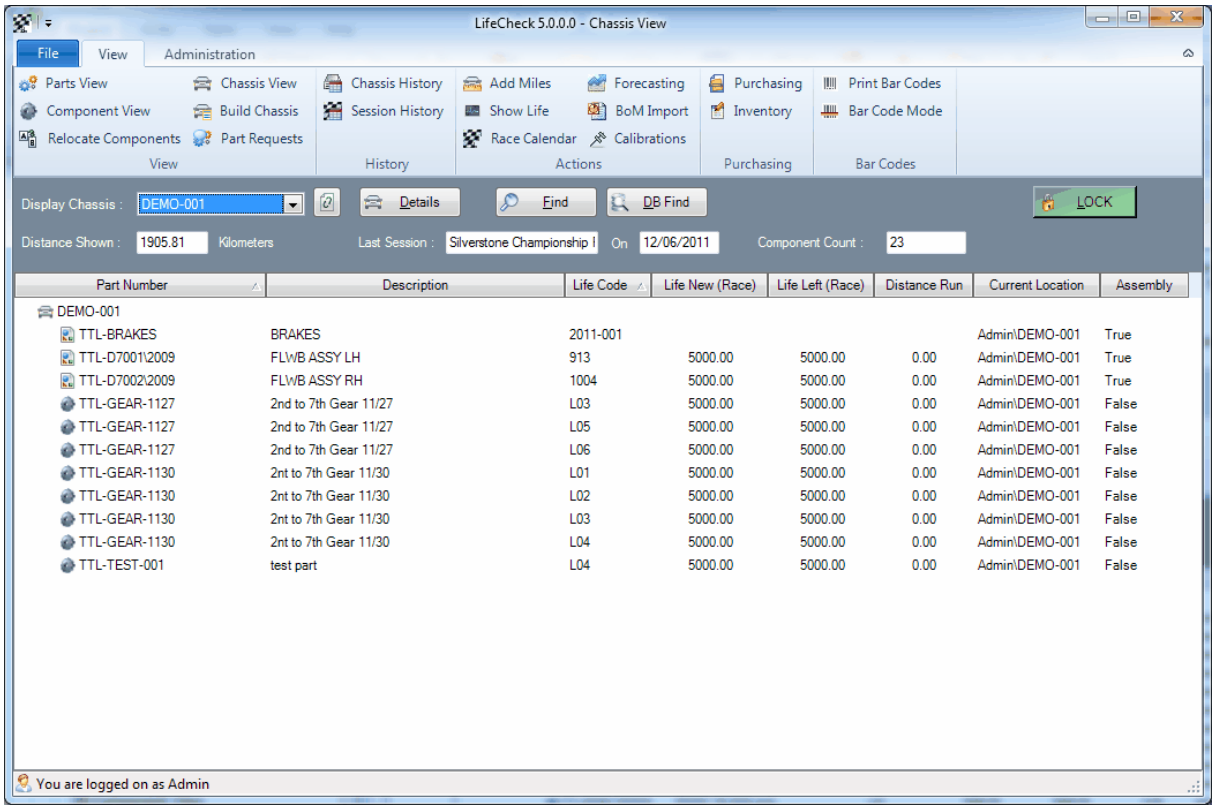

Right-clicking a component in either pane will display a context sensitive menu :-

Swap Component
This allows the currently displayed component to be 'swapped' with another instance of the component. See Using the 'Swap Component' Functionality for more details.

Delete Component
Use this option to delete components from the database subject to confirmation. This option should be used with care as deleting a component will also delete any associated history. As such this operation cannot be reversed. See Deleting Parts and Components for details.

Expand All
Expand all branches in the displayed hierarchy - note that this can take some time where there are a large number of components in a multi-level hierarchy to display.

Contract All
Contract **all** branches in the displayed hierarchy.

Choose Columns
Select the Columns which are to be displayed within this view. See Selecting View Columns for details.

Export Data To...
Exports the contents of this view in a variety of formats. See Exporting Data for further details

Print
This option allows the contents of the view to be sent directly to a printer in the form of a report. See

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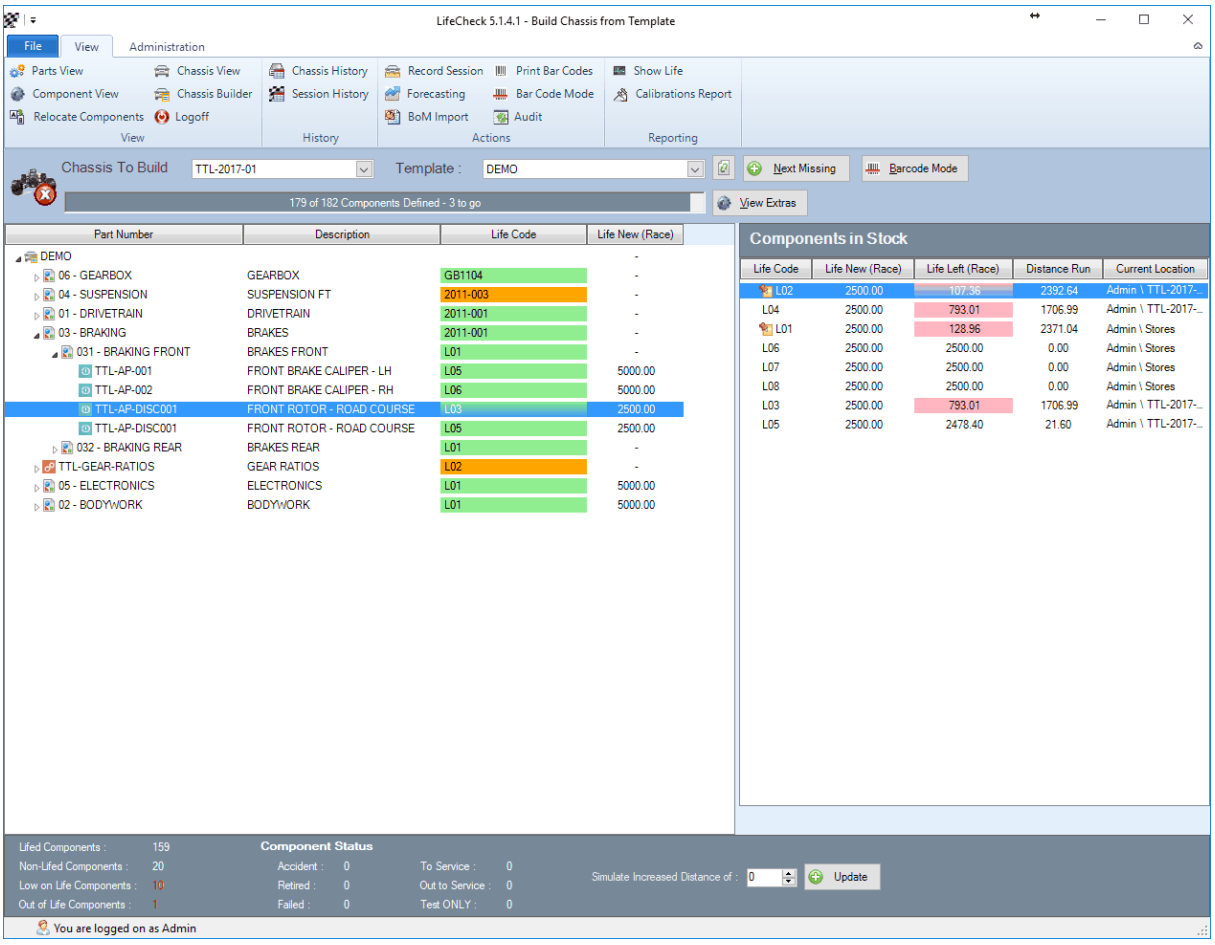
Printing Reports for details.

Reset Check
this option allows a check to be reset for the selected component(s). See Custom Checks for details.

Properties
This will display the Component Properties window for the currently selected component.

4.6 Chassis Builder

The **Chassis Builder View** allows a Chassis to be built according to a pre-defined Chassis Template. The Chassis Template defines the exact structure and content of the chassis and allows a Chassis to be built against the template. The example shown below has a number of components missing from the Chassis when compared with the template.



+

There are 2 points to consider when building a Chassis. Firstly, have all parts defined within the Template been specified on the Chassis and secondly are there any parts on the Chassis which are not

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specified within the template. The Build Chassis View is split into 2 distinct panes. The left hand pane displays the Chassis Template and highlights where a specific component has been identified on the selected chassis. The right hand pane displays the instances of the component selected which are in stock. The progress bar and image in the header of the view make it easy to identify when the chassis matches the template exactly.

If there are extra or miss-placed components on the Chassis the progress bar will show the count of additional components and the **View Extras** button will be enabled. Clicking this button will display a popup window showing the additional components and allowing for them to be removed from the chassis. It is important that the exact number of components are on the chassis before any sessions are added!

This view can also be used to move or swap components onto the chassis simply by right-clicking a part in the left hand paneor a component in the right hand pane and selecting the appropriate option from the menu displayed.

Swap Component
This option is only available when an existing component has been defined on the chassis. It displays the Swap Component form to allow a different component to be swapped on to the chassis.

Quick Swap Component
This option is only available in the right hand pane when an existing component has been defined on the chassis. It will immediately swap the component selected in the left hand pane with that selected in the right hand pane without any further options.

Select Component
This option has 2 functions. Clicking on this menu item will display a new window which lists all of the instances of the Part clicked on. This is of particular use when the part in question has a Part Class defined as the displayed window will display all instances of all parts with a matching part class from which the specific component may be selected. When Select Component is chosen for a non-classed part, an additional linked menu will be displayed containing the life codes and distance remaining of all instances of the part from which the required instance may be selected. Note that in the case of an assembly with contained parts, the top assembly must be defined before any lower level parts. Once the Assembly has been selected, the **Swap Component** function may be used to change components within the assembly however it is recommended that all assemblies are built prior to using the **Build Chassis** screen.

Properties
Click to display the properties of the Part (if a Component has not been specified) or Component (if it has).

Right-clicking on a row in the right-hand pane displays a different menu with the following option.

Remove Component
Selecting this option will remove the selected Component (or Assembly) from the Chassis. The component removed will be placed at the root of the default (first) location defined for the currently logged in department.

4.7 Selecting View Columns

LifeCheck allows the columns displayed in its main views to be customized on a user by user basis. To change the displayed columns, right-click within the view and select **Choose Columns** from the context menu displayed. The following window will be shown:

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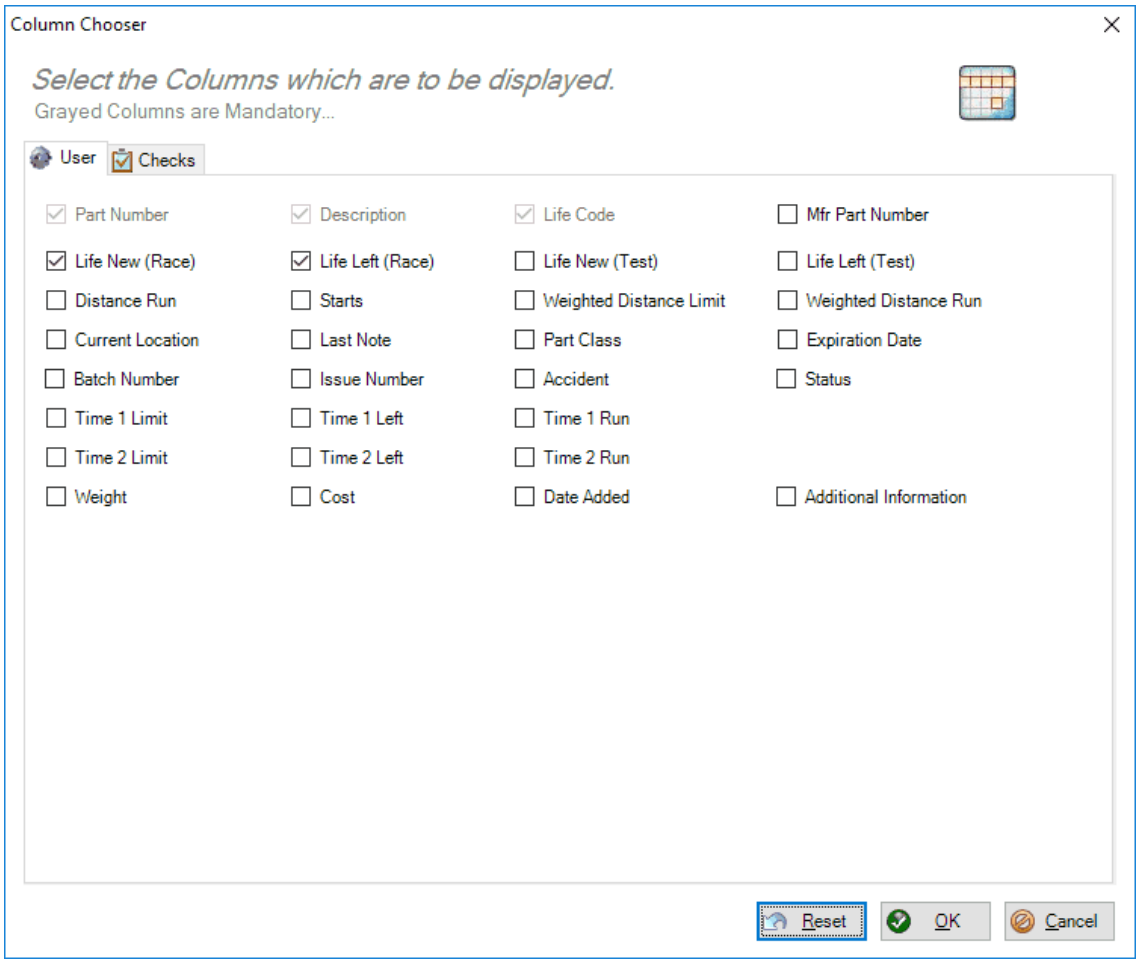

The **Part Number, Description** and **Life Code** columns are mandatory however the other columns may be selected by checking the appropriate box. In addition to the standard columns, **LifeCheck** can also display the attributes for any of the defined checks as well as the current value of any component extension fields. Select the check to display and check the required fields. The column settings will be saved on the users PC and will be restored the next time the user logs in. Note that the column settings are per-PC and per screen and are not dependent on the Department under which the user logs in to LifeCheck.

Click **Reset** to revert to the default display columns for the view being configured or **OK** to confirm the changes.

4.8 Finding Parts

Over time, the number of parts on file can grow substantially. It is not unheard of for there to be many hundreds or even thousands of parts and tens of thousands of components. Even if good naming standards are enforced and components placed into appropriate locations it can sometimes be difficult to find a specific part or component. To simplify this process all views have **DB Find** and **Part / Component** functions which will find parts within the database and current view respectively.

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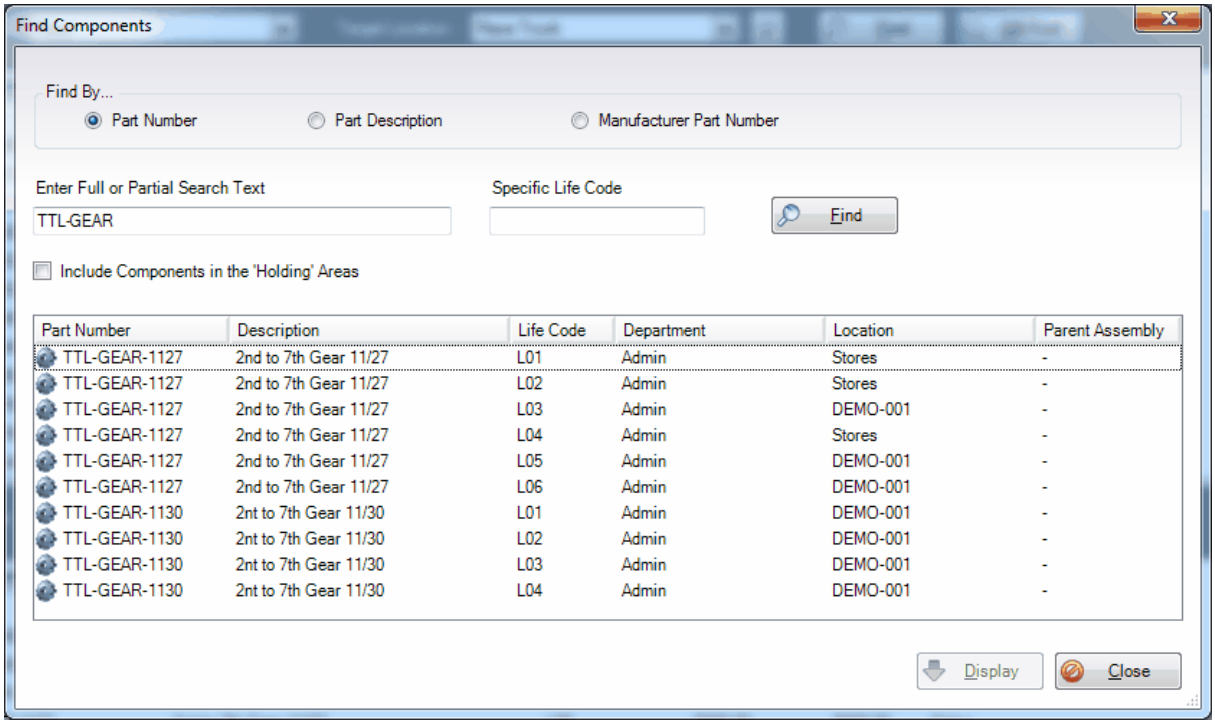
DB Find

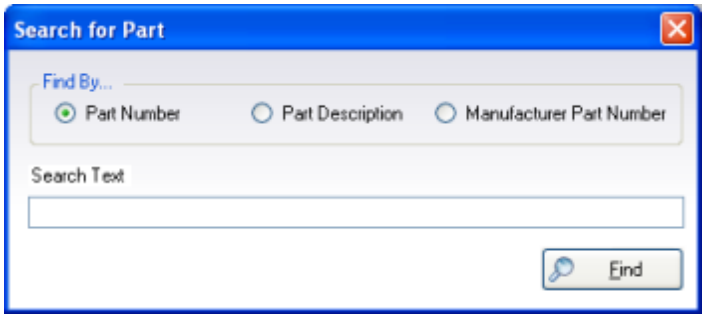
This function is used to perform a global search of the components within the database to identify those which match the selection criteria specified.



Here we have search to return all components whose part number begins with 'TTL-GEAR'. Clicking **Find** displays all instances located in the list. From here, click **Display** to jump to the Relocate Components view to display the component within its current location.

Find in View

This function is used to locate a specific component within the current view. To find a component, click the **Find** button or use the keyboard shortcut **CTRL+F**. The following window will be displayed:-



This window allows the current view to be searched for a part or component which matches the specified criteria, either Part Number, Description or Manufacturer Part Number. The search will be conducted in a case insensitive fashion and will match items which begin with the specified text. For example, to search for a part with number 'TTL-GEARBOX' we could enter just 'TTL-GE' and LifeCheck would search for the first item in the list with a part number beginning with 'TTL-GE'. The Search window will remain open unless explicitly closed or a different view is selected. Click **Find Next** to search forward for further matches.

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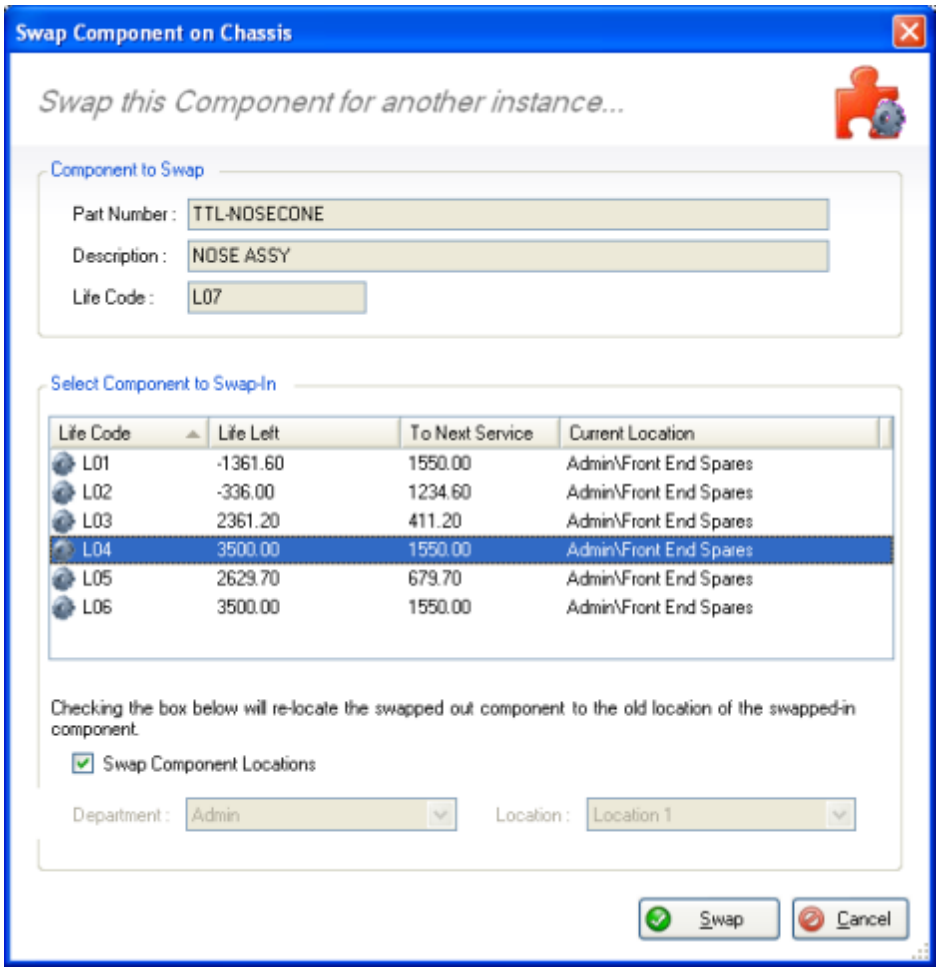
Note that the search will also start at the first item in the list regardless of any item currently selected.

4.9 Using the 'Swap Component' Function

One of the most common tasks within LifeCheck is the process of building or making changes to the chassis which is to take part in a race and the most common task in building a chassis is to replace one component with another instance of that component. For example, if a nose cone has been damaged during a practice session it will be necessary to replace it with another nose cone. LifeCheck simplifies this operation using a simple **Swap Component** menu option.

Simply select the component or assembly which is to be replaced, right-click and select **Swap Component** from the displayed menu. The following window will then be shown from which a replacement component can be selected.



All of the available instances of the component to be swapped are listed together with their life codes, relevant life information and their current location. When swapping a component, the default behavior is to move the component being swapped-out to the location of the component being swapped-in and vice-versa. It is however possible to over-ride this by unchecking **Swap Component Location** which allows the location to which the swapped-out component should be moved to be selected. This is most relevant if the component has been damaged or is out-of-life as it may need to be moved to one of the special

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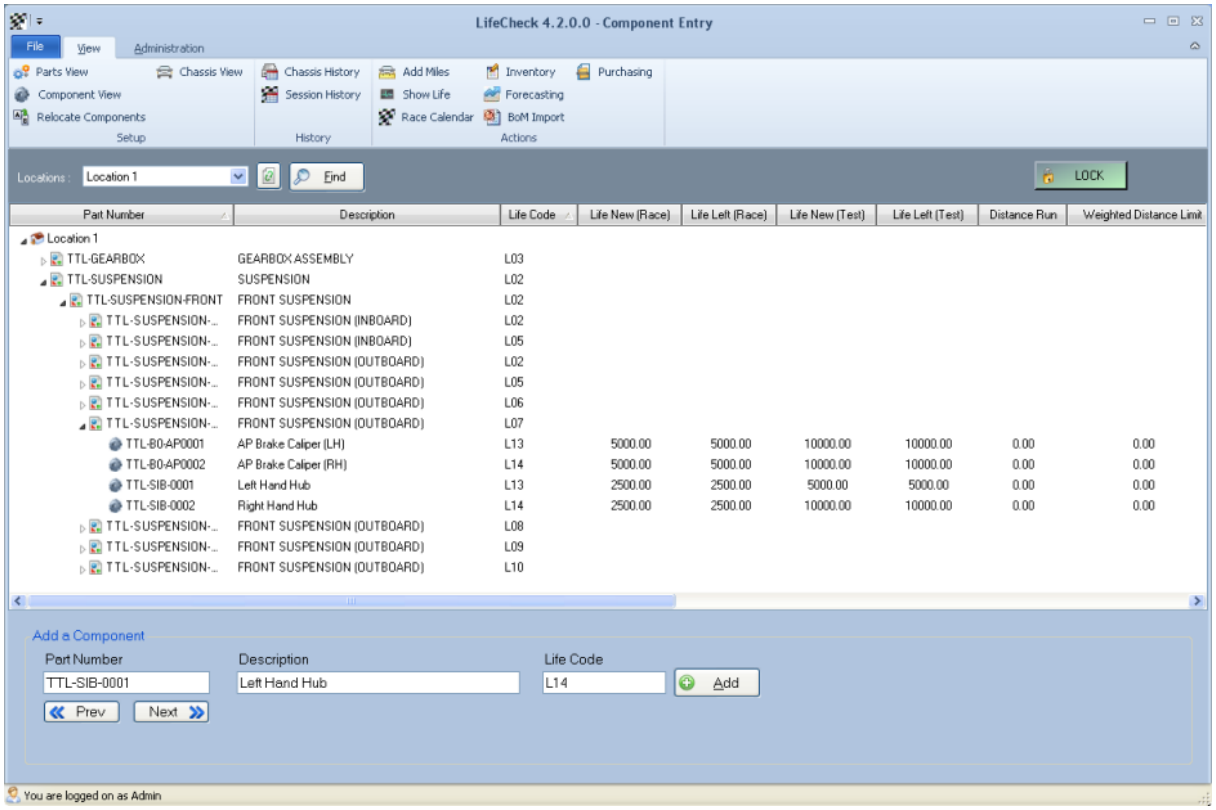
Holding areas.

You can also define the default location to which swapped out components should be re-located if you want to over-ride the above behavior. This done under Administration>Department Settings.

5 Parts and Components

5.1 Creating new Parts and Components

New parts and components are typically created from the Component View however it is also possible to create a new instance of an existing Part by right clicking on a part or component within any of the LifeCheck main windows and selecting 'New Component' from the context menu displayed.



New components/parts are created using the controls at the bottom of the window. This allows you to scroll through the list of existing parts to find the one that is to be created. Selecting a component in the view will pre-select that component to be created. To find a part, simply enter the first few characters of its part number and hit tab. The first matching part will be selected. Use the **Prev** and **Next** buttons to navigate through the list of parts until the desired part is selected. Note that the Life Code displayed is that which would by default be set for the next instance of the selected part.

To create a new part, enter its part number into the appropriate text box and hit tab to move to the **Description** field and enter a value for that field also. Click **Add** to begin the process of creating the part and/or component. If the Part Number entered does not currently exist a warning message will be displayed asking whether a new part should be created or not. This helps prevent typing mistakes from adding new parts to the database in error. New Components are positioned beneath the currently select

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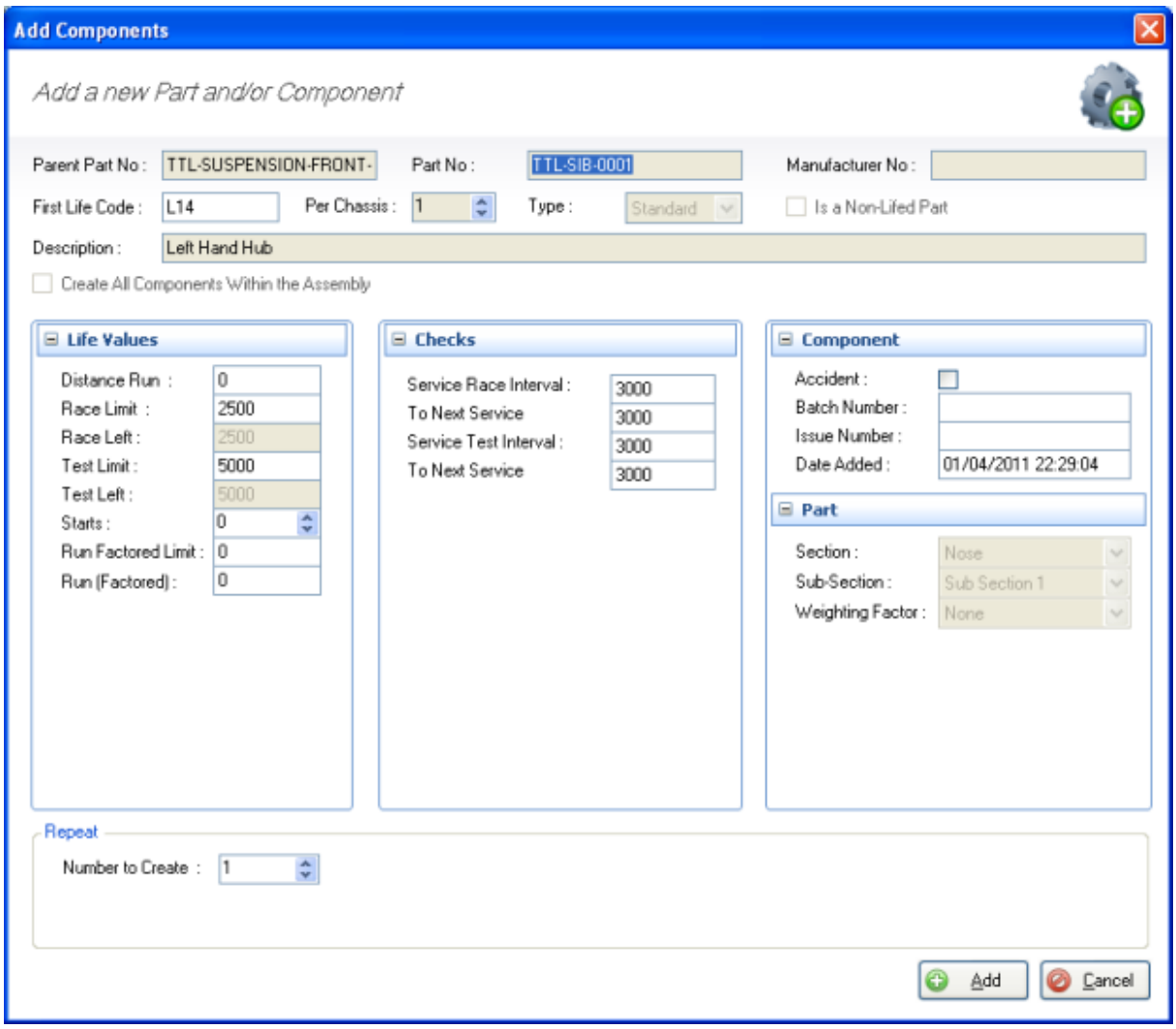
component making it easy to quickly build up assemblies. The following window will be displayed:-



The attributes of the component are grouped into a number of different categories as listed below.

General

These attributes are general properties of the Part and the component instance of that part being created. The majority of these settings such as the Part Number, Description and Quantity per Chassis are read-only unless a Part is being created as well as a component. The one exception to this is the life code as this applies to the new component. In most cases this will have been defined prior to this window being displayed, however it is always possible to modify the life code at this point. The life code must be unique for this part.

Life Values

These attribute set the actual life limits for the component being created. By default, these will be set to the values specified for the last instance of this component created or to the default values specified in

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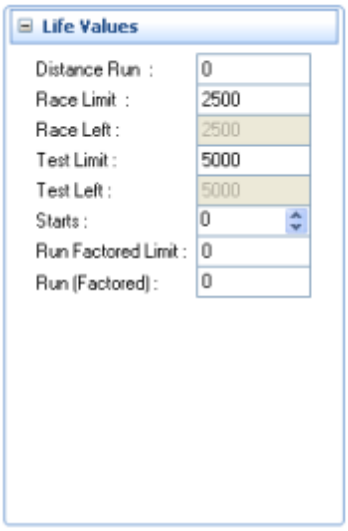
the Global Settings if this is the first instance of the part created.



Distance Run
This is used when creating a component which has already been run and allows a starting distance to be applied to the component. Where a non-zero value for **Distance Run** has been specified, LifeCheck will calculate the appropriate values for **Race Left** and **Test Left** based on the limits specified.

Race Limit
This is the distance that this component can run in race conditions.

Race Left
This value is calculated based on the **Race Limit** and **Distance Run**.

Test Limit
This is the distance that this component can run in test conditions.

Test Left
This value is calculated based on the **Test Limit** and **Distance Run**.

Starts
This is used when creating a component which has already been run and allows the number of starts already performed to be applied to the component.

Run Factored Limit
This is the factored distance that this component can run.

Run (Factored)
This is used when creating a component which has already been run and allows the factored (or weighted) distance already run by this component to be recorded. Note that changing this value will have no effect on other life fields as it is not possible to determine the factor value that was used. Please refer to Component Factors and Weighting later in this manual.

Checks

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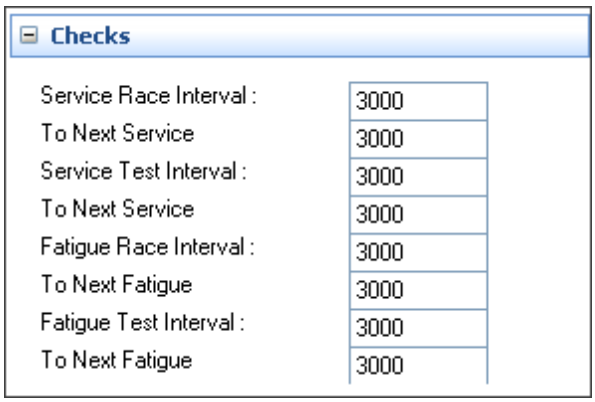
These attributes set the life values for all checks defined within LifeCheck. As **Service** is pre-defined as a check and cannot be deleted there will always be at least 1 check defined.



In the example above, an additional 'Fatigue' check has been defined within LifeCheck and therefore LifeCheck will prompt for values to be entered for this check also. The 'To Next' values will be affected by any value entered for **Distance Run** above however this can be over-ridden as required.

<check> Race Interval
This is the distance this component can run in race conditions between checks.

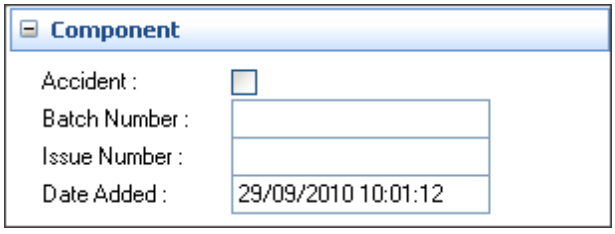
<check> To Next
This is the distance remaining that this component can run in race conditions before a check is required. It is calculated based on the **<check> Race Interval** and **Distance Run**.

<check> Test Interval
This is the distance this component can run in test conditions between checks.

<check> To Next
This is the distance remaining that this component can run in test conditions before a check is required. It is calculated based on the **<check> Test Interval** and **Distance Run**.

Component

These attributes are set for the Component being created.



Accident
Check this box to indicate that the component being created has been involved in an accident and has not been inspected or cleared for re-use.

Batch Number

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A textual string to indicate the batch this component is part of.

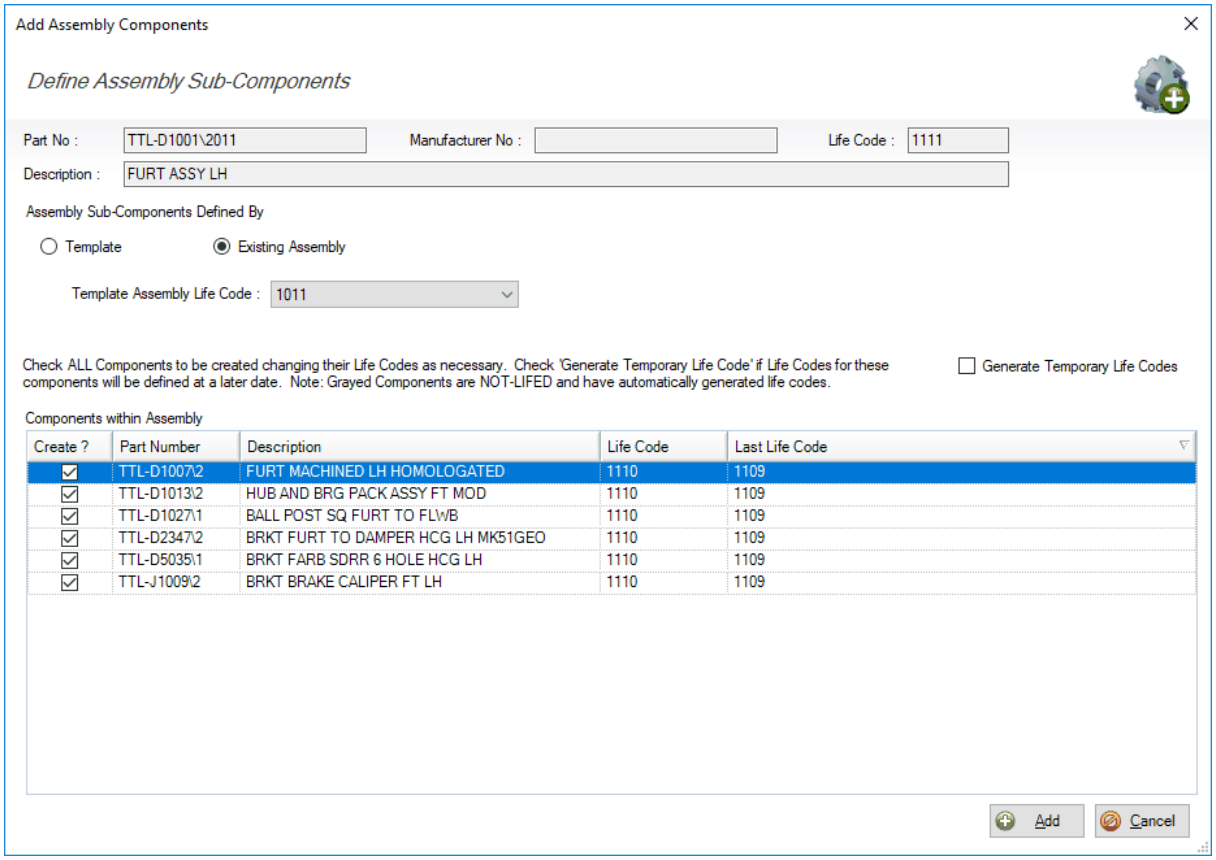
Issue Number
A textual string to indicate the Issue this component is part of.

Date Added
The date on which the component was added will be logged in the database - this field cannot be changed.

5.1.1 Creating the Components within an Assembly

When creating new instances of an assembly it is often the case that you will need to create a new instance of each component within the assembly. LifeCheck simplifies this process by allowing all of the components to be defined in a single operating rather than individually.

To create all components within an assembly, check the Create All Components Within the Assembly box on the Add Components window. LifeCheck will use the last instance of the Assembly being created as the 'template' to define which components (and sub-assemblies) make up the assembly and will display the following window as the new assembly is created:



This form shows the details of the New Assembly being created and lists the components which make up that assembly together with their description and the last life code used by that component. LifeCheck will allocate the next sequential life code for each new component to be created within the assembly however these may be modified if required by clicking on the 'Life Code' column and entering

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the correct value. Ensure that all components to be created are checked and that a unique life code is specified. Click **Add** to create the components.

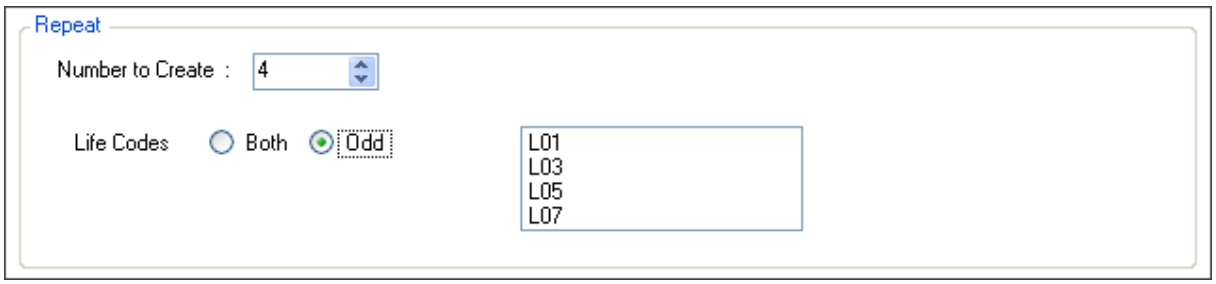
5.2 Creating Multiple Components

If a single part is to be added click on the **Add** button. LifeCheck may however also create several parts with the same details but different Life Codes using the **Repeat** options.

Enter the number of parts to be added in the **Number to Create** box, LifeCheck will allocate Life Codes to each of the components and these will be displayed in the box. If the first Life Code is purely numeric the subsequent codes will be
incremented either in steps of 1 or 2 depending on which of the options is selected. If the first Code is an even number the options are Both and Even, if it is odd they are Both and Odd.

If the first Life Code is part alpha and part numeric the program will increment the numeric part.

In the case of Life Codes which are wholly alpha, LifeCheck will be unable to determine multiple life codes and the repeat feature should not be used. In addition, the repeat feature will only allocate sequential life codes - if the components being created require non-sequential life codes they will need to be added individually.



In this example, four components will be created with sequential (odd) life codes L01, L03, L05 and L07. This odd/even numbering of life codes is often used to identify left handed and right handed parts on the chassis. For example left hand suspension uprights would have **odd** life codes whereas right hand suspension uprights would have **even** life codes.

5.3 Assembly Builder

The **Assembly Builder** simplifies the process of creating assemblies from individual components already present in the database. Often when migrating from a previous product the data imported into LifeCheck is not as well structured as is possible within LifeCheck and the components which make up an assembly may not be actually displayed within the assembly. In addition, you may receive a batch of components which are then sent to the sub-assembly department where they are built into their final assemblies.

An assembly can be easily built within LifeCheck using the **Component View** or **Relocate** screens and typically involves dragging and dropping components into their appropriate assembly 'containers'. This can be more complex than it first appears if a large number of components exist or where the components which make up the assembly are not all in the same location. This is where the **Assembly Builder** comes into play - it provides a simplified interface similar to the Chassis Builder where the assembly being built is compared against a reference or template assembly.

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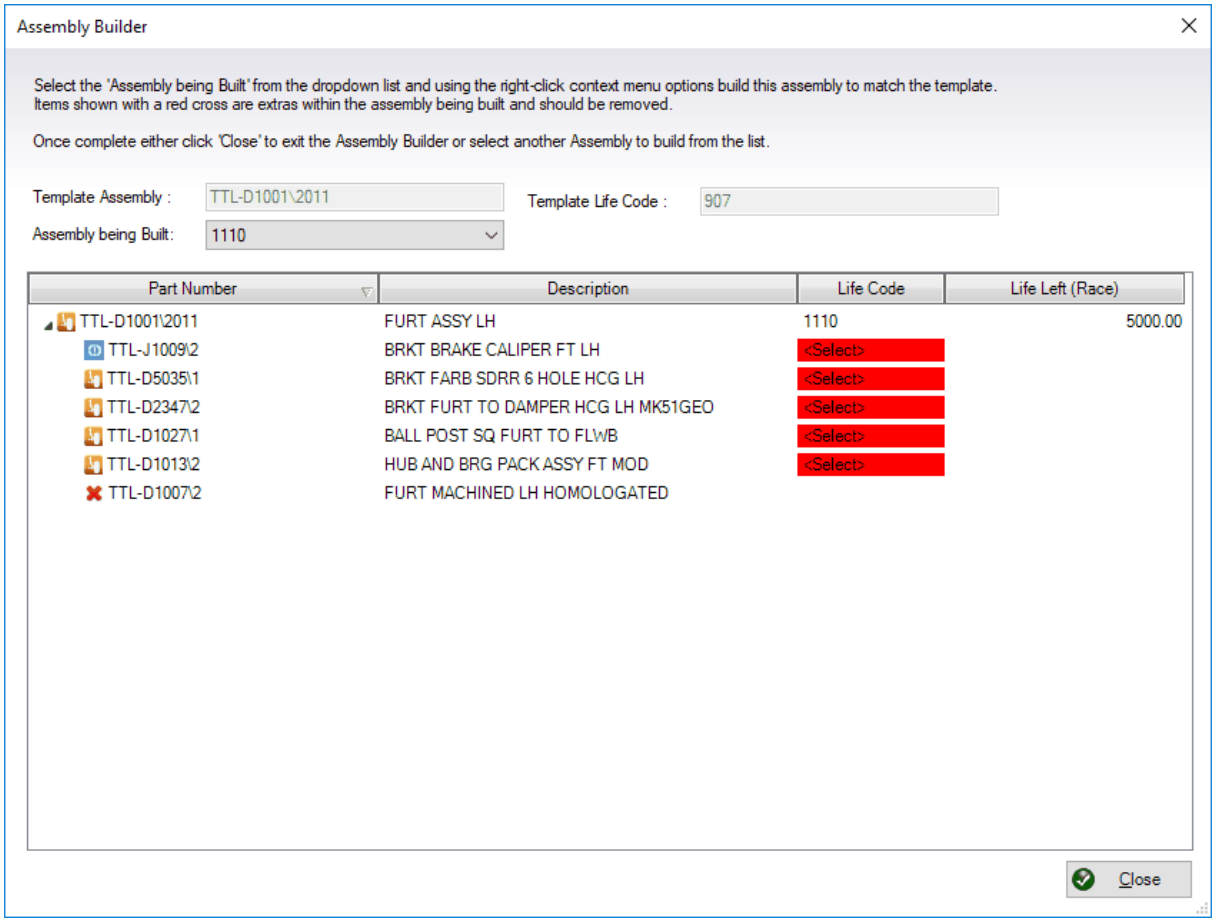
To invoke the assembly builder first select an existing instance of the assembly which is to be used as the template by which the new assembly will be built. The assembly builder will allow you to select the Assembly being built from the drop-down list of existing assemblies.



In the above example, a side pod assembly **TTL-N0-SIDEPOD** is being created using the existing assembly with life code **L02** as the template. Assembly **L03** is currently selected to be built and it shows that both components which make up the assembly **as defined in the template L02 assembly** are missing. As with the Chassis Builder, right click on the missing components (or sub-assemblies) and select the required component to add to the assembly. If a component is to be changed within the assembly, again right click and select the **Swap Component** option. the assembly is built in real time meaning that once it has been defined, simply close this window or select an alternate life code to build from the drop down list,

5.4 Part Properties

The Properties of a Part may be displayed from the Parts View by right-clicking the desired part and selecting **Properties** from the menu displayed.

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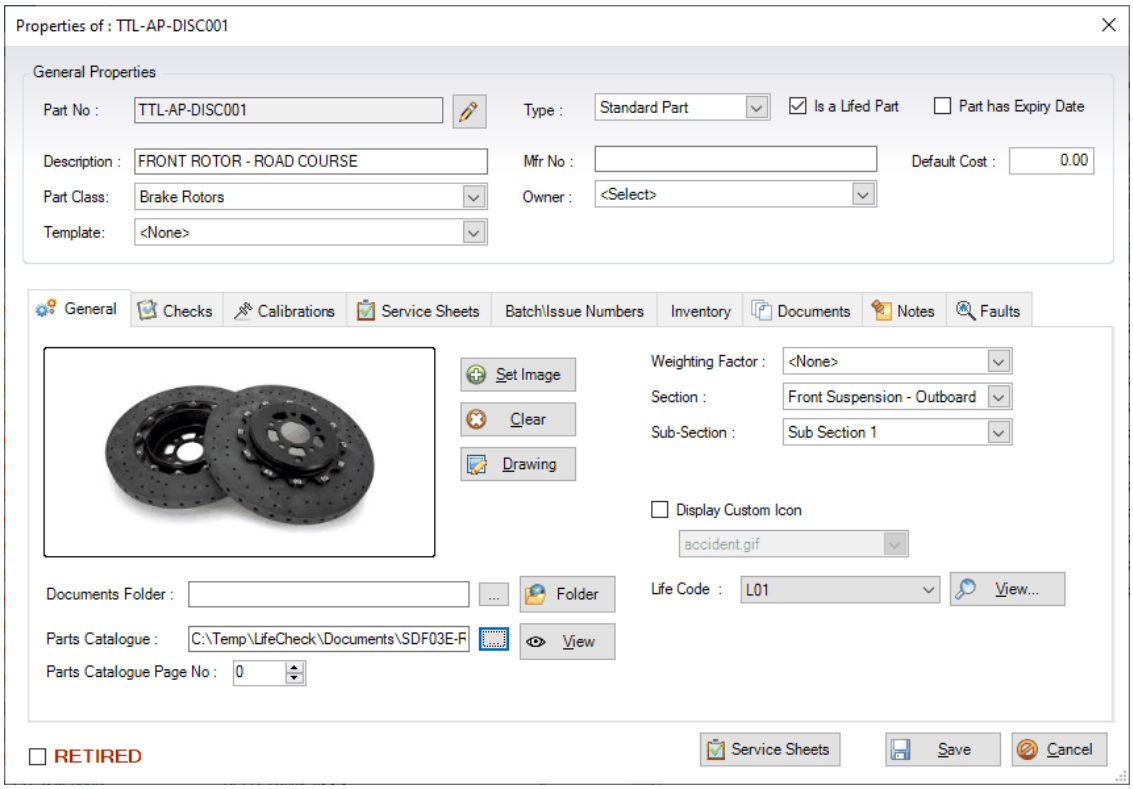

The properties of a Part are sub-divided into a number of Categories as follows:-

Part Number
This is the unique identifying number for this part. It is recommended that a formal naming convention is established for parts to make their identification easier. The Part Number can be an internally allocated number as LifeCheck also provides support for a second Manufacturer's part number to be specified.

Type
Select from 'Standard Part', 'Assembly' or 'Sundry'. Standard parts may exist within assemblies or sub-assemblies but may not themselves have children. Assemblies may have other assemblies and/or standard components located beneath it. Sundries are parts such as nuts, bolts, O rings etc which are not individually (or collectively) lifed but which you may want to track within LifeCheck for inventory purposes. The definition and use of assemblies within LifeCheck is the key to ensuring a usable structure may be defined which accurately reflects the structure of the parts on your chassis. For example, a Part could be defined as **Front Suspension Inboard** and flagged as an assembly. Now other assemblies such as uprights, wishbones etc may be added to this assembly which may then be moved as a complete unit onto a chassis.

Is a Lifed Part
While LifeCheck is primarily interested in the lifing of parts it is often desirable to flag a part as being not lifed. Take as an example the **Front Suspension Inboard** assembly mentioned above. This assembly does not have a life of its own - the life values are applied to the component assemblies and parts which may have disparate life's. As such we mark the assembly as non-lifed as we are using it purely as a 'container' in to which we will add other lifed parts.

Description
Enter a textual description for this part.

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Part has Expiry Date
This is used for parts which have a time after which they should not be used and is typically used for safety critical items such as fire bottles, seat belts etc.

Mfr No
Enter the manufacturers part number for this part where this has not already been specified for the **Part No** field.

Part Class
Part Classes are discussed later in this manual but you can select a part class here with which to associate this part.

Default Cost
Enter the default cost for this part. This will be automatically set as the cost for each component instance of this part as they are created.

Template
This field is only applicable to assemblies and allows a previously defined Assembly Template to be associated with this part. The primary purpose of this field is to enable the structure of the assembly to be known to the system outside of any chassis template. This is most useful in conjunction with part classes as it allows the Chassis Builder to be able to maintain an assembly selected for a Part Class as it now has a method by which it can determine the required structure of the assembly.

Part has been Retired
Use this flag to retire the part. Retired Parts are by default hidden within the system and only visible if selected on the Parts View.

Additional attributes are grouped on tabs within the Properties form.

5.4.1 Part Properties - General

General

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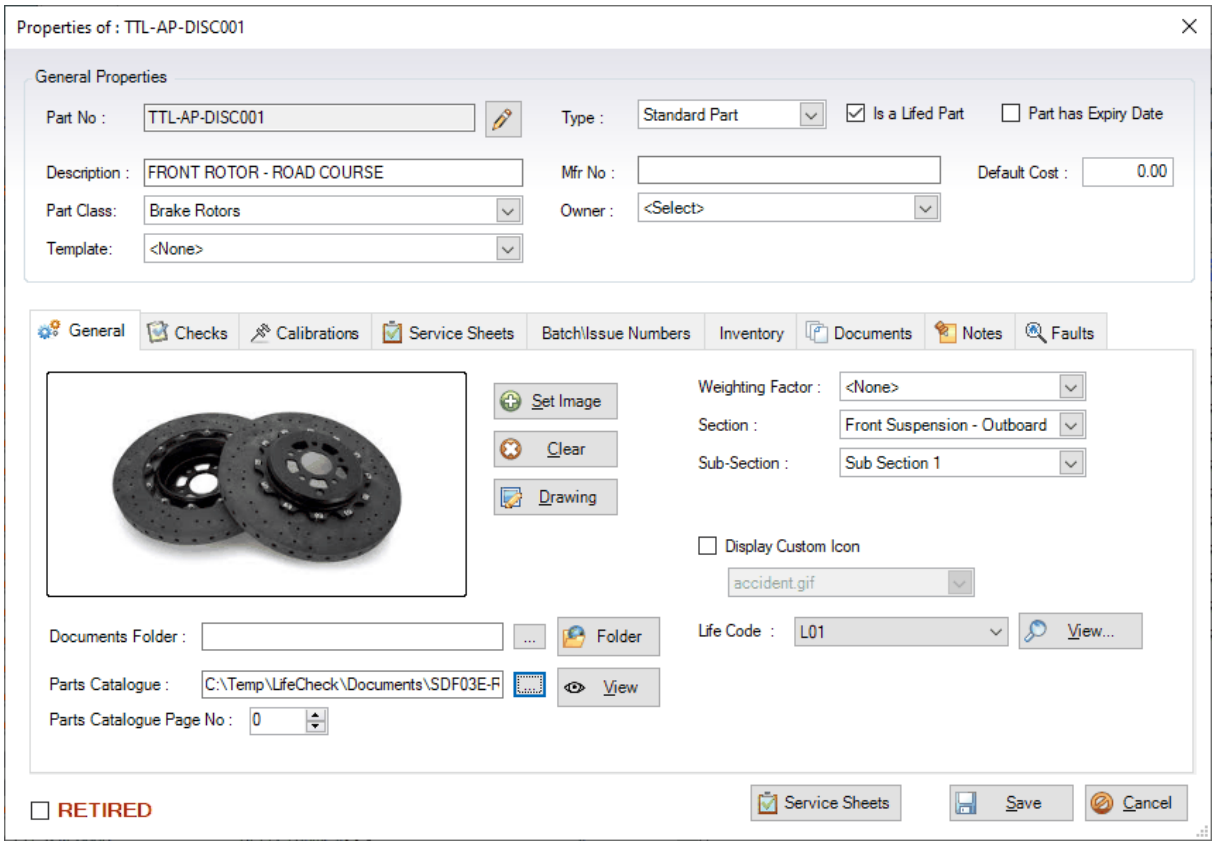

Section
This identifies the Section in which this Part has been grouped. Sections have been largely replaced by the Chassis Template and should not be used.

Sub-Section
This identifies the Sub-Section in which this Part has been grouped. Sub-sections have been largely replaced by the Chassis Template and should not be used.

Weighting Factor
This identifies any Weighting Factor which has been set for this part.

Display Custom Icon
By default the icon displayed for this part and all component instance is the standard assembly/ component image. It is however possible to define your own icons or select from those shipped with LifeCheck and held in the '\CustomImages' sub-folder beneath the LifeCheck installation folder. To use your own custom images simply copy them into this folder and restart LifeCheck.

Life Code
This displays a list of the life codes allocated for this part.

Change To
This allows the Life Code displayed above to be changed to a different (new) life code. Enter the new life code and click **Update Life Code** to change the life code for the component.

View Component
Click to view Component Properties for the component with the selected life code.

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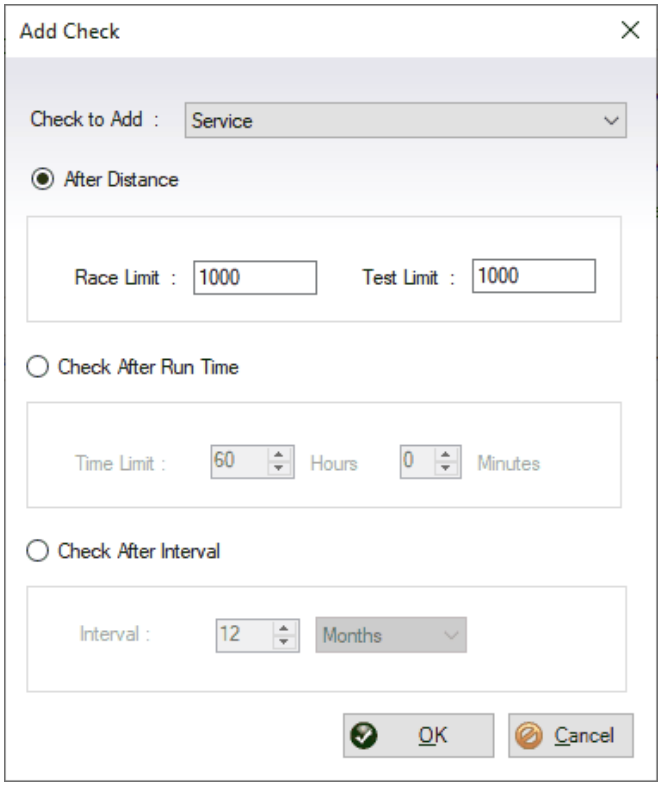
Documents Folder
This is a folder within which documents relating to this part may be held - it has no real meaning within LifeCheck but is intended to allow quick access to a part specific folder.

Parts Catalog
The Parts Catalog allows a part and all component instances of that part to be linked to a PDF file which contains additional information about the part such as a price lists, technical drawing, torque settings etc. A specific page within the catalog may also be specified and, when viewed, LifeCheck will attempt to open the PDF at the specified page. Note the default PDF viewer should be specified in Department Settings for this to function correctly.

5.4.2 Part Properties - Checks

Checks

The Checks tab allows periodic maintenance to be added or removed for the part and hence for all component instances of the part. Please note that once a check has been removed all data relating to that check will be lost for the components and cannot be recovered. To add a new check for the part, click **Add Check**. The following window will be displayed :-



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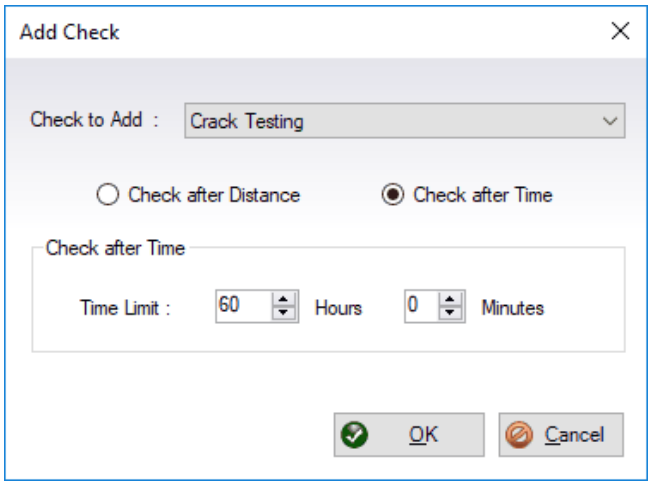
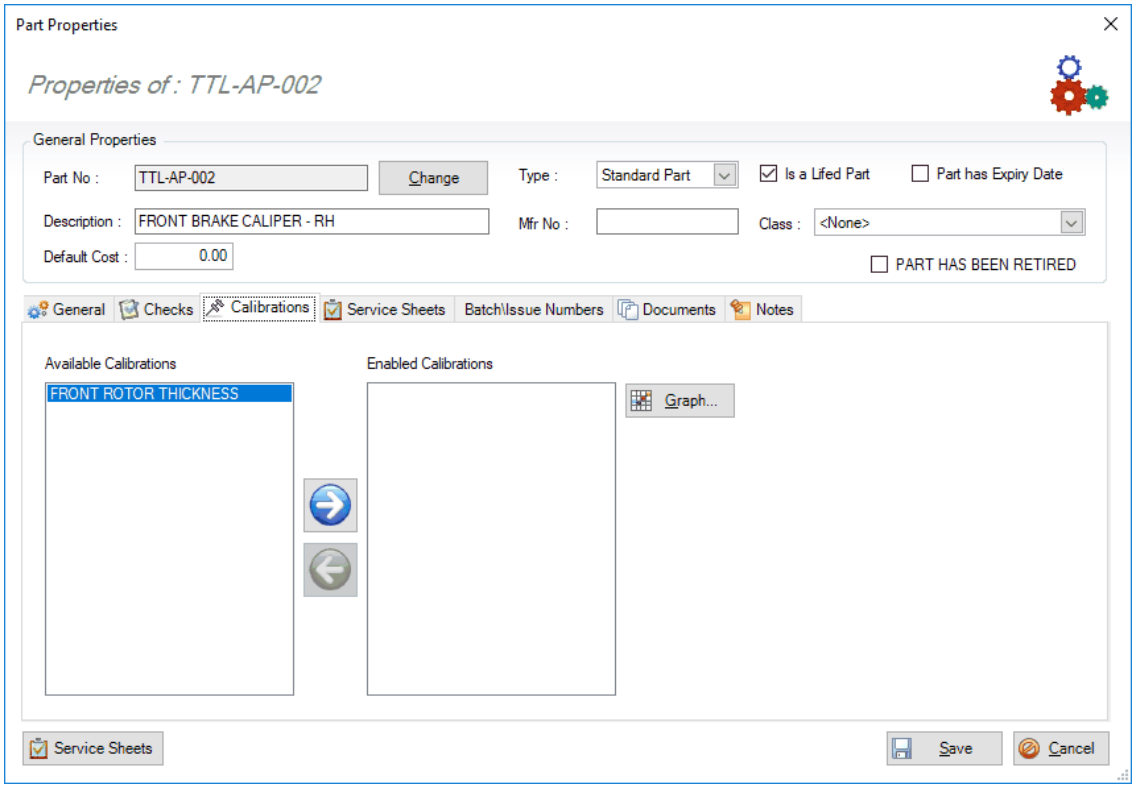


Checks can be performed after either a specified distance or duration as required.

5.4.3 Part Properties - Calibrations

The Calibrations tab allows calibrations to be defined for the part. Calibrations are discussed later in this manual but in brief allow an arbitrary value, such as a minimum thickness to be defined as a life value. To enable a calibration for this part select the required entry in the left pane and click the right arrow to move it to the 'Enabled Calibrations' list. To remove a calibration do the reverse operation.



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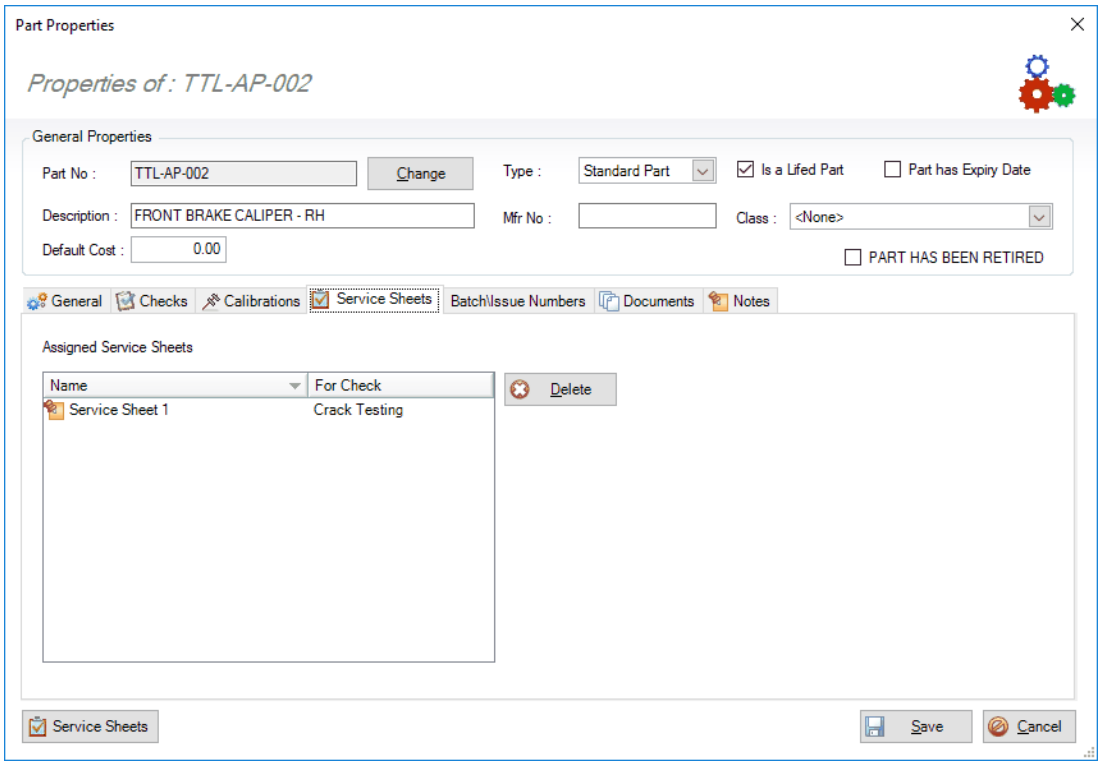
5.4.4 Part Properties - Service Sheets

Service sheets define a series of questions which are asked when a check for a component is reset and a service sheet has been associated with that Component/Check. This window displays the service sheets which have been assigned to this part and lists the checks for which the service sheet should be displayed.



Service sheets are assigned to a part/check via a right click option on the Parts View.

5.4.5 Part Properties - Batch and Issue Numbers

This tab allows the batch and issue numbers to be set and modified for the part. See Editing Parts for further details.

5.4.6 Part Properties - Inventory

Inventory

This tab allows stock levels and limits to be set for this part. It is only applicable and will only be displayed if LifeCheck has been licensed for the Inventory functions.

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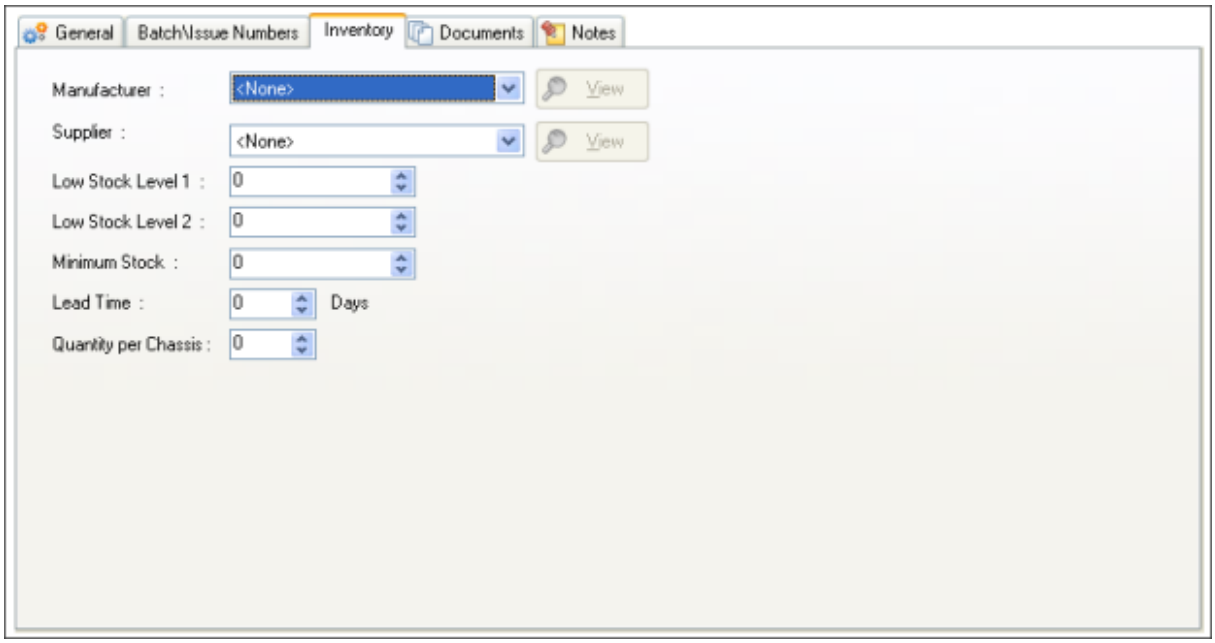

Manufacturer
Select from a drop-down list of pre-defined manufacturers. Manufacturers are defined in the Administration area of LifeCheck. See Manufacturers for further details.

Supplier
Select from a drop-down list of pre-defined suppliers. Suppliers are defined in the Administration area of LifeCheck. See Suppliers for further details.

Low Stock Level 1, 2 and Minimum Stock
These fields define, in increasing severity the permitted stock levels for this part. Level 1 should be set higher than Level 2 which in turn should be set higher than minimum stock. These levels affect the display content and highlighting shown on the Inventory View and allow parts which are low on stock to be easily identified.

5.4.7 Part Properties - Documents and Notes

As with a number of items within LifeCheck, Parts may have documents and notes associated with them. For example, a Part may have its technical drawing attached to it and may have notes which relate to changes in the specification. Further details can be found in Documents and Notes.

5.5 Component Properties

The Properties of a Component may be displayed from multiple views showing a component such as the Parts View, Component View, Chassis View etc by right-clicking the desired component and selecting **Properties** from the menu displayed.

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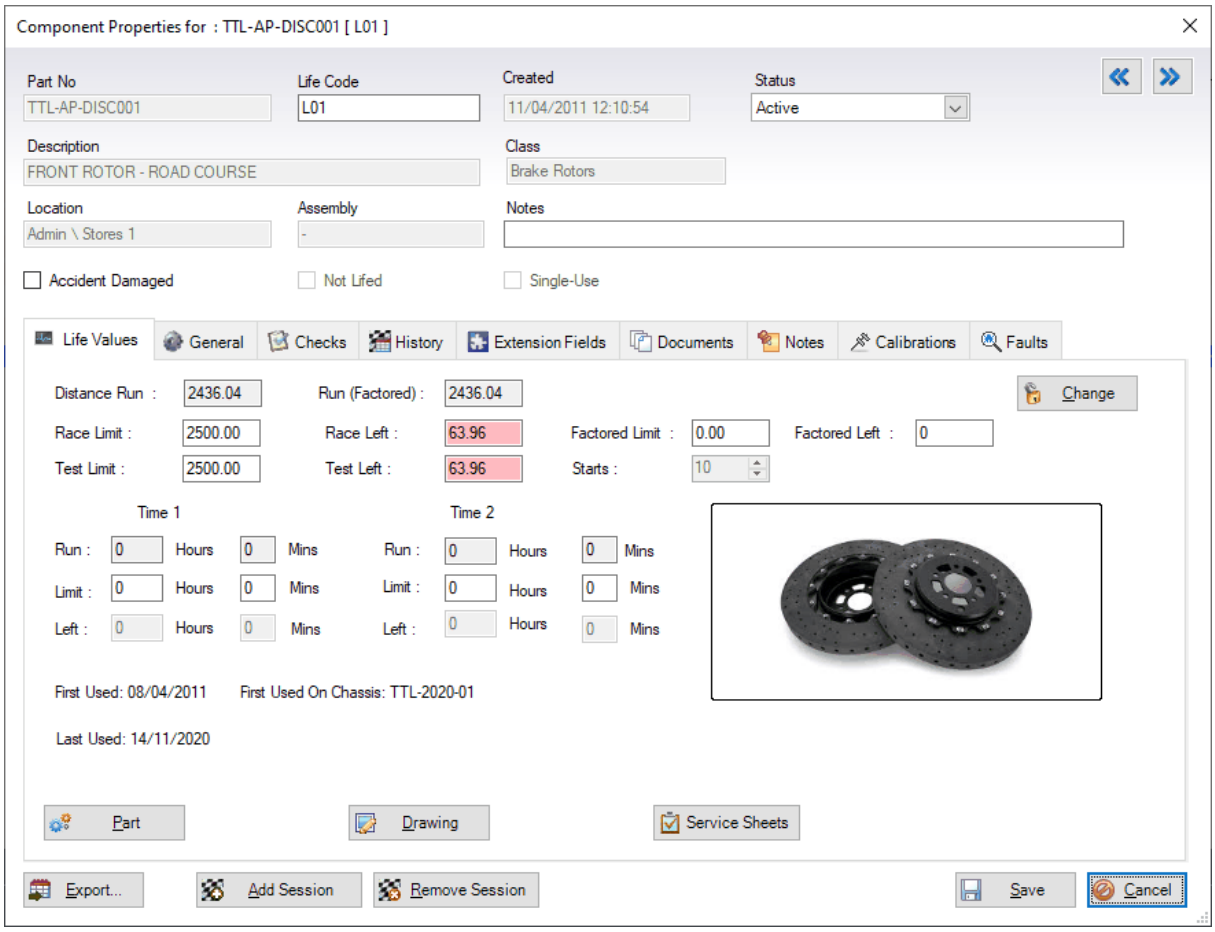

The properties of a Component are as follows:-

Part Number
This is the unique identifying number for the parent part. **(Read Only)**

Life Code
This is the unique life number assigned to this component instance of the part. The life code for a component may be modified on the Part Properties form. See Editing Components for details.

Created
The date at which this component was added to the database. **(Read Only).**

Status
The current status of this component, values are selected from a drop down list of available statuses defined within **Administration > Data Setup**

Description
A textual description for this part. **(Read Only).**

Class
(Any) **Part Class** associated with this component **(Read Only, set in Part Properties)**

Location

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The current location within which this component has been placed.

