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BrakeWIN   Trailer Consultation

The theoretical brake calculation of the trailer.
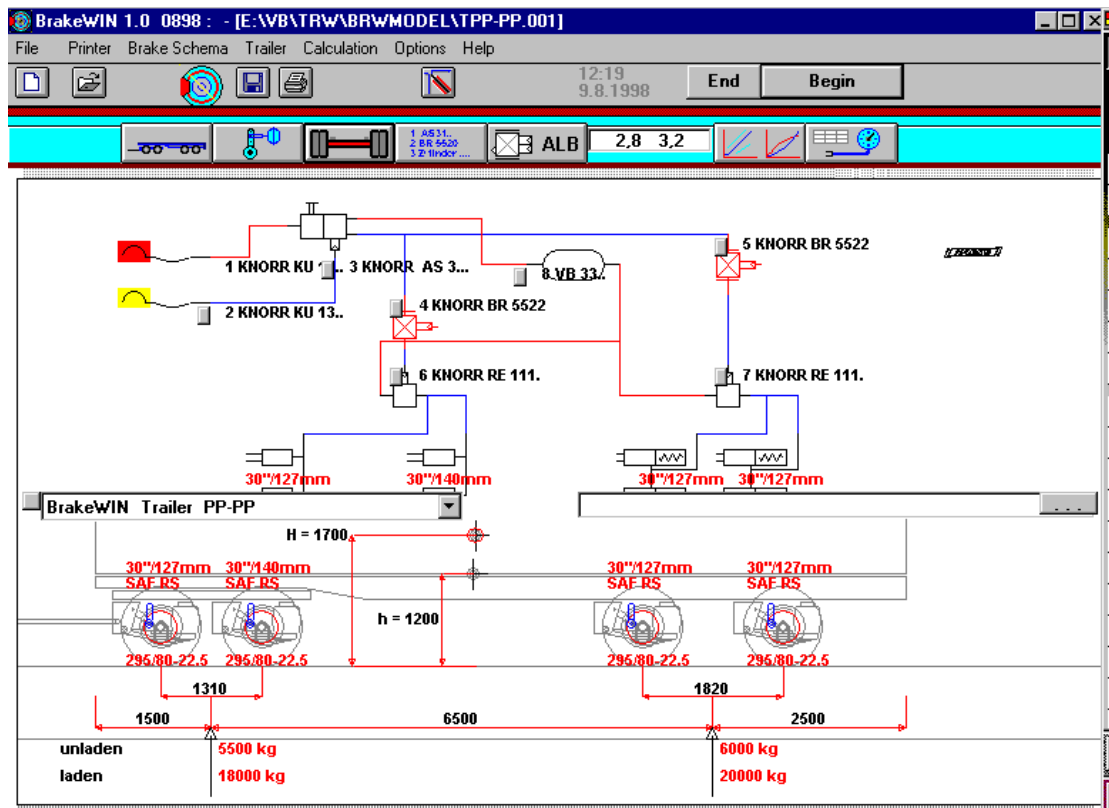
Begin the calculation
The screen data (BrakeWIN brake schema)
Buttons
Menus
Trailer weights and dimensions
Brakecylinders, brake levers
Axles
Load Sensing Valves (ALB)
BrakeWIN brake schema Modification
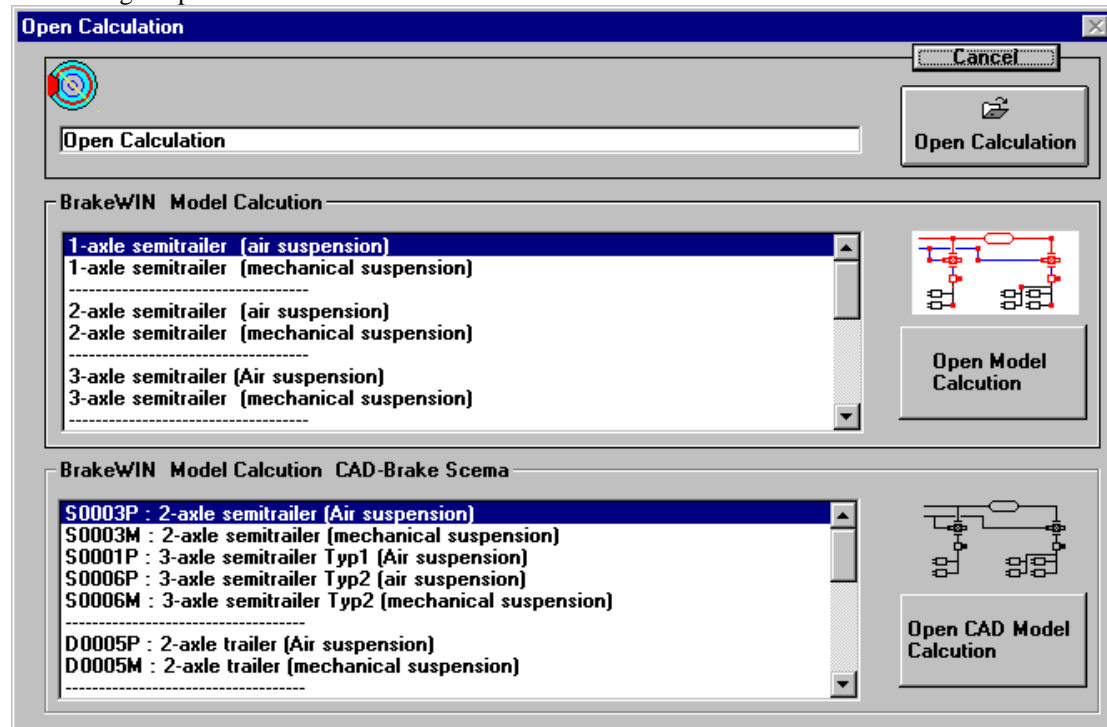Modification of the valveserie

