

ShipWeight

Tutorial - 9.0



Table of Contents

1 INTRODUCTION	3
2 PREPARING A PROJECT	4
3 GETTING DATA INTO SHIPWEIGHT	16
4 MANIPULATING DATA	27
5 WEIGHT MONITORING AND REPORTING	36
6 ADDITIONAL FEATURES	39
7 WEIGHT ESTIMATION	43
8 ADMINISTRATIVE FUNCTIONS.....	53
9 DEVELOPING OWN CRYSTAL REPORTS.....	57



1 Introduction

This tutorial is designed to give a walkthrough of the most important features of ShipWeight.



2 Preparing a project

A Getting started

Start ShipWeight. Create a new design project by selecting *New* from the *Project* menu, or by clicking the '*New project*' button on the toolbar.

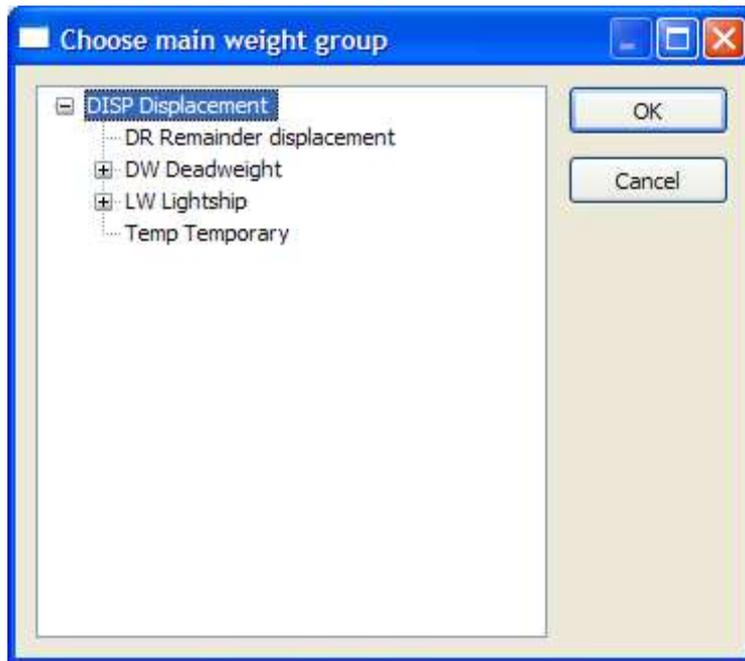
The 'Project data' dialog box contains the following fields and values:

- Database ID*: SWBSPProjects
- Project ID*: ImpTest *Mandatory
- Parent ID: [Empty]
- Ship name: [Empty]
- Ship owner: [Empty]
- Main ship type*: Other Special Vessel
- Ship type*: Research Ship
- Build year: 2010
- Registration pers.: Administrator
- Registration date: 9/9/2010
- Graphics drawing: [Empty]
- DXF drawing: [Empty]
- Shipdesigner: [Empty]
- Shipyards: [Empty]
- Design: [Empty]
- Class: [Empty]
- Comment: [Empty]
- Frame spacing: 1#
- Coord.ref.point: VCG: 0 LCG: 0 TCG: 0
- Coord.ref.dir.: VCG: 1 LCG: 1 TCG: 1
- Units: Metric US

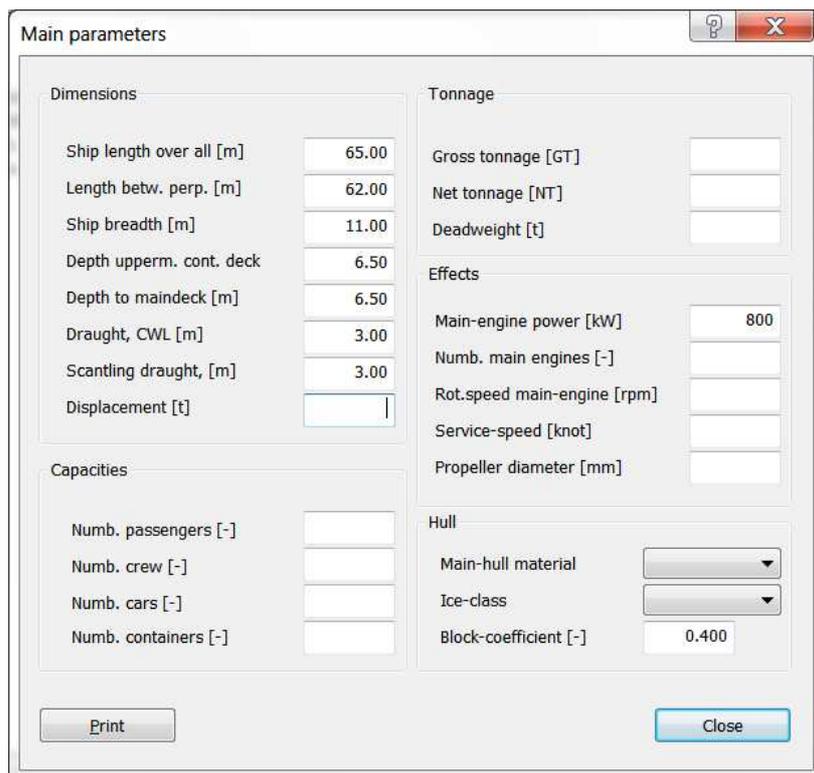
It is necessary to fill in the fields *Database ID*, *Project ID*, *Main type* and *Sub type*, - the others are optional.

Select *Other Specialized Vessel* as *Main type*, and *Research Ship* as *Sub type*. The other fields can be typed in as pleased. Click *OK*.

The *Choose main weight group* dialog will now pop up. Select *OK* to verify that *DISP displacement* should be the main post.



The *Main parameters* dialog will now pop up. Fill in the fields for main particulars.



For a suggestion of values to fill in, see the above figure or chapter 7 *Data for MS Breeze*.

Click the *Close* button.

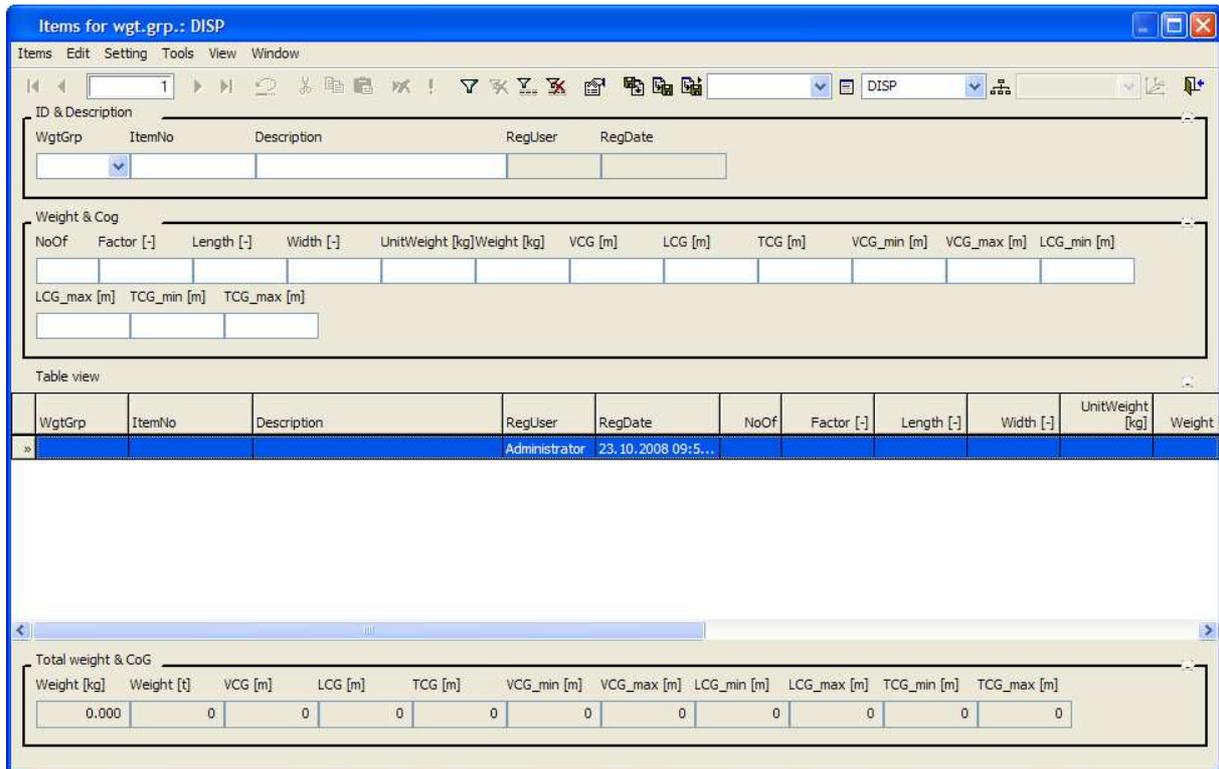


B Preparing the item dialog

Open the item dialog

To open the item dialog, select Items... on the Wgt.Grp menu. Alternatively, press the 'Item level' button on the toolbar: 

The item dialog now opens in default mode. Next we will add default codes



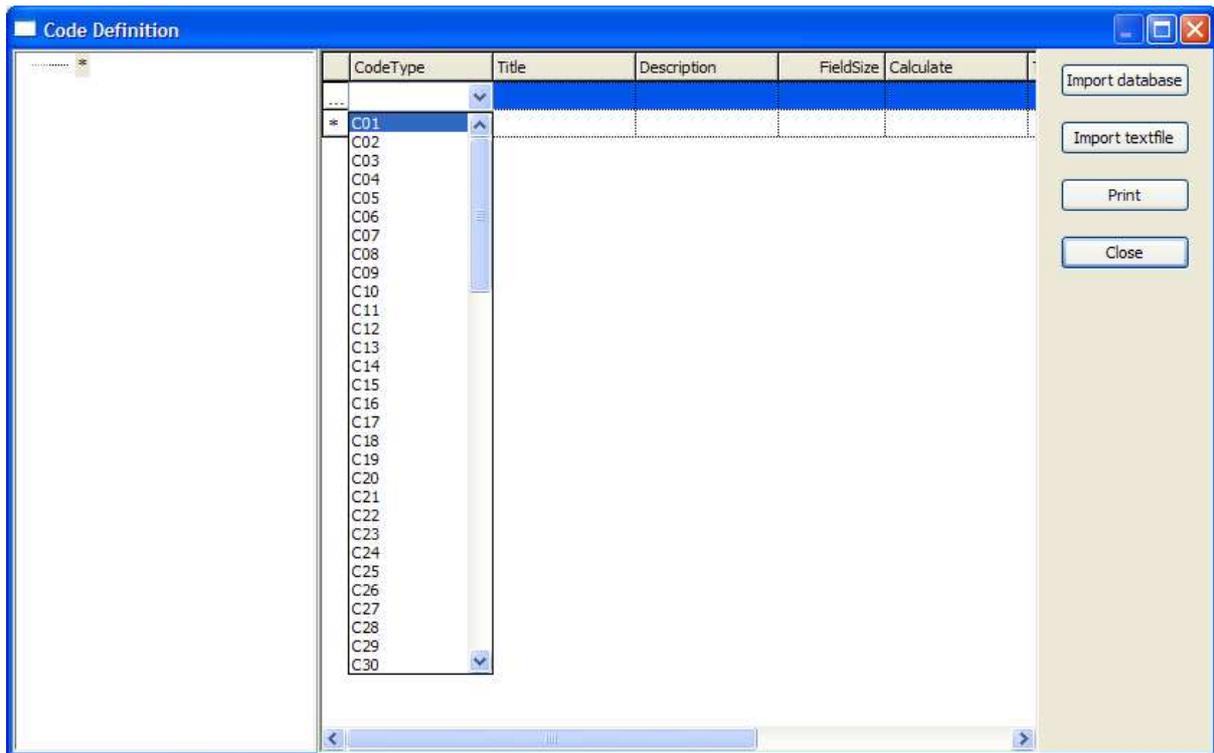
Open the Code Definition dialog

To open the *Code Definition* dialog, select *Code definition...* on the *View* menu of the Item dialog. The Code Definition dialog contains a tree-view on the left side, and a table on the right side.

Define Drawing number code

To create a code, select the cell in the column "CodeType" of the table. The cell will become activated and editable. A new row automatically will be added, and the cell will turn into a combo box (editable dropdown list).

Next, activate the dropdown of the combo box and select the ID of the custom code you want to make e.g. C01.



Next, fill in the following fields:

<i>Field</i>	<i>Value</i>	<i>Description</i>
Title	Drawing no.	<i>Title will show above field in Item dlg.</i>
Description	Drawing number	<i>Information only, no effect</i>
FieldSize	15	<i>Number of characters allowed in field</i>
Calculate	(leave empty)	<i>Formula for calculated codes (Leave empty)</i>
Tab	Right	<i>Alignment of value in Item dlg.</i>
Format	(leave empty)	<i>Formatting of calculated fields (Leave empty)</i>
FieldType	EditBox	<i>Specify a standard editable field</i>

To finish off the registration of code C01, click with the mouse on the empty line in the table. You can make sure that the code has been registered by checking that it is added to the tree left of the grid. Click the minus/plus sign to (un)expand the tree.

The FieldType in this case is EditBox. This means that the custom code field will be an editable box where the user may type in freely.

The other Fieldtypes are:

- ListBox – the user must select value for the field from a dropdown list of predefined values
- ComboBox – the user may select value for the field from a dropdown list of predefined values or type in freely
- ReadOnly – the value cannot be changed by the user

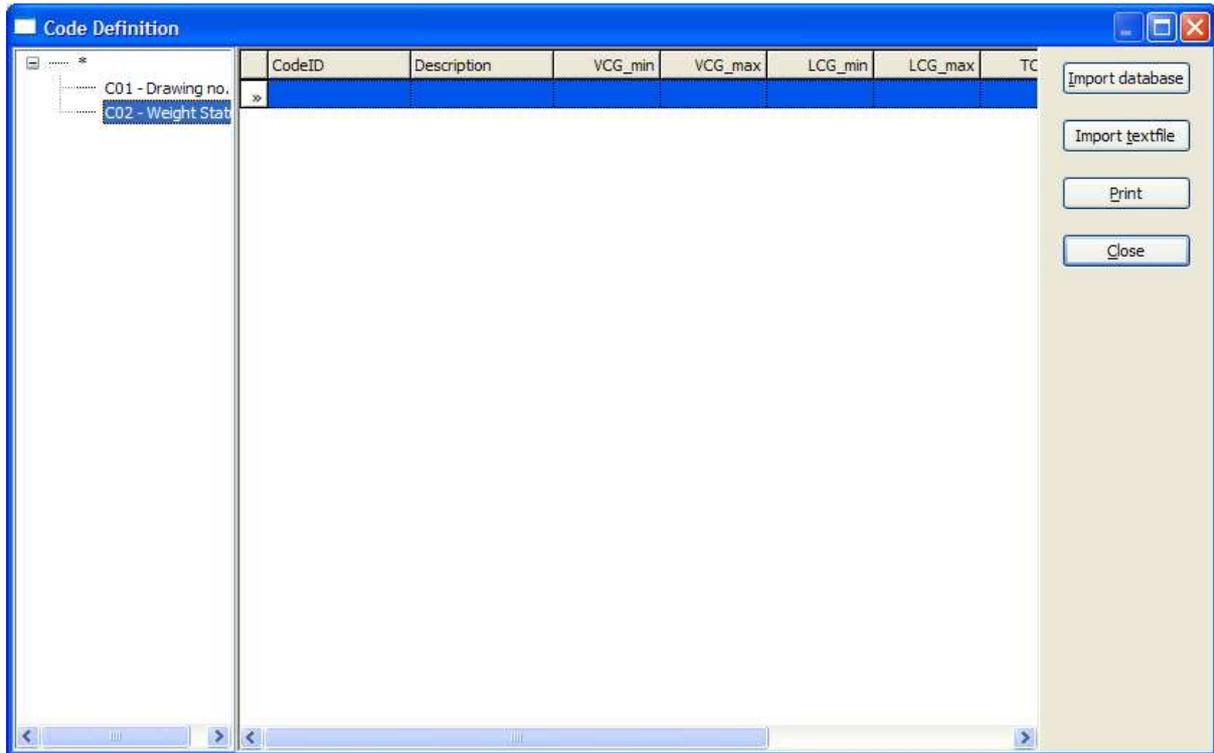


Define Weight status code

In the same way, add the code C02 with the following values:

<i>Field</i>	<i>Value</i>
Title	Weight Status
Description	Weight Status Code
FieldSize	20
Calculate	(leave empty)
Tab	Left
Format	(leave empty)
FieldType	ListBox

Next, we will add code values to the Weight Status code. In the tree-view, select code 'C02 – Weight Status'. An empty table for adding code values will appear on the right side of the tree-view.



Select the row of the table and fill in these values:

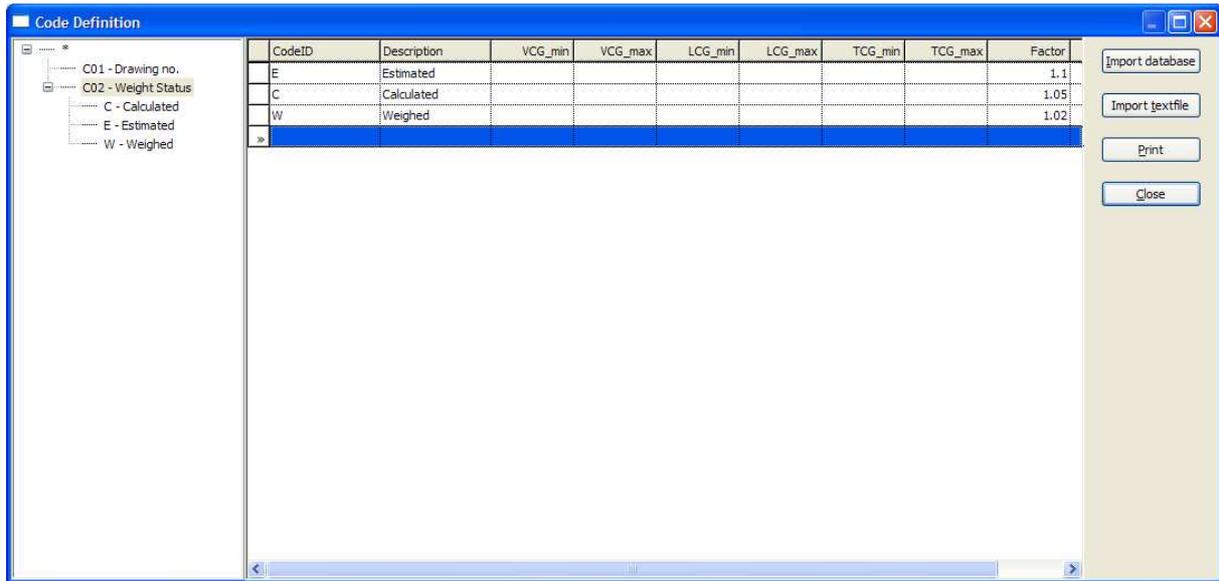
<i>Field</i>	<i>Value</i>
CodeID	E
Description	Estimated
Factor	1.1

Leave the rest of the fields empty, and click on the next row in the table. Enter two more code values:

<i>Field</i>	<i>Value</i>
CodeID	C
Description	Calculated
Factor	1.05

<i>Field</i>	<i>Value</i>
CodeID	A
Description	Actual
Factor	1.02

Finish off registering the code value by clicking the last row in the table with the mouse.



Define Weight with margin code

Next, click the topmost asterisk in the tree-view to display the Code Definition table. Add code C03 with the following values:

<i>Field</i>	<i>Value</i>
CodeType	C03
Title	Weight with Margin
Description	Weight multiplied with margin based on Weight Status code
FieldSize	20
Calculate	[Weight]*[C02].[Factor]
Tab	Right
Format	%.4f
FieldType	ReadOnly

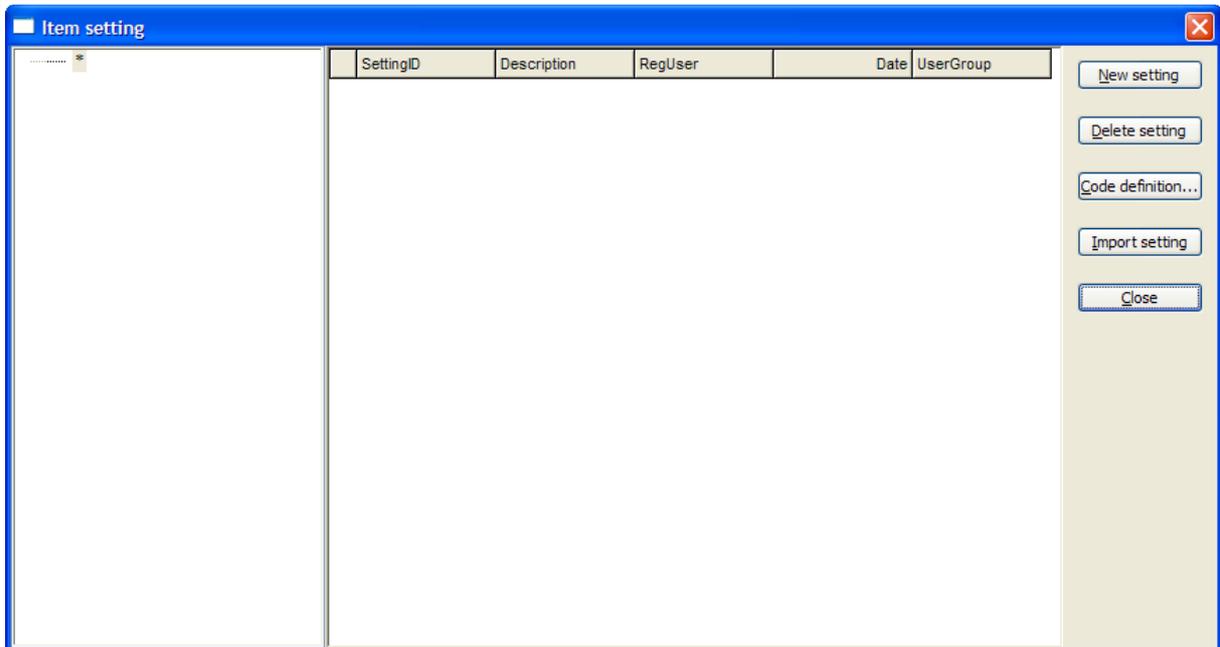
Click the empty row of the table to finish off the registration of C03. Finally, close the Code Definition dialog.



Open the *Item setting* dialog

Back in the *Item* dialog, select *Item settings...* in the *Setting* menu to display the *Item setting* dialog. Alternatively, press the  *Item setting...* button on the toolbar.

The *Item setting* dialog controls the layout of the *Item dialog*.



Create a user defined input view

When the *Item Setting* dialog pops up, press the *New Setting* button to create a new setting. In the tree-view on the left side, click the plus sign next to the asterisk to expand the tree. A setting named 'New setting' has been created. Your dialog should then look like this:





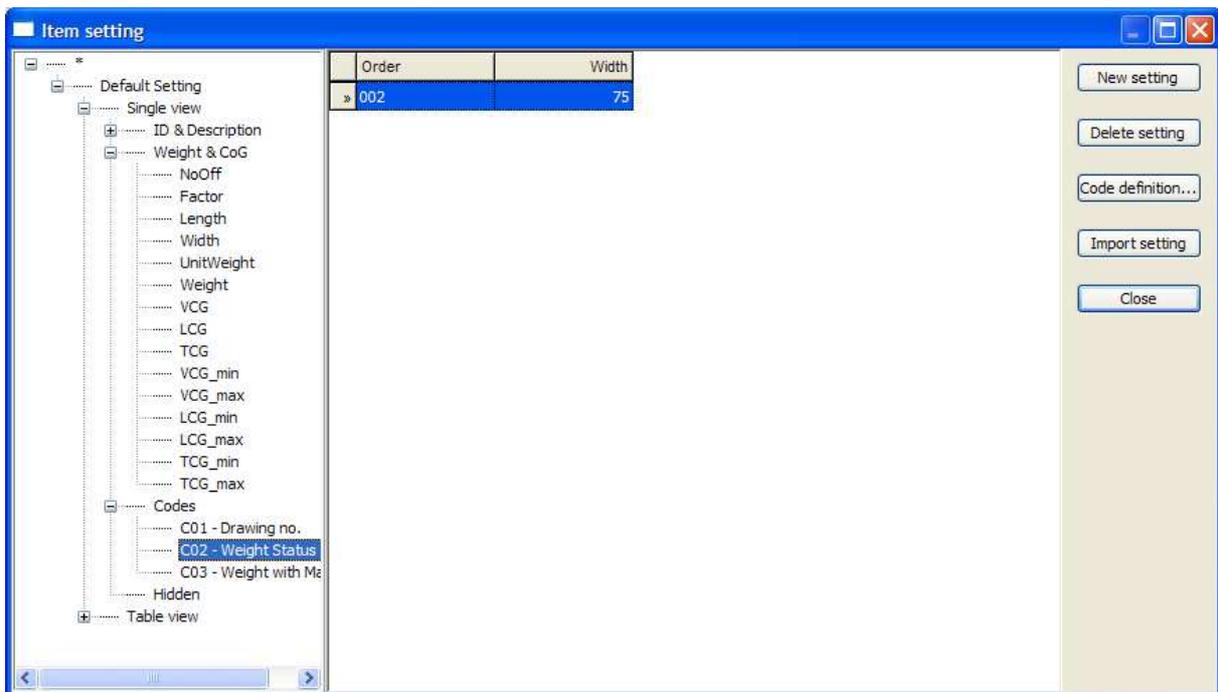
Change SettingID from 'New setting' to 'Default setting'

Make sure the topmost asterisk is selected in the tree. Click the 'New setting' cell in the SettingID column of the table. Change the Setting ID from 'New setting' to e.g. 'Default Setting'.

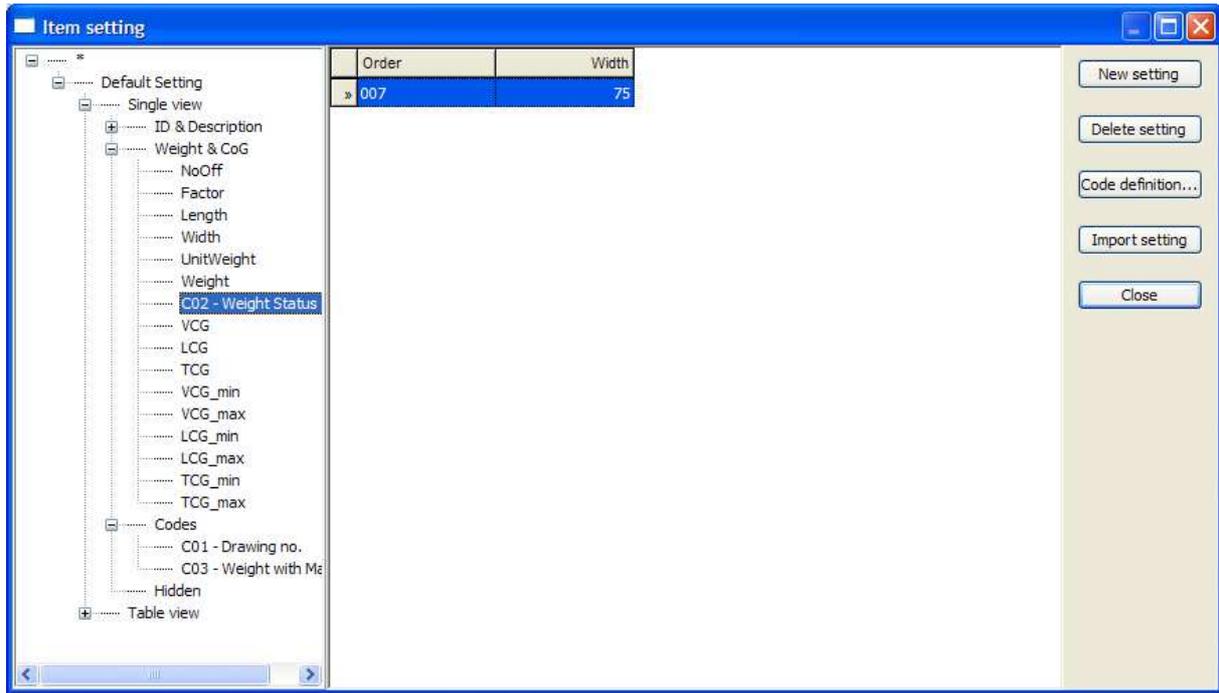
In 'Single view'-view: Move code C02 from Codes group to Weight & CoG group, next to the Weight field.