Assembly
The name of (any) Parent Assembly **(Read Only)**

Notes
Generic notes held separately from the main component notes.

Accident Damaged
Flags this component as having been involved in an accident. This would typically be set as distance is added to a chassis containing this component. Once an accident damaged part has been inspected and found to be usable, the accident damaged flag may be cleared here.

Lifed
Flag to indicate if this a Lifed part **(Read Only, set in Part Properties**)

Single Use
Flag to indicate if this a Singe Use part **(Read Only, set in Part Properties**)

5.5.1 Component Properties - Life Values

This tab shows Component attributes which relate to the lifing of the Component.

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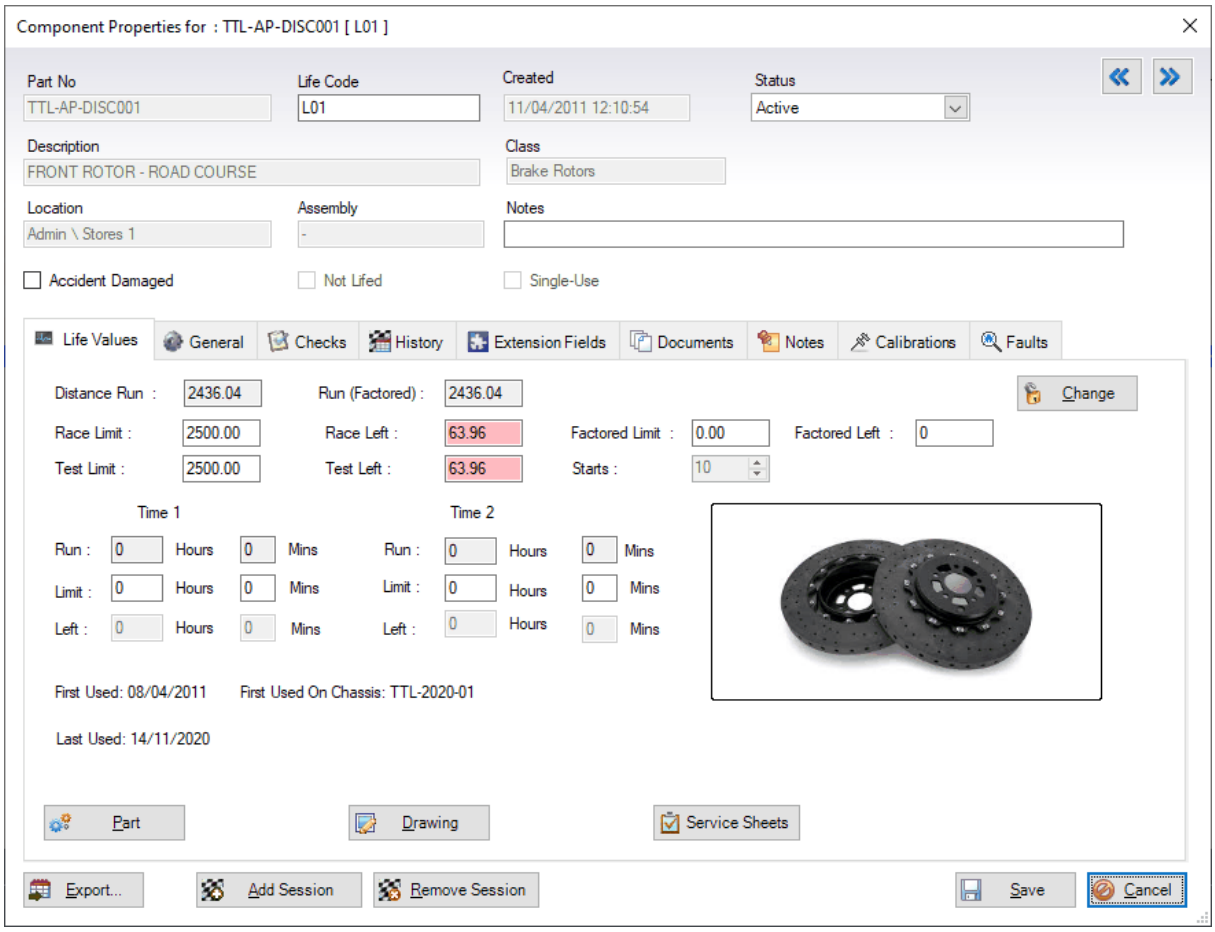

Distance Run
This is the total distance run by this component. This field is normally read-only but may be unlocked by the **Admin** user.

Run (Factored)
This is the distance run by the component taking any factors set into account. This field is normally read-only but may be unlocked by the **Admin** user.
See Component Factors and Weighting for details on setting a factor for a component.

Race Limit
This is the race limit set for this component. This field may be modified on this form to correct any previous errors. See Editing Components for details.

Test Limit
This is the test limit set for this component. This field may be modified on this form to correct any previous errors. See Editing Components for details.

Race Left
This value is calculated based on the **Race Limit** and **Distance Run**.

Test Left
This value is calculated based on the **Test Limit** and **Distance Run**.

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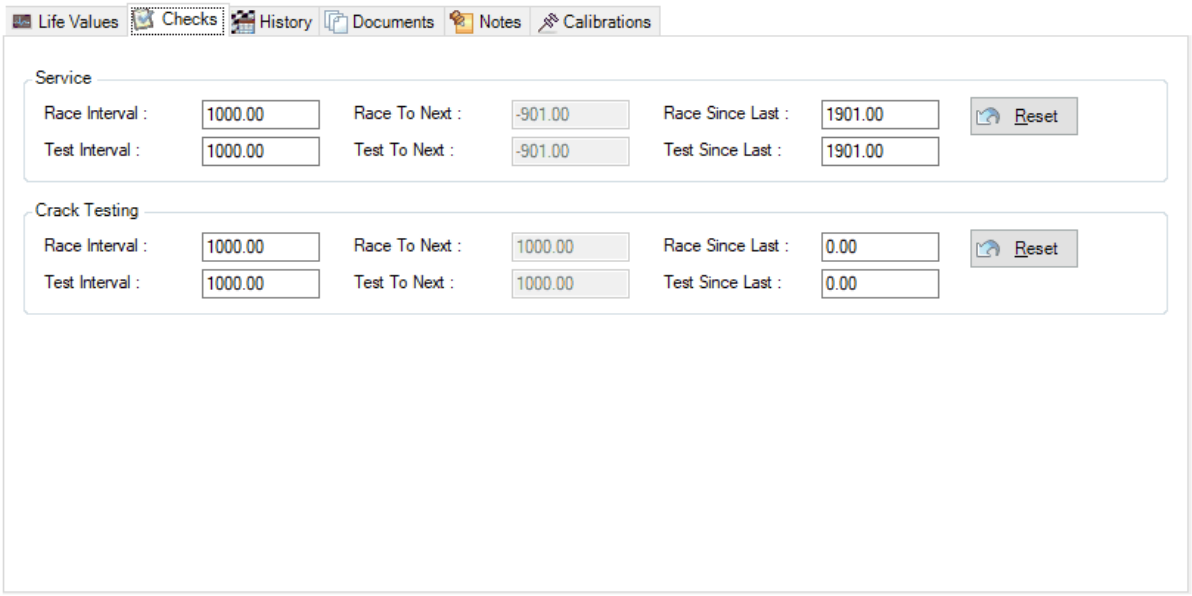
Run (Factored) Limit
This is the life limit of the component based on the factored distance run. See Component Factors for more details on factors and their effect on component life.

Starts
This is the number of Starts which have been defined for this component. This field is normally read-only but may be unlocked by the **Admin** user.
See Editing Components for details.

Time 1 / Time 2
These are separately held time values detailing the total time run, the limit and time left. The 'labels' for these fields may be set under Administration>Global Settings as required.

5.5.2 Component Properties - Checks

These attributes set the life values for all checks defined within LifeCheck for this component. Each check is displayed within its own section.



<check> Race Interval
This is the distance this component can run in race conditions between checks.

<check> To Next
This is the distance remaining that this component can run in race conditions before a check is required. It is calculated based on the **<check> Race Interval** and **Distance Run**.

<check> Test Interval
This is the distance this component can run in test conditions between checks.

<check> To Next
This is the distance remaining that this component can run in test conditions before a check is required. It is calculated based on the **<check> Test Interval** and **Distance Run**.

Each check may be reset here by clicking on the **Reset** button. Checks are added to Components

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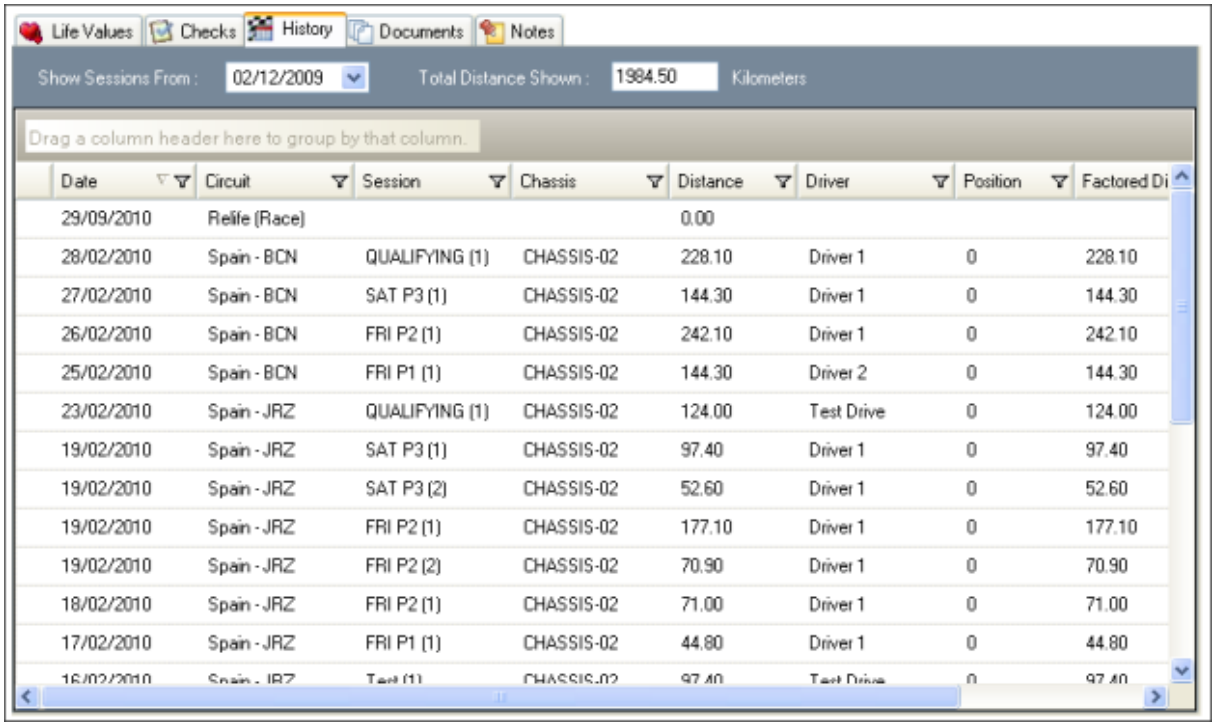
within **Part Properties > Checks**.

5.5.3 Component Properties - History

The Component History details the sessions in which this component has run and other significant events such as a change of life limit, service or update as a result of a BoM update.



Date	Circuit	Session	Chassis	Distance	Driver	Position	Factored Di
29/09/2010	Relife (Race)			0.00			
28/02/2010	Spain - BCN	QUALIFYING (1)	CHASSIS-02	228.10	Driver 1	0	228.10
27/02/2010	Spain - BCN	SAT P3 (1)	CHASSIS-02	144.30	Driver 1	0	144.30
26/02/2010	Spain - BCN	FRI P2 (1)	CHASSIS-02	242.10	Driver 1	0	242.10
25/02/2010	Spain - BCN	FRI P1 (1)	CHASSIS-02	144.30	Driver 2	0	144.30
23/02/2010	Spain - JRZ	QUALIFYING (1)	CHASSIS-02	124.00	Test Drive	0	124.00
19/02/2010	Spain - JRZ	SAT P3 (1)	CHASSIS-02	97.40	Driver 1	0	97.40
19/02/2010	Spain - JRZ	SAT P3 (2)	CHASSIS-02	52.60	Driver 1	0	52.60
19/02/2010	Spain - JRZ	FRI P2 (1)	CHASSIS-02	177.10	Driver 1	0	177.10
19/02/2010	Spain - JRZ	FRI P2 (2)	CHASSIS-02	70.90	Driver 1	0	70.90
18/02/2010	Spain - JRZ	FRI P2 (1)	CHASSIS-02	71.00	Driver 1	0	71.00
17/02/2010	Spain - JRZ	FRI P1 (1)	CHASSIS-02	44.80	Driver 1	0	44.80
16/02/2010	Spain - JRZ	Test (1)	CHASSIS-02	97.40	Test Drive	0	97.40

Show Sessions From
This defines the start date for component history records allowing the display to be customized. This defaults to the value specified under **Displays>Start Date** on the Department Settings form.

Total Distance Shown
This totals up the distance covered in each of the listed sessions.

5.5.3.1 Adding and Removing Sessions

In certain circumstances it may be necessary to either remove a component from a previously recorded session or add the component to a session. Adding a component to a session must be done from the Component Properties form whereas removing a component from a session may be done either from Component Properties or from the Session History view.

Removing a Component from a Session

To remove a component from a session first display the properties for the component and select the history tab. Two ways of removing the component from the session are supported:-

For a Single Session

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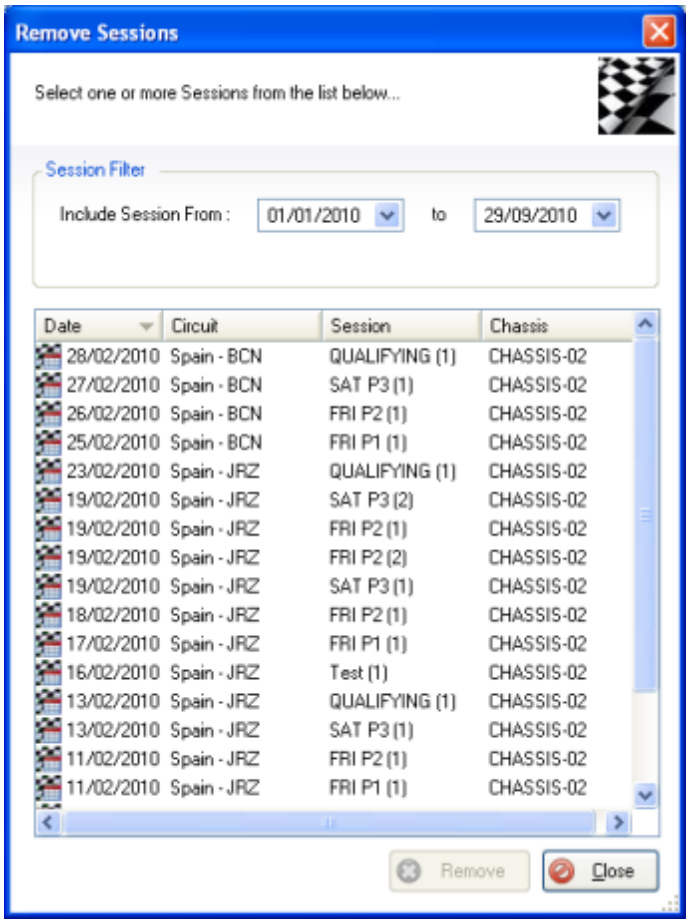
Right-click on the session to be removed and select **Delete** from the menu displayed. After confirmation the session will be removed for the component.

For Multiple Sessions
Right-click within the Component History and select **Remove Session** from the context menu displayed. The following window will be displayed listing the sessions defined for the component.



The sessions displayed can be tailored based on the start and end dates specified. Select one or more sessions to remove for the component and click **Remove**. Following confirmation, the sessions will be removed from the component.

Adding a Component to a Session

In a similar fashion, a component may also be added to an existing session by right-clicking within the Component History and selecting **Add Session**. The window shown below is displayed:

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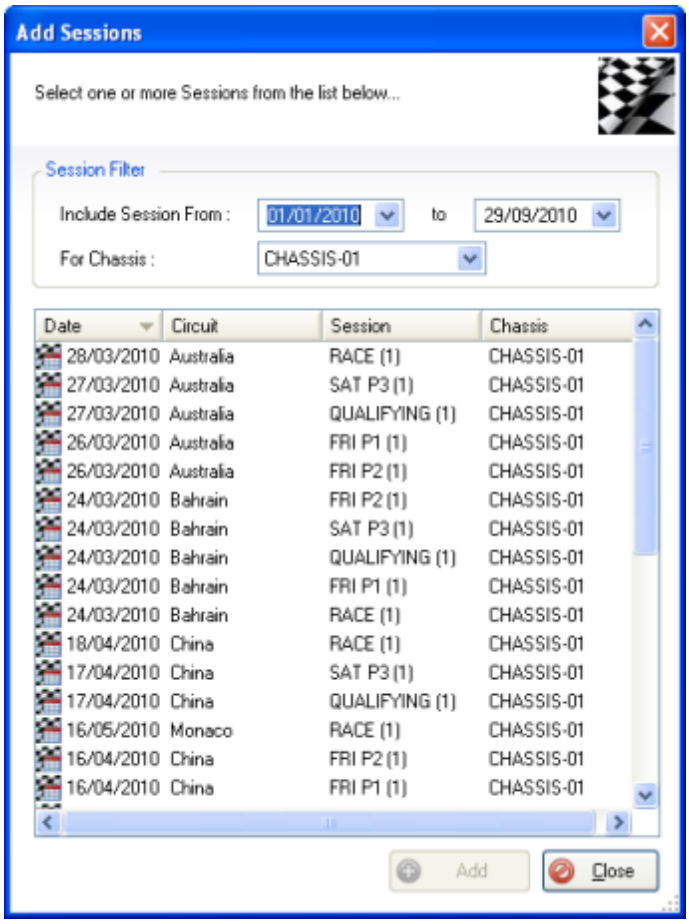

This window displays the sessions between the specified dates which have been defined for the specified chassis but which did not contain the selected component. Different sessions may be displayed by changing the selected chassis. Once the session or sessions have been identified, select them and click **Add** to add the component to those sessions.

5.5.3.2 Changing a Service or Re-Life Date

While viewing the history for a component it may also be necessary to change the date on which a component was re-lifed or serviced if this was incorrectly specified initially, as this will affect the distance to the next service. To change the date of a service, click the Date for the service in the component history. A popup calendar will appear. Change the date as required and simply exit from the calendar to commit the change.

5.5.4 Component Properties - Documents and Notes

As with a number of items within LifeCheck, Components may have documents and notes associated with them. Further details can be found in Documents and Notes.

5.5.5 Component Extension Fields

Once a component extension field has been defined under Administration > Component Extension Fields, it is available for a value to set under Component Properties. There is no default value for a component extension field. Once a value has been set, a component extension field can be displayed in all the places that any other attribute of a component may be displayed by checking the appropriate field in the Column Chooser.

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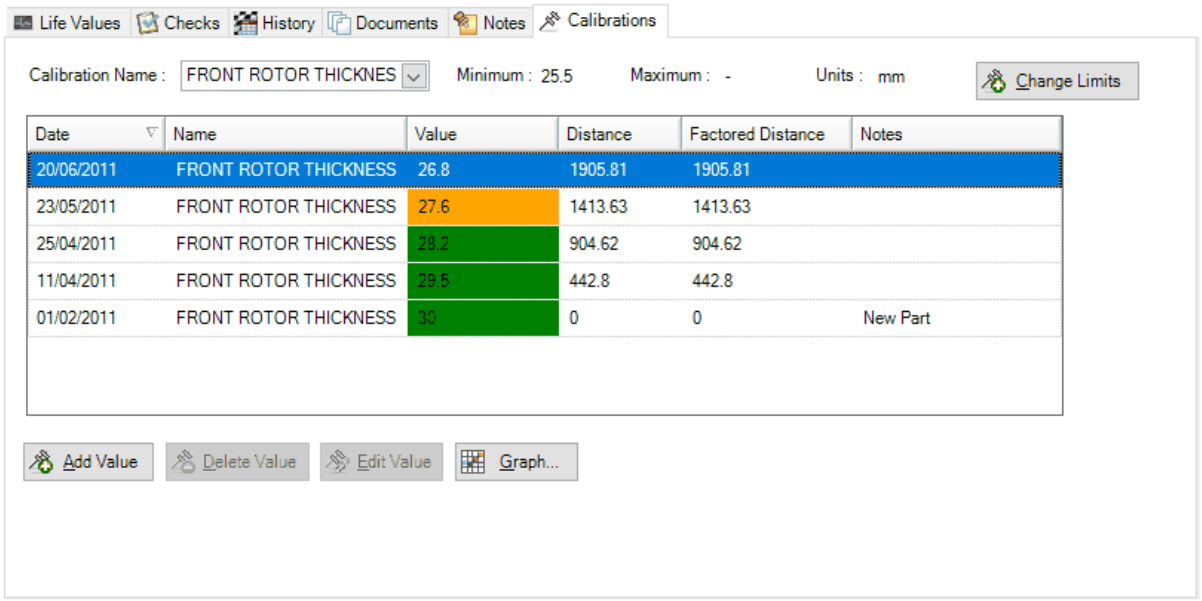
5.5.6 Component Properties - Calibrations

This tab is only available if the appropriate option has been licensed. It displays any calibration values recorded for this component. Note that calibrations can only be recorded if one has been defined for the Part under **Part properties > Calibrations**.



5.6 Component Extension Fields

Occasionally you may find that additional information is needed about a specific part which the standard LifeCheck component attributes do not support. For example, while a batch of springs may have a nominal rating there may be subtle differences in their measured rating which needs to be recorded against each instance of the spring. this could be done using the existing Notes field but the disadvantage of that approach is that subsequent notes added to the component may obscure the important rating note. To meet this requirement each component may have 0 or more Extension Fields associated with it.

Prior to specifying a value for a Component Extension field, the field itself must be declared under Administration>Component Extensions as shown below :-

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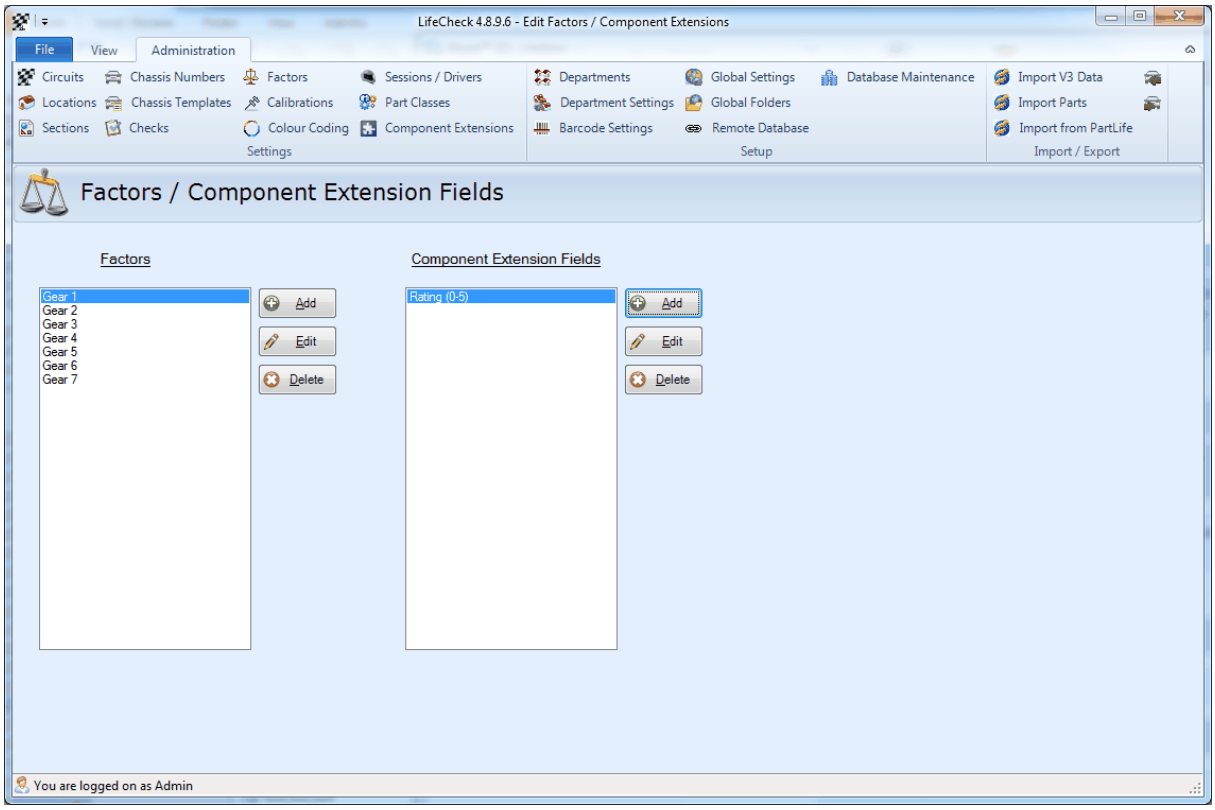
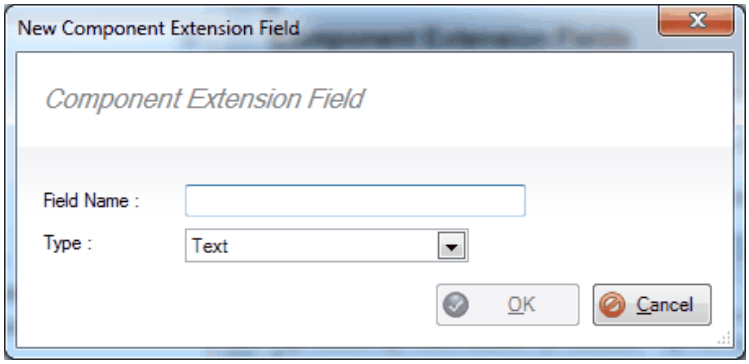


Here we have a single component extension field which holds a rating value which is defined as a numeric value in the range 0 to 5. To add a component extension field, click **Add**. The following window will be displayed.



All component extension fields are available to all components however no value is stored for a component until and unless a value is entered under Component Properties.

5.7 Building a Chassis

A chassis is the primary item to which distance is added via the **Add Miles** form. It should replicate the parts and components actually fitted to your race car. Chassis's can be built in one of two ways - either within a single location, for example within the Race Department or in multiple departments with the Hydraulics Department responsible for building their section of the chassis, the Electronics department responsible for their part of the chassis and so on. Exactly how this works is dependant on the structure of your Organization.

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It is however recommended that where possible components should be contained within the appropriate department and built onto the Chassis View for that department. In practice what this means is that when (for example) the Electronics Department displays the Component View or Relocate Component View and selects a chassis, they will see only those components on the chassis within their own department. This greatly reduces the chance of errors as the possible component list is dramatically reduced. Note however that the Chassis View always shows a complete list of all components located on the selected chassis regardless of in which department they were defined.

An alternate methodology is to allow the individual departments to maintain their own list of parts and components, however the responsibility for building the chassis is left to a single user who uses the Relocate Component View or Chassis View to drag components from the individual departments onto the chassis within their department. The **Race** department is pre-defined for this method of working.

See Adding Distance for possible ways in which distance can be added to a chassis for more details.

5.8 Locking and Unlocking a Location / Chassis

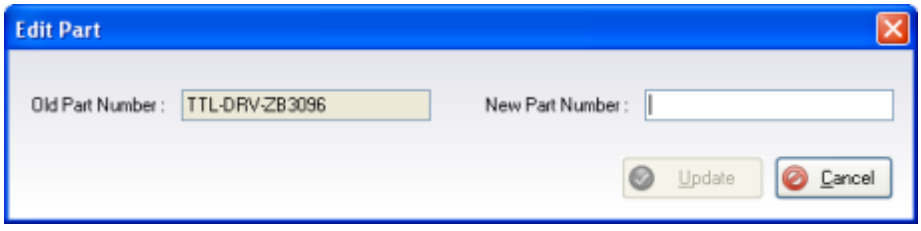
Once components have been moved to a location - especially onto a chassis, it may be desirable to lock that location to prevent accidental changes from being made prior to adding sessions. **LifeCheck** supports the locking and unlocking of a location or chassis by the **Admin User Only** to prevent components from being re-located by clicking on the Lock button displayed on the Component, Relocate and Chassis Views. When a location is locked, components within that location cannot be moved from the location nor can additional components be moved into the location.

5.9 Editing Parts

Various attributes of a part can be changed, including the part number using the **Part Properties** window displayed by right-clicking a part and selecting **Properties** from the menu displayed. The Part Properties have been covered previously, however this section will deal with the changes which can be made to the specification of the part.

5.9.1 Changing a Part Number

The Part Number is changed by clicking the **Change** button next to it. The following window will be displayed allowing a new part number to be specified.



Enter a new Part Number for this part and click **Update**. LifeCheck will validate the Part Number and check to see if it already exists in the database. If the specified part number does exist the following warning will be displayed.

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It is possible to merge parts and their component instances as long as the life codes for the two parts do not clash. If a conflict is detected, LifeCheck will abort the merge operation and report an error. The duplicate life codes must be resolved before the parts can be merged. Changing the Life Code for a component is covered in Editing Components. If you entered an incorrect part number and did not intend to merge the parts, select **No** to return to enter a different part number for this part.

5.9.2 Changing Section, Sub-Section and Weighting Factors

These items are changed simply by selecting the required item from the drop-down list and clicking **Save** to commit the change to the database.

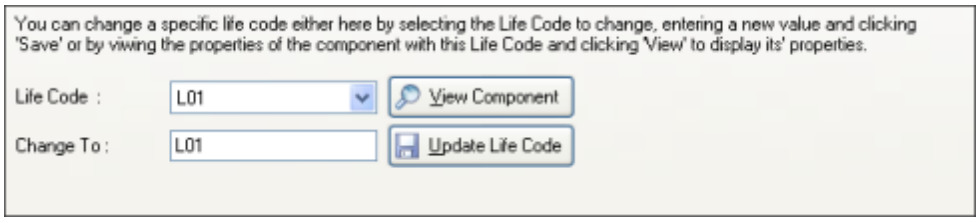
5.10 Editing Components

Various attributes of a component can be changed, using the Component Properties window displayed by right-clicking a component and selecting **Properties** from the menu displayed. The Component Properties have been covered previously, however this section will deal with the changes which can be made to the specification of the component. Note that changes to the life code of a Component are actually made from the Part Properties form.

Setting/resetting the accident flag or changing the batch/issue numbers for this component may be done directly within Component Properties ensuring that **Save** is clicked to commit the changes to the database.

5.10.1 Changing a Component Life Code

The Life Code for a component is actually changed from the Part Properties form for the parent part. Select the General tab to show the life codes of components assigned for this part.



Select the Life Code to change as **Life Code** and enter a unique life code value as **Change To**. Click **Update Life Code** to commit the change. Note that LifeCheck will not allow a life code which already exists for another instance of the part to be specified as life codes must be unique within instances of a part.

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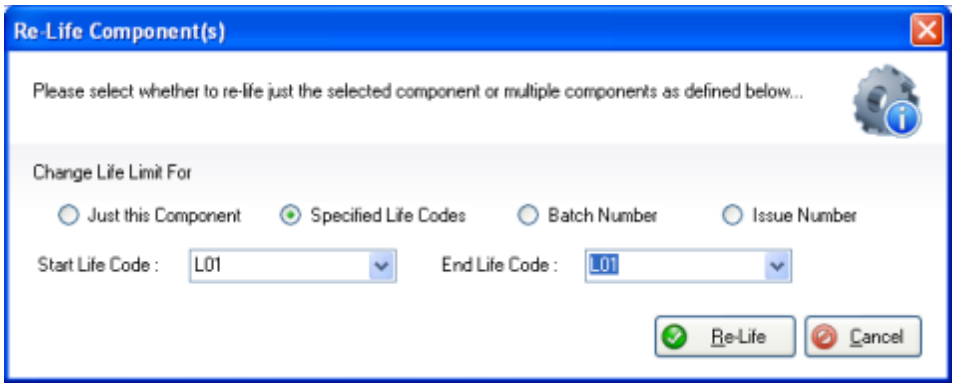
5.10.2 Changing Component Life Values

The Life Values for a component may also be changed to handle incorrect data. Race Limit and Test Limit may be updated on the Life Values tab on the Component Properties form. To change the Race or Test Limit, enter the new life value and click on another field in the form.



The above window will be displayed to determine the scope of the re-life as it is possible to update multiple instances of the part at the same time. Select one of the above options and select **Re-Life** to commit the change and re-life all selected components. The change to the life value will be recorded in the history of the component. In the above example, we have selected to re-life based on a life code range.

5.10.3 Changing Distance Run, Starts and Factored Distances

Under normal circumstances these fields are read-only and are maintained by **LifeCheck** based on the sessions added to the component and any life limits defined. Occasionally it may be necessary to update life values for a component to correct previous errors . For example if a component was imported but an initial distance was not specified, it may need to be updated at a later date.

LifeCheck allows the **Admin** user **ONLY** to update individual components while displaying the Component Properties.

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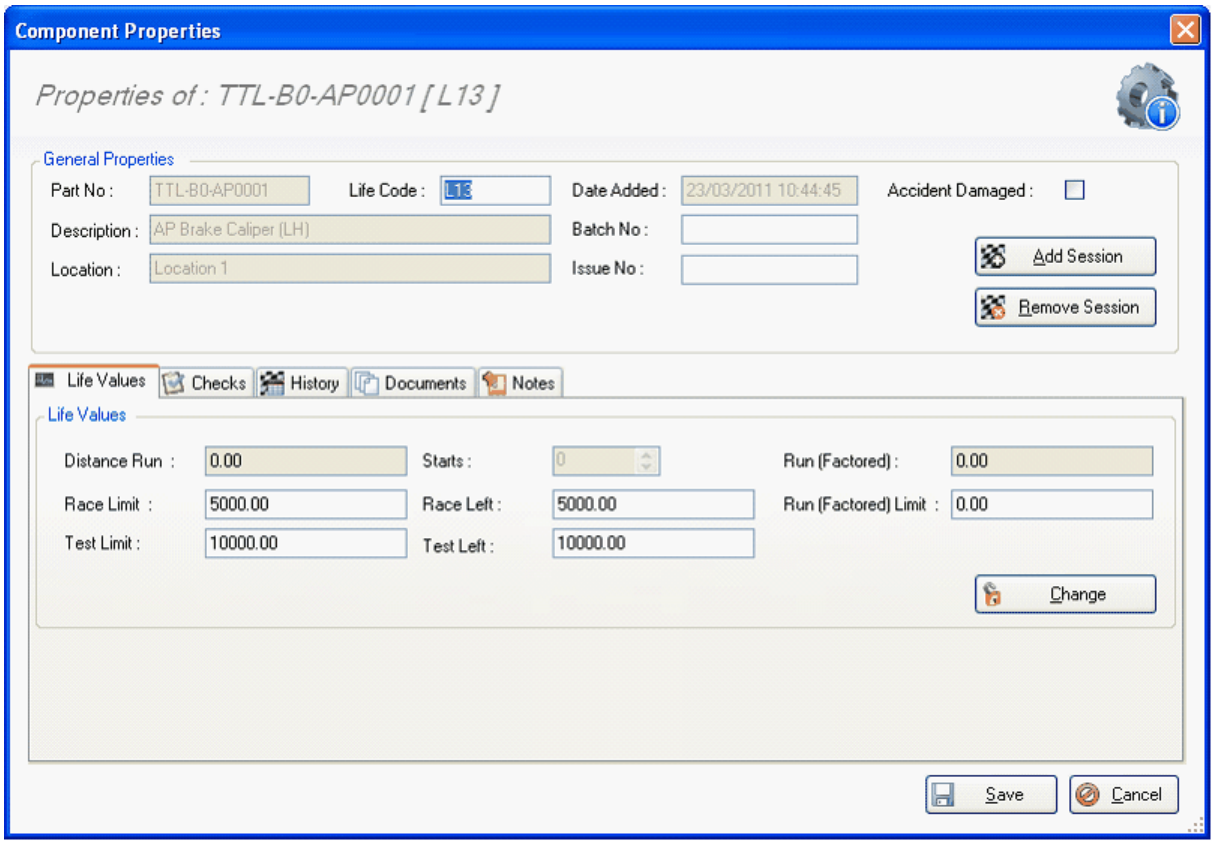

Initially the Distance Run, Starts and Run (Factored) fields are read-only. Click Change to 'unlock' these fields. A warning message will be displayed as changing these fields should be used with care. Clicking Yes will unlock the fields and update the Change button to read Lock.
Once all changes have been made, click Lock to commit the changes and lock the component again.

Please note that changes made here **will not** affect any Checks defined – if the distance run is modified this change will not be filtered to the checks defined as **LifeCheck** has no knowledge of how such a change would affect the check values.

5.10.4 Up-Issue Components

Generally once a component has been created it's part number will never change. There are 2 main exceptions to this rule. Firstly, the Part Number for all instances of the component could genuinely change, perhaps as a result of internal procedures or as a result of a change of manufacturer. Secondly, one or more component instances of a part may be **up-issued** that is re-engineered to meet a different specification which has been assigned a different part number. For example, a component may be slightly changed by the addition of a welded on bracket. The addition of the bracket requires that new components have a different part number to differentiate them from the old component without the bracket. Some instances of the old component may however have the bracket fitted retrospectively and thereby be **up-issued** to the newer specification.

Up-issuing 1 or more components can only be done from the Parts View screen. Here select the components to be up-issued in the right hand pane, right-click and select **Up-issue Component(s)'** from the menu displayed. The following screen will be shown :-

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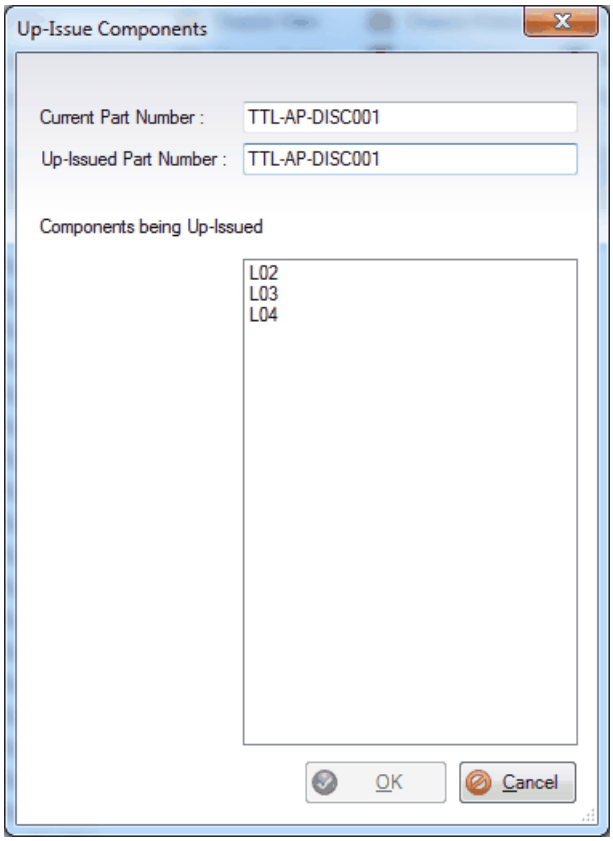

Here you set the 'Up-Issued Part Number' to that required for the components – say 'TTL-AP-DISC001-0A' and click OK. The components with the life codes displayed with then have their parent part changed to that specified as the Up-Issued part. If the up-issued part does not already exist it will be created as a copy of the original part.

5.11 Deleting Parts and Components

While it is often necessary to delete parts and components from LifeCheck this process should always be performed with a great deal of care as the action is irreversible and will delete all data, such as history records associated with the deleted part or component. Parts and Components may only be deleted by Non-Administrator users in the following situations.

Deleting a Part

1. If the Part has no Component Instances
2. If none of the Component Instances of the Part have any History associated with them

Deleting a Component

1. If the Component has no History associated with it.

Parts can only be deleted from the Parts View by right clicking on a part and selected **Delete**. Components can be deleted on any of the views which display them by right-clicking the component and selecting delete from the menu displayed.

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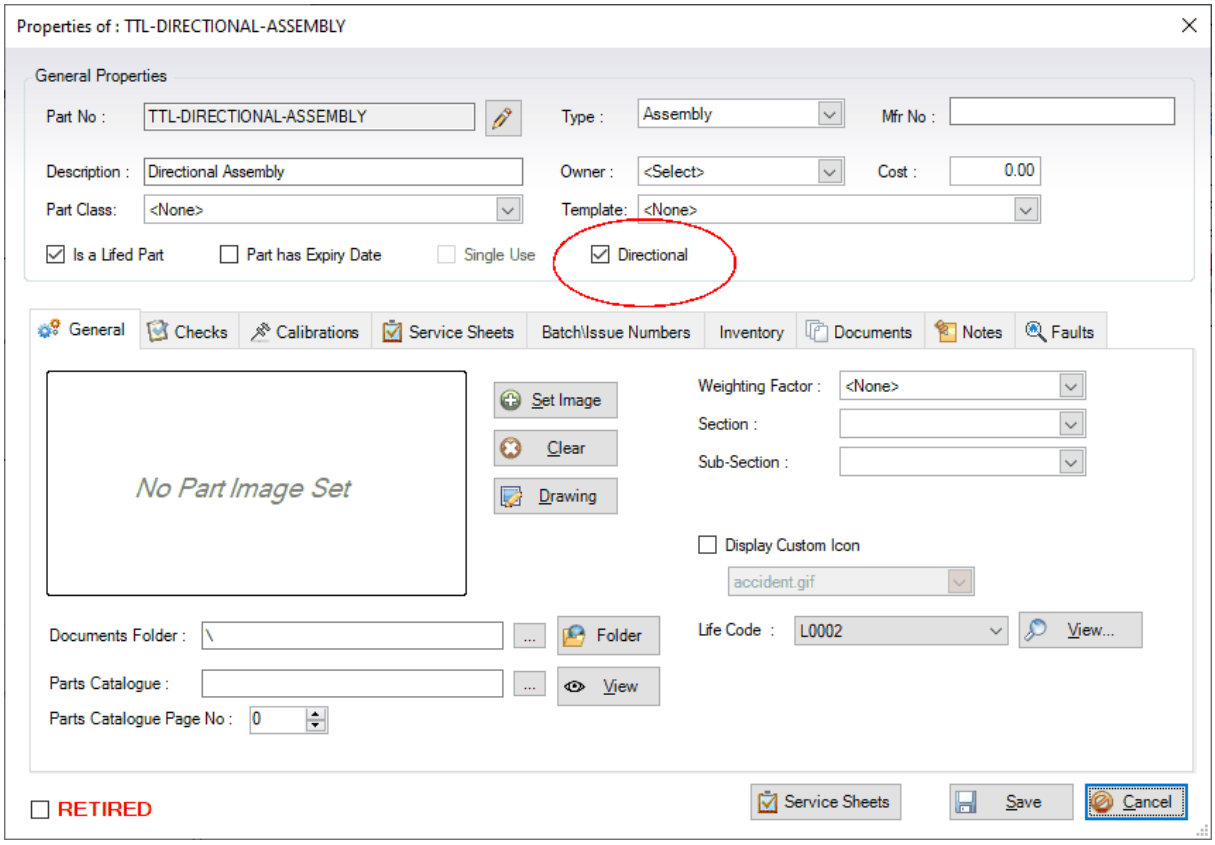
5.12 Directionally Lifed Parts

Certain components are able to be lifed in clockwise and counter-clockwise direction separately. Typically, this occurs with parts such as drive shafts, which are fitted to, and run on, the left hand side then right hand side of the chassis, or vice versa. The life of these directional components is split to allow a specified limit in one direction and the same limit in the opposite direction. LifeCheck includes support for this type of part using the Directional Lifing property which may be set for a part either as it is defined or later using Part Properties.

5.12.1 Setting a Part to be Directional

A Part may be set as being directional when creating the first instance of that part or later using Part Properties as shown below.



When setting a Part to be directional, LifeCheck first request confirmation of the action and then will check all components instances of the part as they also will become directional. Any components which have already run or are currently located on a chassis MUST have a direction set for them. In this case the following window will be displayed :-

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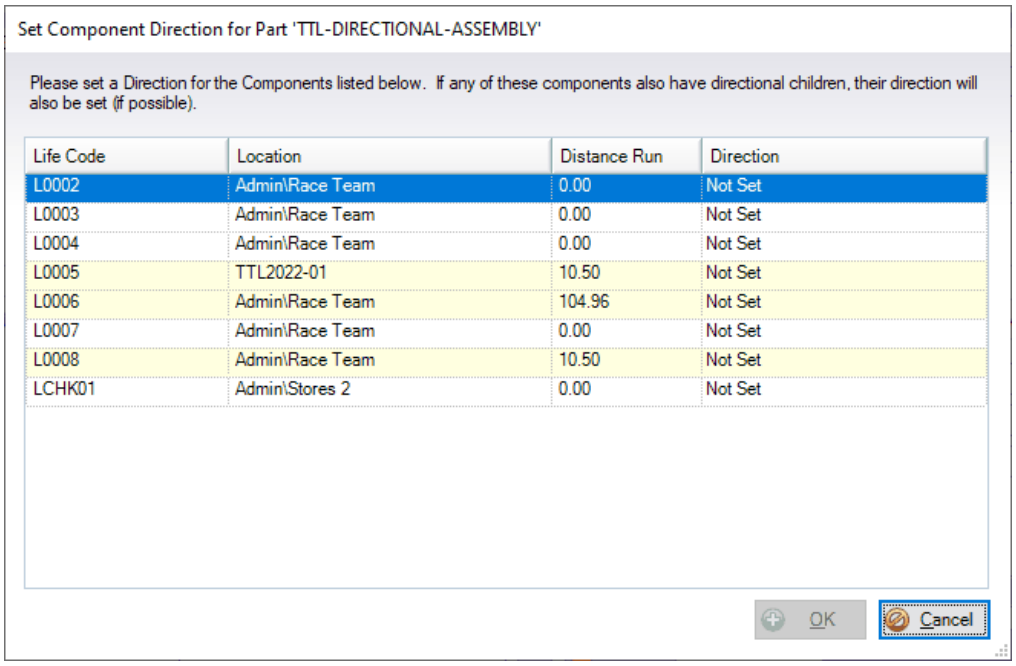

Certain components are highlighted yellow, these indicate those which must have a direction set before proceeding as they either have run or are on a chassis. Cancelling from this window will also cancel saving the change to the Part itself. Once a direction has been set for all required components, click OK to continue. This will also exit from Part Properties.

IN a similar manner, un-checking the **Directional** flag for a part will, after confirmation, update all component instances of that part and clear their directional flag and any direction set. Note that this will also lose any knowledge of any previous direction set and as such the life limit may be affected. As this operation cannot be reversed, please take care when re-setting the directional attribute of a part.

5.12.2 Directional Components

Once a part has been set as Directional, all component instances of that part also become directional, this includes any components created later. By default, components will be created with a direction of 'Not Set' unless they are created directly on a chassis in which case the appropriate direction must be set at the time of creation. Both assemblies and standard components may be defined as directional but note that directional assemblies will normally only contain sub-assemblies or standard components which have the same direction set. This is enforced when the assembly is located on a chassis.

Components may have a direction set of 'Not Set', 'Left' or 'Right' however a component will normally only be permitted to change direction once. This does not include changes from 'Not Set' however. Take as an example the following Component..

TTL-DIRECTIONAL-001 Life Limit 1000

In this case we say that the component has a life limit of 1000km in EITHER direction but any life remaining in one direction will not carry over into the opposite direction. So if the component is set to be 'Left' and runs for 900km and is then switched to 'Right' the distance run remains at 900km but the Life Limit is increased to 1900km to allow for an additional 1000km run as right hand. Once switched to right hand the component becomes **Direction Locked** and cannot be changed back to 'Left' **UNLESS** it has not been run yet as a right handed component in which case it can still be changed back to left. This is to allow for the occasional mistake being made with the direction for a component being changed

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accidentally. The direction for a Direction locked component will be coloured red when displayed whether in the main views or within Component Properties.

Any changes in direction will be logged to the history of the component being updated and will include the mileage at which the change took place. These history records are not removed if a direction change is reversed owing to an error as above.

5.12.3 Adding Directional Components on to a Chassis

The basic rules here are that all Directionally Lifed components on a chassis must have a direction set and this direction must correspond with any parent directionally lifed assembly. These rules are enforced by LifeCheck when placing a component on a chassis either from any of the main views or using the Chassis Builder Select, Swap and Quick Swap functions.

If an attempt is made to put a directionally lifed component on to a chassis LifeCheck will :-

Check if the Component has a Direction already set and if not will set the direction as appropriate - where there is a directionally lifed parent assembly, the component be set automatically to the same direction as its parent, otherwise LifeCheck will ask the user which direction is to be set.

If the Component already has a direction set, LifeCheck will ensure that this direction matches that of any directionally lifed parent assembly. If not, LifeCheck will try to change the direction of the component to match that of the parent assembly by checking both the component and any sub-components to ensure they can have their direction changed (they may have a different direction and be directionally locked). If a direction change is valid, it will be performed and if not, an appropriate error will be displayed and the component will not be placed on the chassis.

Changing the ‘Current Direction’ value of a component in an assembly will change all components beneath that component to the same value. Again, LifeCheck will validate any child components within the assembly and warn / prompt for confirmation, if any of the child components would have their ‘Current Direction’ changed.

LifeCheck will prevent components having different ‘Current Direction’ values set in the same assembly at the point at which the assembly is located on a chassis. It is possible for this situation to occur within spares locations.

LifeCheck will prevent components changing ‘Current Direction’ value to ‘Left’ to ‘Right’ to ‘Left’ again. Or ‘Right’ to ‘Left’ to ‘Right’ again. In other words it may only change direction once.

5.12.4 Adding Sessions to Directionally Lifed Components

Sessions are added to directionally lifed components as a result of their being placed on the chassis, the only additional effect is that once a session has been added in the selected direction, that direction becomes 'locked' that is it cannot be changed without affecting life limits and if a previous change of direction has been recorded, cannot be changed.

5.12.5 Adding Missed Sessions to Directionally Lifed Components

As with other components, it is always possible that a mistake has been made and a session needs to be added (or removed) from a directionally lifed component retrospectively. When adding a missed session to a directionally lifed session, LifeCheck must take into account any changes in direction which may have taken place AFTER the date of the session being added. The reason for this is that it may affect the life limit of the component as this takes into account the distance run by the component at the time of the direction change and adds on the original life limit to allow for running in the opposite

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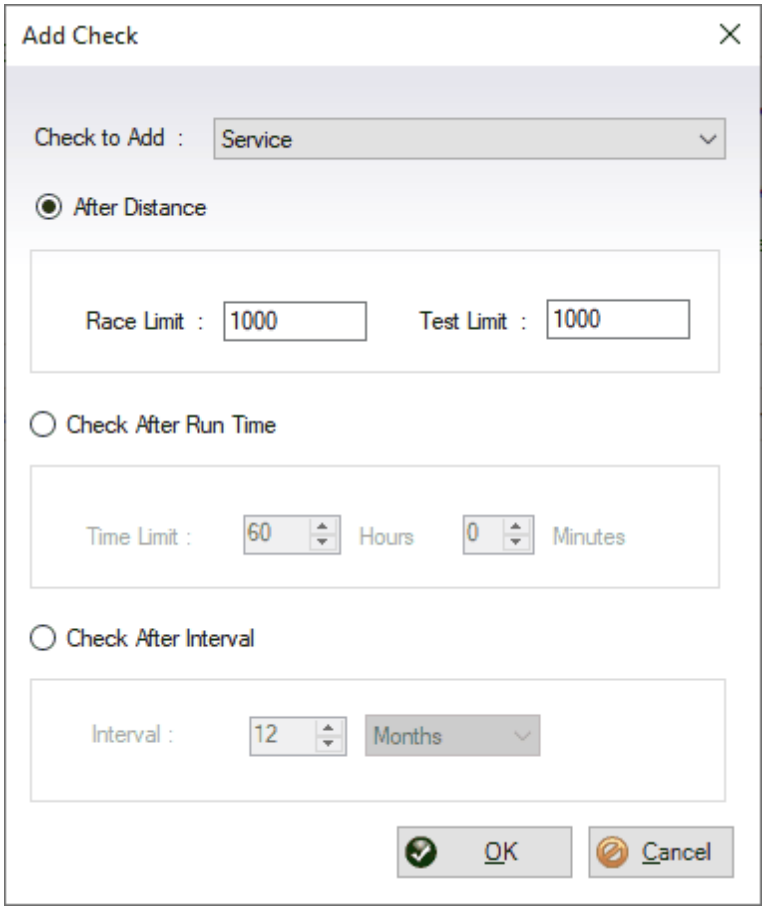
direction. The total limit however must not exceed double the original limit as shown in the table below.

Life Limit	Direction Changed At	New Limit
1000	900	1900
1000	1000	2000
1000	1100	2000

6 Servicing and Periodic Checks

As well as maintaining information relating to lifing limits for each component within the database, LifeCheck can also track servicing and other periodic maintenance schedules such as crack testing, visual inspection and rebuilds. These are known as **Checks** and can be defined within the Administration section of LifeCheck. A Service check is created automatically for every component within the database and cannot be removed from a component.

Once a new check has been defined under Administration > Data Setup it must be added to a Part from the Part Properties window. It will then be visible for all component instances of that part within their Component properties screen. Checks can be added to a Part on either a distance or timed basis as shown below:-



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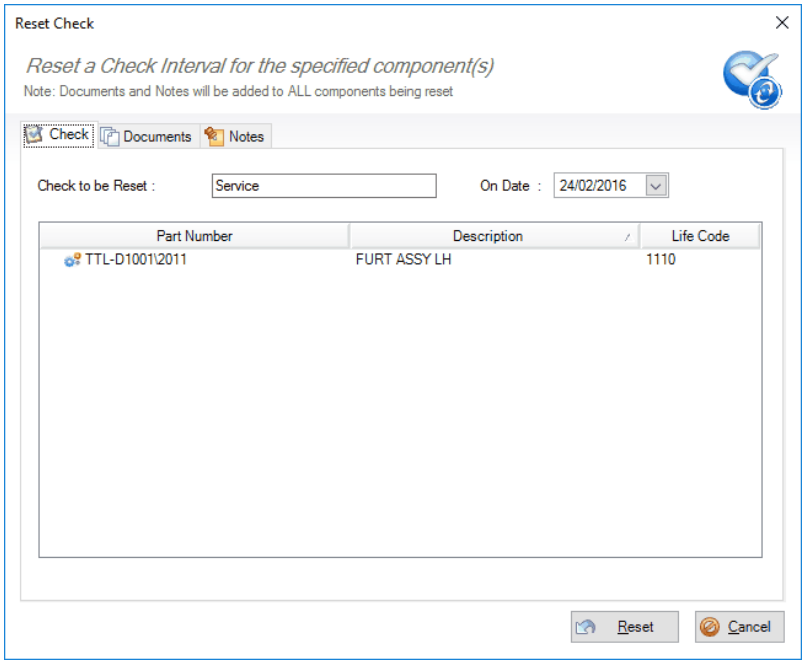
In the above example, a check is being added wbhich has a period of 1000km, that is the service will be due after the components of this part have covered 1000km. Checks may also be added after a specific run time or after a specified interval such as 'every 4 weeks' or every '12 months'.

6.1 Using Service Sheets

As a component has sessions and distance added to it, the distance to the next periodic maintenance (or check) will count down until the time is reached where the component needs to be serviced. A component is flagged as having been serviced within LifeCheck in a number of ways :-

- From views displaying Components, right click and select **Reset Check** from the popup menu displayed
- From Component Properties, select the **Checks** tab and click reset to the right of the appropriate check

In both cases the following window will be displayed :-



Although as above it is possible to add notes and documents as additional information relating to the service it is often required to have a more formal approach to servicing a component. To this end LifeCheck supports Service Sheets. These are defined under Administration>Data Setup and assigned to a part either from the Parts View via a right click menu option or from Part Properties. Service sheers are assigned to one or more parts for a specific check, that is a different service sheet could be used for a Service and a Rebuild check.

As the check is reset, LifeCheck will determine whether or not a service sheet must be completed as part of the service and will display any service sheet identified.

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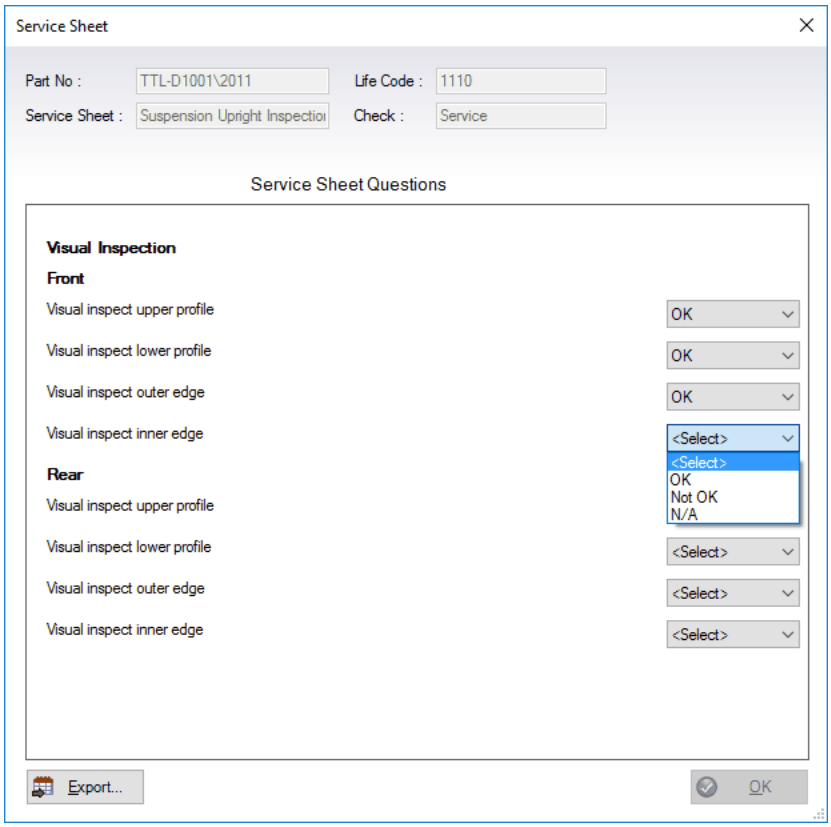

The service sheet is comprised of a number of questions each of which may be set to **OK**, **NOT OK** or **N/A**.

6.1.1 Service Sheets and Holding Areas

Service Sheets may also be associated with the movement of components from a 'Holding Area' location. Holding area locations are typically used to hold components which are either no longer used or which are to be quarantined for one reason or another. As such it may be desirable to record why these components are being moved back out of the holding area. Service sheets allow this process to be formalised by requiring a service sheet to be completed prior to restoring components in the holding area back into main stores. To assign a service sheet first display the Holding Area Locations by selecting **Administration > Global Settings**. Now select the required holding area location and click **Edit** to display the window below.

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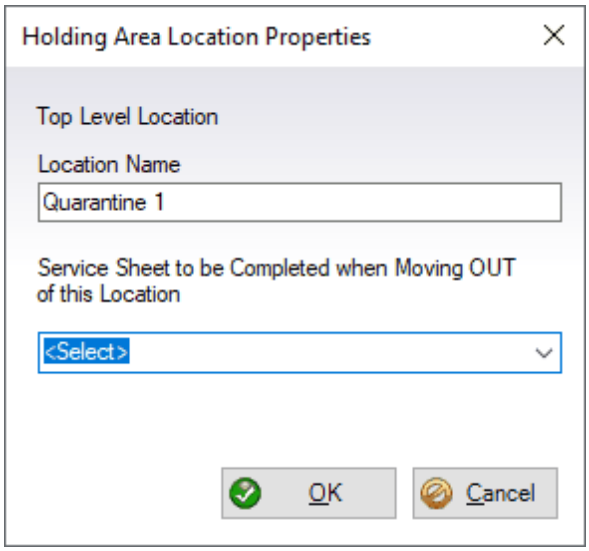


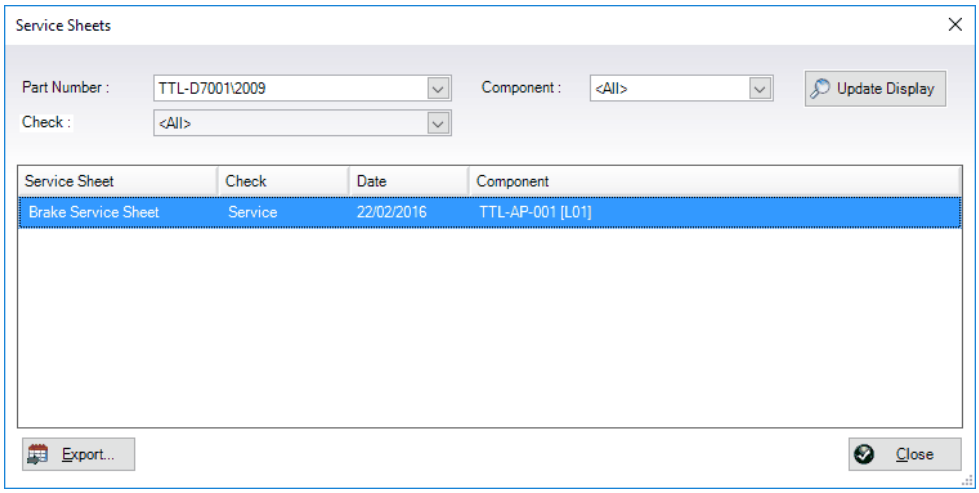
Select the service sheet from the drop down list and click OK. Now this service sheet must be completed for each component being moved from the specified location. The service sheet will be recorded in the history of the component and will be available to view from the properties of the component.

6.2 Viewing Service Sheets

When-ever a component is serviced or has another periodic check reset, a service sheet may be required to be completed. These service sheets may be viewed from a number of different places.

Component Properties - Click the **Service Sheets** button
Part Properties - Click the **Service Sheets** button
Parts View - select **View Service Sheets** from the right click menu

In all of these cases a window will be displayed which allows you to view a list of the service sheets completed for the specified part and/or component and from there to view the completed service sheet itself.



Double-click on the service sheet to be viewed :-

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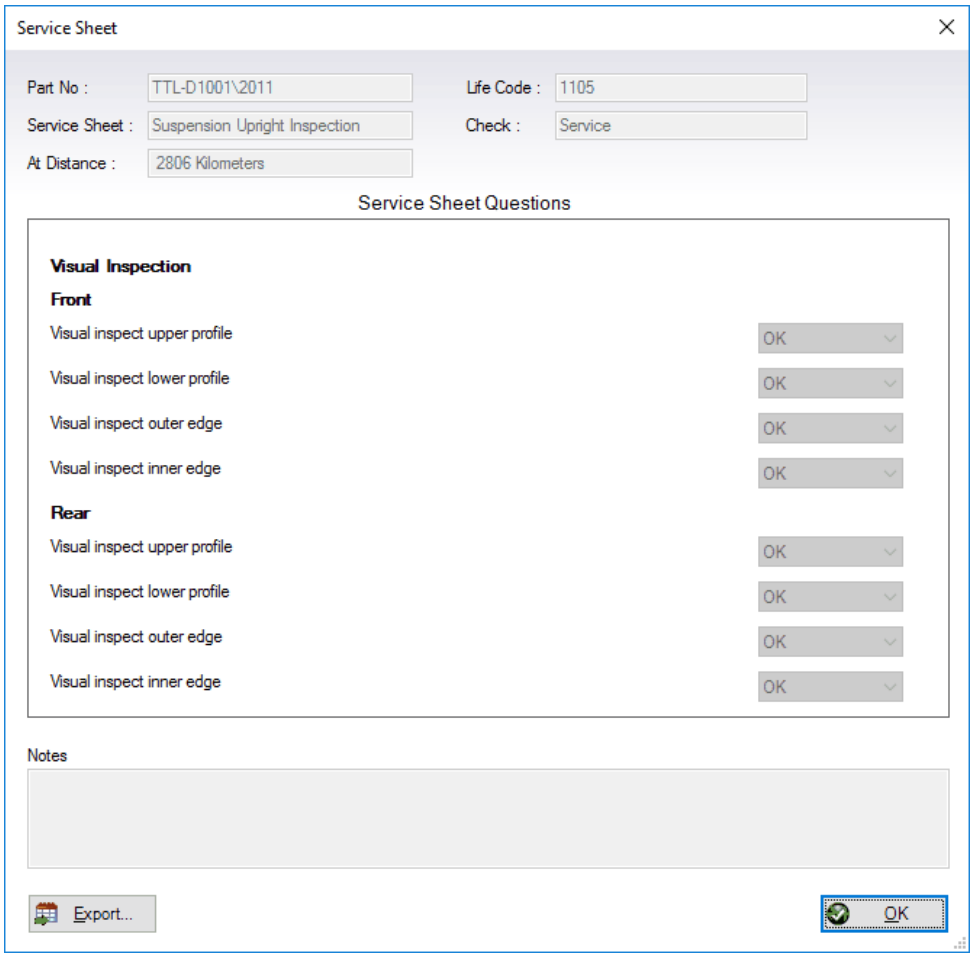

Here you can see the service sheet as it was completed by the user. The service sheet may also be exported to Microsoft Excel by clicking the **Export** button at the base of the screen.

7 Documents and Notes

Many items within LifeCheck including Parts, Documents, Sessions and Checks can have documents and notes associated with them to provide additional information or possibly just as a useful place to store such things as part technical drawings. For the purpose of this section we will deal with adding documents and notes to a Part however the operation is identical for Components and sessions.

To view or modify documents associated with a Part display the properties for that part and select the Documents Tab.

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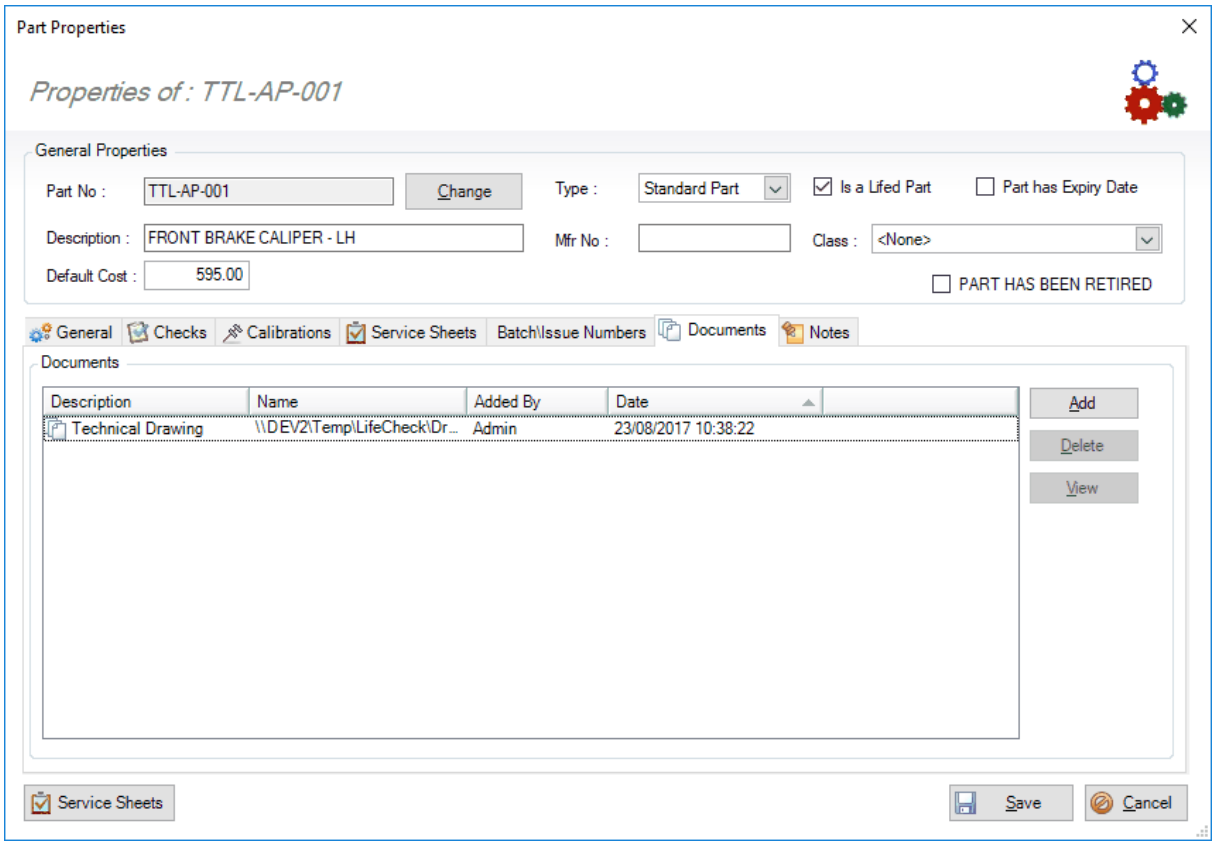
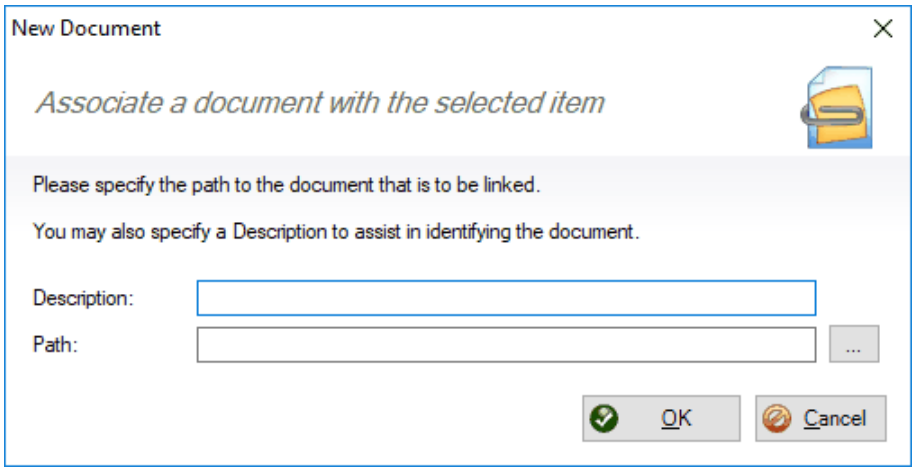


To Add a new Document to this Part, click **Add** and the following window will be displayed:-



You may enter a description for the document and select a file either by typing its path/name or browsing for it. Click **OK** to add the document to the list of documents already associated with the part.

Clicking the **View Document** button will request LifeCheck to view the document using the default program associated with the type of file linked.

Notes

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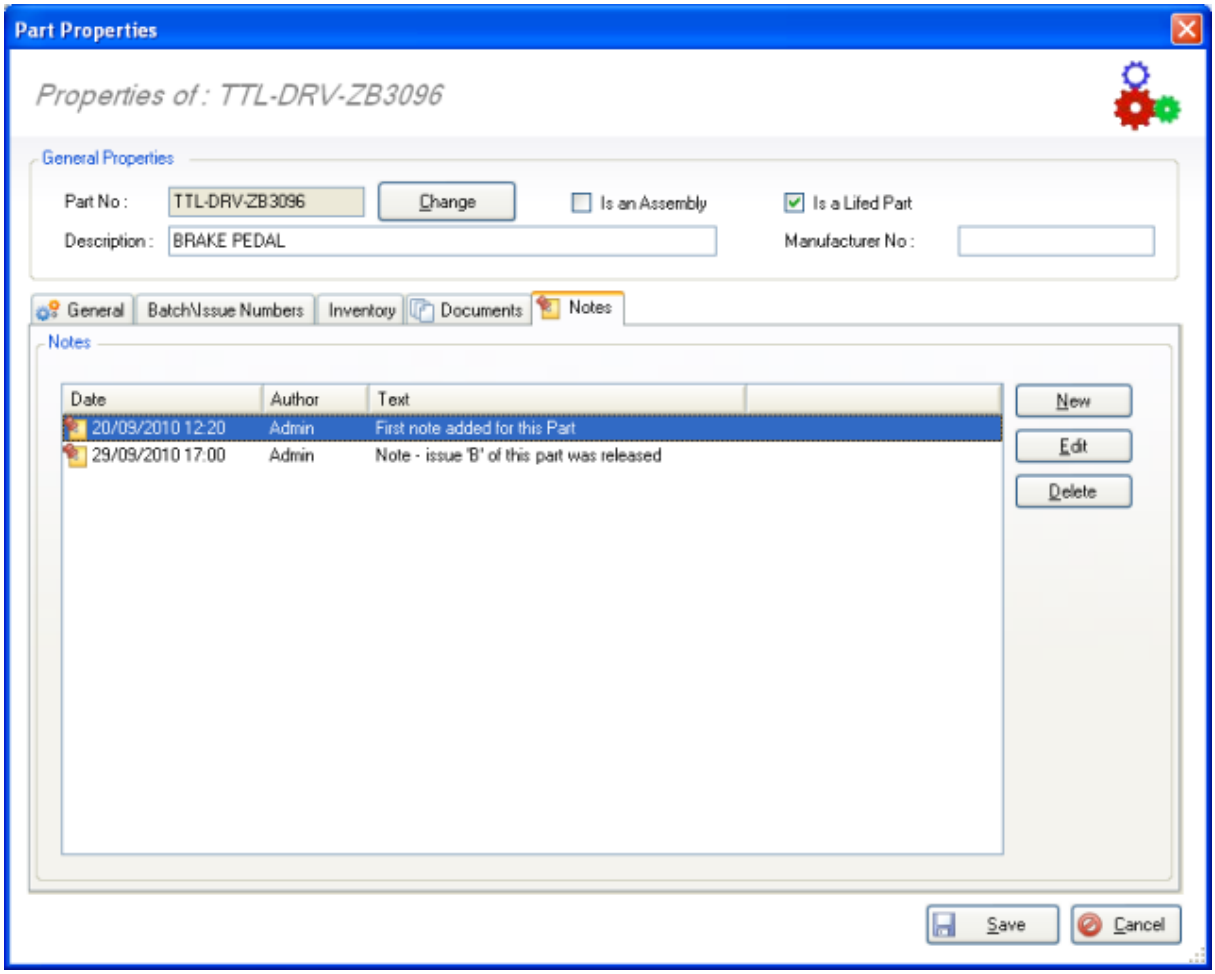
LifeCheck may also maintain a list of date stamped notes for the part. These can contain any useful information relating to the part such as changes in specification or notes on servicing or strip-down techniques.