Curves
Pressure table
Brake Force Table
Trailer Consultation

Begin

Button 'begin' opens this window

The calculation can be chosen by 3 different ways, three different methods:
1. Open a previously saved calculation. When You have done some calculations and saved them, You can begin a new case by opening a previously saved calculation first and then modify it, by doing all the required changes to the saved calculation.
2. BrakeWIN program's own calculation models. These calculations use the program's own brake schema handlind procedure. Brake schema can be modified on the screen.
3. BrakeWIN calculation models, that have a CAD brake schema as a basis. The schemas are originally from brake component manufacturer's model schemas .
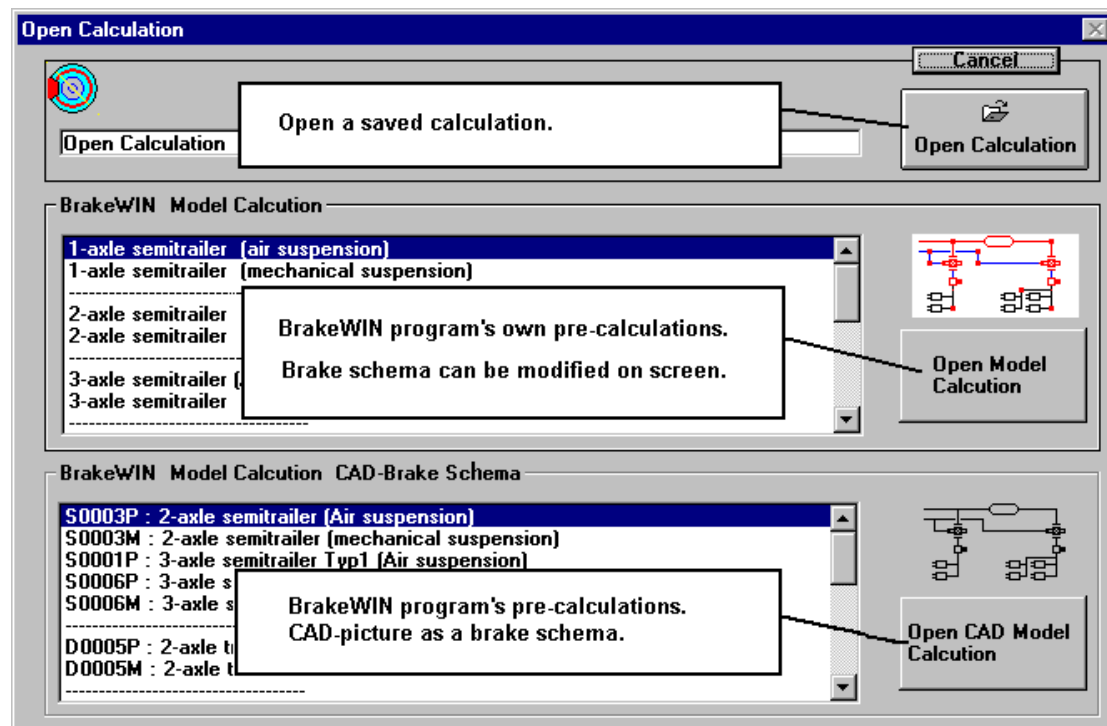
Open a previously saved calculation.

By choosing this opens a BrakeWIN file opening window.
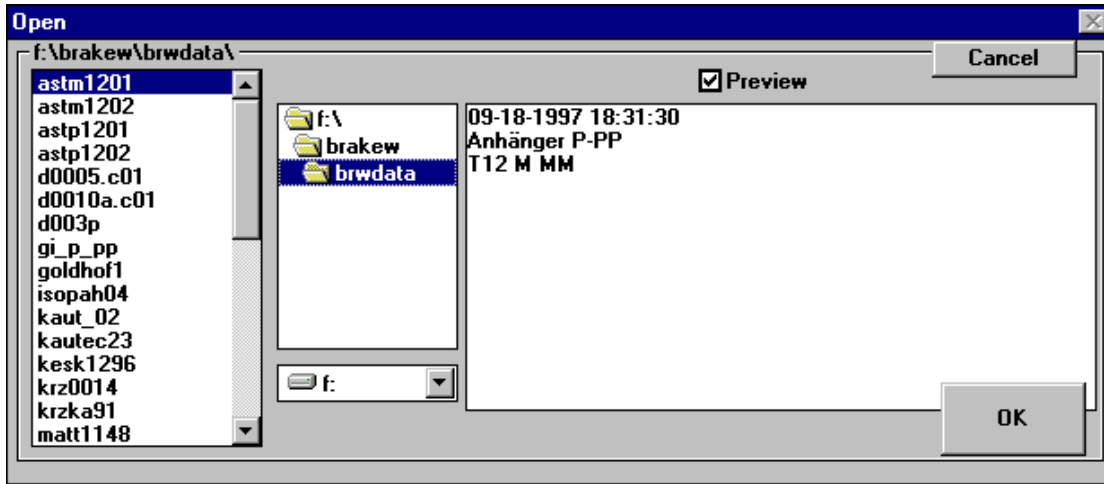
As a default directory for saved files is programdirectory's subdirectory BRWDATA, usually C:\BRAKEW\BRWDATA.
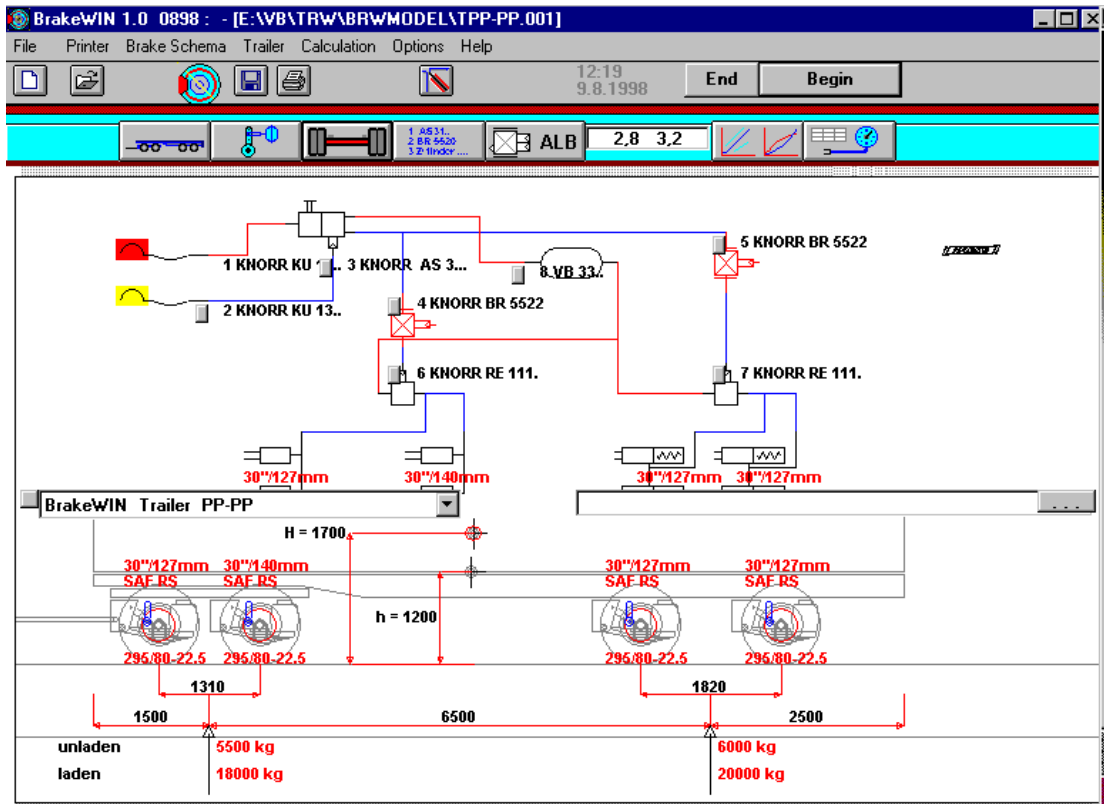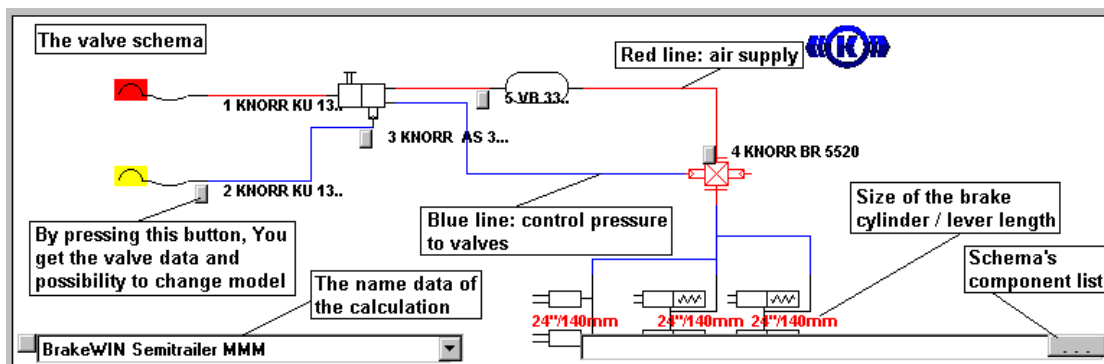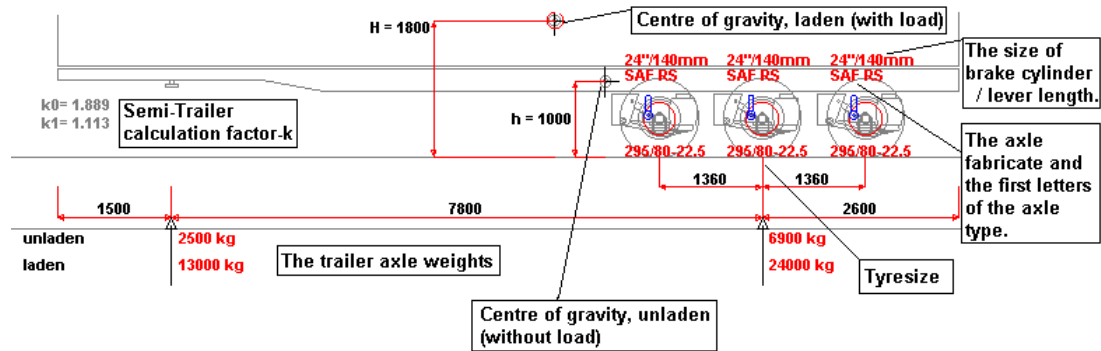
Screen Data