Next, expand the tree further by clicking the plus sign in front of 'New Setting', 'Single Record', 'Weight & CoG' and 'Codes'.

Select 'C02' in the 'Codes' branch of the tree.



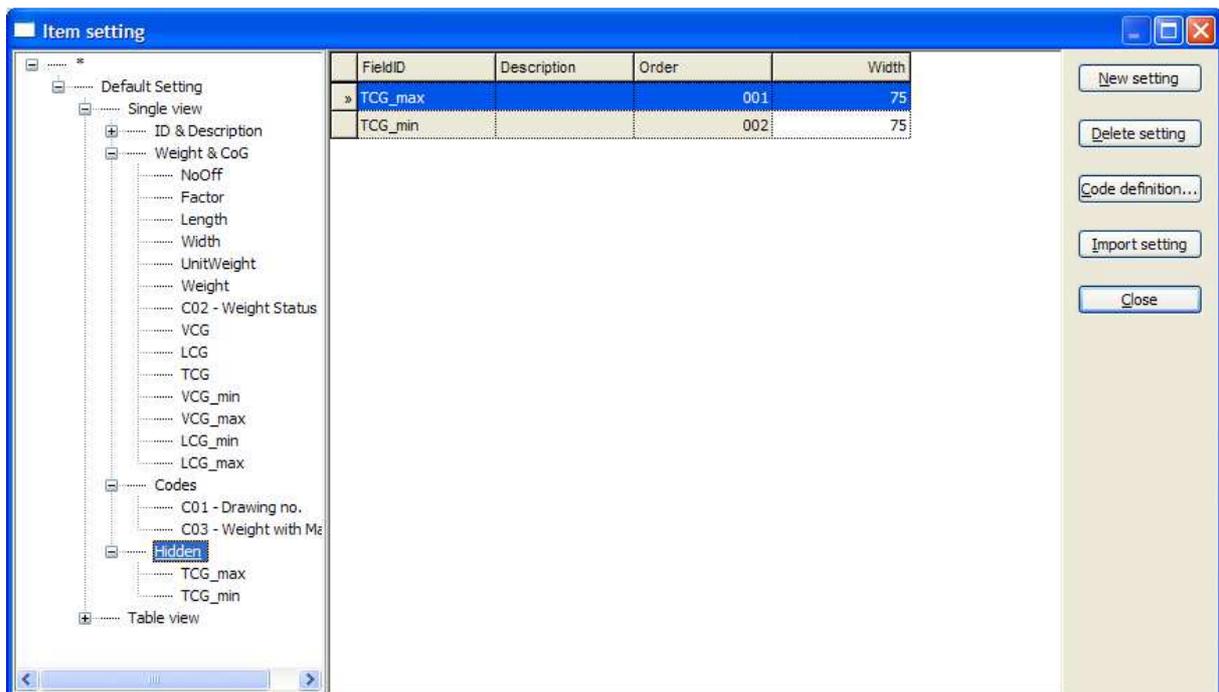
Using the mouse, drag 'C02' from the 'Codes' group and drop it on Weight in the 'Weight & CoG' group. C02 will now be placed directly after the Weight field in the Single Record area of the Item dialog.



In 'Table'-view: Hide TCG_min and TCG_max

Collapse the 'Single Record' branch by clicking the minus sign in front of it. Next, expand the 'Table' branch and then the 'Weight & CoG' branch.

Select 'TCG_min' with the mouse. Drag and drop it in the 'Hidden' group. Repeat this for TCG_max.

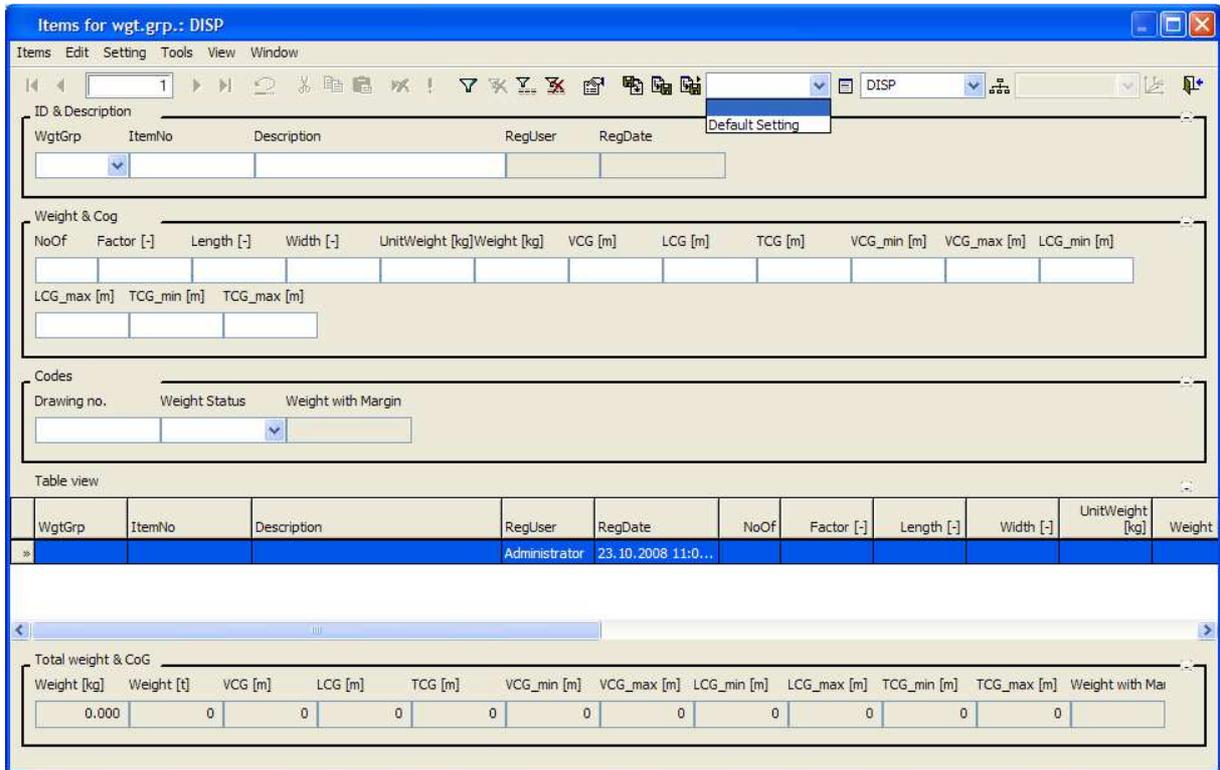




The TCG_min and TCG_max fields will now be hidden in the Single View area of the Item dialog.

Apply the new dialog setting

Close the Item setting dialog. Back in the Items dialog, select 'Default Setting' from the 'Setting' dropdown list on the toolbar.



Now, the Item dialog should look like this:



Items for wgt.grp.: DISP

Items Edit Setting Tools View Window

Default Setting DISP

ID & Description

WgtGrp	ItemNo	Description	RegUser	RegDate

Weight & CoG

NoOf	Factor [-]	Length [-]	Width [-]	UnitWeight [kg]	Weight [kg]	Weight Status	VCG [m]	LCG [m]	TCG [m]	VCG_min [m]	VCG_max [m]
LCG_min [m]		LCG_max [m]									

Codes

Drawing no.	Weight with Margin

Table view

WgtGrp	ItemNo	Description	RegUser	RegDate	NoOf	Factor [-]	Length [-]	Width [-]	UnitWeight [kg]	Weight [kg]	VCG [m]	LCG
			Administrator	23.10.2008...								

Total weight & CoG

Weight [kg]	Weight [t]	VCG [m]	LCG [m]	TCG [m]	VCG_min [m]	VCG_max [m]	LCG_min [m]	LCG_max [m]	TCG_min [m]	TCG_max [m]	Weight with Mar
0.000	0	0	0	0	0	0	0	0	0	0	

Note: This is only one setting. You may make as many settings as you like. The purpose of this is to only see fields that are relevant for the work process you are currently in.

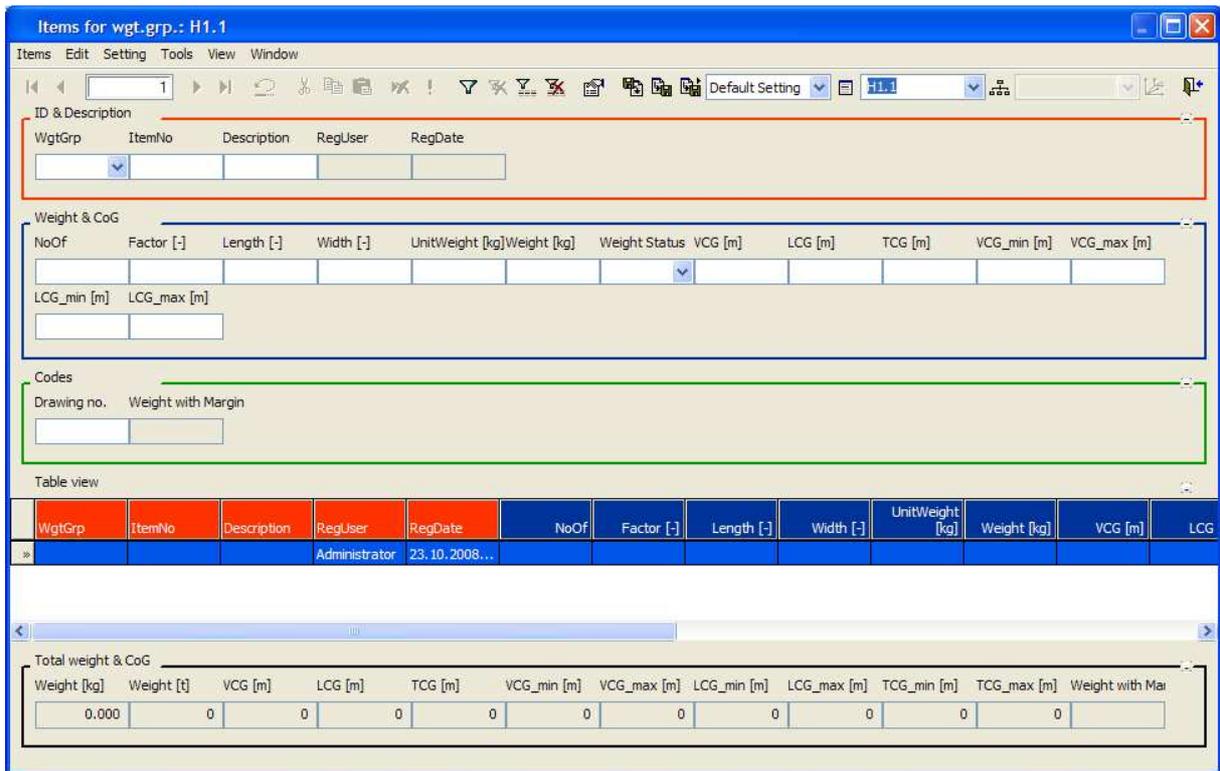


3 Getting data into ShipWeight

A The item dialog: entering data

Open the Items dialog for weight group 111 Shell Plating.

In the ShipWeight main dialog window, navigate to weight group 111 Shell Plating and open the Item dialog.



Add weight item 'Plate 1' using the 'Single Record' area

To register a new item weight using the Single Record area of the Item dialog, you must start by selecting Weight Group 111 from the WgtGrp dropdown list.



Jump to the ItemNo field by pressing the TAB button. Enter Item number 1. When pressing TAB once more, the item will be created. Continue filling in data for the weight item.

Data for Section 1, 111 Shell Plating:

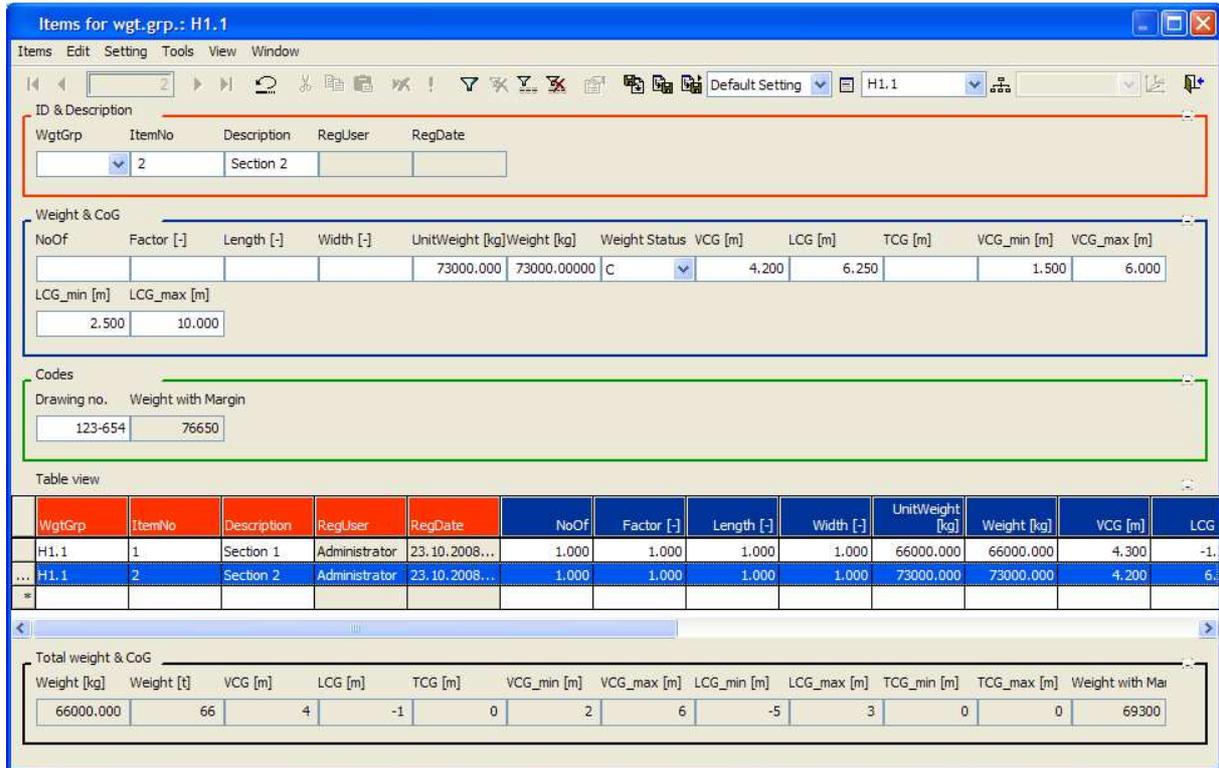
<i>Field</i>	<i>Value</i>
WgtGrp:	111
ItemNo:	1
Description:	Plate 1
NoOf:	1.000
Factor:	1.000
Length:	1.000
Width:	1.000
UnitWeight:	300.00
Weight Status:	C
VCG:	4.300
LCG:	-1.250
TCG:	0.000
VCG_min:	1.500
VCG_max:	6.000
LCG_min:	-5.000
LCG_max:	2.500
TCG_min:	0 (hidden field)
TCG_max:	0 (hidden field)
Drawing no.	123-456



To complete the registration of the weight item, press the right-arrow on the toolbar, or click the empty row in the table.

Add weight item 'Plate 2' using the 'Table' area

Select the empty row in the table and double click the WgtGrp cell. WgtGrp will now be set to 111. Click the TAB-key to jump to the next column. Continue entering item data for 'Plate 2'.



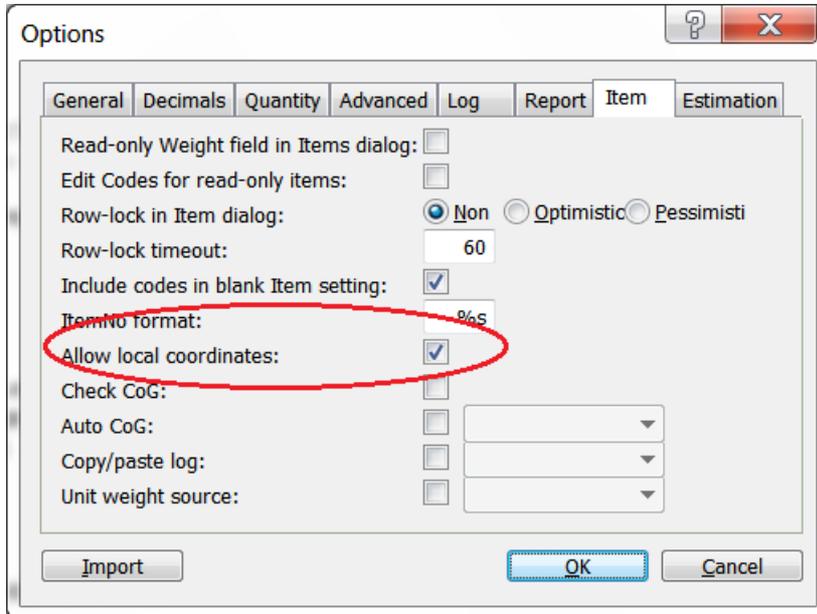
Data for Plate 2, 111 Shell Plating:

<i>Field</i>	<i>Value</i>
WgtGrp:	111
ItemNo:	2
Description:	Plate 2
NoOff:	1
Factor:	1
Length:	1
Width:	1
UnitWeight:	730
VCG:	4.2
LCG:	6.25
VCG_min:	1.5
VCG_max:	6
LCG_min:	2.5
LCG_max:	10
Drawing no.	123-654
Weight Status:	C



Local Coordinates

Local coordinate systems are only available in the Item dialog and the function must be enabled through the “Option” dialog (menu: View->Option...).

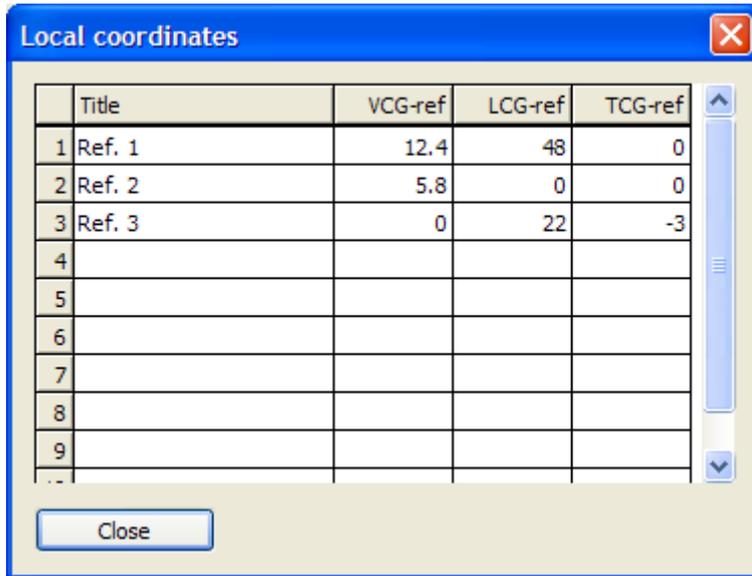


To set up a local coordinate system, press the ‘Local coordinates’ button on the toolbar, or select ‘Local coordinates’ on the Setting menu in the Item Dialog.

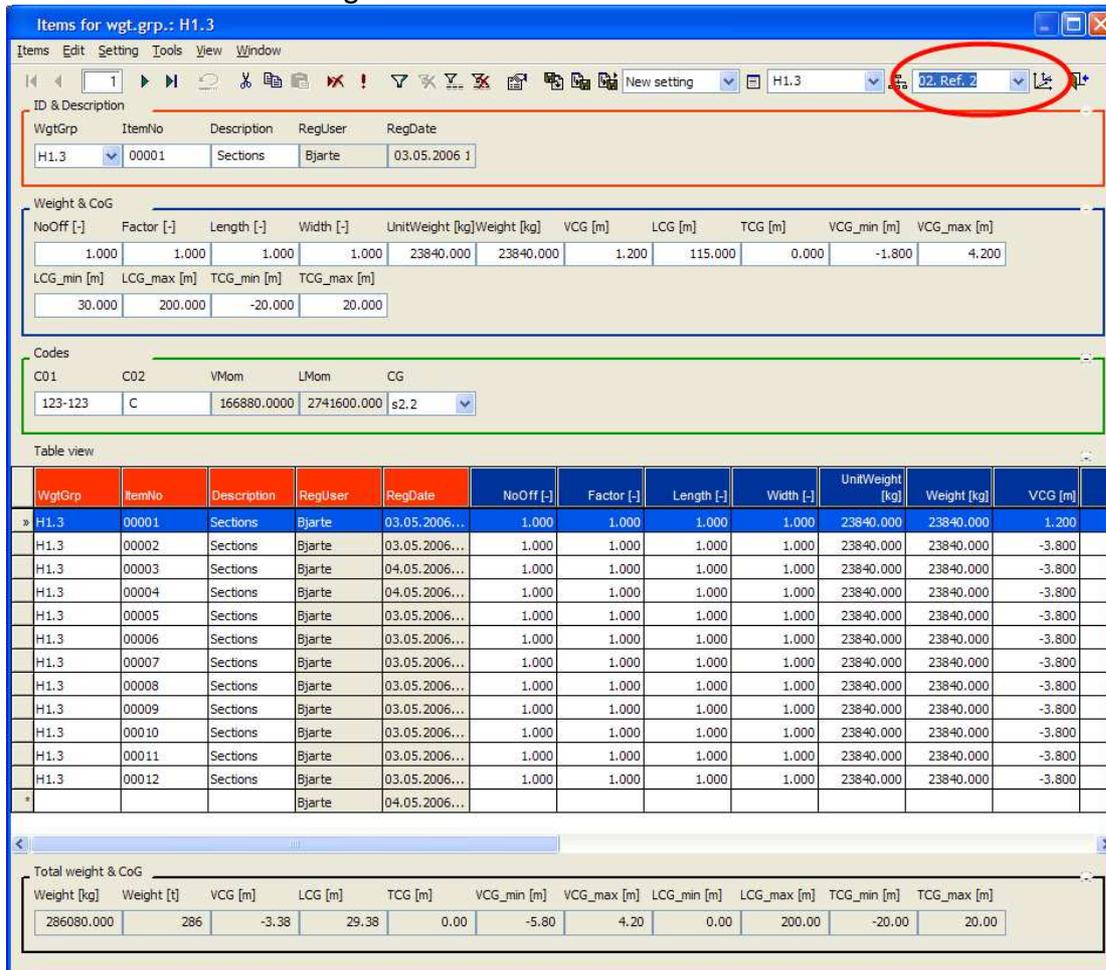
The Local coordinates dialog includes a grid with four columns. To create a local coordinate system, simply fill in the fields:

Title	Name of the local coordinate system
VCG-ref	Vertical reference point
LCG-ref	Longitudinal reference point
TCG-ref	Transverse reference point

Up to ten different local coordinate systems can be defined. The unit of the VCG, LCG and TCG reference points is determined by the Units selected in the options dialog: meters when Metric units are selected and feet when US units are selected. Please note that the reference points are not converted when changing Units from Metric to US units and vice versa.



When you have finished adding/editing local coordinate systems, press the Close button to close the dialog window.



To activate a local coordinate system select it from the 'Local coordinates' dropdown list on the toolbar of the Item dialog.



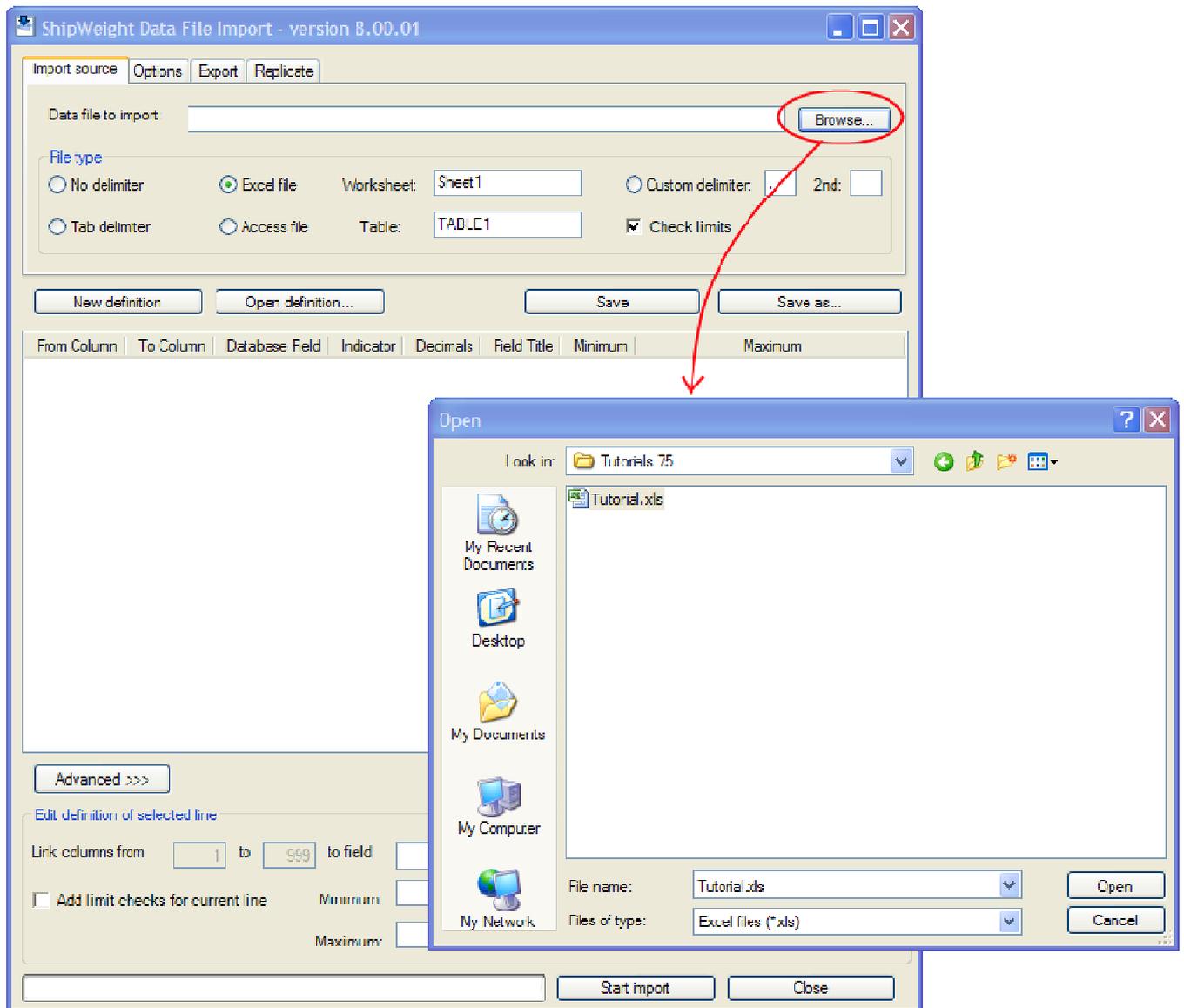
A Importing data

In this tutorial we will import weight data from an Excel workbook. This can be done using the 'ShipWeight Data File Import'-dialog.

To follow this tutorial, please open an appropriate project or create a new project. If you have just completed the previous chapters, you are set. Otherwise, please refer to chapter 2 for details on creating a new project.

In the ShipWeight main dialog window, we select Project → Import → Data file.... Now, the *ShipWeight Data File Import* dialog opens.