Create a new note by clicking **New** and entering the required text for the note into the window displayed. Click **OK** to save the new note. Editing an existing note is done by selecting the note to be modified and clicking **Edit**. Click **OK** when all changes have been made. Similarly, a note may be deleted by selecting it and clicking **Delete.**

As a note is created for a component a flag is set for the component to highlight the fact that a new note has been defined. This flag is shown next to the 'Life Code' field in the main LifeCheck views. The note may be dismissed by right-clicking on eone or more components and selecting 'Acknowledge Note' from the menu displayed.

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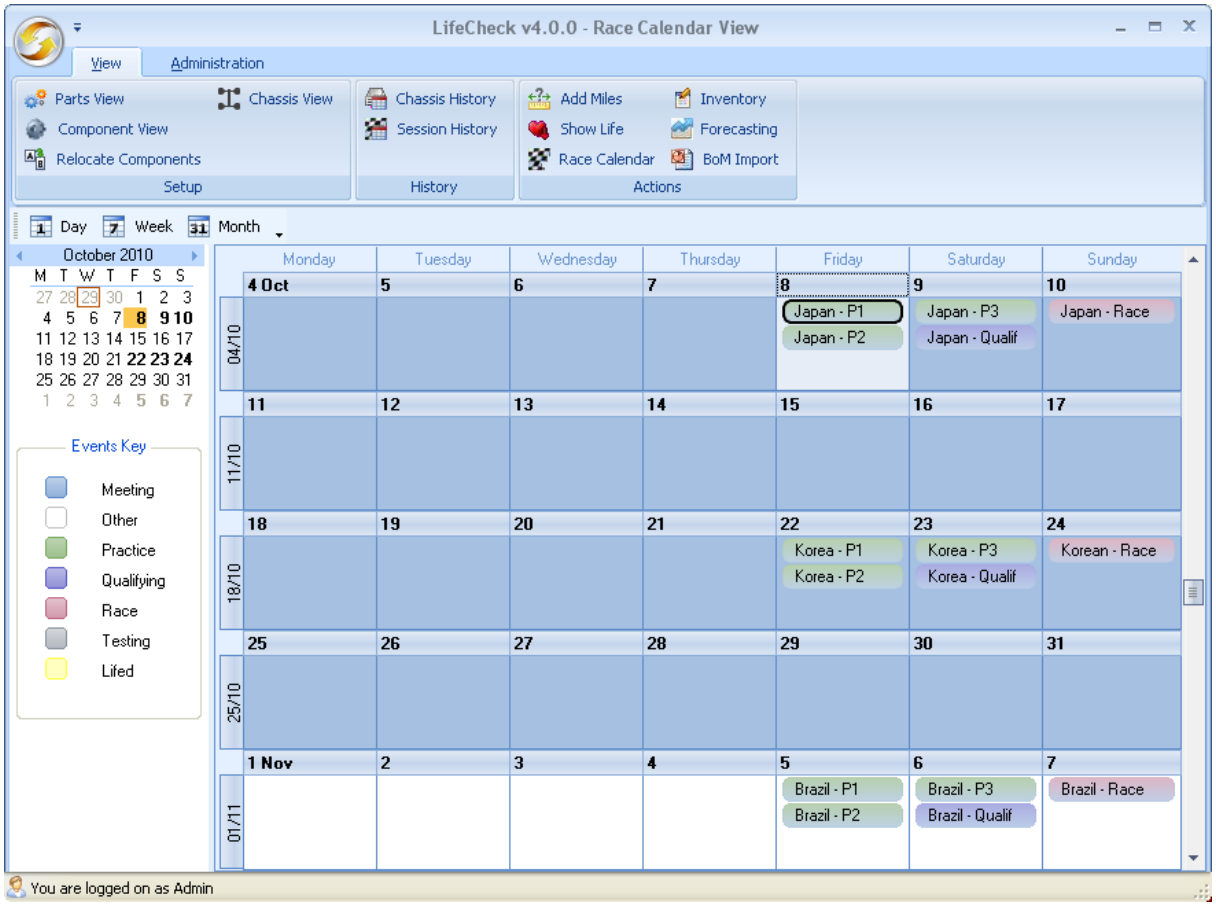
8 Race Calendar

The Race Calendar has two primary functions, the first is to allow you to keep track of significant events within your season which can then be subsequently used to determine circuits etc when you add distance to a chassis. The primary use of the Race Calendar is however is to allow more accurate forecasting of the lifing of your components. By pre-defining the events in which you will compete, giving estimates of the expected distance covered during practice, qualifying and race, LifeCheck V4 can determine when you are most likely to need to re-order new components to ensure that there are no shortages.



The calendar may be switched to show either a day, week or month view using the icons on the menu above the calendar.

To add a new event to the Calendar, double click the day on which the event will take place or double click an existing event in the calendar to edit it. The following window will be displayed:-

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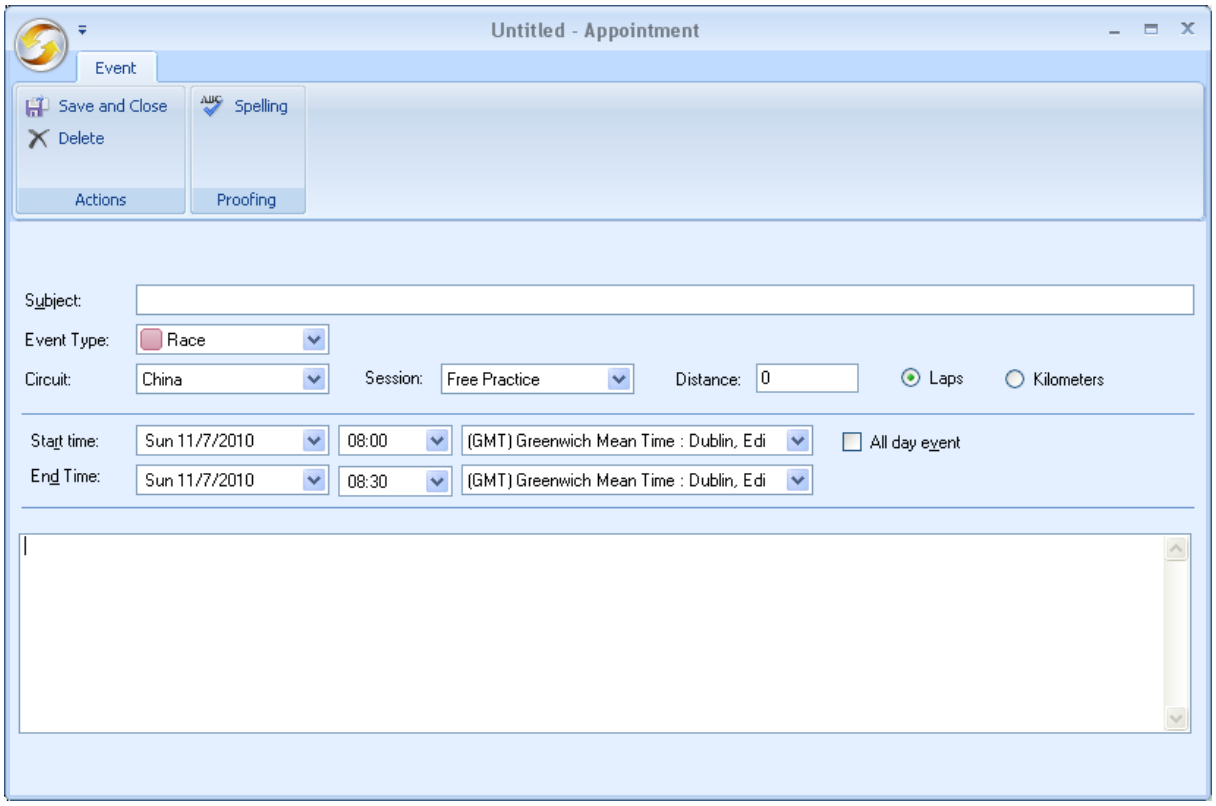

Subject
Enter a short textual subject - this will be displayed in the main race calendar view and as such a meaningful value here will help identify individual events.

Event Type
Select the type of event being created from the drop-down list of pre-defined event types. LifeCheck supports event types of Testing, Practice, Qualifying, Race, Meeting, Other and Lifed. These are all colour coded again making their identification easier in the main Race Calendar View.

Circuit
For event types other than Meeting, Other and Lifed, a circuit should be selected from the drop-down list of pre-defined circuits.

Session
For event types other than Meeting, Other and Lifed, a session should be selected from the drop-down list of pre-defined sessions.

Distance
For event types other than Meeting, Other and Lifed, specify the anticipated distance which will be covered in the selected circuit/session as either a number of laps or a number of miles/kilometers. The distance specified here is important as it will affect the calculations performed when using the forecasting functionality.

Start Time
Specify the time at which the event will commence.

End Time

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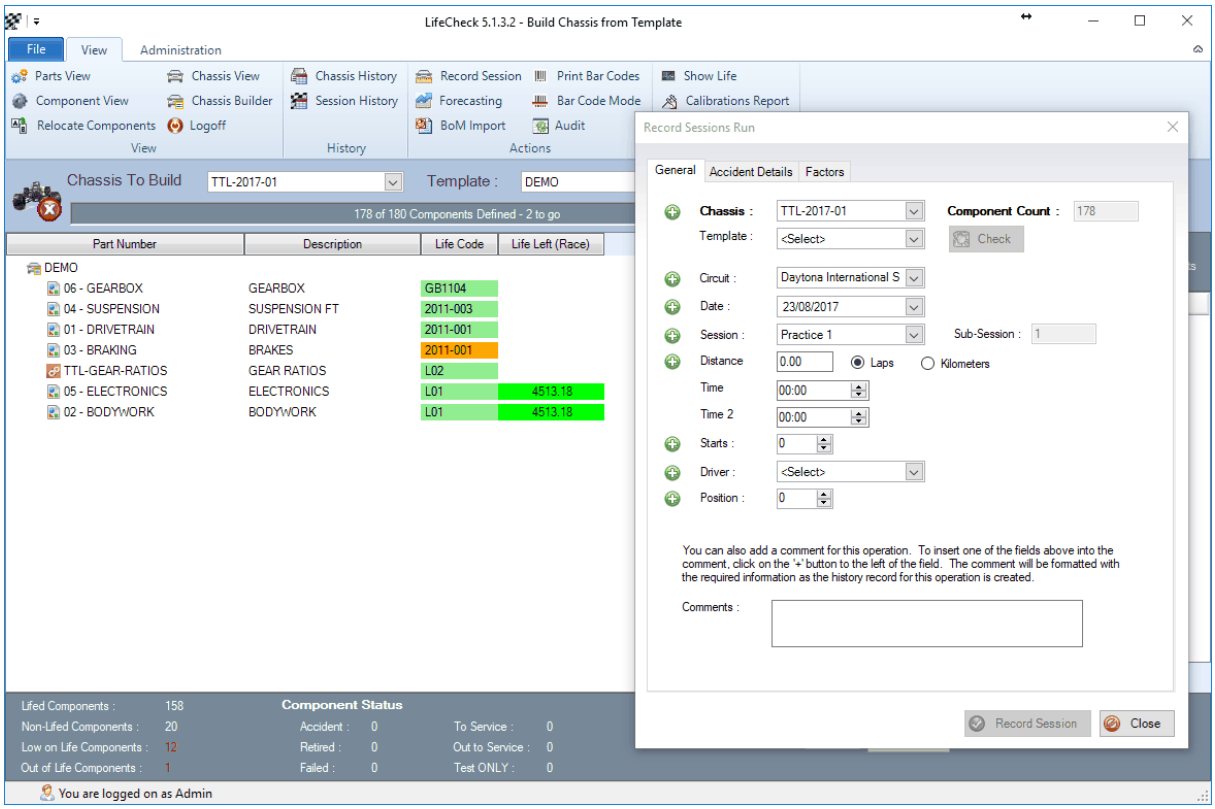
Specify the time at which the event will finish.

A full description of the event may also be specified. This will only be displayed if the event is edited. An existing event may be deleted while in this window by clicking the **Delete** button in the menu ribbon. You may also check the spelling used within the description field by clicking the **Spelling** button or save any changes and close the window by clicking **Save and Close**.

9 Recording Sessions

Of course the primary use of LifeCheck is to maintain information relating to the life of components created within the system. Sessions are typically recorded after an event or at the end of the day as time permits. Adding sessions is an iterative process meaning that you start with a base chassis build, add the first session, modify the chassis build to take into account any changes made to the car between sessions and then record the next session. This process of recording a session and then applying changes to the car continues until all required sessions have been recorded. Adding distance to a chassis can only be performed by departments flagged as 'Can Add Miles' within the Administration area of LifeCheck.

In most cases it is easiest to record sessions while on the **Chassis Builder** screen as from here both recording sessions and updating the chassis are possible. It is usually easiest to move the 'Record Sessions' window to the right so it does not overlap the Chassis Builder.



There are a number of steps which should be followed when recording sessions to ensure that the

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correct chassis is lifed for the correct circuit/session and that the correct number and type of components are located on the chassis. In addition, LifeCheck allows the user to account for accident damage occurring within a session and for different factors and factor values to be applied to components over-riding any values previously specified.

The first task is to define the chassis which is to be lifed and various attributes relating to this.

1. Use the drop-down list to select the required chassis.
2. The date will have been pre-set to today's date but change as required to match the actual date of the session being recorded.
3. Based on the date entered, LifeCheck will interrogate the Race Calendar (if licensed) and identify the last race defined prior to the specified date and pre-select it. If none are found, the last used circuit will be selected. If incorrect, select the required circuit from the drop-down list.
4. LifeCheck will also interrogate the Race Calendar to determine the most likely session. If incorrect, select the required session from the drop-down list.
5. Enter the distance covered in the specified session as either a number of laps or a physical distance noting that once entered changing from laps to Kilometers or vice-versa will convert the entered value according to the circuit lap distance.
6. Enter any 'times' which need to be recorded.
7. Enter the number of starts executed during the session.
8. Select the Driver from the drop-down list.
9. Enter a comment to be recorded with the chassis history record. While typing you may click the button to the left of the above fields to add the value to the comment. For example, type 'Race was run at ' and click the **Circuit** button. The description will now be 'Race was run at {Circuit}'. {Circuit} will be substituted with the actual name of the circuit as the description is created.
10. If the chassis was involved in an accident during the Chassis, switch to the Accident Details tab and check those sections which were affected by the Accident.
11. To specify different Factor Values for this circuit and/or change factors for specific components, switch to the Factors tab and make changes as required.

Once certain that all criteria has been specified correctly, click **Record Session** to record the session and add distance/time to the appropriate components.

9.1 Recording Accident Damage

Components within specific sections can be marked as 'Accident Damaged' as part of the **Add Distance** operation using the **Accident Details** tab. This takes the form of a hierarchical tree showing the sections and sub-sections defined for the chassis. Check those sections affected by the accident. As distance is added to the components, any located in the selected sessions will have their 'Accident' flag set allowing them to be easily identified within the LifeCheck views.

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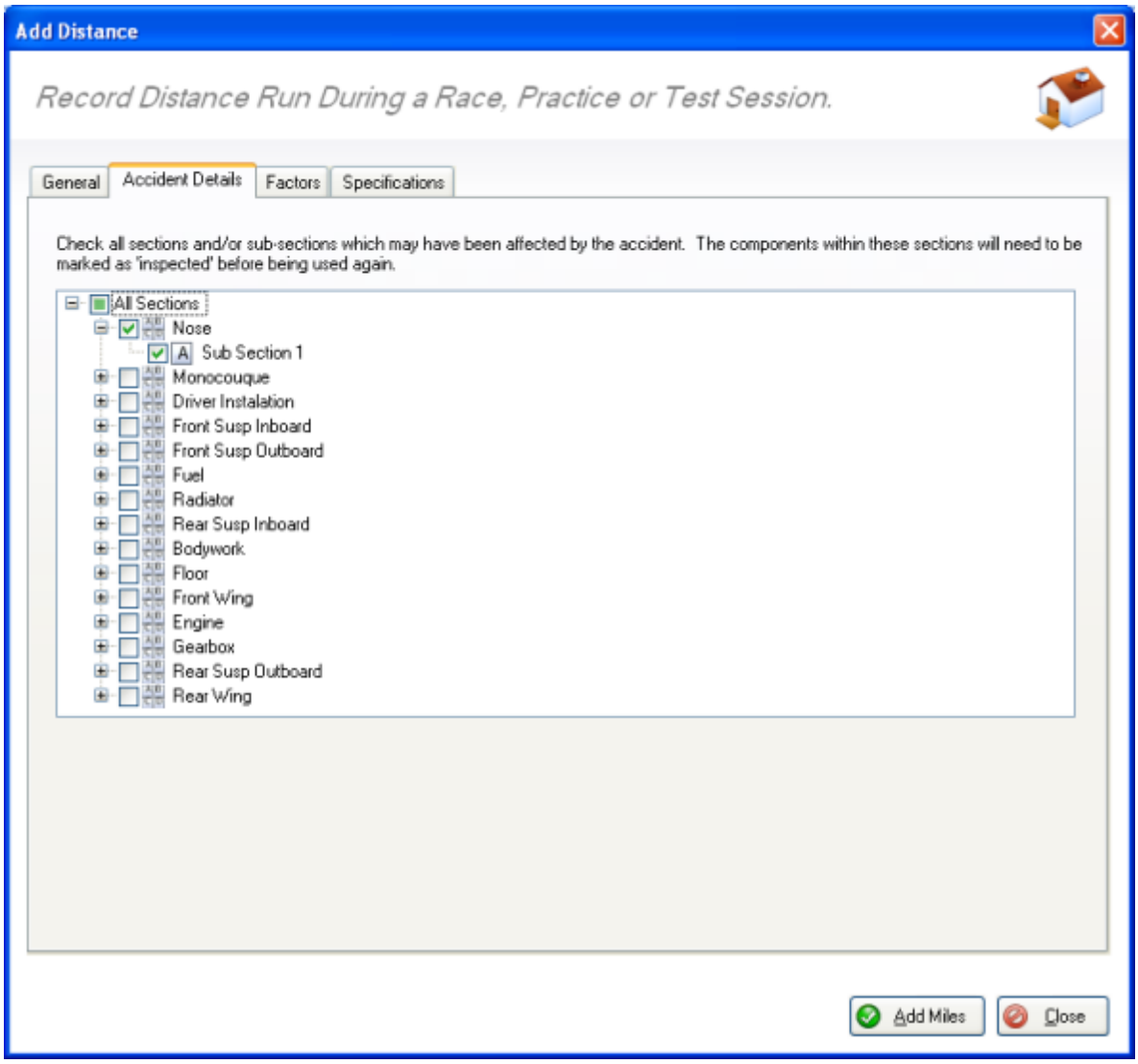

In the above screen, the Node has been identified as potentially being accident damaged and will need to be inspected.

9.2 Updating Component Factors and Weightings

Although factors values can be defined on a per-circuit basis and factors can be set for individual components it is often the case that these factors will need to be adjusted to take into account real-life values before adding distance to a chassis. Take as an example the case where gear factors are determined by telemetry data - the figures recorded will most likely not correspond with any factor values defined originally for the circuit and will therefore need to be adjusted based on the actual recorded values.

In addition, gear ratios can often be used as many different actual gears and as such a factor can only be set for them once it is known which gear component is being used as which physical ratio within the gearbox. With this mind both circuit factor values and the factors set for a specific component can be altered prior to adding distance to a chassis as shown below.

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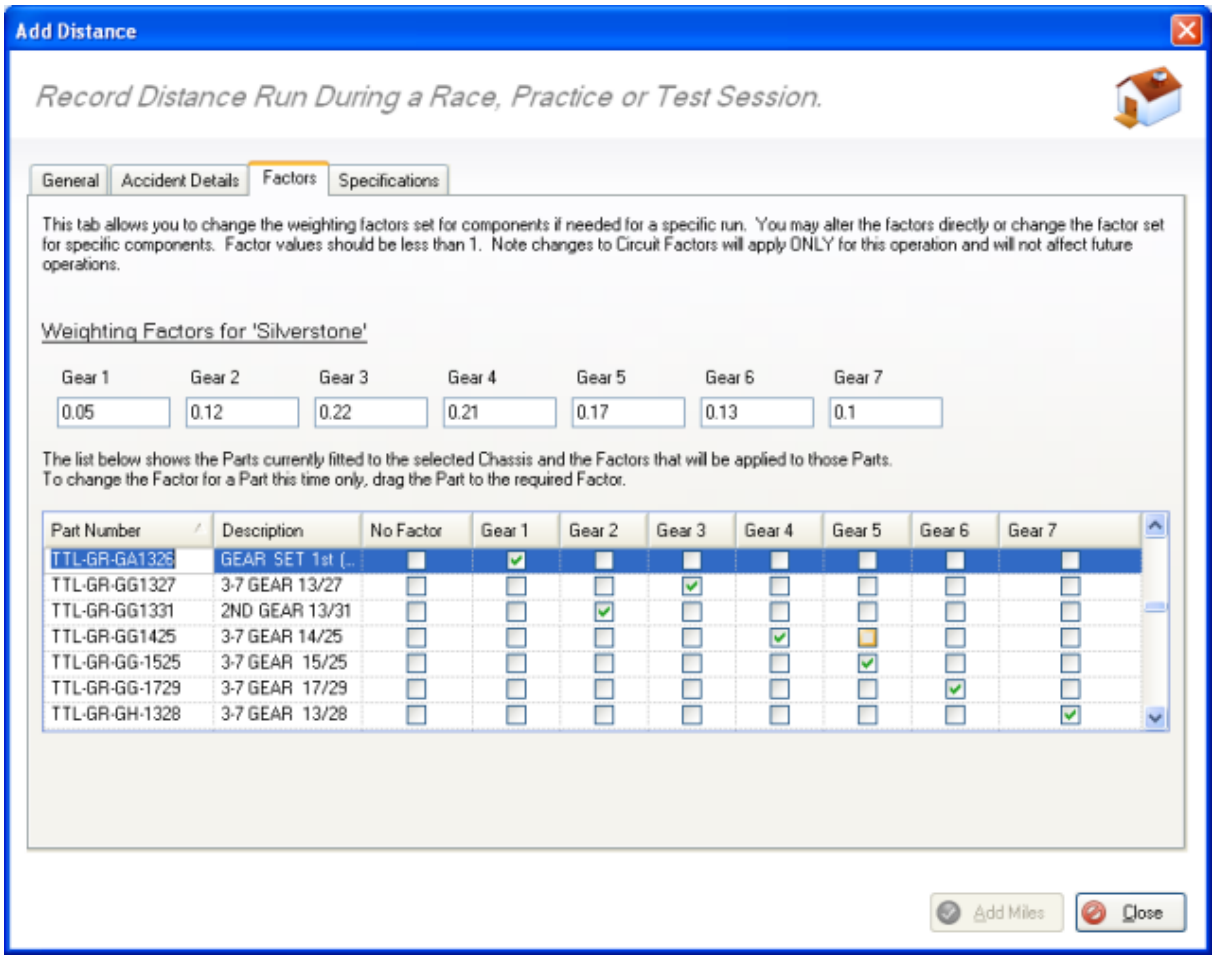

In this example, the factor values for the Silverstone circuit have been adjusted to reflect actual values recovered from telemetry and actual factors have been defined for all 7 gear ratios. Note that the Weighting Factors add up to 1 (100%). LifeCheck will display an error if an attempt is made to add distance to the chassis with weighting's which do not add up to 1.

To change the Weighting Factors, simply select the factor value and over-write with the correct value. Pressing return at this point will save the change and move to the next factor. Changing the factor for a specific component on the chassis is a simple task of locating the component and checking the appropriate box corresponding to the factor that is to be applied to that component.

10 Reporting on Component Life

This part of the program allows a number of filters to be set so that only parts matching the selection criteria are displayed. This is extremely useful in rapidly locating parts with sufficient life to complete an event or test session and for ensuring that all parts currently allocated to a particular chassis have sufficient life remaining.

The filters that are available are:

- Departments & Locations
- Life Left
- Section

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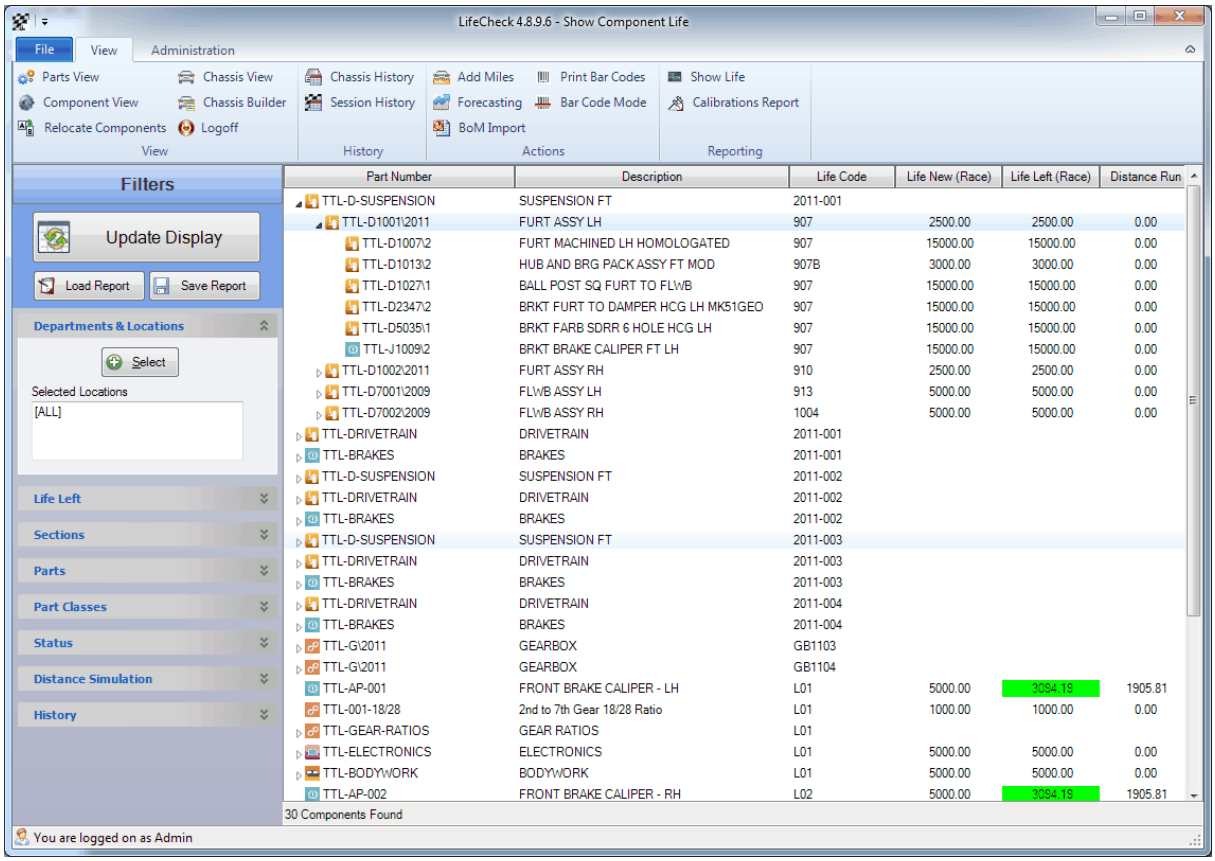
- Part
- Part Class
- Status
- Distance Simulation
- History



Departments & Locations
Click the **Select** button to display a window from which the required department(s) and/or location(s) which are to be included in the report can be selected. Note that if all departments are included the report may take some time to generate!

Life Left
Select whether to include components with any life, only those with life remaining better than the specified value or worse than the specified value.

Sections
Click the **Select** button to display a window from which the required section(s) which are to be included in the report can be selected.

Parts
To include multiple parts within a report, select the Parts filter and click **Select**. The following window will be displayed from which you can select one or more individual parts to include in the report.

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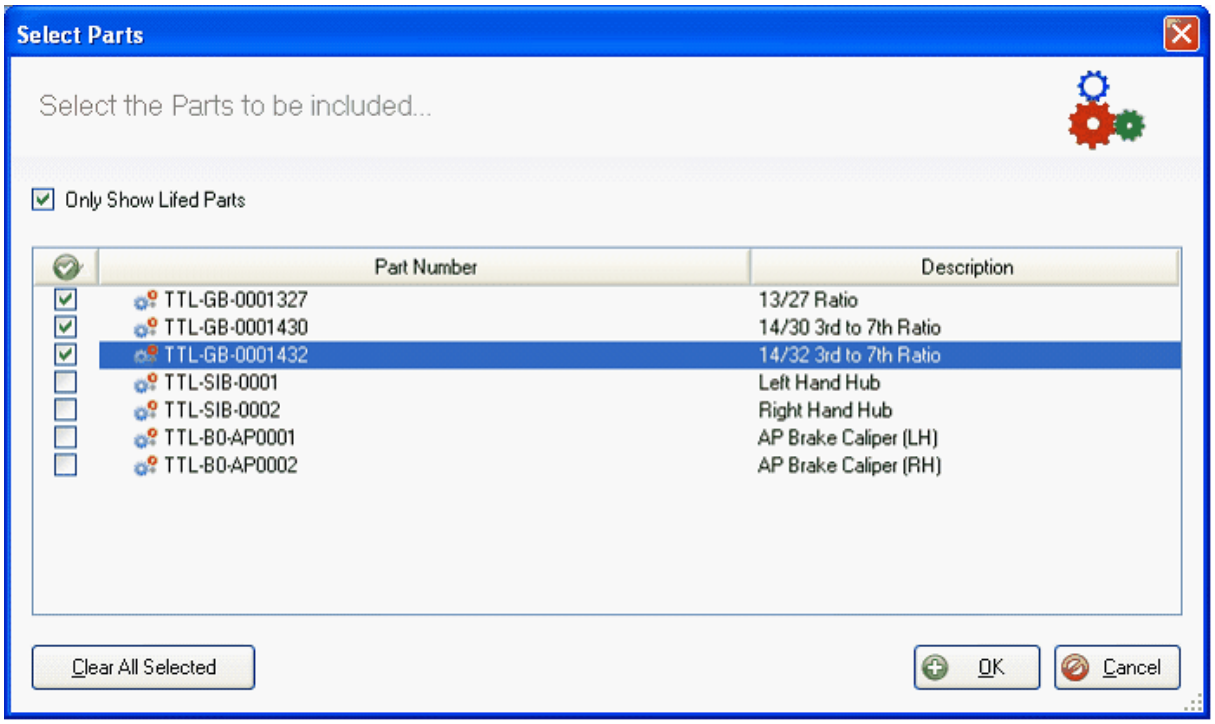

Part Classes
Selecting one or more part classes to filter by allows you to focus on a specific type of component. For example you could select the 'Gear Ratios' part class to create a report for all of the gears defined within the database or 'Anti-Roll Bars' to report on the different types of anti-roll bars defined.

Status
Each component within LifeCheck has its own 'Status' which can be manually set or can be automatically updated as distance is added. for example a component can be automatically flagged as 'To Service' once it reaches its service limit. By using the status filter, it is possible to create a report which shows which components require a service, which are out to service or even which have failed.

Distance Simulation
The values for life run, weighted life etc. displayed in the Show Life screen can be modified to show the effect of an additional race or test distance. Click **Distance Simulation** and enter the required extra distance. If weighted life values are also to be modified select a circuit name from the drop down list and click on Display. All the distances for the displayed parts will be re-calculated as if the additional distance had been covered using the weighting factors for the selected circuit
and the colour coding will also be adjusted.

Note that the actual lifing values for the components are not changed only the display. To return to actual values for the display uncheck **Distance Simulation**.

History
The history filter is useful for identifying components which are no longer in use and are simply cluttering up the database. By setting this filter to only show components which have not been used in (say) the last 24 months you can easily identify obsolete components which perhaps should be either moved into the holding areas or even deleted from the database.

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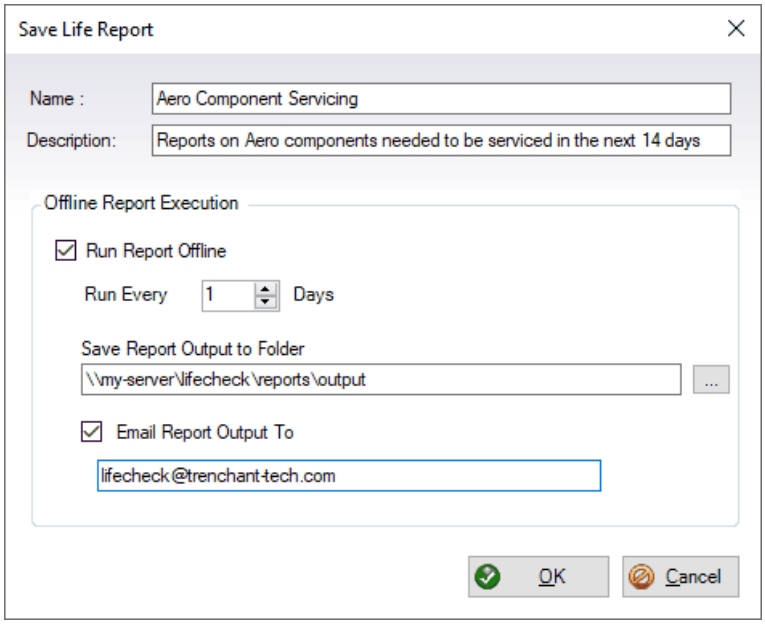
Loading and Saving Reports

To Save a report definition, click **Save Report** located in the filters pane. **LifeCheck** will ask for the name of the report and a description. The folder within which the reports will be saved is a global setting defined within **Administration>Global Settings**.



Please note, the default reports folder is located beneath the **LifeCheck** installation folder and as such may not be accessible under Windows Vista and XP systems and will need to be modified prior to saving a report. Note also that as this is a global setting it should be set to a location accessible to all users of LifeCheck. To load an existing report definition, click **Load Report** and select the required definition from the list displayed.

If licenced, LifeCheck will also enable the **Offline Report Execution** options. These define whether the report will be run by the LifeCheck Integration Service and if so how.

10.1 Forecasting

The Forecasting screen expands on the Distance Simulation functionality on the Show Life screen to include support for the Race Calendar and allowing calculations to be based on the total life of all instances of a Part rather than on a component by component basis.

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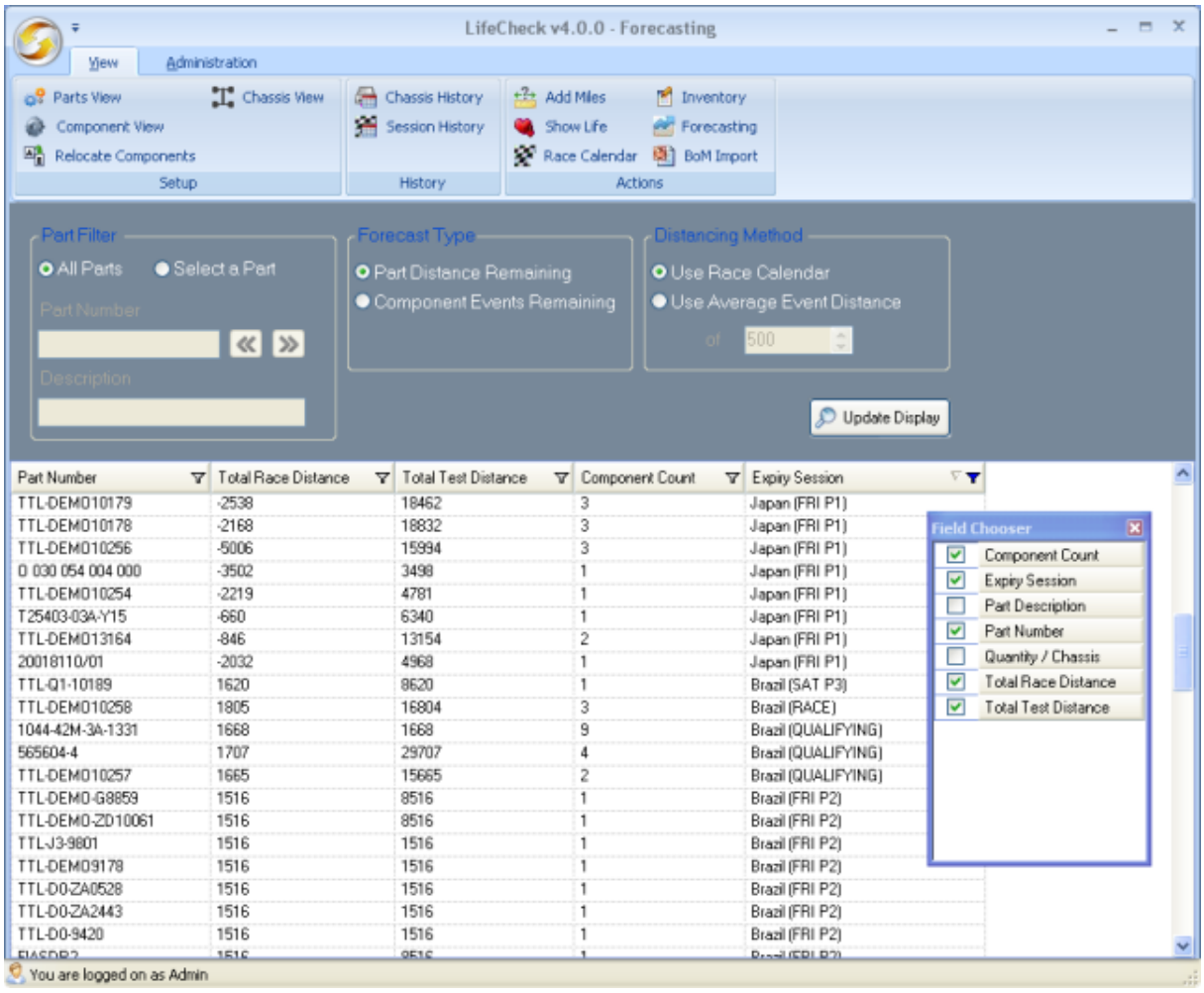

Use the part filter to select a specific part to report on or include all parts in the report.

Forecasting Type

The forecasting type may be set to either **Part Distance Remaining** or **Component Events Remaining**.

Part Distance Remaining works by adding up the distance remaining for each component instance of the part in question and using this to project forward and give an indication as to when all of the life on these components will have been used up given the distancing method selected. While this can only be an estimate because of potential for components to be damaged and natural rotation of the components it does provide an indication as to when parts will need to be ordered.

Component Events Remaining works by listing each component and based on their life left and the average race distance specified (the use of the Race Calendar is not meaningful in this case) LifeCheck will calculate the number of events which this component could take part in before it is out of life. .

Distancing Method

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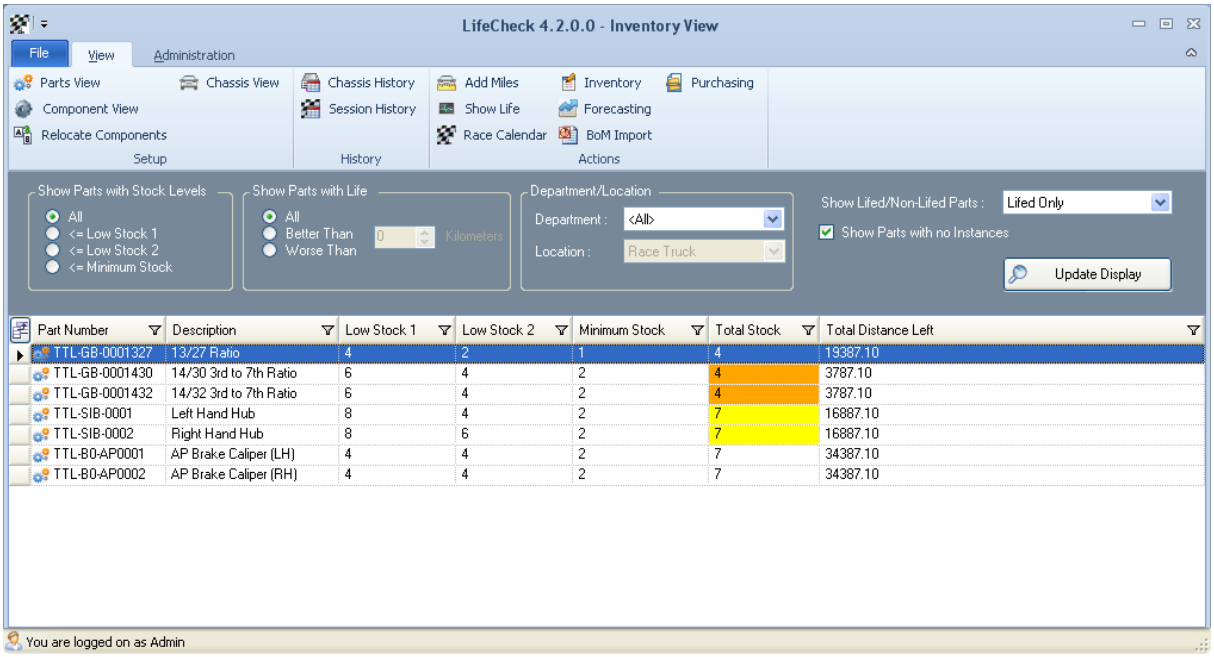
This is only applicable when the **Forecasting Type** is set to **Part Distance Remaining**. It selects between using an average race/session distance or using the sessions defined within the Race Calendar to give an indication as to the event before which the part will run out of life.

11 Inventory Functions

LifeCheck can also help with stock control of your parts and components using the functionality on the Inventory View. This screen displays a list of parts together with their current and minimum stock levels. It also provides facilities for creating purchase orders and receiving parts into stock via the Purchasing Functions.



A number of filters are provided to reduce the quantity of data displayed - note that if no filters are applied it can take some time to generate the Inventory display initially. LifeCheck allows the display to be filtered by:-

Show Parts with Stock Level
Select whether to include all parts or only those which have stock levels beneath one of the pre-defined 'low level' limits.

Show Parts with Life
Select whether to display all parts or only those with life remaining which is better or worse than the specified value

The display may also be filtered to only show either lifed or non-lifed parts and to remove any parts for which no instances have yet been defined. Click **Update Display** to refresh the display taking any filters applied into account. As with all of the displays within LifeCheck, this data may be exported in a variety of formats by right-clicking and select **Export** from the menu displayed.

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Department / Location
Use this filter to allow this display to be filtered to show stock levels in a specific location. For example, you may want to check the level of spares currently located on the Race Truck. LifeCheck allows this to be analysed by selecting the Race>Race Truck location and refreshing the display.

Note however that when an individual location has been selected, the minimum stock levels are no longer meaningful as they apply to total stock and not to stock within the selected location.

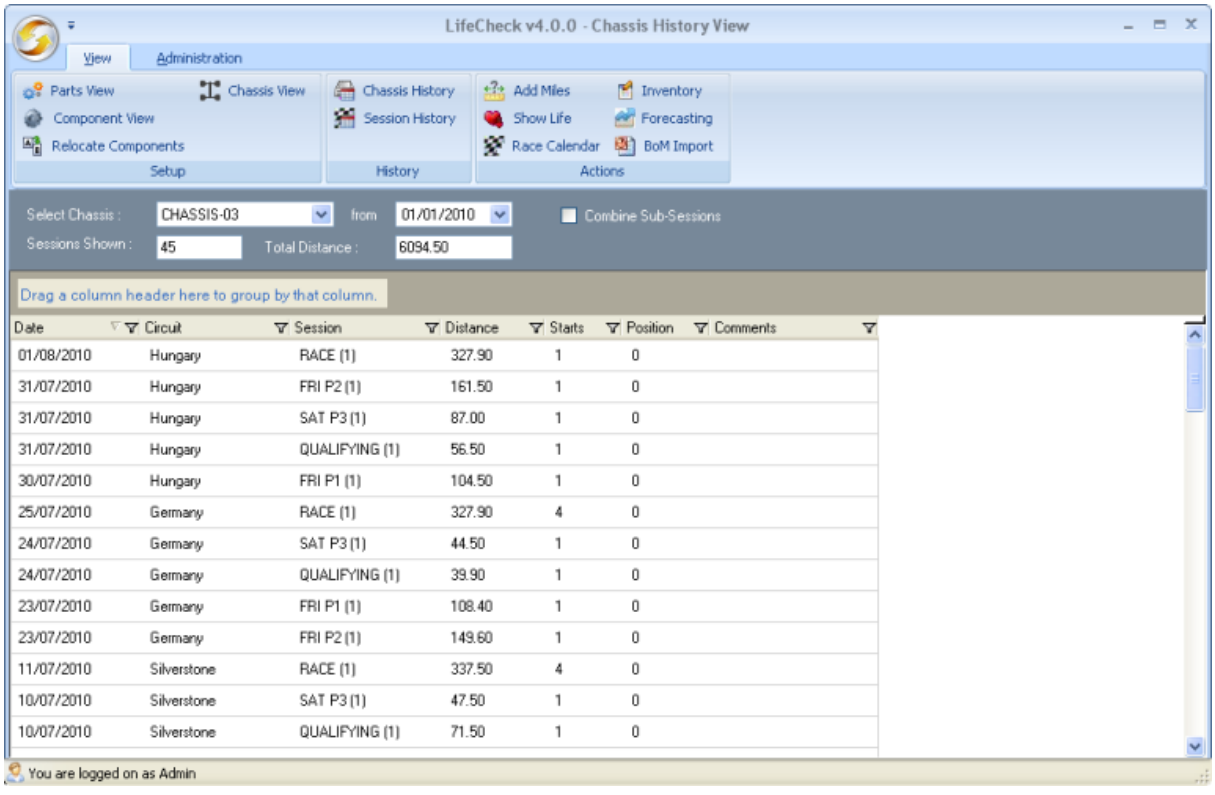
12 History Functions

LifeCheck supports 3 levels of history with regards to lifing operations.

- Chassis History
- Session History
- Component History

12.1 Chassis History

This displays a list of the individual sessions applied to the selected chassis since the date specified.



To view chassis history, first select the chassis for which the history is to be displayed. The **from** date is pre-set to that defined within Global Settings in the Administration area or LifeCheck but may be

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changed here to show more or fewer sessions. In addition, sub-sessions may be combined in this view. A sub-session is defined as where a specific session is recorded multiple times for the same circuit/ date/driver. This screen automatically refreshes as changes are made to the selection fields and will display a count of the number of sessions currently shown and the total distance cumulatively covered within those sessions.

To zoom in on a specific session either double-click the session in the display or right-click and select **Session History** from the menu displayed. The Session History window will be displayed pre-configured to display data for the selected session.

12.1.1 Identifying Changes made between sessions

The Chassis History screen also provides a mechanism by which you can quickly and easily identify changes made between sessions simply by selecting the sessions to be compared (these usually are but need not be sequential) and selecting **Changes** from the right click menu. A new window will be display which shows components changed between the 2 sessions including instances where a component was on on either the first or second session. This list can be exported to Excel if required.

12.1.2 Components used in multiple sessions

While the Chassis and Session history reports are able to show which sessions were run by the selected chassis and which components were on the chassis in each session this does not provide a complete list of all components which were used over for example the course of a race weekend. This function is provided by the **Components Used** menu option displayed by right-clicking within the Chassis History screen after selecting one or more sessions. The following window will be displayed which will list ALL components which were used within any of the selected sessions.

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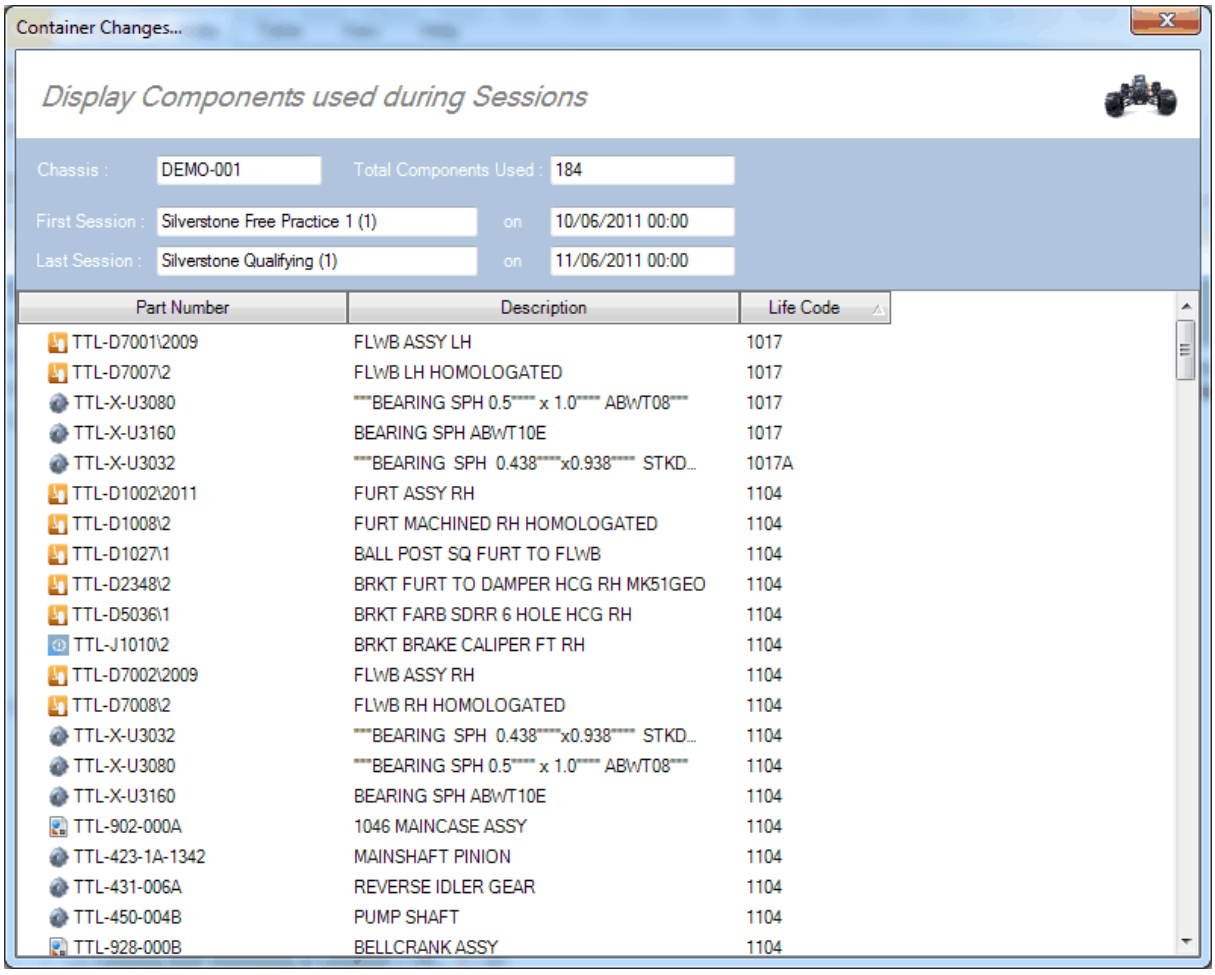

As with the only similar displays within LifeCheck, a rich right-click menu provides a plethora of additional options to customize this display!

12.2 Session History

This displays a list of the components which were located on the selected chassis for the given session. Select the required chassis and session from the drop-down lists.

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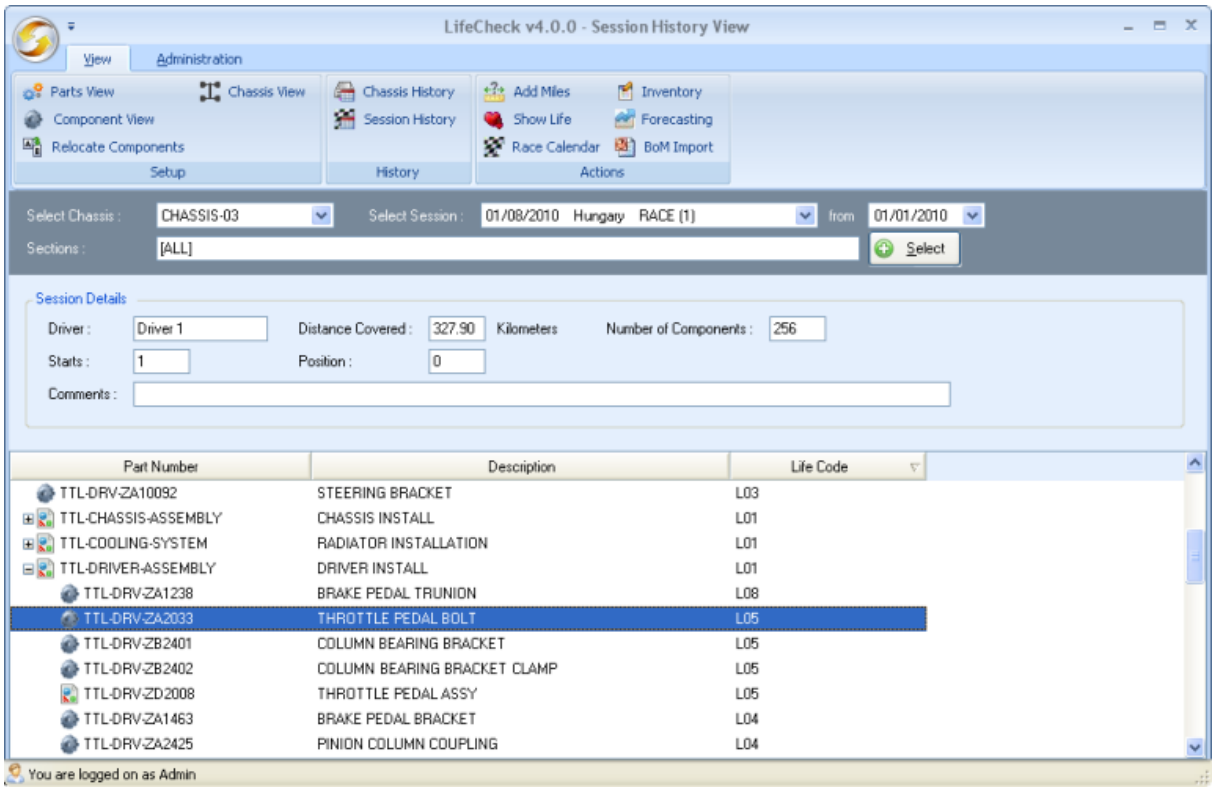

The display will list all of the components which were located on the chassis when the session was added to LifeCheck grouped into the assemblies which they were part of at that time. In addition, LifeCheck will display other relevant data such as the driver at the time, total distance covered and the total number of parts. It is also possible to remove a component or assembly from the session by right-clicking and selecting **Remove Session** from the menu displayed. For further details please refer to Adding and Removing Sessions earlier in this manual.

To zoom in on the history for a specific component either double-click the component in the display or right-click and select **Component History** from the menu displayed. The Component History window will be displayed pre-configured to display data for the selected component.

12.3 Component History

Component History is displayed as part of the Component Properties window and may be invoked either from the Session History screen or by right-clicking on a component and selecting **Properties**. An example of component history is shown below - it lists all of the sessions in which this specific component has taken part together with additional information about each session such as its date, distance and the driver. A range of operations are possible on this tab including Adding and Removing Sessions from this component and changing the date at which a service or re-life was performed. For full details, please refer to Component History - Properties.

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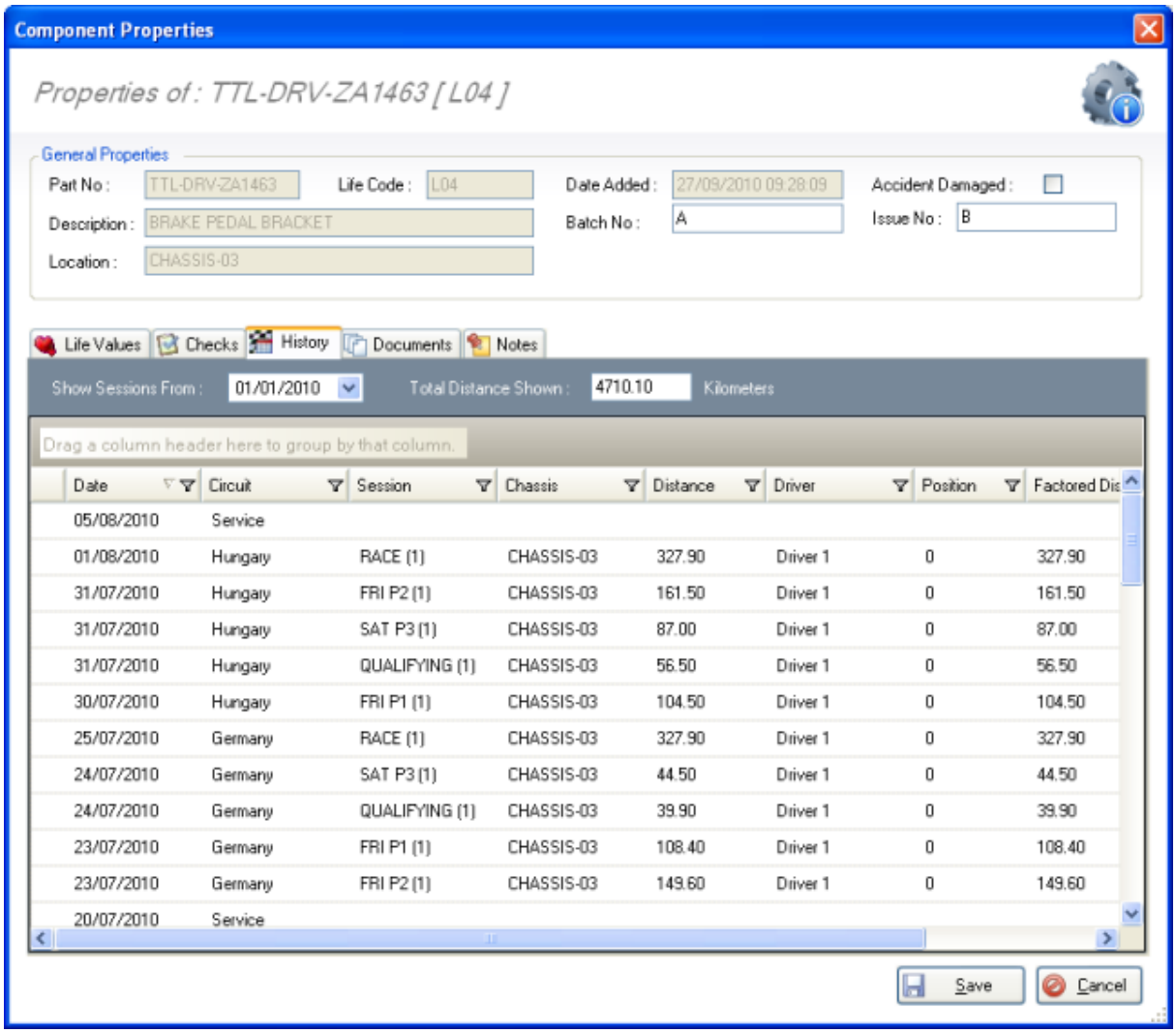

13 Calibrations

The Calibrations module is an optional add-on to LifeCheck and as such may not be available in your installation. The calibrations module allow parts to be lifed using values which are not necessarily based on the distance run by the component. For example clutches and brake discs may have a mileage limit but are often also lifed based on their thickness. In addition, other components such as driveshafts may have limits which are based on twist and tun-out measurements. The Calibrations module allows these measurements to be recorded chronologically, graphed and used to identify components which have worn beyond their service limits.

13.1 Defining Calibrations

The first step in maintaining calibration values for a component is to define the calibration itself. This is done on the **Admin>Calibrations** form as shown below:-

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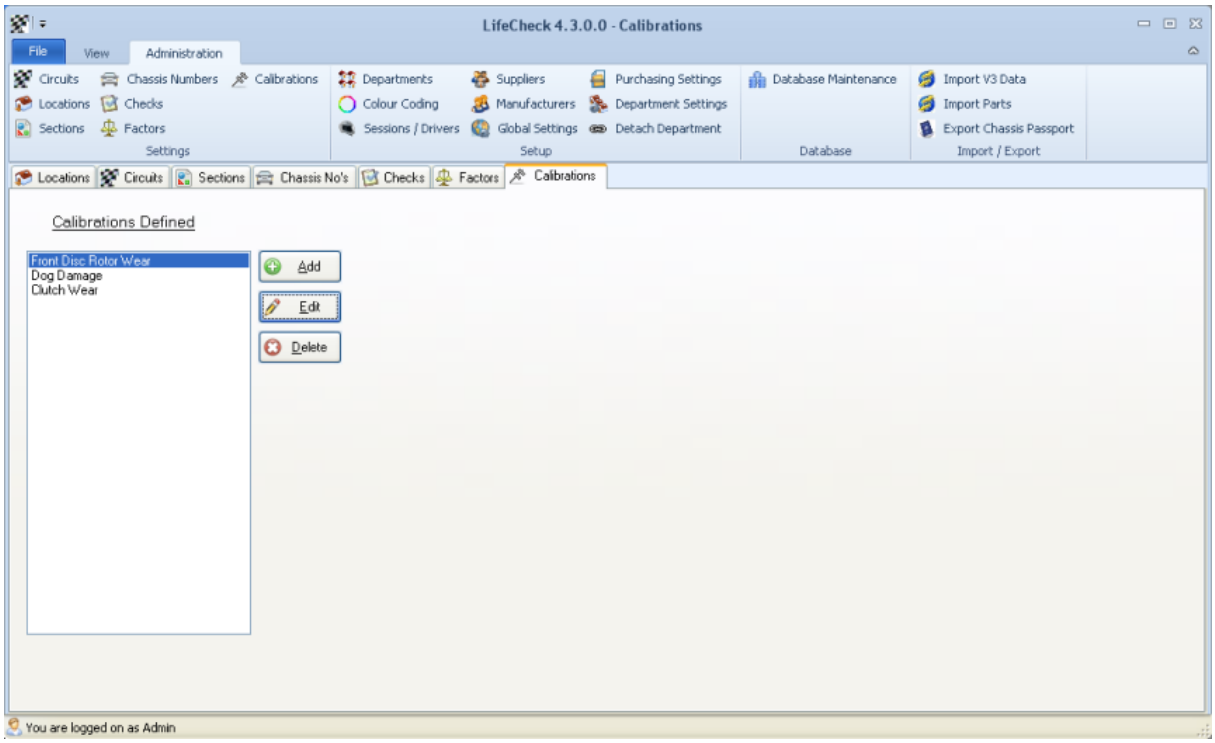
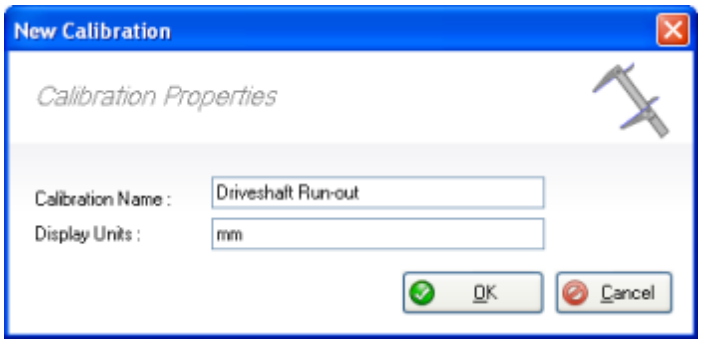


In this example, 3 calibrations have been defined, Front Disc Rotor Wear, Dog Damage and Clutch Wear. Additional calibrations may be defined by clicking the **Add** button.



To define a calibration we need to specify a name by which the calibration will be referenced and the text which will be displayed for the units in which the calibration is measured.

13.2 Adding a Calibration to a Part

Once a calibration has been defined it can be added to one or more parts on the Part Properties form. The easiest way to access Part Properties is to select the **Parts View**, select the required part and right-click to display the context menu. Select **Properties** from the menu.

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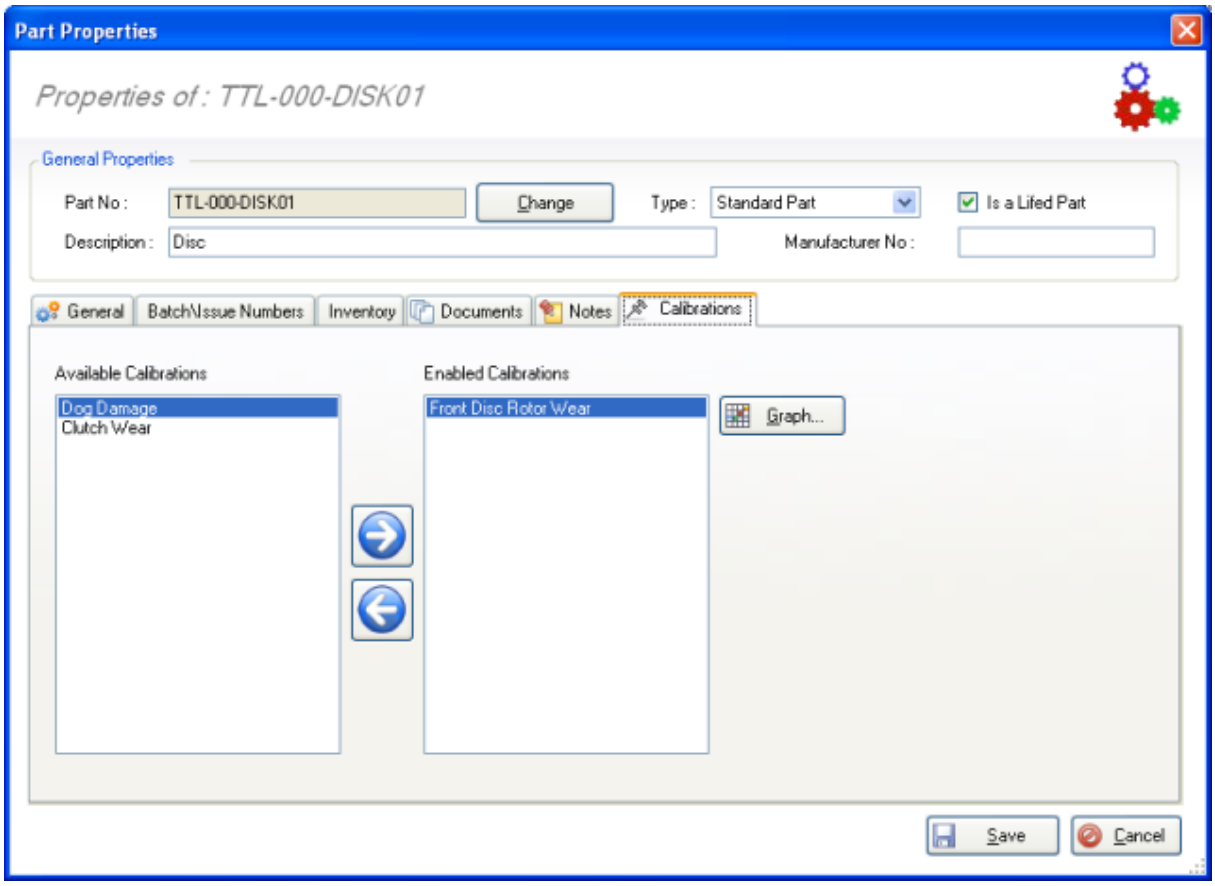

The **Calibrations** tab contains a list of calibrations which have been defined and a list of calibrations which have been associated with the specified part. A calibration may be associated with multiple parts and a part may have multiple calibrations associated with it. A drive shaft may for example have both a **Twist** and a **Runout** calibration where as a **Dog Damage** calibration may be associated with a number of gears. If you attempt to remove a calibration from a part for which calibration values have already been specified, a warning will be displayed as continuing to remove the calibration will result in the deletion of all calibration values set for all instances of the part. Note that only the **Admin** user is authorised to remove a calibration for which values have been defined.

It is also possible from **Part Properties** to display a graph of all previously defined values for this calibration and part. Please refer to Graphing a Calibration later in this manual.

13.3 Setting Calibration Limits

As a Calibration is associated with a Part, LifeCheck will display the following window to allow specific limits for this calibration and part to be defined. Limits are defined initially on a Part by Part basis - for example front discs may have a different minimum thickness to rear discs but may be tracked using the same calibration.

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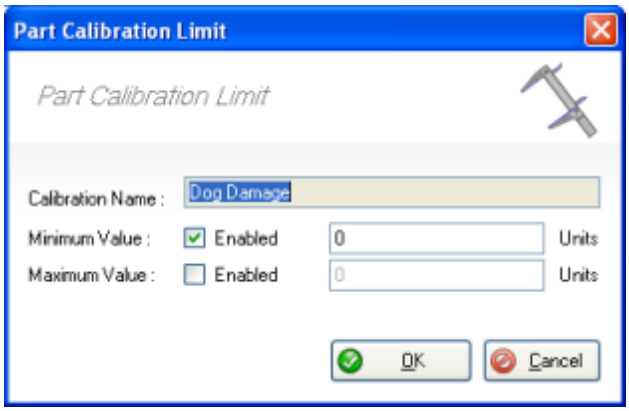

It is possible to set either or both of minimum and maximum values for a calibration. This is particularly usefully when defining a calibration which measures a deflection which could be positive or negative. The calibration could be defined as needing to be in the range -4 to +4 degrees. This can be easily achieved by enabling both the minimum and maximum limits and setting each accordingly.

Click OK to accept the limits set.

13.4 Adding Calibration Values

Once a calibration has been defined and associated with a Part it is now possible to actually define values for the calibration for a specific instance of the part. Right-click the required component and select **Properties** from the menu displayed. Select the **Calibrations** tab in the window displayed.

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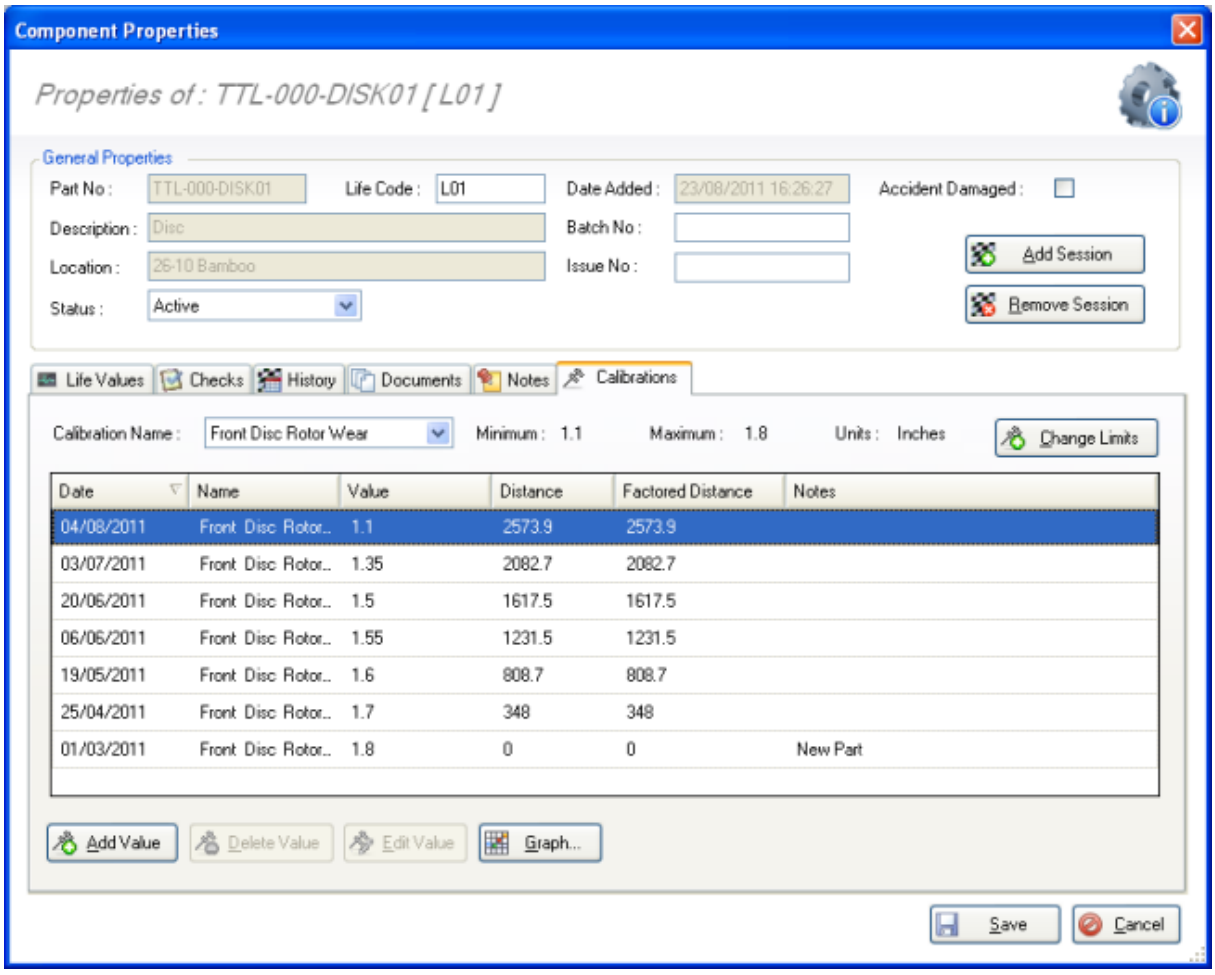

In this example a number of calibration values have already been defined for a front disc rotor - the values, dates, distances and any notes specified for each calibration value are displayed. This list may be exported in a variety of formats. In addition you may also edit or delete existing values or click to add a new value.

