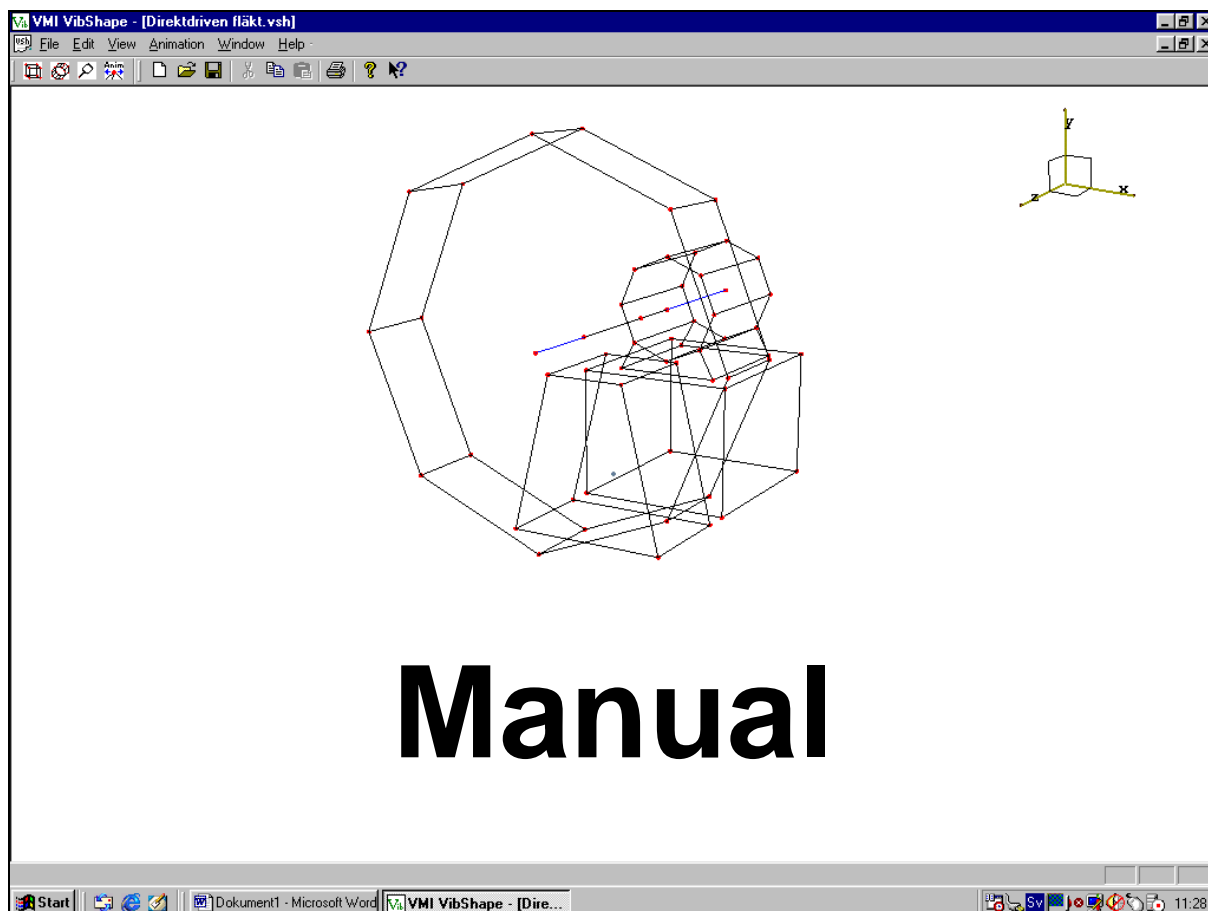


Vibshape



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Vibshape
English manual ver: EN 1.01

**Before you start using this program please read the
Hints and Questions.
It will save you a lot of future work.**

**Follow the example in the manual and do the same operations in your Vibshape
program and you will quickly learn all the program functions.**

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03 Hints

Creating a good model

The most difficult part in creating a good model is always a compromise between a representative model and the number of measuring directions.

Each measuring direction takes a certain time to measure and the number of measuring directions can easily reach hundreds of directions.

When you are creating your model try to keep the number of measuring directions at a minimum.

- Depending on what you are investigating you may not need to measure all (x, y, z) directions.
- A good compromise is to assume that a floor is only vibrating in the vertical direction.
- On very stiff parts you can sometimes “borrow” the measured data from an opposite point or a point nearby.
- Choose your model according to what you want to see.