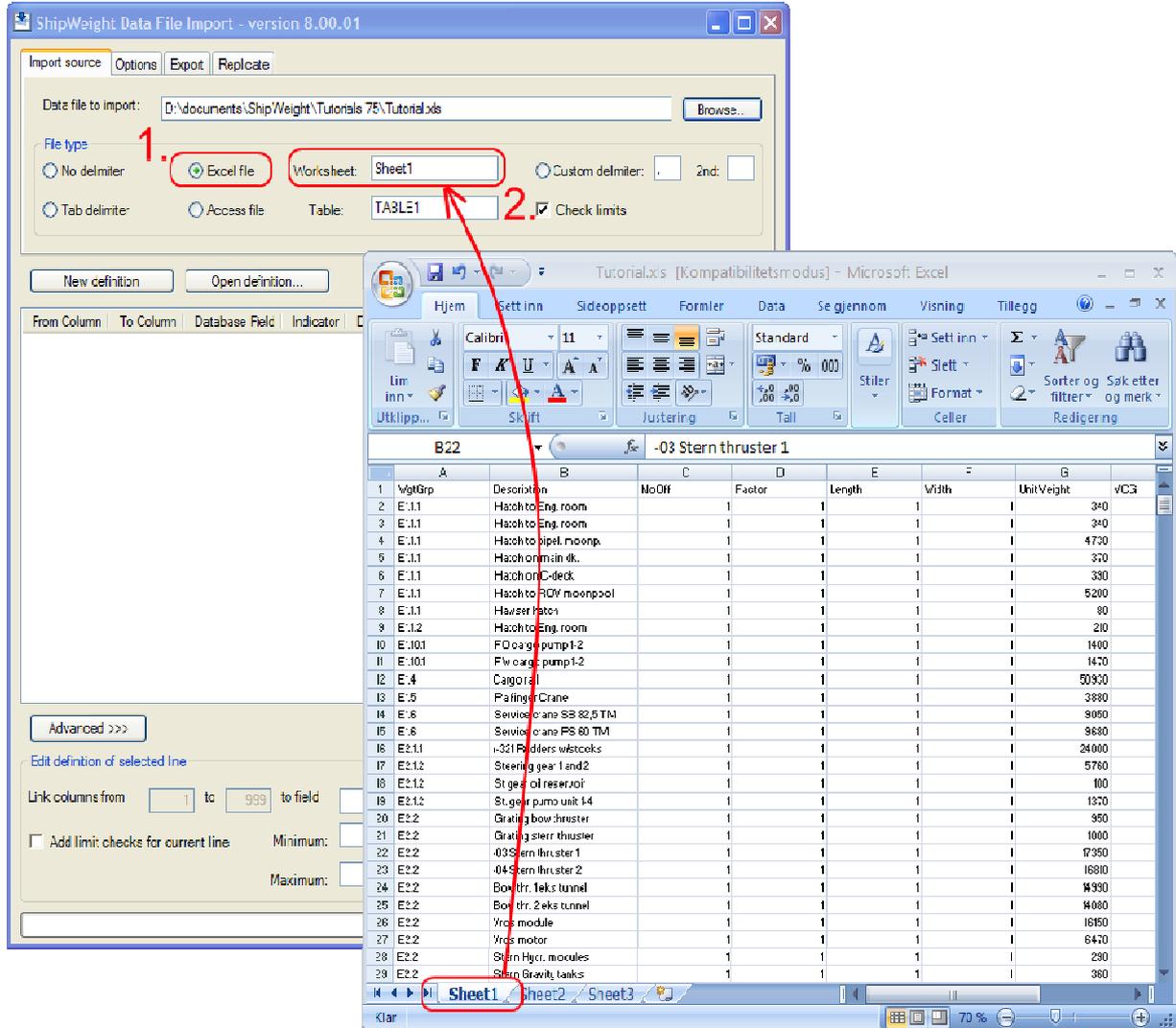
First we set the 'Import source' options. On the 'Import source' tab-sheet, we press the Browse button. Using the 'Open dialog window, we locate the Excel file to import. Press the Open button to select the file "SwbsImport.xls".





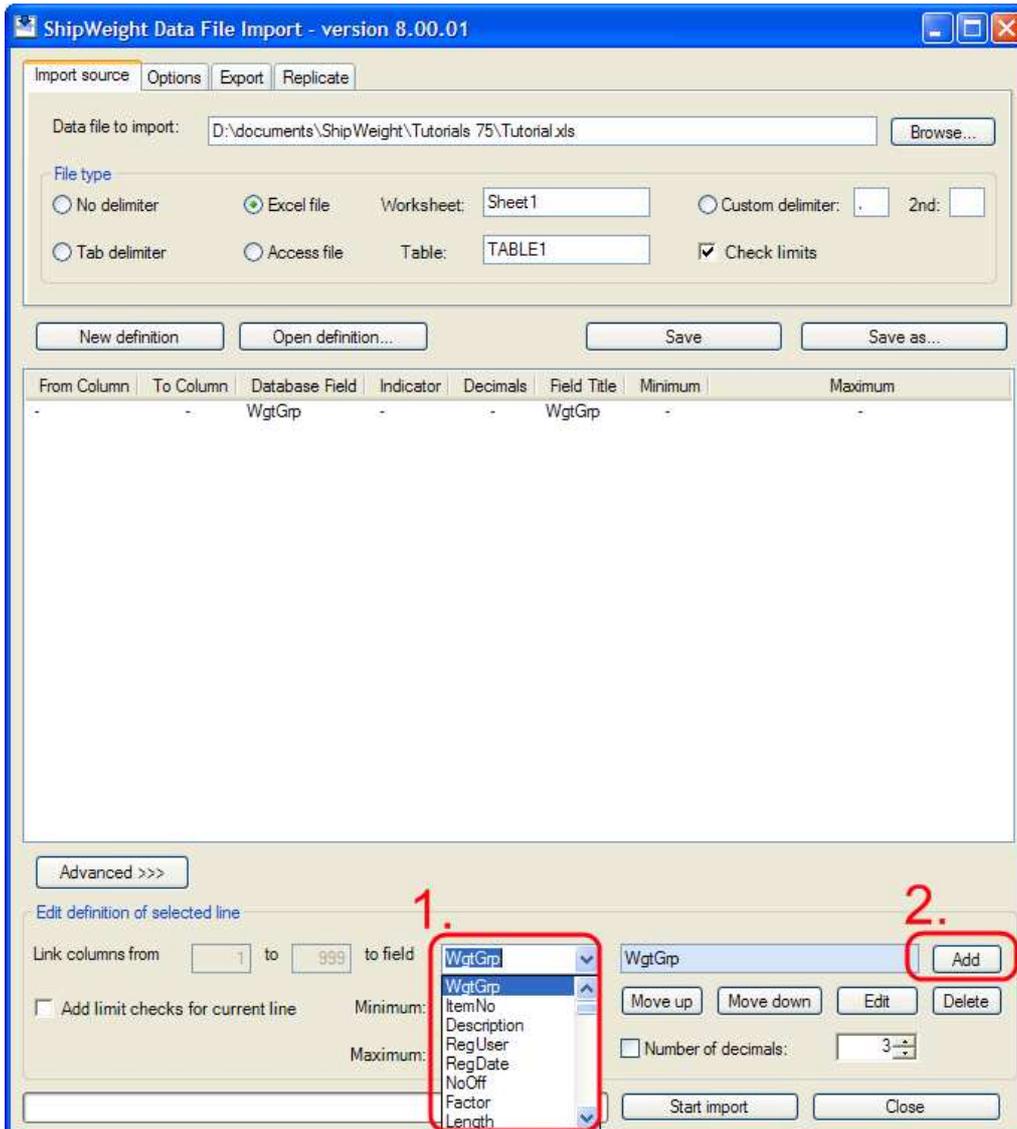
Back in the 'ShipWeight Data File Import' window, check that file type is set to 'Excel file' (default).

Next, we must verify that the name of the Worksheet to be imported is correct. It is important that the name of the Worksheet given in the 'ShipWeight Data File Import' dialog is exactly the same as the name of the spreadsheet in the Excel file.



The next step is to define a set of import rules. The import rules determine in which database field the data from each column of the Excel file will be stored.

In the 'Edit definition of selected line' panel, we select the database field to store the data in the first column in the Excel sheet. In this case, since the first column of our spreadsheet contains 'WgtGrp' data, we must select the field 'WgtGrp'. Press the 'Add' button to apply the rule.



Continue adding database fields according to the columns in the spreadsheet. In this tutorial we will add the following database fields:

- WgtGrp
- ItemNo
- Description
- NoOff
- Factor
- Length
- Width
- UnitWeight
- VCG
- LCG
- TCG
- LCG_min
- LCG_max



This import definition list may be saved (click “save” button in the dialog) and restored by clicking from the “Open” button later.

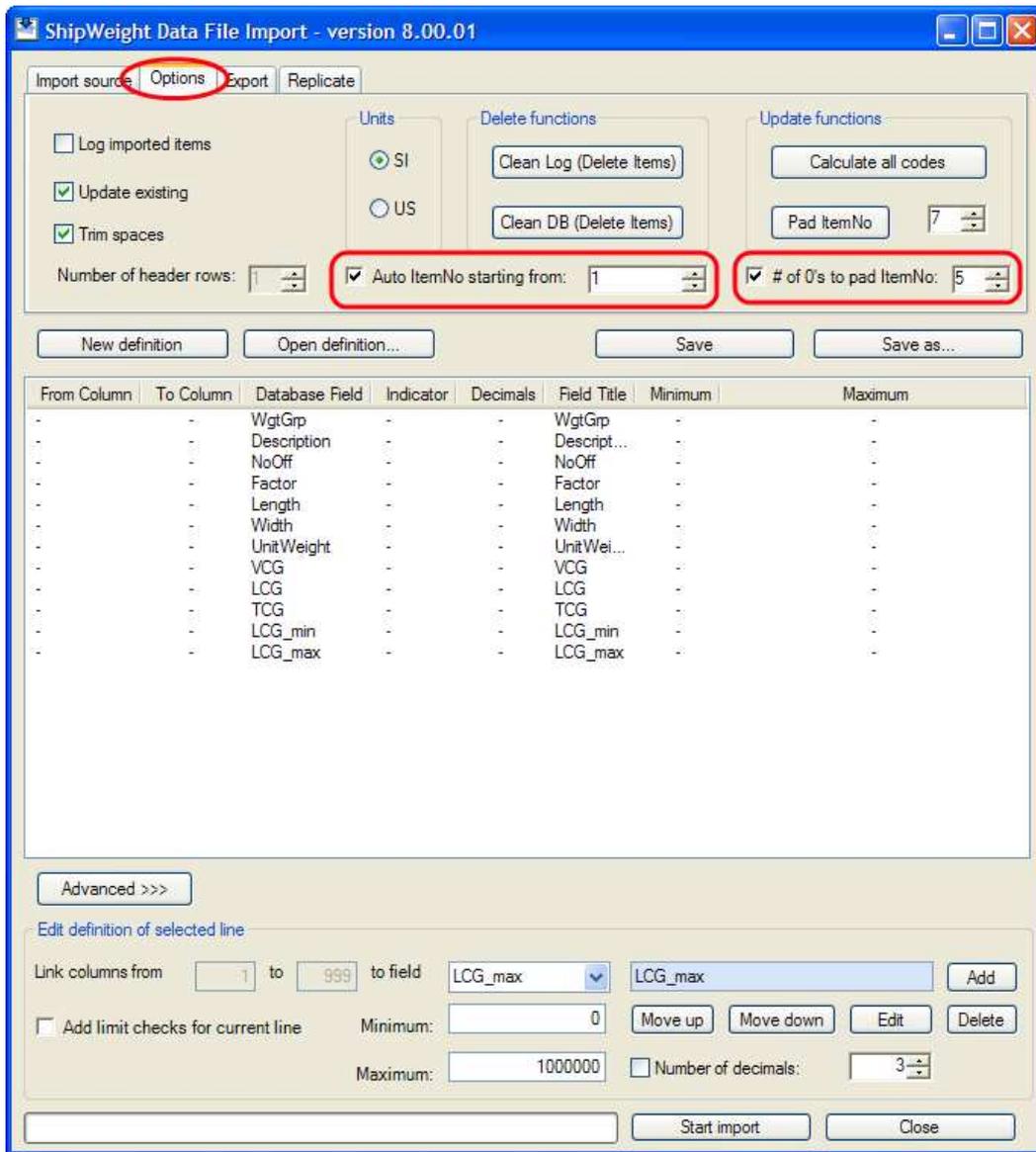
In case of Item numbers missing from the import file:

Before we start importing data, we must set the import options. Click the ‘Options’ tab sheet.

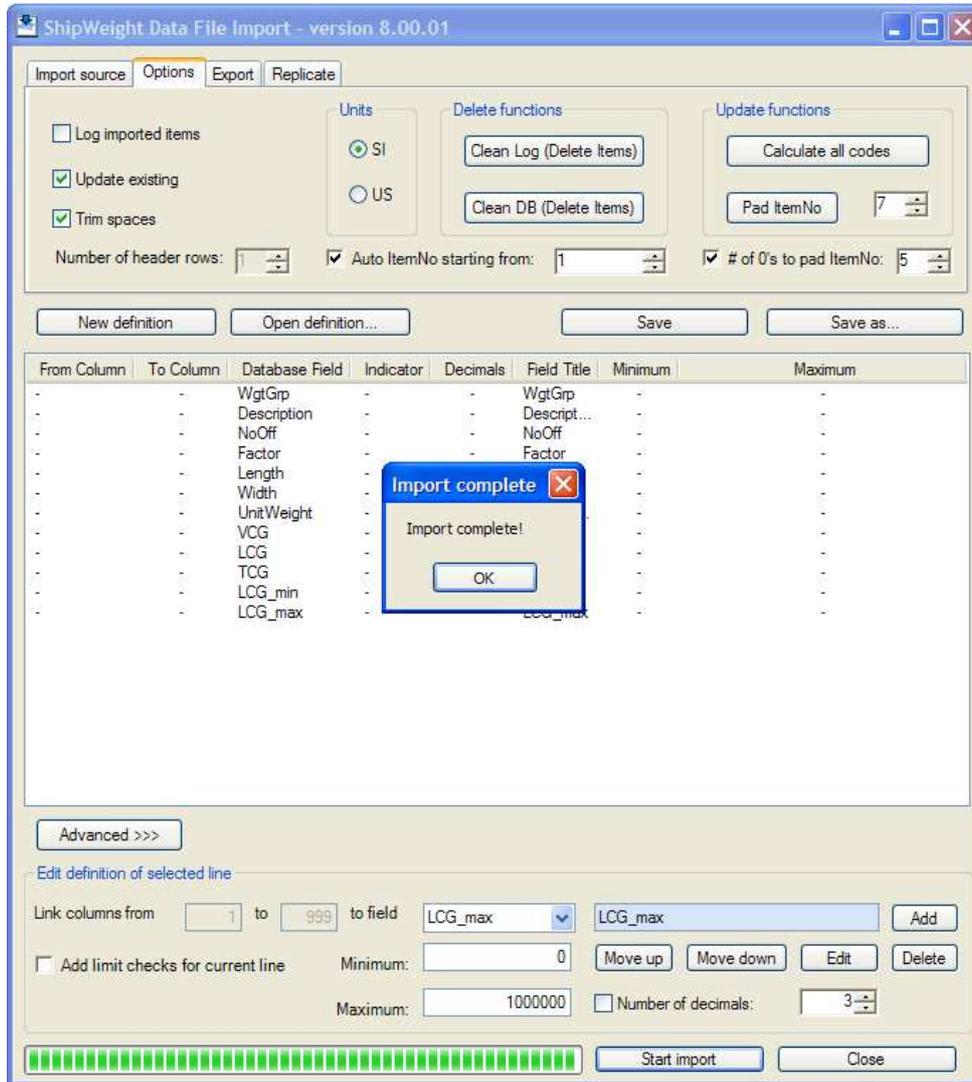
First we will check off the option ‘Auto ItemNo starting from’. The reason for this is that our spreadsheet doesn’t contain a column for item numbers.

Please note that the import will fail if you try to import data with item numbers already in use in the database. If this is the case, please try to increase the number in the ‘Auto ItemNo starting from’ field. Alternatively, check off the ‘Update existing’ option to overwrite items with identical item numbers.

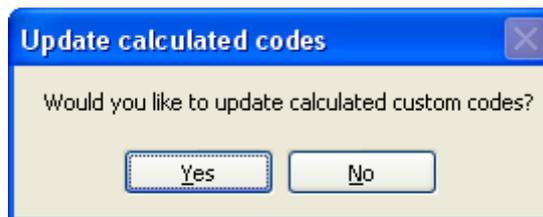
We also want to pad the item numbers with zeros. Check off the option ‘# of 0’s to pad ItemNo’. Please note that the option ‘Number of header rows’ is disabled. The ‘ShipWeight Data File Import’ always assumes that the spreadsheet contains one header row.



Now we are ready to start importing data. Make sure that the spreadsheet you are going to import is not open in Excel.



You will get the following question after import:



No need to update as no calculated codes are affected, so click “No”. When the import is complete, select ‘Close’.

You will get a dialog that ask you to ‘Summarize wgt.grp’ in the ‘Wgt.Grp’ menu. Please do this after returning to the main dialog window of ShipWeight.

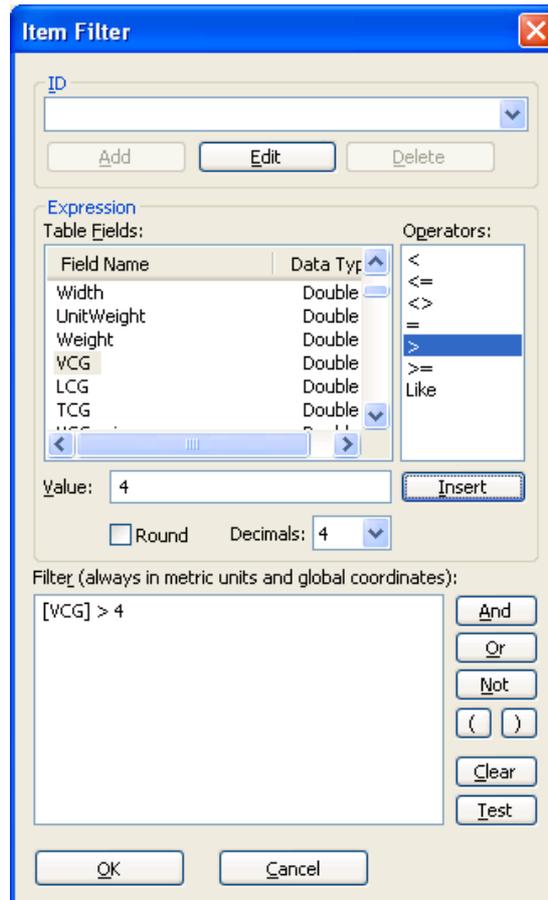


4 Manipulating Data

Create a filter to display weight items with VCG > 4 m

In the tree-view on the main dialog, navigate to weight group E2.2 under LW – Lightship → 100 → 110 → 111 Shell Plating, and open the item dialog.

Press the  'Apply filter' button on the toolbar, or select Tools → Filter → Apply... on the Tools menu. The *Item Filter* dialog will pop up.



In the 'Table Fields' list, select VCG. Select the '>' operator from the 'Operators' list. Set the 'Value' to 4, and press the Insert button.

Press OK to apply the filter. Now, 5 items which have VCG's larger than 4.0 meters will be listed.



Items for wgt.grp.: E2.2

Items Edit Setting Tools View Window

Default Setting E2.2

ID & Description

WgtGrp	ItemNo	Description	RegUser	RegDate
E2.2	00019	Grating bow 1	Administrator	23.10.2008 1

Weight & CoG

NoOf	Factor [-]	Length [-]	Width [-]	UnitWeight [kg]	Weight [kg]	Weight Status	VCG [m]	LCG [m]	TCG [m]	VCG_min [m]	VCG_max [m]
1.000	1.000	1.000	1.000	950.000	950.000		1.800	73.800	0.000		
LCG_min [m]	LCG_max [m]										
69.100	75.300										

Codes

Drawing no. Weight with Margin

Table view

WgtGrp	ItemNo	Description	RegUser	RegDate	NoOf	Factor [-]	Length [-]	Width [-]	UnitWeight [kg]	Weight [kg]	VCG [m]	LCG
» E2.2	00021	-03 Stern t...	Administrator	23.10.2008...	1.000	1.000	1.000	1.000	17350.000	17350.000	4.900	2...
E2.2	00022	-04 Stern t...	Administrator	23.10.2008...	1.000	1.000	1.000	1.000	16810.000	16810.000	5.000	5...
E2.2	00027	Stern Hydr...	Administrator	23.10.2008...	1.000	1.000	1.000	1.000	290.000	290.000	8.100	3...
E2.2	00028	Stern Gravi...	Administrator	23.10.2008...	1.000	1.000	1.000	1.000	360.000	360.000	6.600	3...
E2.2	00029	LO St. thru...	Administrator	23.10.2008...	1.000	1.000	1.000	1.000	1730.000	1730.000	5.900	3...
*			Administrator	23.10.2008...								

Total weight & CoG

Weight [kg]	Weight [t]	VCG [m]	LCG [m]	TCG [m]	VCG_min [m]	VCG_max [m]	LCG_min [m]	LCG_max [m]	TCG_min [m]	TCG_max [m]	Weight with Mar
36540.000	37	5	4	-0	0	0	1	7	0	0	0

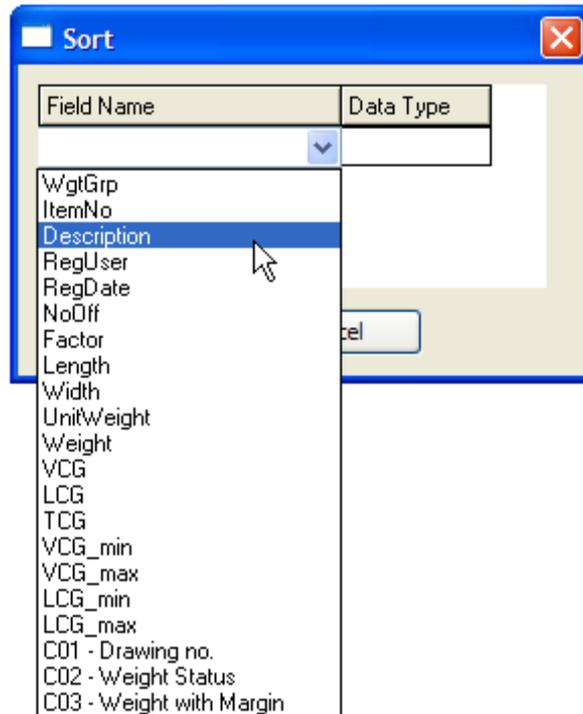
To remove the filter, select Tools → Filter → Clear, or press the  'Clear Filter' button.



Sort the weight items on Description and Weight

To open the Sort dialog, select Sort → Apply... on the Tools menu, or press the  'Sort' button on the toolbar.

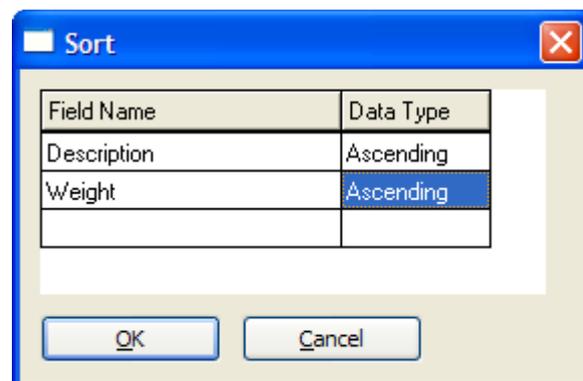
Click the 'Field Name' cell of the empty row. The cell will change to a combo box. Activate the dropdown list, and select Description.



Click the 'Data Type' cell. By default, the value will be set to 'Ascending'.

On the next row, select

Field Name: Weight
Data Type: Ascending



Press the OK button to apply the Sort.



Items for wgt.grp.: E2.2

Items Edit Setting Tools View Window

Default Setting E2.2

ID & Description

WgtGrp	ItemNo	Description	RegUser	RegDate
E2.2	00021	-03 Stern thr...	Administrator	23.10.2008 1

Weight & CoG

NoOf	Factor [-]	Length [-]	Width [-]	UnitWeight [kg]	Weight [kg]	Weight Status	VCG [m]	LCG [m]	TCG [m]	VCG_min [m]	VCG_max [m]
1.000	1.000	1.000	1.000	17350.000	17350.000		4.900	2.800	0.000		

LCG_min [m] LCG_max [m]

1.500	4.000
-------	-------

Codes

Drawing no. Weight with Margin

Table view

WgtGrp	ItemNo	Description	RegUser	RegDate	NoOf	Factor [-]	Length [-]	Width [-]	UnitWeight [kg]	Weight [kg]	VCG [m]
» E2.2	00021	-03 Stern t...	Administrator	23.10.2008...	1.000	1.000	1.000	1.000	17350.000	17350.000	4.900
E2.2	00022	-04 Stern t...	Administrator	23.10.2008...	1.000	1.000	1.000	1.000	16810.000	16810.000	5.000
E2.2	00023	Bow thr. 1 ...	Administrator	23.10.2008...	1.000	1.000	1.000	1.000	14990.000	14990.000	2.800
E2.2	00024	Bow thr. 2 ...	Administrator	23.10.2008...	1.000	1.000	1.000	1.000	14080.000	14080.000	2.800
E2.2	00019	Grating bo...	Administrator	23.10.2008...	1.000	1.000	1.000	1.000	950.000	950.000	1.800
E2.2	00020	Grating ster...	Administrator	23.10.2008...	1.000	1.000	1.000	1.000	1000.000	1000.000	1.500
E2.2	00030	LO Bow thr...	Administrator	23.10.2008...	1.000	1.000	1.000	1.000	1800.000	1800.000	2.800
E2.2	00029	LO St. thru...	Administrator	23.10.2008...	1.000	1.000	1.000	1.000	1730.000	1730.000	5.900
E2.2	00028	Stern Gravi...	Administrator	23.10.2008...	1.000	1.000	1.000	1.000	360.000	360.000	6.600

Total weight & CoG

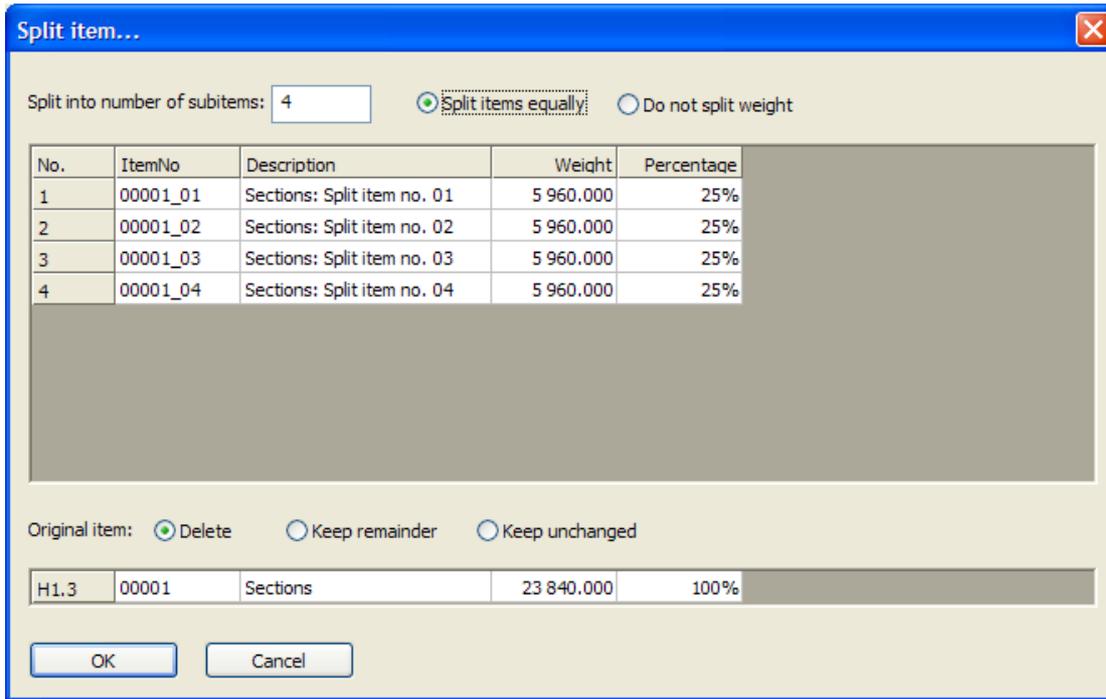
Weight [kg]	Weight [t]	VCG [m]	LCG [m]	TCG [m]	VCG_min [m]	VCG_max [m]	LCG_min [m]	LCG_max [m]	TCG_min [m]	TCG_max [m]	Weight with Mar
91980.000	92	3	43	0	0	0	1	75	0	0	0

Splitting Items

The Split item dialog is used to divide an item into two or more parts. In the Items dialog, select a weight item. Choose 'Split item...' on the Items menu.

Next, select the number of sub-items to split the item into. Choose whether to split the weight or not. Select how to treat the original item: 'Delete', 'Keep remainder' or 'Keep unchanged'.

Press the OK button to create the new items and close the dialog.