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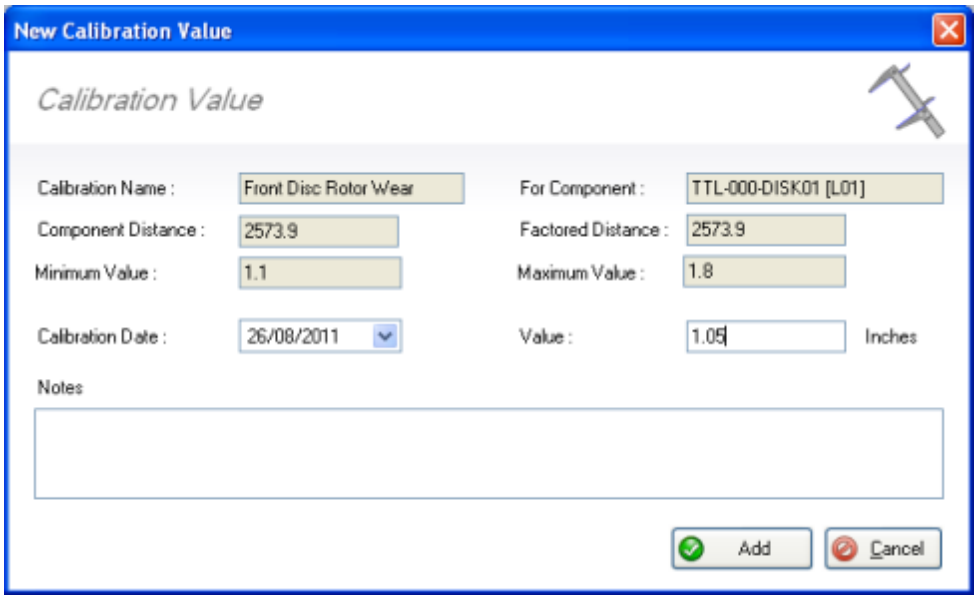
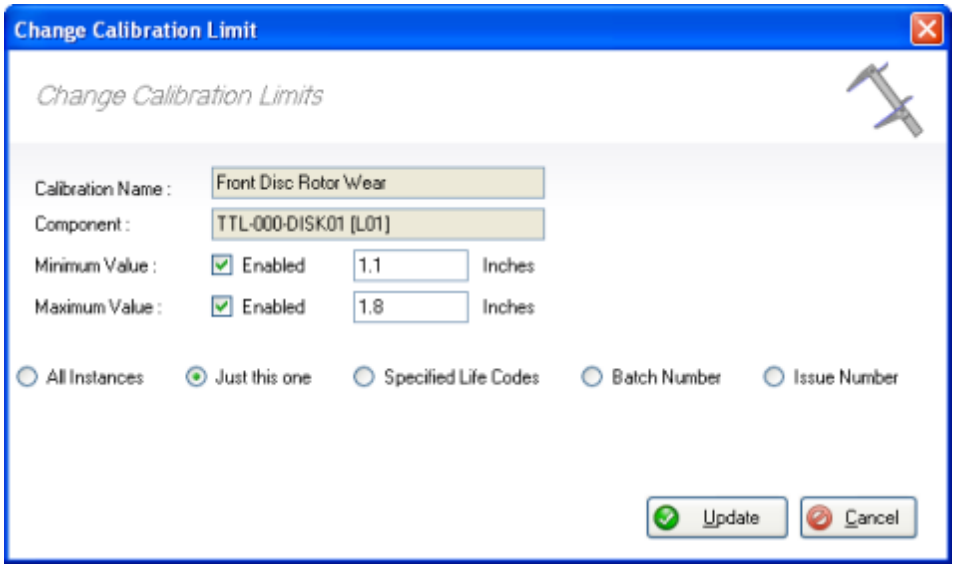


Here we have clicked **Add** to begin defining a new calibration value. Note that the window is displaying the distance run by the component based on the Calibration Date. Varying the date of calibration will cause the distance run and factored distance to be re-calculated to fit in with the actual distance run based on the selected date. The minimum and maximum limits set for the calibration (for this part or component) are also displayed. Select the date on which the calibration value was taken and enter the value itself before clicking OK to create a new calibration value and associated it with the component.

13.5 Changing Calibration Limits

In general once the limits for a calibration for a specific part or component have been set they should not be modified. In certain cases however, for example when a revised part has been manufactured with perhaps a different issue or batch number but the same part number, it may be necessary to alter the limits set. This can be done from the Component Properties by clicking the **Change Limits** button. The following form will be displayed.



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On entry to this form the current minimum and maximum values will be displayed as appropriate. You may also select whether to change the limits for this component only, for all instances of the component, for specific life code ranges or for a specific batch or issue number. As the selection changes, LifeCheck will display additional fields to allow entry of, for example, the batch code. Click **Update** to update all components selected.

13.6 Graphing a Calibration

While the raw data can be helpful and can be exported to Excel for further analysis, LifeCheck does allow the data to be displayed graphically by clicking the **Graph** button.

The graph displayed shows the wear characteristics for a single instance of a front disc rotor according to the calibration values entered for the rotor. Additional comparisons may be made by checking the **Include ALL instances of this Component** box as this will cause all other instance of the selected component (which have values defined for this calibration) to be shown on the same graph. When the Graph form is accessed from the **Part Properties** form, this check box is checked and cannot be unchecked.

The graph may be saved in a number of image formats as well as to a PDF file by selecting the required format and clicking **Save**. Similarly the graph may be printed by clicking **Print**. A print preview window will however be displayed prior to printing.

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14 Chassis Templates

Chassis Templates allow both the structure and content of a Chassis to be pre-defined within LifeCheck. The Chassis Template does not include actual components only references to parts so for example the template may define that 2 front brake calipers are required on the chassis but will not specify ***which*** physical calipers. The idea behind this is that the template effectively doubles as a **Bill of Materials** or **BoM** and an actual build of the chassis can then be compared against the template to identify where components have not yet been specified or where additional components are on the chassis but not in the template.

There are a number of reasons why the use of a Chassis Template is a good idea :-

- By pre-defining the structure and content of the chassis, future chassis builds can be easily validated to ensure that all necessary components have been added to the chassis prior to distance being added
- The Chassis Template defines the expected structure of Assemblies within LifeCheck. This can be used when creating new instances of that Assembly to ensure that they conform to the template
- The Chassis Template can be used a a checklist to simplify the process of adding components to the chassis and highlighting which components still need to be defined and whether additional components have been added to the chassis and should be removed prior to recording a session for the chassis.
- The Chassis Template can include Part Classes in addition to actual parts - this means that the Chassis Template cab be more generic than a specific build of the chassis defining for example that 7 gear ratios are required but without having to define the exact part numbers.

Chassis Templates are defined within **Administration > Settings > Chassis Templates**.

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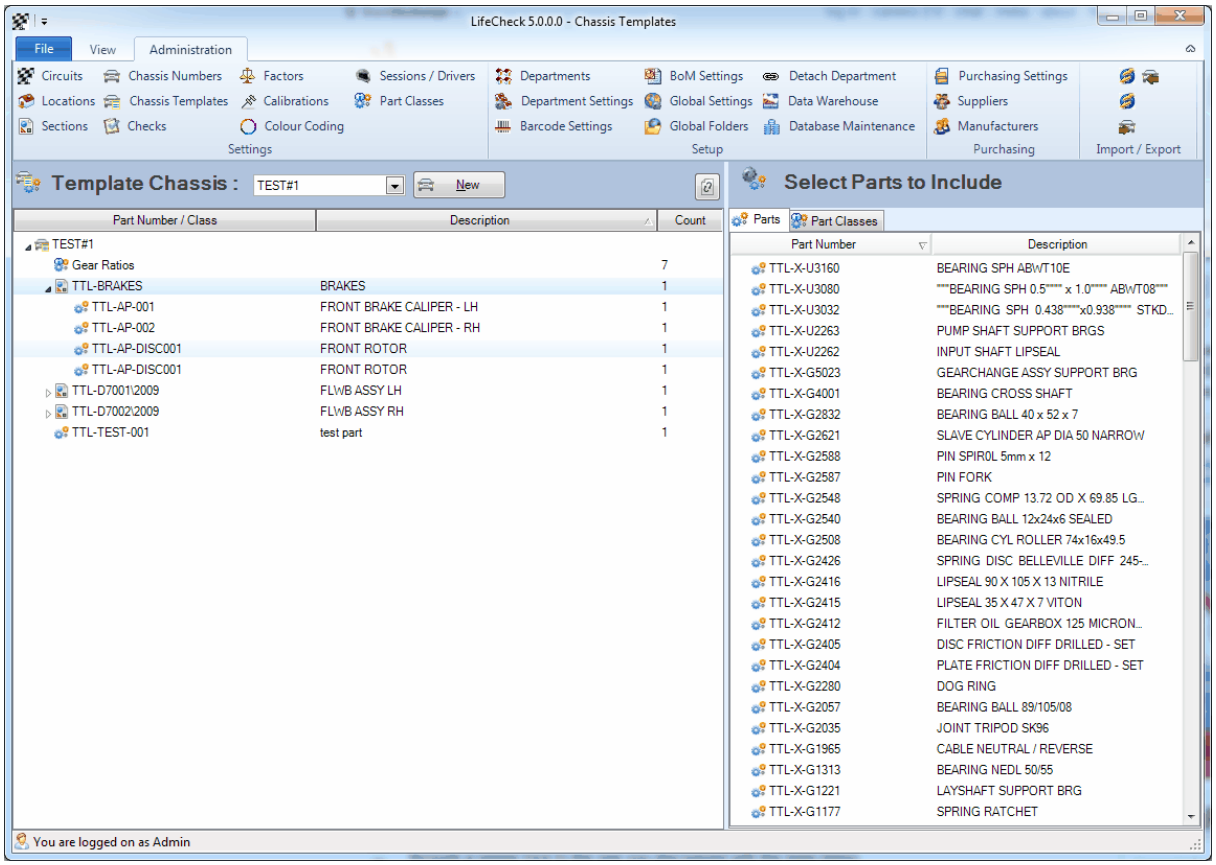

Here we can see a Chassis Template in the process of being defined.

14.1 Creating a new Chassis Template

Multiple chassis templates may be required if you run multiple Race Cars with radically different setups or possibly where a different setup (with different parts not handled by part classes) may be used for different sessions. It is recommended that where possible only a single Chassis Template is defined as this reduces the possibility of errors where the wrong template is later used to validate a build of a chassis.

There are 2 ways in which a chassis template may be created, that is by manually adding the parts and assemblies using drag and drop functionality from the right hand pane, or by using an existing build of a chassis to define the template. The latter approach is highly recommended as it is far easier to work from an existing chassis than to build it up manually in Chassis Templates.

Regardless of which approach is taken, the first step is to click **New** to begin the process of creating the Chassis Template and display the following form :-

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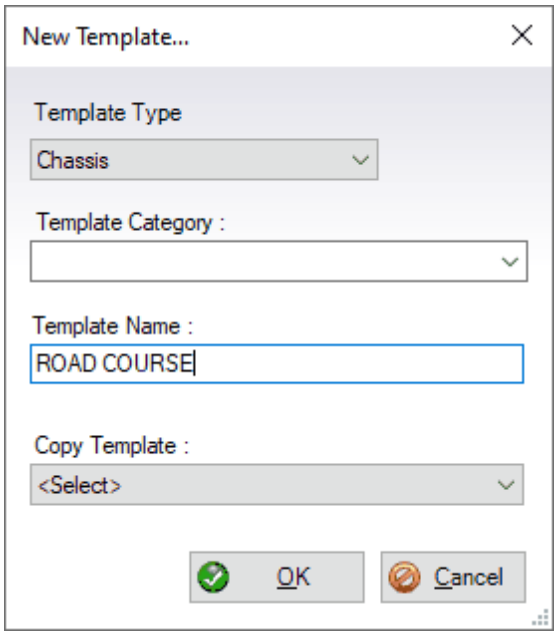

When creating a new chassis template it if often useful to base the new template on an existing template and then make changes to it to suit different applications. Enter a unique name for the new template, select any existing template to copy from and click **OK**. Where a large number of chassis templates is being created, it may be useful to either select a previously defined Category for the template or enter a new name. For example if you have different cars in your database you may want the category to be the type of car to group the templates together.

14.2 Including sundries in a Chassis Template

In most situations the chassis template will only include those parts which you would like to track for mileage purposes. It may however be useful to also include Sundry items as although they are not lifed nor is the mileage run maintained for them, from an inventory perspective and in terms of keeping the chassis template as close as possible to the Bill of materials, it may be desirable to at least record the fact the sundries are used.

Sundries in general are added to the chassis template in the same way as any other part, by dragging them from the list of parts to a location in the template. Where they do differ however is once dropped on to a chassis template node, you will be asked to specify the quantity required. So if for example the assembly in question requires 8 M6 NAS bolts, enter a quantity of 8.

As a chassis is built using this template, LifeCheck will use this quantity to select the required number of a sundry from a collection and place them on the chassis. As an example if a collection of 32 M6 NAS Bolts is selected (or swapped) onto a Chassis where the template has defined that 8 are required, the source collection will be split placing the required 8 onto the chassis and reducing the count in the source collection to 24. The Quick Swap function (See Chassis Builder), is not supported for Sundries. In addition when using the Swap function for Sundries, you must relocate the sundry items being removed from the chassis to a new location as simply swapping them back into the source collection would result in effectively no change!

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14.3 Populating a Chassis Template

The recommended approach to populating a chassis template is to create one from an existing chassis build by right-clicking in the left hand pane and selecting the **Create from Chassis** option. A form will be displayed from which the chassis to use can be selected. Note however that the existing template will be completely over-written by this function. Once the template has been created, it may be modified by moving parts and/or part classes on to and off the template. To remove a part from the template, right-click the part and select **Remove** from the menu.

It may however be the case that you do not yet have a chassis build and want to use the functionality of the Chassis Template to simplify the chassis build. While this approach can be more complex than building the chassis first it has its merits as you can include part classes from the start rather than having to retrospectively edit the chassis template. The Chassis Template is constructed in a similar way to how you would build your chassis using Relocate Components in that standard 'drag and Drop' functionality is typically used to drag parts and / or part classes onto the template to build assemblies, sub-assemblies and individual parts. Note that the Chassis Template does not define the specific components to be placed on a chassis, just the Parts.

To add a Part Class to the template, select the **Part Class** tab in the right pane and drag the required part class onto the template. As you 'drop' the part class, a form will be displayed to allow the quantity to be specified. For example, if the template should contain 7 Gear Ratios, select and drag the **Gear Ratios** part class to the template and enter '7' as the quantity. The selected quantity of items will be created in the template.

15 Assembly Templates

In a similar way to Chassis Templates, Assembly Templates allow the structure of an assembly to be pre-defined and then the template used to build additional instances of the assembly. Assembly templates are built in much the same way as chassis templates by dragging and dropping parts from the right hand pane onto the template to define a hierarchical structure to represent the structure of the assembly. In many cases, assembly template will not be needed as most assemblies are better defined by referring to the Chassis Template itself. Assembly templates are however very useful when used in conjunction with Part Classes within a chassis template as explained next.

When creating a Chassis Template, a common problem is where a number of different assemblies or components may be substituted for one another such as in the case of torsion bars or suspension springs. In this case specifying a particular part number within the Chassis Template is not possible as a number of different part numbers could be used interchangeably. As long as the correct number of components are placed onto the chassis the car build should be considered correct and complete. This is where **Part Classes** are useful as they group one or more parts into a class and allow that part class to be added to the chassis template rather than a specific part number. This means that if a number of torsion bars are assigned to the **Torsion Bars** part class ANY instance of a torsion bar can be placed on the chassis and will match the template. Part Classes are discussed in more detail earlier in this manual.

This approach works well for standard parts but not always for assemblies. The reason for this is that the assembly itself could have a different structure and as such the chassis template cannot handle a part class where the underlying part is a part class as it has no mechanism by which the structure of the assembly can be analyzed. As such, the use of Part Classes fort assemblies has been discouraged prior to LifeCheck v5.5. In v5.5 this changed however as the ability to assign an **Assembly Template** to a part was introduced together with support for these assembly level templates in the **Chassis Builder**.

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What LifeCheck is now able to do is to identify where an assembly has been used in place of a part class and to then interrogate that assembly (or in fact the Part associated with the assembly) looking to see if an Assembly Template has been associated with the Part. If an assembly template is found, this is used to analyze and build the assembly instead of the chassis template. The advantage of this approach is that multiple assembly templates can be used where the different assemblies differ in content. For example, a Rear Wing may use multiple different end planes and have different specifications of fences. These different structures can be handled by creating a different assembly template for each specification of rear wing as follows:

TTL-REARWING-SPEC-A
- TTL-MAINPLANE-A
- TTL-ENDPLATE-RHS
- TTL-ENDPLATE-RHS

TTL-REARWING-SPEC-B
- TTL-MAINPLANE-B
- TTL-ENDPLATE-RHS
- TTL-ENDPLATE-RHS

In this case we have 2 Rear Wings, Spec-A and Spec-B which are the same other than their mainplane. To set these up for use within a Chassis Template follow these steps

1. Create a new Part Class and call it **'REAR WINGS'**
2. Under Administration>Chassis Templates create new Assembly Templates for the parts **TTL-REARWING-SPEC-A** and **TTL-REARWING-SPEC-B** and name them **REARWING-SPEC-A** and **REARWING-SPEC-B**
3. In **Parts View**, right-click the **TTL-REARWING-SPEC-A** part and select 'Set Part Class > REAR WINGS'
4. In **Parts View**, right-click the **TTL-REARWING-SPEC-B** part and select 'Set Part Class > REAR WINGS'
5. In **Parts View**, right-click the **TTL-REARWING-SPEC-A** part and select 'Set Assembly Template > REARWING-SPEC-A'
6. In **Parts View**, right-click the **TTL-REARWING-SPEC-B** part and select 'Set Assembly Template > REARWING-SPEC-B'
7. In Administration.Chassis Templates, select your chassis template and add an instance of your **'REAR WINGS'** part class.

Note steps 3 to 6 can also be done within **Part Properties** for the 2 parts.

16 Working with Teams

Each Chassis (or other primary container) defined with Administration>Chassis Numbers may optionally have additional data associated with it. This data is comprised of 6 additional fields, the terminology for which may be changed within Global Settings>Terminology. By default however, a T**eam** may be set for each chassis. Within LifeCheck 'Team' has a specific meaning and can be used to allow individual cars and their spares to be maintained independently within LifeCheck by assigning cars and components to a specific team.

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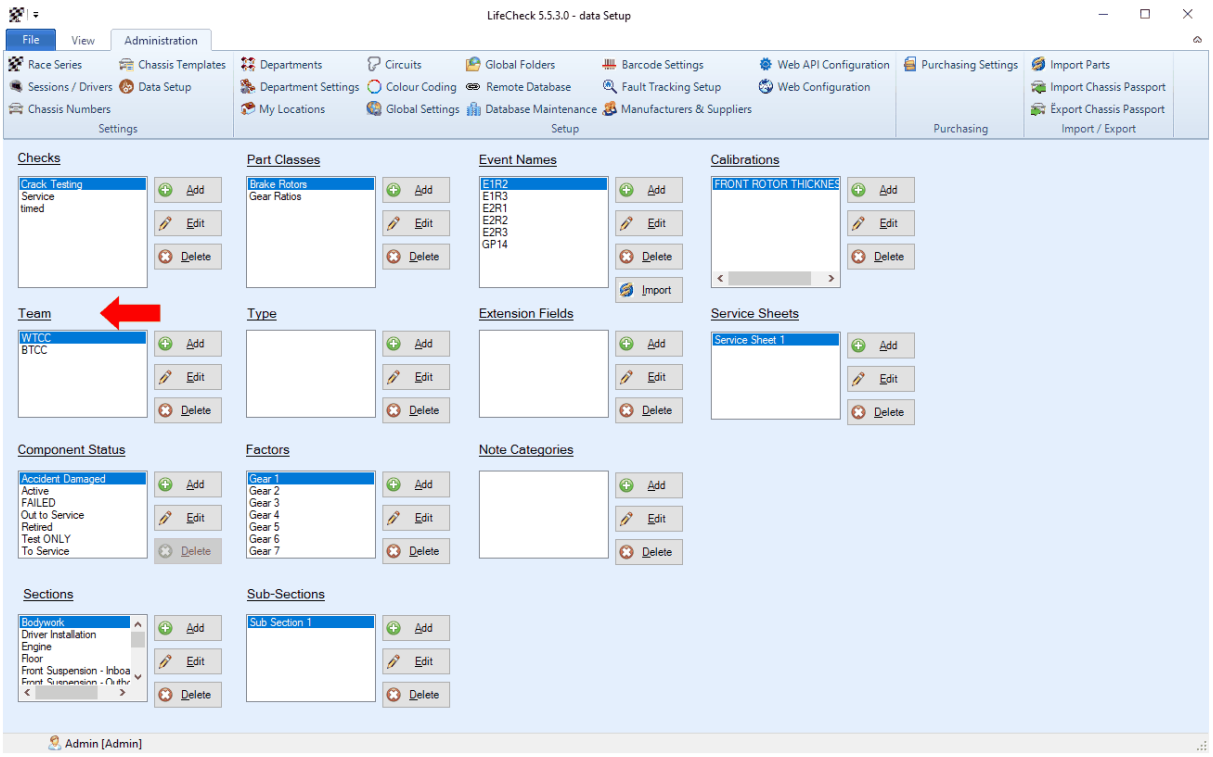
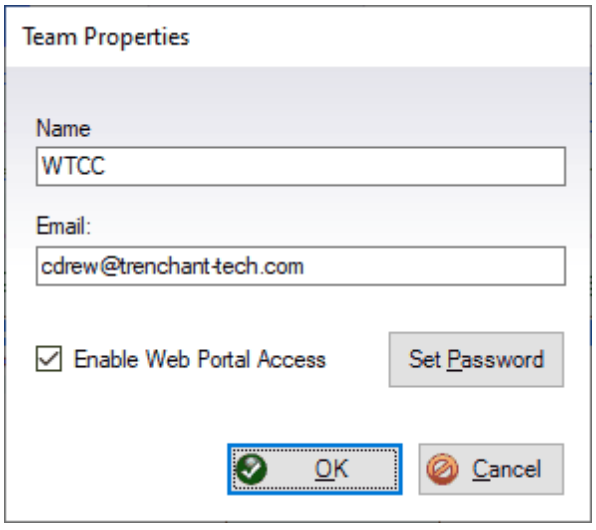
16.1 Defining Teams

To begin working with teams, first the name(s) of these teams should be defined under **Administration>Data Setup**.



In the example above, 2 teams have been defined, **WTCC** and **BTCC**. To add a new team or edit an existing team, select the team and click Add or Edit as appropriate to display the following window.



If you intend to make use of the LifeCheck Web Team Portal, it is important to specify an Email for the team and to check the box to enable web portal access. In addition, a password for the web portal

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access should be set at this time. The email address is required to allow for password reset links to be sent to the team to manage / control their own password.

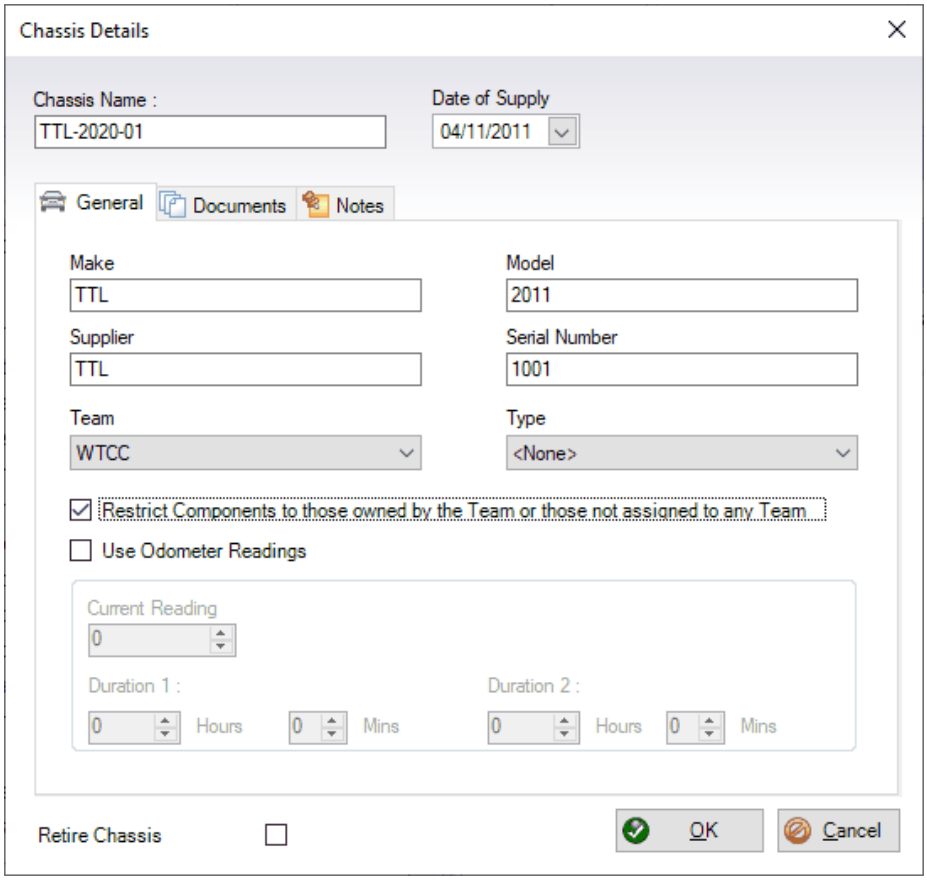
A chassis may be assigned to a specific team under Administration>Chassis Numbers. Edit the team in question and select the team from the dropdown list of teams defined.

16.1.1 Assigning Components to Teams

Component(s) may be assigned to teams either by selecting the right click menu option **Set Team** or from within the Component Properties window. It is often easier to move components belonging to a team into a specific location and set ownership for them all in a single operation. To do this, select the first component in the group, move to the end of the group and, while holding the shift key down, select the last component also. Now right-click within the group to display the context menu and select the **Set Group** option and the appropriate group.

16.1.2 Restricting Components placed on a Chassis

Although components can be assigned to a team, this assignment does not by default, affect the use of those components. That is any component may be placed on any chassis subject to any other restrictions defined (such as restricting components with specific status's from being put on a chassis). It is however possible to restrict components being moved onto a chassis if that chassis is not owned by the same team. Components may however be unassigned to any team and as such are considered to be global stock. To prevent components assigned to another team being placed on a chassis, ensure that the appropriate box is checked as shown below.



Note that this must be done on a chassis by chassis basis.

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17 Working with Barcodes

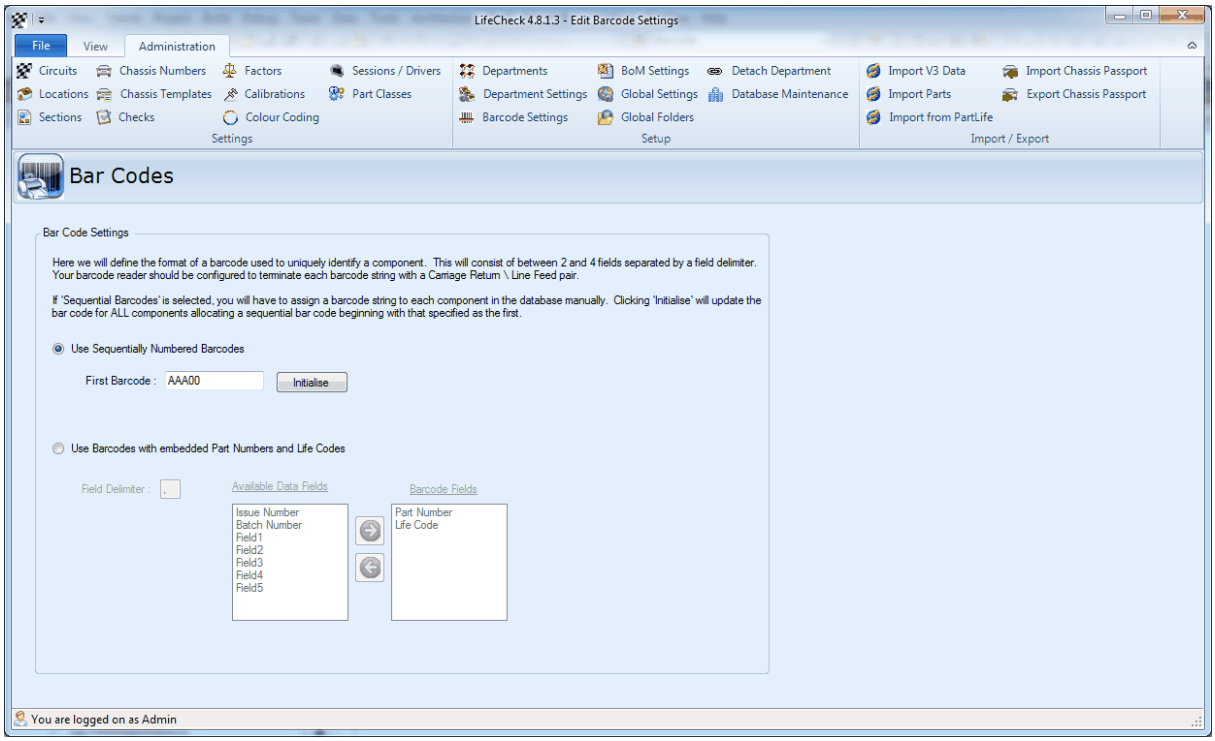
LifeCheck allows certain functionality to be automated using a bar code scanner to identify operations to be performed and the components or locations that are to be acted on. There are 3 stages to enabling bar code support within LifeCheck.

- Define the bar code format
- Print Operation / Location Bar Codes
- Enter Bar Code Mode

Note that Bar codes are a separately licensed option within LifeCheck and as such may not be enabled.

17.1 Setup

The first task to perform when working with bar codes is to configure LifeCheck so that it knows how bar codes are to be associated with components defined within LifeCheck and the format of those bar codes. this is done under Administration>Barcode settings.



Bar codes may be defined in 2 distinct ways. Firstly bar codes may be allocated in a sequential or otherwise pre-defined method. The advantage of this approach is that off the shelf bar code labels may be purchased and applied to a component with details of the bar code entered for the component within LifeCheck. The drawback of this approach however is that it is a largely manual approach with each component within LifeCheck having to be updated as a bar code is associated with it.

Secondly the bar code may be formatted to contain both the part number and unique serial number or life code by which the component can be identified. This information may be embedded in a larger text value and LifeCheck configured so as to know where in the bar code as a whole the pertinent

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information about the component is stored. For example the bar code could contain the fields

XXXXX, <part number>, YYYYY, <life code>, ZZZZZ

This can be defined within LifeCheck using this option. The obvious advantage here is that bar codes will just work within LifeCheck but it does require custom bar codes to be printed for each component using this defined format.

Note that although we refer to bar codes throughout this manual the actual medium by which this data is encoded is irrelevant - all that is needed is what-ever reader is being used, whether that be a 1D or 2D bar code reader, an RFID tag reader or any alternate technology, that the data is returned as a text value delimited by a new line character.

Using Sequential Bar codes

If sequential bar codes are selected, you may also define a starting bar code value and have LifeCheck pre-set a bar code for each component within the database using the specified value as a base and incrementing this value for each component found. For example if the first bar code value is set to 'AAA001', LifeCheck will allocate the bar codes as 'AAA001', 'AAA002', 'AAA003' and so on as it iterates through the components defined within LifeCheck. Note that it is not possible to set the order in which LifeCheck will process these components and as such it is not possible to know before hand what bar code each component will be allocated using this method. The bar code can be viewed and/ or modified on the **Component Properties** form.

Using Bar codes with embedded data

Where bar codes with embedded data are to be used, LifeCheck allows you to define both the delimiter used between fields within the bar code and also the ordering of these fields. Simply move fields in the correct order from **Available data Fields** to **Barcode Fields**. Use **Fieldn** as place holders where there are fields in the bar code which are to be ignored. It is important that the fields are defined in the correct order otherwise the bar code may not process correctly.

17.2 Printing Barcodes

Once the mapping of the fields within the bar codes etched onto your parts has been defined, the next stage is to print the barcodes which will identify the individual operations and locations/departments. Select Actions>Print Bar Codes from the main menu. The following window will be displayed :-

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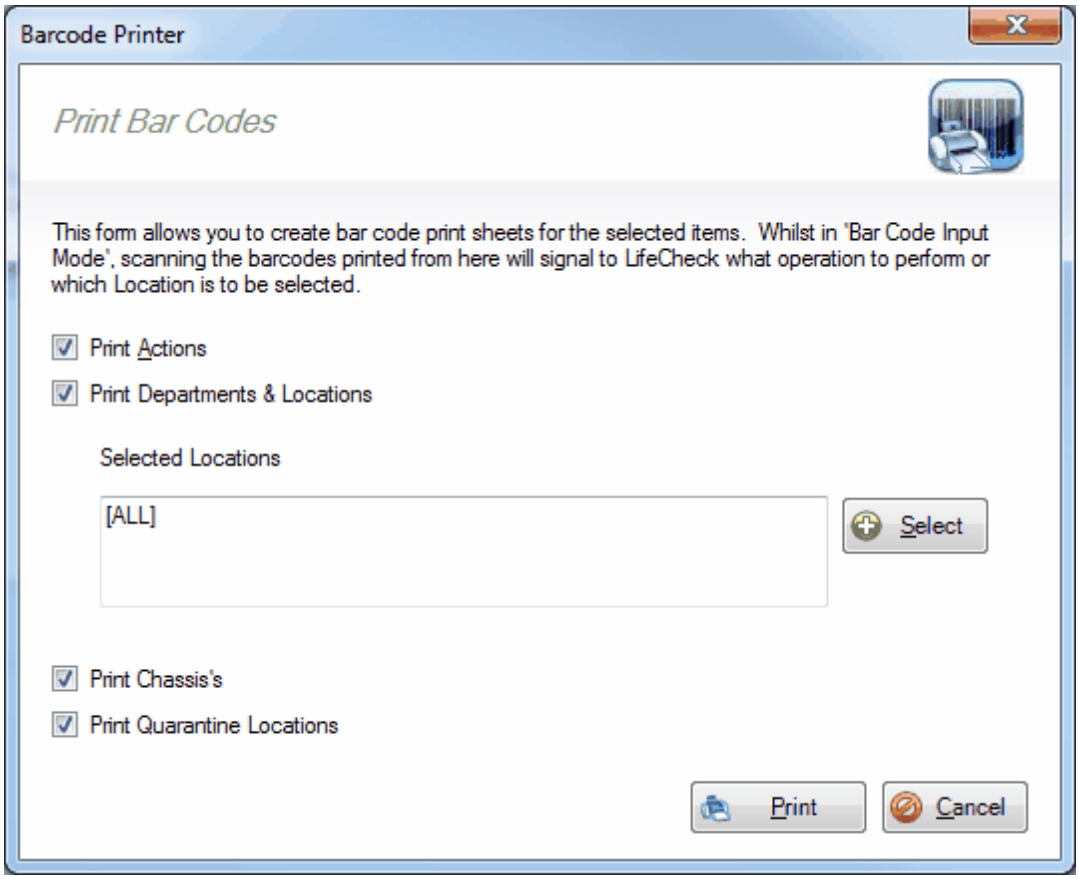

Select whether to print the actions and/or departments and locations and click **Print**. It is possible to print only a selection of locations by clicking **Select** and checking those locations to be printed on the window displayed. It may be desirable to laminate the printed sheet(s) to protect them as they form the basis for all future barcode operations. The following image shows a typical print-out of barcodes.

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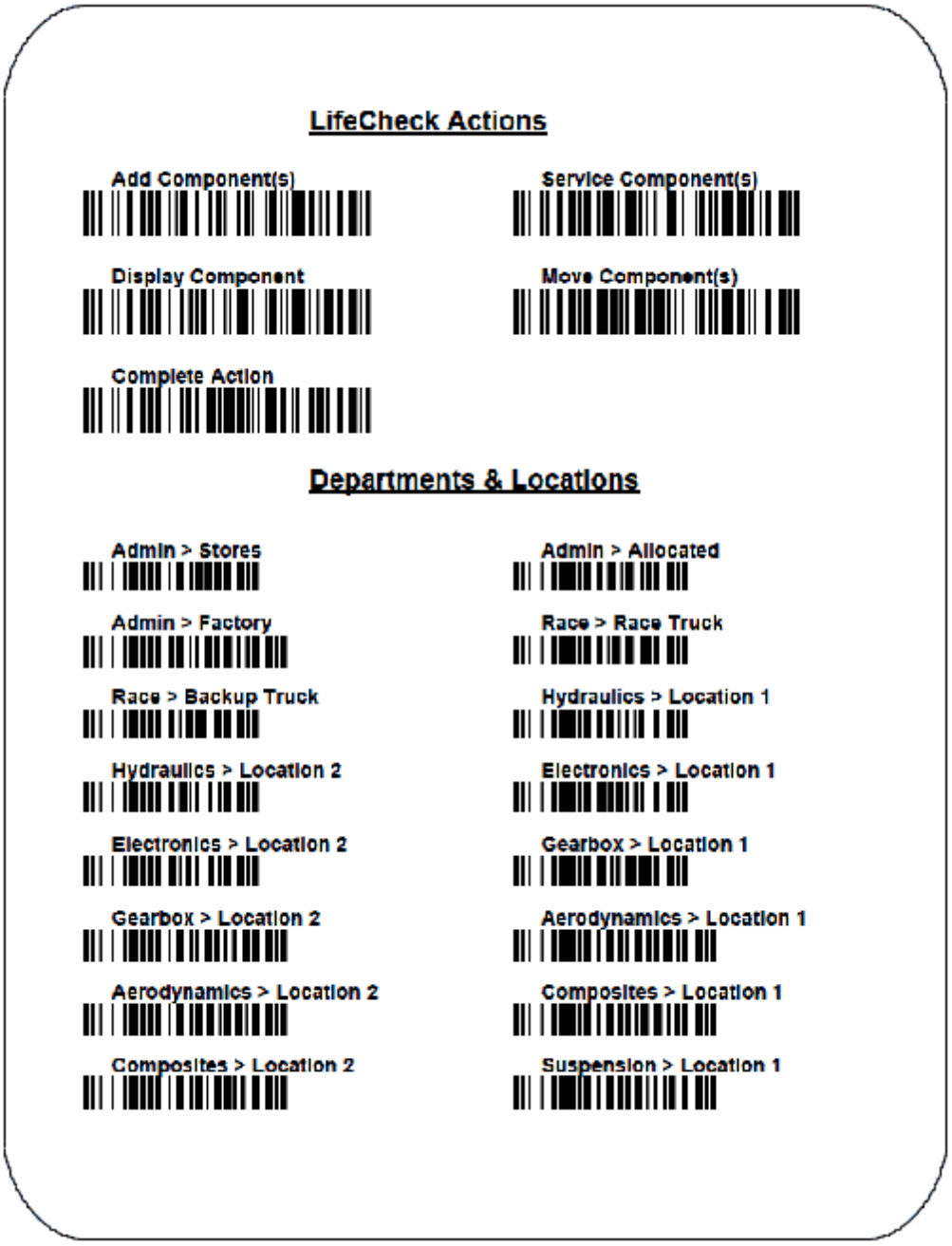

17.3 Barcode Mode

Barcode mode is used to allow operations to be performed entirely by use of a barcode reader. The following screen shot shows the screen during an **Add Component** operation.

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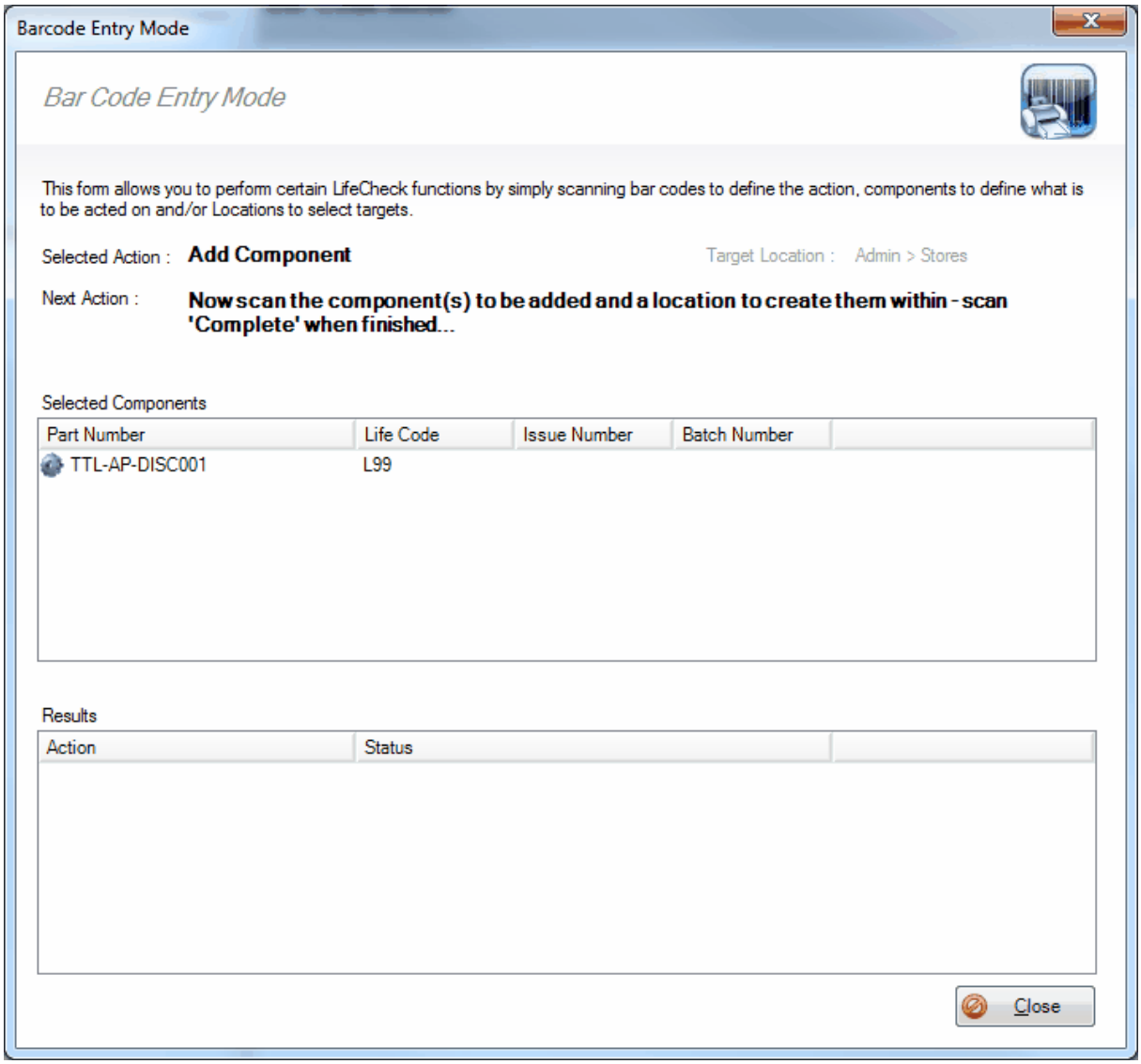

The following actions may be performed using a barcode scanner. All actions are initiated by scanning the appropriate action barcode and completed by scanning the **Complete Action** barcode.

- **Add Component(s)**

Scan **Add Component(s)** followed by the component(s) to be added. Once all components that are to be added have been scanned scan **Complete Action** to create the components in the LifeCheck database. Note that the details of each component scanned will be displayed in the **Selected Components** list.

- **Service Component(s)**

Scan **Service Component(s)** followed by the component(s) to be serviced. Once all components that are to be serviced have been scanned scan **Complete Action** to perform the action. Note that the details of each component scanned will be displayed in the **Selected Components** list.

- **Display Component**

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To display the properties of a specific component, scan **Display Component** followed by the component(s) to be displayed. In this instance there is no need to scan **Complete Action**.

- **Move Component(s)**

Scan **Move Component(s)** followed by the component(s) to be re-located. Once all components that are to be re-located have been scanned scan the location to which the components should be re-located followed by **Complete Action** to perform the action. Note that the details of each component scanned will be displayed in the **Selected Components** list.

18 Build Sheets

Build sheets allow you to create Microsoft Excel based files which detail the components placed on the selected chassis but separated out into specific areas of the car. For example, one build sheet could detail which parts are located within the Front Suspension whereas a second build sheet would detail the braking system components.

LifeCheck implements build sheets using a Microsoft Excel template file which defines the layout and presentation of the build sheet and substitutes data about the chassis build into this template. In order for this 'substitution' to work, LifeCheck must be able to identify exactly where details about each component should be written and this is done using **field substitution codes**.

18.1 Build Sheet Location

The folder in which the build sheet template files are held is defined within the Administration>Global Folders window. In this window you may define both the folder containing the build sheet templates and also a folder into which generated build sheets will be written. These may be the same folder as LifeCheck will name the output build sheet based on the name of the template but will remove the template suffix. Care should be taken however to ensure that existing build sheets are not over-written.

Build Sheet Template files must have names ending in 'template.xls' to be recognized by LifeCheck.

18.2 Build Sheet Templates

The process of creating build sheets hinges on the creation of build sheet templates. These are Microsoft Excel based files which define the appearance and content of the build sheet as well as specifying where data from a chassis build should be inserted into the template. The image below shows an example of a build sheet aimed at the gear ratios and associated components on the chassis.

	A	B	C	D	E	F
1	***TITLE					
2						
3	**Chassis**	***CHASSIS	**Session**	***SESSION	**Date**	***DATE
4	**Circuit**	***CIRCUIT	**Notes**	***NOTES		
5						
6	*Gear Ratios*	*Part Number*	*Serial No.*		**CLUSTER PLATE**	
7	*1st*	***PC>Gear Ratios|1st Gear|PN	***PC>Gear Ratios|1st Gear|LC		***TTL-001-0909|LC	
8	*2nd*	***PC>Gear Ratios|2nd Gear|PN	***PC>Gear Ratios|2nd Gear|LC		**MAINSHAFT**	**SIDE COVER**
9	*3rd*	***PC>Gear Ratios|3rd Gear|PN	***PC>Gear Ratios|3rd Gear|LC		***TTL-001-0111|LC	***TTL-001-0909|LC
10	*4th*	***PC>Gear Ratios|4th Gear|PN	***PC>Gear Ratios|4th Gear|LC		**PUMP ASSEMBLY**	**CLUTCHSHAFT**
11	*5th*	***PC>Gear Ratios|5th Gear|PN	***PC>Gear Ratios|5th Gear|LC		***TTL-001-9882|LC	***TTL-001-4455|LC
12	*6th*	***PC>Gear Ratios|6th Gear|PN	***PC>Gear Ratios|6th Gear|LC			
13	*7th*	***PC>Gear Ratios|7th Gear|PN	***PC>Gear Ratios|7th Gear|LC			

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In the above example we can see a number of cells with text values beginning with '***'. This is used as an identifier by LifeCheck to locate cells into which a value will be substituted as the build sheet is generated. There are a number of different substitutions supported :-

***TITLE	Replace with the text specified as the Title
***CIRCUIT	Replace with the name of the selected Circuit
***SESSION	Replace with the name of the selected Session
***DATE	Replace with the Date specified
***NOTES	Replace with the Notes specified

There are also component substitution fields which are defined as :-

***<part number> { |<comment> } | <field>

where <part number> is the part number as held within LifeCheck. Where a Part Class has been specified in the Chassis Build, the part number should be specified as 'PC>part class name' as the specific part number is not known. Field may be one of the following values :-

PN	Part Number
DESC	Description
LC	Life Code
LL	Life Left (Race)
DR	Distance Run
MTS	Miles to next Service
MSS	Miles since last Service
WDR	Weighted Distance Run
CAL	Last Calibration Value (for the first calibration defined for the component)
TL1	Time Left 1
TL2	Time Left 2
TR1	Time Run 1
TR2	Time Run 2
LN	Last Note added to the component
NOTE	'Free' Note added for the component
XD	Expiration Date of the component

The 'Comment' field is optional but is used to help uniquely identify a specific component within the build sheet where there are potentially multiple instances of the same component but it is important to differentiate between each instance. In the example above a part class has been used to specify that 7 gear ratios are required but it is important that the correct component is used for each ratio. The comment field is used here to marry up the correct component from the Chassis Build (which also supports the comment field) and the build sheet. In the above example the comments are defined as '1st Gear' through '7th Gear'.

The comment field can also be useful where a part class has not been defined in the Chassis Build. An example of this is the left and right hand disc rotor where the rotors themselves are not handed but we need to know which rotor is to be used on the left hand side and which on the right hand side. In this case we could specify the substitution code as '***TTL-AP-001|LHS|LC' and '***TTL-AP-001|RHS|LC'.

18.3 Chassis Templates and Build Sheets

There is a close relationship between a Chassis Template within LifeCheck and Build Sheet templates from which build sheets are generated. There is the obvious relationship as previously explained with

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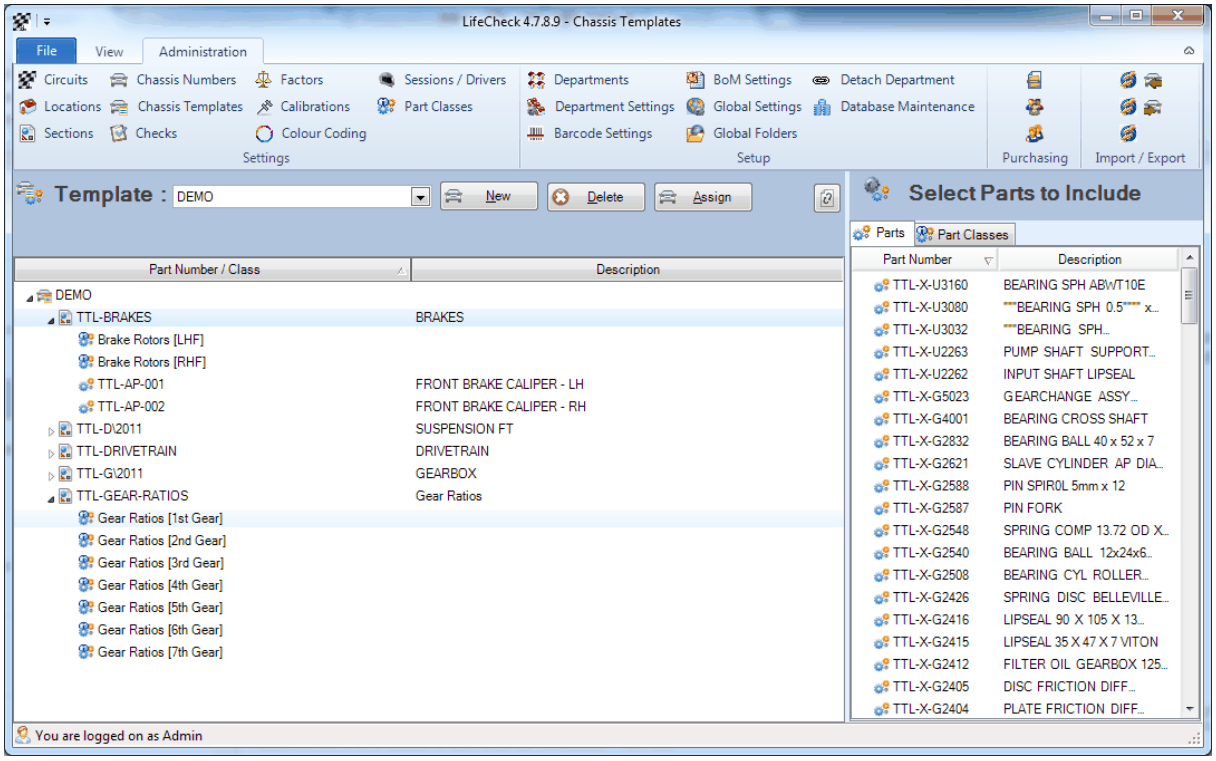
part numbers and part classes but there is a less obvious relationship when it comes to Comments. Comments are used within the Chassis Template to allow individual instances of a component to be uniquely identified and hence able to be matched with an entry in a build sheet template.



So for example in the screen shot above we can see that each of the gear ratios has been commented to indicate its actual position in the gearbox. This is very important when it comes to the build sheet as the race engineer needs to know not only which ratios to select but also where to use them. Comments can be added to both part classes and instances of an individual part as for the brake rotors in the above screen shot. To set a comment for a part, right click the part and select **Set Comment** from the menu displayed. Note that where a comment has been specified, an entry in the build sheet template must match not only on part number/class but also on the comment. If no comment is found in the template there will be no match.

18.4 Creating Build Sheets

Build sheets are created on the **Build Chassis** window by right-clicking within the window and selecting **Create Build Sheets** from the menu displayed. The following window will be displayed :-

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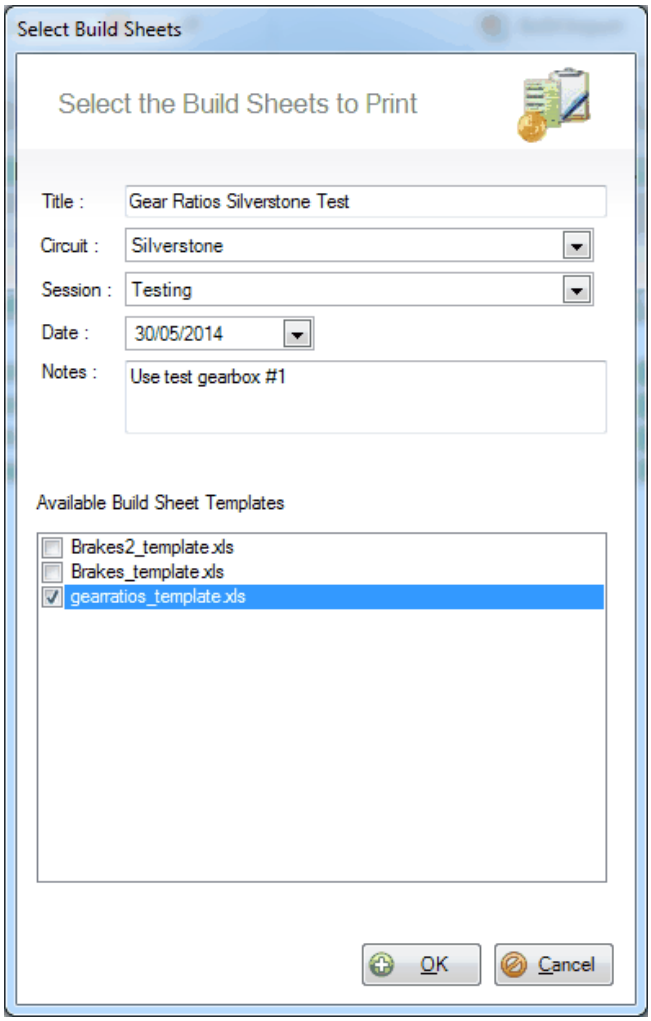

In this form we can define a number of items which are available for substitution into the generated build sheet as well as select 1 or more build sheets to be generated. Once the required details have been entered, click **OK** to generate the build sheet(s) requested. On completion LifeCheck will allow the build sheet to be opened using the default application if a single template was selected. If multiple build sheets were generated, LifeCheck will display the name of the folder into which the files were saved.

19 Administration

The Administration of LifeCheck is sub-divided into two main categories accessed from the Administration tab of the main ribbon. These categories are:-

- Settings
  - Circuits
  - Locations (Available to ALL departments)
  - Sections
  - Chassis Numbers
  - Checks
  - Factors

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- Setup
  - Departments
  - Colour Coding
  - Sessions / Drivers
  - Suppliers
  - Manufacturers
  - Global Settings
  - Department Settings (Available to ALL departments)
  - Link

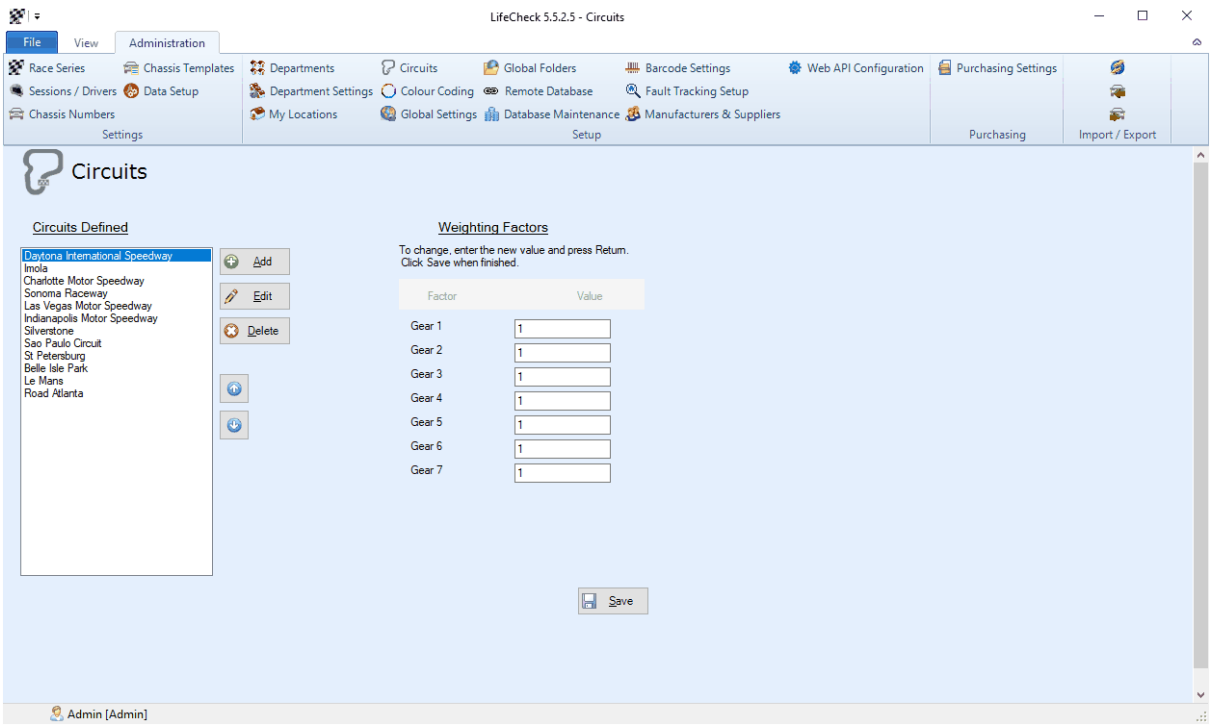
Most of these items are only accessible to LifeCheck Administrators and will not be visible when logged on as a non-Administrator. It is recommended that a single user is nominated to maintain the Administrative area of LifeCheck to ensure consistency and accuracy of the data. Non-administrators will only be able to access Settings>Locations to maintain their list of locations and Setup>Department Settings to maintain settings which affect only their own department.

19.1 The Settings Menu Group

The Settings Menu Group contains items which may change from time to time after the system has been installed.

19.1.1 Circuits

Use this tab to maintain the list of circuits and the factor values set for those circuits.



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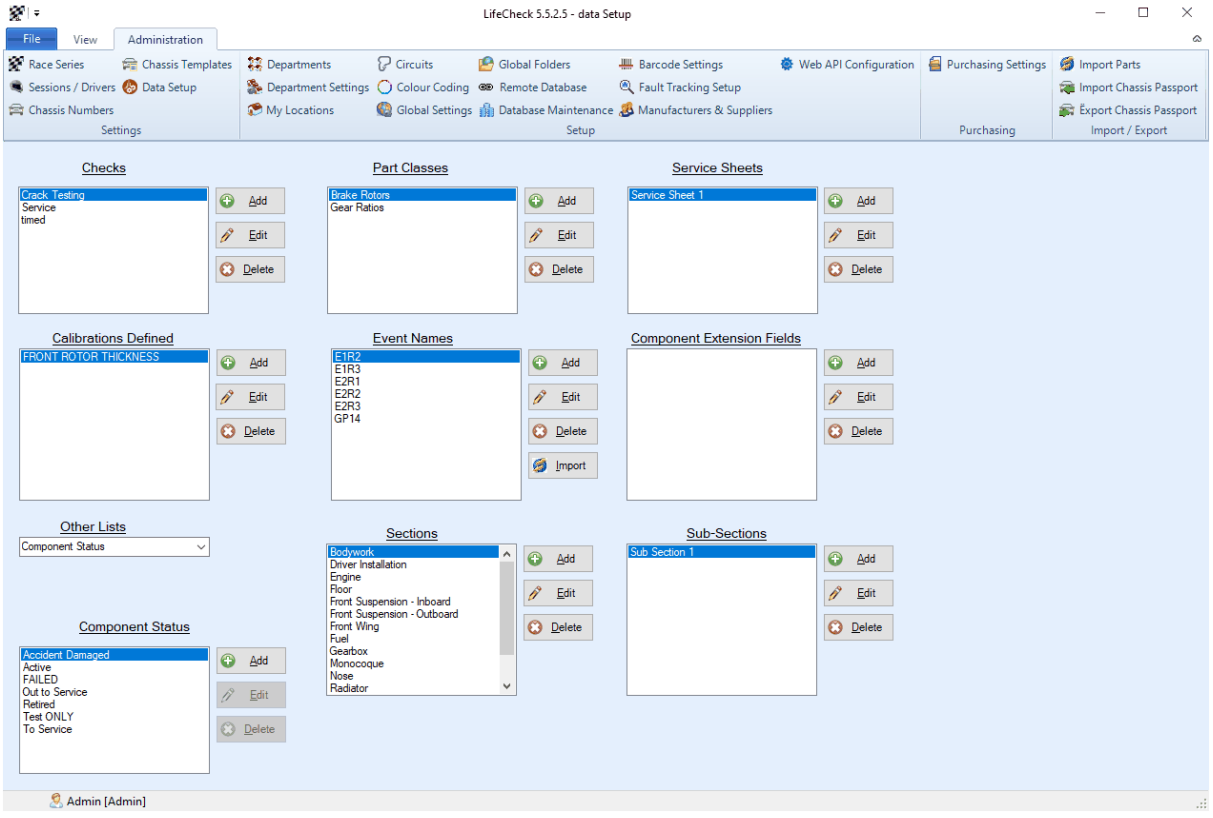
To change the lap distance for a circuit, select the circuit in the list and then enter the new lap distance. Click **Save** to commit any changes to the database. In a similar fashion, to change the weighting factors for a circuit, select it in the left list and then change the factor values as required. Click **Save** when all changes have been made.

Care should be taken before trying to delete a Circuit from the list as any references to that circuit (for example its factor values) will also be lost. To edit the name of a circuit, select it in the list and click **Edit**. A text box will appear over the circuit name to allow you to edit it. Hitting return will save the change.

19.1.2 Data Setup

Much of the setup of LifeCheck is performed as the system is configured and is rarely altered after this point. For this reason many of the configuration options are held within the single **Data Setup** screen invoked from the Administration menu.



19.1.2.1 Sections

Use these options to maintain the list of sections and sub-sections. Each section must have a minimum of 1 sub-section defined and as such it is not possible to remove the last sub-section. It is also not possible to delete a section or sub-section which still contains components. These must be moved first. To edit the name of a section or sub-section, select it in the list and click **Edit**. A text box will appear over the name to allow you to edit it. Hitting return will save the change.

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19.1.2.2 Checks

Use these options to maintain the list of custom checks, The **Service** check is pre-defined and cannot be edited or deleted however additional checks, such as fatigue or crack checks may be defined and will be added to each component within the system.

19.1.2.3 Part Classes

Part classes are provided to group together parts which have different part numbers but which perform same function and/or are interchangeable. They are typically used in conjunction with Chassis Templates to define a single chassis template which is flexible enough to handle multiple different configurations of the car. For example, you may use a number of different specifications of torsion bar but the torsion bars themselves can be swapped for one another depending on the particular setup being used. If a specific set of torsion bars were defined in the chassis template, the use of any other torsion bars would mean that the chassis template might not match the chassis build.

Using Part Classes avoids this issue as the chassis template can be built requiring 2 instances of the 'Torsion Bars' part class without mentioning specific part numbers. Now any member of the 'Torsion Bars' part class can be added to the chassis and so long as the correct number are present, the chassis build will match the template.

19.1.2.4 Service Sheets

Service sheets build on the Checks previously detailed. Although LifeCheck allows notes and documents to be associated with the reset of a check this is not always sufficient for documentation purposes. Service Sheets allows a series of questions to be defined which will be presented to the user when a component for which a service sheet has been defined has a check reset. Service sheets are check and part specific meaning a single part may have different service sheets for each check defined. Service sheets may be assigned to multiple parts.

19.1.2.4.1 Creating Service Sheets

A service Sheet may be defined by clicking the **Add** button to the right of the service sheet list to display the following window :-

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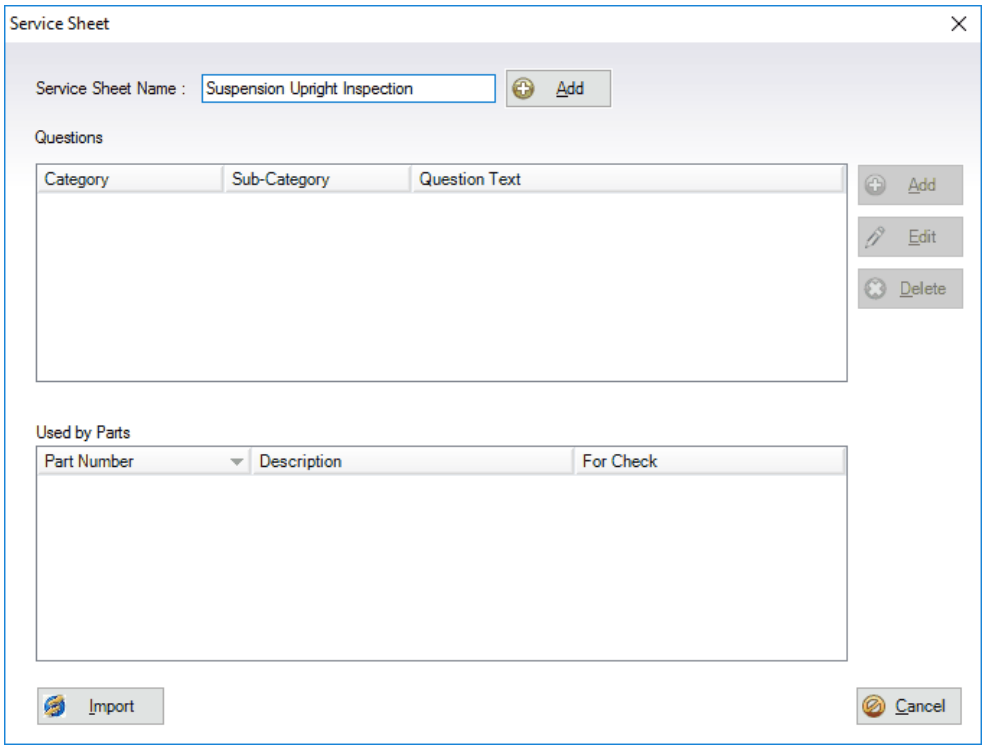
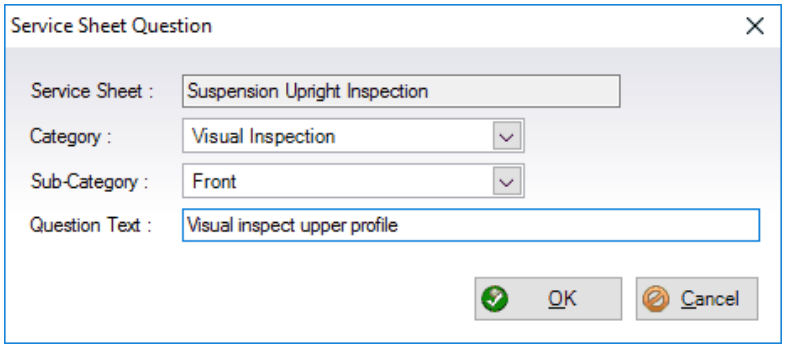


First enter a new, unique name for the service sheet and click **Add** to create it within the database. Questions may now be defined for the service sheet by clicking **Add** to the right of the questions list.



Each service sheet question must have a category and question text, a sub-category is optional. Use of Category and Sub-category helps to group the questions when the service sheet is displayed following a check reset. category and sub-category may be either typed or selected from a list of previous categories and sub-categories defined for the sheet. All questions are tr-response allowing 'OK', 'Not OK' and 'N/A' to be specified. In addition, a service sheet will allow notes to be specified.

Returning to edit a service sheet will allow the list of parts for which the service sheet has been assigned and for which check, to be viewed as shown below.

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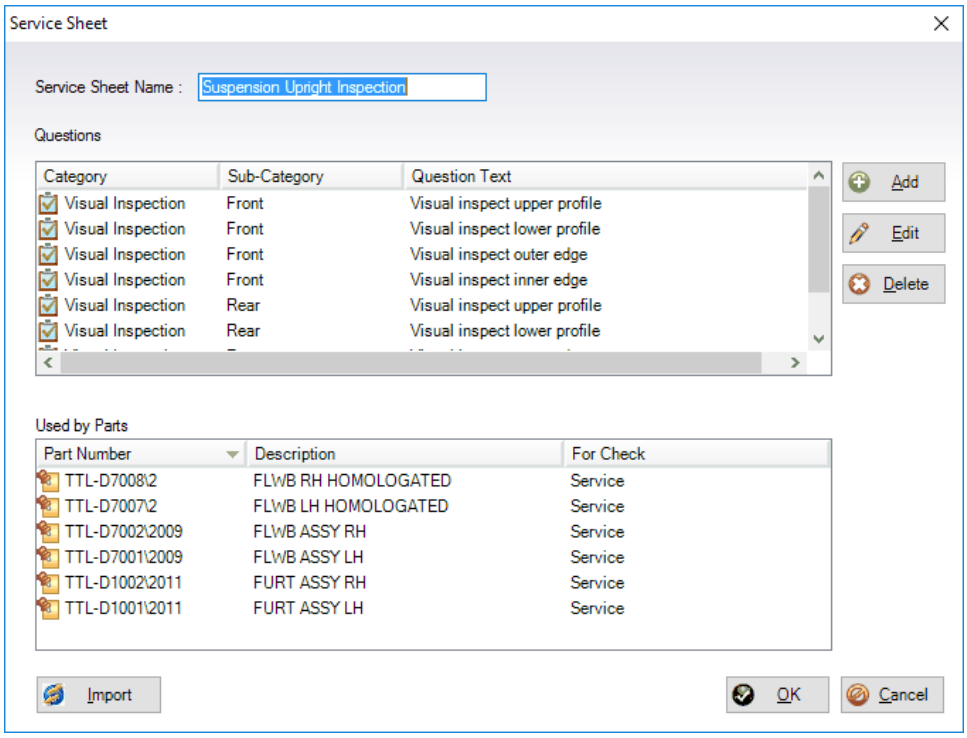

19.1.2.5 Calibrations

Use this tab to define any calibrations which may be associated with Parts within the LifeCheck database. For example a calibration could be **Front Rotor Thickness** or **Dog Damage**.

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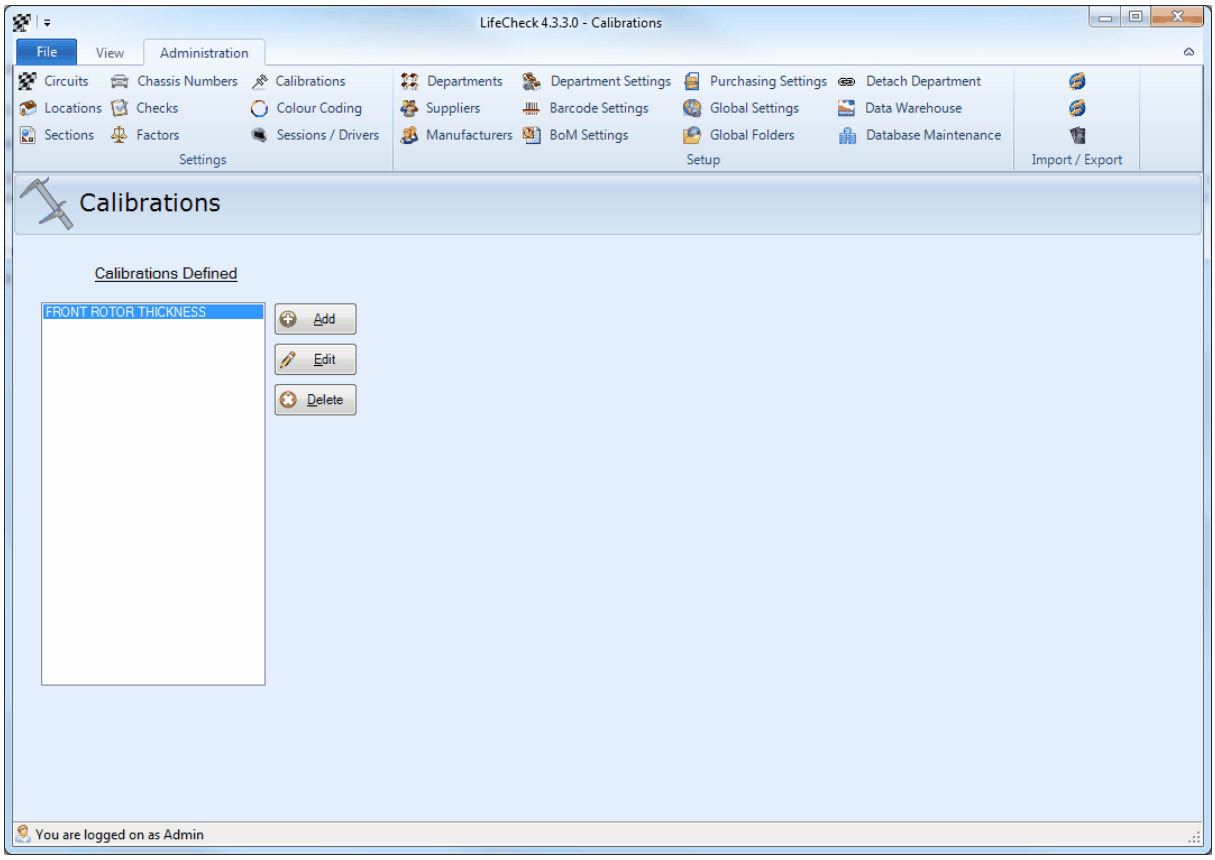

You may define any number of calibrations here. Calibrations can only be deleted when not referenced by any parts.