The brake schema You can edit.

Picture of the trailer.

The picture shows trailer model / type and the dimensions. The picture also shows the suspension structure as a basic drawing without specific details.

The trailer dimensions on the screen (overhang, wheelbase, height of the centre of gravity) and weights can be modified on the screen easily straight from the measure.
Click the measure with the mouse. An editing box will appear on top of the measure.
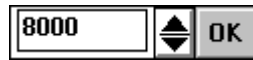
    Type here the new measure and press OK.

The weights and measures and the structure of suspension can also be modified by pressing the button trailer dimensions .
If You need to modify many dimensions and/or weights, this method is much easier to use.

Screen Data with CAD Schema

You can not modify the CAD Schema on the screen.
You can modify the valve list and valve order for the calculation, but the Schema does not change.
Trailer Data editing as above.

Buttons

 New: Begin a new calculation by opening a new calculation model or file.

 Open a calculation

 Save

 Print
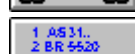
 Re-draw and Re-calculation

  Begin = BrakeWIN calculation models

 Trailer weights and dimensions and suspension

 Brakecylinders and leverlengths

 Axles, tyres

 Valve list

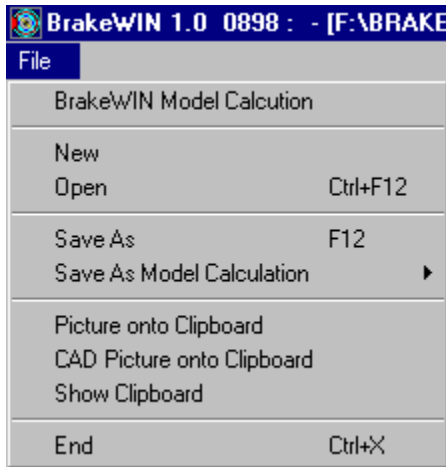 Load Sensing Valves (ALB) and regulating values

 Curves

 Pressure table

Menus

Menu File

New, BrakeWIN Calculation model: = 'Choose the model' window
Open   = open a previously saved file

Save = save the calculation as a file. Same function as the button:
Save as a calculation model
     This choice is not recommended, because the next update can change calculation models.

Picture on the Clipboard : Takes the brake schema and the picture of the trailer on Windows Clipboard.
CAD-picture on the Clipboard : Takes only the CAD-brake schema on the Windows Clipboard.
     Clipboard is a temporary store for Windows, from where the picture can be taken into other
     Windows programs: Using Menu Edit - Paste commands. The picture will then be taken as a
     Bitmap.

Show clipboard

End
     Exit the program

===
Most easy way, is to make own examples and save it using names for example:
  Trailer 1+1 axle air suspension
  Semitrailer 2 axle air suspension
and so on,
Then you can later open this examples and begin with these.

===
Other way is following:

  Make own modification
..Save as model using Menu
   File:
    - Save As Model Calculation
     - Save as BrakeWIN Model

Then you save into directory BRWMODEL;
Name logic must be following:

T = Trailer
S = Semitrailer
C = Centre Axle Trailer
M = Mechanical Suspension
P = Air Suspension (Pneumatical)
File name extension must be .001
Examples:
 TM-MM.001   = model for Trailer;
       1 front axle with mechanical suspension and
       2 rear axles with mechanical suspension

 S-PPP.001   = model for Semitrailer;
       3 rear axles with air suspension

IMPORTANT NOTICE !   If you use this method !!!!
Save Copies of your own model files also into some other directory.
When we send an update, and you install it, then the setup program
Overwrites your model files in BRWMODEL directory.
If you do not have copies somewhere, you will lose these totally.

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Menu Printer

| Printer |
| Print |
| Printer setup |

Print : Prints the Calculation
Choose the printer :   Opens the Windows Print Manager.

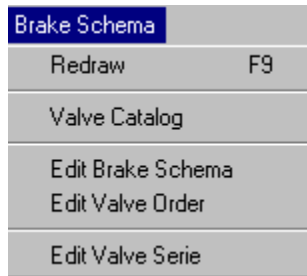## Menu Brake schema, when used the calculation with CAD-brake schema

Valve list : Shows the component list (catalog).
Open brake schema : You can choose some other brake schema.
Edit the Valveserie : Choose the valves, modify the mutual order of the valveserie.

Menu Brake schema, when not used calculation with CAD brake schema

Redraw : Draws the pictures again, does the calculations again. With this You can make sure that all the changes have been taken into consideration.
Valve list: Shows the component list (catalog).
Modification of the brake schema :   Modification of the location of the valves and pipelines of the BrakeWIN schema.
Modification of the order of valves :   Modify the order of valveserie valves on the screen. From where the pressure goes to which valve.
Modification of the valveserie : Choose the valves, modify the order of the valves in valveserie.