Merging Items

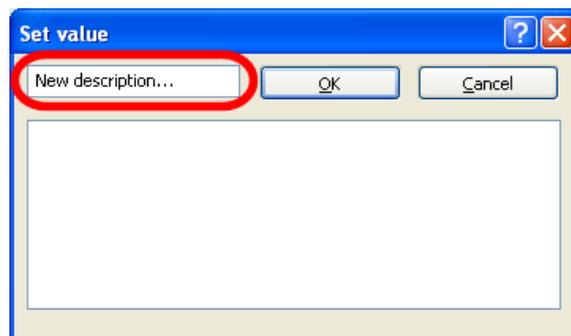
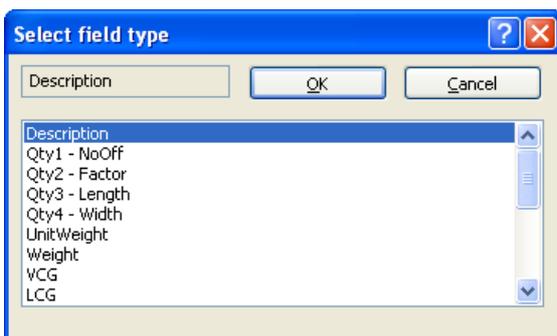
From the Items menu “Merge items” you may go also merge item by selecting them (consecutive) in the Item Dialog and run the merge function from the menu.

Multiple Editing of Items

You can use the ‘Set field values’ option to edit several weight items in one operation. The fields available for editing are:

- Description
- Quantities
- Weight (if not read-only)
- CoG
- Extensions (CoG_min and CoG_max)
- Codes

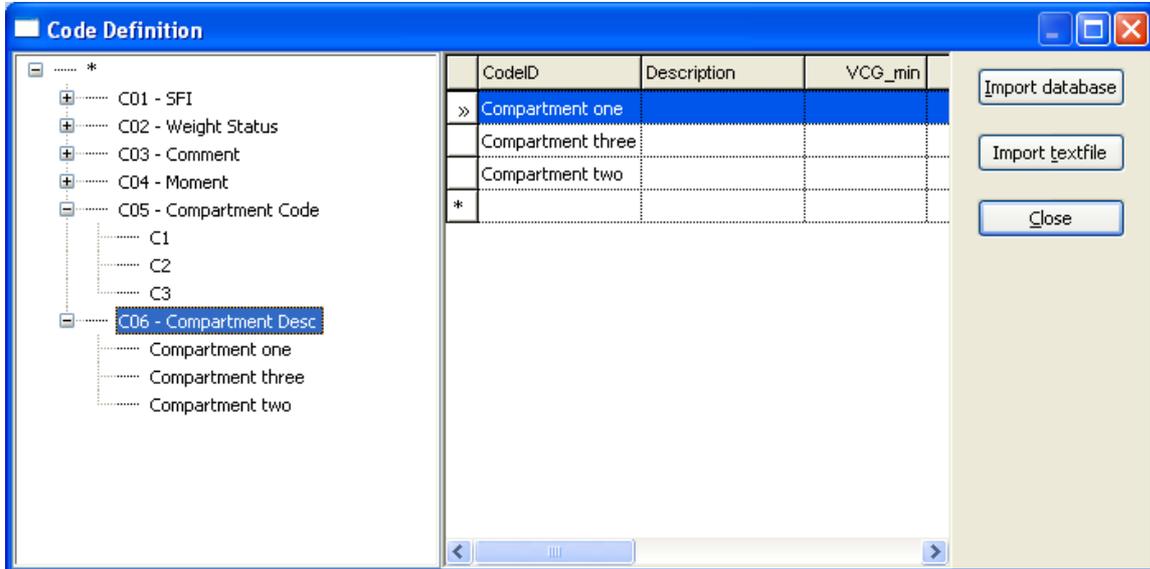
Select the desired items, and choose ‘Set field values...’ on the Edit menu. Next, choose the field to be changed in the ‘Select field type’ dialog window and press OK. The ‘Set value’ dialog will appear. Type a value into the field at the upper left corner of the dialog window or select one of the available values in the list below. Press OK to apply the changes.



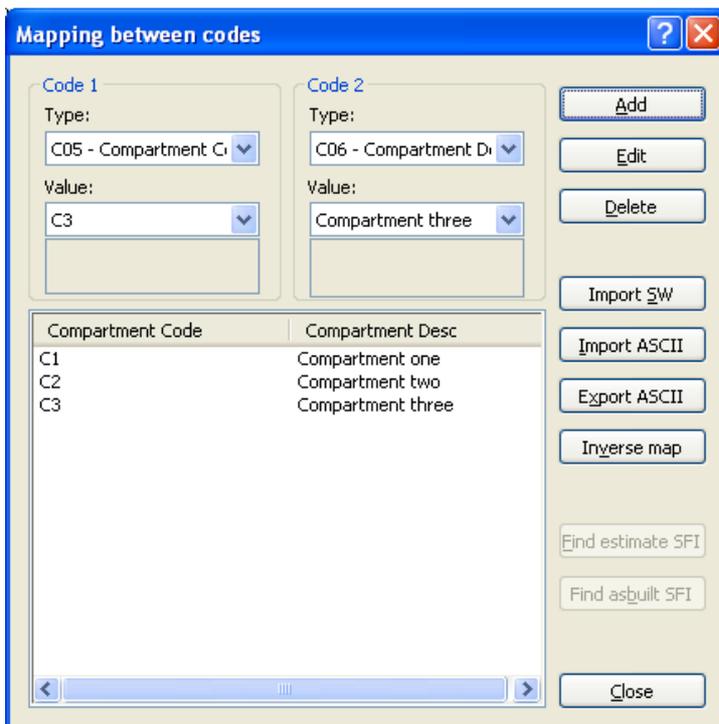


Code Mapping

First make two codes: "C05 – Compartment code" and "C06 – Compartment description" in the code definition dialog.



In the Code Mapping dialog, select C05 as Code Type 1 and C06 as Code Type 2. Select "C1" value in the first drop list, then "Compartment one" in second drop list and click "Add" button. Next I select "C2" in first drop list and "Compartment two" in second drop list and click "Add" button. Finally, select "C3" in first drop list and "Compartment three" in second drop list and click "Add" button. This creates the mapping. Now close the dialog.





In the Item Dialog, weight items are assigned compartment code (C05), but not compartment description (C06):

	WgtGrp	ItemNo	Description	Width [-]	UnitWeight [kg]	Weight [kg]	Compartment Code	Compartment Desc
»	H1.4	497	Unit 02	1.000	59860.000	59860.0000	C2	
	H1.4	520	Unit 18	1.000	45130.000	45130.0000	C3	
	H1.4	521	Unit 19	1.000	31140.000	31140.0000	C1	
	H1.4	522	Unit 20	1.000	48550.000	48550.0000	C2	
	H1.4	523	Unit 18	1.000	29240.000	29240.0000	C3	
*								

All items to be assigned “Compartment description” through “Code Mapping” must be selected in the Table View, and go to “Items” menu in the Items Dialog and select “Set Codes by mapping...”.

Click “OK” on the message pop-up and then select “C06” in the pop-up dialog to pick the code to be updated:



wWgtGrp	ItemNo	Description	Width [-]	UnitWeight [kg]	Weight [kg]	Compartment Code	Compartment Desc
H1.4	497	Unit 02	1.000	59860.000	59860.0000	C2	
H1.4	520	Unit 18	1.000	45130.000	45130.0000	C3	
H1.4	521	Unit 19	1.000	31140.000	31140.0000	C1	
H1.4	522	Unit 20	1.000	48550.000	48550.0000	C2	
H1.4	523	Unit 18	1.000	29240.000	29240.0000	C3	

When “C06” is selected in the list click “OK” and once more click “OK” to pass the message pop-up and then select “C05” in the pop-up dialog to select the code the update should be based on:

wWgtGrp	ItemNo	Description	Width [-]	UnitWeight [kg]	Weight [kg]	Compartment Code	Compartment Desc
H1.4	497	Unit 02	1.000	59860.000	59860.0000	C2	
H1.4	520	Unit 18	1.000	45130.000	45130.0000	C3	
H1.4	521	Unit 19	1.000	31140.000	31140.0000	C1	
H1.4	522	Unit 20	1.000	48550.000	48550.0000	C2	
H1.4	523	Unit 18	1.000	29240.000	29240.0000	C3	



Click OK again and code C06 should be updated based on the mapping.

You're done:

WgtGrp	ItemNo	Description	Width [-]	UnitWeight [kg]	Weight [kg]	Compartment Code	Compartment Desc
H1.4	497	Unit 02	1.000	59860.000	59860.0000	C2	Compartment two
H1.4	520	Unit 18	1.000	45130.000	45130.0000	C3	Compartment three
H1.4	521	Unit 19	1.000	31140.000	31140.0000	C1	Compartment one
H1.4	522	Unit 20	1.000	48550.000	48550.0000	C2	Compartment two
H1.4	523	Unit 18	1.000	29240.000	29240.0000	C3	Compartment three

Changing Weight Group Code for Items

The easiest way of moving weight items from one weight group to another is to use the 'Change wgt.grp. code...' option. Select the desired items in the table and select 'Change wgt.grp. code...' option on the Edit menu. The 'Select Weight Group' dialog will appear. Choose a weight group and press OK.

Cell Formula in Item Dialog

A formula typed into a grid cell in the Item Dialog (i.e. =5*4+2) is stored for later use. If a grid cell value is calculated from such formula, this grid cell will show the formula in a tooltip when the mouse pointer is resting on the cell. When editing the grid cell later, the calculated result value transforms back to this formula in the cell.

Frame Conversion

If frame spacing is defined in Project Data dialog (menu **View->Project Data...**) then frame number can be entered into the LCG, LCG_min and LCG_max field of the Item dialog by typing a # sign in front of the value. The frame number will then automatically be converted to metric or US units (depending on unit setting) according to the frame spacing defined.

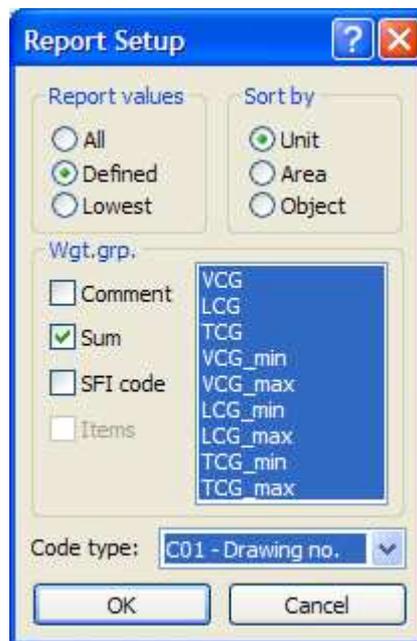


5 Weight Monitoring and Reporting

A Standard reports

From the *Project* menu, select *Report setup*. Select:

<i>Report values</i>	<i>Defined</i>
<i>Sort by</i>	<i>Unit</i>
<i>Wgt.grp.</i>	<i>Sum</i>
<i>Code type</i>	<i>C01 – Drawing no.</i>



Click *OK* to close the dialog.



Select *Reports* and *4 Wgt.grp Weight and CoG* on the *Project* menu. The report will be opened in the *Print Preview* dialog.

In the *Print Preview* dialog, press the *MS Word* button to export the report. Close the *Preview* window.

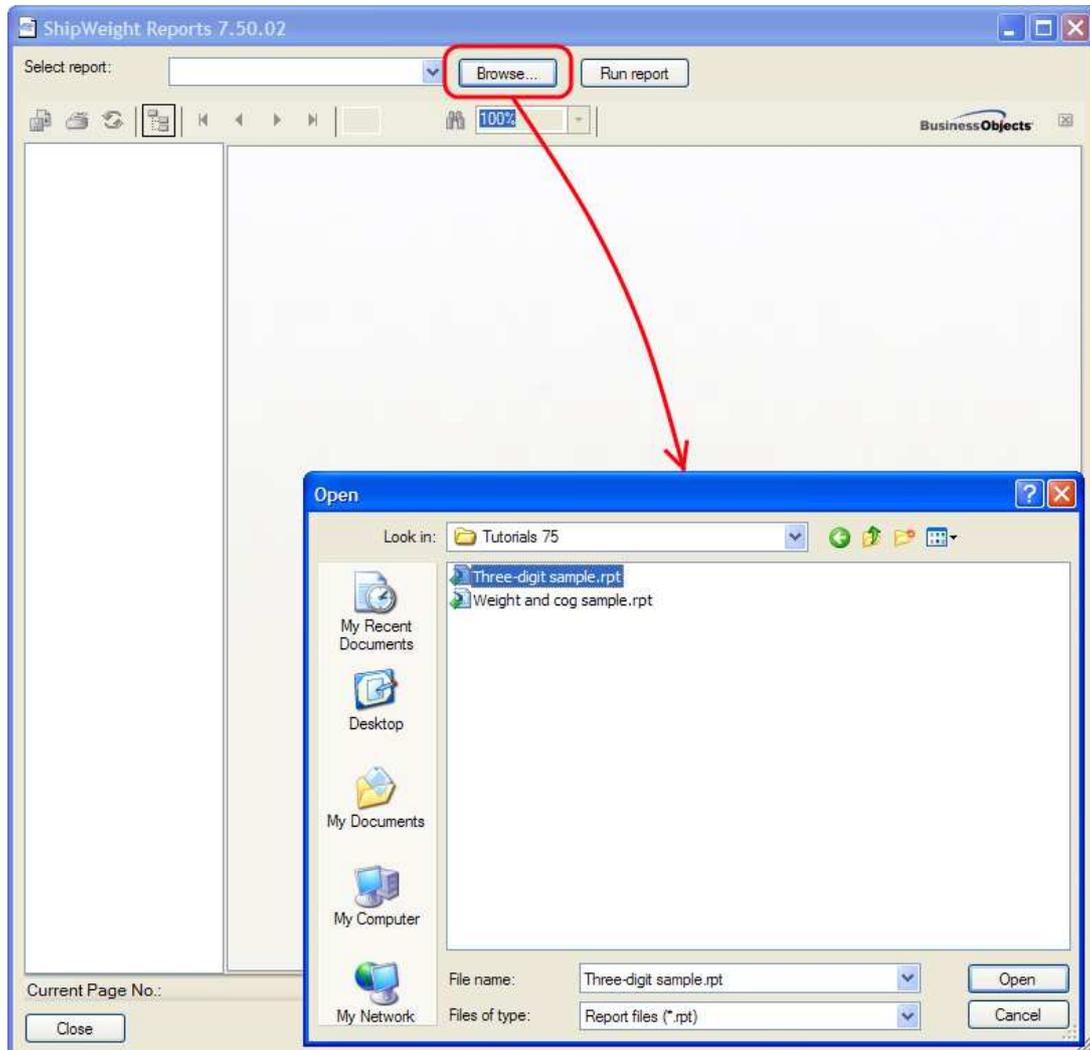
The screenshot shows a 'Print Preview' window with a table of data. The table has 7 columns: Component Name, Weight, CoG X, CoG Y, CoG Z, CoG X', and CoG Y'. The data is organized into sections separated by horizontal lines.

Component Name	Weight	CoG X	CoG Y	CoG Z	CoG X'	CoG Y'
UM Lightship	1.828	5.97	28.81	-5.00	-5.00	87.33
SDP Displacement	1.828	5.97	28.81	-5.00	-5.00	87.33
M Machinery	230	2.44	27.29	-5.21	0.00	52.81
H Hull	912	8.10	28.33	0.01	-5.00	87.33
S Equipment	486	7.41	20.33	0.07	-4.87	88.02
UM Lightship	1.828	5.97	28.81	-5.00	-5.00	87.33
M1 Machinery maincomponent	191	2.11	28.10	-5.08	0.00	48.73
M2 Machinery system	39	4.34	27.58	-5.94	8.00	52.81
M Machinery	230	2.44	27.29	-5.21	0.00	52.81
M1.1 Decoupling for prop.	77	2.06	27.18	0.02	30.26	42.99
M1.4 Gear system	41	2.02	22.46	0.01	17.28	44.80
M1.5 Propel system	54	1.82	8.57	0.01	0.00	25.78
M1.8 Bolero, alarm & gas gen.	2	5.07	42.40	-5.19	28.00	48.73
M1.9 Aggr. & gen. of prod.	17	5.82	27.99	-5.81	18.31	47.54
M1 Machinery maincomponent	191	2.11	28.10	-5.08	0.00	48.73
M1.8.8 Control panel & alarm, bal.	2	5.07	42.40	-5.19	28.00	48.73
M1.8 Bolero, alarm & gas gen.	2	5.07	42.40	-5.19	28.00	48.73
M1.8.1 Aggr. of production	8	2.24	29.75	-5.17	21.81	47.54
M1.8.2 Shaft generator	10	4.28	18.88	0.01	18.31	22.01
M1.8 Aggr. & gen. of prod.	17	5.82	27.99	-5.81	18.31	47.54
M2.1 Fuel systems	7	2.44	27.88	0.11	7.00	48.98
M2.2 Lubr oil systems	4	2.40	29.78	-5.08	24.00	49.51
M2.3 Cooling system	18	2.84	40.18	-5.42	8.00	52.81
M2.4 Exhausted air system	2	8.10	28.80	-5.28	22.00	52.81



Crystal reports

Start ShipWeight Report by selecting Crystal Reports... on the Project menu of ShipWeight.



The first thing to do is to select the report you want to run. In this example we will use the report *Three-digit sample.rpt*. Locate the report file on your hard drive by pressing the Browse button to open the Open dialog window.

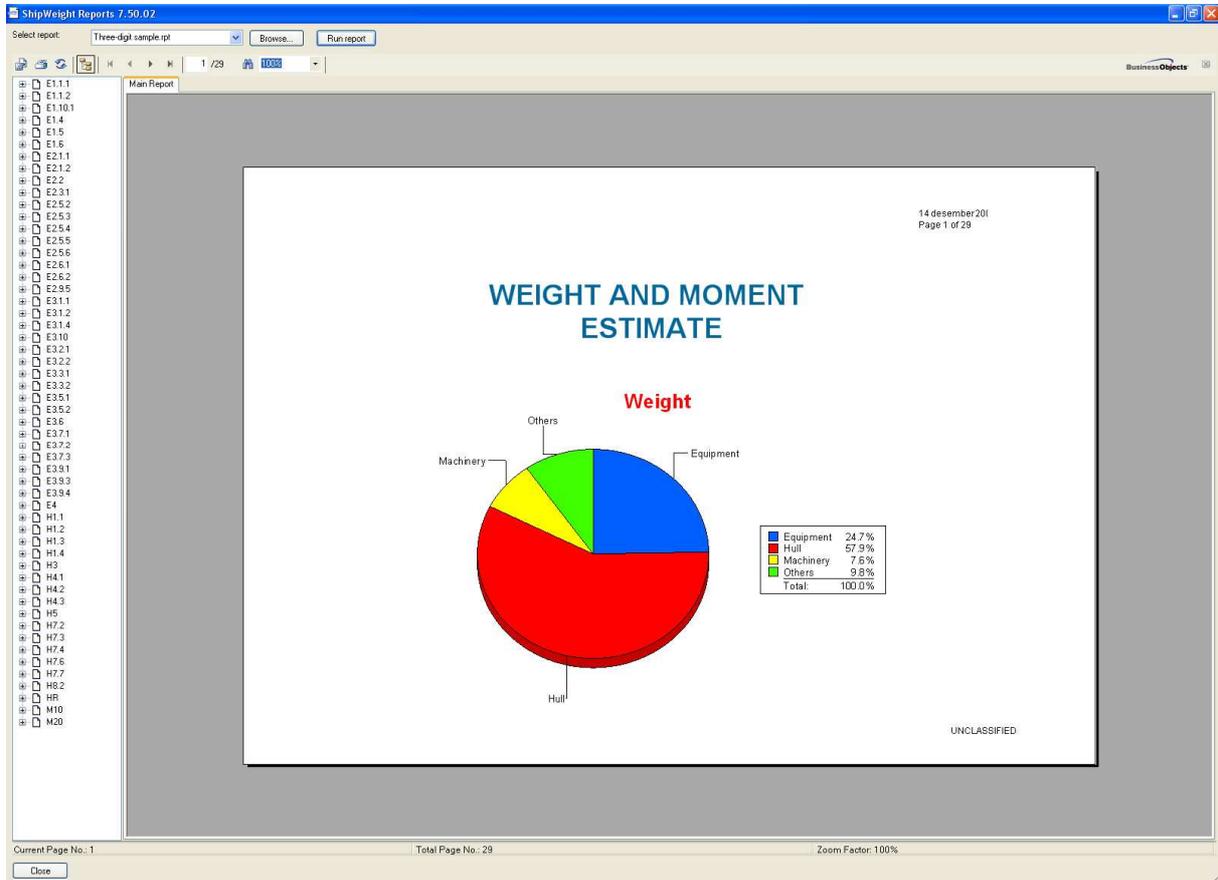
When you have located and selected the file *Three-digit sample.rpt*, press open. Now the file name will show in the Select report field.

Next, press the 'Run report' button.



In the “Enter project ID” dialog that now pops up, select “Tutorial” from the dropdown list and click “OK”.

The report should now be displayed after a few seconds.



Now, use the toolbar or the group tree to navigate through the report. Also try exporting the report to portable document format (PDF), Word or Excel.

You may try the same with the *Weight and CoG sample.rpt*

6 Additional Features

A Gyradius values

From the *View* menu in main window, select *Gyradius...*



Gyradius Calculations

Filter
 Item: ...
 Wgt.grp.filter: None excluded ...

Self inertia (2.term)
 Includ Predef.v Calc. if not define
 x-axis:
 v-axis:
 z-axis:

Variable	Value	Type	Inertia (I) [t...	Gyradius (K) ...	K/Lpp	K/B
Weight [t]:	1 627.233	Roll (xx)	21 890.16	3.67		0.333
VCG [m]:	4.308	Pitch (yy)	331 383.62	14.27	0.230	
LCG [m]:	33.075	Yaw (zz)	320 823.04	14.04	0.226	
TCG [m]:	-0.019	Pitch/Yaw (yz)	-769.45	0.69		0.063
Length p.p. [m]:	62.00	Roll/Yaw (xz)	9 026.03	2.36	0.230	

WgtGrp - Ite...	Description	Weight	VCG	LCG	TCG	Ixx	Iyy	Izz	Iyz	Ixz	Ixy
111 - 00 1	B/O 7/04/85 ...	0.000	0.000	0.000	0.000	0	0	0	-0	0	-0
111 - 00 10	SHELL PLATE...	0.861	7.315	-0.762	0.000	8	993	985	0	-88	-1
111 - 00 20	SHELL PLATE...	0.139	4.572	-0.457	0.000	0	156	156	0	-1	-0
111 - 01 10	SHELL PLATE...	0.750	1.143	1.509	0.000	8	754	747	-0	75	-0
111 - 01 20	SHELL PLATE...	0.625	2.789	1.509	0.000	1	624	622	-0	30	-0
111 - 01 30	SHELL PLATE...	0.854	4.420	1.509	0.000	0	851	851	0	-3	-1
111 - 01 40	SHELL PLATE...	2.082	6.858	1.509	0.000	14	2 088	2 075	0	-168	-1
111 - 01 100	FLAT KEEL S...	0.040	0.000	1.509	0.000	1	41	40	-0	6	-0
111 - 02 10	SHELL PLATE...	0.451	0.991	4.526	0.000	5	373	368	-0	43	-0
111 - 02 20	SHELL PLATE...	0.729	2.591	4.526	0.000	2	596	594	-0	36	-0
111 - 02 30	SHELL PLATE...	0.985	4.267	4.526	0.000	0	803	803	-0	1	-1
111 - 02 40	SHELL PLATE...	1.272	6.904	4.526	0.000	9	1 046	1 037	0	-94	-1
111 - 02 100	FLAT KEEL S...	0.113	0.000	4.526	0.000	2	95	92	-0	14	-0
111 - 03 10	SHELL PLATE...	0.833	0.838	7.544	0.000	10	553	543	-0	74	-0
111 - 03 20	SHELL PLATE...	0.694	2.332	7.544	0.000	3	455	452	-0	35	-0
111 - 03 30	SHELL PLATE...	1.138	4.115	7.544	0.000	0	742	742	-0	6	-1

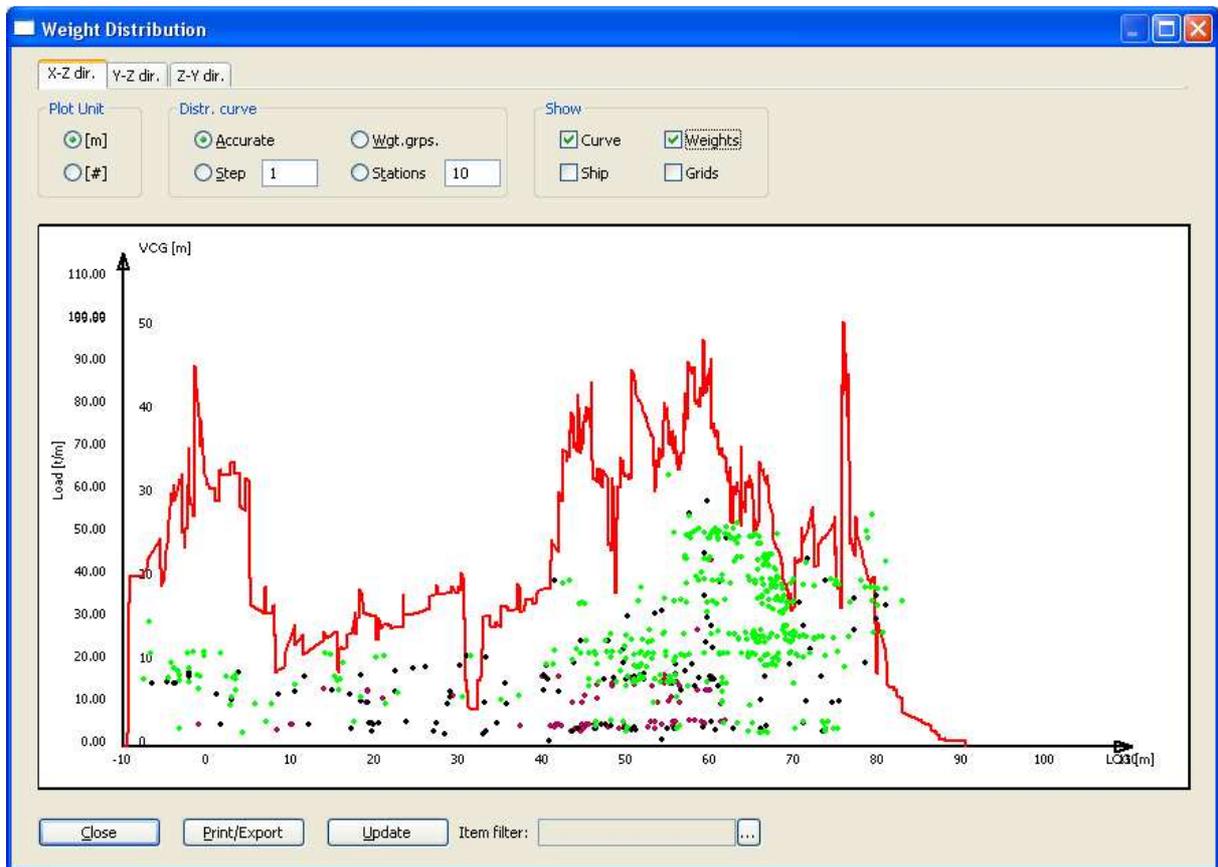
Print OK Cancel

Approximate gyradius values for the project will now be shown. Close the gyradius dialog.



B Weight distribution curve

From the *View* menu in main window, select *Weight distribution...* and then *Curve*.



The weight distribution curve will be displayed. Tick off the *Weights* checkbox to show centre of gravity for weight items as points in the graph. Click (and hold) on one of the points to view information about the weight item.

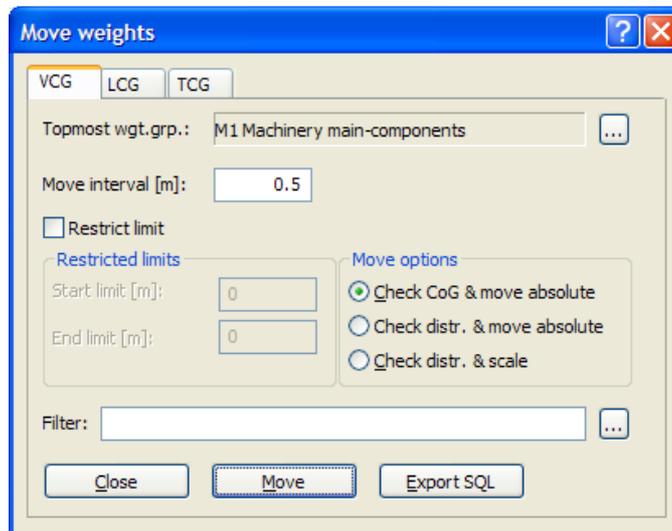
Click the *Print/Export* button to show possibilities for export. Close the dialog.