Example 1: A fan model

Complicated model with 57 corner points and 171 measuring directions

Simple model with 13 corner points and 39 measuring directions.

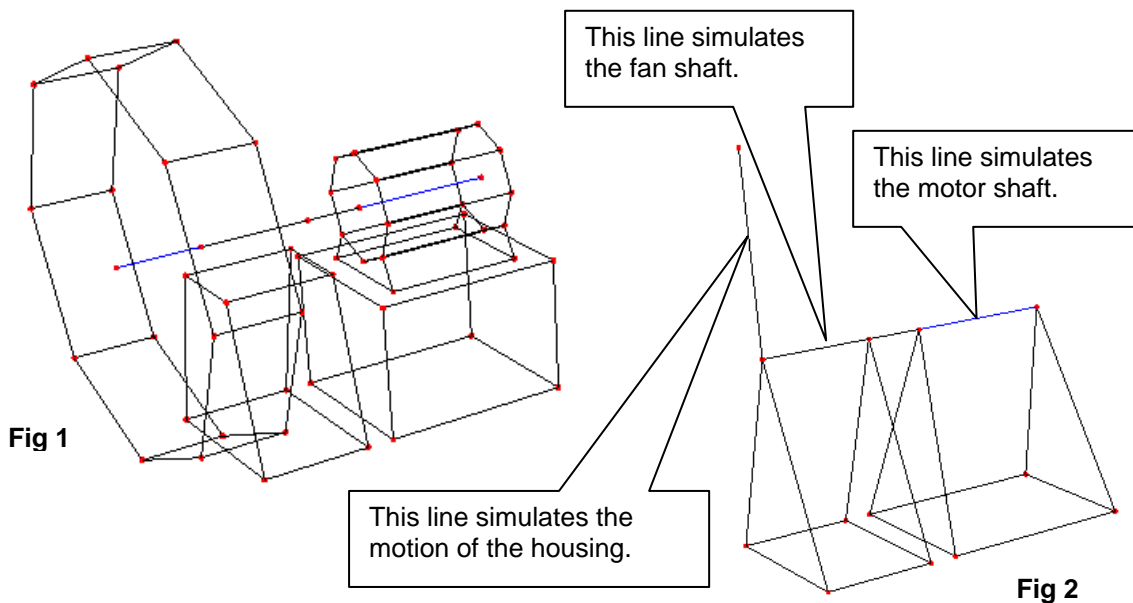
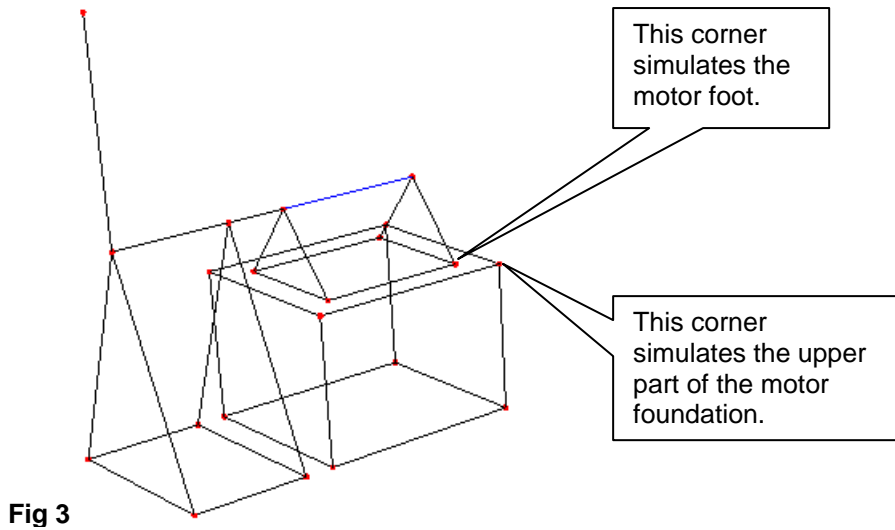


Figure 1 is a model of a direct driven fan that looks almost like a drawing of the fan. It is a very complicated model with 57 corner points and 171 measuring directions.

Figure 2 is a much simpler model with only 13 corner points and 39 measuring directions. This model can show twisting and bending between the motor and fan support as well as misalignment between the motor and fan shafts. This model cannot show if the motor has a loose foot or if there are cracks in the foundation below the motor. The vertical line simulating the housing will show if the housing has excessive vibrations compared with the fan bearings and also if this motion is in phase with the bearing vibrations.