19.1.2.6 Factors

Factors
These are simply textual names by which the factors will be known. Factor values are specified on a circuit by circuit basis on the Circuits tab. For further details on factors please refer to Component Factors and Weighting later in this manual.

19.1.2.7 Component Extension Fields

These are the names of any Component Extension fields which have been defined. Component extension fields allow you to extend the information which can be maintained for individual components. For further details please refer to Component Extension Fields else where in this manual.

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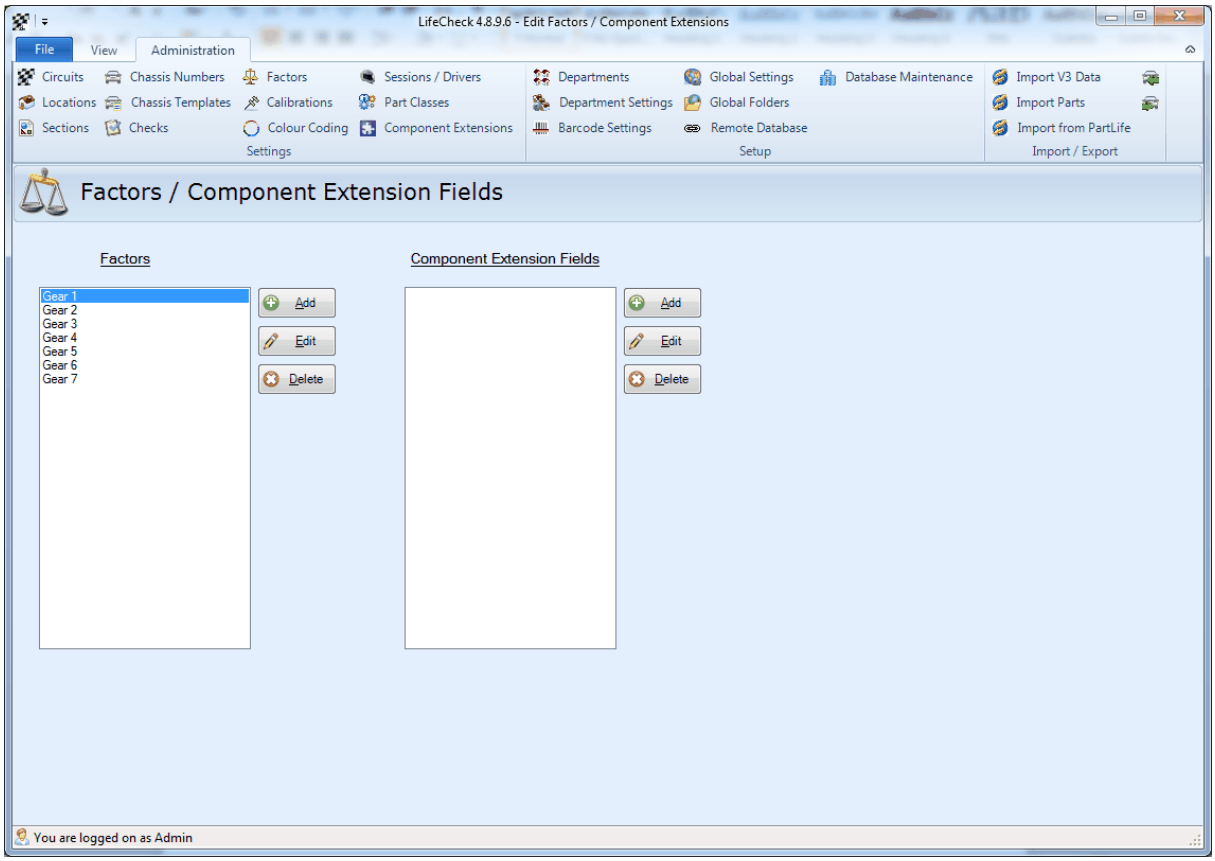

19.1.2.8 Component Status

Each Component within LifeCheck may have its current status defined. A number of statuses are pre-defined within LifeCheck and cannot be modified as they have a defined meaning with LifeCheck however the list of statuses may be extended here. The Component Status is of particular importance when used as a filter on the Show Life reporting screen.

19.1.3 Locations

Use this tab to maintain the list of locations defined for the currently logged in department. Each department must have a minimum of 2 locations defined and as such it is not possible to remove a location when only 2 exist. It is also not possible to delete a location which still contains components. These must be moved out of the location first. To edit the name of a location, select it in the list and click **Edit**. A text box will appear over the location name to allow you to edit it. Hitting return will save the change.

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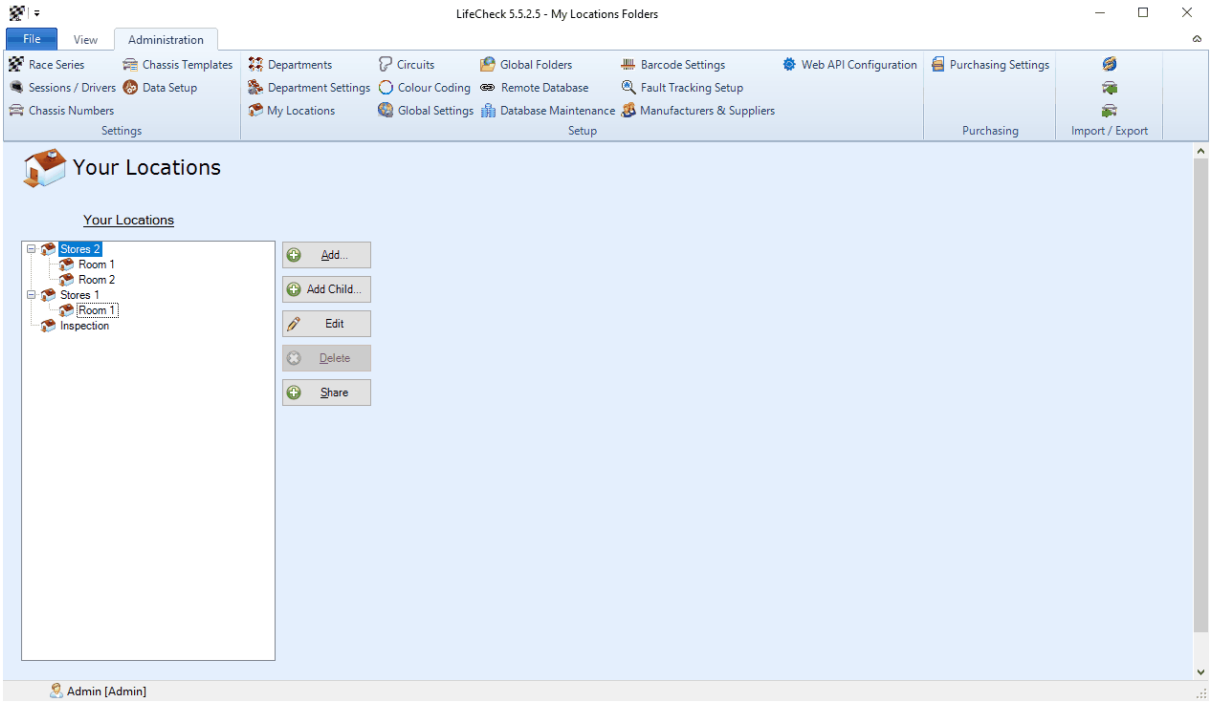

To add a location as a child of another location, select the parent location ion the tree and click **Add Child**. Note that only 2 levels of location are supported. It is not possible to delete a location if it currently has children, deletion of a location or child location is also prohibited if the location being deleted contains components.

19.1.4 Chassis Numbers

Use this tab to maintain the list of chassis numbers. These are the names of the chassis's on which components can be located and to which sessions and distance are added.

Note that the term 'chassis' is the default name for the primary assembly maintained within LifeCheck however this term may be changed within the **Terminology** settings of LifeCheck. For example LifeCheck may be being used to maintain lifing data for engines as opposed to the entire race car and in this case it may be desirable to change the primary assembly to be known as 'Engine;'

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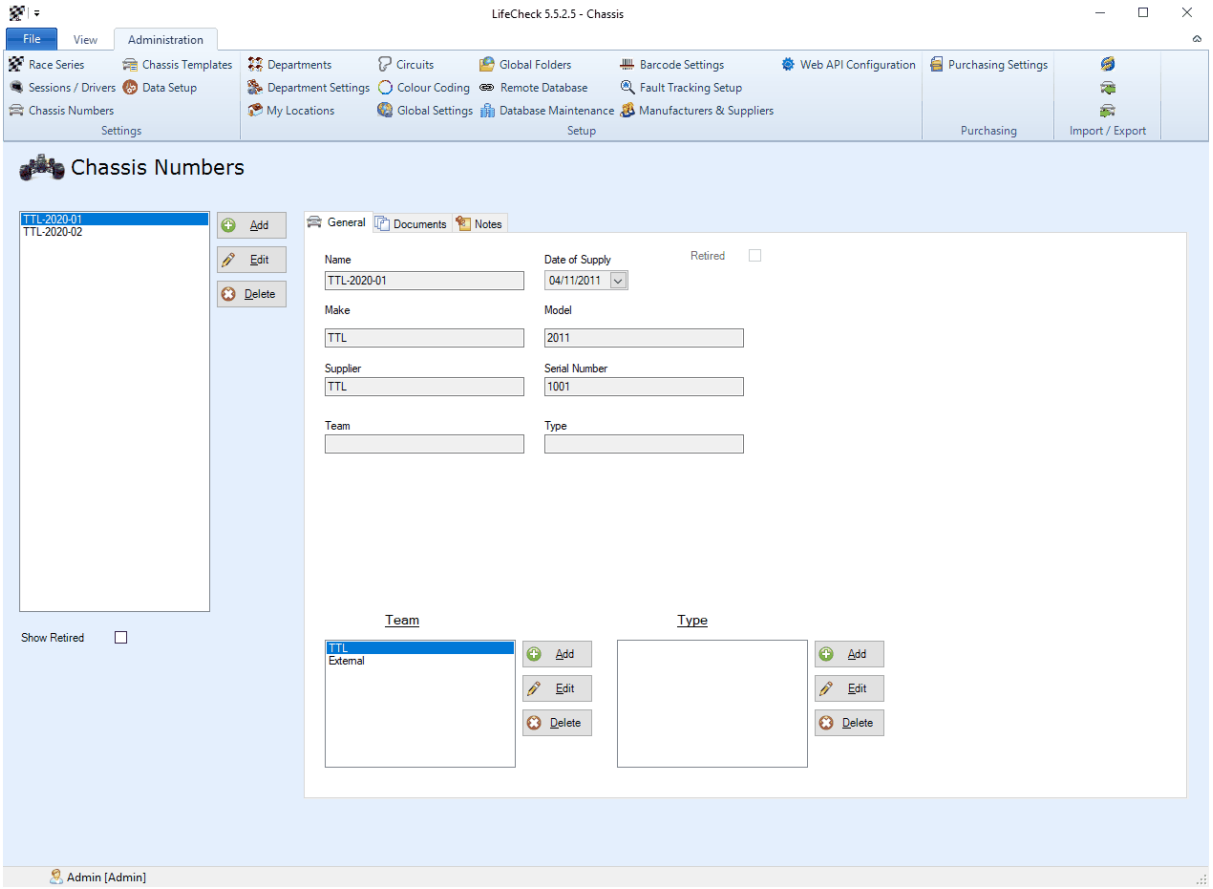

Each chassis may have a number of different attributes associated with it.

19.1.4.1 Retiring Chassis

Over time data within the LifeCheck database will become obsolete as chassis, parts and components are no longer in use. LifeCheck includes facilities to 'Retire' these items removing them from the various views within the system while retaining them in the database. The advantage of this approach over simply deleting the data is that such things as history records can be maintained and it is always possible to 'un-retire' items if a mistake has been made or you simply need to review some archived information.

Retiring a chassis may be done either from the Chassis View screen or from the Administration>Chassis Numbers screen by selecting to view the chassis details. The following window is displayed :-

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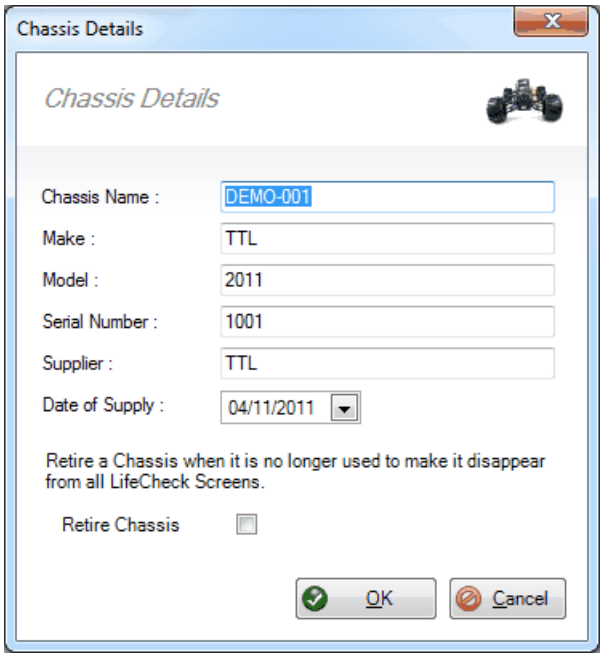
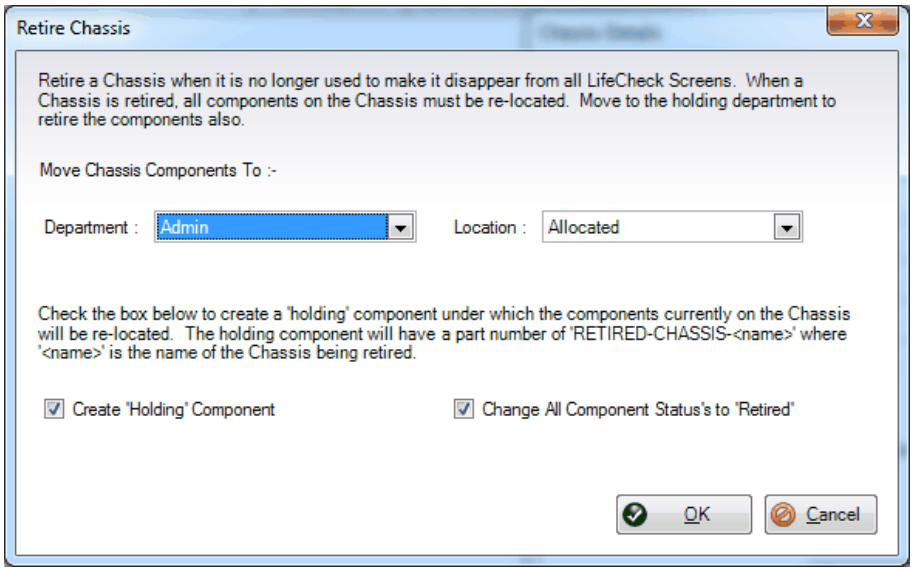


Check the **Retire Chassis** box. If there are components still on the chassis, these must be moved before the chassis can be retired. as such the following retirement options window below will be dfisplayed :-



Select the location to which the components currently on the chassis being retired should be moved. It is often easiest

19.1.5 Colour Coding

The Colour Coding is used to determine how different life values for components will be identified on screen. By using clear colour coding it will be possible to see where components are running low on life

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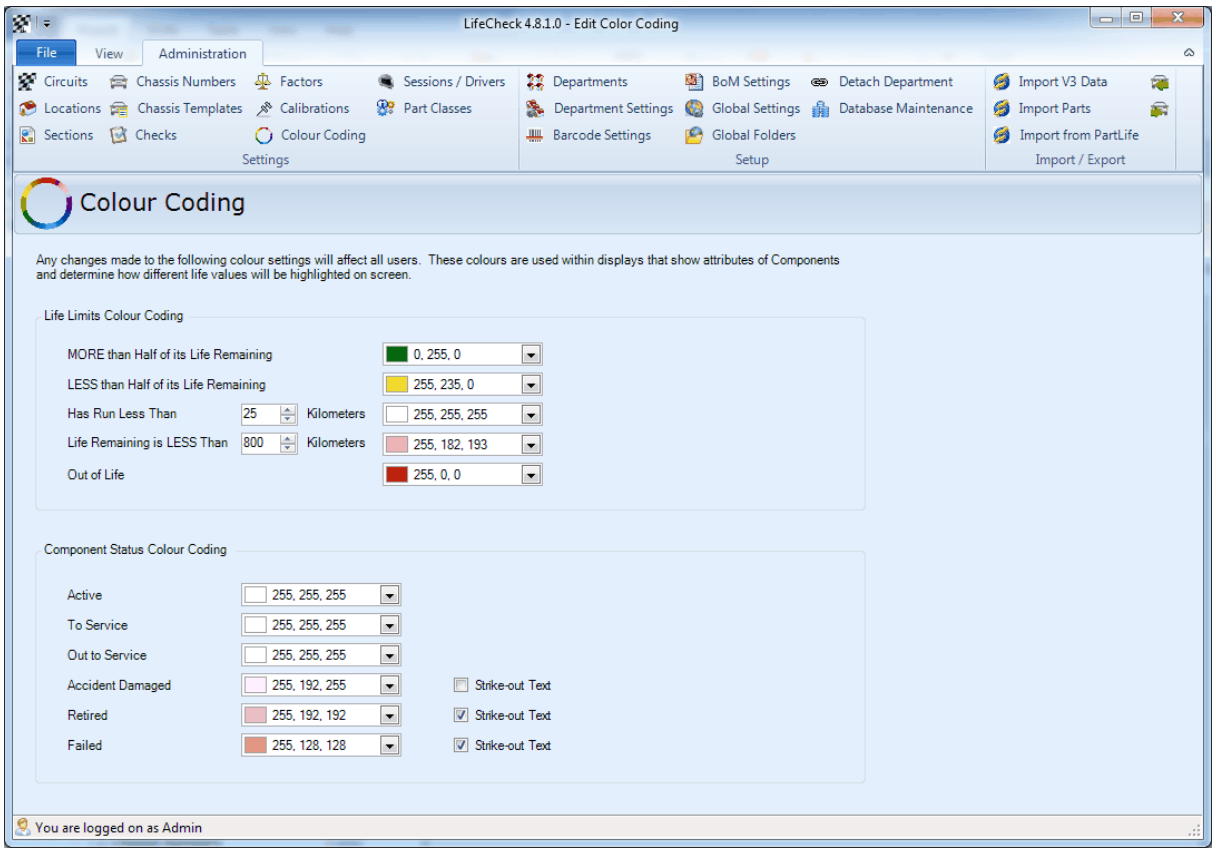
at a glance without having to run specific reports.



To specify different colours for a category, click the button to the right of the required colour to display a colour chooser palette. Changes made here are saved immediately.

19.1.6 Sessions / Drivers

Use this tab to define the individual sessions in which you will take part and also the drivers used by your team.

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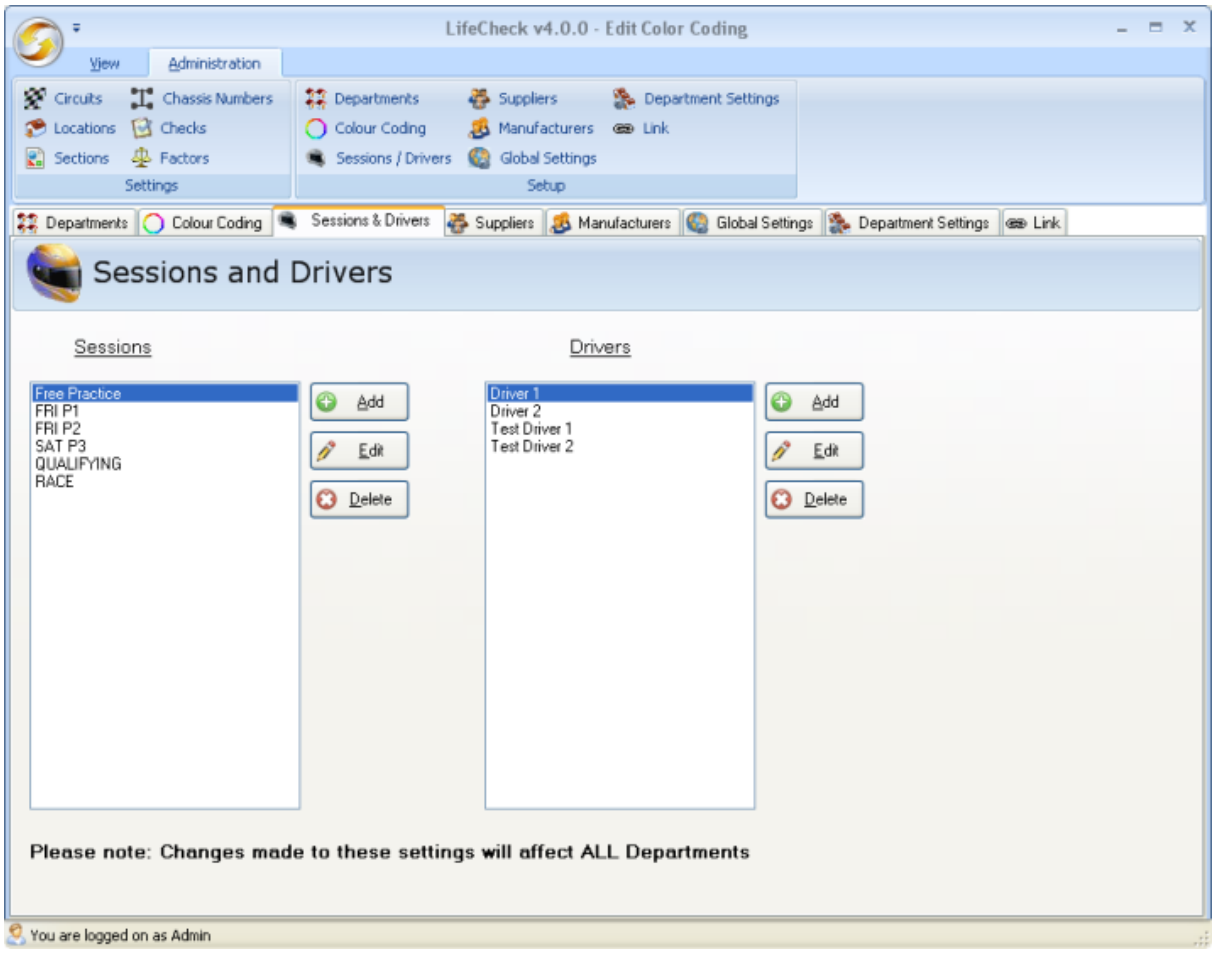

At least 1 session and driver should be defined. LifeCheck will create a list of default sessions as the database is created however these may be changed here.

19.2 The Setup Menu Group

The menu items contained within this group typically affect LifeCheck as a whole and are only accessible to LifeCheck Administrators.

19.2.1 Departments

Use this tab to maintain the list of Departments within LifeCheck. Departments do **not** determine the names under which users can log in to LifeCheck, this is defined by Users assigned to the department. As such there is no limit to the number of departments which may be defined however there is a limit to the number of users which is limited by the LifeCheck License purchased. In this way a department may have 0 or more associated users allowing departments to be used as an additional method of locating components within the system. For example, you could have a **Stores** department with no associated users meaning you can store components within Stores but not login to that department.

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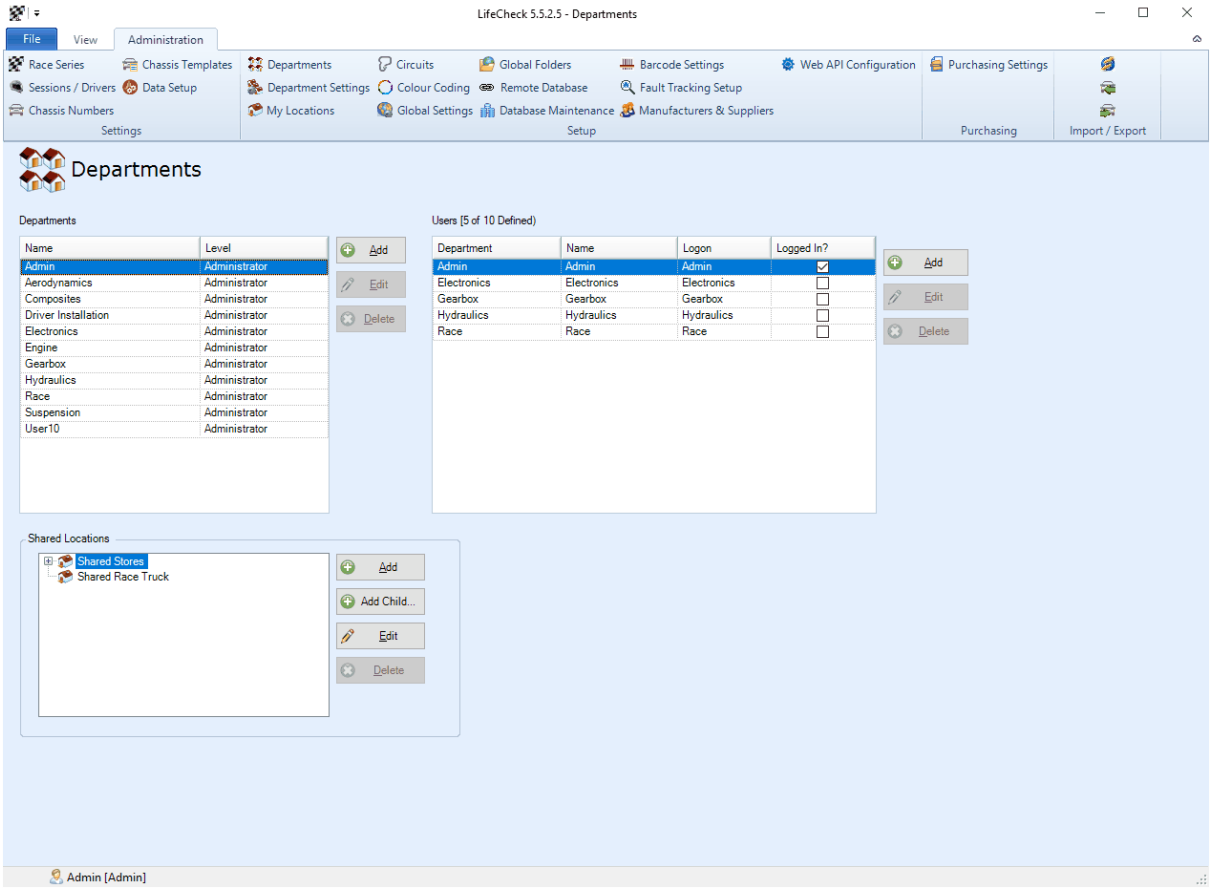
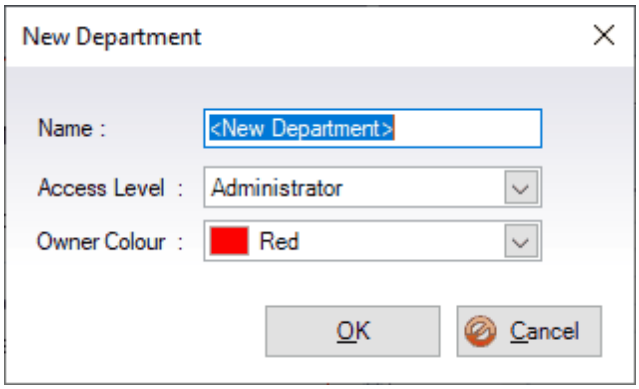


An existing Department may be edited by right-clicking the Department and selecting **Edit Department**. New Departments may be created in a similar way by right-clicking in the display and selecting **New Department** from the menu displayed. The following window will be displayed in either case.



Here the name of the department can be defined Department names must be unique. LifeCheck supports Administrator and Standard users. Standard users can access all of the functionality within LifeCheck other than the Administration areas.

19.2.2 Users

Users are the items under which access is granted to LifeCheck. Each user is assigned to a specific department. To add a new user, click the **Add** button to the right of the Users list to display the following

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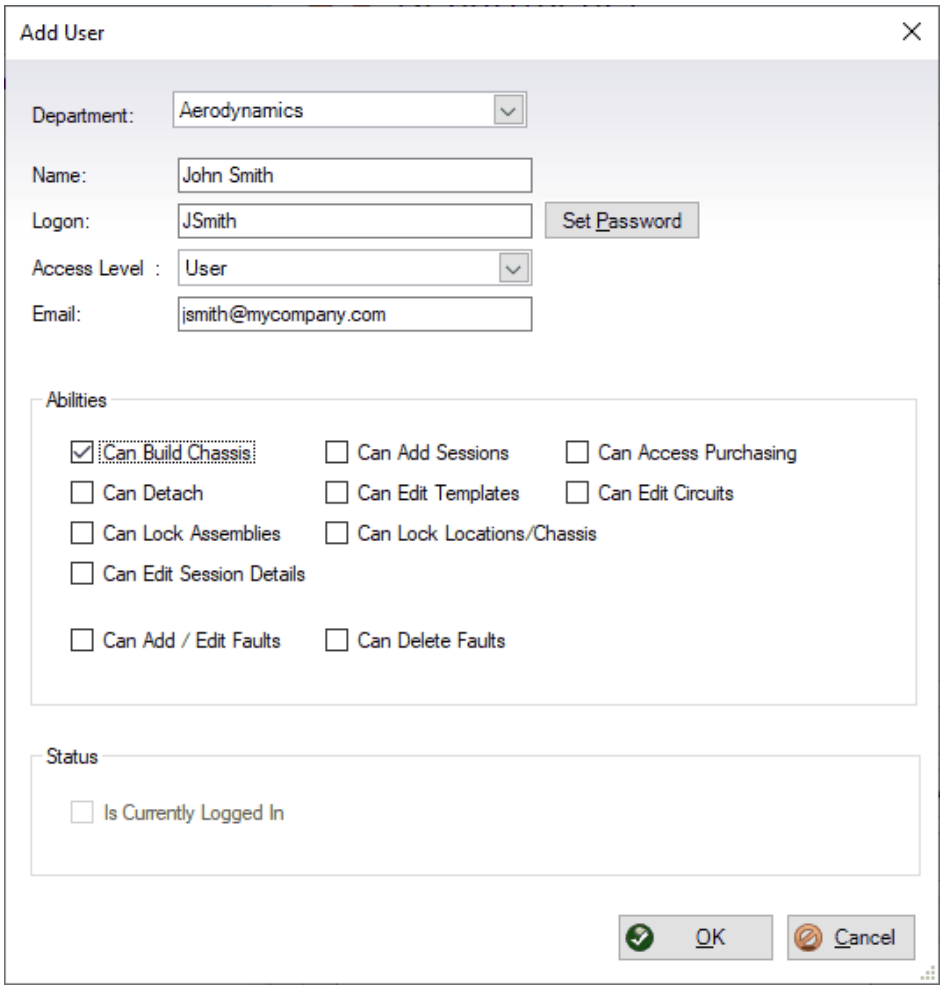
popup window.



To create a new user, define their department and enter both aname by which they can be known internally and a name by which they can login to LifeCheck. Their email address may also be specified, this may be used in future releases as part of the planned active reporting module. Permissions may also be set which can limit the functions available to the user.

19.2.3 Shared Locations

In addition to defining departments and users, this window is also the home for **Shared Locations**. Locations are simply 'bins' into which components may be placed to provide stock management functionality and to allow components to be more easily found within LifeCheck. Historically, these locations have been specific to individual departments meaning they are not globally visible. Shared Locations are similar to traditional locations but are visible to all departments / users within LifeCheck and always display the same components regardless of who is logged in.

As for traditional locations, shared locations may be nested to allow a parent / child relationship so extending the functionality and allowing even better granularity as to the physical location of components.

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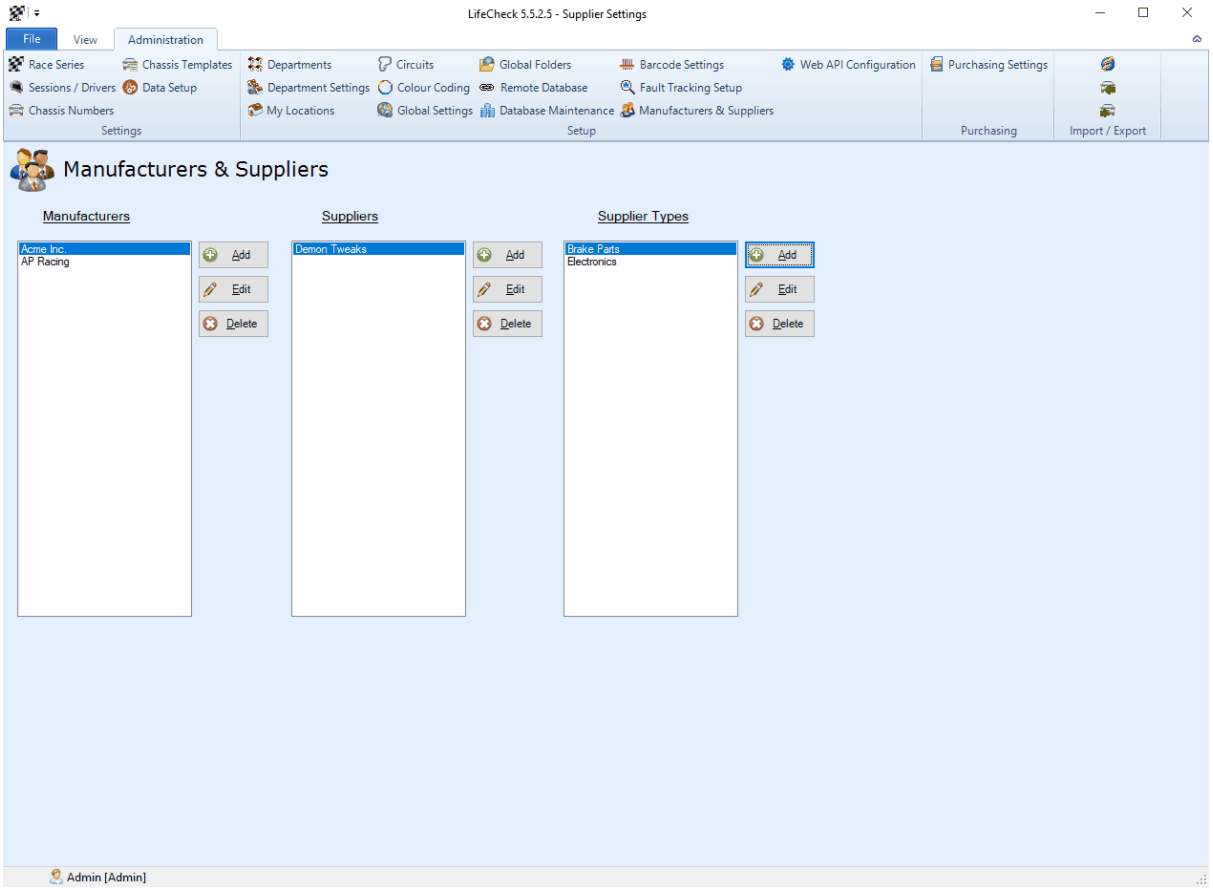
19.2.4 Manufacturers and Suppliers

Use this tab to define Manufacturers, Suppliers and Supplier Types within LifeCheck. These are used within the Purchasing and Inventory functionality of LifeCheck.



19.2.5 Barcode Settings

This tab controls the format in which barcodes are to be read within LifeCheck. It allows the position of each individual field within the barcode to be identified so that LifeCheck can determine which information is required and which is discarded. LifeCheck allows the following files to be mapped within a bar code :-

- Part Number
- Life Code
- Batch Number
- Issue Number

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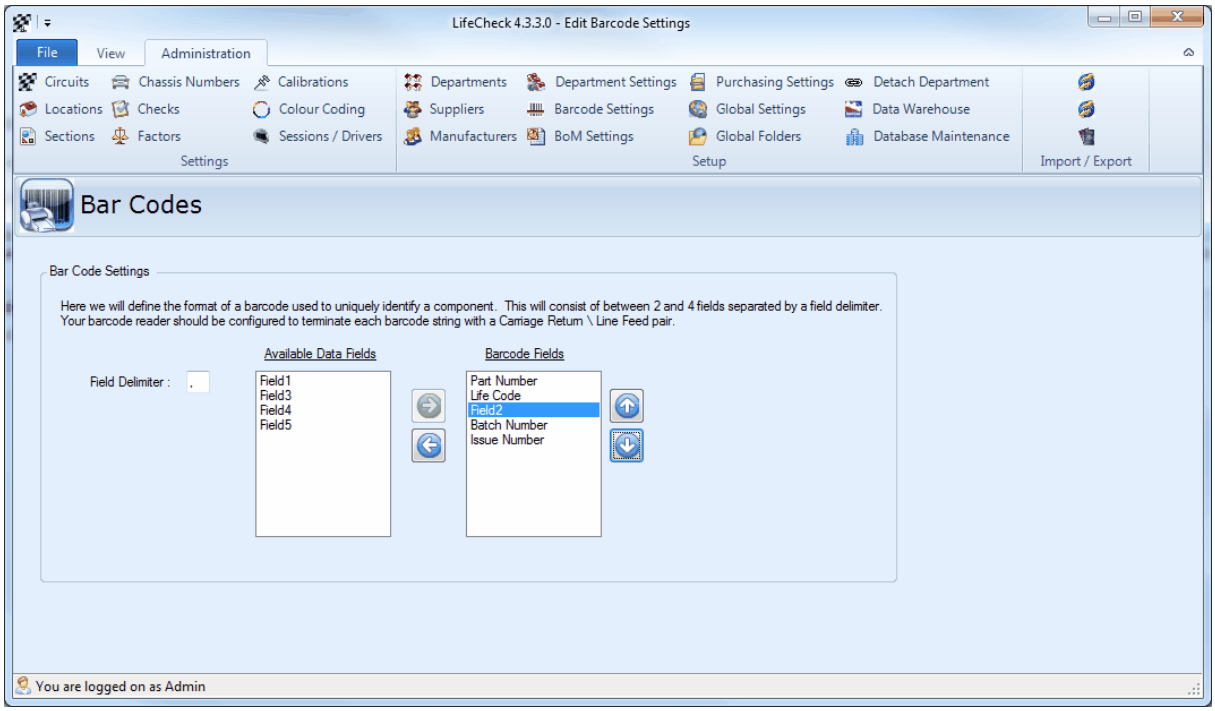

Additional 'placeholder' fields can also be added to the bar code format specification to skip non-required fields in the bar code. For example in the screenshot shown below an additional field has been placed between the Life Code and Issue Number.

19.2.6 Bill of Materials Settings

The BoM or Bill of Materials Settings tab allows the format of the entries in a BoM file to be defined. The BoM should be a CSV format file containing definitions for parts which are to imported into LifeCheck. The following fields may be mapped:-

- Part Number
- Description
- Life Limit
- Service Limit
- Quantity on Car
- Issue Number

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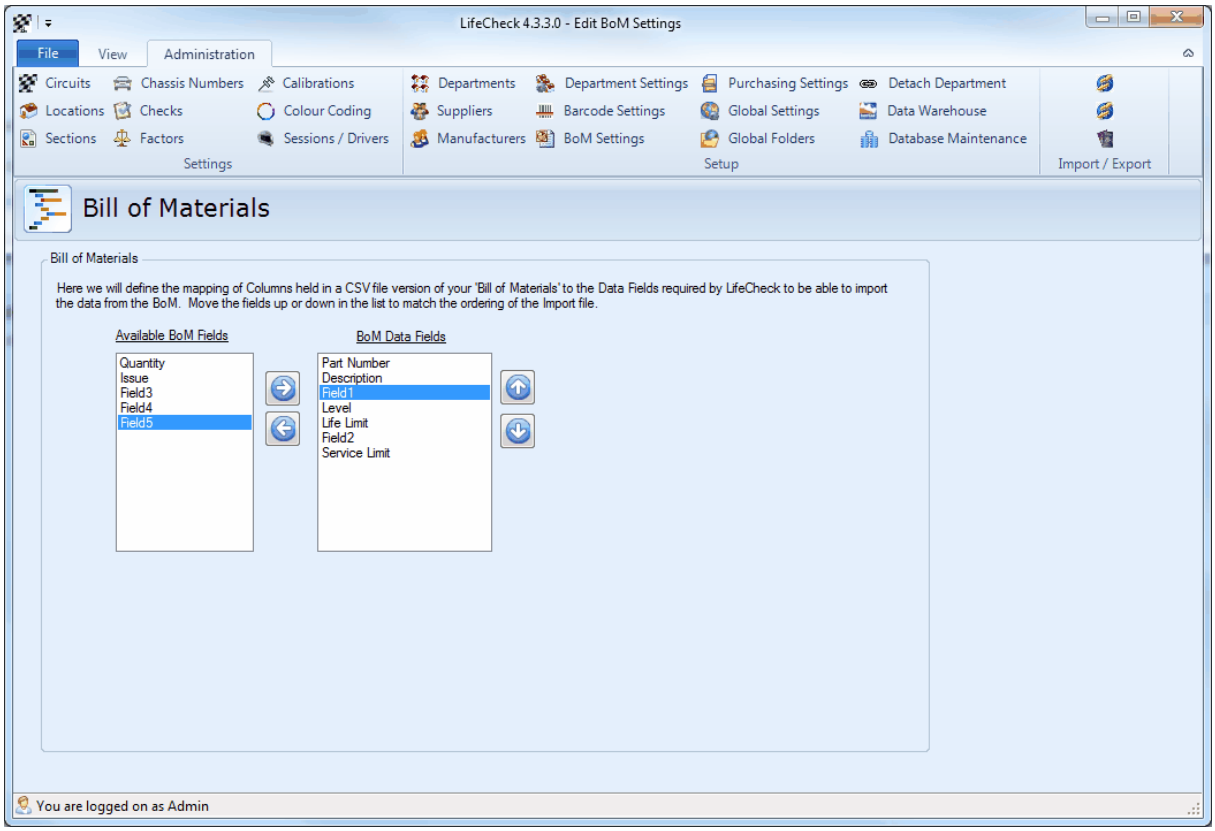

In addition a number of 'placeholder' fields are defined to allow fields within the BoM to be ignored. In the following screenshot each row in the import BoM file must contain 7 fields in the order **Part Number, Description ,Ignored, Level, Life Limit, Ignored and Service Limit**. Please see the Bill of Materials section for further details on importing a BoM into LifeCheck.

19.2.7 Global Settings

The Global Settings will affect all departments logging into LifeCheck and as such care should be taken when modifying the values here.

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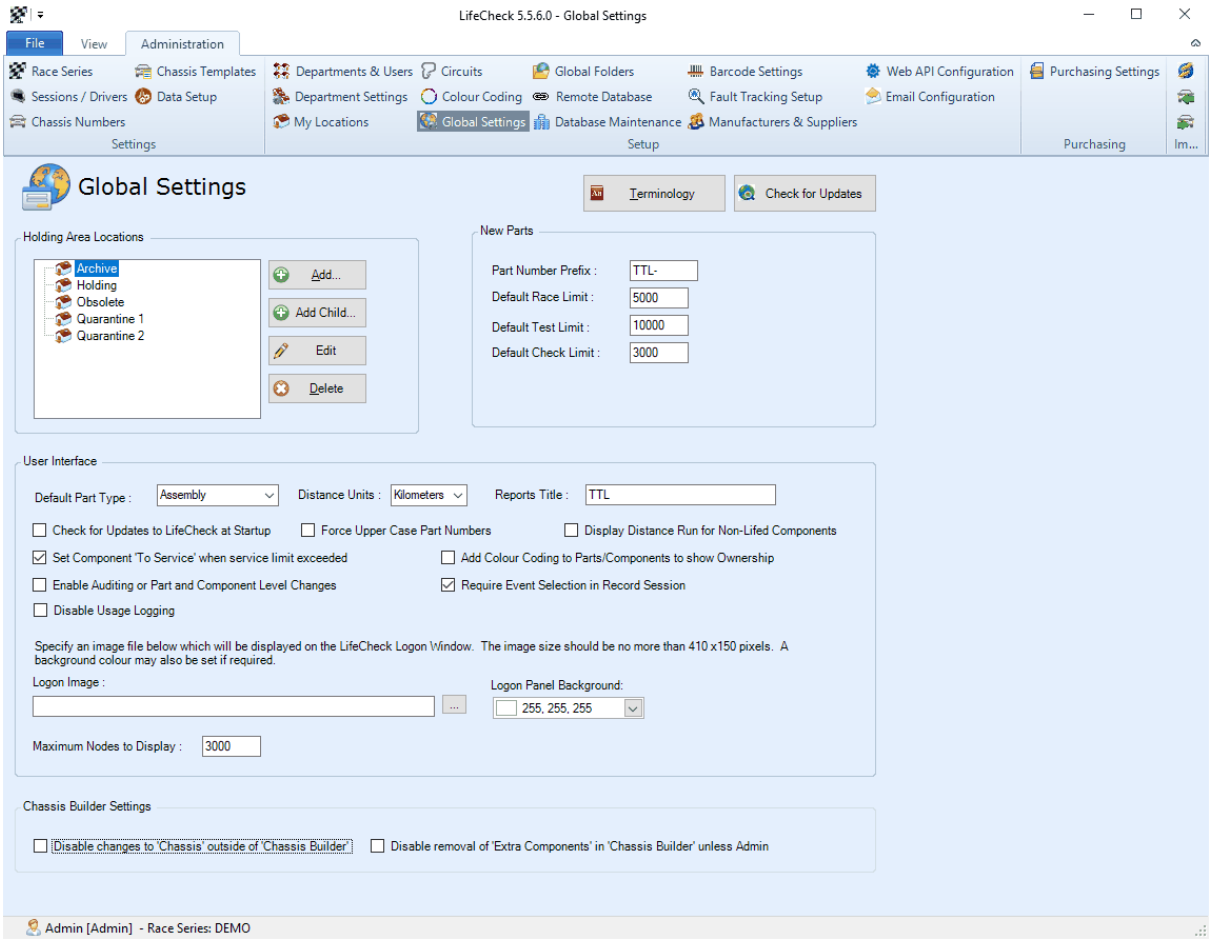

Holding Area Locations

LifeCheck defines a special Department whose sole purpose is to act as a 'bin' into which components which should not be visible within LifeCheck - such as those which have been scrapped or replaced, can be moved. Five holding locations are pre-defined but these may be edited / deleted and/or new locations added. See Holding Department for more details.

New Parts

Part Number Prefix

This sets a prefix which will be used by default for all new Part Numbers

Default Race/Test.Check Limits

These fields set the default values which will be set for the Race/Test/Check limit as appropriate for all new parts and components.

User Interface

Default Part Type

Defines the default setting for the **Part Type** when creating new parts/components. May be set to either 'Assembly' or 'Standard Part'.

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Distance Units
LifeCheck can display (and record) distances in either miles or kilometers. Select the required distance unit. Note that if this is changed at a later date, LifeCheck will convert existing distance values to the new units as such this settings should only really be set during the initial setup period before any parts/ components/sessions have been defined.

Report Title
Specify the company name to appear at the top of any reports generated by LifeCheck.

Check for Updates to LifeCheck at Startup
This option when checked will allow LifeCheck to contact the Trenchant Technologies, web site to determine if a product update has been released.

Force Upper Case Part Numbers
When checked this will force all Part Numbers entered into LifeCheck to be in upper case.

Display Distance Run for Non-lied Components
By default, non-lifed components do not display the distance they have run within LifeCheck. In some circumstances however it is useful to see this information where a large number of non-lifed components have been defined. Check this box to enable this feature.

Set Component 'To Service' when service limit exceeded
Each component within LifeCheck has a status which may be set to a number of different values including Active, Failed and To Service. Normally this status has to be set manually however by checking this box LifeCheck will monitor the 'Service' limit for each component and will automatically set the component status to 'To Service' if the service limit has been breached. Components to service may be selected on the Show Life report screen.

Add Colour Coding to Parts/Components to show Ownership
Sets colour coding of parts and components based on their 'owning' department (if any).

Enabled Auditing of Part and Component Level Changes
Enabled auditing of changes made to parts and components viewable from the Audit screen.

Require Event Selection in Record Session
Sessions may be grouped together using Event names - this most useful for Wheel Lifing and Fault Tracking as it allows a race weekend to be considered as one. Setting this flag will require the user to select an Event from a drop down list when recording sessions. Events may be defined under Administration > Data Setup

Disable Usage Logging
LifeCheck will periodically report usage data to the main Trenchant Technologies license server for the purpose of identifying which version of the software users have installed to aid with diagnostics. this can be disabled by setting this flag.

Logon Image
As part of the ability to 'Brand' your copy of LifeCheck you may specify the full path to an image which will be displayed on the logon screen. The recommended size is 410 x 150 pixels. If required a background colour on to which the image is laid may also be specified.

Terminology
See the following Terminology section

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Chassis Builder Settings

These settings affect how the Chassis Builder will function. It is recommended that all changes to the chassis (moving components on or off the chassis) are performed using Chassis Builder and not to use other screens such as Relocate as these do not validate the structure and content of the chassis and allow additional components to be added to the chassis which are not in the template.

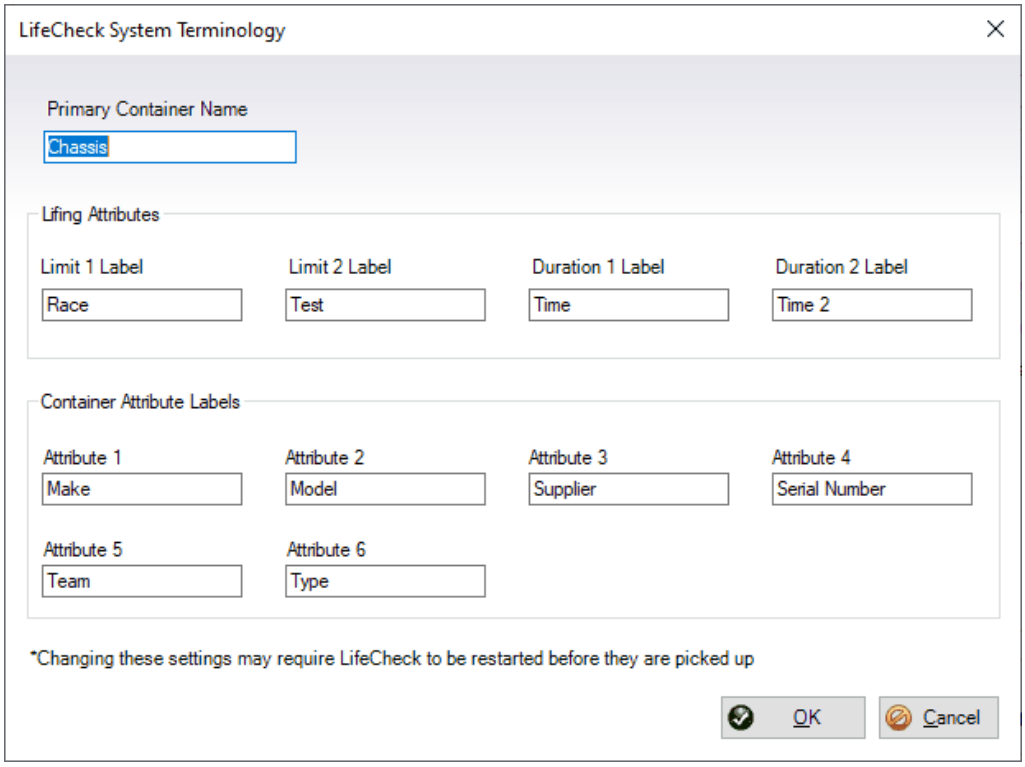
SQL Database Backup

Perform an automatic database backup every 'n' days
Checking this option will enable an auto backup of the LifeCheck database to be performed after the period defined. The backup will be initiated on logon to LifeCheck if the defined period since the last backup has been exceeded. Note however that for the backup to proceed, a valid folder to which the backup file will be saved must be specified for the following **Backup Folder** field.

Backup Folder
This is the folder to which the database server will save the generated backup file either as a result of an explicit request to backup the database under Database maintenance or as a result of an automatic backup. This folder must be a valid folder when viewed from the database server as this is where the backup actually takes place and must be writeable to by the SQL Server.

19.2.7.1 Terminology

As part of its customisation, a number of the keywords and phrases within LifeCheck may be set by users to better reflect the working practices of each organisation. The terminology is set by clicking the **Terminology** button with **Admin>Global Settings**.



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Primary Container Name
This allows the name of the primary container (by default the Chassis) to be changed to better suit the item to which sessions will be added. For example this could be 'Engine' for an engine manufacturer or 'Aircraft' for a user wanting to track mileage of their aircraft.

Lifing Attributes

Limit 1 Label
By default this is set to **Race**. It defines the prefix for the primary lifing metric. For example 'Race Limit' and 'Race Left'.

Limit 2 Label
By default this is set to **Test**. It defines the prefix for the secondary lifing metric. For example 'Test Limit' and 'Test Left'.

Duration 1 Label
By default this is set to **Time**. It defines the name of the primary duration lifing metric. For example 'Time Run' and 'Time Limit'

Duration 2 Label
By default this is set to **Time 2**. It defines the name of the secondary duration lifing metric. For example 'Time 2 Run' and 'Time 2 Limit'

Container Attribute Labels

The primary container (Chassis by default) may have a number of attributes associated with it. These attributes are in the main display only but are used within the Fault Tracking system to provide additional filtering options especially in regards to the **attribute 5** and **Attribute 6** values.

Attribute 1
By default this is set to **Make**.

Attribute 2
By default this is set to **Model**

Attribute 3
By default this is set to **Supplier**.

Attribute 4
By default this is set to **Serial Number**.

Attribute 5
By default this is set to **Team**. The possible values for this field may be defined on the **Administration>Chassis Numbers** screen.

Attribute 6
By default this is set to **Type**. The possible values for this field may be defined on the **Administration>Chassis Numbers** screen.

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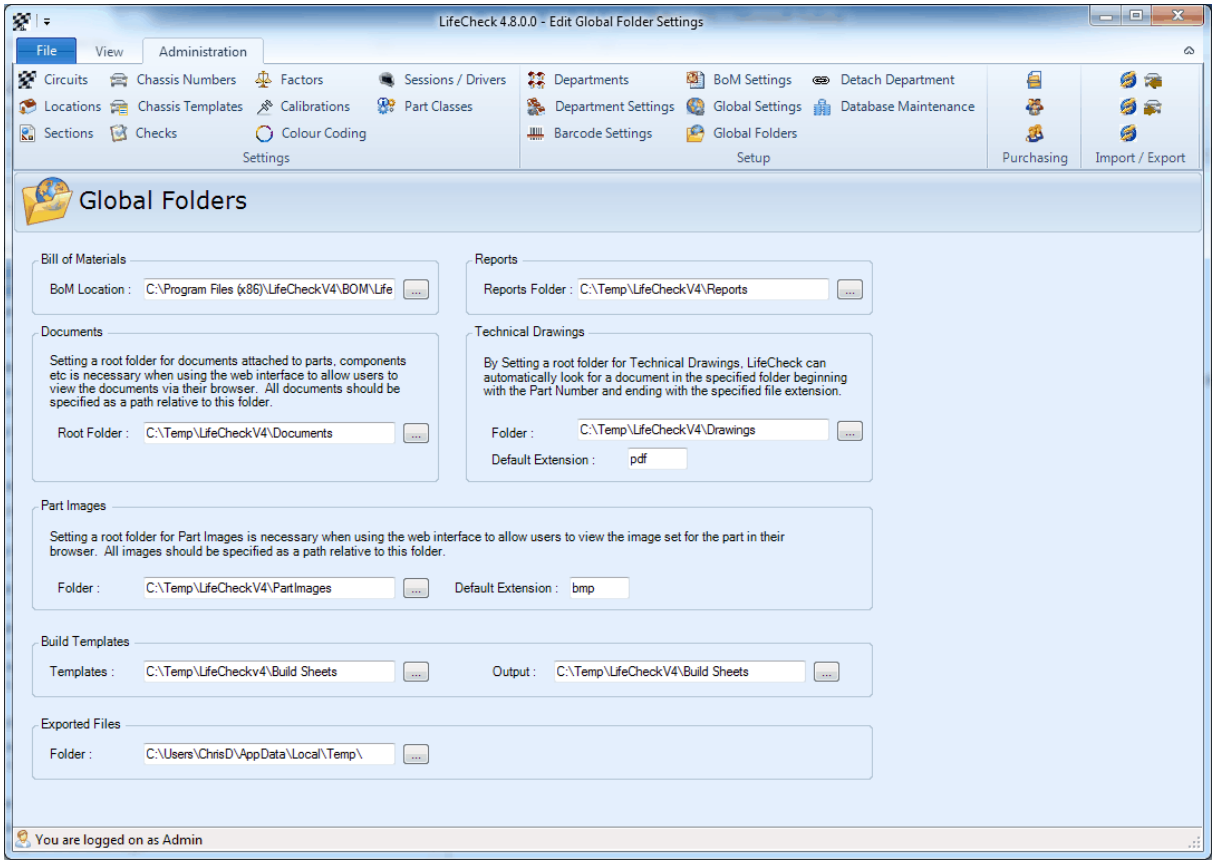
19.2.8 Global Folders

This tab allows the default location to be defined of various global aspects within LifeCheck.



Bill of Materials
This folder defines the location where Bill of Materials (BoM) files in CSV format should be stored.

Reports
This is the folder into which reports will be stored.

Documents
This setting is only relevant where the LifeCheck web interface is being used and defines the root folder where part/component documents will be stored. The folder should be set as a web shared folder. All document references should be specified using this as the root.

Technical Drawings
This is the folder into which technical drawings will by default be located. The main advantage of specifying this folder is so that LifeCheck can check for a technical drawing for a part using just the part number and the following default extension.

Default Extension
This is the default file extension which will be used by LifeCheck together with the part number to identify a technical drawing for a specific part.

Part Images

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This is the folder into which part images will by default be located. The main advantage of specifying this folder is so that LifeCheck can check for an image for a part using just the part number and the following default extension.

Default Extension
This is the default file extension which will be used by LifeCheck together with the part number to identify an image for a specific part.

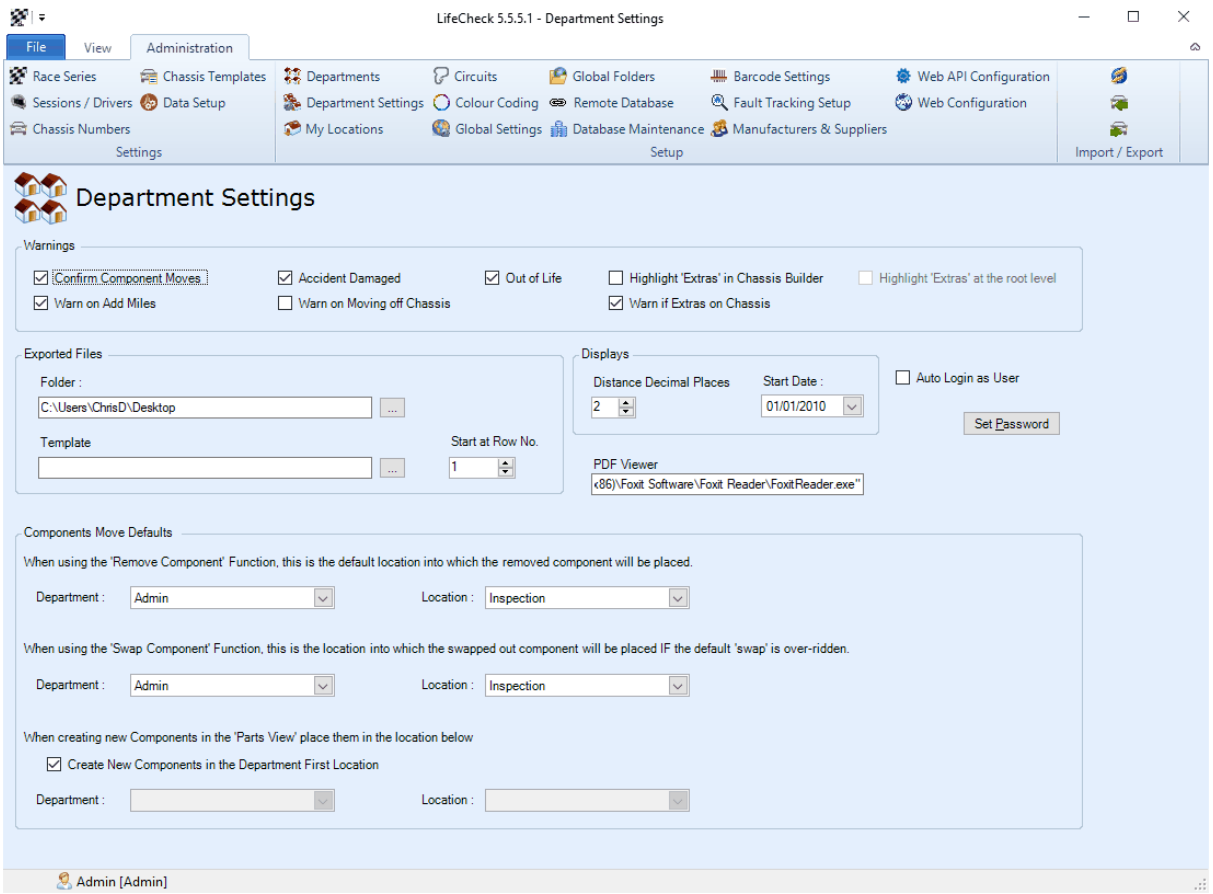
Build Templates
This is the folder within which any build templates must be located.

Output
This is the default folder into which generated build sheets will be written. Build sheets are Microsoft Excel (.xls) files.

Exported Files
This is the folder into which files generated using an 'Export' function will by default be placed.

19.2.9 Department Settings

This tab controls those settings which are local to the currently logged in department/PC.



The window is sub-divided into a number of distinct categories.

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Warnings
Selects which warnings will be active within LifeCheck.

Exported Files
This defines the default folder into which files generated using the 'Export to Excel' function will be located. In addition, a template Excel file may also be specified to allow for such things as headers and footers to be added to all exported documents as well as setting default fonts, styles and other such attributes. The Starting row number should be set to the first blank row in the template to prevent LifeCheck from over-writing any heading rows added to the template.

Displays
Defines how decimal numbers (such as mileages) will be displayed. The Start date is used to limit the number of entries displayed in history views such as Chassis History.

Auto Login As User
This field when checked will cause LifeCheck to automatically login the current user the next time it is started, skipping the standard login dialog.

Set Password
Set the password for the current user.

Component Move Defaults
Defines how components will act when they are moved in various ways such as when using the 'Remove Component' function in the Chassis Builder.

19.2.10 Remote Database

This section covers linking and detaching from the central LifeCheck database. Link and detaching allows a user to replicate the LifeCheck database onto their local PC or laptop and operate in a 'Detached' mode against this database. This is useful when travelling to events where an internet connection back to the central database may not be available. Link and Detaching is covered in more detail in the LifeCheck Supplemental Documentation.

19.2.11 Web API Configuration

The **Web API Configuration** screen defines how and what data will be accessible via the **LifeCheck Web API**.

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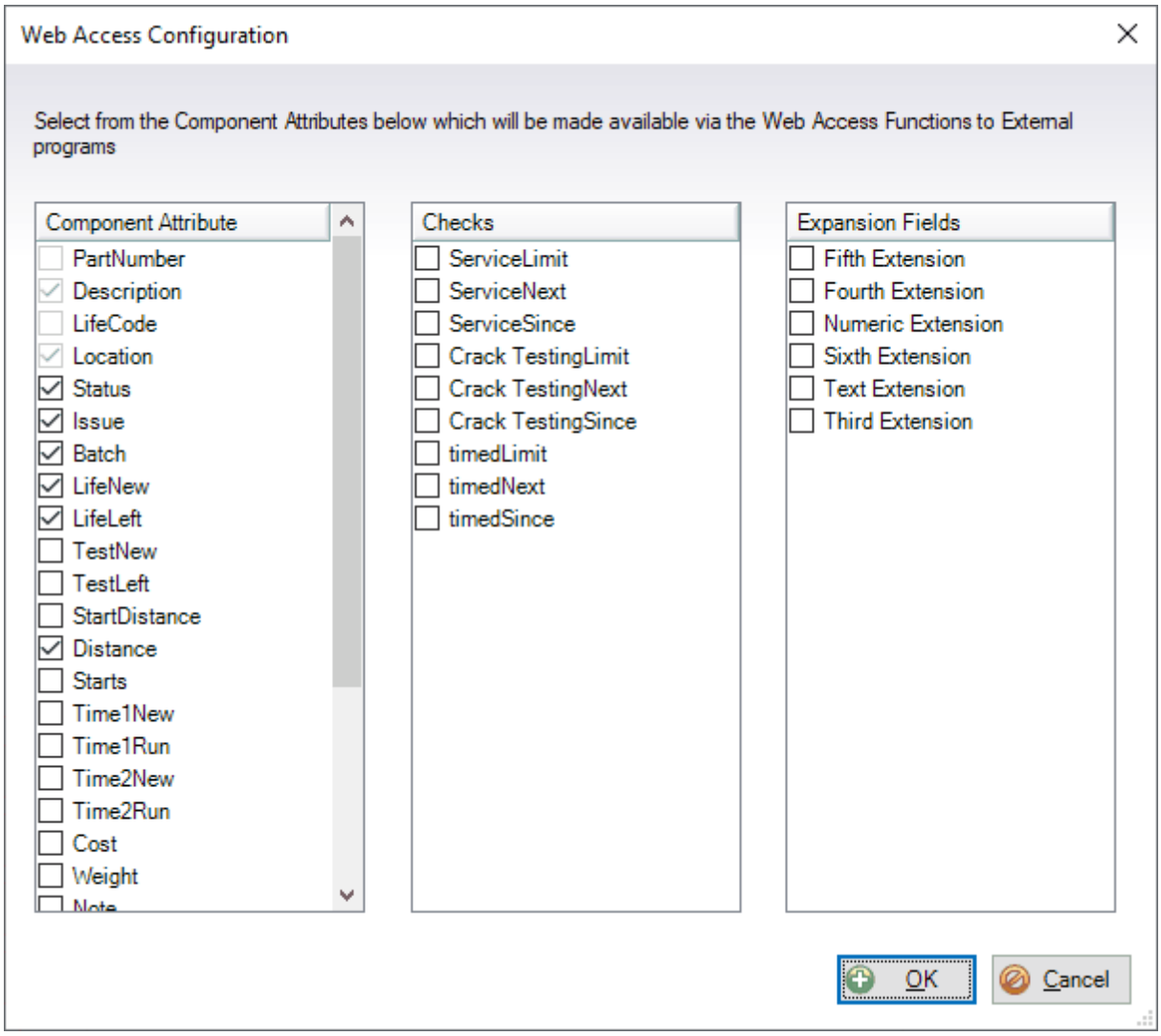

Each field checked will be sent with components recovered using the Web API functions.

19.2.12 Email Configuration

Various aspects of LifeCheck may make use of Email, for example when sending password reminders either within LifeCheck itself or from the Team Web Interface as well as sending notifications from the Fault Tracking module. These features will not be available unless the email configuration has been setup previously.

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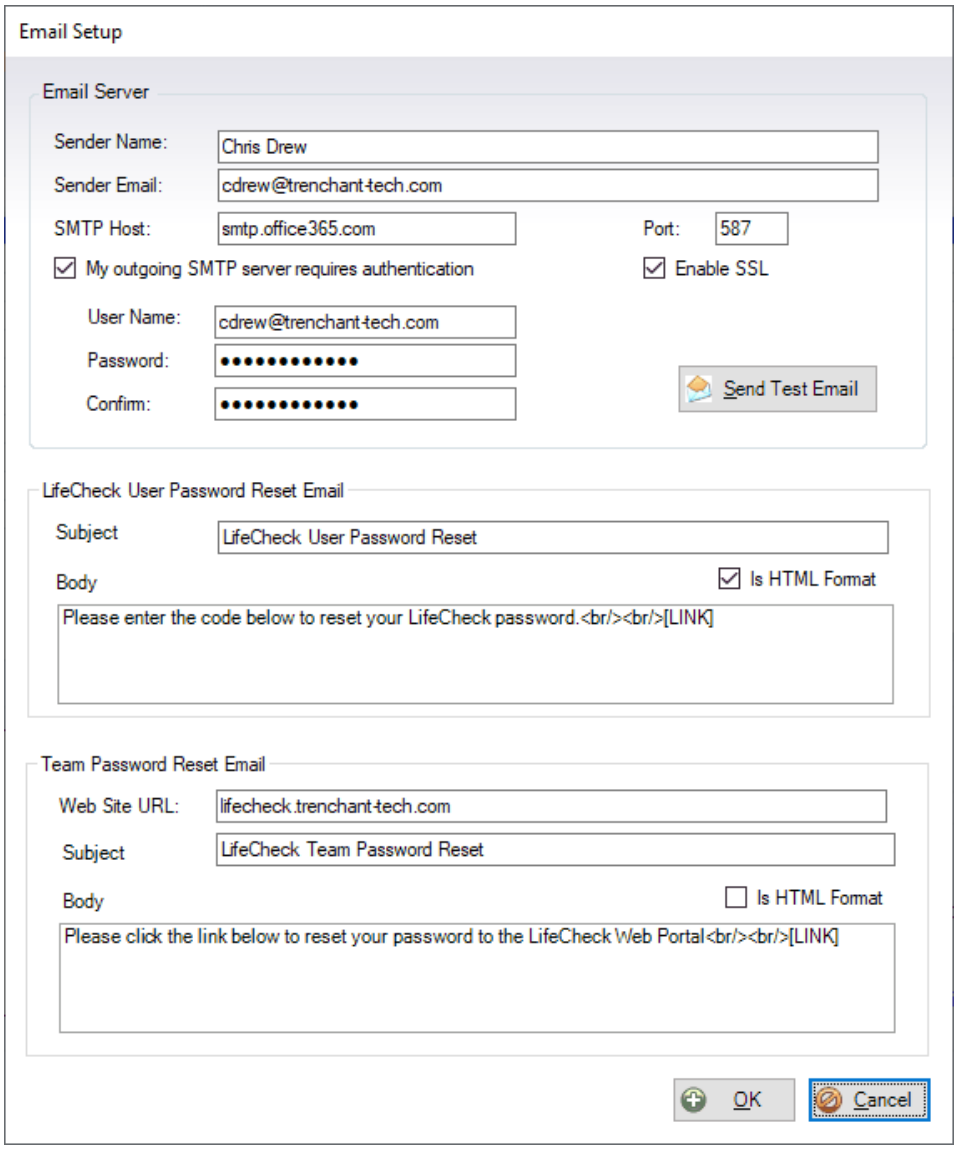

This window is divided into 3 areas, The Email Server, the user password reset email and the team password reset email.

19.2.12.1 Email Server

Sender Name
This is the actual name of the sender which will appear in the email

Sender Email Address
The email address of the above sender

SMTP Host
This is the name of the SMTP server which will be used to send the email. For example, if the sender email address above is a **gmail** account, this will typically be **smtp.gmail.com**. If the address above is an Office 365 email address, the SMTP Host will usually be **smtp.office365.com.**

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Outgoing SMTP Server Port
This is the port number for the SMTP server defined above. For many SMTP servers this will be port 25 but this may be different for other servers. For example gmail may be 25, 587 or 465 whereas Office 365 typically uses port 587.

My Outgoing SMTP server requires authentication
In most cases to prevent email spamming and spoofing, the SMTP host specified above will require authentication to be specified in order for it to send email. Enter the user name and password provided for the LifeCheck email address by your system administrator.

Enable SSL
Check this box to enable Secure Sockets Layer for the email send. This is usually required for gmail and Office 365 hosts.

Send Test Email
Click this button to try to send a test email using the settings previously specified. Specify the email address to send to and If successful, LifeCheck will display an appropriate message. You should then check the email for the specified address to ensure safe delivery of the test email.

19.2.12.2 LifeCheck User Password Reset Email

This section defines the content and format of the email sent when a password reminder / reset is requested from LifeCheck itself. As LifeCheck is an installed Windows application, the process involves sending a validation code to the registered email address of the user and then having them confirm their identity by entering this code into a validation field. As such it is essential that the value **[LINK]** is contained in the message body as this will be replaced with the validation code generated by LifeCheck. The message may be formatted and sent as HTML if required.

19.2.12.3 Team User Password Reset Email

This section defines the content and format of the email sent when a password reminder / reset is requested from the (Team) LifeCheck Web Interface. The email will contain a link which when clicked will take the user to a password reset web page and as such it is essential that the value **[LINK]** is contained in the message body as this will be replaced with the reset URL. The message may be formatted and sent as HTML if required. You should also define the base URL for the LifeCheck Web Interface as this forms the basis of the password reset URL.