Please note that for the weight distribution curve to be displayed it is necessary not only to define weight, VCG and LCG, but also Aft and Fore location of the item.

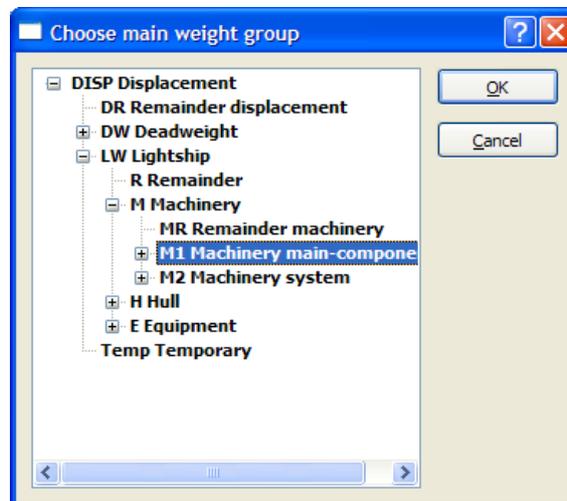


C Move CoG

Open the *Move CoG* dialog from the *Wgt.Grp.* menu. Make sure the VCG-tab is selected.



Click the browse button (...) next to the *Topmost wgt.grp.* field.



Expand the tree, select weight group M1 and click OK.

Enter *Move interval* 0.5 m.

Press *Move* and then *Close*.



7 Weight Estimation

A Preparing an estimate

Starting a new project

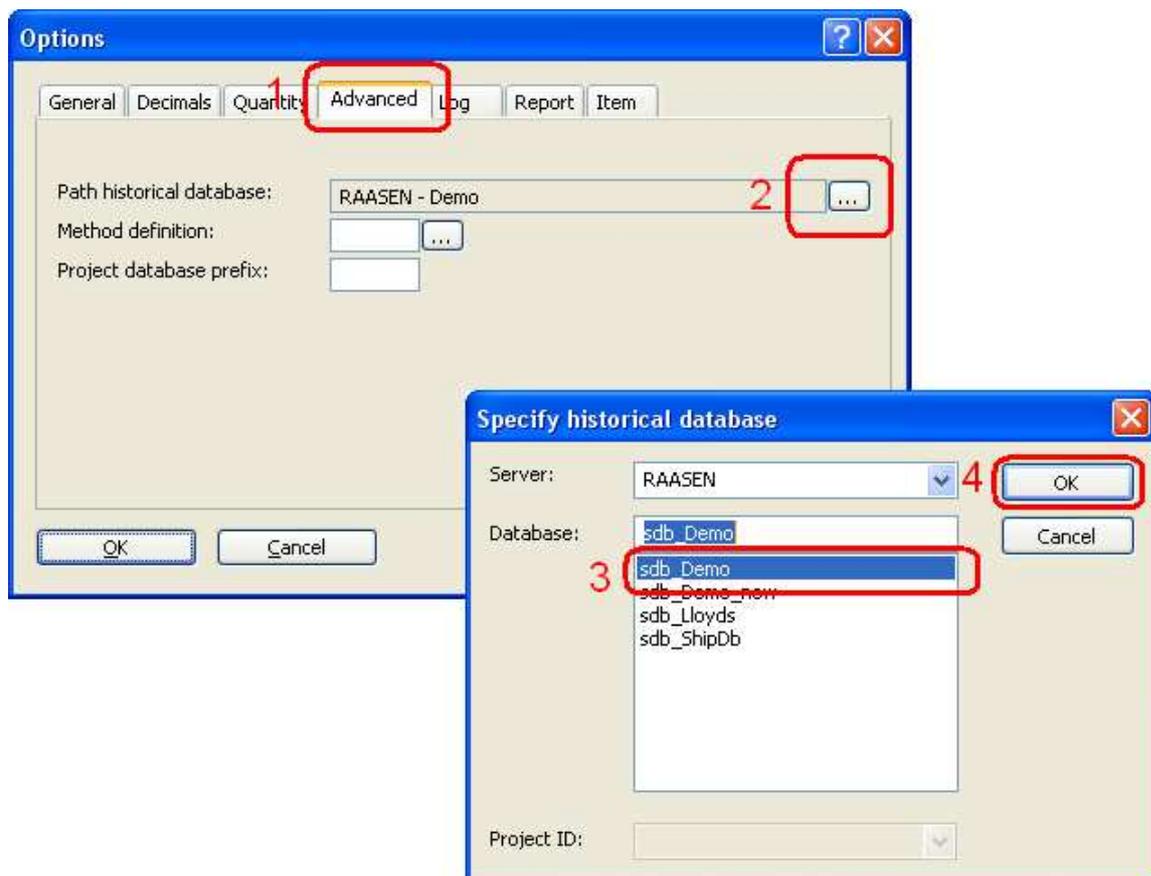
Start a new project using the Project data and Main Parameters of MS Breeze. See chapter 7 for details.

Please refer to chapter 2 Solution A for instructions. Make sure to select a unique project ID.

Select historical Demo database

To be able to follow the tutorial, the historical database must be switched to demo mode. To do this, follow these steps:

Select “Options...” from the “View” menu and select the “Advanced” tab. Next, select the browse button [...] and select the historical database sdb_Demo_Swbs. Click OK to save and close the options dialog.

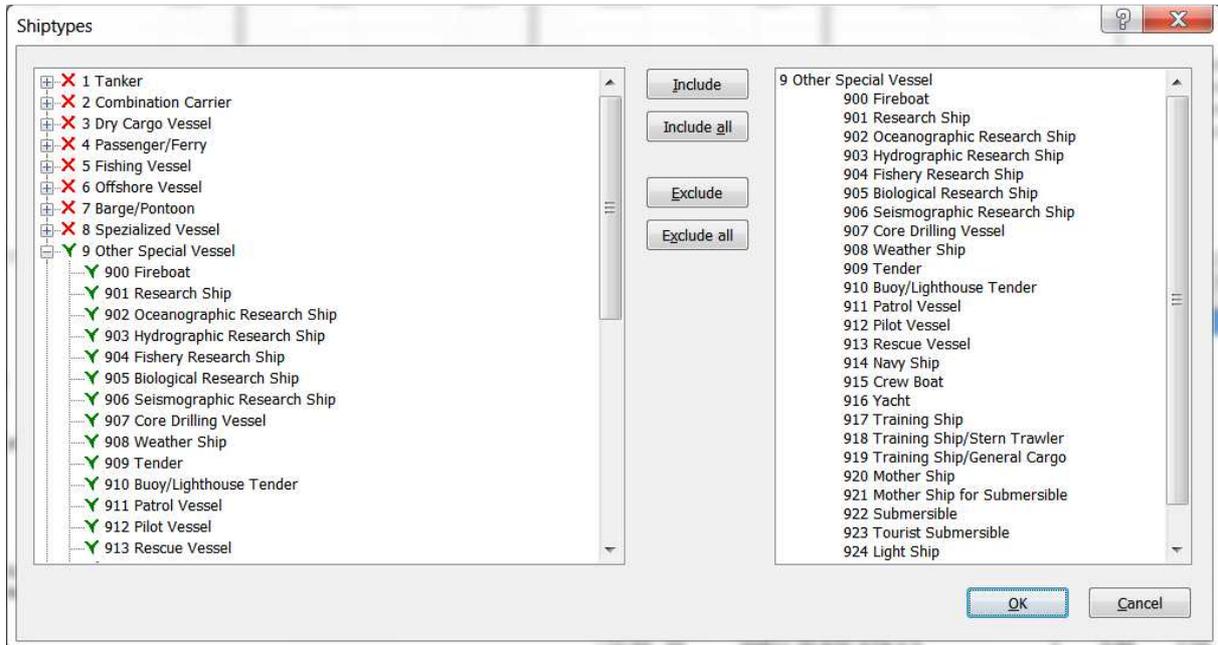




Ship types

Open the Ship types dialog by selecting Ship Types... on the Estimate menu.

Select the node '9 Other Specialized Vessel' branch by clicking it's plus sign. Click the 'Include' button.



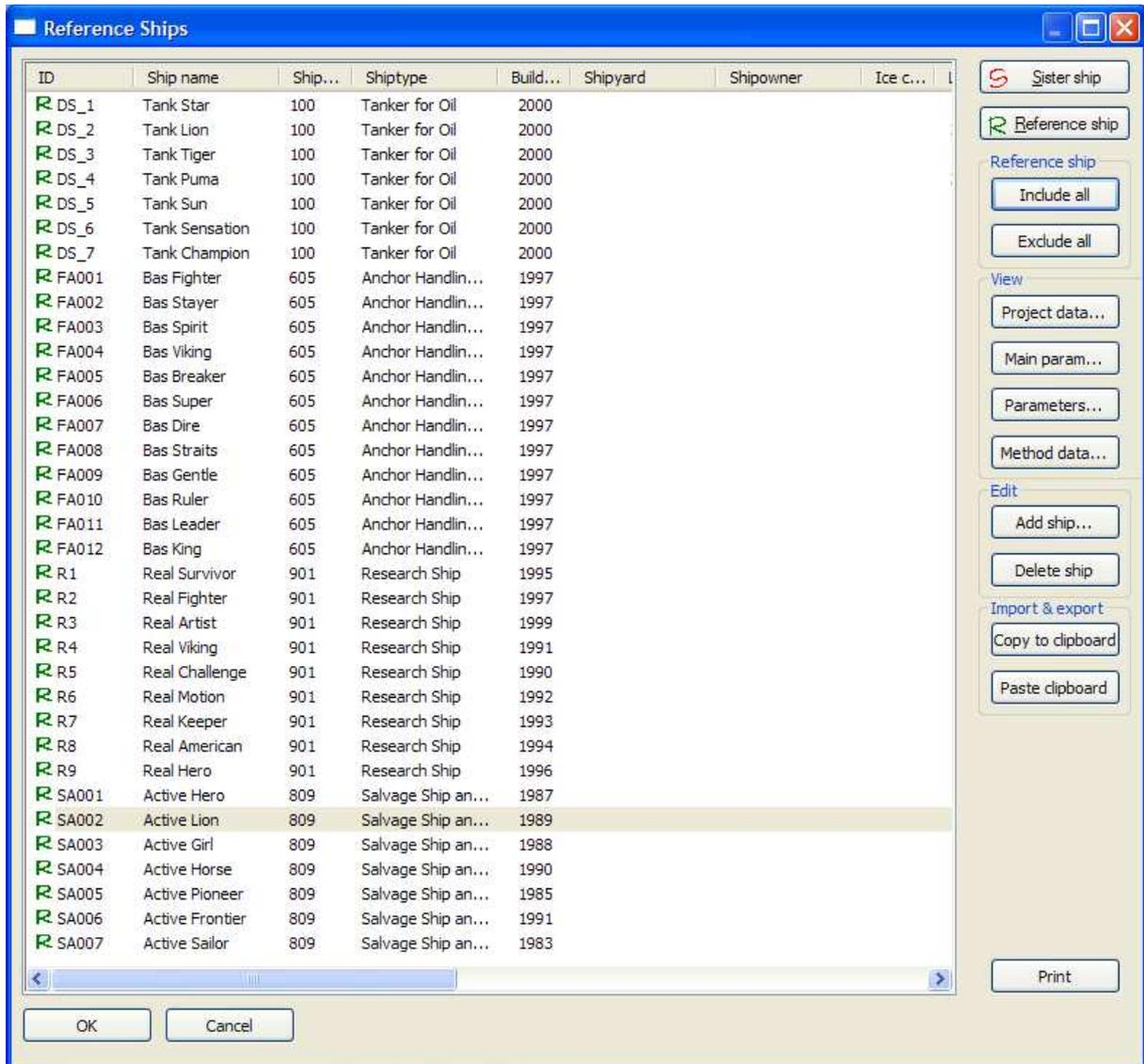
Now, historical data from ships of type 'Other Specialized vessel' will be included in the graph when estimating weight and centre of gravity. The vessels mentioned here might have been selected by default.

Select **OK**.



Reference Ships

On the Estimate menu, select Reference ships... to make sure that all ships are included as reference ships. The vessels should have a green *R* to the left of the ship ID to be included. If there are no green *Rs*, click *Include All* button.



Click *OK*.



B Estimating lightship weight

Navigate to the lightship weight group LW in the main window. In the *Estimate* menu, select *Weight* or click the *Estimate weight* button on the toolbar. The *Estimation* dialog appears.

The Estimation dialog window displays a scatter plot of Lightship Weight (LW) versus Length between perpendiculars (Lpp) for 9 reference ships. A regression line is fitted to the data. The plot equation is $y = 0.758 + 0.0001x$. A horizontal line is drawn at $y = 0.42$ to intersect the regression line, and a vertical dashed line is drawn at $x = 4500$ to intersect the horizontal line.

S ID	NAME	SHIPTYPE	BU...	VA...	PL...	C...	Lp...	Se...	Nu...	Le...	Sh
R1	Real Survivor	Research Ship	1995	1 22172.800	0.391	4.80	14.0	0	62.40	1	
R2	Real Fighter	Research Ship	1997	1 14727.804	0.352	4.87	13.2	0	62.80	1	
R3	Real Artist	Research Ship	1999	1 15331.040	0.415	5.02	12.5	0	60.30	1	
R4	Real Viking	Research Ship	1991	1 13246.752	0.415	5.02	12.8	0	59.70	1	
R5	Real Challenge	Research Ship	1990	1 05671.680	0.443	5.09	12.1	0	55.50	1	
R6	Real Motion	Research Ship	1992	1 15472.510	0.457	4.42	12.7	0	53.50	1	
R7	Real Keeper	Research Ship	1993	1 05418.626	0.555	4.41	12.0	0	46.70	1	
R8	Real American	Research Ship	1994	97586.756	0.454	5.30	11.5	0	54.60	1	
R9	Real Hero	Research Ship	1996	1 04529.400	0.560	4.85	10.8	0	49.50	1	

Estimation Parameter	Value	Std.dev.[%]
Plotvar.: Cubic-no [m3]	4 433	0
Plot-coefficient	0.431	6.40
W = k*Lpp*B*D*Cb^0.5	Calc.wgt.	Calc.std.dev.
Coefficient	0.387	6.40
Length betw. perp. [m]	62.00	0.00
Ship breadth [m]	11.00	0.00
Depth upperm. cont. deck [m]	6.50	0.00
Block-coefficient [-]	0.400	0.00
Wat.[t]	1 085	6.40

No.	J	Comparison parameters	SWBSProjects
	J	Shiptype	Research Ship
1		Lpp/B [-]	5.64
2		Service-speed [knot]	
3		Numb. decks, main-hull [-]	
4		Length betw. perp. [m]	62.00
5		Ship breadth [m]	11.00
6		Depth upperm. cont. deck [m]	6.50
7		Scantling draught, [m]	3.00
8		Main-hull material	
9		Block-coefficient [-]	0.400
10		Double hull	
		Wat.[t]	1 085

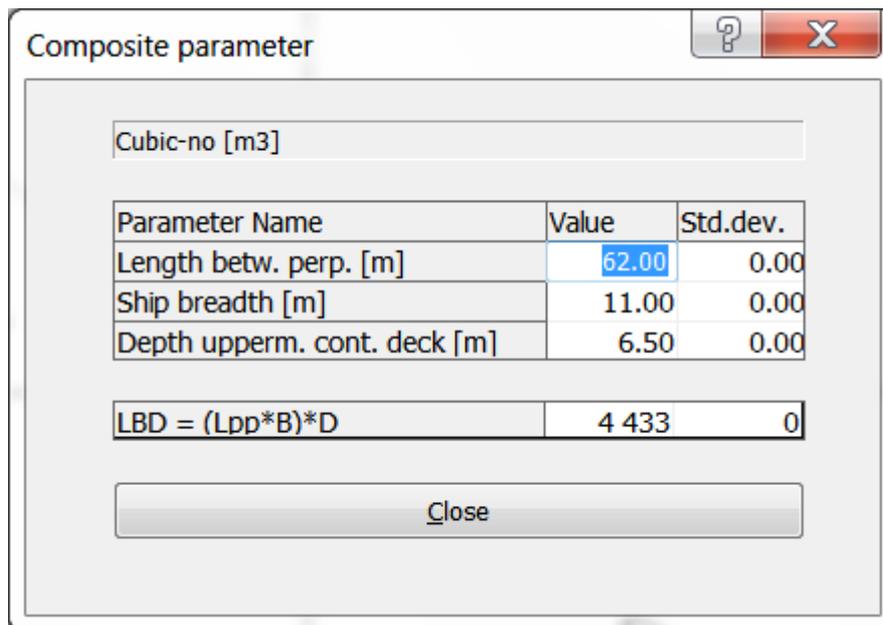
In the estimation dialog, select the regression coefficient in the graph, either by selecting the first button in the *Select coefficient* dialog, or by moving the horizontal coefficient line in the graph by using the mouse. The horizontal coefficient graph should then be moved until it intersects with the regression line and the vertical plot parameter line.

Type	Coefficient	Value
<input checked="" type="radio"/> Reg.coeff.	0.431	1 207
<input type="radio"/> Def.coeff.	0.236	661
<input type="radio"/> Sister ship	0.000	0
<input type="radio"/> Adj.sister ship	0.000	0
<input type="radio"/> Average coeff.	0.449	1 259



Select the **Calc.wgt.** button in the estimation parameter dialog to execute the calculation of the lightweight weight group.

In the right column of the estimation parameter dialog, click the **Calc.std.dev.** button to set the uncertainty value as suggested by the system. Enter 0 (zero) in the grids for uncertainty of the other formula values to obtain the standard deviation for the calculated weight. (If it is impossible to enter a value into a grid, the value is a composite variable. The grid should then be double clicked to enter a dialog to set the values of the composites)



Value	Std.dev. [%]
12 141	0
0.3874	7.21
Calc.wgt.	Calc.std.dev.
0.387	7.21
71.00	0.00
19.00	0.00
9.00	0.00
0.740	0.00
4 046	7.21

From the *Graph* menu in the estimation dialog, select *Print graph* to document the estimation. The print dialog can be resized. Also, selecting *Save Current Settings* from the *Setting* menu will save the settings in the dialog in order for you to find it the same way the next time you enter the estimation window in this weight group.

Close the estimation dialog by selecting *Close* in the *Window* menu in the dialog.

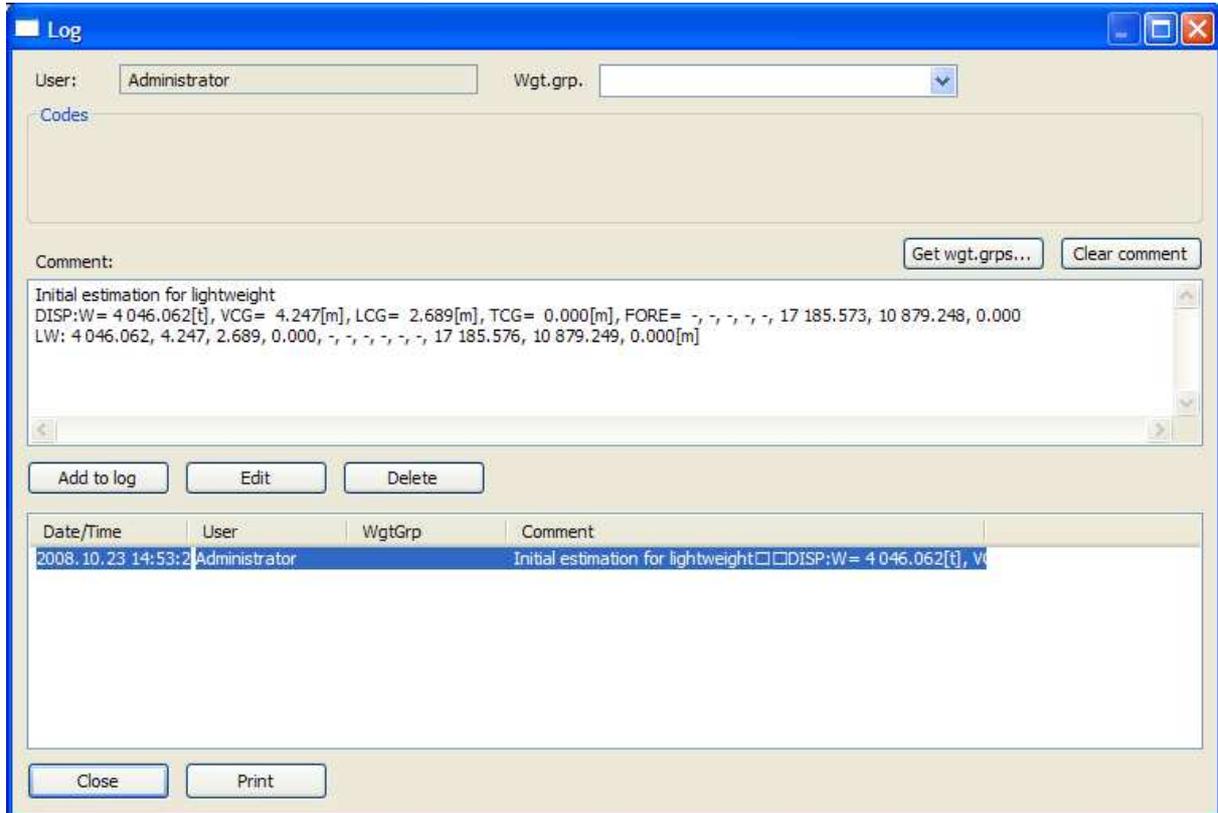




C Log result

You can log your work using the *Project Log dialog*.

In the main window, select *View* → *Log* → *Project Log...* and enter a comment, click the *Get weight groups* button and the *Add to log* button to store the initial result.



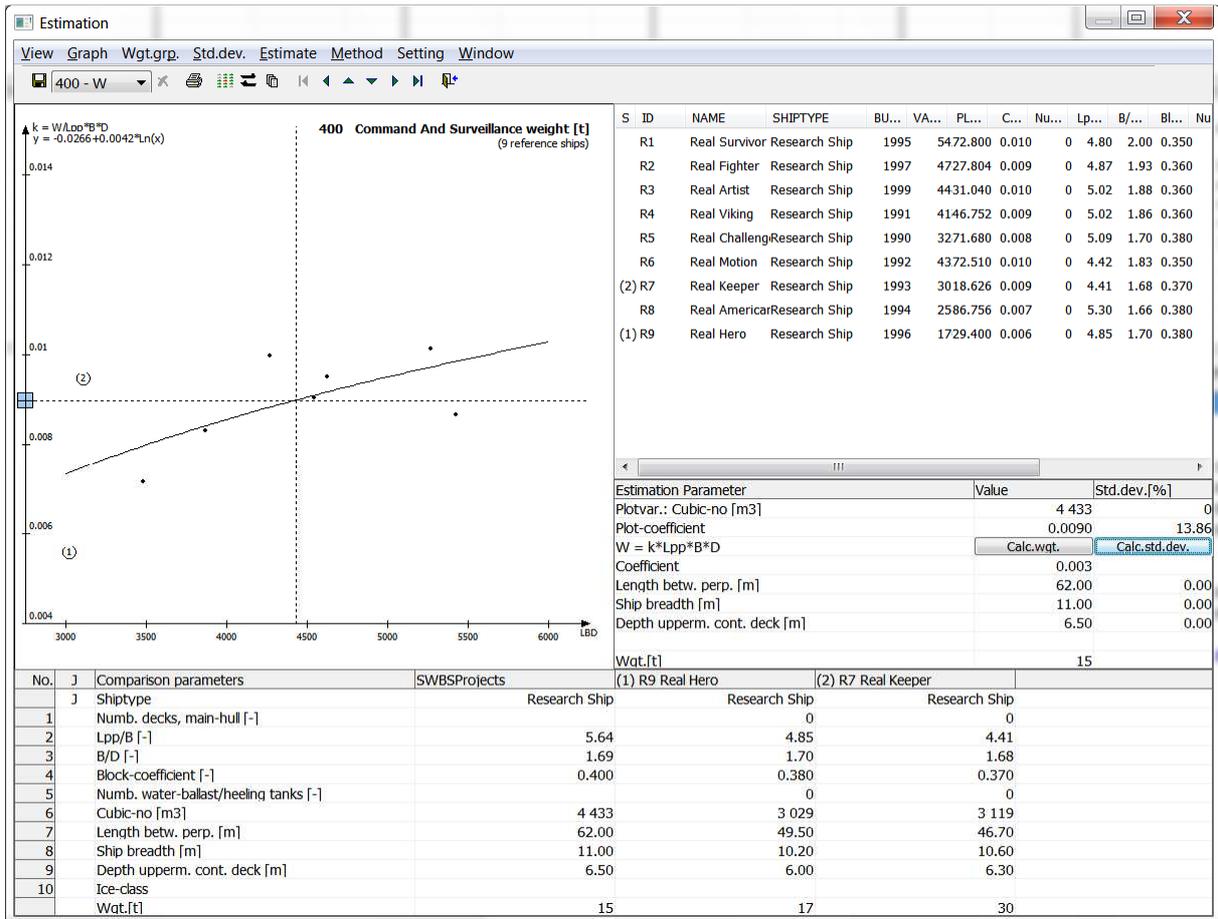
Click the *Close* button to get back to the main window.



D Refining the estimate

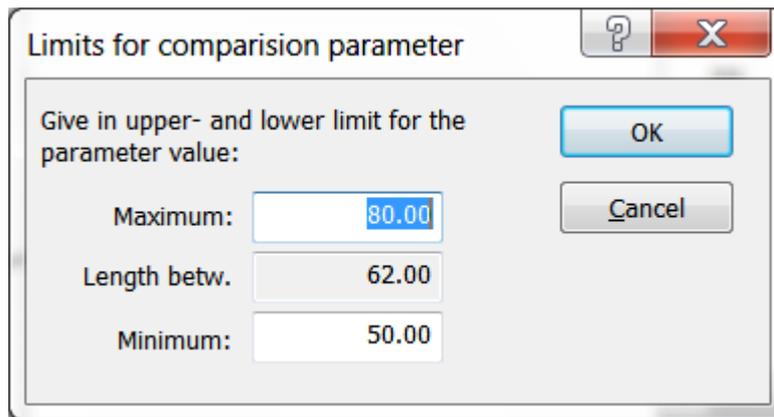
Navigate one level down to the 100, 200, ... , 700 groups and estimate these. Select the 400 weight group and enter the estimation dialog once more.

Notice that the standard deviation is around 13% for the regression value. Click on the two coefficient dots in the graph that is farther away from the . The ships coefficients are circled and numbered 1 and 2.



The comparison data for the two selected ships are now displayed in the columns in the lower part of the estimation dialog. Notice that the two ships are particularly short compared to the rest of the vessels displayed, less than 50 meters long.

Click on the *Lengt betw. perp* text in the comparison area to highlight this value. Next, select *Filter limits...* from the *Graph* menu in the estimation dialog.



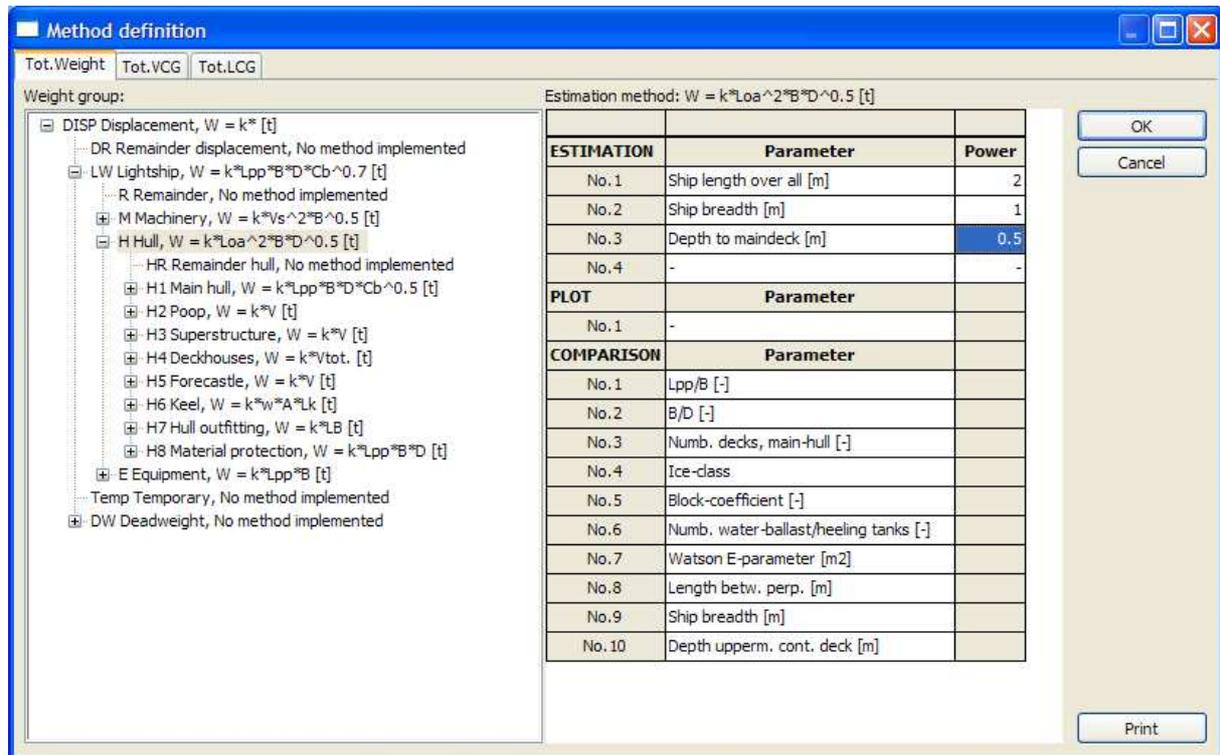
Enter 80 as upper limit and 50 as lower limit for the main engine power. Click *OK*. The selection of coefficient plotted in the graph is now narrowed down to be only those with Length between perpendiculars between 50 and 80 meters.