Menu Trailer
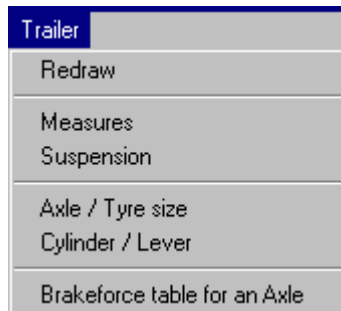
Redraw : Draws the pictures again, does the calculations again. With this You can make sure that all the changes have been taken into consideration.
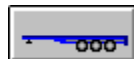
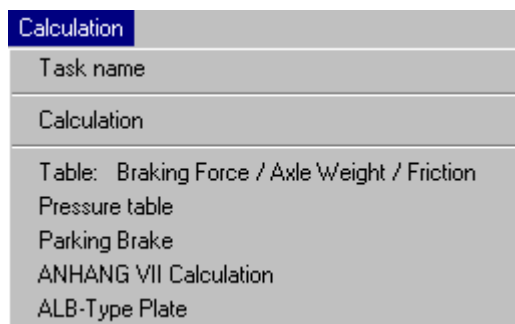Trailer weights and dimensions and the structure of suspension

Axles, tyres

Brakecylinders and lever lengths

Brakeforce table for an axle : Shows separately the technical data of the chosen axle.

Menu Calculation

Calculation

Task name
Calculation
Table: Braking Force / Axle Weight / Friction
Pressure table
Parking Brake
ANHANG VII Calculation
ALB-Type Plate

Task name : The name for the calculation task
Calculation
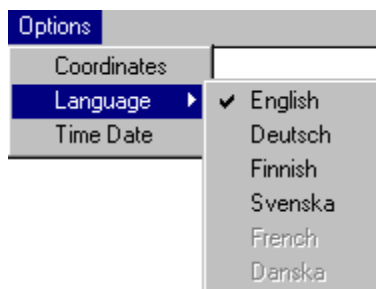Table: Braking force / Axle weight / Friction
Pressure table : Shows the table of pressures-out from different valves.
Parking brake : Shows the results of the parkingbrake calculation.
ANHANG VII calculation: Shows the results of ANHANG VII calculation.
ALB-type plate: Shows the ALB-type plate.

Menu Options

Options

|	
Coordinates	
Language ▶	✔ English
Time Date	Deutsch
	Finnish
	Svenska
	French
	Danska

Coordinates : Coordinate window on / off (off: can not be seen). Shows the location of the mouse on screen in X- and Y- coordinates.

Language : Choose the language on use.

Time, date : Change the time and date in Windows. This will affect also on the clock of the operating system and on all the other programs.

Menu Help

Help

BrakeWIN Help
BrakeWIN Info
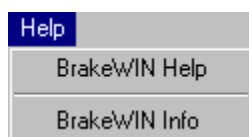
BrakeWIN Help : This help-text .

BrakeWIN Info : Information on the program, on Trailer Consultation and on hardware setups.

Trailer Weights and Dimensions

Modification of the trailer dimensions. Overhang dimensions do not actually count on calculations, they only affect on the outlook of the picture.

Some dimensions can be switched off at the checkboxes (on the right corner) so that they will not come on printouts.

Choose the suspension structure for front- and rearaxles.

Brake Cylinder, Brake Lever

Choose the brake cylinder and the lever length for each axle.

Choose first the fabricate of the cylinder and then the type of the cylinder. At the same time You choose if the axle has got a parking brake or not.

The lever length options are different according to the chosen axle model. You should always check the lever length when You change the axle model.

Below the listboxes is the approximate default value for the brake force and the corresponding pressure , calculated by the program. The force corresponding the chosen measures will be seen below the cylinder / lever-symbol, for example 30 / 127 => 44180 N stands for: 30 square inch cylinder and 127 mm lever length.
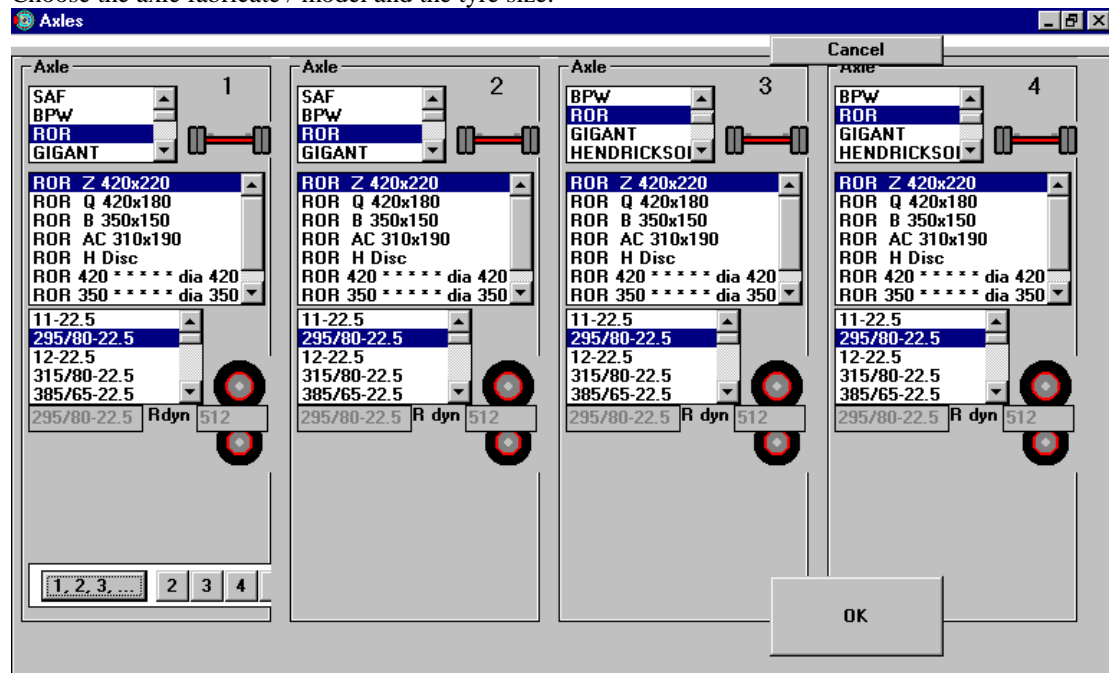
 Symbols show the chosen structure:

Brake cylinder,   Spring Brake combi cylinder,   Brake cylinder + crank as a parking brake.

Axles

Choose the axle fabricate / model and the tyre size.

Choose first the fabricate of the axle. The model table gives You the models to choose from.
Please notice that the tyre-size-table does not change along with the axle models. The program does not automatically check if the tyre size matches the chosen axle or not.
If all the axles of the trailer are same kind, You can first choose the data on axle number 1. The data for the rest of the axles will be the same if You press the button ' 1,2,3,… '. For example: only the axle number 2 will have the same data as axle number 1: by pressing the button ' 2 '.

The options in choosing the lever length are different according to the chosen axle model.
You should always check the lever length when the axle model is changed.