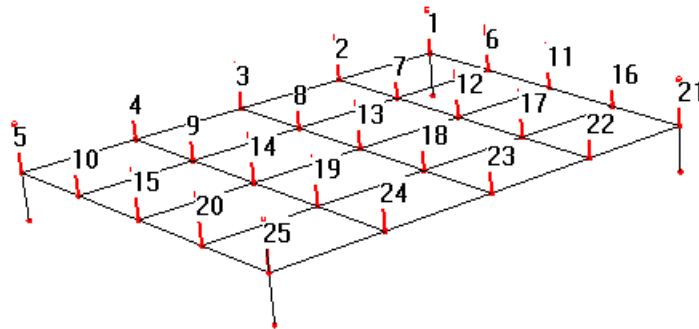
The lines simulating the motor and fan shaft are not really showing the motion of the shaft but the motion of the bearings because the measurements are taken on the bearings or on points close to the bearings.

Figure 3 is a somewhat more complicated model but can also show a loose motor foot and if there are cracks in the foundation below the motor. This model has 21 corner points and 63 measuring points.



Example 2: A concrete floor

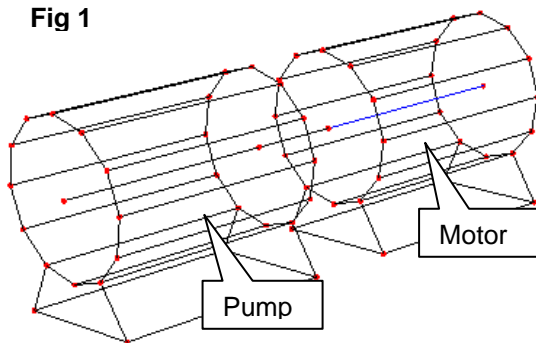
This is a model of a concrete floor supported by four vertical pillars in the outer corners. It is about 10 meter between the pillars and the floor in between was divided in squares with 2.5 meter. The measurements were made only vertically to save measuring points. In this case it will be as many measuring points as corner points.



Example 3: Misalignment between a motor and pump

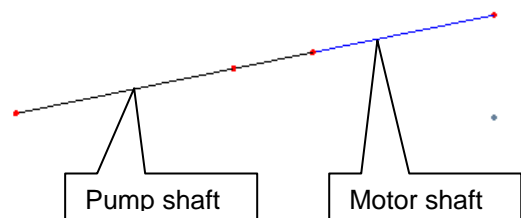
This model has 61 corner points and 183 measuring directions.

Fig 1



This model has 4 corner points and 12 measuring directions.

Fig 2



To investigate the motion at misalignment the model in Figure 2 is as good as the model in Figure 1. Because the model in Figure 2 is very simple it can be used to investigate many machines.

Numbering order of the measuring directions

Do not number the measuring directions to the corner points in your model. Try instead to number the directions in the order you want to measure. Imagine that you are going to measure and that you are going to walk around the machine. Try to number the directions in such a way that you do not need to walk forward and backward or up and down but instead that you are following a thread that is passing all the measuring directions or corner points.

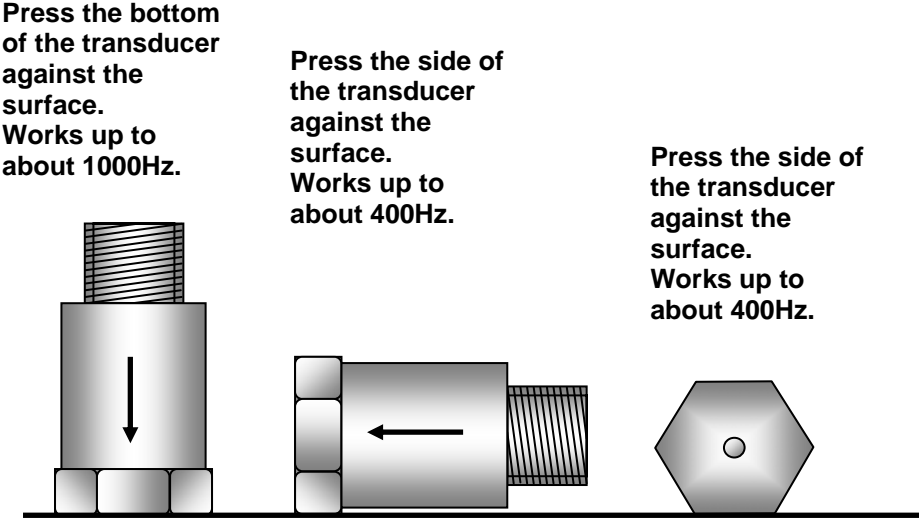
Make a printout of your model with all the measuring directions and use that as a guide when you are measuring. If you cannot measure some directions or corner points without adjustments take notes in the printout and modify your model later before you enter the measuring data.