Notice that uncertainty standard deviation have gone down from about 13% to 9%. Because of the automatic scaling of the graph, it is hard to see this reduction of uncertainty just from the graph. Tick off *Zoom* in the *Graph* menu to have a look at the graph without scaling .



E User defined estimation methods

On the menu *Estimate*, click *Define Methods...* The dialog window will show three main areas with tree-resources. The area to the left contains the work breakdown structure. In this area, use the mouse to select the weight group Hull. The method for this weight group will be shown in the area in the middle.



You want the method for Hull to be **$W=k*(\text{length}^2)*\text{breath}*(\text{depth}^{0.5})$** and plot the coefficient against ship length. Select the estimation parameters and click once more, to reveal a combo box. Select – on top of the list to clear the parameter.

Select the plot parameter and delete it. Leave the comparison parameters as they are.

Under ESTIMATION, select a "length parameter" (e.g. Ship length over all) in the combo box for No.1. Add breadth and depth parameters in same way (e.g. Bm Ship breadth and hDM Depth to maindeck). Set the power parameters to be 2, 1 and 0.5.

Under PLOT, select the "length parameter" again in the right area and click **ADD** button. Now you are done, select the **OK** button.

To be able to use your own method do the following:

Enter the main estimation dialog window in the weight group H Hull. From the menu *Method* select *User defined*. Now your own method will be applied when estimating.



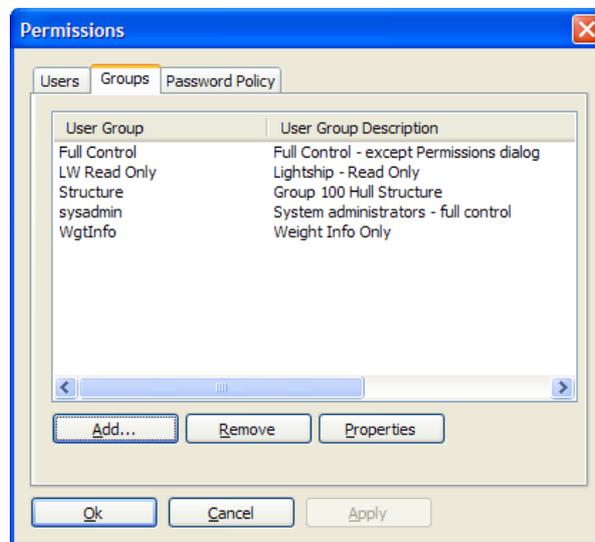
8 Administrative Functions

A User permissions

Add a user group

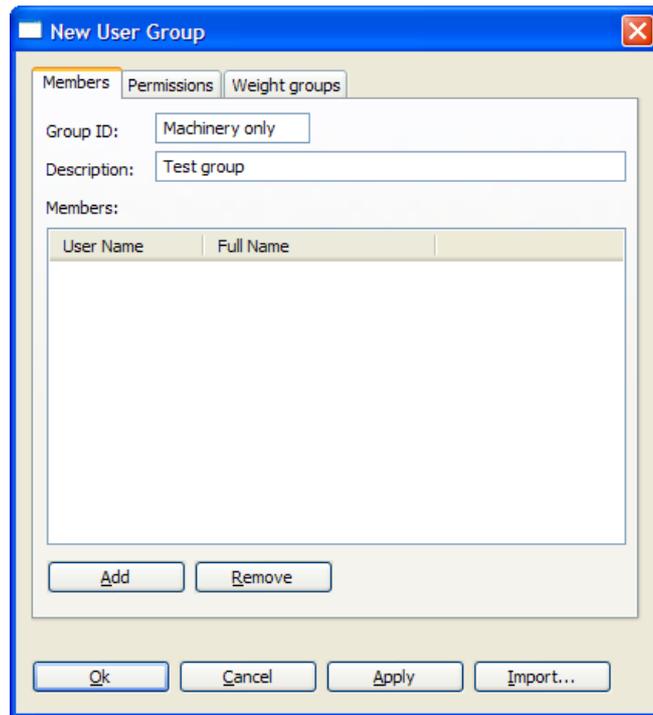
The Permissions dialog is used to manage user groups and user accounts. To open the Permissions dialog, click Project → Permissions → Administration...

The Permissions dialog is divided into three tab-sheets: Users, Groups and Password Policy. To administrate the user groups, please select the Groups tab.



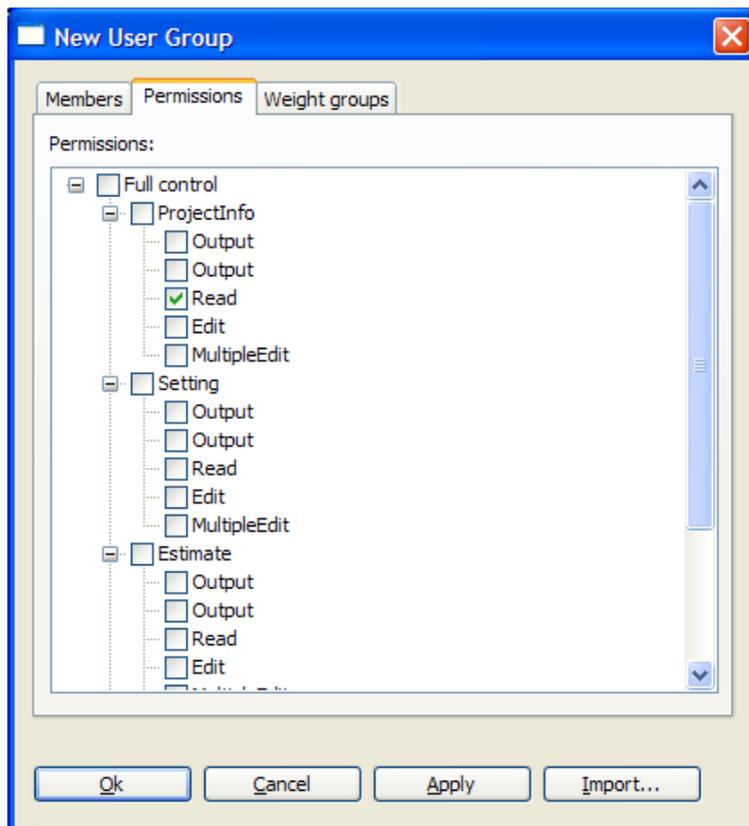
To add a new user group, please select the Add... button.

The New User Group dialog opens. The dialog is divided into three tab-sheets: Members, Permissions and Weight groups.



In the Members tab-sheet, please set the Group ID field to 'Machinery only' and enter a description.

Next, select the Permissions tab-sheet.

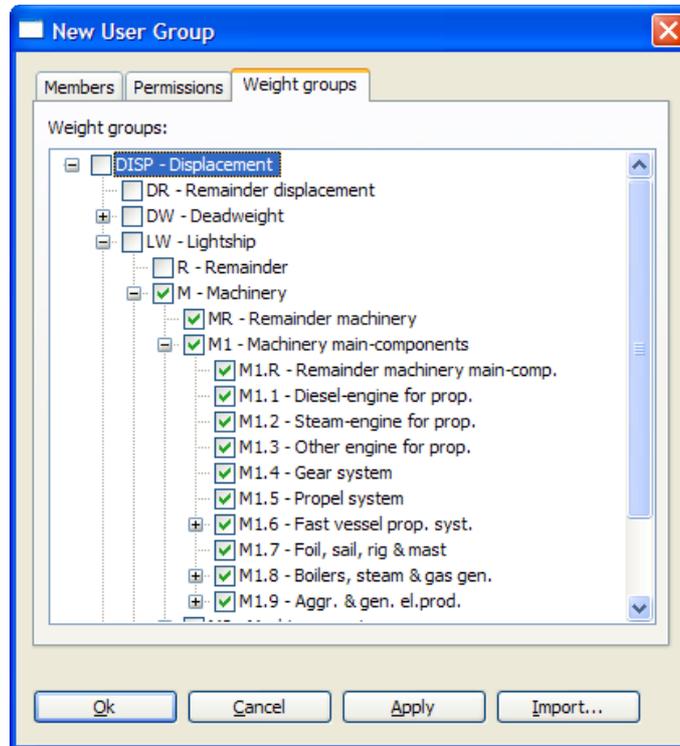




The Permissions tab-sheet in the New User Group dialog, contains a tree-view. The tree-view is used to limit the actions of the current user group.

Please check off Read in the ProjectInfo-branch.

Select the Weight Groups tab.



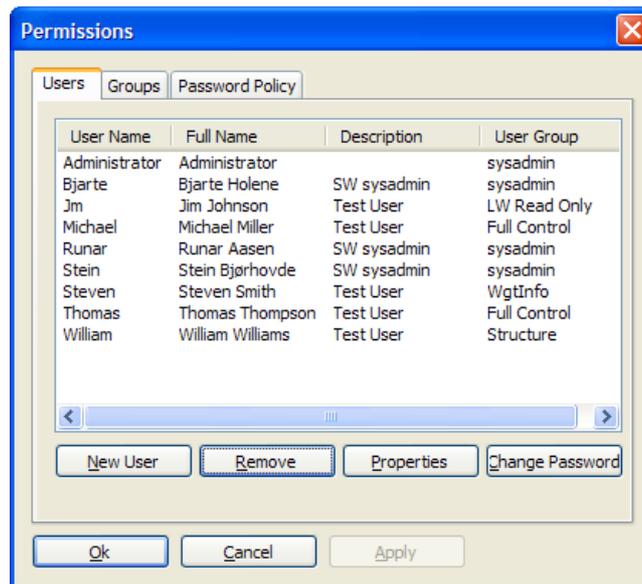
Please expand the tree in the Weight groups tab-sheet. Please check off the weight group M and its sub groups should be selected automatically.

Press OK to exit the 'New user group' dialog.

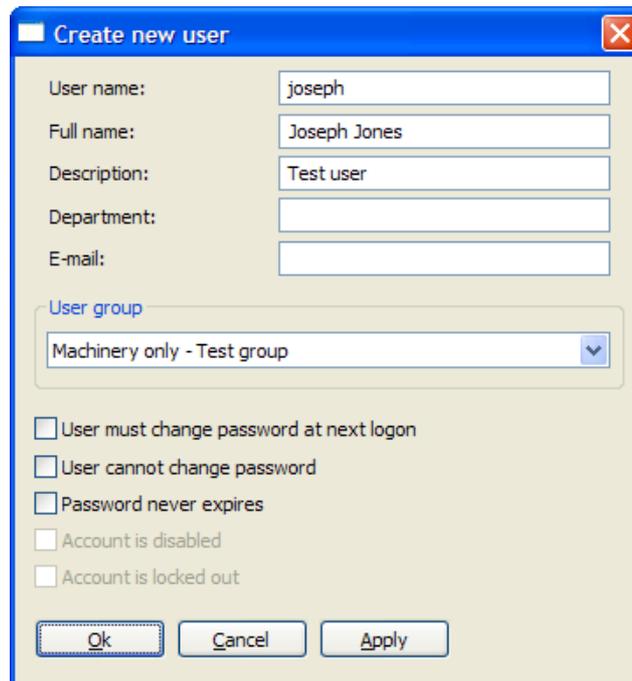


Add a user

Back in the Login dialog (permissions dialog), select the Users tab sheet.

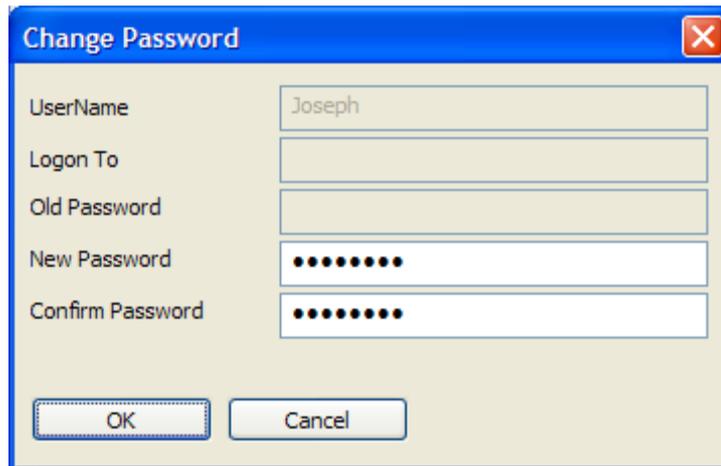


Click the 'New User' button. The New User dialog will open.



Enter the username Joseph and full name Joseph Jones. In the User group dropdown list, please select 'Machinery only'.

When you have finished entering user information, press the OK button to create the user. The Change Password dialog will appear.



Enter a password and close the dialog by pressing the OK button.

Start ShipWeight and log on with the new user. Try navigating the work breakdown structure to verify that this user only has access to weight group M and its sub groups. Also try accessing the Estimation dialog or Options dialog.

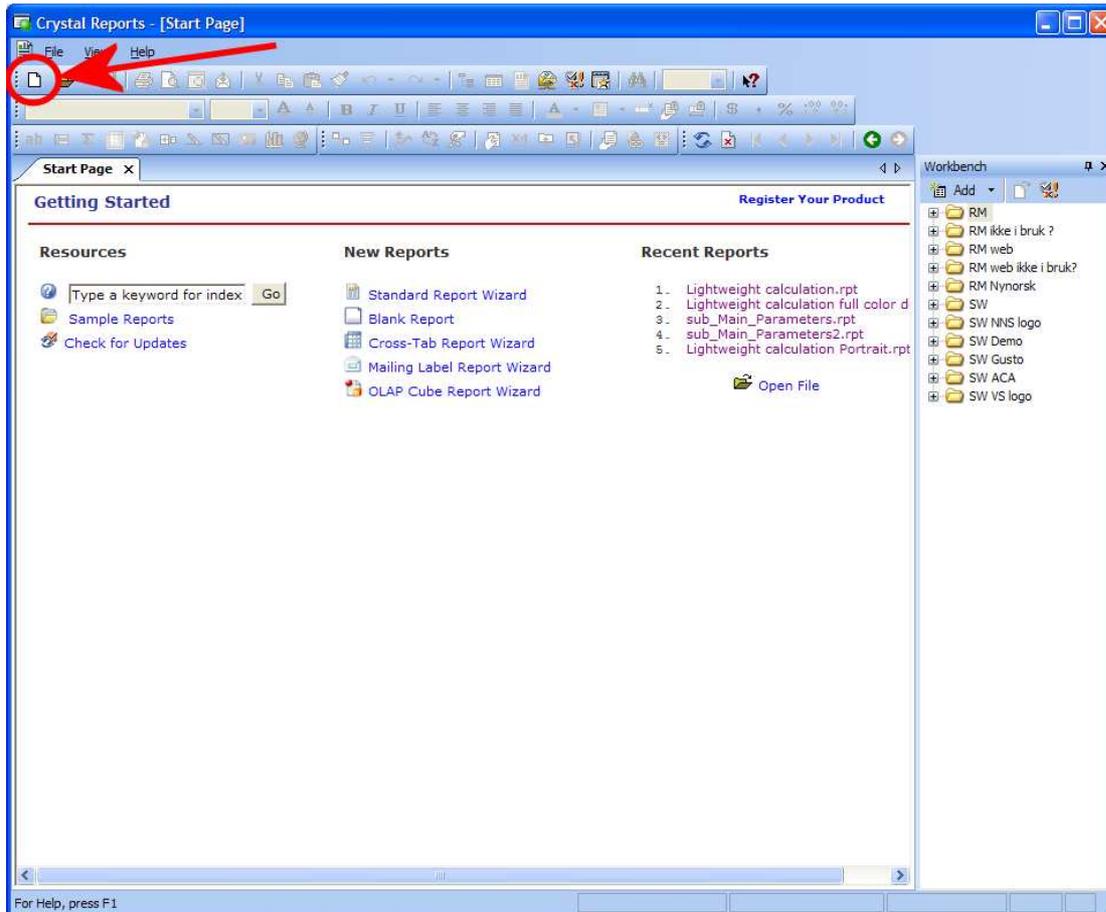
9 Developing Own Crystal Reports

A The Report Creation Wizard

ShipWeight is delivered with a set of sample reports to be used with the Report Viewer. In many cases, the easiest way of creating your own report will be to modify one of the sample reports. This is especially useful if you just want to do minor changes such as inserting your company logo or change the formatting of a report.

In this session, we will create a new report from scratch using the 'Report Creation Wizard'.

To start the wizard, you need to press the 'New Report' button on the toolbar:

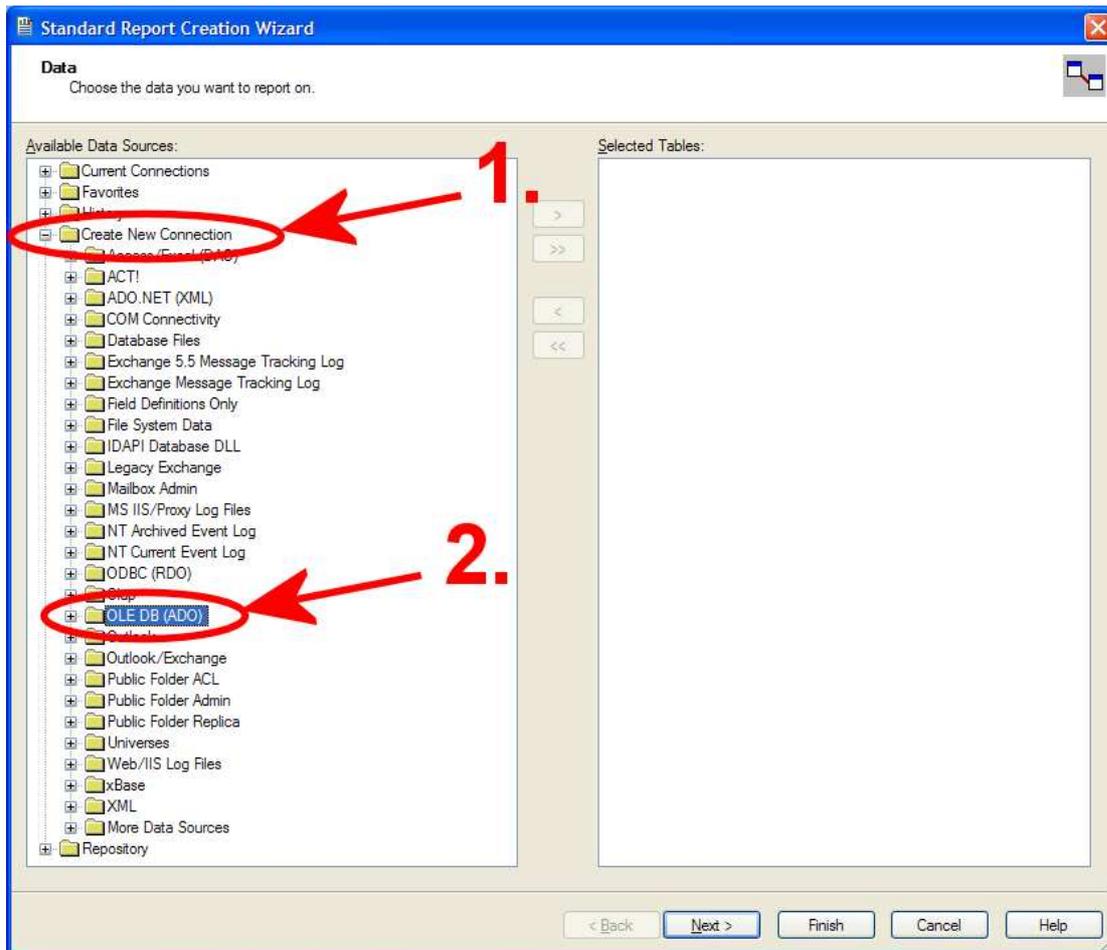


Now, the 'Report Creation Wizard' will appear. This wizard will guide you through the process of creating a report.

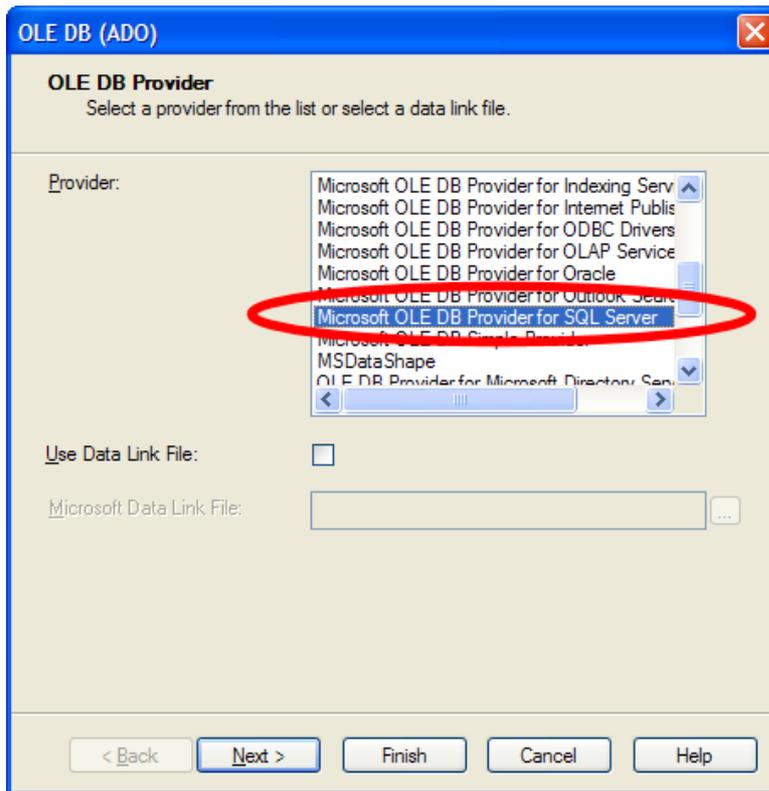
The first step is to choose the data you want to report on. Basically, this means choosing the database and tables to use in the report.

The Data window of the wizard contains a list of 'Available Data Sources' on the left side, and 'Selected Tables' on the right side.

In the list of 'Available Data Sources', you first expand the branch named 'Create New Connection'. This is done either by clicking the small plus sign or by double clicking it with the mouse.



Next, you should expand the 'OLE DB (ADO)' branch. A new dialog-window titled OLE DB (ADO) will appear. This window is used to set up the connection to the database.



In the 'Provider'- list, you should select 'Microsoft OLE DB Provider for SQL Server'. Click the 'Next' button to continue.

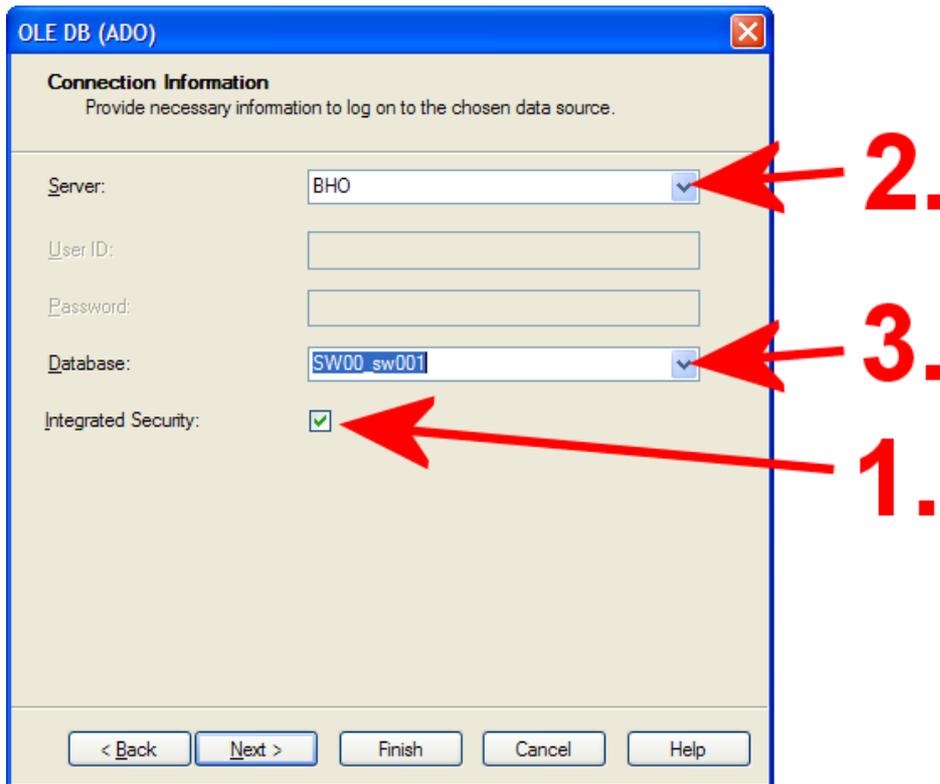
Now you will be asked to provide the necessary information to log on to the data source.

The first thing you need to do is to check the 'Integrated Security' button. When 'Integrated security' is selected, Crystal Reports will connect to the SQL database using your Window username and password. Now you will not need to enter the 'User ID' and 'Password'.

Next, you should enter the name of the SQL server in the 'Server' field. Make sure to ask your database administrator for the name of the server containing the ShipWeight databases.

Now, select one of the available databases from the 'Database' dropdown list. Databases starting with SW0 are project databases.

For more information on the databases used in ShipWeight, please refer to the ShipWeight User's Guide chapter 7: Introduction to the ShipWeight databases.

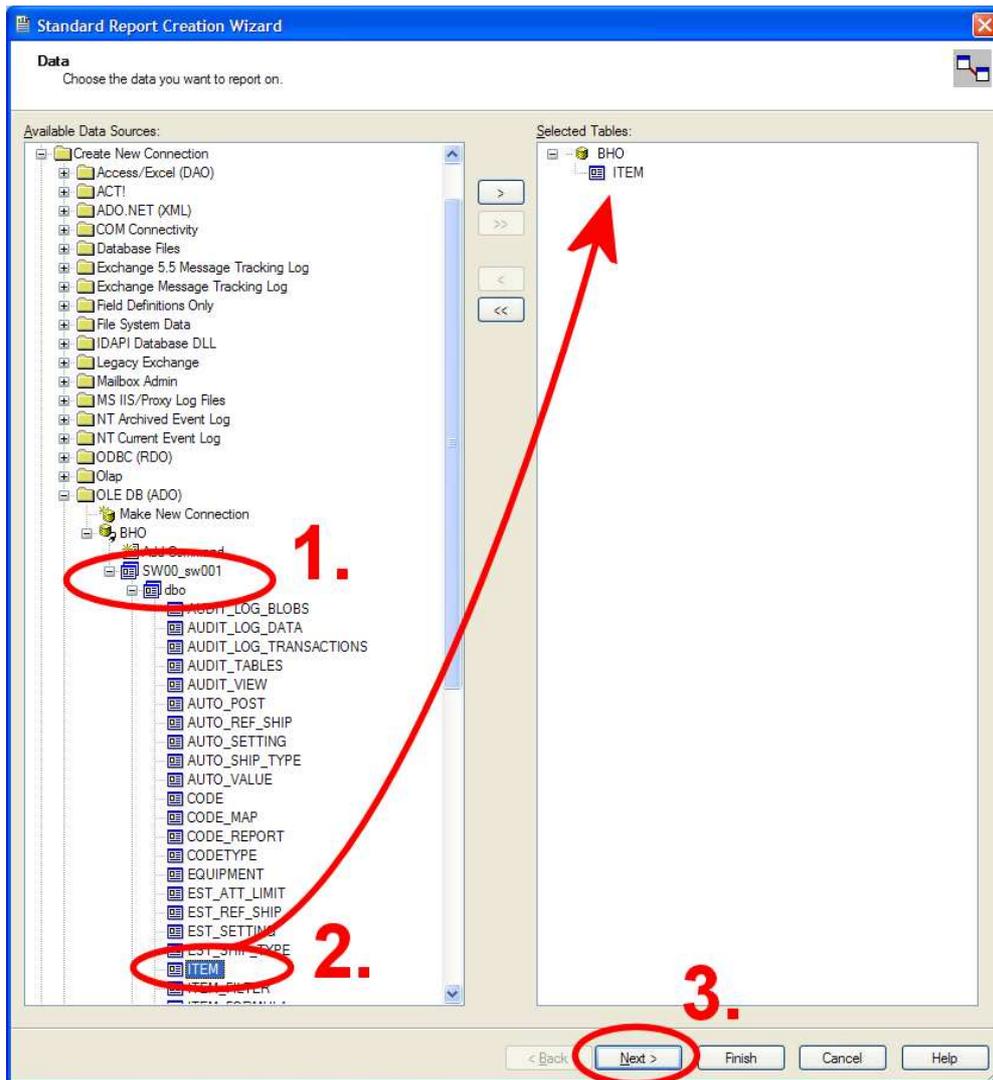


Press the 'Finish' button to close the 'OLE DB' window.