Load Sensing Valves (ALB)

⊠ ALB

Choosing the model and the regulating value of the Load Sensing Valve (ALB).
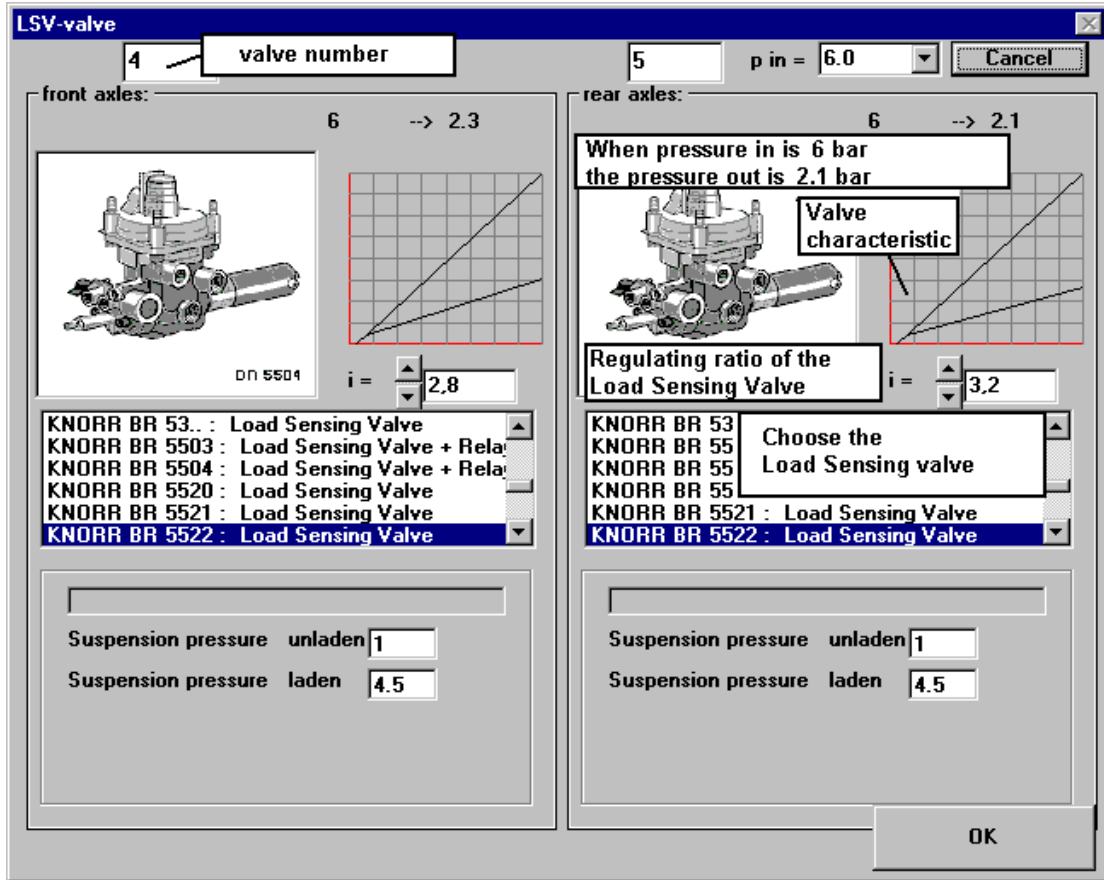
You can choose the regulating ratio of the valve (i) from editing box (i =…), below the curve.
Changing the regulating ratio changes the characteristic of the valve also. Please notice that the regulating
ratio i is not the pressure-out.
The pressure-out for chosen regulating ratio can be seen above the characteristic of the valve.

For example in the picture **6 → 2.3** means that: when pressure-in for valve is 6 bar the pressure-out
is 2.3 bar, when the regulating ratio is i=2.8 as chosen in here .
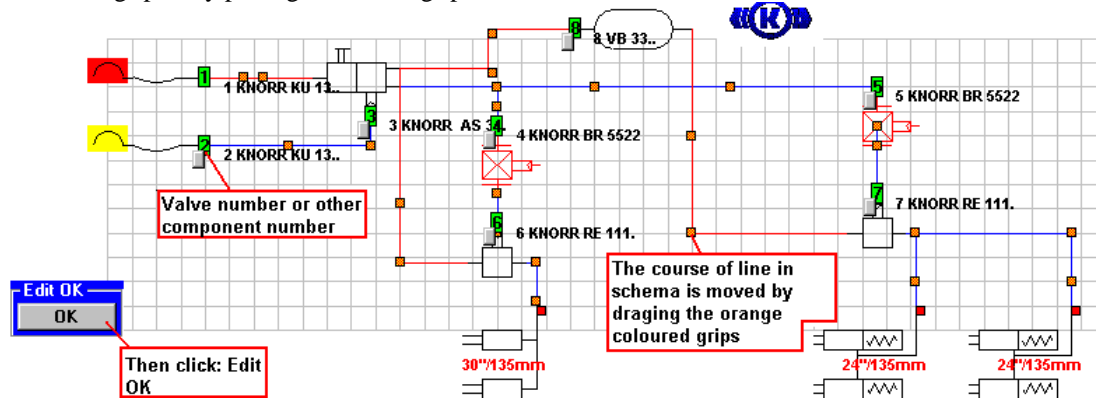
BrakeWIN Modification of the Brake Schema

Pipelines: The control pressure has been marked with blue lines in the schema, supply pressure has been marked with red lines.

Menu : **Brake schema - Modification of the brake schema** gives a possibility to modify the location of the valves and to modify the pipelines in schema.
The green rectangles with numbers ; grips show the numbers of the valves or other components. By dragging the grip with mouse, You can move the component from one place to another.
The orange grips control the course of line. Each pressure line goes from one component to another and on the line
there are 2 grips. By pulling with these grips You can control the course of the line.