19.3 Import and Export

LifeCheck v4 also includes functionality to allow data relating to parts and components to be imported into the LifeCheck database. In order for this function to operate correctly, the import file must adhere to the format defined in the following section.

Import File Format

The import file is typically created using Microsoft Excel and then saved from Excel in Comma Separated Format. The import file may contain the following columns

- PART NUMBER
- MANUFACTURER NUMBER
- DESCRIPTION
- LOW STOCK 1
- LOW STOCK 2

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- MIN STOCK
- LIFED
- TYPE
- LIFE CODE
- START DISTANCE
- LIFE NEW RACE
- LIFE NEW TEST
- SERVICE NEW RACE
- SERVICE NEW TEST
- SERVICE SINCE LAST
- ISSUE NUMBER
- BATCH NUMBER
- COUNT
- PARENT PART NUMBER
- PARENT LIFE CODE

The first line of the import file should contain the column headers. This is then followed by individual lines which define either a part or a component as set out next.

Defining Parts Only

To simply define a part within LifeCheck, the following columns must be defined within the import file:-

Column	Mandatory	Type	Description
PART NUMBER	Y	Text	Must be the first column
MANUFACTURER NUMBER	N	Text	Manufacturers Part Number
DESCRIPTION	Y	Text	Description for the part
LOW STOCK 1	N	Numeric	Value for low stock 1
LOW STOCK 2	N	Numeric	Must be less than Low Stock 1
MIN STOCK	N	Numeric	Must be less than Low Stock 2
LIFED	N	Y or N	Defaults to Y – i.e. lifed part
TYPE	N	A, S, or P	Defines the part as [A]ssembly, [S]undry or [P]art. Defaults to Part

An example of an import file which purely defines parts is :-

PART NUMBER, DESCRIPTION, LIFED
TTL-DRVSHAFT, DRIVESHAFT ASSY, N
TTL-CVJOINT, CONSTANT VELOCITY JOINT, Y

This would define 2 parts, a driveshaft assembly with part number TTL-DRVSHAFT which is not lifed and a CV Joint which is lifed. Note that no instances of these parts (components) would be created.

Creating Components

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To create component instances of parts additional columns are required in the import file. Note however that the key column when defining Components is the life code column. Where no value is specified for Life Code a component will not be created. In this way it is possible for a single import file to both define parts and create components simply by specifying or omitting a value for the Life Code column.

When defining Components, the following columns may be specified:-

Column	Mandatory	Type	Description
LIFE CODE	Y	Text	Must be unique
START DISTANCE	N	Numeric	Initial distance run for component, default 0
LIFE NEW RACE	N	Numeric	Life Limit Race, default to LifeCheck default value
LIFE NEW TEST	N	Numeric	Life Limit Test, default to LifeCheck default value
SERVICE NEW RACE	N	Numeric	Service Limit Race default to LifeCheck default value
SERVICE NEW TEST	N	Numeric	Service Limit Test default to LifeCheck default value
SERVICE SINCE LAST	N	Numeric	Distance since last service, defaults to start distance
ISSUE NUMBER	N	Text	Issue Number of Component
BATCH NUMBER	N	Text	Batch Number of Component
COUNT	N	Numeric	Only applicable to Sundries, this is the count for the sundry. Defaults to 1
PARENT PART NUMBER	N	Text	Part Number of any parent part – used when defining components within an assembly
PARENT LIFE CODE	N	Text	Life Code of any parent component – used when defining components within an assembly. The component identified by PARENT PART NUMBER and PARENT LIFE CODE must already exist
BOM LEVEL	N	Numeric	Used in place of PARENT PART NUMBER and PARENT LIFE CODE to define the relationship between parent parts and their children.

Using BOM Level

Importing Parts and Components

The import functionality is not accessible under normal circumstances and has been hidden within LifeCheck. To access the hidden import form, first display the Component View and click on the Part Number field. Now enter CTRL+ALT+I to display the Data Importer Form.

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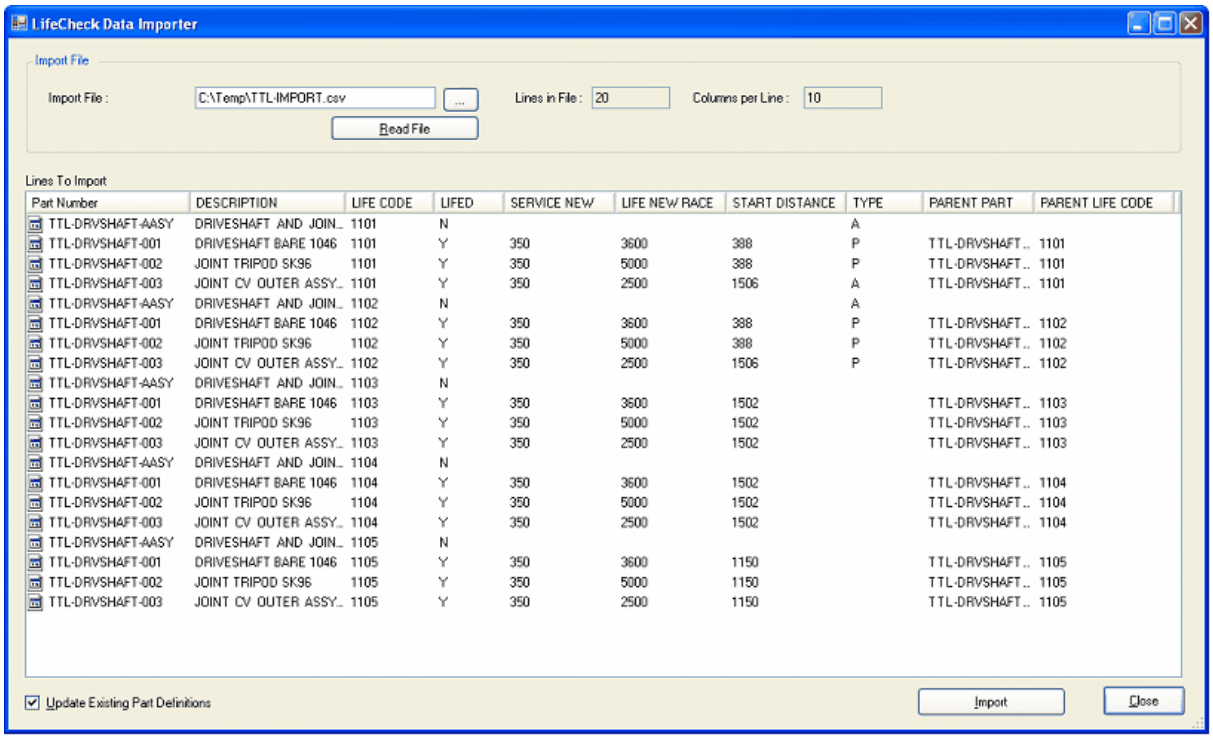

Part Number	DESCRIPTION	LIFE CODE	LIFED	SERVICE NEW	LIFE NEW RACE	START DISTANCE	TYPE	PARENT PART	PARENT LIFE CODE
TTL-DRVSHAFT-AASY	DRIVESHAFT AND JOIN..	1101	N				A		
TTL-DRVSHAFT-001	DRIVESHAFT BARE 1046	1101	Y	350	3600	388	P	TTL-DRVSHAFT..	1101
TTL-DRVSHAFT-002	JOINT TRIPOD SK95	1101	Y	350	5000	388	P	TTL-DRVSHAFT..	1101
TTL-DRVSHAFT-003	JOINT CV OUTER ASSY..	1101	Y	350	2500	1506	A	TTL-DRVSHAFT..	1101
TTL-DRVSHAFT-AASY	DRIVESHAFT AND JOIN..	1102	N				A		
TTL-DRVSHAFT-001	DRIVESHAFT BARE 1046	1102	Y	350	3600	388	P	TTL-DRVSHAFT..	1102
TTL-DRVSHAFT-002	JOINT TRIPOD SK95	1102	Y	350	5000	388	P	TTL-DRVSHAFT..	1102
TTL-DRVSHAFT-003	JOINT CV OUTER ASSY..	1102	Y	350	2500	1506	P	TTL-DRVSHAFT..	1102
TTL-DRVSHAFT-AASY	DRIVESHAFT AND JOIN..	1103	N						
TTL-DRVSHAFT-001	DRIVESHAFT BARE 1046	1103	Y	350	3600	1502		TTL-DRVSHAFT..	1103
TTL-DRVSHAFT-002	JOINT TRIPOD SK95	1103	Y	350	5000	1502		TTL-DRVSHAFT..	1103
TTL-DRVSHAFT-003	JOINT CV OUTER ASSY..	1103	Y	350	2500	1502		TTL-DRVSHAFT..	1103
TTL-DRVSHAFT-AASY	DRIVESHAFT AND JOIN..	1104	N						
TTL-DRVSHAFT-001	DRIVESHAFT BARE 1046	1104	Y	350	3600	1502		TTL-DRVSHAFT..	1104
TTL-DRVSHAFT-002	JOINT TRIPOD SK95	1104	Y	350	5000	1502		TTL-DRVSHAFT..	1104
TTL-DRVSHAFT-003	JOINT CV OUTER ASSY..	1104	Y	350	2500	1502		TTL-DRVSHAFT..	1104
TTL-DRVSHAFT-AASY	DRIVESHAFT AND JOIN..	1105	N						
TTL-DRVSHAFT-001	DRIVESHAFT BARE 1046	1105	Y	350	3600	1150		TTL-DRVSHAFT..	1105
TTL-DRVSHAFT-002	JOINT TRIPOD SK95	1105	Y	350	5000	1150		TTL-DRVSHAFT..	1105
TTL-DRVSHAFT-003	JOINT CV OUTER ASSY..	1105	Y	350	2500	1150		TTL-DRVSHAFT..	1105

The first step is to enter the name of the import file. Click on … to browse for the import file. Once the file has been selected, click Read File. LifeCheck will then read and parse the import file displaying any errors encountered. Assuming that the file is in the correct format and no errors have been reported, click Import to begin the process of importing the parts and components defined within the file.

In the above example we are importing multiple instances of a driveshaft assembly where each assembly contains three other components.

If a part defined within the import file does not already exist within LifeCheck it will first be created. If the part does already exist, checking the Update Part Definitions check box will allow the definition of the part to be updated. This can be useful for updating default life values for the part or setting stock level alerts using low stock. Note that component instances of parts will not be updated.

Once all parts and components have been imported, LifeCheck will display a message indicating the numbers processed and will show any errors. Please check the list carefully to ensure no severe errors have occurred. The new components will be imported into the first location defined for the currently logged in user and may then be re-located from there as required.

19.4 Component Factors and Weightings

The LifeCheck program stores the actual distance covered by all components and in addition allows a weighted or factored distance to be calculated for specific components. This allows parts which are subjected to unusually high or low loading
to be monitored and additional analysis to take place.

For example a gear ratio which is only used for 10% of a lap can have a factor of 0.10 allocated to reflect

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this. Each circuit has its own set of factor values. When distances are updated using the Add Miles screen the program will check the
appropriate values for the specified circuit and then use them to calculate a weighted mileage for all parts that have a factor type other than None.

Setting Factor Names

A range of Factor Names can be entered by LifeCheck Administrator Users and once entered these are available to all users. The system has default entries for Gears 1 to 7. These can be re-named if required and additional entries made. To modify the existing factors select the **Factors** tab under **Administration>Setup**. The following window tab will be displayed:-

To **Add** a new factor, click **Add** to display an edit box where the name of the new factor can be entered. Please note that the names of all factors must be unique. Clicking **Edit** will allow you to change the name of the selected factor pressing Return to confirm the change and exit edit mode. Similarly, click **Delete** to delete the selected factor. Factors can however only be deleted if they have not had a factor value defined for a circuit.

Changing the Factor Values for a Circuit

Each circuit has a separate set of values for each of the specified factor types. These can be viewed and modified through the **Circuits** tab under **Administration>Setup**.

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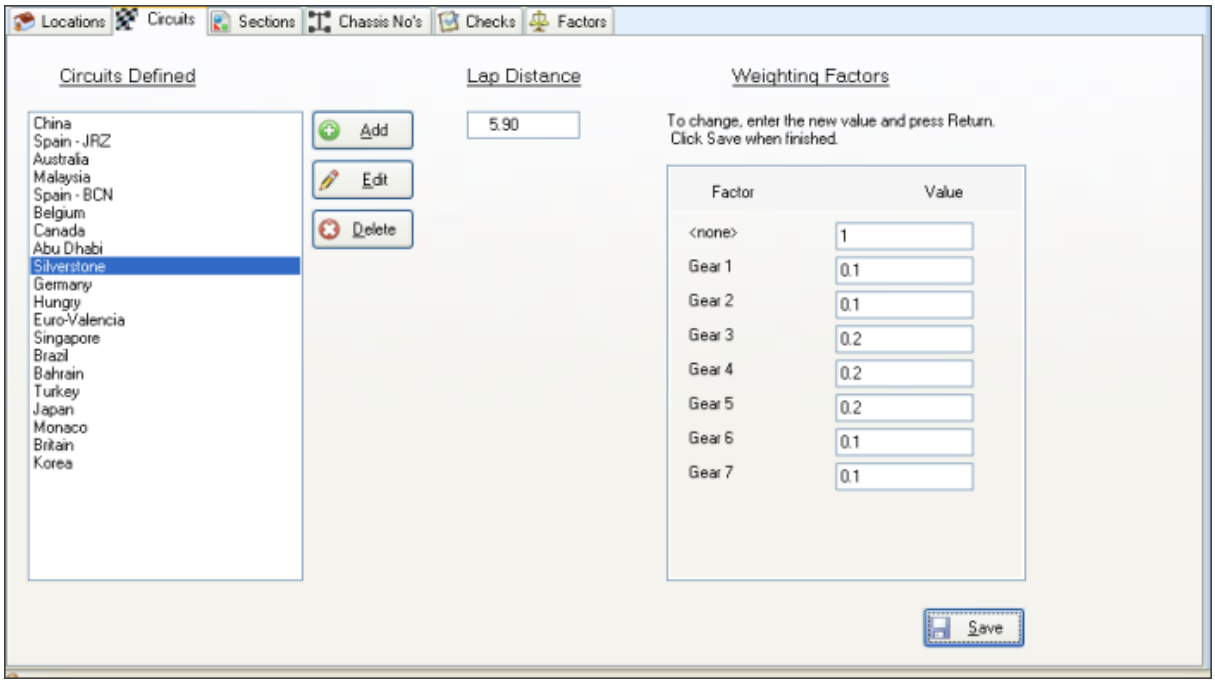

In the above screen the factor values are being displayed for the **Silverstone** circuit showing that Gear 3, Gear 4 and Gear 5 have a factor value of 0.2 (or 20%) whereas the other gears have a factor value of 0.1 (or 10%). What this means is that for every kilometers added to a chassis, components who have their weighting factor set to **Gear 1** will have a weighted distance incremented by 10 kilometers whereas components with a weighting factor of **Gear 3** will have their weighted distance run incremented by 20 kilometers. It is important to note that the sum of all of the factor values should equal 1 (100%). After changing any of the factor values for a circuit, click **Save** to commit the change.

Note although factor values will be automatically set for components on the Add Miles screen, this screen may also be used to make changes both to the actual factor values used for a circuit and to the Factor applied to an individual component. See Adding Distance for further details.

20 Import and Export

Enter topic text here.

20.1 Importing Parts and Components

LifeCheck v4 also includes functionality to allow data relating to parts and components to be imported into the LifeCheck database. In order for this function to operate correctly, the import file must adhere to the format defined in the following section.

20.1.1 Import File Format

The import file is typically created using Microsoft Excel and then saved from Excel in Comma Separated Format. The import file may contain the following columns

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- PART NUMBER
- MANUFACTURER NUMBER
- DESCRIPTION
- LOW STOCK 1
- LOW STOCK 2
- MIN STOCK
- LIFED
- TYPE
- LIFE CODE
- START DISTANCE
- LIFE NEW RACE
- LIFE NEW TEST
- SERVICE NEW RACE
- SERVICE NEW TEST
- SERVICE SINCE LAST
- ISSUE NUMBER
- BATCH NUMBER
- COUNT
- PARENT PART NUMBER
- PARENT LIFE CODE
- BOM LEVEL
- WEIGHTED LIMIT
- WEIGHTED RUN
- EXPIRATION DATE
- Custom Checks (see later)

The first line of the import file should contain the column headers. This is then followed by individual lines which define either a part or a component as set out next.

20.1.2 Defining Parts Only

To simply define a part within LifeCheck, the following columns must be defined within the import file:-

Column	Mandatory	Type	Description
PART NUMBER	Y	Text	Must be the first column
MANUFACTURER NUMBER	N	Text	Manufacturers Part Number
DESCRIPTION	Y	Text	Description for the part
LOW STOCK 1	N	Numeric	Value for low stock 1
LOW STOCK 2	N	Numeric	Must be less than Low Stock 1
MIN STOCK	N	Numeric	Must be less than Low Stock 2
LIFED	N	Y or N	Defaults to Y – i.e. lifed part
TYPE	N	A, S, or P	Defines the part as [A]ssembly, [S]undry or [P]art. Defaults to Part

An example of an import file which purely defines parts is :-

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PART NUMBER, DESCRIPTION, LIFED
TTL-DRVSHAFT, DRIVESHAFT ASSY, N
TTL-CVJOINT, CONSTANT VELOCITY JOINT, Y

This would define 2 parts, a driveshaft assembly with part number TTL-DRVSHAFT which is not lifed and a CV Joint which is lifed. Note that no instances of these parts (components) would be created.

20.1.3 Creating Components

To create component instances of parts additional columns are required in the import file. Note however that the key column when defining Components is the life code column. Where no value is specified for Life Code a component will not be created. In this way it is possible for a single import file to both define parts and create components simply by specifying or omitting a value for the Life Code column.

When defining Components, the following columns may be specified:-

Column	Mandatory	Type	Description
LIFE CODE	Y	Text	Must be unique
START DISTANCE	N	Numeric	Initial distance run for component, default 0
LIFE NEW RACE	N	Numeric	Life Limit Race, default to LifeCheck default value
LIFE NEW TEST	N	Numeric	Life Limit Test, default to LifeCheck default value
SERVICE NEW RACE	N	Numeric	Service Limit Race default to LifeCheck default value
SERVICE NEW TEST	N	Numeric	Service Limit Test default to LifeCheck default value
SERVICE SINCE LAST	N	Numeric	Distance since last service, defaults to start distance
ISSUE NUMBER	N	Text	Issue Number of Component
BATCH NUMBER	N	Text	Batch Number of Component
COUNT	N	Numeric	Only applicable to Sundries, this is the count for the sundry. Defaults to 1
PARENT PART NUMBER	N	Text	Part Number of any parent part – used when defining components within an assembly
PARENT LIFE CODE	N	Text	Life Code of any parent component – used when defining components within an assembly. The component identified by PARENT PART NUMBER and PARENT LIFE CODE must already exist
BOM LEVEL	N	Numeric	Used in place of PARENT PART NUMBER and PARENT LIFE CODE to define the relationship between parent parts and their children.

20.1.4 Use of the BoM Level Column

Using BOM Level as opposed to PARENT PART NUMBER and PARENT LIFE CODE is recommended as it reduces the scope for errors when defining the parent/child relationships. The BOM Level uses a single numeric field to define these relationships as follows:-

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PART NUMBER	DESCRIPTION	LIFE CODE	LIFED	SERVICE NEW RACE	LIFE NEW RACE	START DISTANCE	TYPE	BOM LEVEL
TTL-DRVSHAFT-AASY	DRIVESHAFT AND JOINTS ASSY	1101	N				A	0
TTL-DRVSHAFT-001	DRIVESHAFT BARE 1046	1101	Y	350	3600	388	P	1
TTL-DRVSHAFT-002	JOINT TRIPOD SK96	1101	Y	350	5000	388	P	1
TTL-DRVSHAFT-003	JOINT CV OUTER ASSY 27 TOOTH	1101	Y	350	2500	1506	A	1

20.1.5 Importing Custom Check Data

The 'standard' mechanisms allow for the importing of service level data however information for additional custom checks (such as crack testing and fatigue) is not directly supported using the above import fields.

To import data for custom checks it is necessary to add columns with the following headings :-

CHECK>*name*>NEW RACE

CHECK>*name*>NEW TEST

CHECK>*name*>SINCE LAST

…where ***name*** is the name of a custom check which has ALREADY BEEN DEFINED in the LifeCheck database. For example if you have added a custom check called 'Crack Testing' in LifeCheck then you must set the import column heading to **CHECK>CRACK TESTING>NEW RACE**. The **NEW RACE** column is mandatory however you can also have **NEW TEST** and **SINCE LAST** columns to import custom check data.

20.1.6 Starting the Import Process

The import functionality is invoked by selecting **Import Parts** from the **Administration** menu**.**

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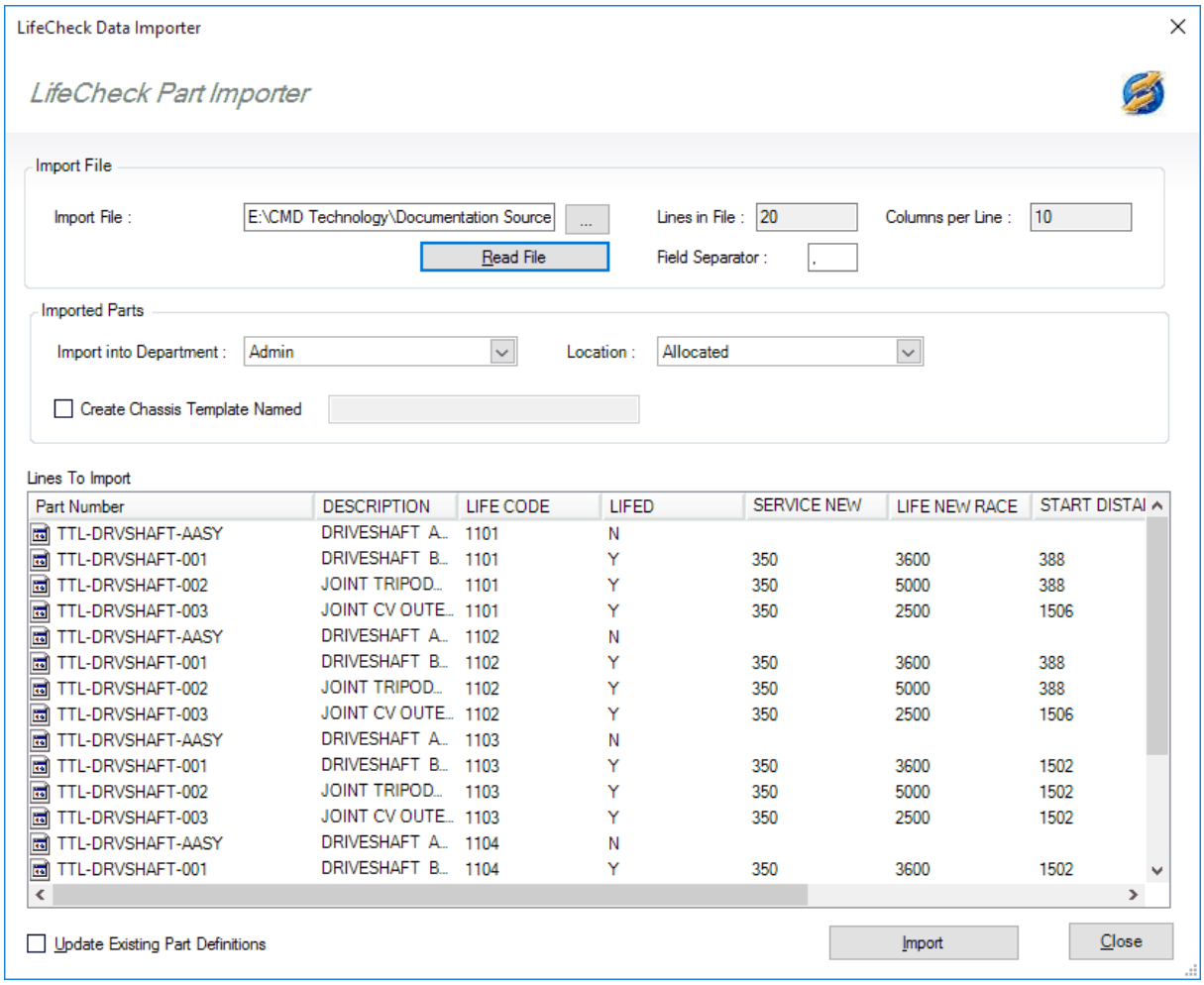

The first step is to enter the name of the import file. Click on **...** to browse for the import file. Once the file has been selected, click **Read File**. LifeCheck will then read and parse the import file displaying any errors encountered. Assuming that the file is in the correct format and no errors have been reported, click Import to begin the process of importing the parts and components defined within the file.

In the above example we are importing multiple instances of a driveshaft assembly where each assembly contains three other components.

If a part defined within the import file does not already exist within LifeCheck it will first be created. If the part does already exist, checking the Update Part Definitions check box will allow the definition of the part to be updated. This can be useful for updating default life values for the part or setting stock level alerts using low stock. Note that component instances of parts will not be updated.

Once all parts and components have been imported, LifeCheck will display a message indicating the numbers processed and will show any errors. Please check the list carefully to ensure no severe errors have occurred. The new components will be imported into the first location defined for the currently logged in user and may then be re-located from there as required.

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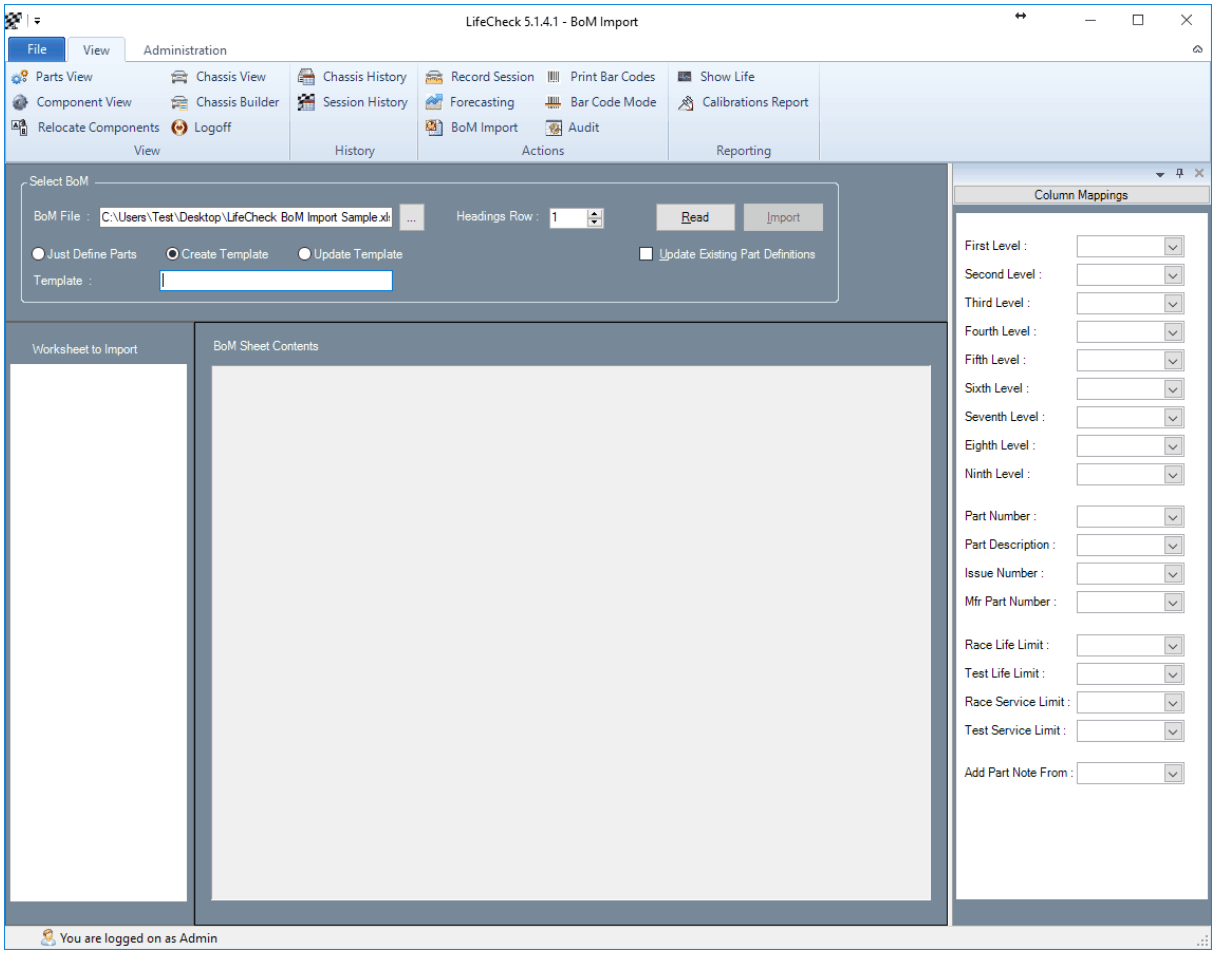
20.2 Bill of Materials

The Bill of Materials import is an alternate mechanism to Part Import to read part definitions into LifeCheck and create a chassis template from those definitions. The main difference between Part Import and BoM Import is there is no facility within the BoM import to import individual components, it is intended solely for the importation of part definitions and to create a chassis template based on those parts. In addition, BoM import allows for the updating of both parts imported and any chassis template created by the import. The BoM import function is invoked from the **View > Actions > BoM Import**. The following screen will be displayed :-



This screen is divided into a number of distinct areas.

- The top section allows for the selection of a Microsoft Excel file to be specified and various options relating to the way the file will be imported to be set.
- The lower section allows the specific worksheet within the Workbook to be selected and displays the contents of the worksheet once read. During and after the import it displays various log messages relating to the import.
- The right hand section allows the mapping between the columns in the worksheet and the fields within LifeCheck to be defined.

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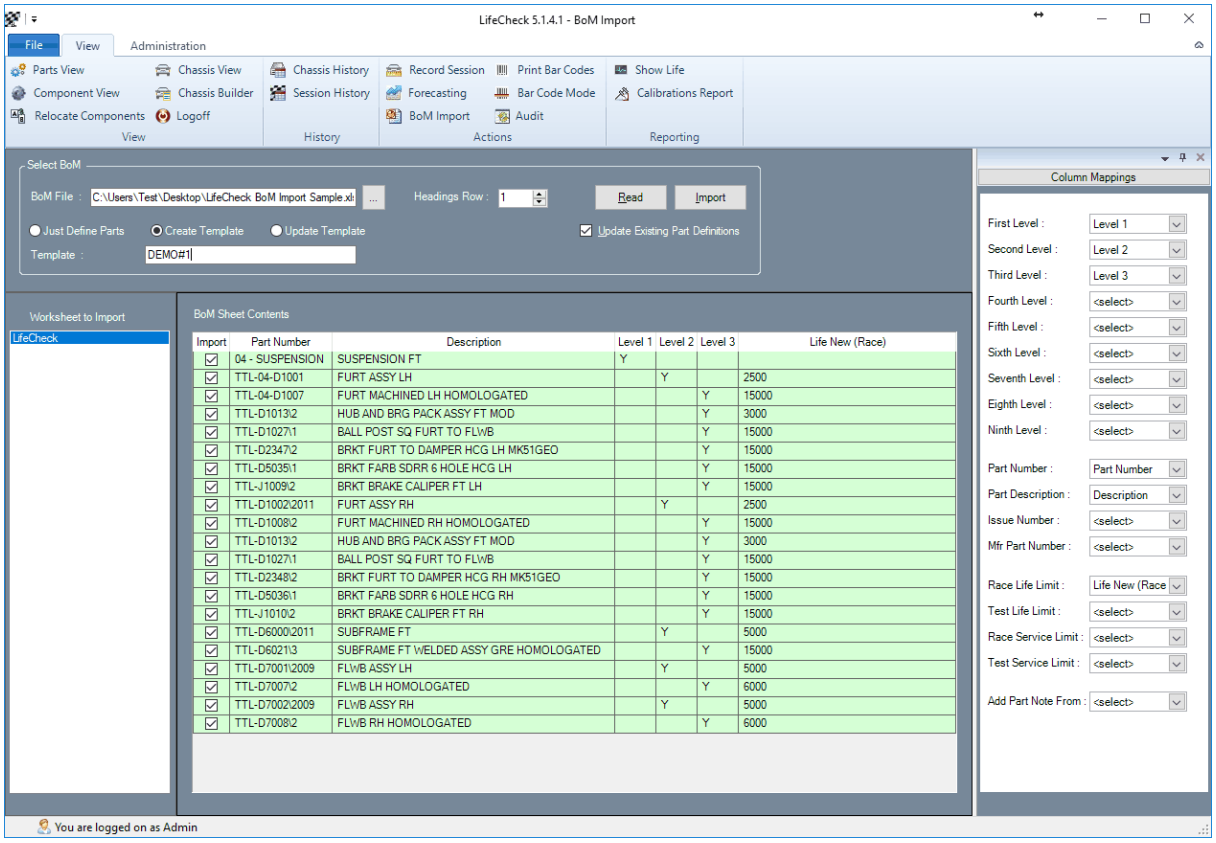
LifeCheck supports both Excel 97-2003 workbooks (.xls) and the newer format (.xlsx) files. An example of an import file is shown at the end of this document. Select the file to be imported and click 'Read'. If the file passes initial validation it will be displayed as below :-



Once the file has been read, the next step is to set the column mappings. To facilitate the creation of a chassis template, LifeCheck requires that the file be in a specific format with the 'level' of the part indicated using one or more columns.

We can easily identify and map the Part Number, Description and Race Life Limit (and similar) columns but the 'levels' require more explanation. In many cases when a BoM is exported from another system it does so using a hierarchy where either the part number or description is indented within the sheet to denote a parent child relationship. Other formats may use a column with a numeric value to denote the hierarchy – LifeCheck currently only supports the former representation however it is a simple matter to use Excel formula to convert from a BoM level to an indented format.

In the example file shown above we can see there are 3 columns labelled 'Level 1', 'Level 2' and 'Level 3' which define the structure. The first part ('04 – SUSPENSION') is defined as being at Level 1 as it has text in the 'Level 1' column. The second part ('TTL-04-D1001') is defined at level 2 and hence is contained within the '04 Suspension' part as it has a value in the 'Level 2' column. The value in the level column itself is unimportant but will often be set either to the Part Number or Description when exported from an ERP system.

LifeCheck will always check from the highest level to the lowest to define the structure. As such it is important to ensure that the column mappings for unused level columns are always set to the default

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'<Select>' value meaning they are not specified. In our example above, labeled 'Level 1', 'Level 2' and 'Level 3' have been configured but 'Level 4' has been cleared. This allows for a 3 level structure to be imported.

Additional column mappings are supported to allow the BoM to import such things as issue numbers and service limits if the BoM includes those fields.

Chassis Templates

Although it is not mandatory to create a chassis template from the BoM, this is its prime function and as such it seems sensible to either create a new template or update an existing one. If creating a new template, a new unique name for the chassis template must be specified. If a name is specified which already exists, the import will be aborted.

Updating Existing Part Definitions

In many cases the BoM file being imported may well contain parts which are already contained within the LifeCheck database and may have been updated within LifeCheck. In this case you may not want to update the Part Definitions using the values contained within the BoM and should ensure the 'Update Existing Part Definitions' check box is unchecked.

Consider however that the BoM is normally considered to be the absolute source of your parts and any changes in the BoM should be reflected within LifeCheck. This can however cause issues if for example the 'life' fields are not included in the BoM file as LifeCheck creates such parts as 'un-lifed'. If you modify such parts within LifeCheck to be lifed, subsequent imports of the BoM will revert this change if part definitions are updated.

Importing the Bill of Materials

Once the column mappings have been defined and double checked the BoM can be imported by simply clicking on the Import button. LifeCheck will process and import the BoM displaying a log of the actions it has taken which will include a log of each part created or updated as well as where parts already existed and were or were not updated.

At the end of the import, LifeCheck will iterate through each of the parts imported at the lowest level i.e. all those for which no child parts were found, and determine whether or not those parts have children in any of the Chassis Templates or if any component instances of those parts are the parent of any other component. If the answer to both of these questions is 'No', LifeCheck will modify the part so that it appears as a 'standard' part as opposed to an assembly.

The log can also be exported if any errors are reported. You may see such errors as 'No part number was found on line 215' or that the same column has been mapped to multiple fields. If so, correct any such errors in the import file or mappings and re-try.

Sample Bill of Materials Worksheet

The following worksheet was used in the example above. As can be seen it closely resembles that displayed within LifeCheck.

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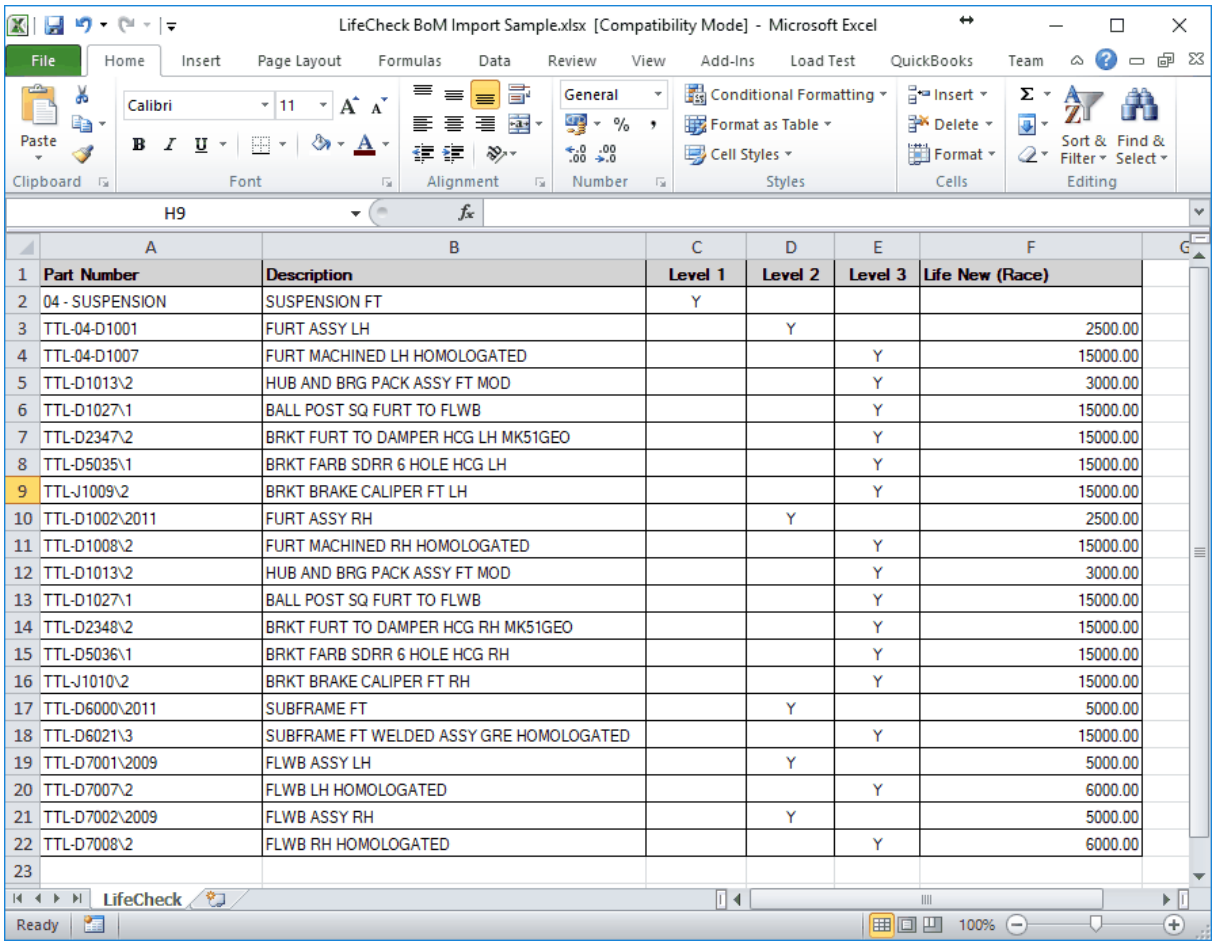

	A	B	C	D	E	F
1	**Part Number**	**Description**	**Level 1**	**Level 2**	**Level 3**	**Life New (Race)**
2	04 - SUSPENSION	SUSPENSION FT	Y			
3	TTL-04-D1001	FURT ASSY LH		Y		2500.00
4	TTL-04-D1007	FURT MACHINED LH HOMOLOGATED			Y	15000.00
5	TTL-D1013\2	HUB AND BRG PACK ASSY FT MOD			Y	3000.00
6	TTL-D1027\1	BALL POST SQ FURT TO FLWB			Y	15000.00
7	TTL-D2347\2	BRKT FURT TO DAMPER HCG LH MK51GEO			Y	15000.00
8	TTL-D5035\1	BRKT FARB SDRR 6 HOLE HCG LH			Y	15000.00
9	TTL-J1009\2	BRKT BRAKE CALIPER FT LH			Y	15000.00
10	TTL-D1002\2011	FURT ASSY RH		Y		2500.00
11	TTL-D1008\2	FURT MACHINED RH HOMOLOGATED			Y	15000.00
12	TTL-D1013\2	HUB AND BRG PACK ASSY FT MOD			Y	3000.00
13	TTL-D1027\1	BALL POST SQ FURT TO FLWB			Y	15000.00
14	TTL-D2348\2	BRKT FURT TO DAMPER HCG RH MK51GEO			Y	15000.00
15	TTL-D5036\1	BRKT FARB SDRR 6 HOLE HCG RH			Y	15000.00
16	TTL-J1010\2	BRKT BRAKE CALIPER FT RH			Y	15000.00
17	TTL-D6000\2011	SUBFRAME FT		Y		5000.00
18	TTL-D6021\3	SUBFRAME FT WELDED ASSY GRE HOMOLOGATED			Y	15000.00
19	TTL-D7001\2009	FLWB ASSY LH		Y		5000.00
20	TTL-D7007\2	FLWB LH HOMOLOGATED			Y	6000.00
21	TTL-D7002\2009	FLWB ASSY RH		Y		5000.00
22	TTL-D7008\2	FLWB RH HOMOLOGATED			Y	6000.00
23						

20.3 Exporting Chassis Passport

On occasions it may be necessary to export a chassis out of the LifeCheck database. For instance, if the chassis is sold on to a 3rd party it can be advantageous for the history of the chassis to be generated and provided to the new owner. This is the purpose of the **Export Chassis Passport** functionality with LifeCheck accessed from the **Administration** menu**.**

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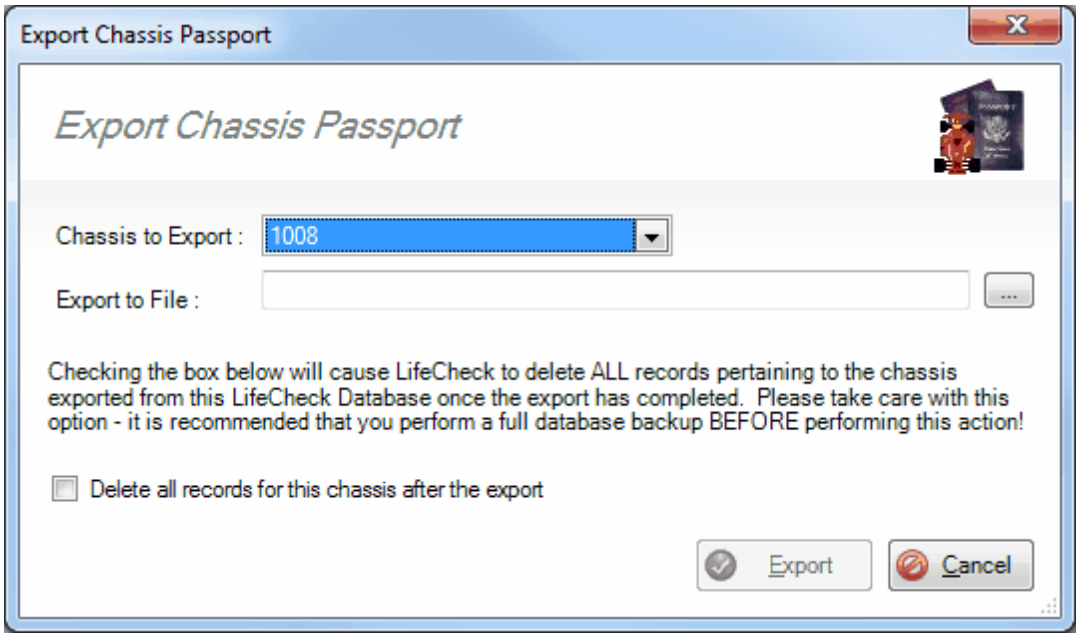

After selecting the chassis which is to be exported the next decision to make is whether or not to retain information relating to the chassis being exported. Great care should be taken here as once exported this information cannot be recovered. If the chassis records are to be deleted after the export, LifeCheck will delete the chassis, all components on the chassis, and all history relating to the chassis or to any components on the chassis.

The exported chassis passport is an XML format file which details the life and history of the chassis.

21 Remote Database Operations

There are times when racing when an Internet connection is just not available to be able to connect to the LifeCheck database back at the factory and in these instances it is important that you can still work with LifeCheck, accessing parts and components, building a chassis, defining changes made between sessions and recording those sessions. LifeCheck supports remote operation in two distinct ways depending on your specific requirements.

21.1 Linking and Detaching

Linking and Detaching refers to the process by which one or more LifeCheck users are able to physically detach themselves from the Factory LifeCheck database and connect to a local database running on their laptop or PC which they take racing with them. In most cases, this will require that an instance of Microsoft SQL Server is installed on the laptop or PC of the user who is being detached. When detached, a user has access only to those components and Chassis which were detached with them but in all other ways the system will behave substantially as it would if the user was connected to the Factory database.

Limited operations are possible both at the factory and by the detached user and these changes will be merged back into the factory database as the detached user is re-attached. Many administrative operations are restricted while detached as they can have far-reaching effects and would affect parts, components and other items not locked to the detached user.

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21.1.1 Setup and Pre-Requisites

In order that a department may be detached from the Factory LifeCheck database it is important to note that an existing version of Microsoft SQL Server MUST be installed on to the PC or laptop which is to hold the detached LifeCheck system. This instance of SQL Server must satisfy the following rules:-

- It MUST be of the same version as the Factory SQL Server (i.e. If the Factory SQL Server is 2008 R2 then this must also be installed on the detached system)
- It MUST have the same instance name as the Factory SQL Server (i.e. if the Factory SQL Server instance name is FACTORY\LifeCheck, the detached system SQL Server must have an instance name of <HOST>\LifeCheck)

Failure to meet these requirements will result in the detach operation failing!

Backups

Although all efforts have been made to ensure the integrity of the link and detach functions there is always the possibility that an error may occur - especially when re-attaching as this involves merging large volumes of data into the Factory database. It is therefore very important that database backups are taken of both the factory and detached database prior to re-attaching. If a backup is not taken, it is possible that if an error did occur, the factory database could be left in an interim state with some detached updates having been applied while others have not.

If an error occurs during the re-attach process, please consult Trenchant Technologies Product Support immediately - please do not re-attempt to connect as this may compound the error.

21.1.2 Detaching the Database

Before a department may be detached it must be flagged as being detachable in the Administration>Departments tab. In most cases the department should also be configured to be able with 'Can Build Chassis' and 'Can Add Miles'. Additional options which determine the behavior of detached users may be defined on the Administration>Global Settings tab.

To detach a department, you must logon under that department and select the Administrations>Remote Database menu option to display the screen shown below:-

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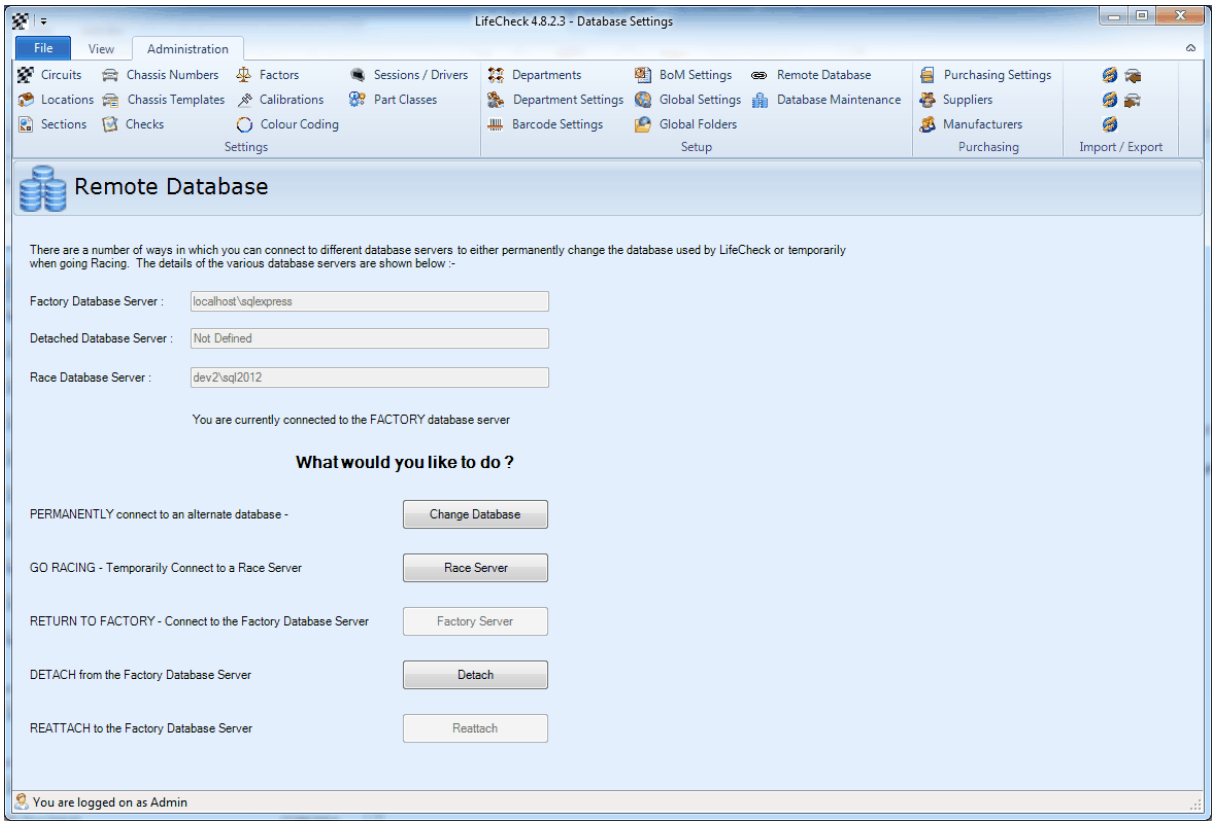

This window provides access to the various remote database functions which may be performed and also displays information about the current database and other databases which have been accessed previously.

When a department is detached the following operations will be performed:-

- LifeCheck will attempt to connect to the specified SQL Server Instance
- LifeCheck will copy the Factory database to the specified SQL Server instance. Any existing lifecheckv4 database will be deleted!
- The Department being detached will be flagged as detached in the Factory database - the detached user will be locked out of the Factory database until it is re-attached.
- All components located within the detached department - including those on the chassis within the department will be flagged as detached in the Factory database
- The LifeCheck installation on the current PC will be configured to access the detached SQL Server rather than the factory database.

While a department is detached all of the components which were detached with it will be inaccessible to factory users. The detached department will not appear within any of the department lists, such as on the re-locate screen, for factory based users preventing parts and components from being moved into or out of a detached department. Some displays, such as the Chassis View will still show components which are detached and these will be identified using a light gray background. You cannot swap detached components on or off a chassis.

Conversely, when using the detached LifeCheck installation only the detached department will be able to logon to the system and will only be able to operate on the components which were detached with that

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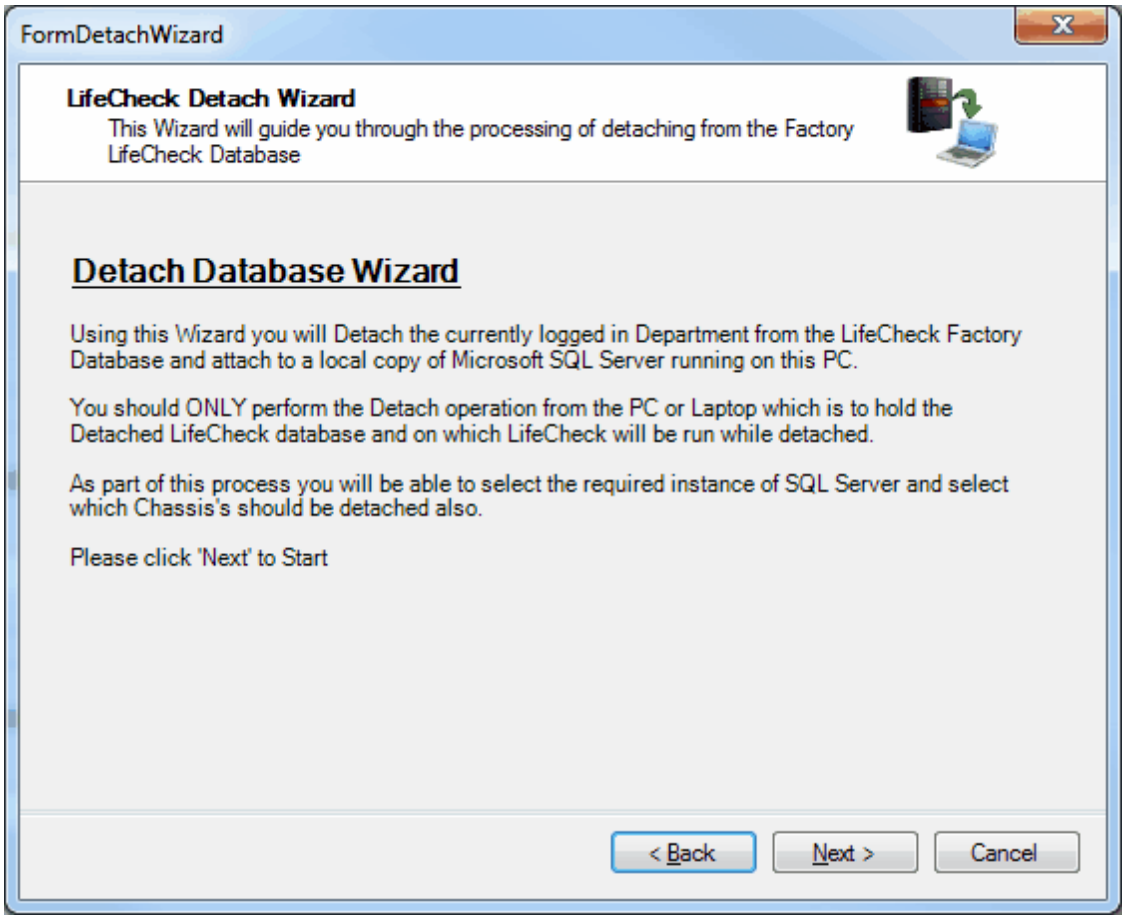
department. Components which were not detached will be highlighted using a gray background. It is not possible to move components into or out of the detached department.

Note that while it is possible to detach multiple departments at the same time it is recommended that only a single department is detached to avoid possible confusion when adding distance to a chassis and its attached components. The detach process makes use of a Wizard to guide you through the process as shown in the following section.



This first wizard page simply introduces the detach operation and gives advice on when and how to use it. Click Next to continue.

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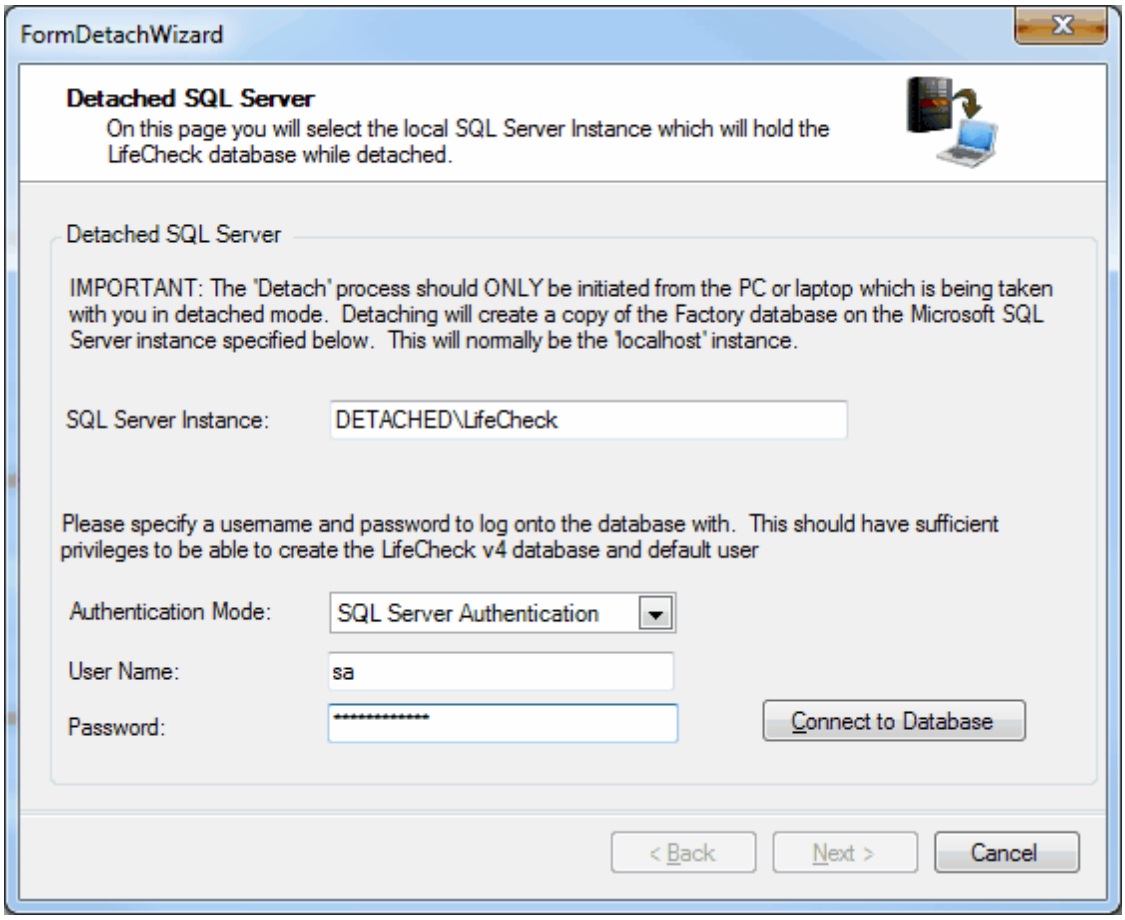

On this page enter the name of the SQL Server instance to which the LifeCheck database will be detached. This should be the instance name on the PC or laptop being taken away. It must have the same instance name as the Factory SQL Server for the detach to work, that is if the factory database instance is called FACTORY\LifeCheck, the detached instance must also have an instance of LifeCheck.

In most cases, SQL Server authentication should be selected and the credentials of a privileged user on the detached SQL Server specified. It is recommended that the 'sa' or equivalent user be specified to avoid any possible security issues while detaching. Click **Connect to Database** to test the credentials by establishing a connection to the detached database server. If successful, LifeCheck will display an appropriate message and the **Next** button will be enabled. If an error occurs, identify and correct the problem and re-try. Note that if there is already a LifeCheckv4 database on the detached database server, a warning will be displayed. This is often the case if you have previously detached and the old database may be safely over-written.

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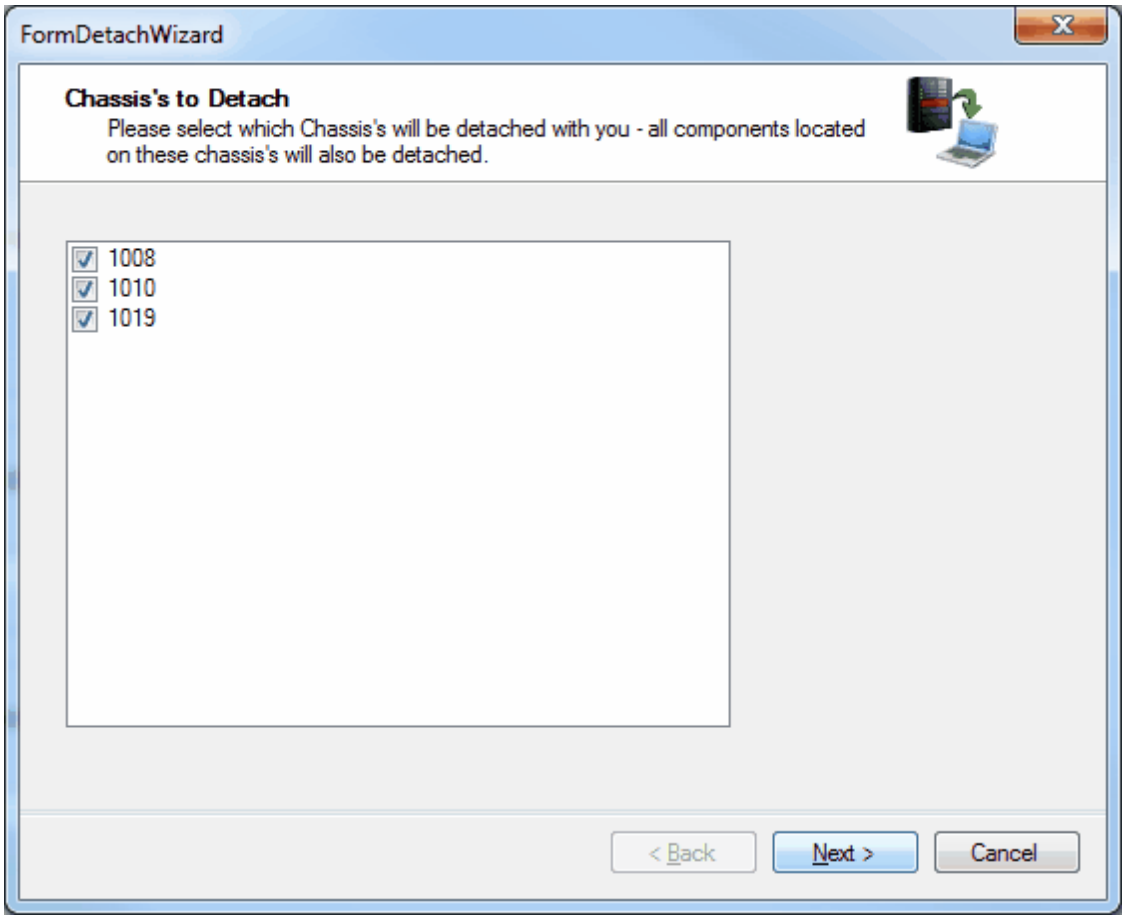

When detaching it is possible to take either all or just selected chassis's with you. Any chassis's which are not detached are available to be detached by other users and/or may be modified by factory workers. Once all required chassis's have been selected, click **Next** to continue.

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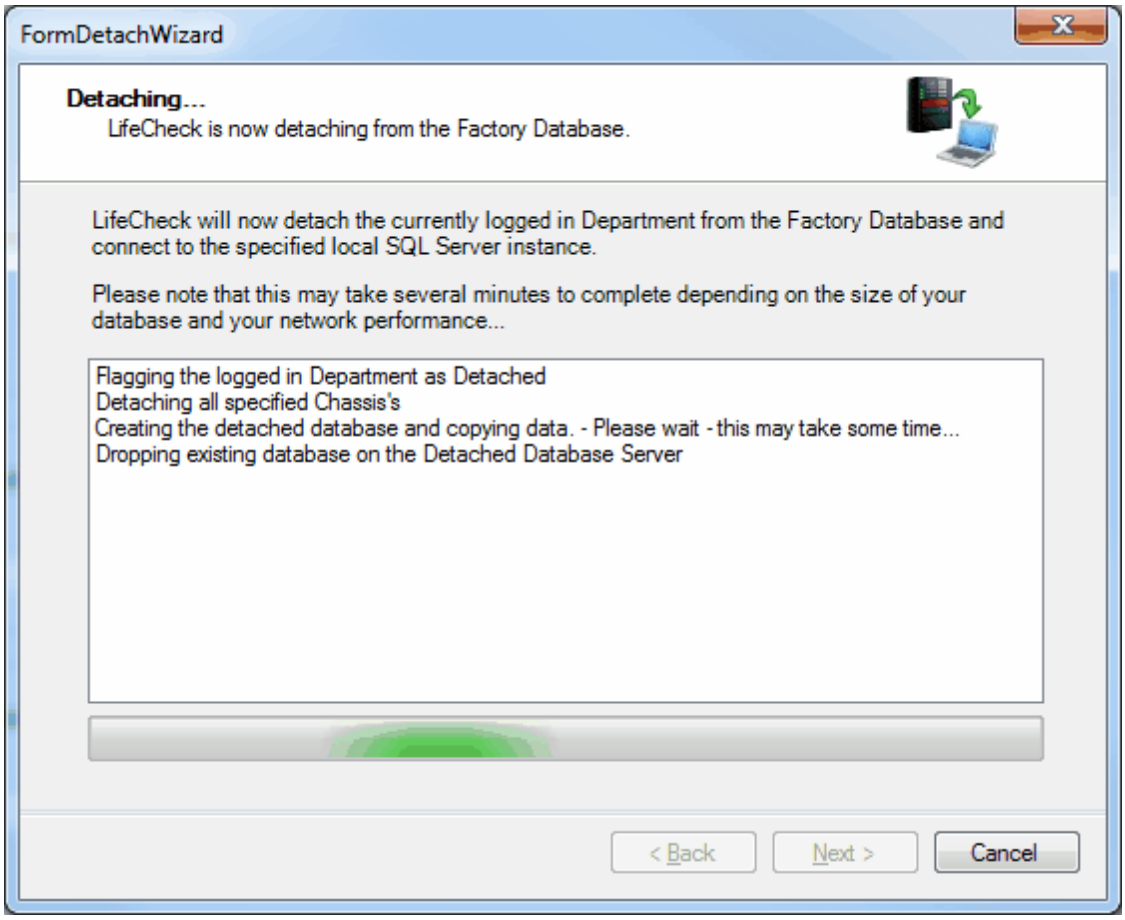

On entry to this screen, the detach process will begin automatically. Note that this can take several minutes to complete depending on network and system performance. Once the department has been detached, LifeCheck will exit and you will only be able to logon as the detached department connecting to the detached database.

21.1.3 Operations while Detached

In the main, LifeCheck will operate while Detached exactly the same as when attached to the Factory database. There are however some user interface differences and limitations as to what operations are allowed while detached to avoid the possibility of conflicting changes being made to the factory and detached databases.

Detached Users

When a department is detached, all components located within that department are also detached and are 100% accessible to the detached department but are inaccessible to non-detached (factory) departments. Detached departments may not edit parts or any components which were not detached with it. They may also not re-locate components into or out of their own department.

Subject to the settings defined under Administration>Global Settings, the detached department may be able to add distance to the chassis to record sessions run. Note however that this will only add distance to those components located on the chassis within the detached department which will not include components located on the chassis within other (non-detached) departments. As such it is ***highly***

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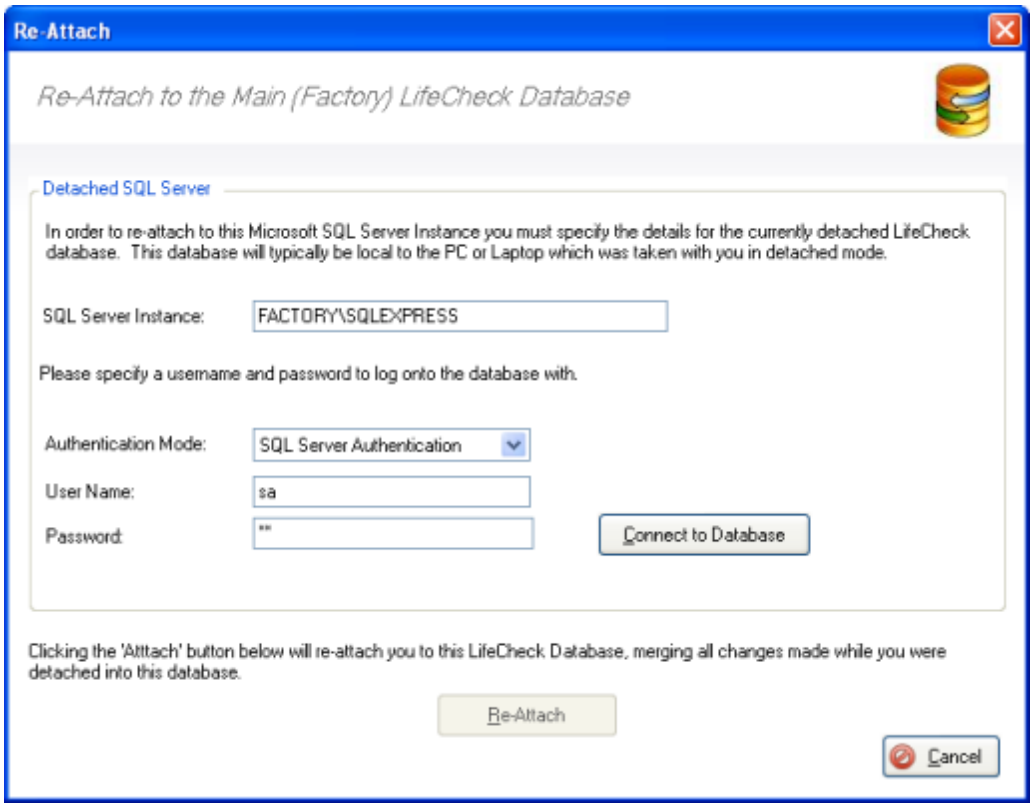
recommended that the department has all chassis components re-located to its instance of the chassis before it is detached to avoid confusion when recording sessions.

Factory Users

Factory (non-detached) departments are also limited in their operations when one or more departments have been detached. The main restriction is that they will be unable to access any components which are flagged as being detached. Subject to the settings defined under Administration>Global Settings, factory departments may or may not be able to add distance to the chassis to record sessions run. The default is for distance to be added by detached departments only.

21.1.4 Re-Attaching to the Factory Database

Once the detached department returns to the factory they will need to re-attach and synchronize with the Factory LifeCheck database. This is done by clicking the **Reattach to Factory** button on the Remote Database window displayed previously. The following screen will be shown.



The details of the factory database should be pre-set however if incorrect, make any changes necessary and click **Connect to Database**. If the factory database is accessible and a connection was established, the **Re-Attach** button will be enabled. Click to begin the re-attach process.

Re-attaching to the factory database typically will be performed within a few seconds however the number of components detached, changes made while detached and network connectivity may result in this process taking longer. During the re-attach process, LifeCheck will :-

- Copy all detached components back to the Factory database

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- Copy all checks for detached databases back to the Factory database
- Add any parts, suppliers, manufacturers, circuits, sessions etc added while detached into the Factory database
- Add any chassis and component history records created while detached into the Factory database
- Mark the detached department as re-attached
- Mark all components detached by the department as re-attached.
- Update the LifeCheck configuration to re-connect to the Factory database

Once this process is complete, LifeCheck must exit and restart.

21.2 Using a RACE Server

In many cases when you go racing, a Race Server will accompany you to the track. In this case, and as an alternate to the link and detach functionality discussed previously, LifeCheck can copy the Factory LifeCheck database to the Race Server and attach all users to this database temporarily. The main advantage of this approach over link and detach is that because the entire database is copied to the Race Server multiple users may connect to this server and may make use of LifeCheck as if they were still back at the factory with no limitations. On return to the Factory, the reverse process is performed with the Race database being copied over the top of the Factory database and all users re-connected to the factory.

Obviously there is a drawback in this approach which is that the Factory database cannot be accessed other than via the LifeCheck web interface until the race team return and re-connect. In situations where all LifeCheck users are at the circuit this is however not an issue and in fact is desired. The Race Server functionality also does not require each user to have a copy of SQL Server installed on their PC as it still makes use of a centralised database server and is a more 'robust' solution as the entire database is restored on return to the factory rather than relying on identifying and replicating each individual change made while detached.

21.2.1 Setup and Pre-Requisites

Prior to using the Race Server functionality you should ensure that a compatible version of Microsoft SQL Server is installed on the race server. It is important that the version of Microsoft SQL Server is the same on both the Factory and Race servers otherwise the backup and restore functionality will fail.

21.2.2 Connect to the Race Server

The actual process of connecting to the Race Server differs depending on whether you are the first user to perform this task or a subsequent user. To initially connect to the Race Server, you must logon to LifeCheck and select the Administrations>Remote Database menu option as detailed for Link and Detach previously. Now click the **Race Server** button to begin the process of connecting to the Race Server.