Back in the wizard, you will now find the database in the 'Data Sources' tree.

Double-click on the database name to expand the branch. Next, expand the 'dbo' branch. A list of the available tables will appear.

Now you need to drag-and-drop the 'ITEM'-table to the 'Selected Tables' list at the right side.



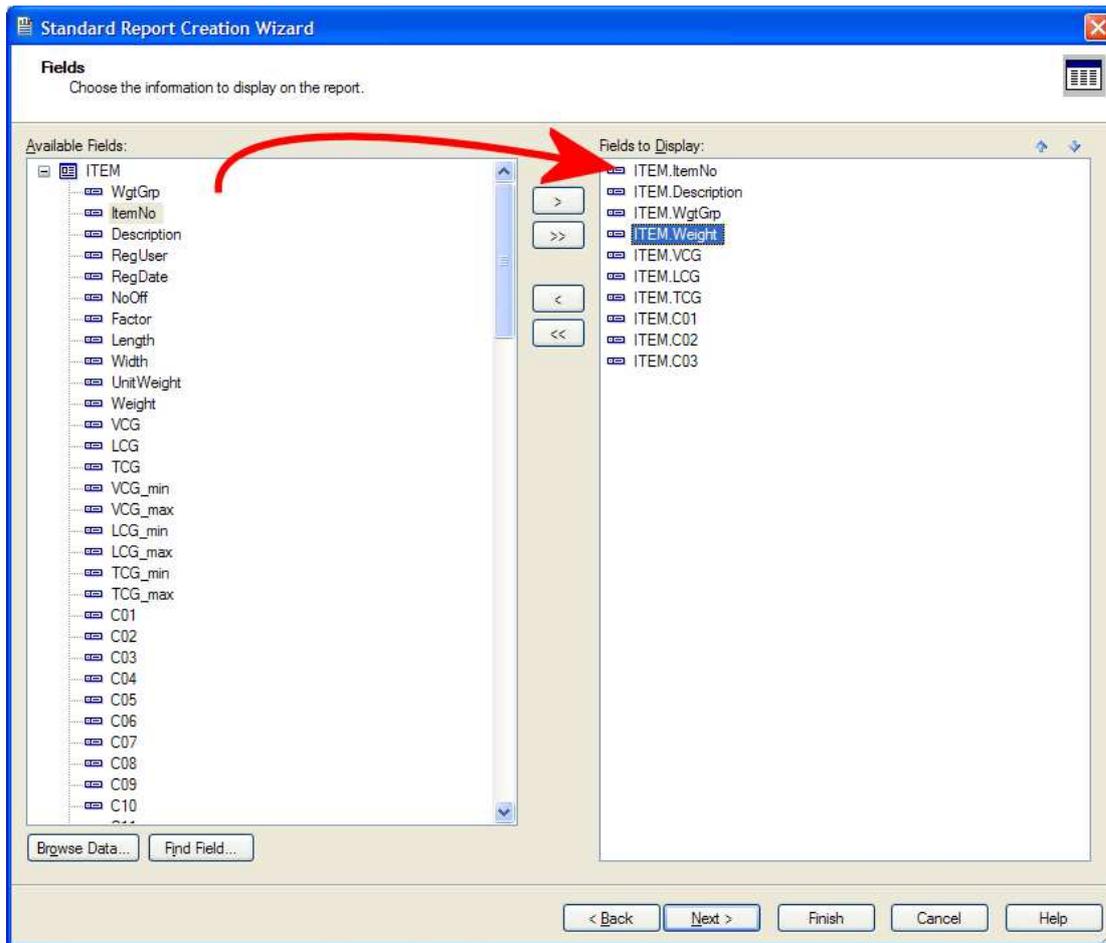
Click the 'Next' button.

The next step of the wizard is to choose the fields to display in the report.

The wizard now shows two lists: 'Available Fields' and 'Fields to Display'. The Available Fields list, shows all the fields in the ITEM table.

To include fields in the report, simply drag-and-drop them to the 'Fields to Display' list.

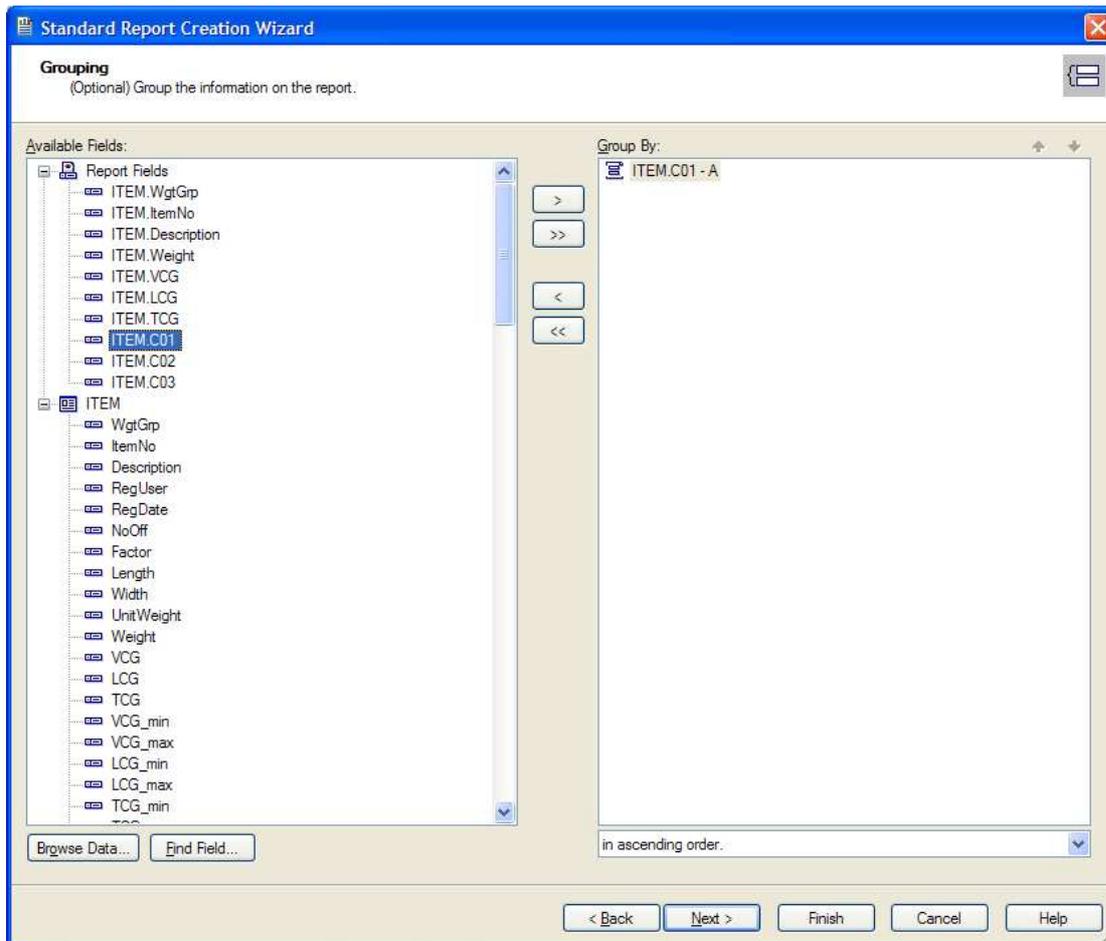
You can re-arrange the order of the selected fields by simply dragging them to a new location in the 'Fields to Display'-list.



When you have selected the data you want in the report, click the 'Next'-button to continue to Grouping.

If you want to group the data in the report, simply drag-and-drop this field from the 'Available'-list to the 'Group By' list.

In this example we will group on code C01, which is a Section code.

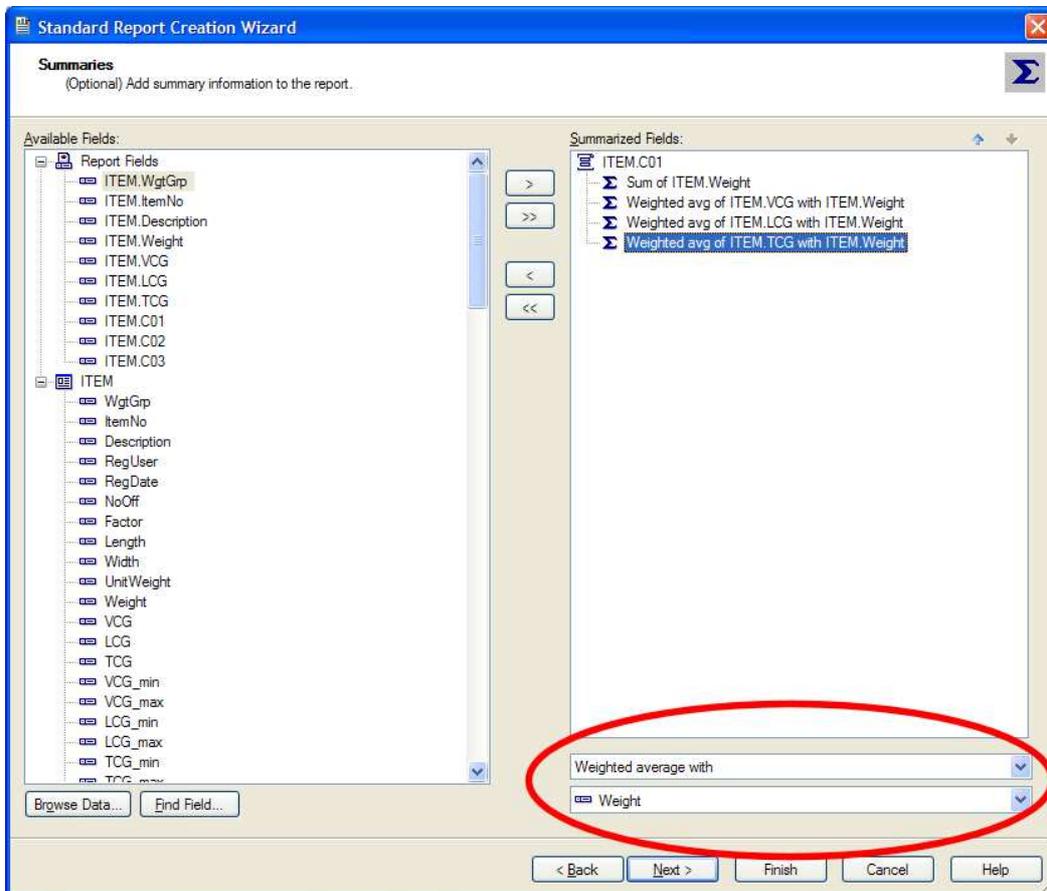
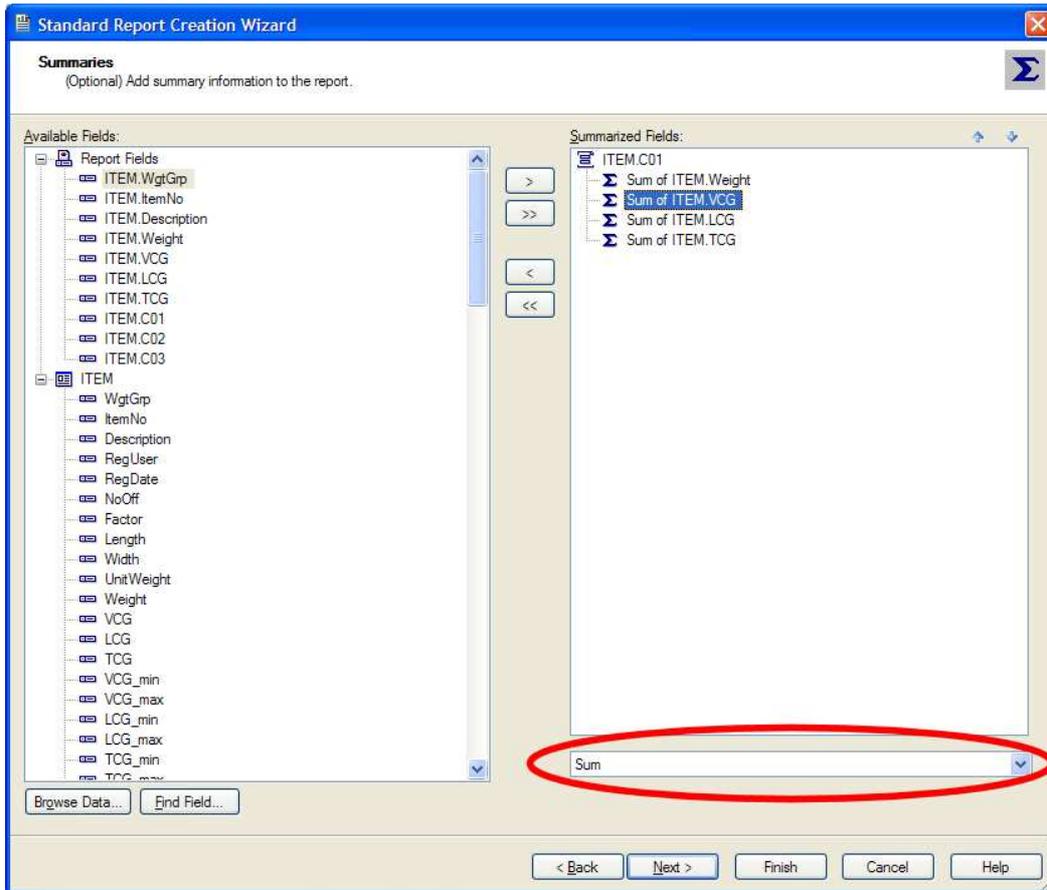


Click 'Next' to go to the Summaries-part of the Wizard.

To add summary information to the report, simply drag-and-drop the field to the 'Summarized Fields'-list.

All numerical fields in the report are automatically added to the 'Summarized Fields'-list.

Please note that the default type of summary is Sum. Make sure to change summary type for VCG, LCG and TCG from 'Sum' to 'Weighted average with Weight'.

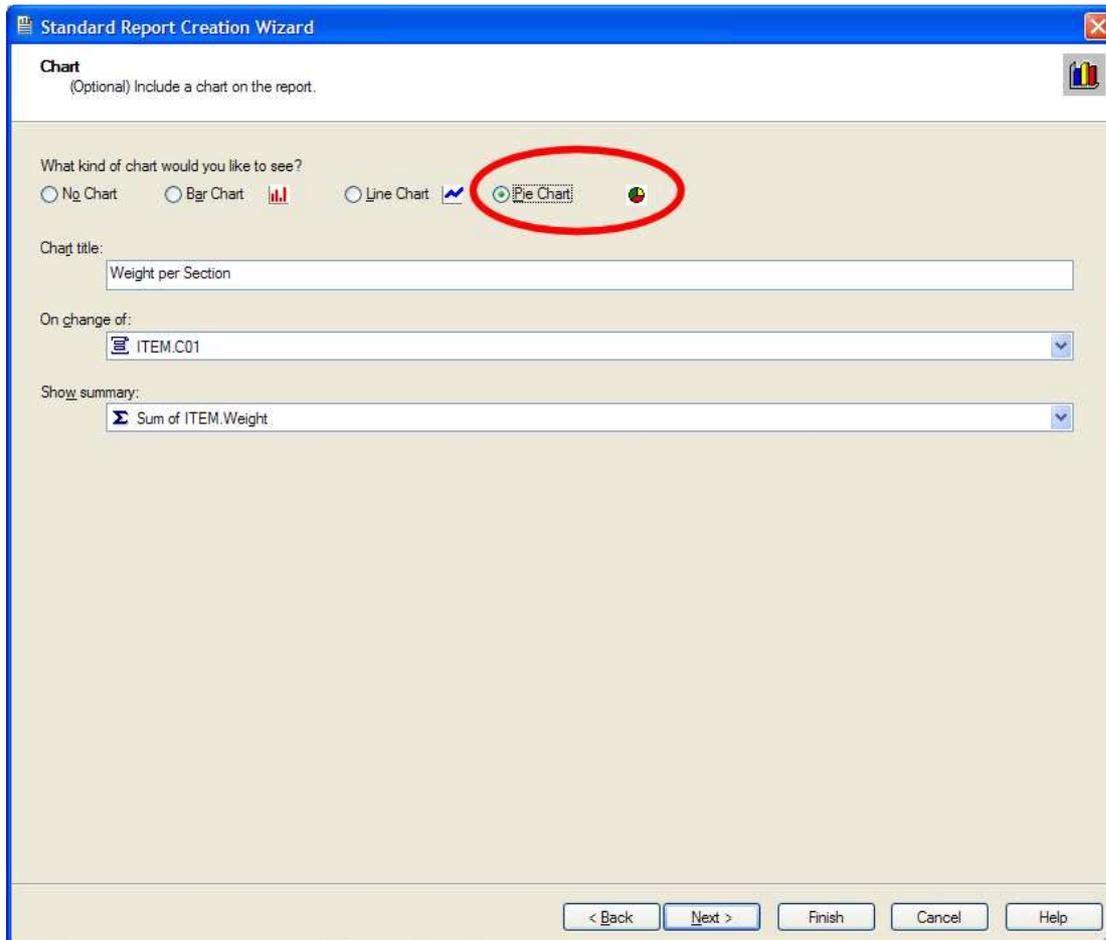




When you click the 'Next' button, you come to the 'Group Sorting'. We will not use group sorting in this example, so you should click the 'Next'-button once more to go to the Chart-section of the Wizard.

We will include a Pie Chart showing the Weight of each section. Select 'Pie Chart'. Optionally you can change the Chart Title.

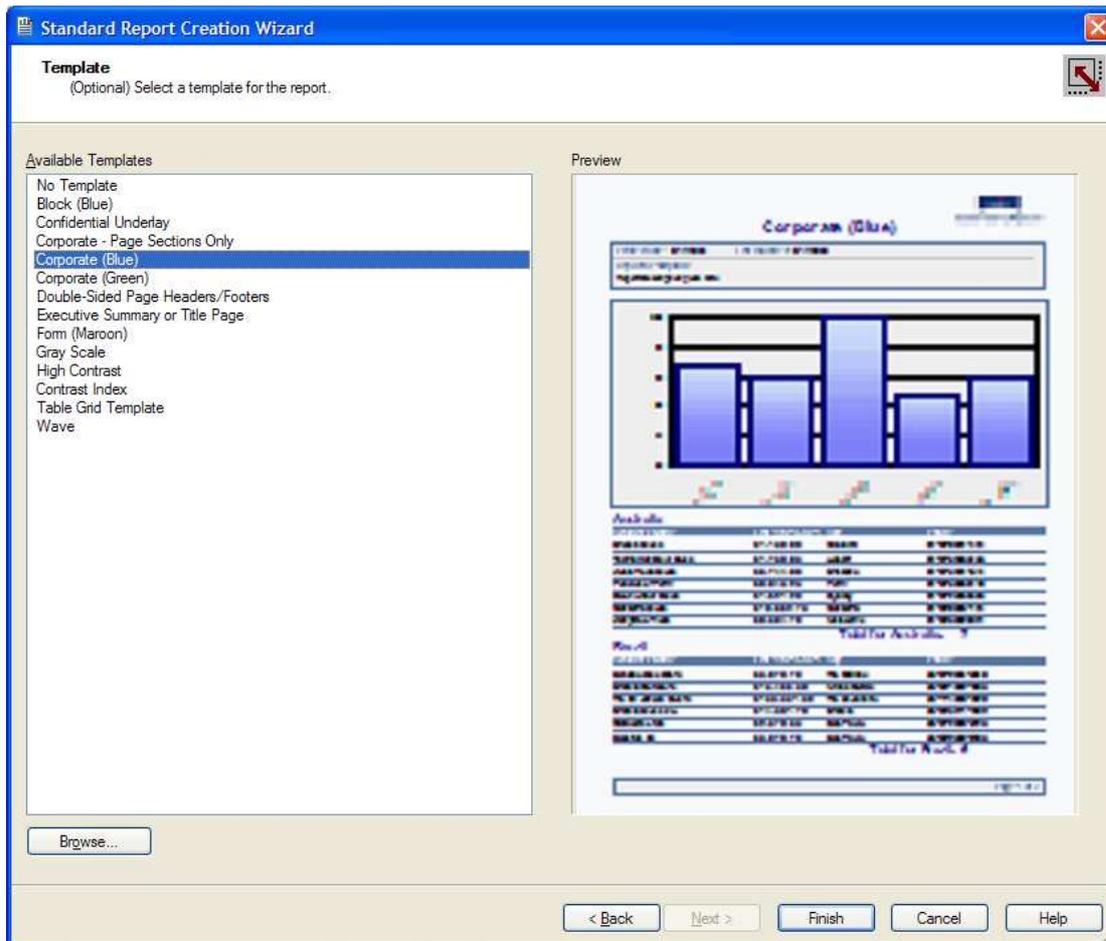
Make sure the 'On change of' field is set to 'ITEM.C01', which is our Section code in this example. Also check that 'Show summary' is set to 'Sum of ITEM.Weight'.



Click 'Next' to go to 'Record Selection'. You can use record selection to include only a part of the data from the database in the report.

We will not be using record selection in this example. Click 'Next' to continue to the last item in the wizard: 'Template'

Crystal Reports comes with a set of predefined templates. You can use one of these to quickly change the look of your report.



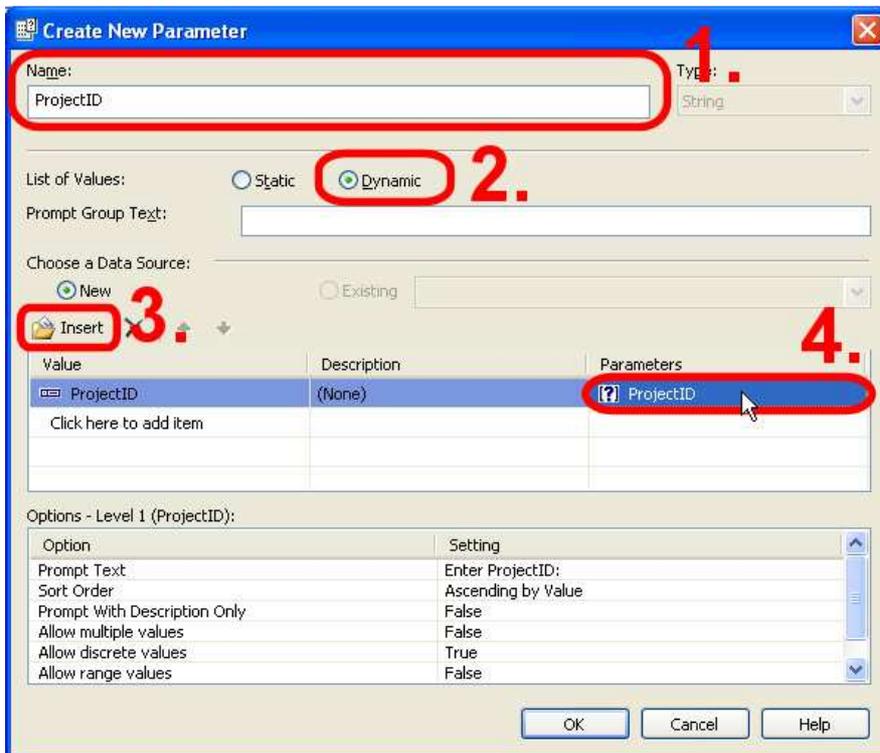
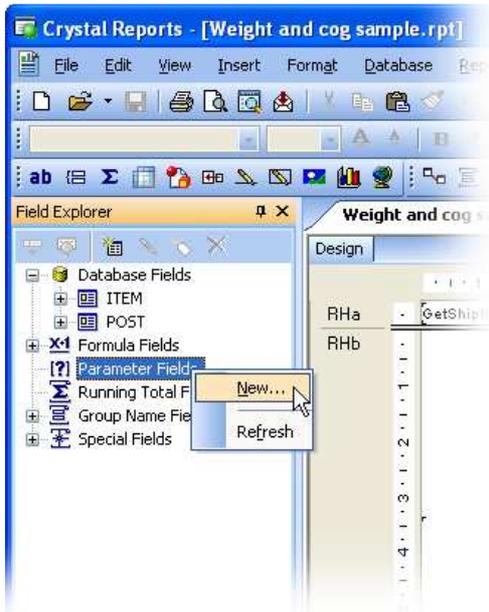
Click the 'Finish'-button to exit the Report Creation Wizard.



B Filtering data on ProjectID

Each project database can contain several projects. The report will now include data from all projects on the database. To list data from the current project only, it is necessary to insert a filter.

First, we will insert a parameter field to prompt for the current project name. Click 'Parameter Fields' in the Field Explorer with the right mouse button. From the right-click menu, select 'New...'





In the 'Create New parameter' dialog box, enter ProjectID as the name of the parameter.

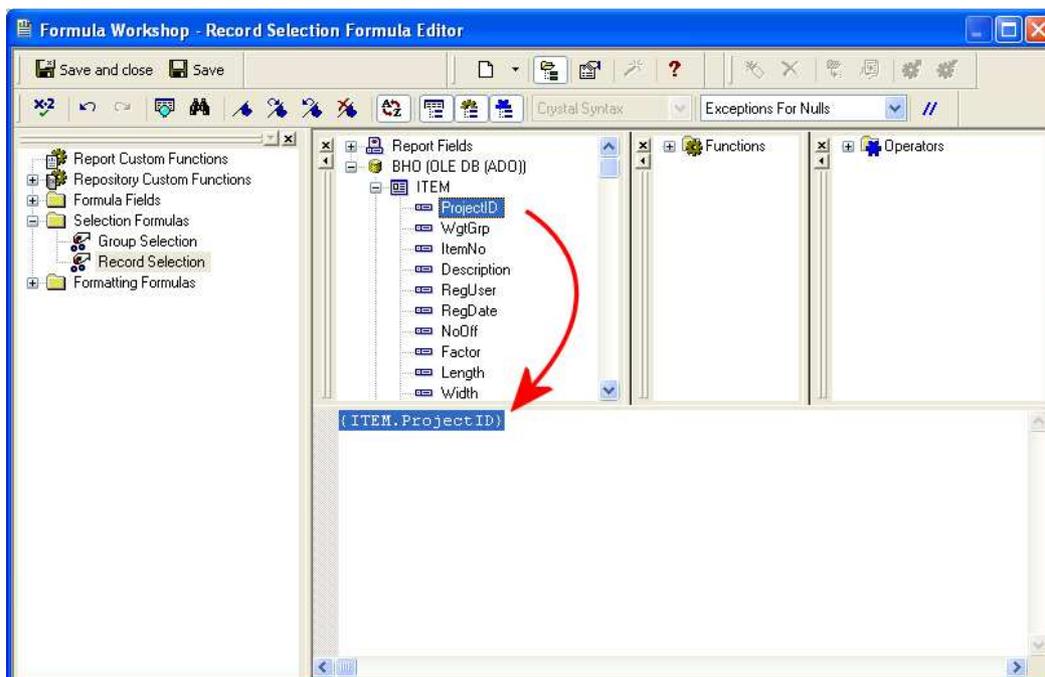
IMPORTANT: If you have installed Crystal Reports version XI, you can add a dynamic list of ProjectID-values to the parameter. This means that the available ProjectIDs will be listed in a dropdown list when the end user is going to select ProjectID. This is a new feature of Crystal Reports XI, and is not available for users of earlier versions of Crystal Reports.