Menu : **Brake schema- Modification of the valve order** Gives a possibility to modify the pipeline between the valves.
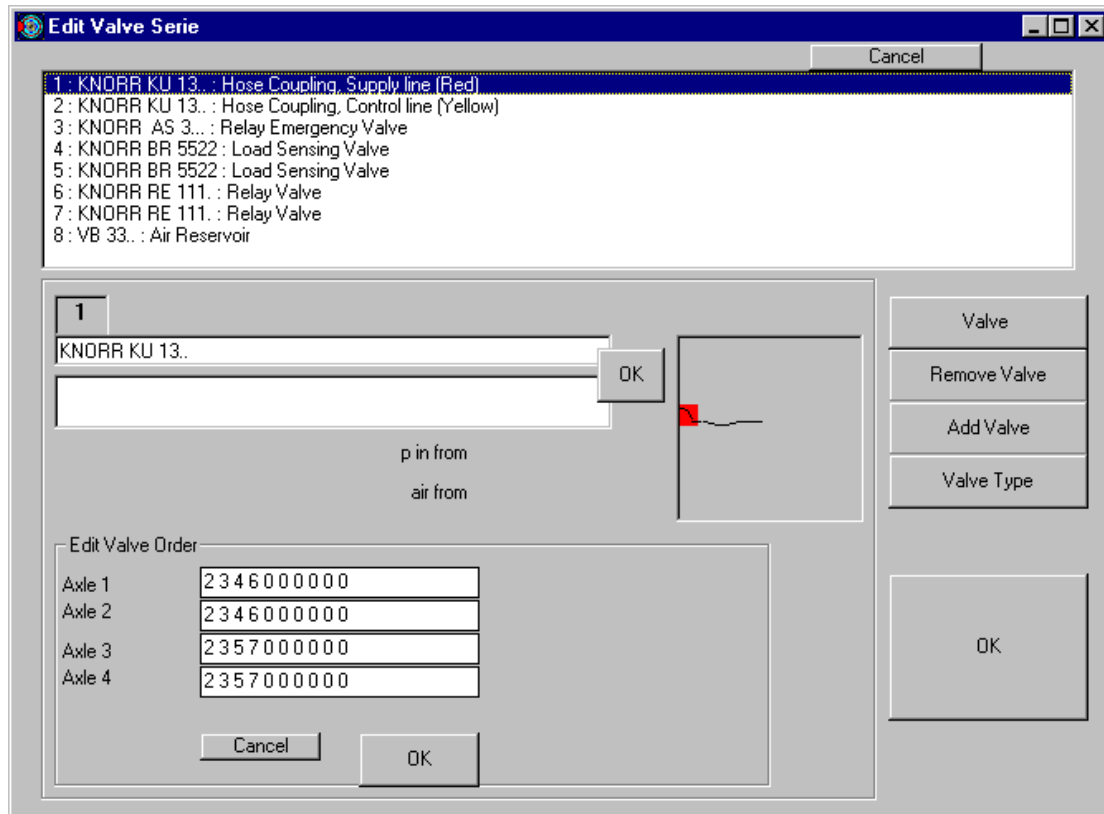Grip, with mark **2->** means that pressure to this port connection comes from component number **2**.
If You want to modify the pressure to come from some other component, drag this grip (**2 ->**) with mouse on top of that component's   green, numbered grip   from which You want the pressure to come from.
When everything is ready, press Edit - OK button.
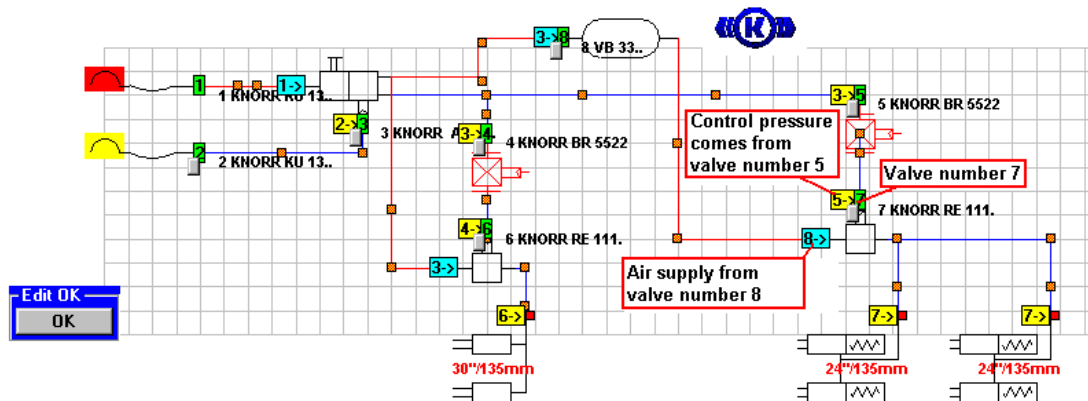
Modification of the Valve Serie

In the window Modification of the valveserie You can add valves, remove valves, change their type and change their mutual order. The functions are targeted on the valve which is chosen from the valvelist.

On the right You see the buttons

Valve :   Shows the data on chosen valve, the picture , the characteristics and settings (if needed)
                        Possibility to change the valve fabricate or valve model.

Remove valve: Remove the valve: Remove the valve that is chosen on the valvelist.
   After the removing this component number will be empty.

Add valve :   Add a new valve on the list. New valve is added on end of the list with a new number.
                        If there are empty places in the list, You should do the adding by choosing a number
                        of an empty place on the list and then choose a suitable type with button "valve type".

  Valve Type :   Choose a suitable type. Should use for example if a valve that is already on the list
                        should be replaced with a different type of component. The 'choose valve type'
                        window can be seen below.

Please notice that modifications made with these functions do not change the CAD-drawing !
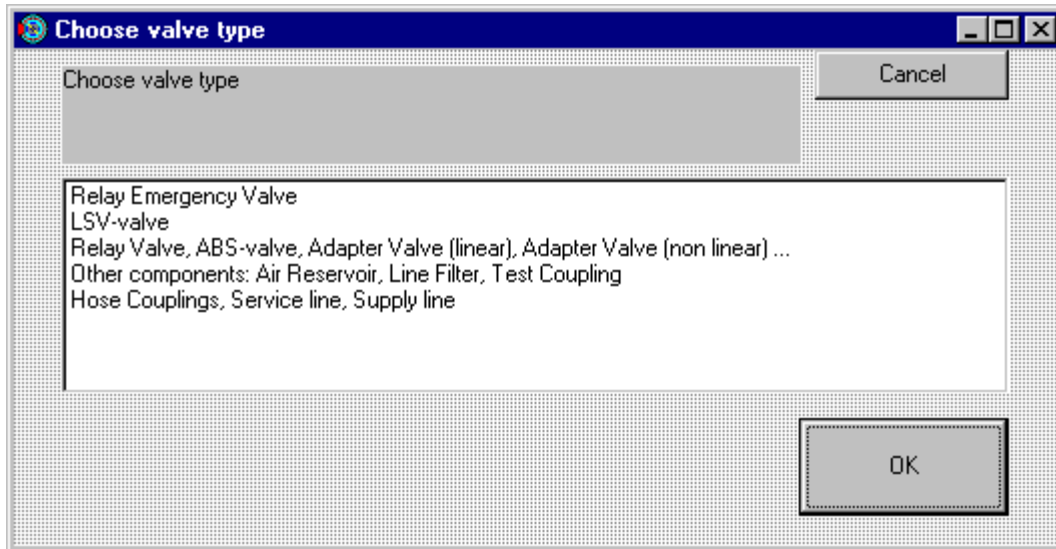
Valves are in 4 groups:
1. Relay Emergency valve
2. Load Sensing Valve
3. Relay valve, ABS- valve, Adapter valve (linear), Adapter valve (non-linear), etc.
4. Other components: Air reservoir, Line filter, Test coupling, etc. components that do not actually function as valves.