04 Questions

How do I measure in three perpendicular directions on a flat surface?

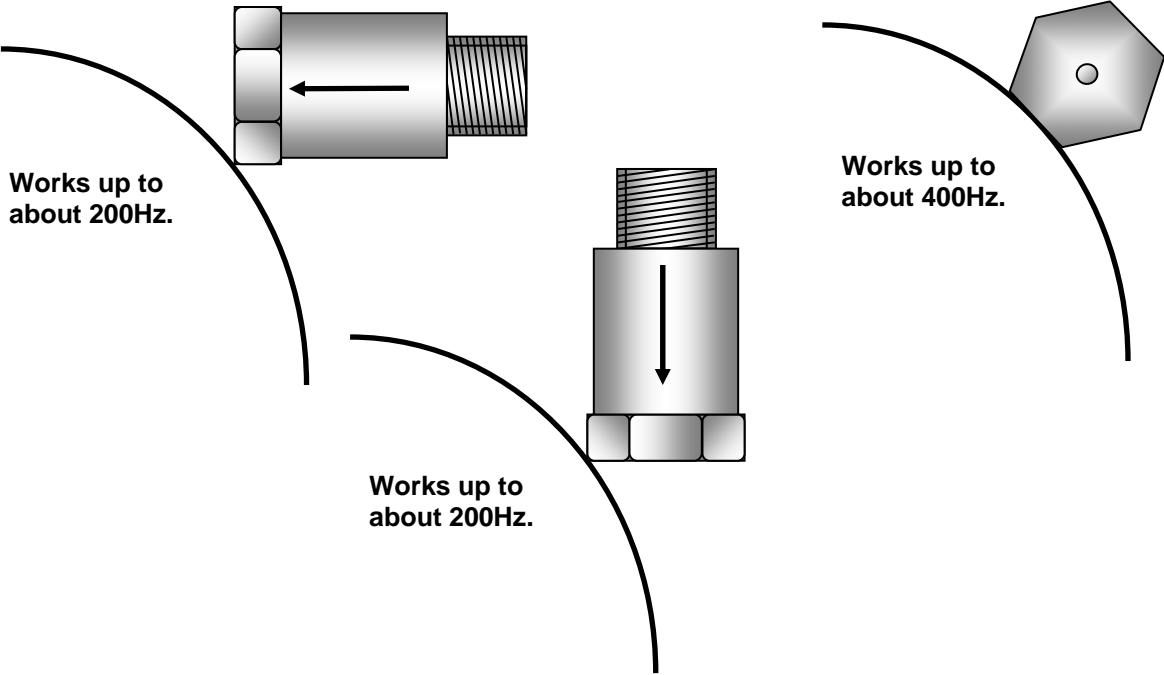
It is very important that you measure in the same directions as in the model because the vibrations can be very different in the three directions.

Because most model animations occur at frequencies below 200Hz it is sufficient to hold the transducer by hand against the surface we want to measure.



How do I measure in three perpendicular directions on a cylindrical surface?

It is very important that you measure in the same directions as in the model because the vibrations can be very different in the three directions. Usually the frequency of interest is lower than 200Hz and it is in most cases enough to hold the transducer firmly by hand.



05 VibShape Installation

In order to run VibShape, you must first install the program. This chapter will describe how.

1. Installing Hardware Protection Drivers

You must first install the device driver for the hardware protection of VibShape.

The hardware protection driver can be found on the VibShape installation CD. It is called "hdd32". To install the driver, double-click on the file "hdd32" (or "hdd32.exe") and follow the installation instructions that appear.

2. Installing Microsoft Installer program

If you have an earlier installation of Windows, earlier than Windows 98 second edition, that does not support installation of programs through Microsoft Installer files (.MSI), then you must first install the file "instmsia", which can also be found on the VibShape installation CD. To install Microsoft Installer double click on the "instmsia" (or "instmsia.exe") file and follow the installation instructions that appear.

3. Installing VibShape program

Now you are ready to install VibShape. Simply double click on the "VibshapeInstaller.msi" file on the installation CD. Follow the installation instructions and you should be ready to use the VibShape program.