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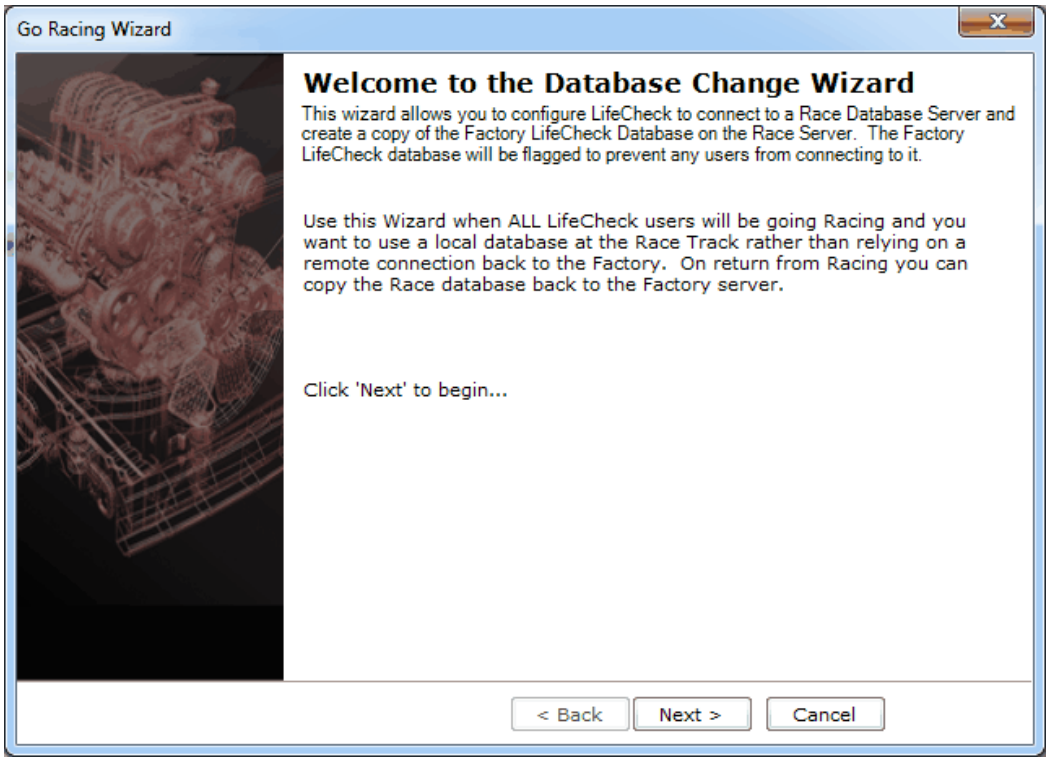
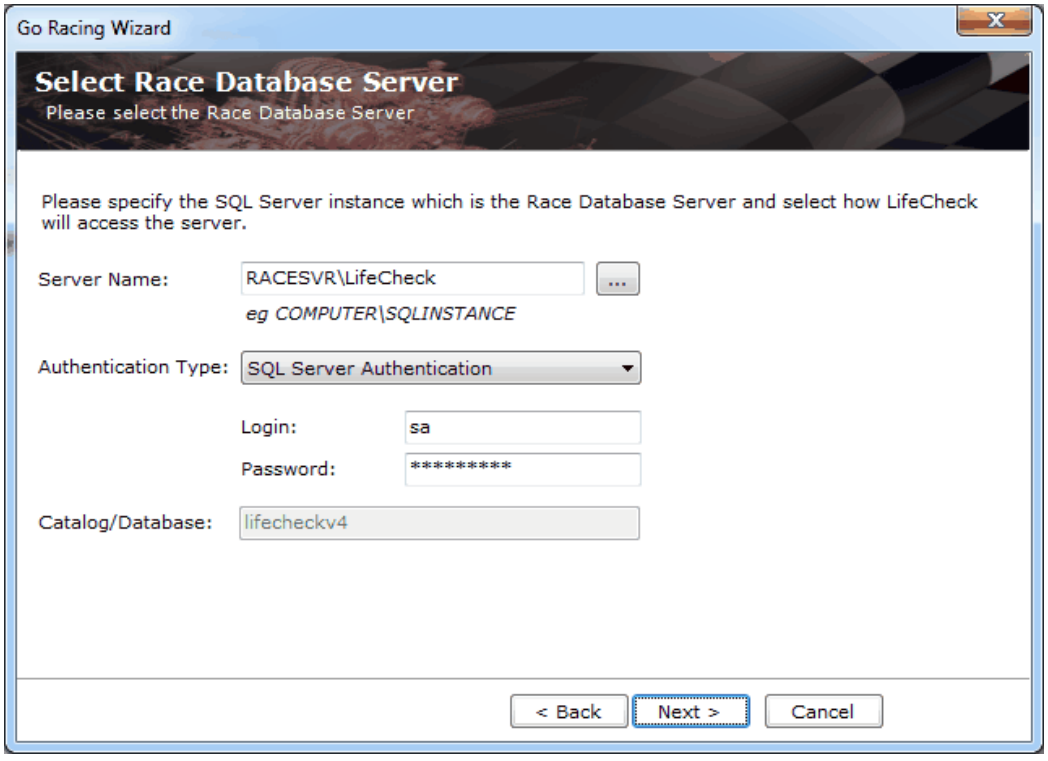


The introductory screen just details the process which is about to be initiated, click **Next** to start. The following screen is shown :-



On this page enter the name of the Race SQL Server instance to which the Factory LifeCheck database

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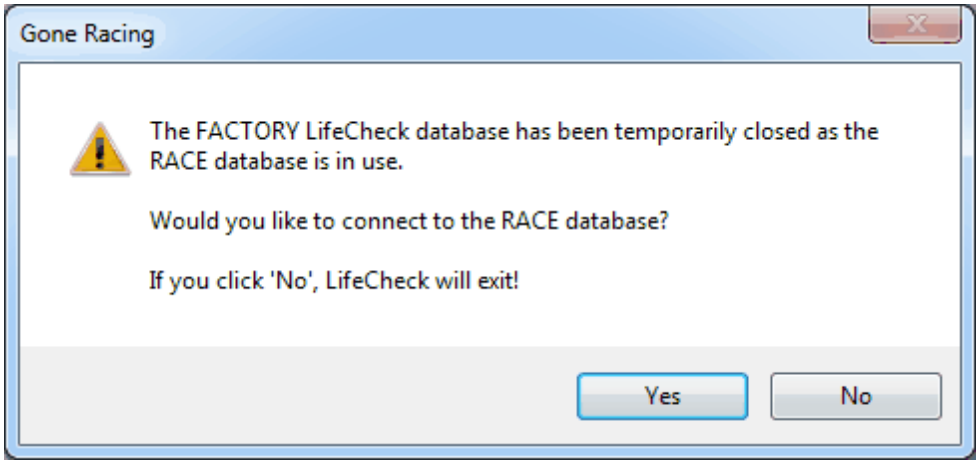
will be copied.

In most cases, SQL Server authentication should be selected and the credentials of a privileged user on the Race SQL Server specified. It is recommended that the 'sa' or equivalent user be specified to avoid any possible security issues while detaching. Click **Next** to test the credentials by establishing a connection to the Race database server. If an error occurs, identify and correct the problem and re-try. Note that if there is already a LifeCheckv4 database on the Race database server, a warning will be displayed. This is often the case if you have previously attached to the Race Server and the old database may be safely over-written.

The final screen in this series gives you an option to abort from connecting to the Race Server. Click **Finish** to initiate the process of connecting to the Race Server. LifeCheck will perform the following actions :-

1. Connect to the Race Server
2. Copy the Factory Database to the Race Server
3. Flag the Factory Database as **Closed**
4. Update the Factory database with the credentials for the Race Server
5. Flag the Race Database as **Race**
6. Update the database connection for this user to point to the Race Server
7. Restart LifeCheck

Note that point 3 and 4 are important as they will affect other users who attempt to connect to the Factory database as they will no longer be able to access the Factory database. On entry to LifeCheck these users will see the following window :-



This is how other users are able to connect to the Race Server. Clicking **No** will cause LifeCheck to exit. Clicking **Yes** will connect the user to the Race server. Note that the connection is not tested at this point and as such at this time the user need not have access to the Race Server. This is useful if the user wants to disconnect from the Factory server but the Race server has already been sent to the track. This operation will update the users connection to point to the Race Server and restart LifeCheck.

21.2.3 Operations while Racing

In all aspects while using Race Server mode, all operations are available within LifeCheck OTHER THAN Link and Detach. All users should be able to work as if they are at the Factory.

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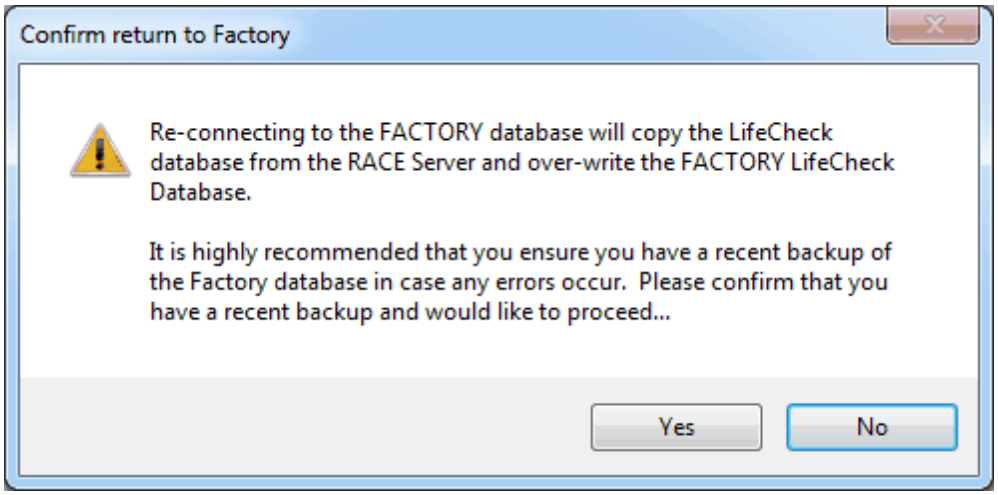
21.2.4 Re-Connecting to the Factory Server

On return to the Factory it is important to update and re-connect to the Factory server. This is easy to do within LifeCheck simply by going to the Admin>Remote Database window and select **Factory Server**. The following window will be displayed :-



Take note to ensure that you do have a recent backup of your factory database just in case an error should occur! Also note that the details of the factory server are well known to LifeCheck and as such they will not be asked for. Click **Yes** to begin the process of re-connecting to the Factory Database. This process involves re-creating the Factory database and copying all of the data from the Race Server and as such may take some time to complete. When complete, LifeCheck will restart and be connected to the Factory database. The process involves the following steps :-

1. Drop the Factory LifeCheck Database
2. Create a blank Factory LifeCheck Database
3. Copy all LifeCheck data from the Race Server to the Factory Server
4. Flag the Race Database as Closed
5. Flag the Factory Database as Open
6. Update the database connection for this user to point to the Race Server
7. Restart LifeCheck

For the second and subsequent users returning to the Factory they will still be connected to the Race Server. On logon to LifeCheck the Race Server will be detected as having been closed and the users will be prompted to re-connect to the Factory database. If accepted, their database connections will be reset to point to the Factory server and LifeCheck will restart.

22 Optional Modules

The following sections detail optional functionality within LifeCheck and may not be available within your system. Please contact Trenchant Technologies, Ltd if you would like to add any of these modules to your licence.

22.1 Wheel Lifing

The Wheel Lifing module is an optional, separately licensed bolt-on for LifeCheck which allows the lifing of wheels to be externalized from the lifing of the chassis as a whole and instead lifed on an event by

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event basis.

Wheel lifing complicates the lifing of other components as the frequent wheel changes would normally necessitate a single session being broken into multiple sub-sessions as wheels are changed when in the majority of cases no other components on the car are changed. This has often meant that wheels are not included within the chassis build and are lifed externally from LifeCheck which is obviously undesirable.

While it can be useful to know which session a specific set of wheels (a 'wheel set') has raced in the primary goal is to identify the chassis on which the wheel set was placed and the distance covered by the wheel set and it would be a significant advantage if this could be done without having to record separate sessions for the chassis as a whole unless that too had changes made to it.

Wheel Lifing and Event Names

The Wheel Lifing Module addresses these issues by separating the lifing of wheels from that of the chassis as a whole. To allow this to be done, it is important that LifeCheck is able to group associated sessions together and then allocate the distance run cumulatively across those sessions to wheel sets. This is achieved by the use of **Events**. Event names are defined within LifeCheck under **Administration>Data Setup** and their use should be set as mandatory by enabling the **Require Event Selection in Record Session** option within **Administration>Global Settings**. With this enabled, all sessions recorded must have an associated event specified and this allows LifeCheck to group the sessions together.

Wheel Part Types

As part of the wheel lifing module, LifeCheck now allows parts to be defined as **Wheel** and **Wheel Set**. A wheel set may contain 0 or more wheels whereas a wheel is a bottom level item in a similar way to assemblies and parts. It is important that Wheels and Wheel Sets are defined as only wheel sets may be selected within the 'Wheel Lifing' module and only parts of type 'Wheel' may be placed within a Wheel Set. In addition, wheels and wheel sets should not be placed on to a chassis rather handled external to the chassis.

It is often useful to keep wheels and wheel sets together in a dedicated location however in most respects they can be treated in the same way as assemblies and components in that wheels can be dragged and dropped into and between wheel sets as required and wheel sets can be moved between departments and locations.

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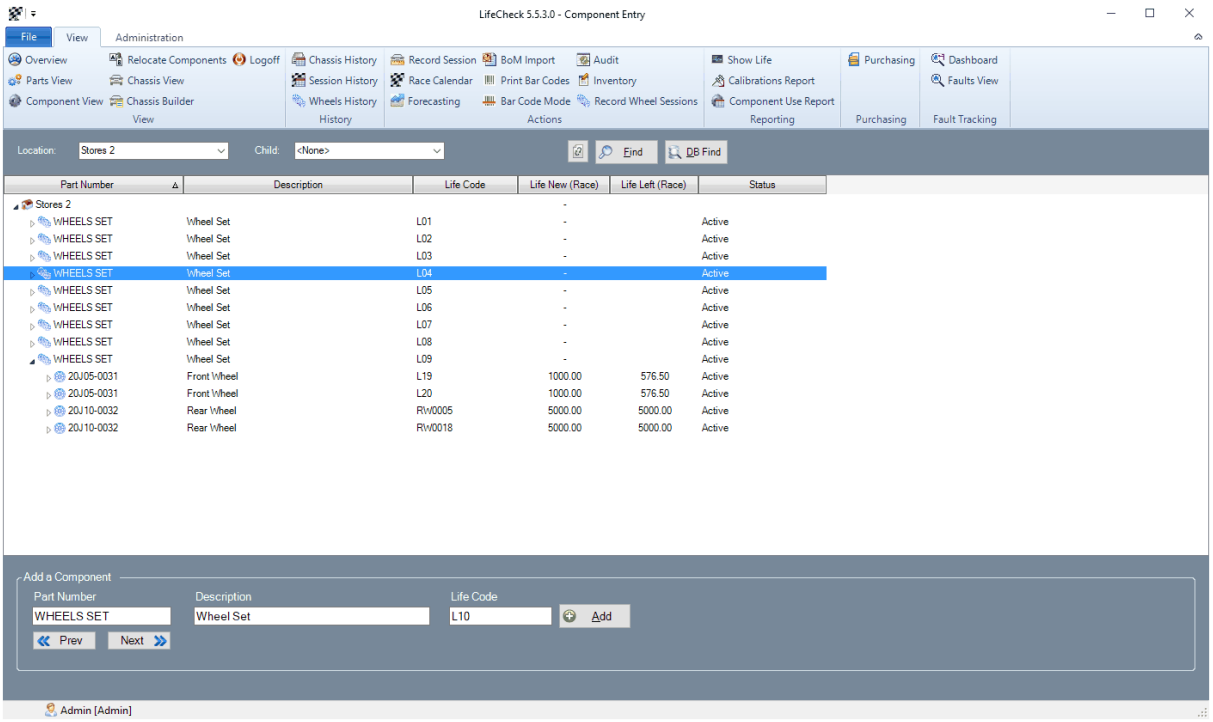

22.1.1 Recording Wheel Sessions

Wheel sessions should only be recorded after all sessions within the event have been recorded for the chassis as this ensures the total distance run in the event is available. To record wheel sessions select **Record Wheel Sessions** from the main menu. The following window will be displayed :-

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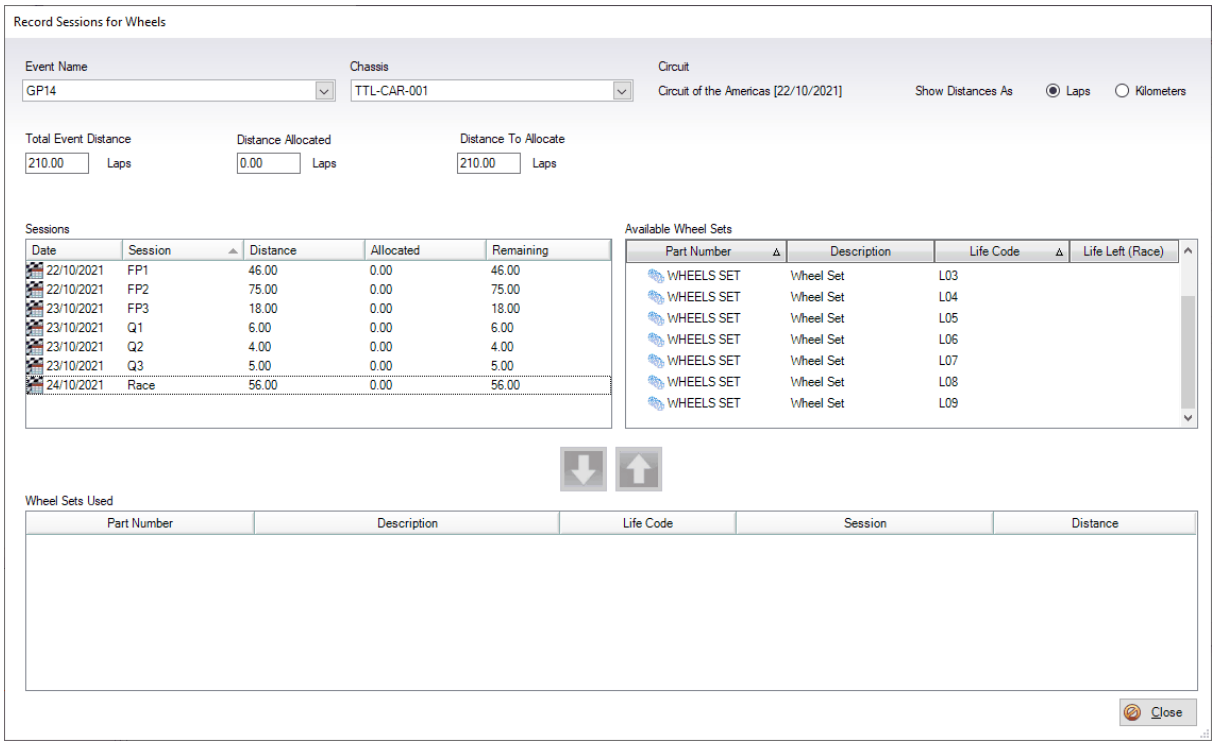
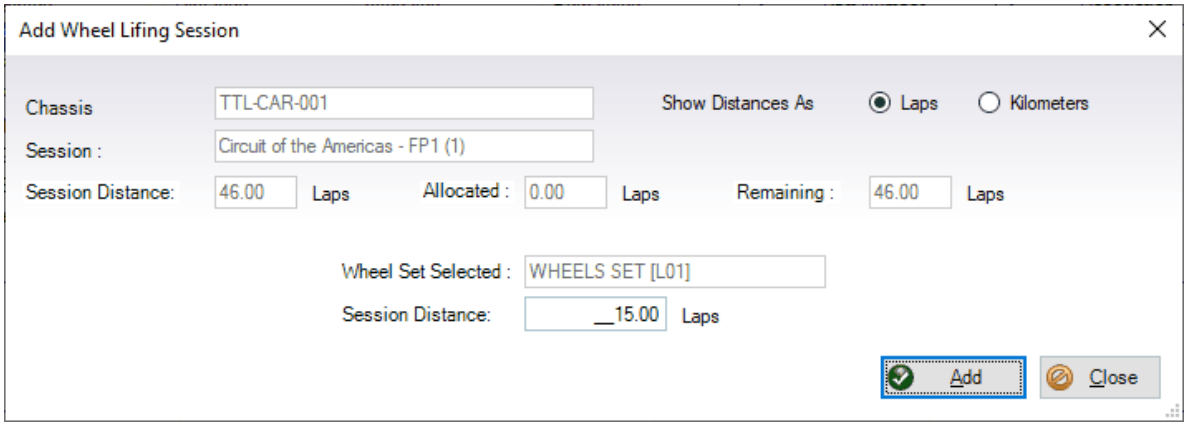


In the above window, the event and chassis have already been selected causing the screen to display the sessions run within that event and the distance / laps run. The available wheel sets are also listed as **Available Wheel Sets**. The general process is to select a session in the left pane and a wheel set used in that session from the right pane and click the 'down arrow' to add that use to the list of wheel sets used. The following window will be displayed :-



In the above window, the **FP1** session has been selected together with the L01 wheel set. LifeCheck has calculated that 46 laps were run in FP1 and allows the specification of how many laps the selected wheel set ran IN FP1. Click **Add** to assign the selected number of laps (or distance) to the wheel set. In this case, as not all of the distance run in FP1 has been assigned, we can now select a different wheel set or sets and allocate the remaining distance to those sets. The screen shot below shows the use of 3 sets of wheels during FP1.

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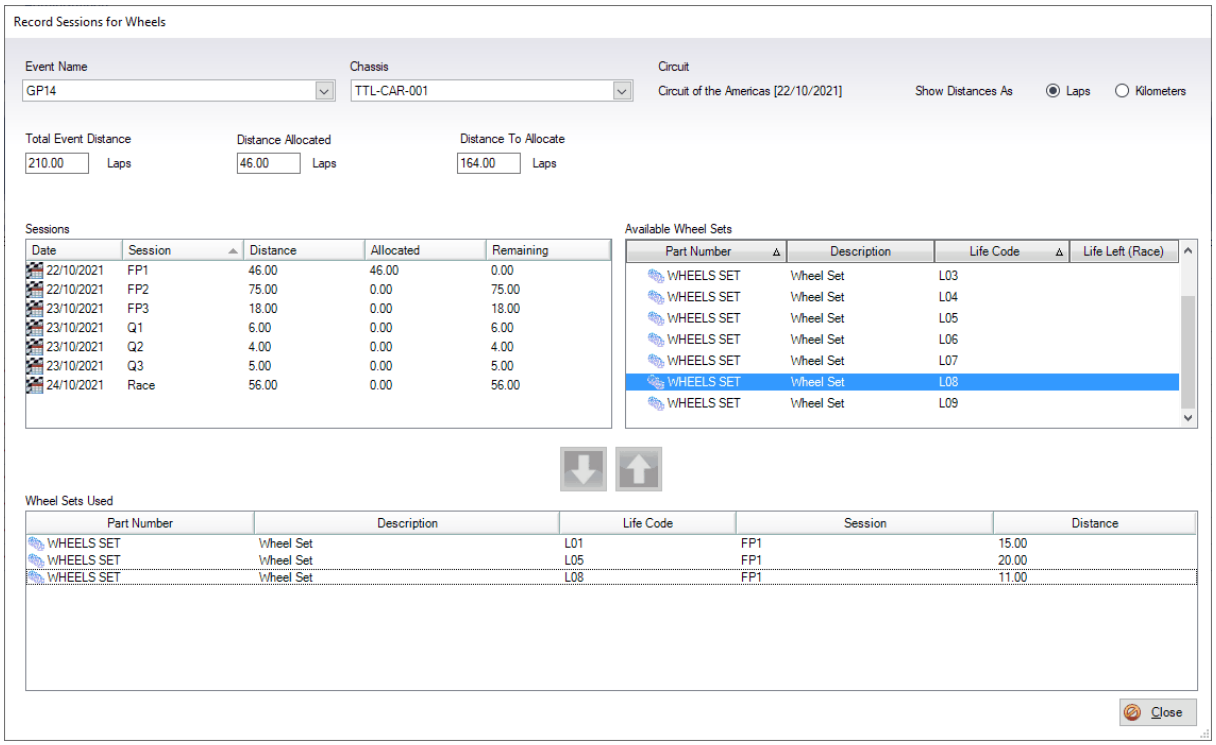

This process can then be carried on for the remaining sessions until the entire distance run in the event has been assigned to the various wheel sets. If you make a mistake, this can be corrected by selecting the wheel set use in the bottom pane and clicking the **Up** arrow to remove that wheel set use from the list. The wheel set use is recorded as you exit from the **Record Sessions for Wheels** windows. You can of course close this window and return at a later date to make further additions meaning the entire event need not be defined in a single sitting.

LifeCheck will not allow you to assign more laps to wheels than were run in any of the individual sessions or for the event as a whole. In addition you may if preferred display distances rather than laps subject to the same total restrictions.

22.1.2 Wheel History

The Wheels History screen is displayed by selecting **Wheels History** from the main menu. It may be run in 1 of 3 modes, Event; Wheel and Wheel Set.

22.1.2.1 Display by Event

In this mode, wheel history will be displayed on an event by event basis meaning that once an event is selected, LifeCheck will display a list of the individual sessions recorded for that event and allow you to drill down into those sessions to see the wheel sets and then the individual wheels within the set as shown below :-

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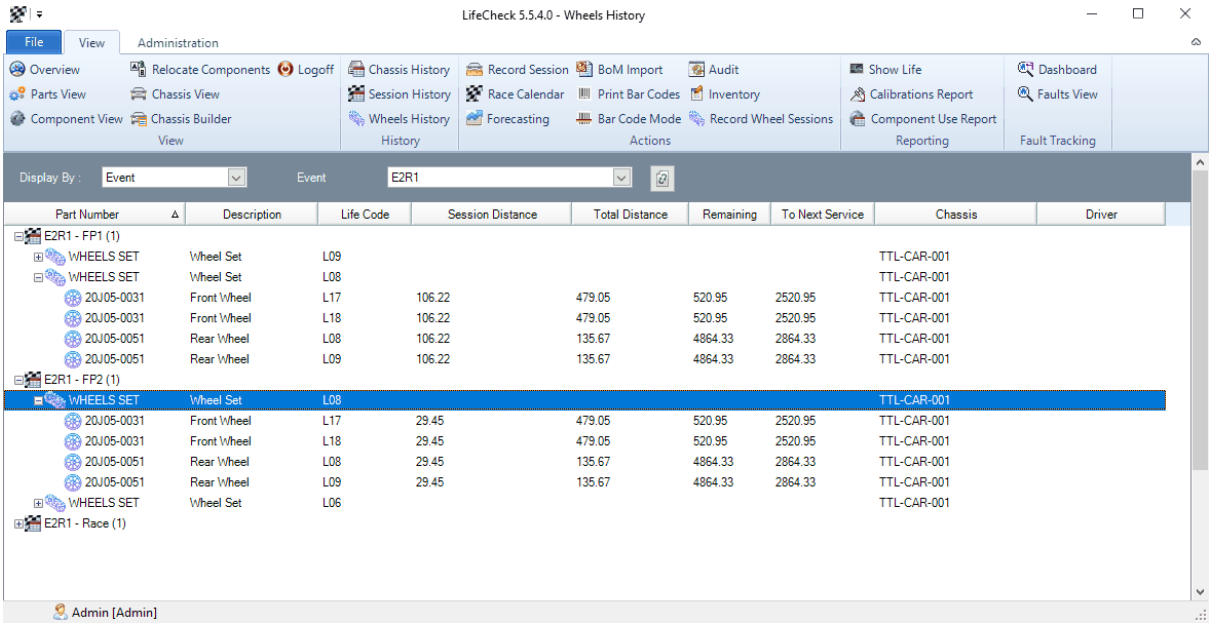
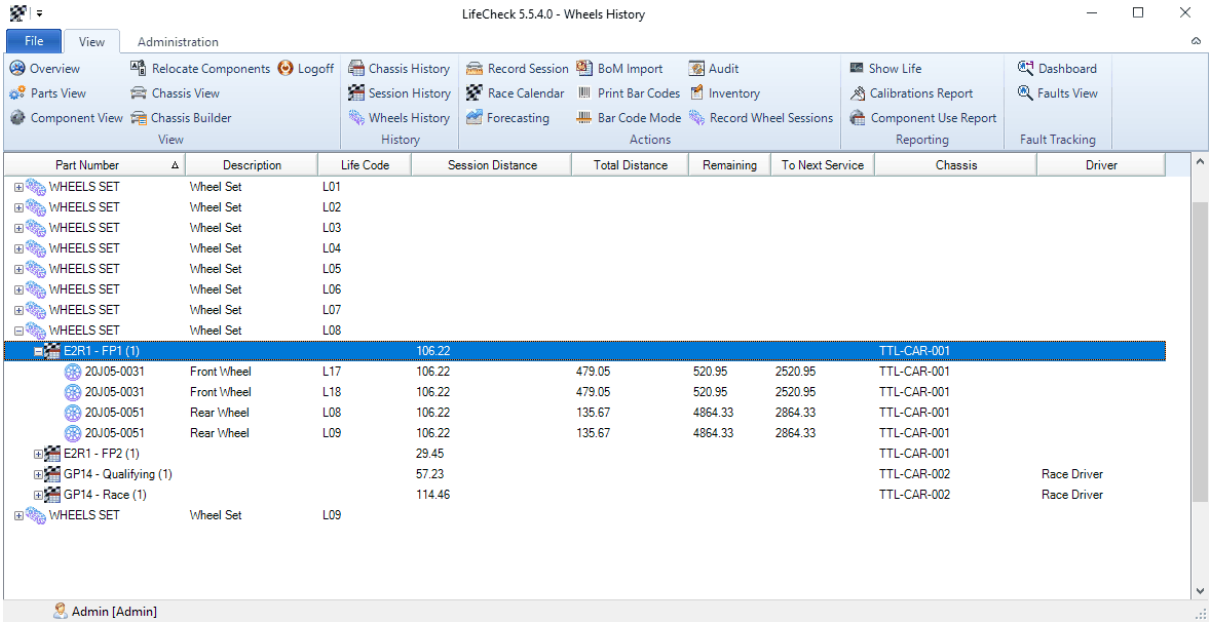


In this way we can see which wheels (and sets) were used during the event on a session by session basis.

22.1.2.2 Display by Wheel Set

In this mode, Wheel History will be displayed for each wheel set. Expanding a wheel set will drill down to display the event/sessions in which the wheel set ran and then the individual wheels which made up that set for the selected session. Note the wheel set could in theory change between sessions to contain different wheels and this is supported by LifeCheck.



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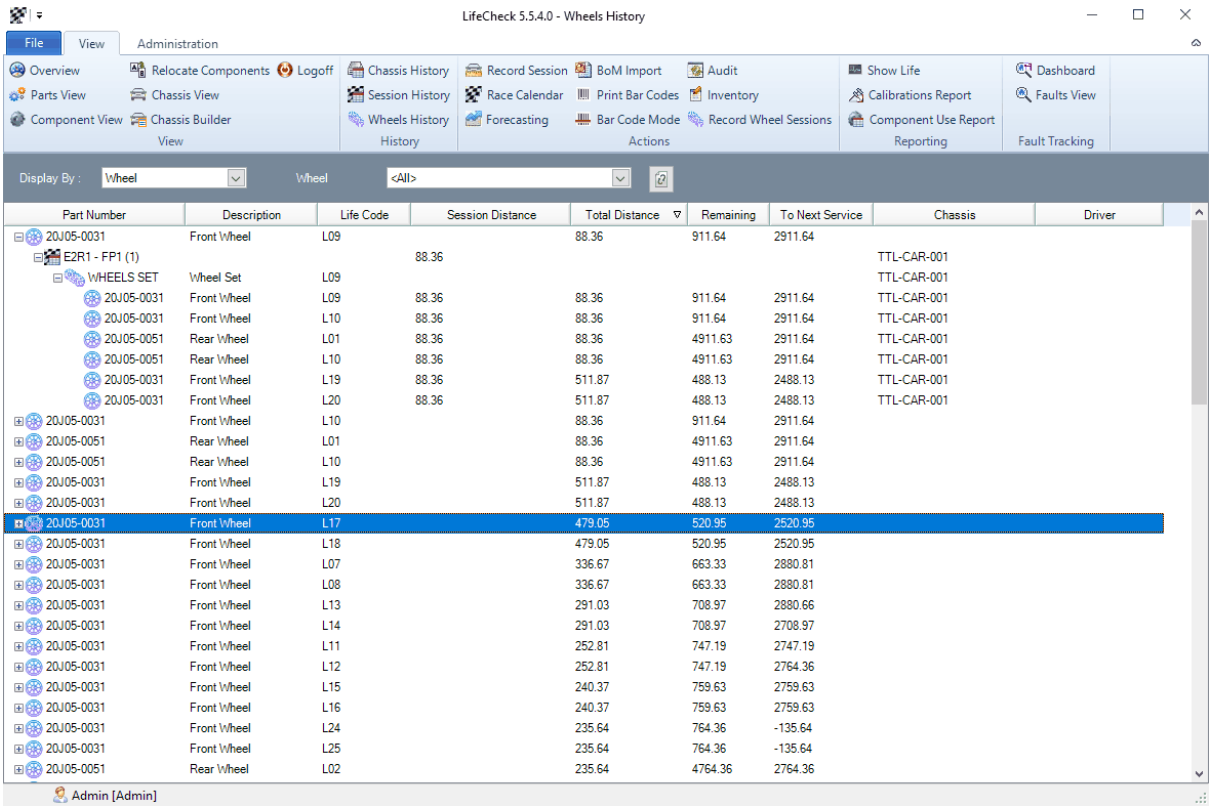
22.1.2.3 Display by Wheel

In this mode, Wheel History will be displayed on a wheel by wheel basis first displaying the event / sessions in which the wheel has run followed by the wheel set of which it was a part and finally displaying the other wheels which were in the set as shown below.



22.2 Fault Tracking

The Fault Tracking module is an optional, separately licensed bolt-on for LifeCheck which implements a fully featured system by which faults relating to assemblies and components may be tracked. Faults may be assigned to different staff members, given a user definable priority and status and notifications sent to nominated users as faults are created, updated or closed.

22.2.1 Faults View

The Faults View is the main screen for both recording and viewing faults defined with the system. It provides a number of filters to zoom in on specific fault criteria.

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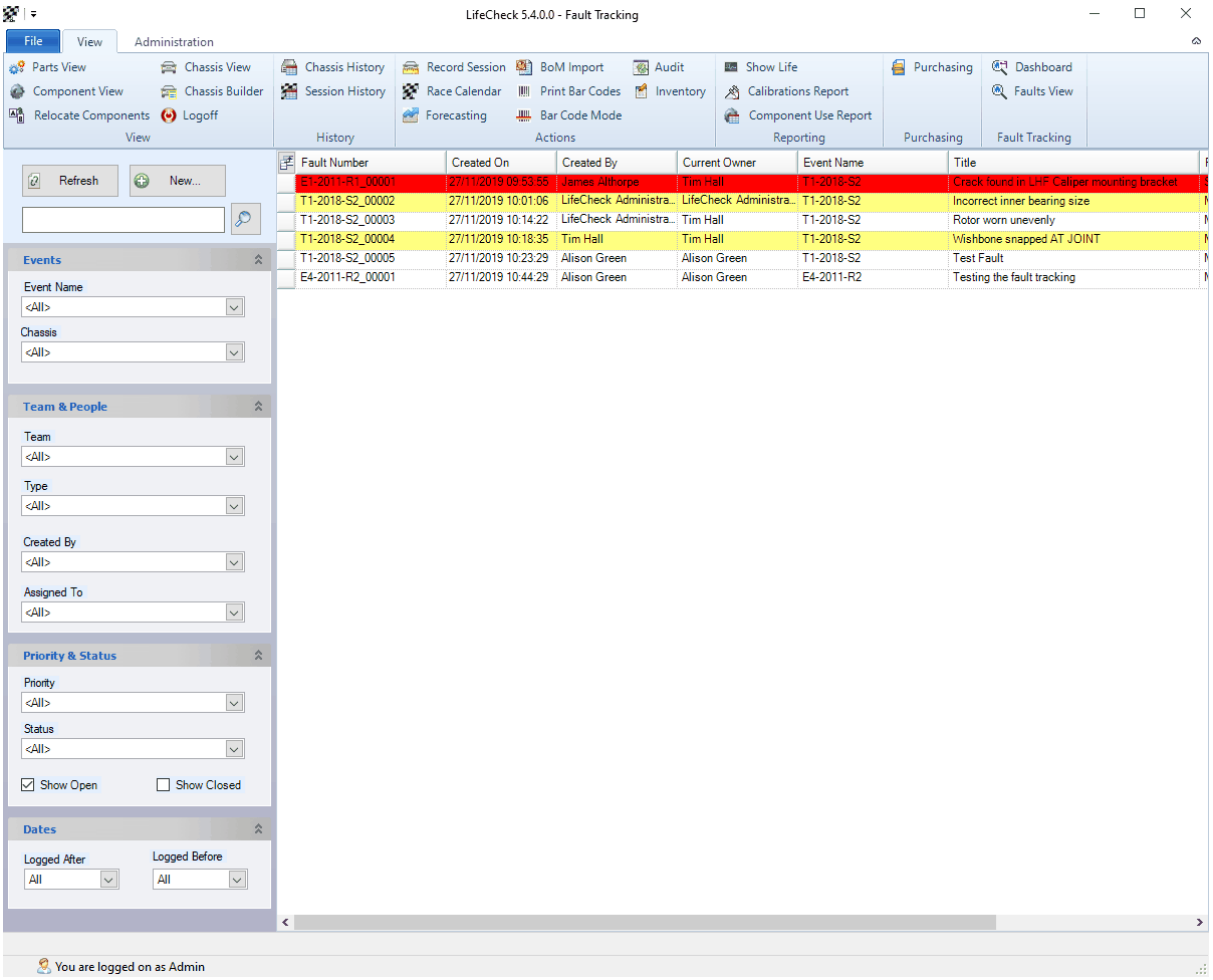

Here we can see a number of faults which are currently open - closed faults are by default hidden on this screen but may be included by clicking the **Show Closed Faults** checkbox in the **Priority & Status** group. Changes to the filters are only applied when the **Refresh** button is clicked. Right clicking in the right hand pane will display a context menu from which the list of faults may be exported in a variety of formats including to a Microsoft Excel Workbook.

There is also a Search box to allow specific faults to be found in the database. This performs a search for the specified text anywhere in either the fault number or fault title and will display all matching faults. The search text will be ignored if **Refresh** is clicked but it is advisable to clear the search box once it has been used to avoid confusion.

It is also possible to customize the display to show more or less detail about the fault. To do this click the icon in the top left of the faults list to display the **Column Chooser**.

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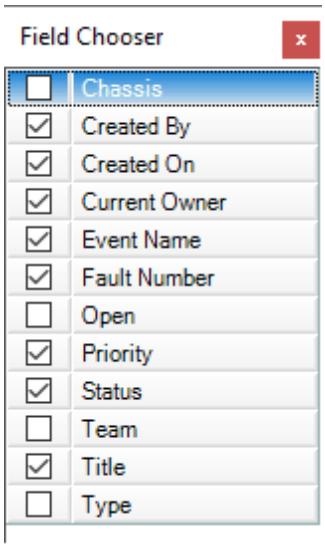

The current layout of this screen will be remembered and restored when next displayed. This includes the columns being displayed and their width.

Double-clicking a fault row will display the full attributes of the fault and allow many aspects of the fault to be modified.

22.2.1.1 Configuring the Fault Tracking System

Before you are able to make use of the Fault Tracking module it will be necessary to configure the system to suit your requirements. Configuration of Fault Tracking starts by selecting the **Administration>Fault Tracking Setup** from the main menu.

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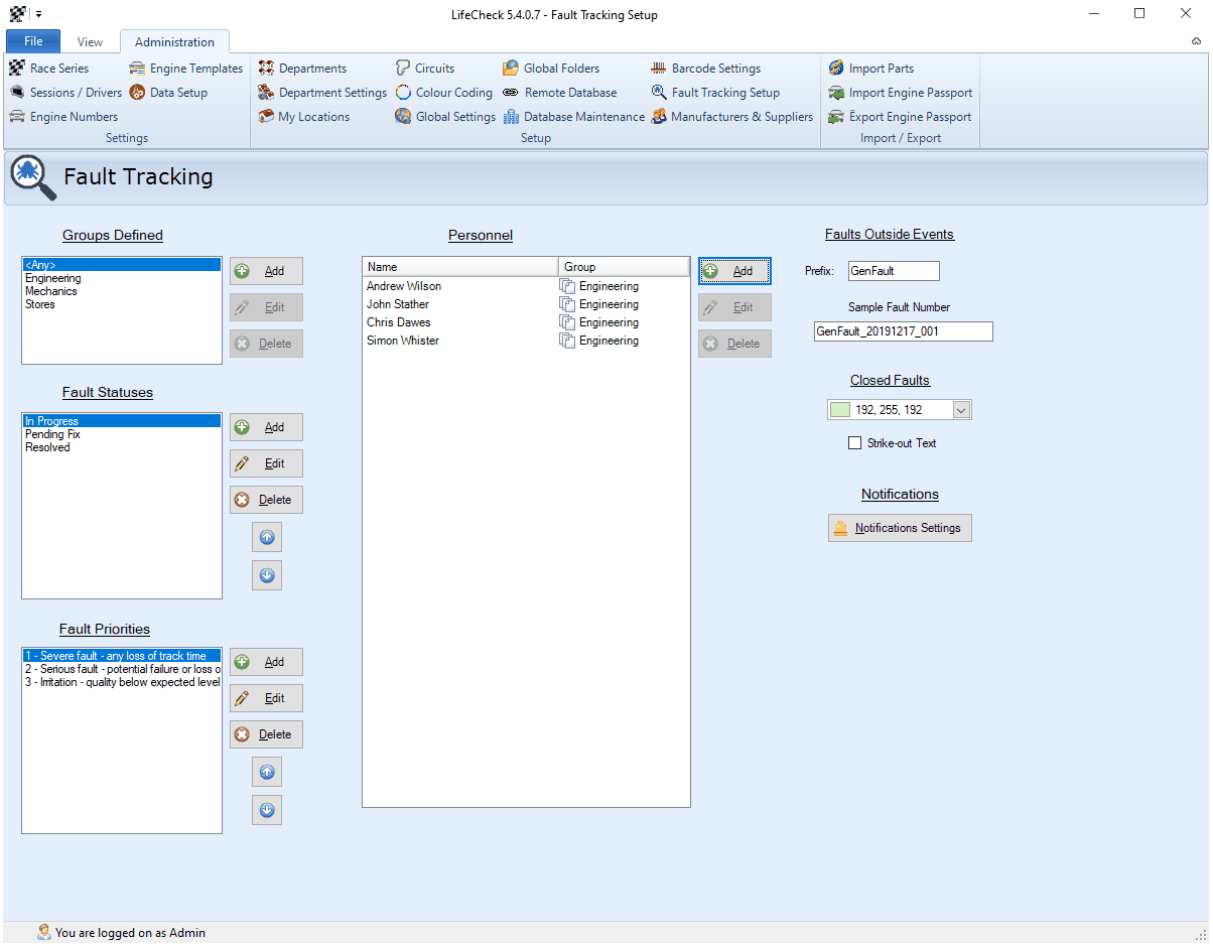

You may find that a number of default entries have been added to the Fault Status and Fault Priority lists. You can add, amend or delete entries in these lists as required by clicking on the appropriate button to the right of the list

22.2.1.1.1 The Basics

The Fault Tracking module allows faults to be recorded against components created within the LifeCheck database. Each fault has a brief overview title and a more detailed description as well as being set a specific status and priority from user definable lists. Faults may optionally be assigned to a nominated user and may have 0 or more components connected to the fault - these are typically the components for which the fault has been created or those directly affected by the fault.

As the Fault is progressed, it may be re-assigned to different users or edited to change various attributes such as its current status or priority. Faults may have a date stamped list of notes associated with them and may also have documents attached to them to provide a complete record of all data which needs to accompany the fault throughout the system.

All changes made to a fault are maintained within the fault history. This details when the fault was created, any changes made to the fault and by which whom and also when the fault is re-assigned and finally closed.

A fundamental aspect of the Fault Tracking system is that normally faults are linked to Events or more specifically to an **Event Name**. One of the main reasons for this is that all faults are allocated a unique

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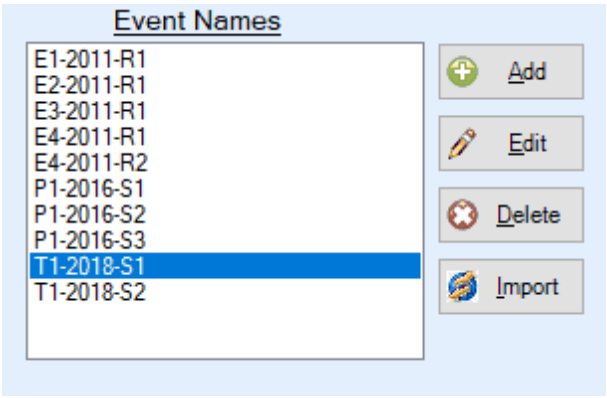
Fault Number which you can subsequently use to search for or identify the fault in the **Faults View**. Fault Numbers are based on the **Event Name** with a numeric suffix so if your **Event Name** has been defined as **E1_2020_R1**, your fault numbers will start at **E1_2020_R1_00001** and increment from there for each fault recorded (for that event name). The advantage of this approach is that it allows faults to be grouped together and it is possible to easily identify which faults have occurred at each event.

It is always possible however that a fault needs to be logged at a time when it is not currently on the primary assembly and may not have even run in a session. It is possible to log faults without relating them to an event but where possible it is advisable to connect the fault with a primary assembly and perhaps a specific session. Where an event name is not available, LifeCheck will create a fault number based on a prefix, specified within Fault Tracking Setup, the date and a sequential 3 digit number which resets for each day.

Event names are normally optional when recording sessions however where the Fault Tracking system is to be used they should be considered Mandatory. It is therefore important that, prior to recording your first fault within LifeCheck, certain initialization tasks are performed

Making Event Names Mandatory

Login to LifeCheck as the **Admin** user and selected **Administration>Global Settings** from the main menu. Within the **User Interface** section ensure that **Require Event Selection in Record Session** is checked. Exit from this screen to ensure that your changes are saved. Now is a good time to actually define the event names which will be used going forward when recording sessions. To do this select **Administration>Data Setup** from the main menu.



In the above screen shot a number of event names have already been defined. These can be added to, edited or deleted as required. It is also possible to 'Import' Event Names which have been previously manually entered when recording sessions in older versions of LifeCheck - this allows faults to be recorded against historical events if needed. On clicking **Import**, LifeCheck will scan previous Chassis History records for any event names having been specified and will create entries in the new **Event Names** table for any which do not already exist.

Another advantage of linking faults to Event Names is that they are then implicitly linked both to a Chassis (or other top level assembly) and the sessions run by that chassis at the event. This means that LifeCheck is able to identify which possible components could be linked to that fault based on what was running in the session and also allows faults to be analysed based on attributes of the Chassis.

Chassis Attributes

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As part of the changes to support Fault Tracking, LifeCheck has been enhanced to allow the attributes held for each Chassis to be customized. A total of 6 different attributes are linked to each chassis in the database. The first 4 attributes are simple text fields whereas attributes 5 and 6 are linked to user definable lists. By default, attribute 5 is labeled 'Team' and attribute 6 is labeled 'Type'. These attribute labels may be defined in **Administration>Global Settings>Terminology**.

The lists from which you can select for 'Team' and 'Type' are maintained using **Administration>Data Setup>Other Lists**. While it is not mandatory to specify these lists and select for each chassis, doing so does improve the reporting as it allows faults to be interrogated based on these attributes.

22.2.1.1.2 Personnel and Groups

Personnel and Groups are used both within the Fault Tracking and Purchasing Modules. Faults may be created by and assigned to people defined in this list as opposed to the 'Department' logged in to LifeCheck. This provides better granularity with to whom faults can be assigned. Each person defined may have a group set for them. A such it is recommended to define the Groups first.

To create a new Group, click the **Add** button to the right of the Groups list and in the window displayed enter a new unique name for the group to be created. Note that the new Group cannot have the same name as an existing entry.

To edit a Group, double-click it in the list or select it and click the 'Edit' button. A window will be displayed where you can change the name of this group. Again note that the name entered must not duplicate an existing entry.

Once one or more Groups have been defined you can continue to define personnel - these are the people who will be flagged as the creator of a fault and to whom a fault may be assigned.

Personnel
To create a new Person, click the **Add** button to the right of the Personnel list to display the following window :-

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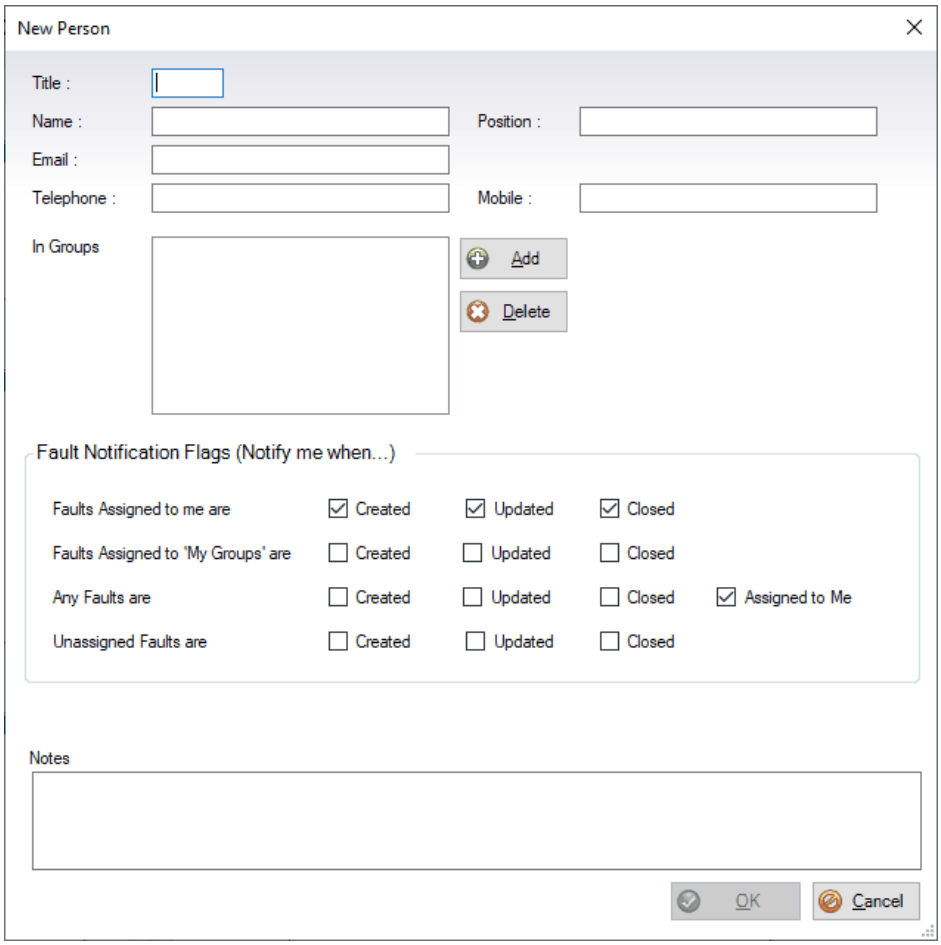

Enter the general attributes for the person and then continue to the **Fault Notification Flags**. These flags determine what notifications this person will be sent when faults are created, updated, assigned or closed. Each person can be allocated to one or more groups, these will affect which notifications they will be sent (if any) as notifications can be based on groups to which people are allocated. To assign a person to a group, click **Add** to the right of the group list and select the appropriate group. In a similar way, removing a person from a group is done by selecting the group in the list and clicking **Delete**.

Please note, it is important that the email address for the person is specified as this is the primary notification mechanism!

22.2.1.1.3 Fault Statuses

Faults defined within LifeCheck must be assigned a specific Status. If no statuses are defined, it will not be possible to create any new faults. It is not possible to delete a status where there are faults (either open or closed) which have that status although you can edit and change the displayed text.

To add a new status, click on the 'Add' button to the right of the list and enter a name for the new status. Note that the new status cannot have the same name as an existing entry.

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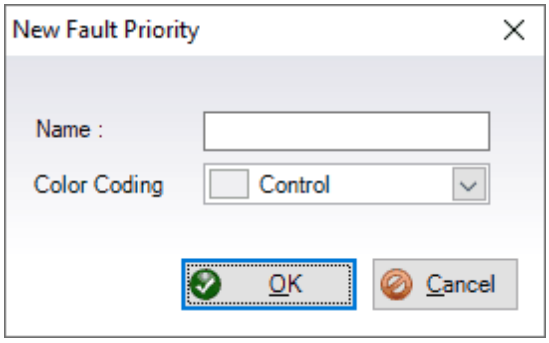
To edit a Fault Status, double-click it in the list or select it and click the 'Edit' button. A window will be displayed where you can set the text for this status. Again note that the name entered must not duplicate an existing entry.

22.2.1.1.4 Fault Priorities

Faults defined within LifeCheck must be assigned a specific Priority. If no fault priorities are defined, it will not be possible to create any new faults. It is not possible to delete a fault priority where there are faults (either open or closed) which have that priority although you can edit and change the displayed text.

To add a new Fault Priority, click on the 'Add' button to the right of the list and enter a name for the new priority. Note that the new priority cannot have the same name as an existing entry.



To edit a Fault Priority, double-click it in the list or select it and click the 'Edit' button. A window will be displayed where you can set the text and color coding for this priority. Again note that the name entered must not duplicate an existing entry.

It is also possible to change the ordering of the Fault Priorities by selecting a priority and then using the up and down arrows to move it up or down in the list respectively. This ordering will be reflected when the Priority is displayed for a fault.

22.2.1.1.5 Notifications

Notifications are currently specific to the Fault Tracking module however it is intended that this functionality will be gradually introduced into other areas within LifeCheck. To configure notifications, click on the **Notification Settings** button at the base of the **Fault Tracking Setup** window. The following window will be displayed :-

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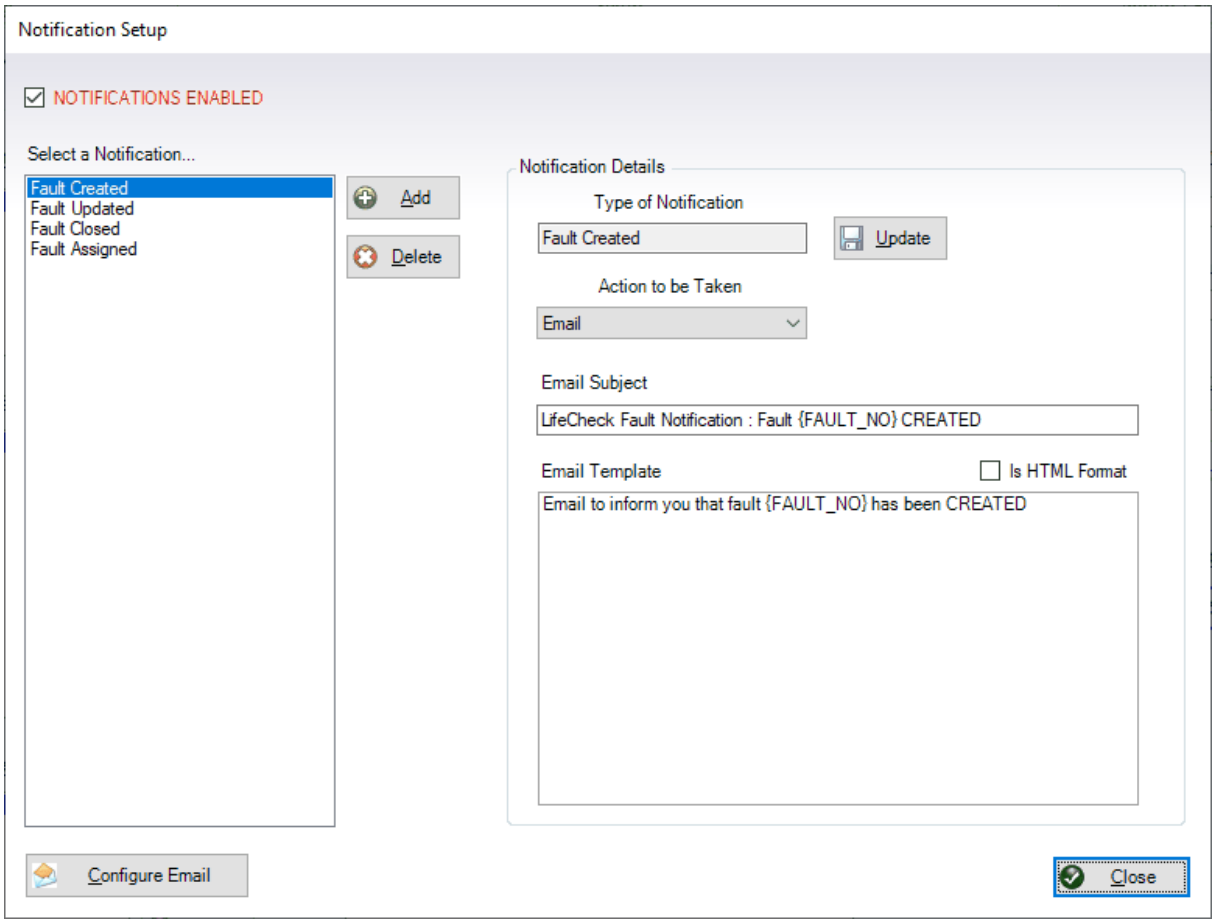

The list on the left of the screen displays the types of notification for which actions have already been defined. In most cases default settings for all fault actions will have been defined however these can be added to, modified or deleted. To display the settings for a specific notification select it in the list view. The settings for the selected notification will be displayed on the right.

Notifications can be disabled by un-checking the **NOTIFICATIONS ENABLED** box - this is especially useful when performing maintenance of the faults database as it prevents large numbers of notifications from being sent.

Type of Notification

At this time notifications may be defined for

- Faults Created
- Faults Updated
- Faults Assigned
- Faults Closed

Action to be Taken

At this time the only supported Action is **Email**

Email Subject

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This is the subject line which will be set for all emails generated for this notification. It is possible to specify a number of substitution parameters in the subject line. These are detailed below.

Email Template
This is the text which will be the body of all emails generated for this notification.. It is possible to specify a number of substitution parameters in the template. These are detailed below. The template may be either plain text or may contain html text. If the template contains html text, please check the **Is HTML Format** check box to indicate this.

Substitution Values
When generating the subject line and the body of the email, LifeCheck will perform some basis text substitutions to allow fault specific information to be included in the email. All substitutions are indicated by being surrounded by '{' and '}' characters.

{FAULT_NO}	Replace with the fault number
{FAULT_PRIORITY}	Replace with fault priority
{FAULT_STATUS}	Replace with fault status
{FAULT_ASSIGNEE}	Replace with the name of the person to whom the fault is assigned
{FAULT_TITLE}	Replace with the fault title
{FAULT_TEXT}	Replace with the text of the fault
{FAULT_CREATED}	Replace with the name of the person who created the fault
{FAULT_COMPONENTS}	Replace with the list of components associated with the fault
{FAULT_ASSEMBLY}	Replace with the name of the primary assembly associated with the fault
{FAULT_ATTRIBUTE5}	Replace with the value of 'Attribute5' for the primary assembly
{FAULT_ATTRIBUTE6}	Replace with the value of 'Attribute6' for the primary assembly
{FAULT_CONTAINER}	Replace with the value of the primary container (Chassis / Engine /Pack etc)
{FAULT_LASTHISTORY}	Replace with the text of the last history record for the fault or '-' if none
{FAULT_LASTNOTE}	Replace with the text of the last note added for this fault or '-' if none

For example, the following text could be specified as the Email Subject for assigned fault notifications

LifeCheck Fault Notification : Fault {FAULT_NO} ASSIGNED TO {FAULT_ASSIGNEE}

If any changes are made to a notification, remember to click **Update** to save those changes before selecting another notification or closing the window.

22.2.1.1.5.1 Email Configuration

In order that LifeCheck may be able to send email notifications, it is first necessary to configure the email profile to be used. It is recommended that a dedicated email address is created for use by LifeCheck to avoid any potential issues when sending email. Email configuration can be tricky as different email servers require different settings and may function slightly differently! It is best to consult with your system administrator to get the email settings which will work in your environment and with

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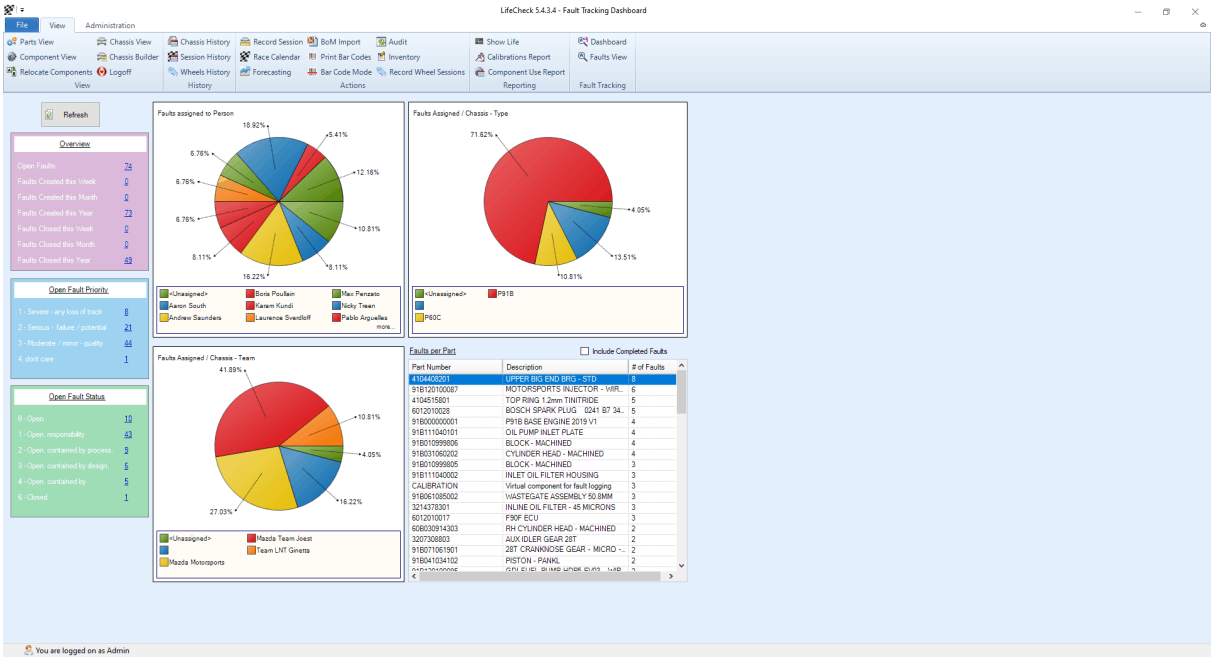
your email provider. Please refer to the Email Configuration section for more details.

22.2.1.2 Fault Tracking Dashboard

The Fault Tracking Dashboard provides an overview of all of the faults currently defined and allows you to see at a glance who has the most faults assigned to them, which components have the most faults and other such statistical information.



The **Counts** displayed in the left hand panels are also links to the **Faults View** detailed in the next section. Clicking any of these counts will jump to the **Faults View** to show details of the selected count. For example, clicking on **Faults Closed this Week** will jump to the faults view with the date file set for the current week and only closed faults selected.

22.2.1.3 Adding a New Fault

New faults can be created in a number of different ways including :-

- From any of the 'standard' views within LifeCheck, right-click on a component and select **Add Fault** from the menu displayed
- From the **Faults View** by clicking the **New** button in the left hand panel

In either case the **Record Fault** window shown below will be displayed. When invoked from the **Session History** window, LifeCheck will assume that the fault is being recorded for the selected session and will preset the details of the session into the **Add fault** window. In all other cases, LifeCheck will preselect the last session run by the selected component.

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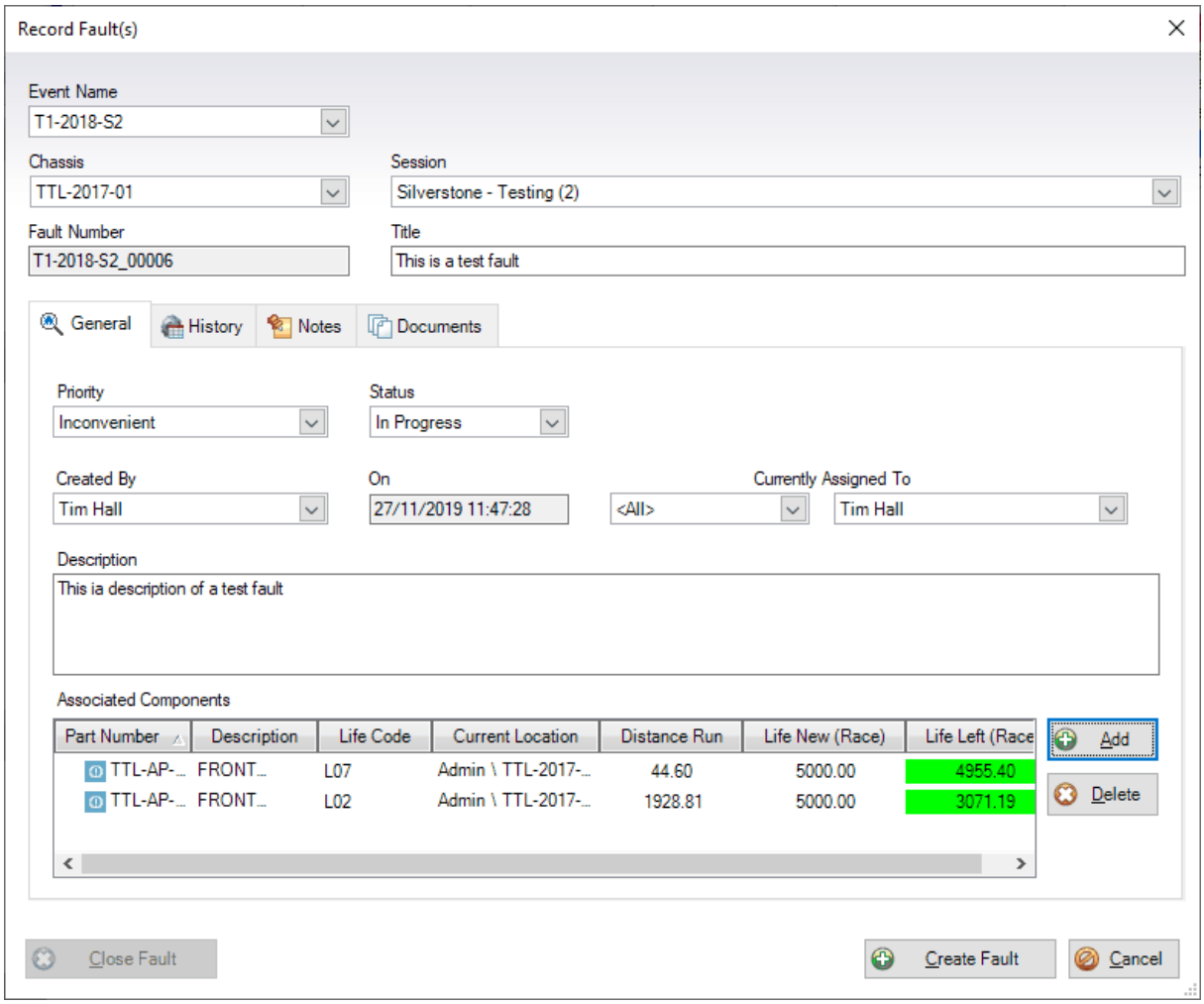

In the above example, a fault is being created for 2 components and has been assigned (and created by) Tim Hall. An initial status and priority has also been set. as this is a new fault you can change all fields including the Event Name, Chassis and Session dropdown lists but note that changes to these properties will cause the list of associated components to be cleared as they may not be applicable to the newly selected event/chassis/session.

To add a component to the list of associated components, click the **Add** button to the right of the list. The following window will be displayed which contains all of teh components which were on the selected chassis at the selected event/session taken from the session history.

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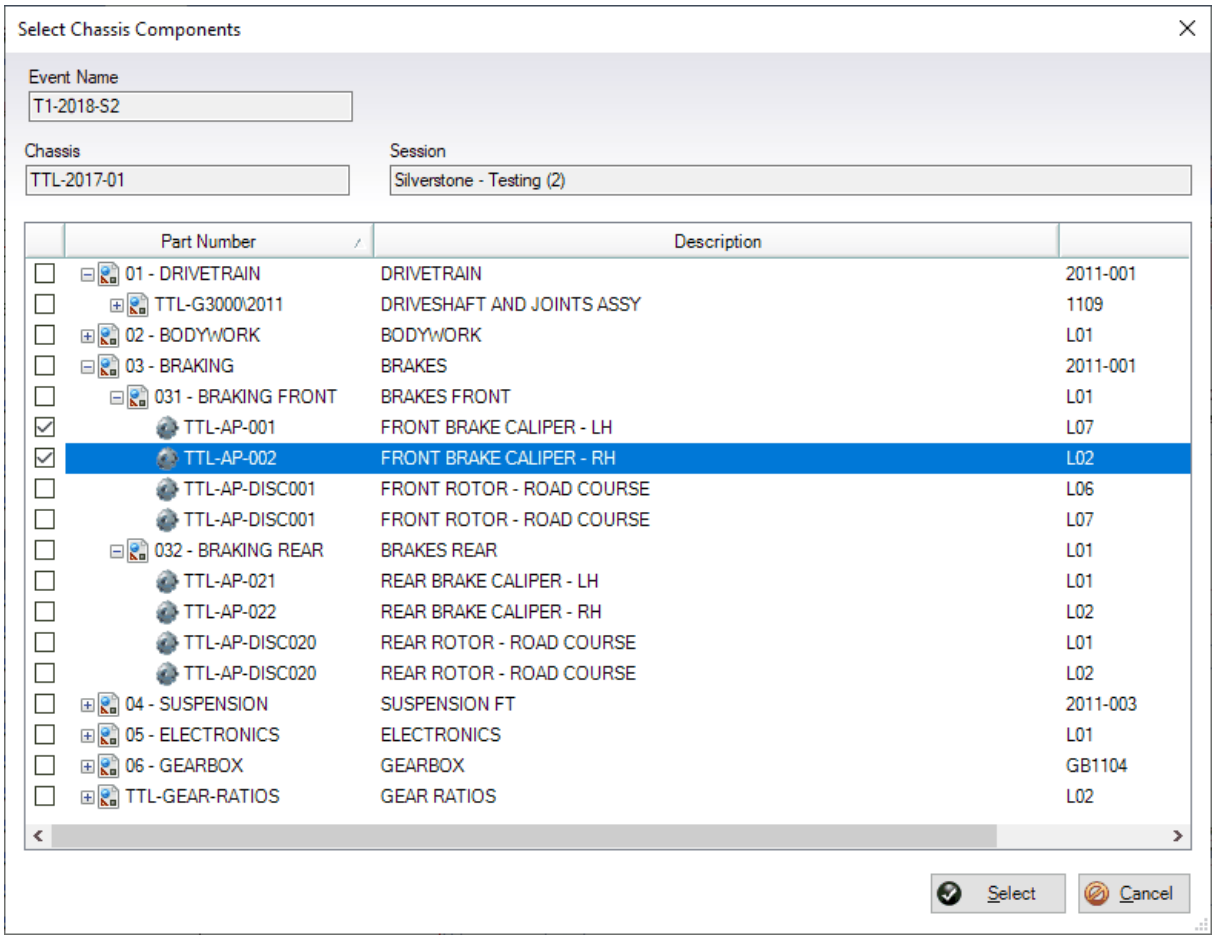

To select components, check the box to the left of the component(s) in question and click **Select**. Note that any previously selected components will be checked automatically.

22.2.1.4 Modifying details of a Fault

As the fault is worked upon, it may be necessary to update details of that fault, for example change the current status or perhaps assign it to a different user. To edit a fault, double-click it in the faults list to display the above window but this time showing the details of the fault selected. Note that once a fault has been created you cannot alter the **Event Name**, **Chassis** or **Session** fields as these are fundamental properties of the fault. Make changes as required and click **Update** to save those changes.

22.2.1.5 Faults and Notifications

Faults and Notifications are closely tied together in that adding, updating, deleting or closing a fault can result in 1 or more notifications being sent to users based on the operation performed and the individual notification settings defined for the users. At this time LifeCheck only supports notifications sent via email.

When creating, updating or closing a fault you may experience a slight delay as LifeCheck identifies those users to which an email is to be sent and actually sends them. Notifications are covered in more details earlier in this section.

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22.2.1.6 Parts and Components

As well as the **Faults View** you can also see details of faults from both the Part Properties and Component Properties windows. In the case of **Part Properties** the faults listed are those for any component instances of that part whereas for Component Properties only those faults which include the component will be listed.

22.3 The LifeCheck Web Interface

The LifeCheck Web Interface is an optional add-on to LifeCheck and provides a web based, read-only interface to your LifeCheck database. At this time there is no automated installation procedure available rather the necessary files are provided as a ZIP archive.

The web interface is also specific to a particular version of LifeCheck and may not work after a product update if that update also required the LifeCheck database to be upgraded. As and when new versions of the LifeCheck Web Interface are created to support newer versions of LifeCheck they will be made available to download from our web site both as full zip files and also just those files which have changed. The LifeCheck web interface runs under Microsoft Internet Information Services (IIS) and is typically located on the same server as the LifeCheck SQL Server but this is not a requirement.

22.3.1 Installation

As detailed previously, the LifeCheck Web Interface is not provided as an installable system but rather as a version specific ZIP file containing the necessary files to support the designated version(s) of LifeCheck. A basic understanding of Microasoft Internet Information Services (IIS), installation of programs and the current LifeCheck configuration is assumed and required to successfully install and configure the Web Interface.

To install the LifeCheck Web Interface first unzip the contents of the distribution file into a new folder on your IIS server. For the purposes of this document we shall assume the files have been extracted to C:\LifeCheckWeb however you may want to extract to a folder beneath any existing web site on this IIS Server. You should ensure the IIS user has full access to this folder and its contents. The next step is to create a web application within IIS. To do this start IIS and navigate to Sites. Now open the Default Web Site and right click selecting **New Application** from the menu displayed. The following window will be shown.