When You have edited the valve series, as the last step You have to control the valve working order for every axle.
You can do this from the textboxes, below the valve list.
For every axle there is its own number series.
For example the text: **Axle 1 : 4 10 12**
This means that when calculating the cylinder pressure for axle number 1, the program takes the control line pressure go first to valve number 4, then the output pressure from valve 4 goes to the valve number 10 and that the output pressure from valve 10 goes to the valve number 12. From last valve, the number series (valve 12) the pressure goes to the brake cylinder.
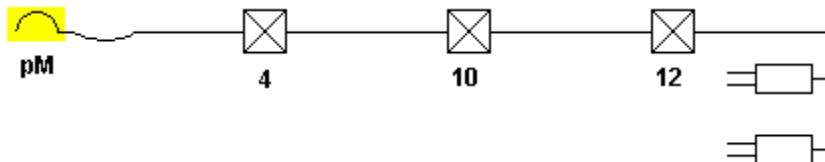
Curves
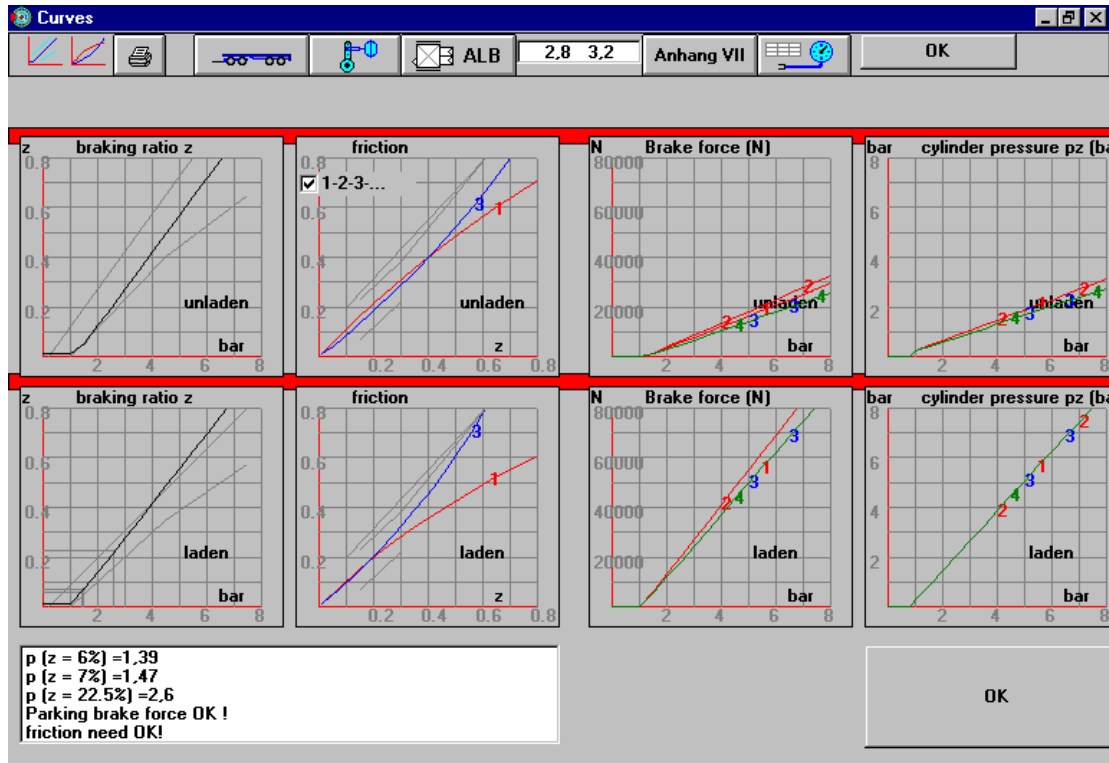
On the screen You can see results of the calculation as curves. On the top unladen (without load) and below laden (with load).

The numbers and colors express different axles.

The checkbox 'V 1-2-3-…' gives a possibility to choose if the friction curves are calculated so that each axle is as its own graph (curve), (V-mark on the checkbox), or so that the front axle is is as one graph (curve) and the rear axle is as another graph (curve), (no mark on the checkbox).

Text $p (z = 6\%) = 1.47$ means that the braking ratio: 6 % corresponds to control line pressure 1.47 bar.

On the same list You can see also results of the calculations : parking brake's brakeforce and the result of needed friction.

From the icons in the window 'Curves' You can go to other functions as follows:
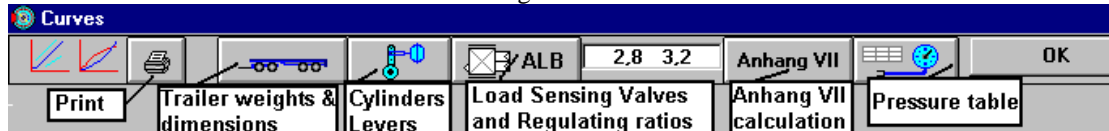
Pressure Table

pM bar	Axle Valve	A 1 4	A 1 10	A 1 18		A 2 4	A 2 11	A 2 18		A 3 4	A 3 11	A 3 18	
0.0		0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	
0.5		0.21	0.00	0.00		0.21	0.00	0.00		0.21	0.00	0.00	
1.0		0.73	0.41	0.28		0.73	0.42	0.28		0.73	0.42	0.28	
1.5		1.25	0.59	0.47		1.25	0.60	0.47		1.25	0.60	0.47	
2.0		1.77	0.77	0.66		1.77	0.79	0.66		1.77	0.79	0.66	
2.5		2.29	0.95	0.86		2.29	0.97	0.86		2.29	0.97	0.86	
3.0		2.81	1.13	1.05		2.81	1.16	1.05		2.81	1.16	1.05	
3.5		3.32	1.31	1.25		3.32	1.34	1.25		3.32	1.34	1.25	
4.0		3.84	1.49	1.44		3.84	1.53	1.44		3.84	1.53	1.44	
4.5		4.36	1.67	1.63		4.36	1.71	1.63		4.36	1.71	1.63	
5.0		4.88	1.85	1.83		4.88	1.90	1.83		4.88	1.90	1.83	
5.5		5.40	2.03	2.02		5.40	2.08	2.02		5.40	2.08	2.02	
6.0		5.92	2.21	2.21		5.92	2.27	2.21		5.92	2.27	2.21	
6.5		6.44	2.39	2.41		6.44	2.46	2.41		6.44	2.46	2.41	
7.0		6.96	2.56	2.60		6.96	2.64	2.60		6.96	2.64	2.60	
7.5		7.48	2.74	2.80		7.48	2.83	2.80		7.48	2.83	2.80	
8.0		8.00	2.92	2.99		8.00	3.01	2.99		8.00	3.01	2.99	
0.0		0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	

Pressure table shows the pressure-out from the valves. Horizontal rows of the table show pressures from different serviceline. (pM bar).

Columns: (above is A1) , stand for the valves affecting on braking of axle number 1. On the second row is the number of each valve. The table contains all those valves, that are defined to be included in axle's valveseries in "modify the valveserie " window.

In the table the figures are calculated first unladen (without load) and then again as laden (with load).

Brake Force Table

The Table shows the Brake Force (FBr in Newton), the Dynamically calculated Axle Weight (N in Newton) and the

Minimum friction factor needed (u) for every axle (A1, A2, …)   with different control line pressures (pM) .

All these in laden (with load) situation and unladen (without load).

Save

Menu **File - Save**   or click the button

Opens the Windows Save Dialog.

As a default directory is programdirectory's subdirectory BRWDATA ,

usually C:\BRAKEW\BRWDATA, but You can also choose some other directory.

If You use the same name that You have given to some other file earlier, will that earlier saved file with the same name be lost. The program will give a warning about this.