To add a dynamic list of values to the ProjectID parameter, set 'List of Values' to Dynamic. You then press the Insert button, and select ProjectID from the dropdown list. In the Parameters column, click on the text 'Click to create parameter'. The text will change to ProjectID.

Click the OK button to close the 'Create New Parameter' dialog window.

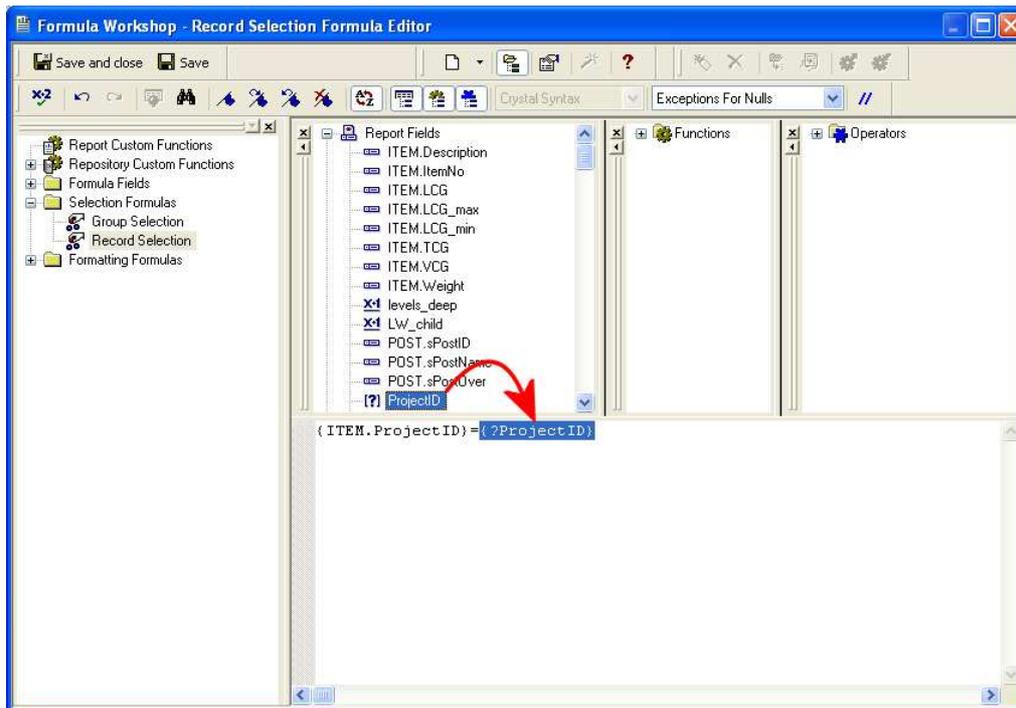
Now we are ready to create the data filter. This is done by creating a Record Selection formula. Choose 'Selection Formulas' and then 'Record...' on the Report menu.

In the Report Fields list of the Formula editor, expand the database and the item table. Select the database field ProjectID with the mouse, and drag it into the formula text window.



In the formula text window, type the sign of equality after the text {ITEM.ProjectID}.

Select the parameter named ProjectID (marked with a question mark icon in the list) in the 'Report Fields' branch. Drag and drop it to the formula text window.



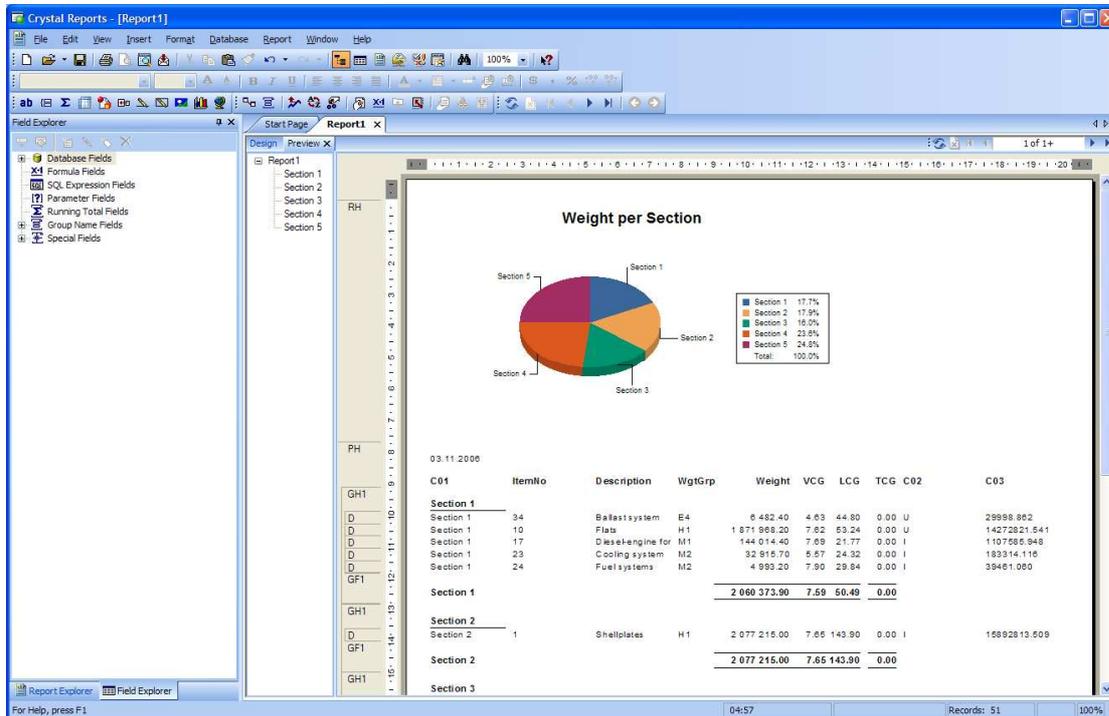
The selection formula should look like this:

```
{ITEM.ProjectID}={?ProjectID}
```

Press the 'Save and close' button. The report data will now be filtered to include the selected ProjectID only.



C Formatting a report



The preview shows that the report needs some formatting.

Some of the fields are too short to display the number. The easiest way to fix this is to click on the field in the preview area and expand it using the mouse.

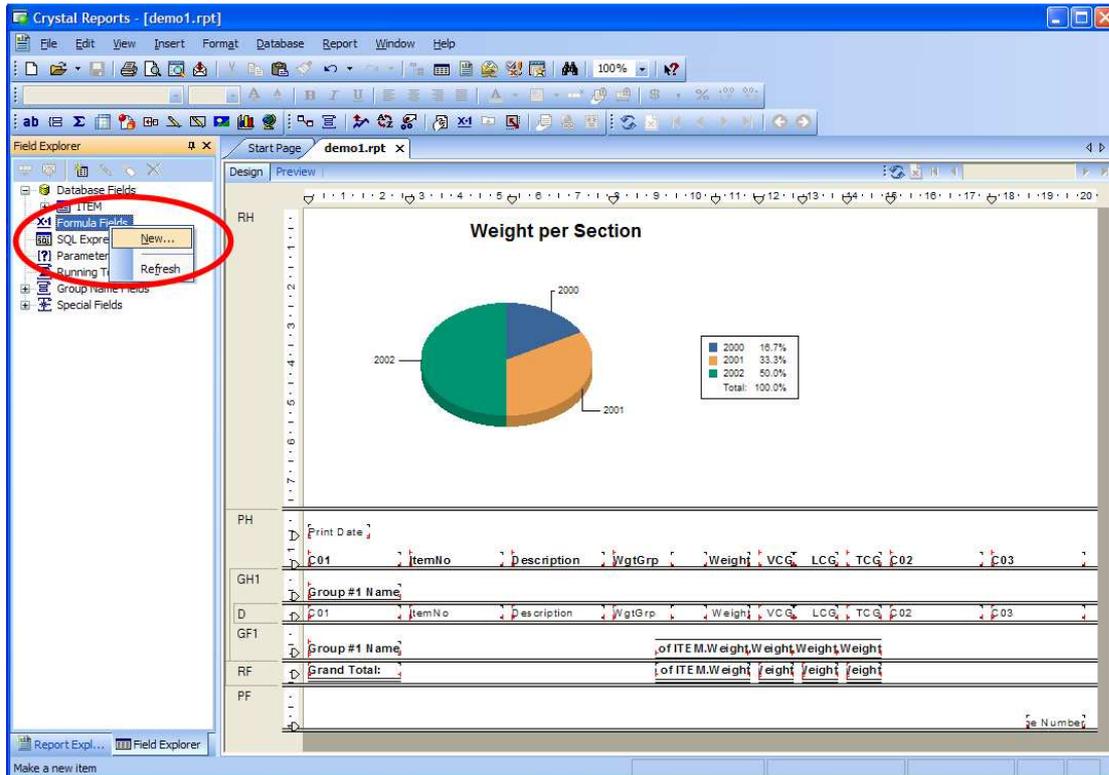
The group summary fields are in the wrong position. Drag and drop them into place.

To switch between preview and design mode, simply push the tab in the top left corner of the preview/design area.

D Displaying data in US-units

Next, we want to display the data in US-units. In the database, all data are stored in metric units.

Since the database does not contain any data in US-units, you need to create a formula to convert the value from metric to US units.



To create a new formula, you can right-click the 'Formula Fields' in the 'Field Explorer'. Select 'New...'

Enter the name of the formula: 'US Weight'.

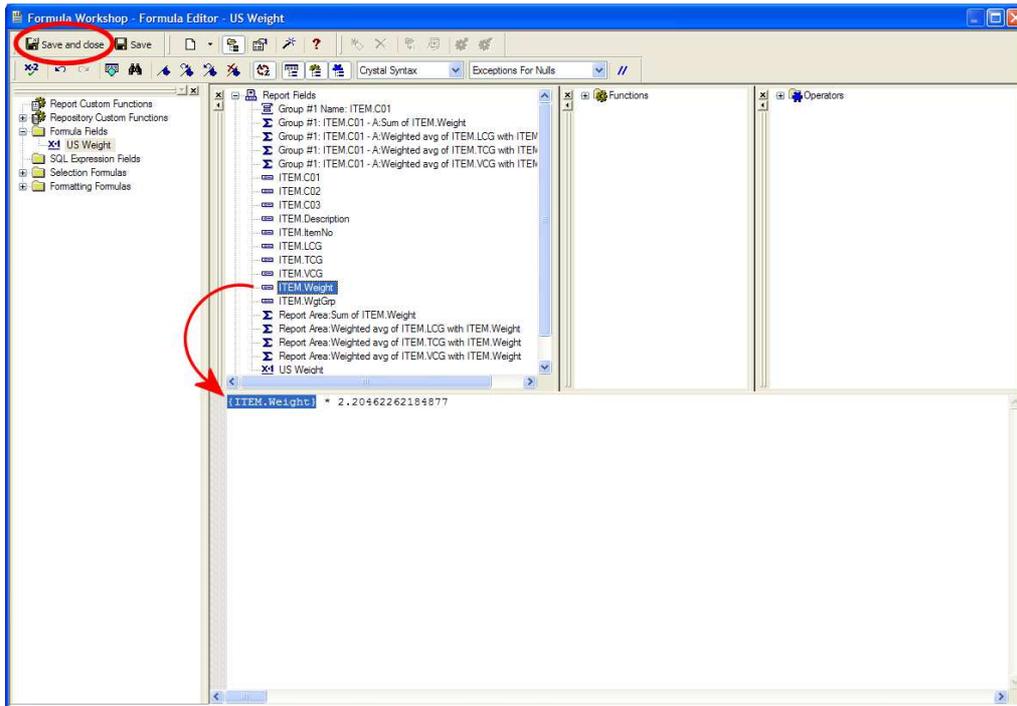
Now the Formula Editor will appear.

In the Formula editor, you will find a list of the available fields. Expand the branch 'Report Fields'. Drag-and-drop the field 'ITEM.Weight' into the formula editor.

Finish the formula by entering the multiplication sign (asterisk) and the conversion factor. The formula to convert from kg to lb should be:

{ITEM.Weight} * 2.20462262184877

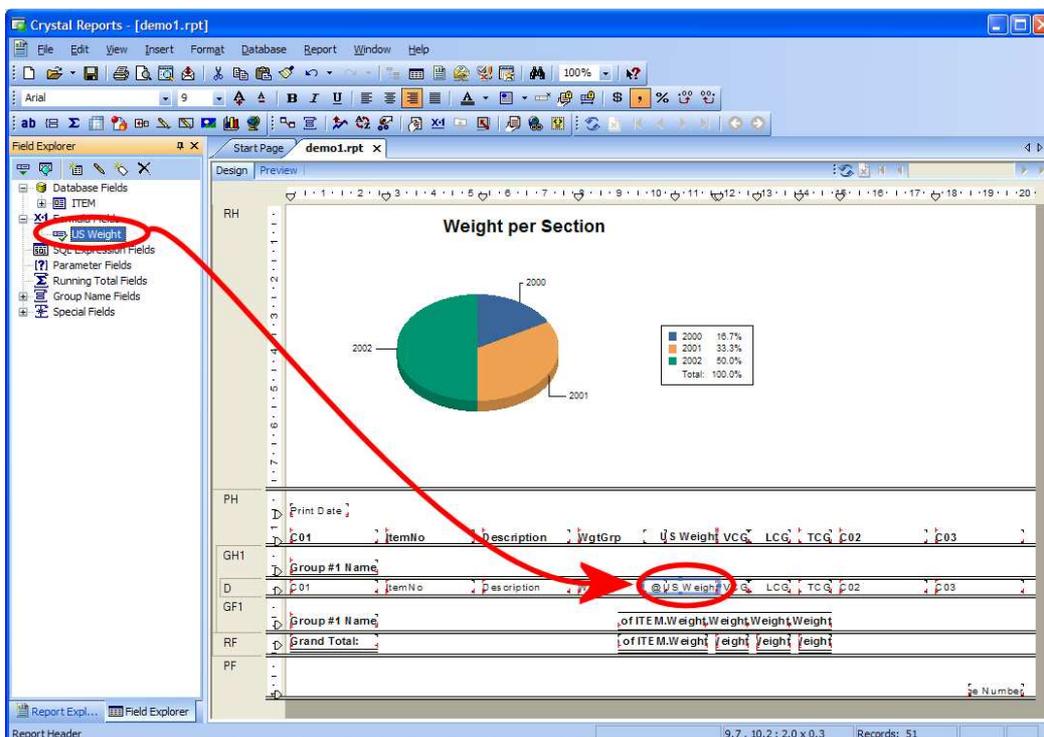
Press the 'Save and close'-button on the toolbar.



Back in the main window of Crystal Reports, you will find the new formula under 'Formula fields' in the 'Field Explorer'.

Before you insert the 'US Weight' field, you need to delete the original weight field from the report. Simply select the field in the design view, and press the 'Delete' button.

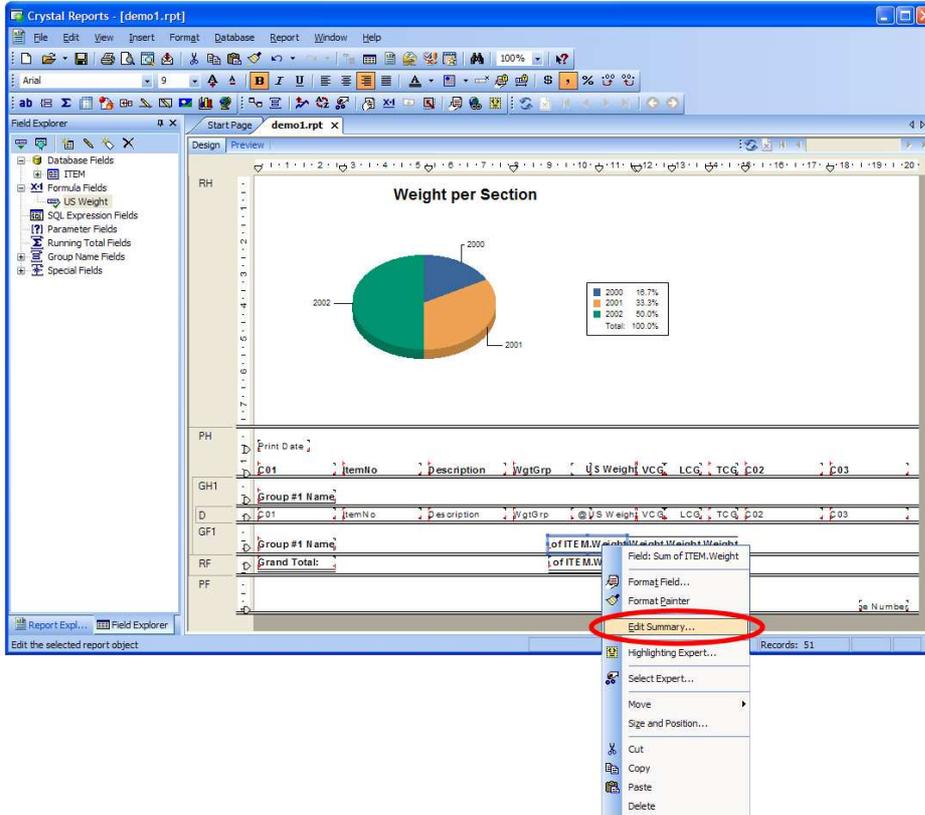
Now, you need to drag-and-drop the 'US Weight' formula into the Details section of the report.



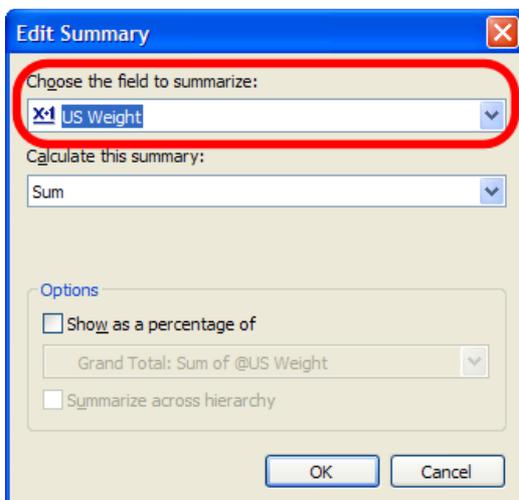


Finally, you must change the summary fields to summarize the 'US Weight' formula instead of the 'Weight' database-field.

To do this, select the Group Summary field in the design view, and click on it with the right mouse button. Select 'Edit Summary' from the dropdown menu.



The 'Edit Summary'-window pops up. Select 'US Weight' in the 'Choose the field to summarize' listbox. Click OK to close the window. Repeat this for the Report Summary.



The report now shows the weight in pounds instead of kilograms.



E Summarizing a Code-field

In the project we have used, Code C03 is the Vertical Moment. We would like to summarize the moments.

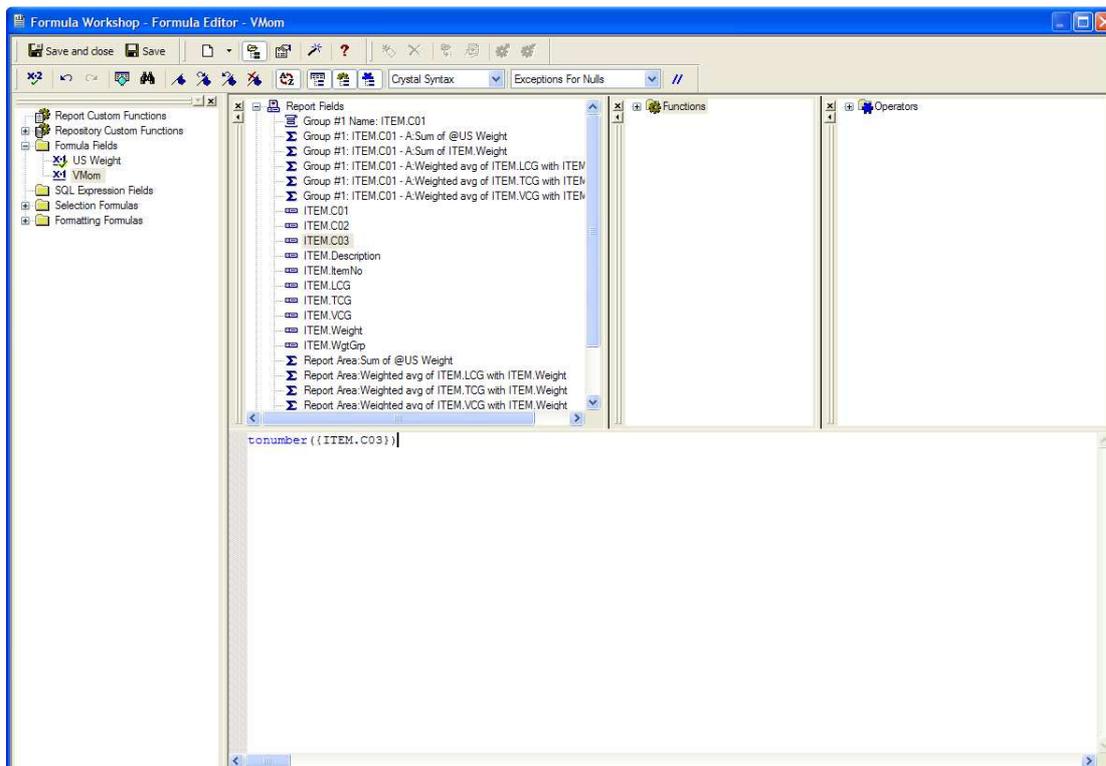
Crystal Reports can only summarize numerical fields. And since ShipWeight stores the code values as strings, you can not summarize code values directly.

The solution is to create a formula that converts the string C03 into a numerical value.

Create a new formula named 'VMom'. In the Formula Editor drag-and-drop the field ITEM.C03 into the editor.

To convert a string to a number, you need to use a Crystal-Reports function named TONUMBER(). The formula should look like this:

```
tonumber({ITEM.C03})
```



Now, the formula 'VMom' is available in the 'Field Explorer'.

In the design area, select and delete the field 'C03'. Then drag the formula 'VMom' into the report.

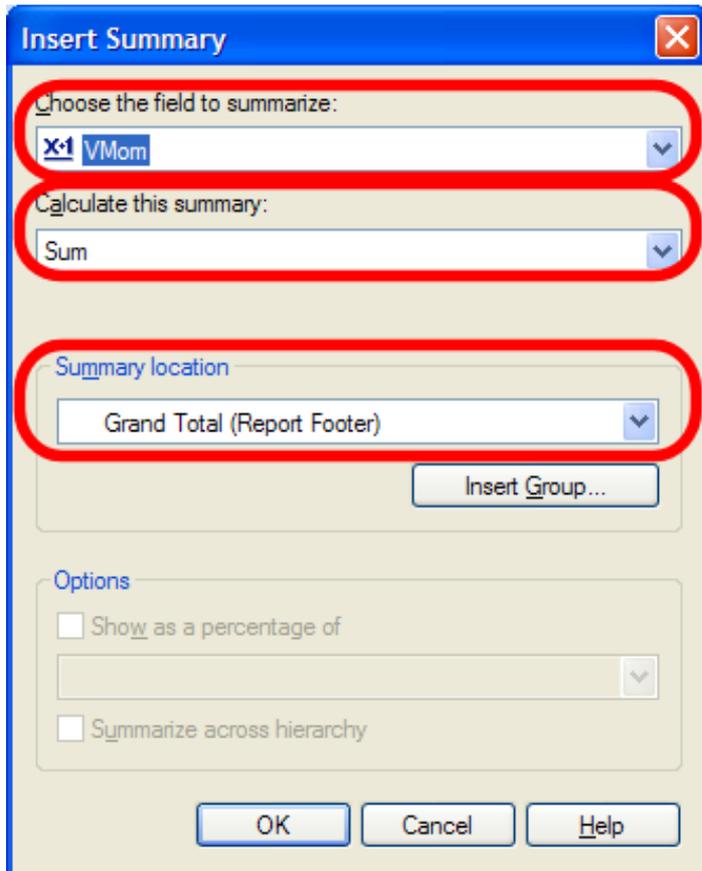


To insert a summary of the Vertical Moment, choose 'Insert Summary' from the 'Insert' menu.

Now the 'Insert Summary' dialog will appear. First, select 'VMom' in the 'Choose the field to summarize' list box.

Then make sure the 'Calculate this summary' option is set to 'Sum'.

Finally, set 'Summary Location' to 'Grand Total (Report Footer)'



In the same way, insert a Group summary. Hint: in the 'Insert Summary' window, you will need to set the 'Summary location' to 'Group #1: ITEM.C01 – A'

Now, you successfully have inserted a summary of code values into your report. Click the Preview-tab to see the result.



Crystal Reports - [demo1.rpt]

Field Explorer

- Database Fields
- ITEM
- Formula Fields
 - US Weight
 - VMom
- SQL Expression Fields
- Parameter Fields
- Running Total Fields
- Group Name Fields
- Special Fields

Design Preview X

demo1.rpt

PH

03.11.2006

C01	ItemNo	Description	WgtGrp	US Weight	VCG	LCG	TCG	C02	VMom
D	Section 5	3	Shelplates	H1	376 255.8722.28	195.19	0.00	I	3 801 907.94
D	Section 5	11	Flats	H1	215 259.9320.12	16.15	0.00	I	1 973 564.09
D	Section 5	12	Flats	H1	312 569.2819.52	158.20	0.00	I	2 768 230.75
D	Section 5	30	Power equipmen	E4	103 997.7818.24	32.00	0.00	I	766 249.13
D	Section 5	8	Decks	H1	257 001.0222.01	22.17	0.00	I	2 585 973.66
D	Section 5	9	Decks	H1	337 872.0918.99	172.50	0.00	I	2 910 077.77
D	Section 5	14	Deckhouse	H4	750 150.7118.03	100.50	0.00	U	8 185 485.13
D	Section 5	15	Deckhouse	H4	954 761.4329.98	18.82	0.00	I	12 932 203.12
D	Section 5	43	Hull outfitting	H7	196 118.3818.03	70.40	0.00	I	1 604 229.38
D	Section 5	17	Hull outfitting	H7	177 017.2918.44	76.80	0.00	I	1 481 210.84
D	Section 5	5	Bulkheads	H1	85 457.7919.82	21.12	0.00	I	798 426.08
D	Section 5	6	Bulkheads	H1	119 964.9819.33	169.20	0.00	I	988 863.69
D	Section 5	49	Invent. In acc.	E3	38 142.1824.31	23.09	0.00	I	420 510.84
D	Section 5	50	Galley, provision	E3	61 124.0425.96	22.36	0.00	I	719 836.78
D	Section 5	28	Power Cable	E4	281 664.3017.69	25.00	0.00	U	2 099 629.93
D	Section 5	42	Hull Fittings, Rail	E1	239 764.6221.27	63.16	0.00	I	2 313 122.95
D	Section 5	31	Ship equipment	E2	73 215.6035.14	39.40	0.00	I	1 246 061.44
D	Section 5	32	Ship equipment	E2	115 199.0331.25	35.84	0.00	I	1 633 118.36
D	Section 5	41	Ship equipment	E2	30 465.4617.16	19.20	0.00	I	237 110.77
D	Section 5	51	Ship equipment	E2	19 409.0616.99	28.16	0.00	I	149 541.88
D	Section 5	13	Accommodation	E3	626 883.5831.21	27.64	0.00	I	8 875 699.79
D	Section 5	33	Ship equipment	E3	138 277.4621.95	15.36	0.00	I	1 370 822.51
D	Section 5	40	Lifas, prot. & me	E3	69 911.2331.90	3.82	0.00	I	1 011 700.17
D	Section 5	44	Fl. pl., rail, etc.	E3	269 264.4525.33	26.91	0.00	I	3 093 297.22
D	Section 5	45	Ladders & steps	E3	18 829.6817.56	81.67	0.00	I	149 947.85
D	Section 5	21	Ext. Syst.	M2	95 983 1026.80	10.38	0.00	I	1 166 729.91
D	Section 5	22	Propulsion contrb	M2	93 845.9313.67	27.66	0.00	U	845 562.99
D	Section 5	35	Machinery system	M2	22 740.4820.08	23.04	0.00	I	244 646.22
GF1	Section 5				6,354,824.49	23.12	69.84	0.00	66 631 154.49
RF	Grand Total:				25,638,639.60	12.75	89.49	0.00	148 277 250.69

Report Exp... Field Explorer

Group #1: ITEM.C01 - A

22:37

Records: 51

100%