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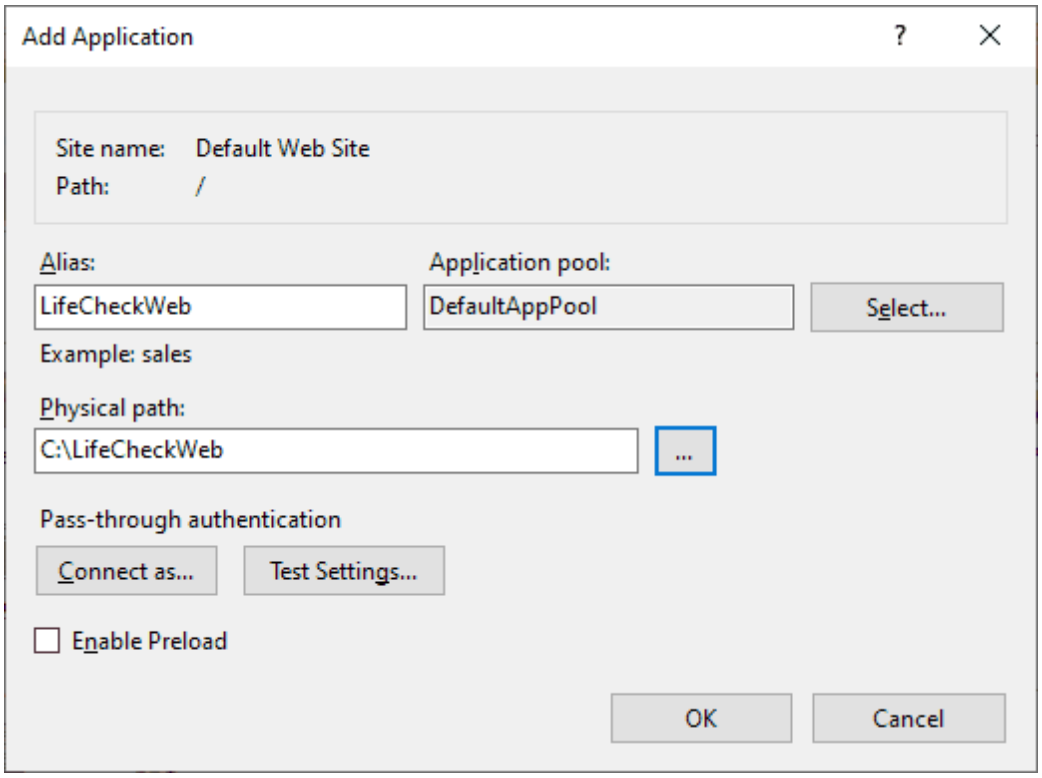

Enter an alias for the web site (LifeCheckWeb) and a path to the folder into which you have unzipped the distributions files (C:\LifeCheckWeb) as shown. The current LifeCheck Web Interface runs under .NET 4.0 and as such you should select an application pool which supports .NET 4.0. This may be the **DefaultAppPool** which will be selected by default but if not a suitable application pool should be selected or created. Click OK to create the Web Application within IIS.

22.3.2 Configuring the Web Application

The configuration for the LifeCheck Web Interface is held in the file named web.config held at the root of the distribution folder. This file may be opened using a text editor such as notepad. Scroll down in this file until you reach the section as shown below :-

There are a number of settings here which will need to be set for the web interface to work correctly.

DatabaseServer Set this to be the name of the instance of Microsoft SQLServer holding the LifeCheck Database

DatabaseName Set this to be the name of the LifeCheck database (lifecheck)

DatabaseTrustedConnection Set this to be 0 if you want to use an SQL login to access the LifeCheck database or 1 if you are to use the Windows credentials. Note however that if using Windows credentials the user in question will be the user under which IIS is defined to run and NOT the local user. SQLcredentials are recommended.

DatabaseUser If 0 has been specified above, this is the SQL user under which the LifeCheck web interface will connect to the LifeCheck database

DatabasePassword If 0 has been specified above, this is the password for the SQL user above.

DecimalPlaces Defines to how many decimal places distances will be displayed within the LifeCheck Web Interface.

Documents If documents have been associated with parts/components within LifeCheck, this is the

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RootFolder URL that will be used by the web interface to display such documents. Can normally be ignored

PartImages RootFolder If custom part images are being used by LifeCheck this is the URL that will be used by the LifeCheck Web Interface to locate the part images. Can normally be ignored.

WebUser If the following WebLoginRequired field is set to Y, this is the username which must be specified to access the LifeCheck Web Interface

WebPassword If the following WebLoginRequired field is set to Y, this is the password which must be specified to access the LifeCheck Web Interface. May be blank.

WebLoginRequired If set to Y the user will be presented with a login screen prior to accessing the LifeCheck Web Interface and must enter the username and password specified above. If N the login step will be skipped and the LifeCheck Web Interface will display the Components View screen.

LogoImage This image will appear on the Team Portal* Login Screen and also on the left of each screen within the web interface. It allows for **branding** of the LifeCheck Web interface

RightLogoImage This image will appear to the right of each window within the web interface. It is intended to allow for a 'Team Specific' logo to be displayed

The LifeCheck configuration information should be obtained from your IT department or is visible from within LifeCheck under **Administration>Database Maintenance**. Once the configuration has been set, attempt to access the LifeCheck Web Interface from a web browser by entering the appropriate URL.

If still on the IIS server you can specify http://localhost/lifecheckweb assuming the Alias was set as shown. If the configuration was correct you should see either the logon screen or the Component View screen depending on the configuration set.

22.3.3 Using the Team Portal

The main web interface allows a web user to view all of the data held within the LifeCheck Web Interface without restrictions. The web interface does however allow for access on a Team by Team basis assuming that these teams have been defined within the main LifeCheck system (see Working with Teams). Specific locations, chassis and components may be allocated on a team by team basis ensuring that each team can only see and access those items which have been assigned to them. In the case of the Component View for example, the team will only be able to see and access departments where at least one location within that department has been assigned to them.

Team based access provides a portal where individual teams (as defined with LifeCheck) may be provided access to their lifing data without also having access to Cars / Chassis / Components assigned to other teams. Where Team based access is required, additional configuration of the LifeCheck Web Interface may be performed to allow a degree of branding to be set for the system (see the previous section on configuration).

The team portal is activated by specifying the query string '?mode=team' to the login.aspx page as in

lifecheck.yourdomain.com?mode=team

In most cases the best way to achieve this is by a configuration setting within the **web.config** page however it is possible to specify the URL manually. To configure Team access within the web.config file, edit the file either from within Microsoft Internet Information Services (IIS) or manually using a text editor. Locate the below section :-

```
<authentication mode="Forms">
       <forms name=".ASPXLIFECHECK" loginUrl="login.aspx?mode=team"
              protection="All" path="/" timeout="30" />
```

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```
</authentication>
```

In the above code, team access has been specified as the default login page URL includes the additional query string and value. Removing this will revert the LifeCheck Web Site for login using the fixed credemntials as detailed previously. While within the Team Portal, the web interface will behave as normal however the data displayed will be limited to that assigned to the team currently logged in.

22.3.3.1 Configuring the Web Site

In addition to setting the starting document to enter 'Team Mode' it is also possible to further customise the user experience of each team by adding custom logos to both the login page and the child pages displaying the information relevant to the team logging in. These settings are defined with the **appSettings** section of the **web.config** file.

```
<add key="LoginImage" value="images/nascar-logo.jpg"/>
<add key="LogoImage" value=""/>
<add key="TeamImageSuffix" value="png"/>
```

LoginImage
This setting defines an image which will be displayed on the login screen. It will be scaled to fit the available space which is 250 pixels wide by 35 pixels high by default.

LogoImage
This setting defines an image which will be displayed to the left of the header on all child pages within the LifeCheck Web Site. If this is left blank, the name of the image will be based on the name of the team logging in.

TeamImageSuffix
This setting defines the file extension which will be added to the team name to form the name of the image file to display above. For example if **'Team A'** logs in and this field has been set to **'png'**, LifeCheck will look for a file named **'TEAMA.png'** in the \Images folder.

22.3.3.2 Configuring Team Access

One additional feature to be found when using the Team Portal version of the LifeCheck web site is that the login screen has support for the sending of Password reminders. This functionality des however need to be setup within the LifeCheck main user interface by selecting Administration > Web Site Configuration from the main menu. The following window will be displayed :-

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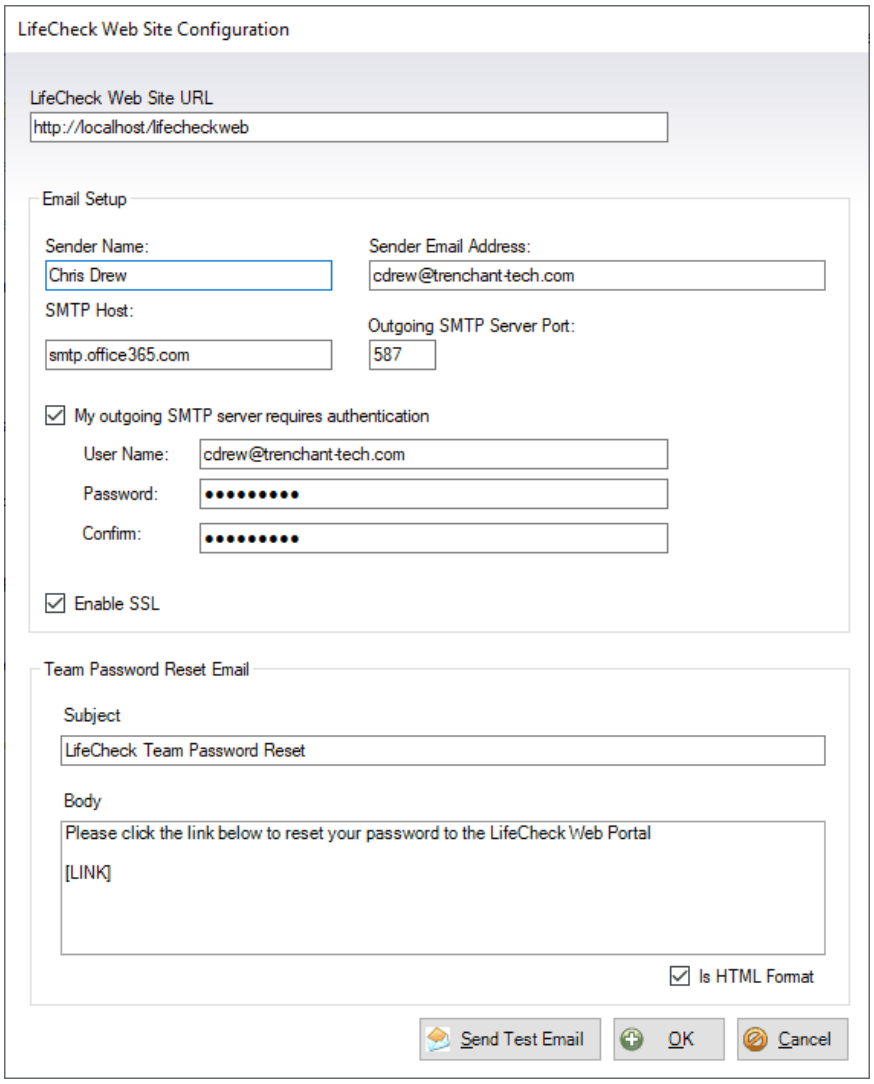

This window serves 2 purposes, firstly it allows details of the email server used to send password reset links to be defined and secondly it allows the content of that email to be specified. It is also important to specify the full URL for the LifeCheck Web Site as this will be used within the email with the appropriate password reset script link appended to it.

The email body may be specified either as HTML format (recommended) or text format and may contain text appropriate to its use as a link to the password reset script. A default value will be set both for the Email subject and body as shown above. The main thing to note in this text is the **'[LINK]'** placeholder. This should appear within the email body as it will be replaced with a hyperlink which when clicked will take the user to the Team Password Reset page. Note that when a password reset is requested, the team record in the LifeCheck database will be updated with a reset 'token' and expiration time. By default this time is set to 15 minutes but this may be changed using the **PasswordResetPeriod** field in the web.config file.

Blank team passwords are not permitted however the LifeCheck web interface does not enforce a password policy.

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22.3.3.3 Team Portal Displays

The Team Portal functions in much the same way as the 'standard' LifeCheck Web Interface however there are some major differences. Firstly, the Team Portal works in conjunction with the Team functionality defined in the main LifeCheck system in that it will only display chassis / parts and components assigned to the team who have logged in. For instance, when displaying the **Parts View**, only those parts for which the team has components will be displayed as otherwise a large number of irrelevant parts may be displayed. In a similar way, only those chassis (or other named major assembly) assigned to the team will be selectable on the **Chassis View** and **Chassis History** pages. In addition the **Reports View** is not made available to the Teams.

22.4 The LifeCheck Web API

22.4.1 Introduction

The LifeCheck Web API is intended for use when interfacing 3rd party systems to LifeCheck and allows such functionality as the creation of new Parts and Components, updating parts and components, servicing components and returning lists of various items held within the LifeCheck database.

At this time there is no automated installation procedure available rather the necessary files are provided as a ZIP archive. The Web API is also specific to a particular version of LifeCheck and may not work after a product update if that update also required the LifeCheck database to be upgraded. As and when new versions of the LifeCheck Web API are created to support newer versions of LifeCheck they will be made available to download from our web site both as full zip files and also just those files which have changed.

The LifeCheck Web API runs under Microsoft Internet Information Services (IIS) and is typically located on the same server as the LifeCheck SQL Server but this is not a requirement. This document assumes a basic understanding of IIS, installation of programs and the current LifeCheck configuration.

22.4.1.1 Installation

To install the LifeCheck Web Interface first unzip the contents of the distribution file into a new folder on your IISserver. For the purposes of this document we shall assume the files have been extracted to C:\LifeCheckWebApi however you may want to extract to a folder beneath any existing web site on this IIS Server. You should ensure the IIS user has full access to this folder and its contents. The next step is to create a web application within IIS. To do this start IIS and Navigate to Sites and open the Default Web Site. Right click on Default Web Site and select New Application.

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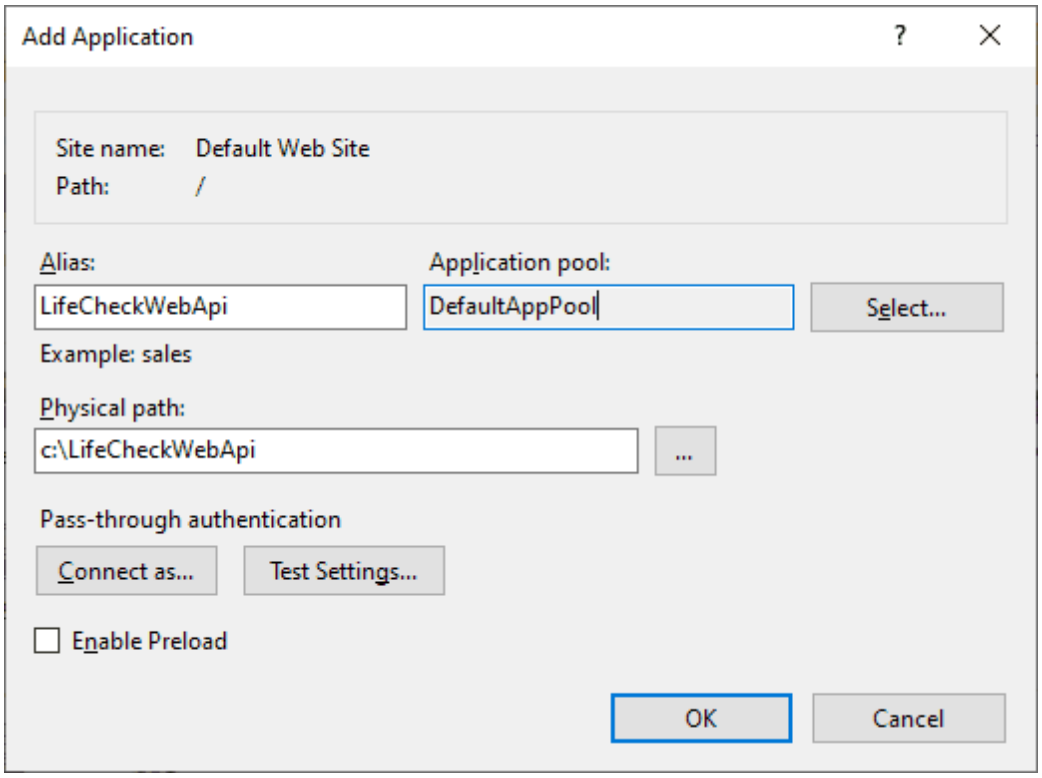

Enter an alias for the web site (LifeCheckWebApi) and a path to the folder into which you have unzipped the distributions files (C:\LifeCheckWebApi) as shown. The LifeCheck Web APIs run under .NET 4.5 and as such you should select an application pool which supports .NET 4.5. This may be the DefaultAppPool which will be selected by default. Click **OK** to create the Web Application within IIS.

22.4.1.2 Configuring the Web API

The configuration for the LifeCheck Web API is held in the file named **web.config** held at the root of the distribution folder. This file may be opened using a text editor such as notepad.

Scroll down in this file until you reach the section as shown below :-

```
<appSettings>
        <add key="DatabaseServer" value="localhost\sqlexpress" />
         <add key="DatabaseName" value="lifecheckv4" />
        <add key="DatabaseTrustedConnection" value="0" />
        <add key="DatabaseUser" value="lifecheck" />
        <add key="DatabasePassword" value="password />
 </appSettings>
```

There are a number of settings here which will need to be set for the web interface to work correctly.

DatabaseServer	Set this to be the name of the instance of Microsoft SQLServer holding the LifeCheck Database
DatabaseName	Set this to be the name of the LifeCheck database (lifecheck)
DatabaseServer	Set this to be the name of the instance of Microsoft SQLServer holding the LifeCheck Database

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DatabaseTrustedConnection	Set this to be 0 if you want to use an SQL login to access the LifeCheck database or 1 if you are to use the Windows credentials. Note however that if using Windows credentials the user in question will be the user under which IIS is defined to run and NOT the local user. SQL login is recommended
DatabaseUser	If 0 has been specified above, this is the SQL user under which the LifeCheck Web API will connect to the LifeCheck database
DatabaseServer	If 0 has been specified above, this is the password for the SQL user above.

The LifeCheck configuration information should be obtained from your IT department or is visible from within LifeCheck under Administration>Database Maintenance.

Once the configuration has been set, attempt to access the LifeCheck Web API from a web browser by entering the appropriate URL. If still on the IIS server you can specify

http://localhost/lifecheckwebapi assuming the Alias was set as shown. If the configuration was correct you should see an ASP.NET Test Page as shown below. This page also provides additional documentation on the Web API.

22.4.2 Using the LifeCheck Web API

Overview documentation for the LifeCheck Web API is automatically generated when you enter the base URL into your web browser, for example :-

http://lifecheck.trenchant-tech.com/lifecheckwebapi

This is however more of an overview and while detailing the calling format does not go into details as to how to use the Web API in detail. As such, the documentation contained here should be read in conjunction with that automatically generated or a fuller view of the LifeCheck Web API.

22.4.2.1 Credentials

All LifeCheck Web APIs require an encrypted string containing the login credentials for the required department/user to be passed as the 'APIKey'. The credentials string is displayed within LifeCheck under **Administration > Departments** and then select to display the properties of the required user as shown below.

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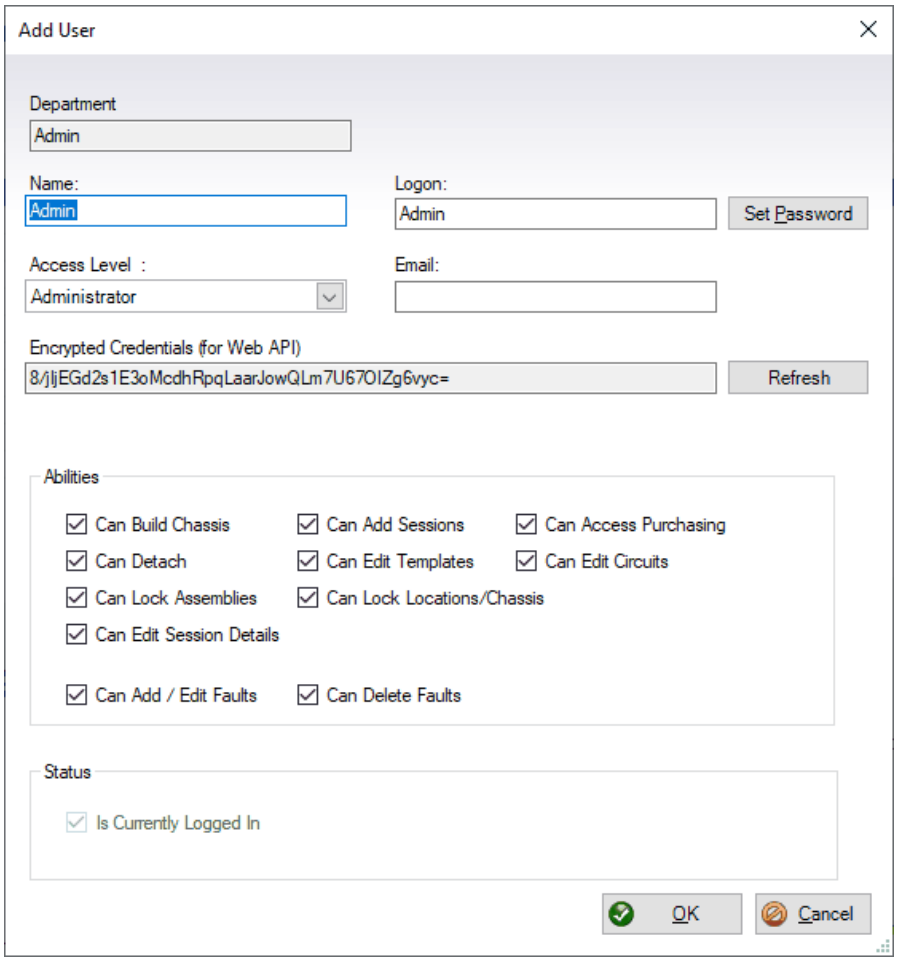

Alternatively, the **Credentials** Web API call may be used to return the same encrypted string when passed the username and password of the appropriate user.

22.4.2.2 Overview

This call returns statistical information relating to parts and components held within the LifeCheck database. This includes such things as the total number of parts and components, counts of components which are out of, or low on life and components which are reaching or over their service limits.

22.4.2.3 Teams

This call returns a list of the Teams defined within the LifeCheck database.

22.4.2.4 Departments

This call returns a list of the Departments defined within the LifeCheck database.

The Departments / Credentials call may be used to return an encrypted credentials string for the user with the specified username and password. This can then be used for other calls to the Wep API.

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22.4.2.5 Locations

This controller is used for calls relating to Locations. The following methods are supported

API	Description
GET Locations/{locationId}/ Components	Returns a list of Components located within the specified location. Note that all components will be returned regardless of their parentage.
GET Locations? departmentId={departmentId}	Return a list of Locations defined for the specified Department

22.4.2.6 Parts

This controller is used for calls relating to Parts. The following methods are supported

API	Description
GET Parts	Returns a list of ALL Parts defined in the the database.
GET Parts/Components? partId={partId}	Return a list of Component instances of the specified part.
GET Parts/Details?partId={partId} &partNumber={partNumber}	return details of the specified part. Part may be defined using either **partid** or **partNumber**
PUT Parts/Add	Add a new part
POST Parts/Update	Update the specified part. Part may be defined either using **Id** or **PartNumber**

22.4.2.7 Components

This controller is used for calls relating to Components. The following methods are supported

API	Description
GET Components/Details? componentid={componentid}	Returns details about the specified component. The data returned is configurable within LifeCheck.
GET Components/Upfated? sinceDate={date}	Return a list of Components which have been updated since the specified date. This call is used to keep the caller up to date with any changes made within LifeCheck. It returns a list of Component Ids which can then be used in the above call to recover those changes.
PUT Components/Add	Add a new component to the database. This call is comprised of a fixed header containing such fields as the id of the location in which the component is to be created, the Part Id or Part Number of the component; the life code to be assigned to the component and a list of additional attributes to be set. Location may be specified either by **LocationId** or **Location** and the parent part may be specified either by **PartId** or **PartNumber** as required. If **LifeCode** is specified as 'XXX' a temporary life code will be assigned to the component.

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	If **LifeCode** is omitted or is a blank string, the next sequential life code will be assigned to the component..
POST Components/Update	Update the specified component

22.4.2.7.1 Attribute Names

The data sent / returned by the API may be extended to include the information which is important to the caller. When passing information to the API, such as when adding or updating a component, these additional fields are sent as **name/value** pairs. For example, if we are updating a component we may pass attributes in the form

```
"Attributes": [
        {
             "Name": "Issue",
             "Value": "ISSUE004"
        },
        {
             "Name": "LifeNew",
             "Value": 6000
        }
]
```

This will set the **Issue Number** to 'ISSUE04' and the **Race Limit** for this specific component to 6000km. The following standard component attributes may be set in this way.

PartNumber
Description
LifeCode
Location
Status
Issue
Batch
LifeNew
LifeLeft
TestNew
TestLeft
StartDistance
Distance
Starts
Time1New
Time1Run
Time2New
Time2Run
Cost
Weight
Note
ParentPart
ParentLifeCode

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FirstUsed
LastUsedOn
LastUsed
Section
SubSection
Count

Checks

It is also possible to set values for periodic maintenance (checks) for the component. These have a slightly more complex name - the name MUST begin with 'Check|' followed by the NAME of the check and end with one of

|Limit
|Next
|Since

For example, to set the service limit for a component to 2000km the following attribute string pair would be specified

```
{
    "Name": "Check|Service|Limit",
    "Value": "2000"
}
```

Extension Fields

The Web API may also return data relating to Component Extension Fields. In this case the name must begin with 'Ext:' followed by the name of the extension field.

For example, to set the extension field named 'SAP Store' extension field for a component to 'Bin 1', the following attribute string pair would be specified

```
{
    "Name": "Ext:SAP Store",
    "Value": "Bin 1"
}
```

Note when data is returned from the API the attributes are returned with these names also

22.4.2.8 Checks

This controller is used for calls relating to Checks. The following methods are supported

API	Description
GET Checks	Returns a list of all Checks defined within the database
GET Checks/Reset	Resets the specified check for the specified component

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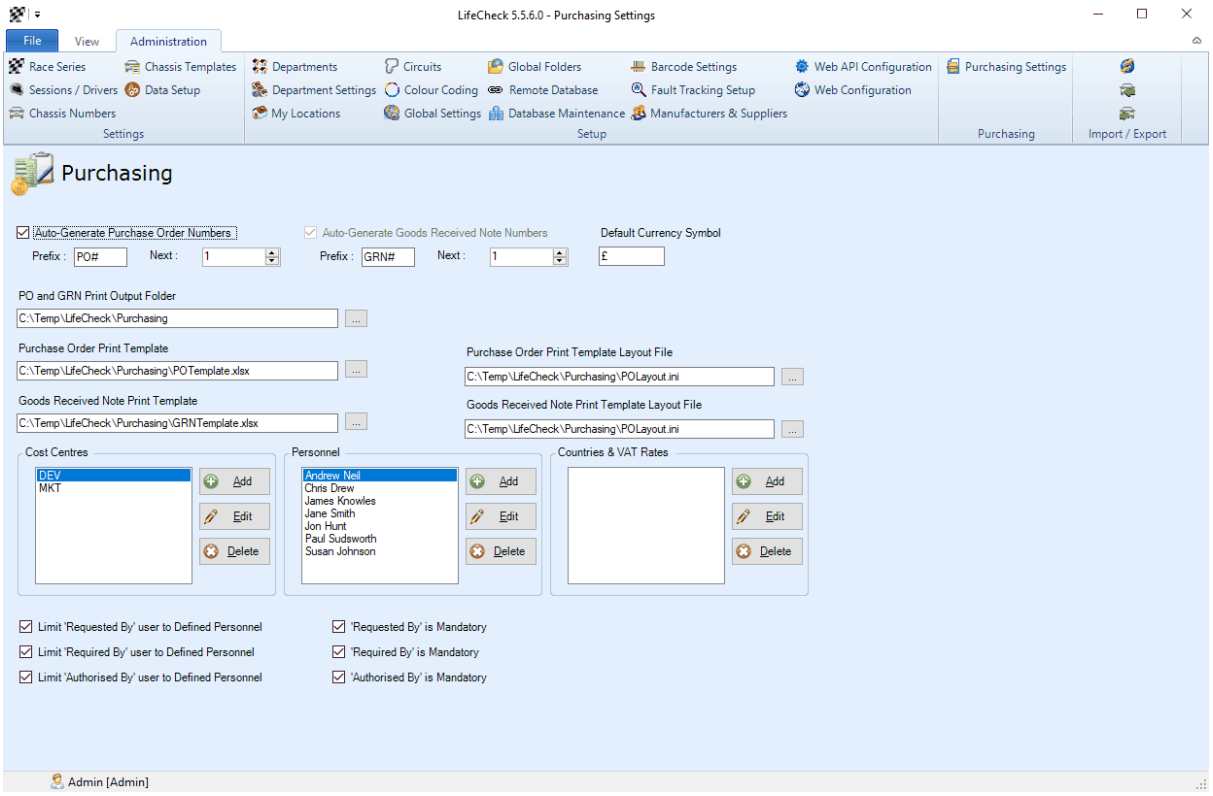
22.5 The LifeCheck Purchasing Module

The LifeCheck Purchasing Module is an optional, add-on module which may be enabled via an updated licence key. The Purchasing Module is a fully featured system developed to allow both Car and non-car parts to be ordered by raising purchase orders, receiving new goods into stock against a PO and includes support for such things as Goods Received Notes (GRN) and Advice notes as well as for payment of invoices. The following section details the configuration and use of the system.

22.5.1 Configuring the Purchasing System

Before the purchasing system may be used to create purchase orders, a number of configuration steps must be followed to initialise required data. This is achieved by accessing the **Administration>Purchasing Settings** screen.



Auto-Generate Purchase Order Numbers
The system by default will automatically generate sequential PO numbers with the specified prefix with a numeric suffix starting with the specified value. For example in the above situation the PO number would start at 'PO#1' followed by 'PO#2' and so on.

Auto-Generate Goods Received Note Numbers
In a similar way, goods received notes will have an auto-generated number based on the prefix and numeric suffix specified.

Default Currency Symbol
The LifeCheck purchasing system is only able to work with a single currency. This setting defines that currency.

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PO and GRN Print Output Folder
This setting defines the folder into which POs and GRNs will be saved to when printed. Click the '...' button to browse for a folder.

Purchase Order Print Template
This setting defines the name of the file which will be used as a template for purchase orders. This is a Microsoft Excel file and allows such things as headings, footers and fonts to be set for all POs created by LifeCheck. Click the '...' button to browse for a file to use. The format / layout of this file is determined by...

Purchase Order Print Layout File
The purchase order print layout file is a text based file which defines the way in which the information on a PO should be saved to the printed PO (using the above template). The layout file is discussed further in the following section.

Goods Received Note Print Template
This setting defines the name of the file which will be used as a template for Goods received Notes. This is a Microsoft Excel file and allows such things as headings, footers and fonts to be set for all GRNs created by LifeCheck. Click the '...' button to browse for a file to use. The format / layout of this file is determined by...

Goods Received Note Print Layout File
The Goods Received Note print layout file is a text based file which defines the way in which the information on a GRN should be saved to the printed GRN (using the above template). The layout file is discussed further in the following section.

Cost Centres
Defines a list of cost centres to which purchases will be assigned. You must define at least 1 cost centre.

Personnel
Defines a list of personnel who will work with Purchasing. These should include anyone who may order, receive or request items on these purchase orders. You must define at least 1 person in this section.

Countries and VAT Rates
Used to define different VAT rates for items ordered from different Countries.

Requested / Required and Authorised
These fields define rules which should be followed when creating a purchase order. For example, you can require that personnel connected to a PO may only be selected from the above list of personnel or relax this restriction to allow free entry of personnel names. You may also require that specific personnel fields must be completed before a PO can be created.

22.5.1.1 Purchase Order Print Layout Files

The print layout file for purchase orders is used in conjunction with the print template file to define how the PO will appear when printed. It is a text based file in an 'ini' file format. An example of this file is shown below.

[Supplier]
Name = C4
Address = C5
City = C6

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Postcode = C7
Telephone = C8
Payment Terms = C40

[PO]
Number = J5
Date = J7
Currency = J38
Approved By = J40
Notes=

[Items]
First Row = 11
Last Row = 25
Quantity = B
Part Number = C
Issue Number=E
Description = F
Cost Centre = G
Delivery Date = H
Unit Price = K
Line Value = L
Total = L36
Comment Start = B
Comment End = L

From the above t can be seen that the file is divided into a number of distinct sections dealing with specific areas of the PO.

Supplier
This section defines the row or cell locations where details of the supplier will be written. For example, the Name of the supplier will be written to cell C4 in the output Excel spreadsheet.

PO
This section defines the row or cell locations where details of the PO itself will be written. For example, the PO Number will be written to cell J5 in the output Excel spreadsheet.

Items
This section defines the row or cell locations where details of the individual lines on the PO will be written. This is slightly different to the sections above as there may be multiple lines on the PO and as such the row number for each item is not specified, just the column letter. In the example above **First Row** and **Last Row** define the starting and ending row numbers for the items on the PO.

Examples of both the PO Print template and the Layout file can be found in the Templates folder of the LifeCheck installation.

22.5.1.2 Goods Received Notes Print Layout Files

The print layout file for goods received notes is used in conjunction with the print template file to define how the GRN will appear when printed. It is a text based file in an 'ini' file format. An example of this file is shown below.

[Supplier]

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Name = C5
Address = C6
City = C7
Postcode = C8
Telephone = C9

[PO]
Number = I5
Advice Number = I7
GRN Number = I9
Received By = I11
Date = I13

[Items]
First Row = 16
Last Row = 35
Quantity = B
Part Number = C
Description = E
Cost Centre = F

From the above t can be seen that the file is divided into a number of distinct sections dealing with specific areas of the GRN.

Supplier
This section defines the row or cell locations where details of the supplier will be written. For example, the Name of the supplier will be written to cell C5 in the output Excel spreadsheet.

PO
This section defines the row or cell locations where details of the GRN itself will be written. For example, the GRN Number will be written to cell I9 in the output Excel spreadsheet.

Items
This section defines the row or cell locations where details of the individual lines on the PO will be written. This is slightly different to the sections above as there may be multiple lines on the GRN and as such the row number for each item is not specified, just the column letter. In the example above **First Row** and **Last Row** define the starting and ending row numbers for the items on the GRN.

Examples of both the GRN Print template and the Layout file can be found in the Templates folder of the LifeCheck installation.

22.5.1.3 Manufacturers and Suppliers

Manufacturers and Supplier may be specified on a PO and as such should be pre-defined using the **Administration>Manufacturers and Suppliers** window. They are applicable to both Purchasing and Inventory and further details may be found under Administration>Manufacturers and Suppliers.

22.5.2 Purchase Orders

Purchase orders are maintained using the **Purchasing View** selected from the main menu. This section details how they are created, their life cycle and how they assist in managing your stock control system.

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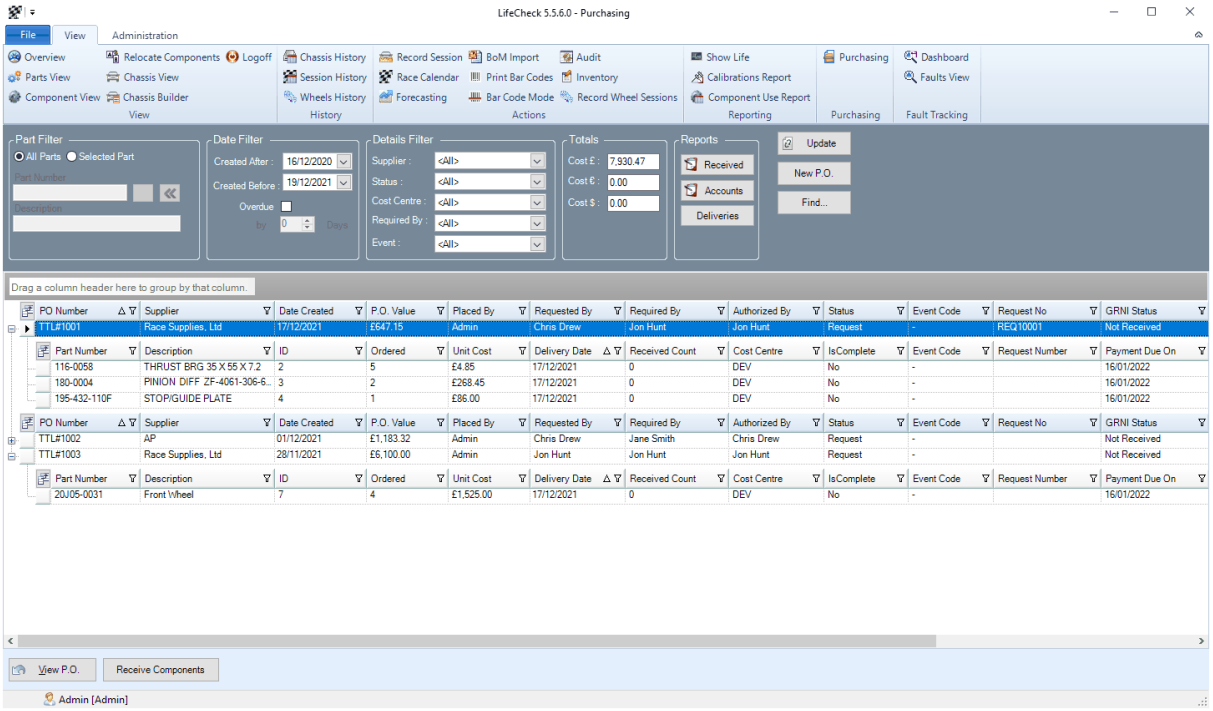

This view displays all of the Purchase Orders currently defined within the system and allows this list to be filtered according to a number of criteria. After making any changes to the filter, or on initial entry to the screen, click **Update Display** to display the selected purchase orders. Purchase orders are shown in a hierarchical manner with the individual purchase order lines grouped beneath their parent PO. Right clicking an item in the PO list will allow the PO to be viewed and components to be received on the PO.

Double-clicking on a P.O will view the details of the P.O. and allow it to be modified. Right clicking on a P.O. will display a context menu from which the following options may be selected :-

- Export
- Receive Components
- View Purchase Order

Filters

All Parts / Selected Part

To display purchase orders for a specific part, click **Selected Part** and then select the part from the list. You may enter a partial part number and tab to the next field to find the first match for the part number entered Use the arrow keys to move forwards or backwards through the list of parts.

Created After

Select the start date for purchase orders. Only purchase orders created after this date will be displayed.

Created Before

Select the end date for purchase orders. Only purchase orders created before this date will be displayed.

Overdue By

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Only purchase orders which have items overdue by the specified number of days will be displayed.

Supplier
Select a specific supplier from the drop-down list. Only purchase orders for the selected supplier will be displayed.

Status
Select whether to display all purchase orders or only those which are open or which have been closed.

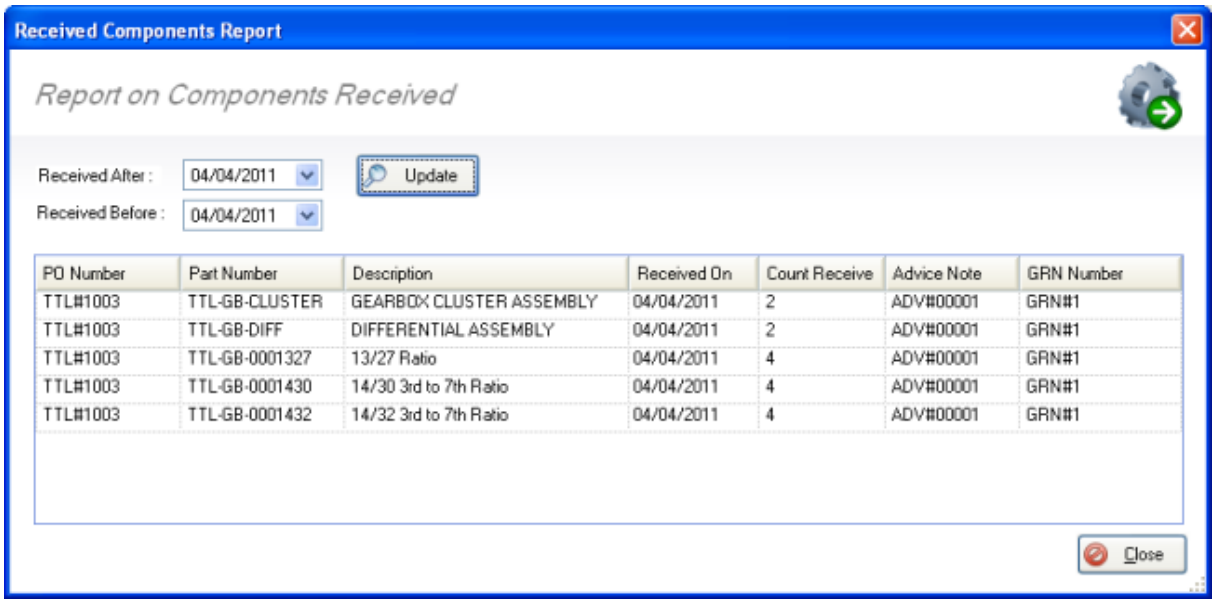
Cost Centre
Select the cost centre to report on from the drop down list.

Required By
Select the 'Required By' user to report on from the drop down list.

Totals
Displays totals for the purchase orders selected according to the filters defined.

22.5.2.1 Received Report

The Received Report allows you to easily view a list of components received between the selected dates and on which Purchase order they were received. This can be a useful feature when trying to identify exactly when components have been entered into stock.



Right-clicking an entry in this list will display a context menu from which you can export the data displayed, view the purchase order identified or view the Goods received Note (GRN) created when the items were received.

22.5.2.2 Creating a Purchase Order

To create a new Purchase Order, click **New Purchase Order** to display the screen shown below.

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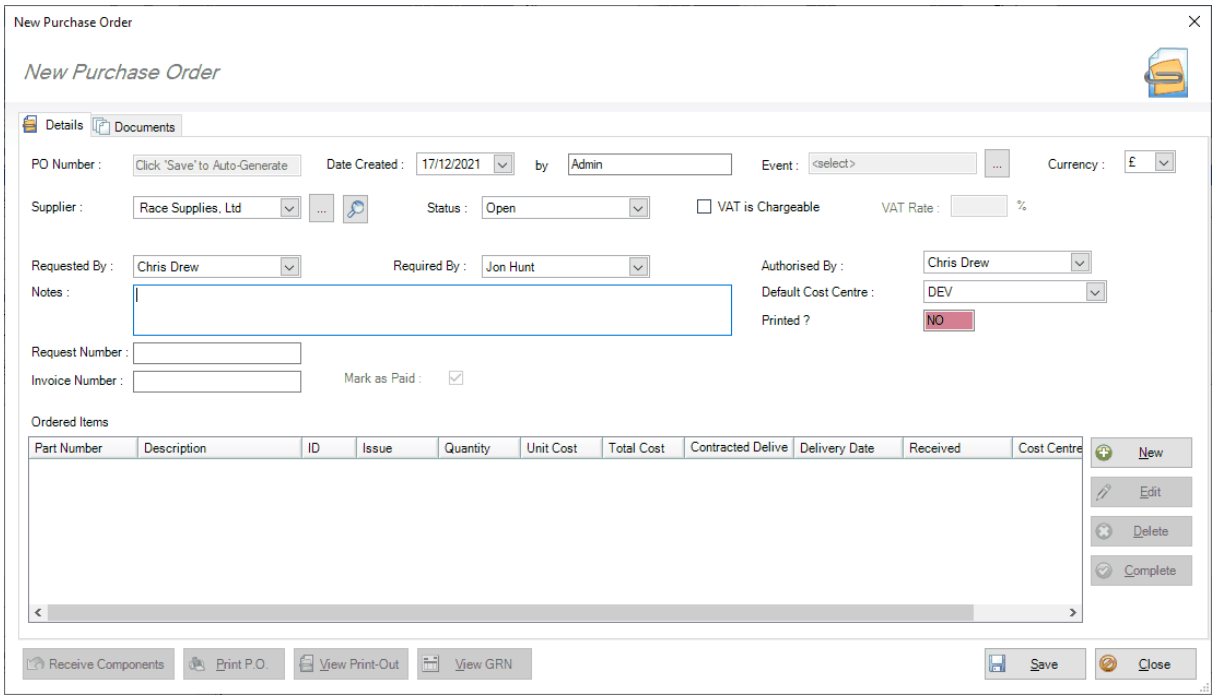

PO Number
The PO number is the primary identifier of the purchase order and should be unique to ensure that all purchase orders can be easily identified. LifeCheck allows you to either enter a P.O. Number created by another system - such as your accounts package, or to automatically generate the next sequential purchase order number based on the information set under Administration>Purchasing. Where auto-numbering is in force, LifeCheck will display the text 'Click Save to Auto-Generate for the P.O. number until such time as the purchase order is created.

Date Created
This field will be automatically set to today's date. You may change this if entering historical purchase orders onto the system.

by
This field is the name of the user creating the P.O. Either select from the drop down list of pre-defined users or type the name of the user creating the P.O.

Supplier
Select from the pre-defined list of suppliers. If logged in as an administrator, a button will be displayed to the right of the supplier. Clicking this will allow a new supplier to be defined. You may also click on the 'View' button to view the properties of the selected supplier.

Status
Select either 'Open' or 'Closed'. The purchase order can be automatically set to 'Closed' as the last component defined on the P.O. is received.

Currency
This field allows the symbol for the currency to set for this P.O. to be defined. Note however that this currency symbol is doe display purposes only and no currency conversions will take place when calculating totals. If the currency symbol required is not defined select a blank symbol.

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Requested By / Required By / Authorised By
Select the appropriate user from the drop down list of pre-defined users or type a new name. Note however that 'Authorised By' may only be selected from the pre-defined list.

Notes
Enter any notes required for this P.O.

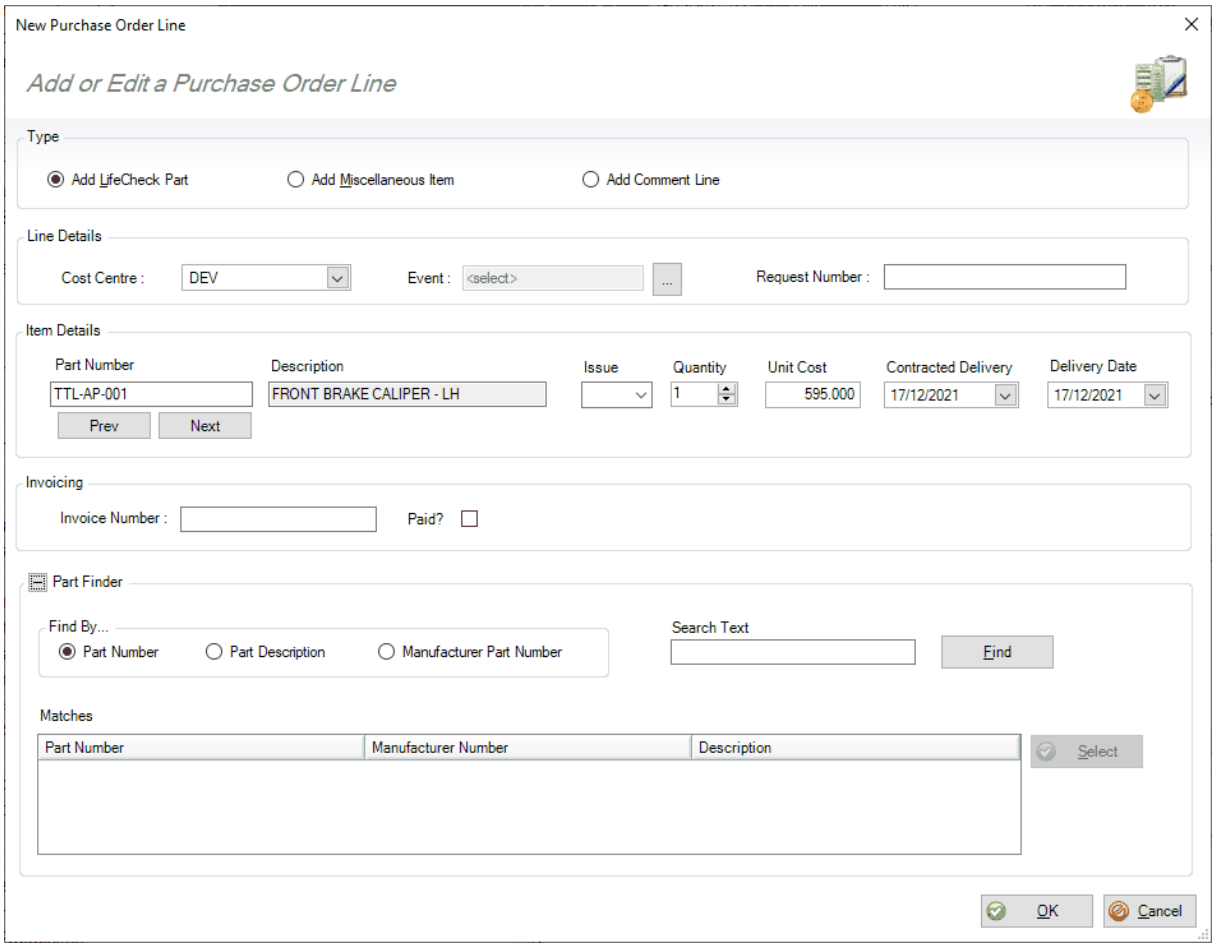
Default Cost centre
Select the default cost centre against which all purchase order lines will be created. This can be over-ridden on a line-by-line basis however.

Request Number
The PO may be linked to an externally generated request, if so enter the request number here.

Invoice Number
The PO may be linked to an externally generated invoice, if so enter the invoice number here.

22.5.2.2.1 Adding Purchase Order Lines

Each purchase order will contain 1 or more lines, each of which will order 1 or more items. To add a new line to a P.O. click **New Line** to display the following screen:-



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First, select the type of item to be ordered on this line. This may be either 'LifeCheck Part' or 'Miscellaneous Item'. LifeCheck Part equates to a part already defined within the LifeCheck database and may be a lifed or non-lifed part or a sundry. Miscellaneous items are handled very differently in that they relate to non-physical items such as services. Miscellaneous items are not retained on the system once they have been received as there is no physical instance of the item. They are supported for completeness within the Purchasing system to allow both products and services to be recorded within LifeCheck.

The cost centre will have pre-set from that selected for the Purchase order itself. You can however over-ride the cost centre while adding a new line to the P.O. The next step is to select the part to be ordered. You may either enter a partial part number and tab across to the description to navigate to the first match found or alternatively use the 'Part Finder' to locate a specific part from its part number, description or manufacturer's part number. The **Part Finder** panel will initially be collapsed but may be expanded by clicking on the '+' button. To use the part finder, select the appropriate option and type in the search text. For example to locate a part based on its description, select 'Part Description' in the 'Find By' box and enter one or more keywords to find. Click **Find** to display all matches in the results list.

You may now select the required part in the list and click **Select** to copy its details to the **Item Details** box.

When adding miscellaneous items, the part number is not applicable and cannot be specified. Simply enter the description for the item being ordered together with quantity, unit cost and delivery date and click OK. For example the description could be 'Catering Facilities for pre-launch meeting' or similar. Clicking OK will add the specified line to the P.O. and quit the screen returning to the P.O. Details view.

If an 'Issue Number' is specified on the PO line, it will be copied to all components received on that line

22.5.2.3 Listing Purchase Orders

To view all purchase orders recorded on the system click **Purchasing** from the main menu. You can also view either all purchase orders or purchase orders for the selected part by right-clicking a part and selecting the appropriate menu option. The Purchasing Window will then be displayed with the filters set to show only those POs pertaining to the selected part.

22.5.2.4 Receiving Component on a Purchase Order

To receive components on a PO, right click the entry in the Purchase Orders window and select **Receive Components**. The following window will be displayed:-

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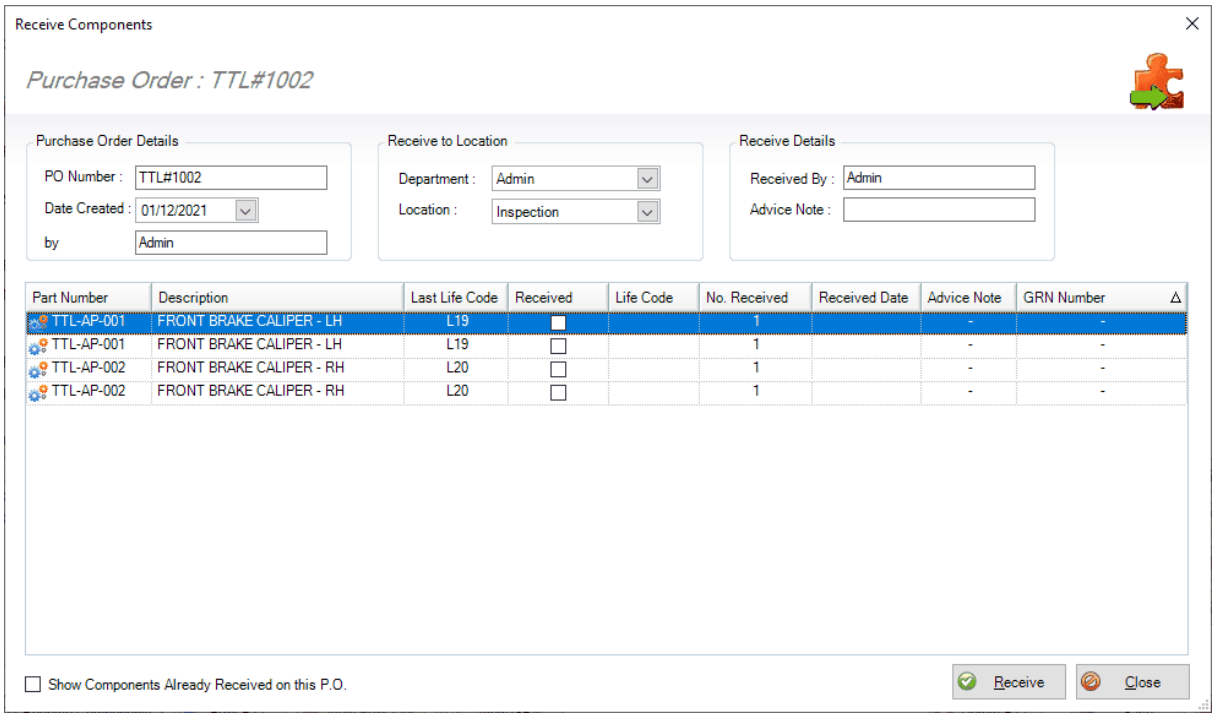

This window lists each of the items on the PO expanding out each where multiple parts have been ordered. In the above screen, 2 front left and 2 front right brake calipers have been ordered. LifeCheck shows for each item the last life code used for that part. To receive a specific brake caliper :-

1. Check the **Received** box for the component
2. Enter a life code for the received component
3. Click **Receive**

Note that you cannot receive a component without defining a life code for it. On return to the Purchase Orders screen the count of received components on the PO will be updated. By default, components will be received into the first location defined for the logged in department however this can be over-ridden during the receive process to move the received components into for example an 'Inspection' location.

If at the time of receiving a lifed component, a life code has not yet been set for this component, it is worth considering using a temporary life code convention and moving the component into an 'Inspection' area. Once a life code has been set for the component it may be updated within LifeCheck to record the actual life code and moved to its final location.

22.6 The Integration Service

The LifeCheck Integration Service is a Windows Service which automates the importation of parts and components and the execution of reports previously configured for offline running. It is an option licenced module which may be added to your copy of LifeCheck via an updated product licence key.

22.6.1 Controlling the Service

The Integration Service is controlled using the window displayed on selecting **Administration>Integration Service Control** from the main LifeCheck menu. Please note that you

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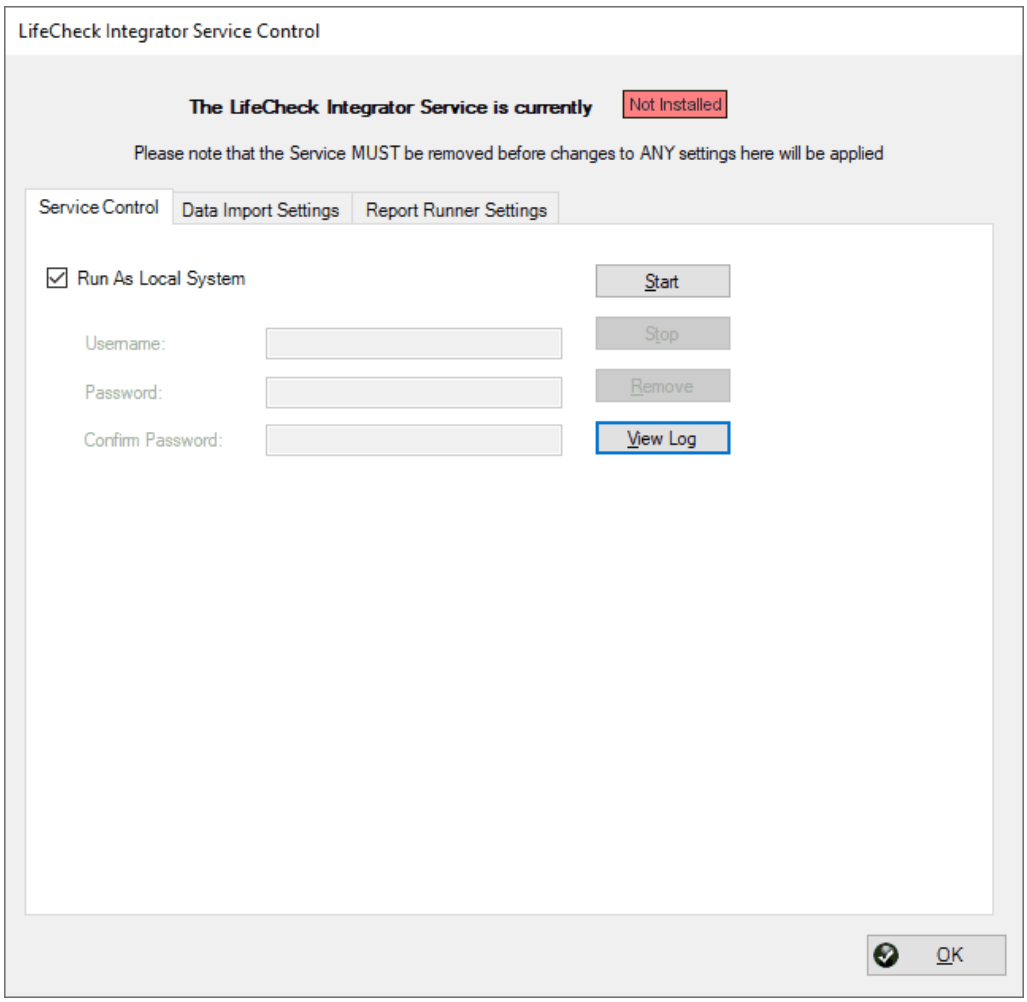
MUST run LifeCheck under an Administrator Account to be able to access the service control. If this is the case and the appropriate option is licenced, the following window will be displayed.



The first tab allows the service itself to be controlled. LifeCheck allows the service to be run either under the local system account or under any other nominated user account. Note the account used must also be able to access the LifeCheck SQL Database.

To Start the database, click the **Start** button. After a few seconds, the screen should refresh and the service status should show **Running**. If the service does not start, review the service log by clicking the **View Log** button or view the service event log using the system **Event Viewer** utility. The Integrator Event Log is named **LCIService**.

The service itself contains 2 distinct tasks, one which handles the processing of LifeCheck Import Files (see Importing Parts and Components), and the other handles the running of reports which have been marked as **Run Report Offline** when saved (see Reporting on Component Life).

22.6.2 Configuring the Data Import Task

The data import task is configured using the tab shown below. Note the settings here may be changed while the service is running but will only be picked up by the service if it is restarted.

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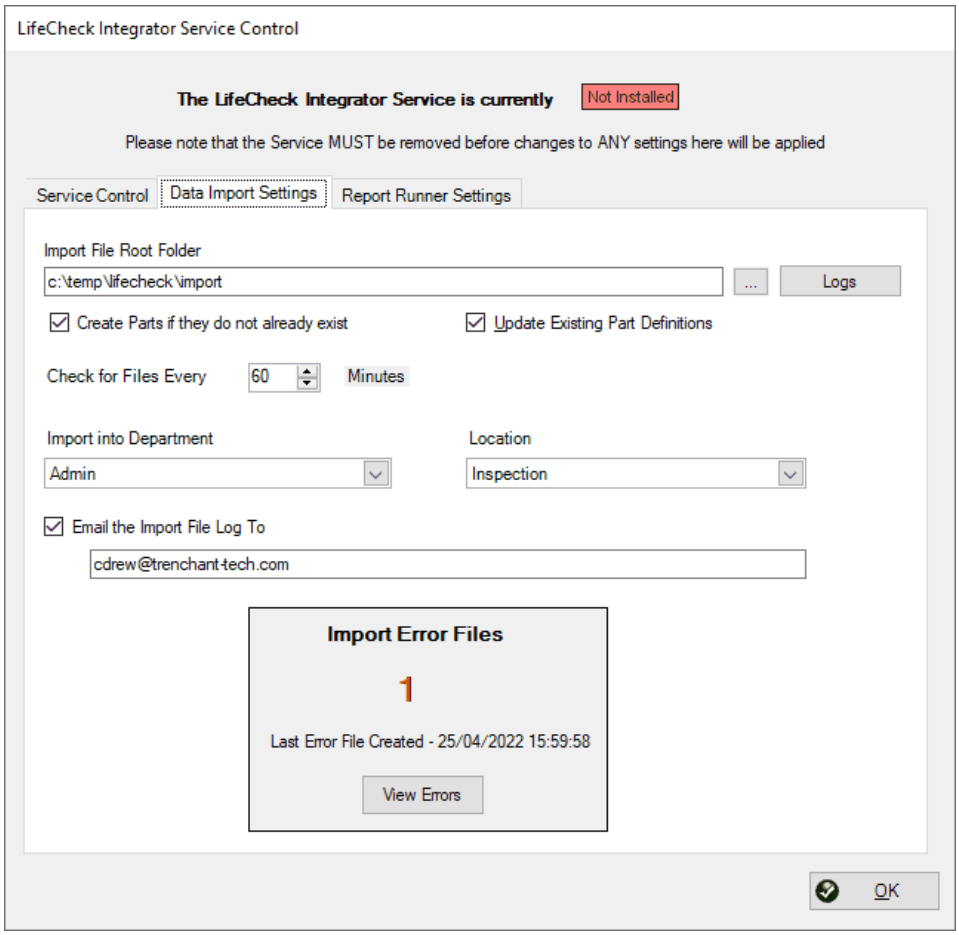

Import File Root Folder
This is the root folder which will be monitored by the integration Service for LifeCheck Import Files (comma-separated format files with the extension .csv). Beneath this folder, LifeCheck will create additional folders as required such as

- Errors

This folder will contain any import files which generated errors (mainly validation errors)

- Logs

This folder will contain log files created as part of the import process which details the parts and components created by the import

- Processed

This folder contains those files which have been successfully processed by the import task. On successful import, the file imported is moved to this folder to avoid being imported a second time.

Clicking the **Logs** button will open Windows File Explorer displaying the contents of the logs folder.

Create Parts if they do not already Exist
When checked. the import task will create any parts read from the import file which do not already exist in the database. It may be useful to leave this un-checked if the import file has been generated by another application/system and may contain parts which are not required in the LifeCheck database.

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Update Existing part Definitions
When checked, the import task will update any parts read from the import file which already exist in the database. For example this can be used to update the part description if it has changed or such things as the part default cost or UIIL flag status.

Check for Files Every 'n' Minutes
The Upload task will re-check the root folder specified above on a set interval looking for new files to import. This setting defines the frequency of these checks. The aim here is to not check too often as this could be an undesirable overhead but often enough that files are processed within a reasonable time of their appearing in the folder. The default of 60 minutes gives a reasonable compromise.

Import into Department / Location
These fields identify the department and location within that department to which imported components should be imported. This allows a central 'inspection' location to be defined into which all imported components will be created initially and so allows control over the distribution of these components.

Email the Import File Log To
This optionally allows the log file created for the import to be emailed to 1 or more addresses as a further check on the import process. Separate email addresses using the semi-colon (';') character. Note that the Email system must be configured under **Administration>Email Configuration.**

Import Error Files
This gives a count of files which have not imported successfully and allows you to open the folder containing the failed import files. Files may fail for a number of reasons including an invalid format, missing columns, non-sequential BoM Levels or duplicated life codes. Consult the associated import log to determine the cause of the error.

22.6.3 Configuring the Report Runner Task

The Report Runner task is configured using the tab below and also specific settings in the report itself which may be defined as the report is saved. These are also detailed below.

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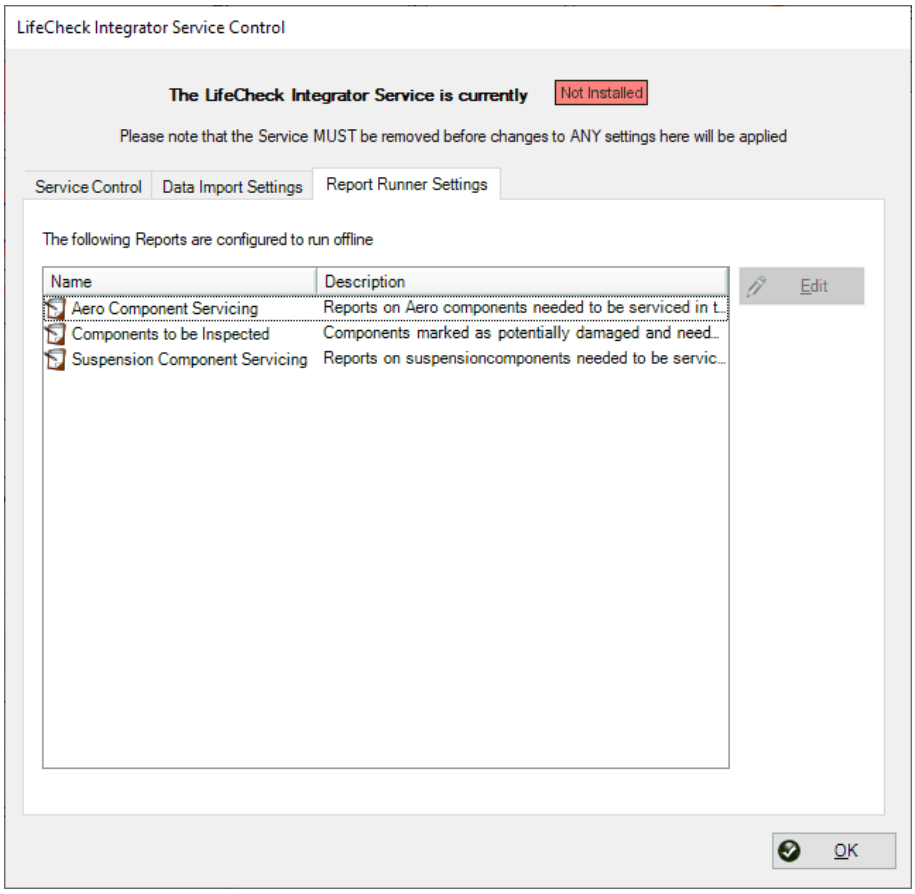

The reports shown are those marked as to be run offline at the point at which they have been saved. You can check the offline running of these reports by selecting one from the list and clicking the **Edit** button to display the following window. Note this is the same window displayed in **Show Life** when saving a report.

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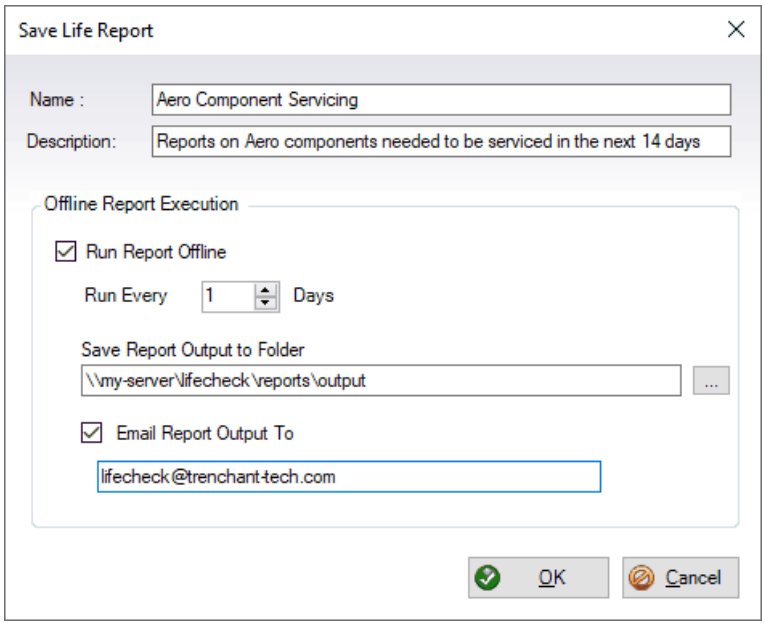

Run Report Offline
When checked, this sets the report to be able to be run in offline mode by the Integration Service. The following settings define how the report will be run.

Run Every 'n' Days
This defines the frequency the report will be run as a number of days.

Save Report output to Folder
When run, the report will be run with its output directed to Microsoft Excel. The resultant Excel file will be saved to the folder specified noting that this folder must be specified before the report may be saved.

Email Report Output To
This optionally allows the Excel file created for the report to be emailed to 1 or more addresses as a further check on the import process. Separate email addresses using the semi-colon (';') character. Note that the Email system must be configured under **Administration>Email Configuration.**

23 Updates

From time to time we may release updates to **LifeCheck** either to add new functionality or to fix any software issues which have been reported or which we have found during internal testing. These updates will be made available via the Trenchant Technologies, Ltd Web Site. **LifeCheck** can also be configured to automatically check our Web Site for any product updates having been released and to download and install any updates found.

By default, automatic update checking is disabled but this may be enabled via the **Automatically Check for Updates to LifeCheck at Startup** option found under **Administration>Global Settings**. When checked, **LifeCheck** will check for product updates each time that it is invoked. It should be noted that this process requires LifeCheck to establish a connection to our web site and this may be blocked by any firewall/security settings in force at your site. In addition, this may slow the startup of **LifeCheck** if an Internet connection is not available. It is also possible to manually check for updates by selecting **File>Check for Updates** from the main ribbon menu. The following window will be displayed :-

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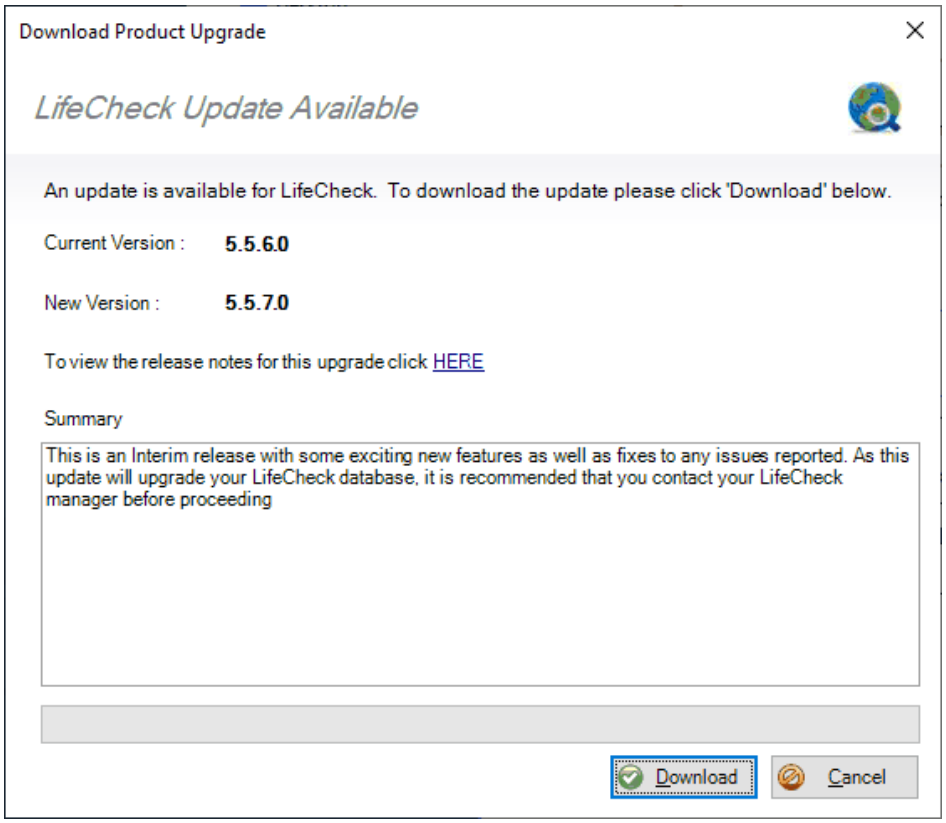

This window allows the release notes for the new version to be viewed by clicking the appropriate link. Click **Download** to begin the download operation. Once the download has been completed, LifeCheck will invoke the installation file downloaded and will exit to allow the upgrade to take place.

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