Because this program is made to function also in 3.11 Windows, it gives limits to the name when saving the file: The length of name can be 8 characters at the most, then a point and 3 characters.

Specialcharacters are not allowed and it is recommended also not to use the scandic letters: ä,ö,å .
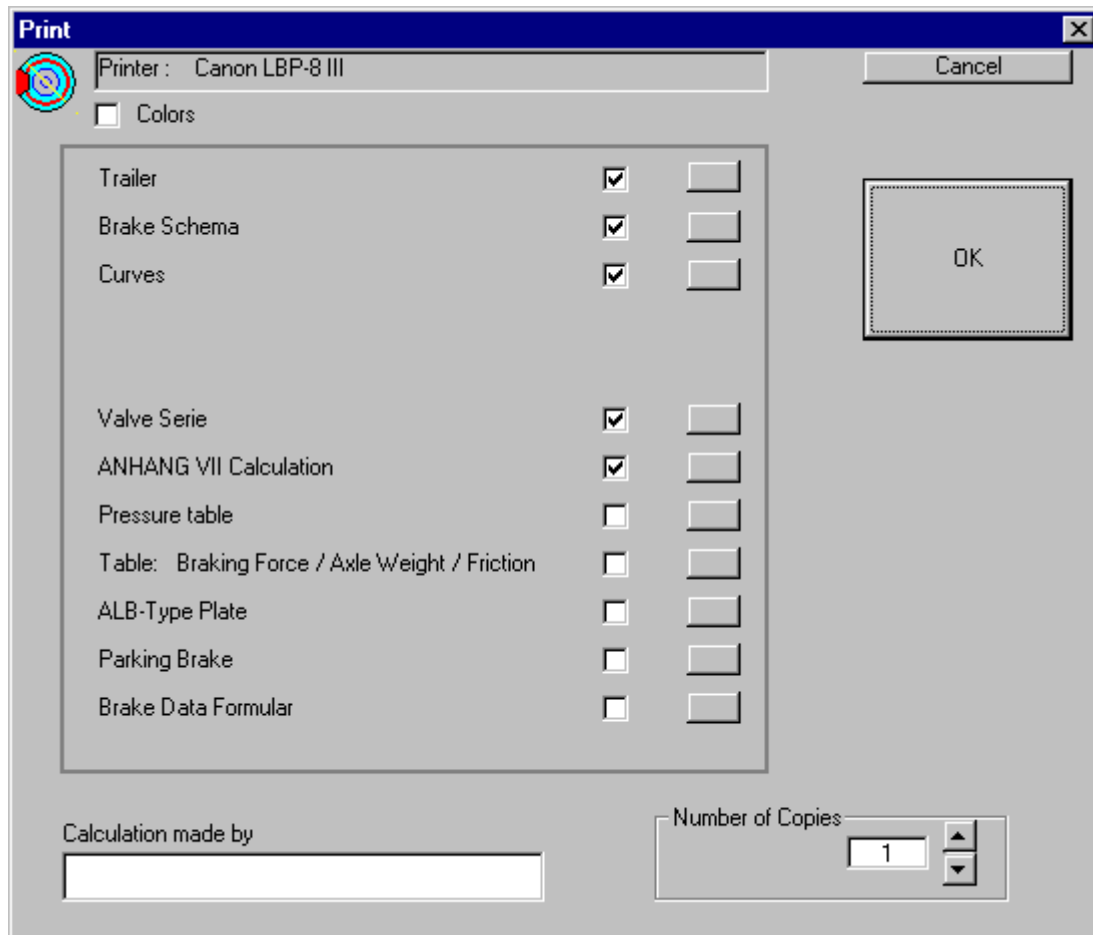
Examples of allowed filenames:

HAKKINEN.011   COULTHAR.PV1   SCHUMACH.MIK   IAA98   HANNOVER
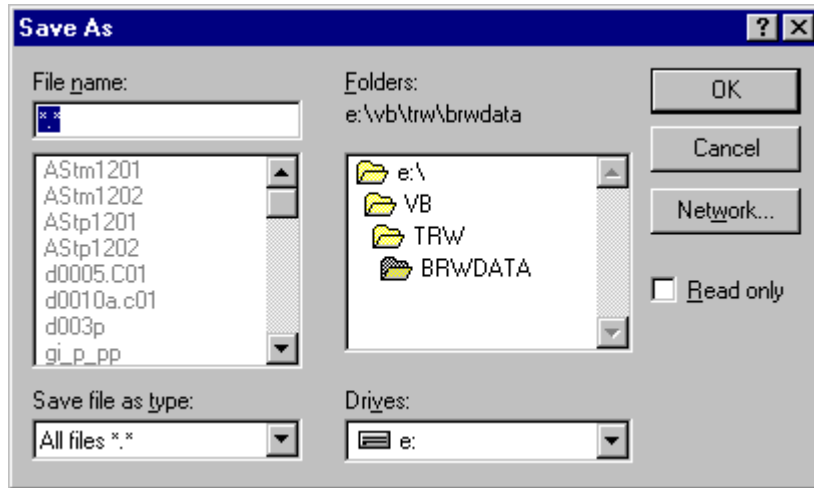
Print

 The command Print opens this window.

You choose what to print out by using the check boxes.

When You press OK, the program will print out the pictures, curves and tables that You have marked in the check boxes.

If You want to print only a certain specific part of the program, You just mark it on the check boxes.

By marking the box: colors, You get the colorprinter to printout the curves and pictures in color. You should not try this with Black-White printer, because it only slows the functions down and the result can be worse than normal Black-White picture. For example Red will come as light grey.

On the box 'Calculation made by' You can type the name or initials of user. They will also be on the printout papers.

The printout uses Windows printer manager and therefore also WindowsPrinter Drivers. If there are any trouble with the printout, should You try and change the Printer Driver and then try again.

Axle Data Table

Choose the axle fabricate / model and the size of tyre.

The program makes a table from that specific axle's brake torque and brakeforce with different brake cylinder / lever length alternatives.

The choice of tyre affects on the breakforce, but not on the brake torque.

Trailer Consultation

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Fax: 06-831 1008

E-mail: info@trailerwin.com
Internet address: www.trailerwin.com

Licensing Clauses, Guarantee

Licensing clauses

Order / offer / delivery includes the program for the use of one office or house.
Inside the same office or house the programs can be used in more than one computer.
The person that uses this program in work have the right to use the program also at home.

Copying the program for other use than mentioned above is prohibited.

Guarantee

Due to the great variety of calculation-variations, it is possible that there may appear some errors.
In case the user should find errors in the program, please inform the manufacturer of program .

If there are any errors in the program they will be corrected without charge as quickly as possible. The
guarantee is valid for period of a year.
The files included in the program (Axle data, Valve data, Schema etc.) have been received from the
manufacturers.
We do our best for getting the correct data and latest models, but it is possible that there is also same
old data or false data.
Possible costs caused by a programming error, file error, component data error or some error on the
program will not be compensated by the program manufacturer or by dealer.

Program update:

The update includes:

- Axle model supplementation.
- Valve model supplementation.
- Brake schema development and supplementation.
- New versions as the program develops.

Payment per year in accordance with agreement.

Index

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