4. Starting VibShape

After installation Vibshape can be started from the Start menu. It is located under "Programs" in the folder "VMI VibShape". To start VibShape do the following:

1. Click the "Start" button on the taskbar. The Start menu will pop up.
2. Click the "Programs" folder in the Start menu.
3. On the menu that appears to the right of the Start menu, click the folder "VMI VibShape".
4. A new menu will appear. Click "Vibshape.exe". The program will now start up.

5. Uninstall Vibshape

Double click the "VibshapeInstaller.msi" file on the installation CD. Choose Uninstall and follow the instructions.

06 Installing the Vibshape program key

The program key for the parallel port

Install the program key on one of the parallel ports. The program will find the key by itself.

The program key for the USB port

Install the program key on one of the USB ports. Windows will automatically recognise that the key is connected to the USB port and will install a windows driver for the program key. This driver is only installed the first time the program key is connected to the USB port.

Program functions with the program key connected

You must have the program key connected to the same computer as where the Vibshape program is running. This is valid even if the program is installed on another computer.

Program functions without the program key

If the program key is not connected to the computer the following program parts are disabled:

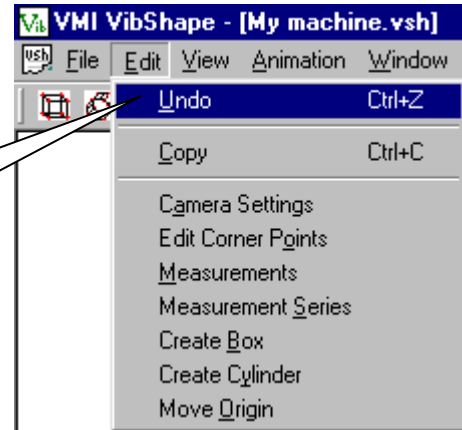
- Start a new *.vsh file, you can only look at previously saved *.vsh files.
- Edit points, you can only look at an existing list.
- Create box
- Create cylinder
- Set origin
- Edit measurements, you can only look at an existing list.

07 Undo

If you make a mistake you can always correct the last step by using the **Undo** function.

You will find the **Undo** function in the **Edit** menu.

You can only **Undo** the last step or move.



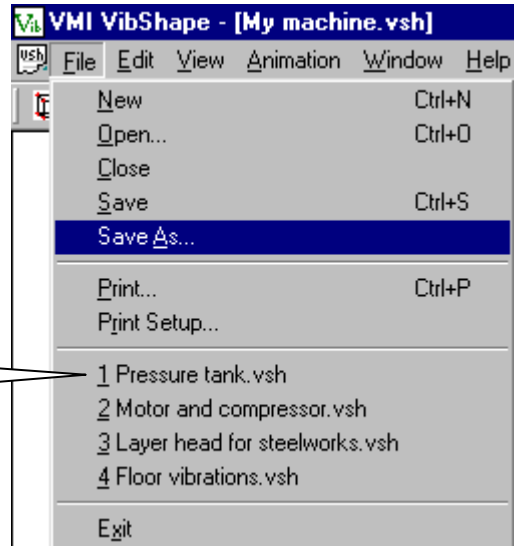
08 Save and Open files

When you open a new window by selecting **New**, this window will automatically be named Vibshape 1.vsh. Try to make a habit of saving this window under a more appropriate name by selecting **Save As**. In our example we have named the file My machine, the extension **.vsh** is automatically added.

Changes in the model can later be saved by selecting **Save** or pressing the buttons **Ctrl +S**.

As a further protection you will be asked to save before you exit the program, if you have made some changes in the model.

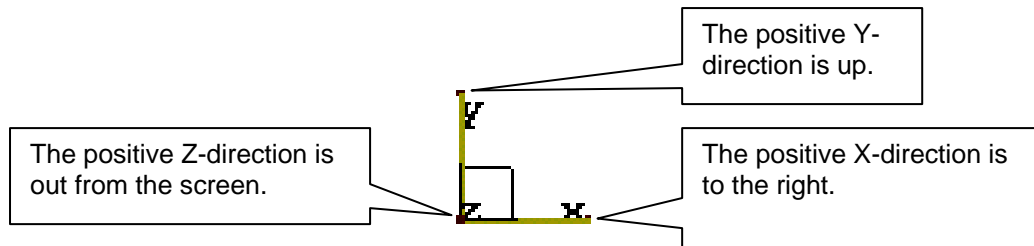
Click one of the names in the list if you want to open one of the four latest models



09 Camera Settings

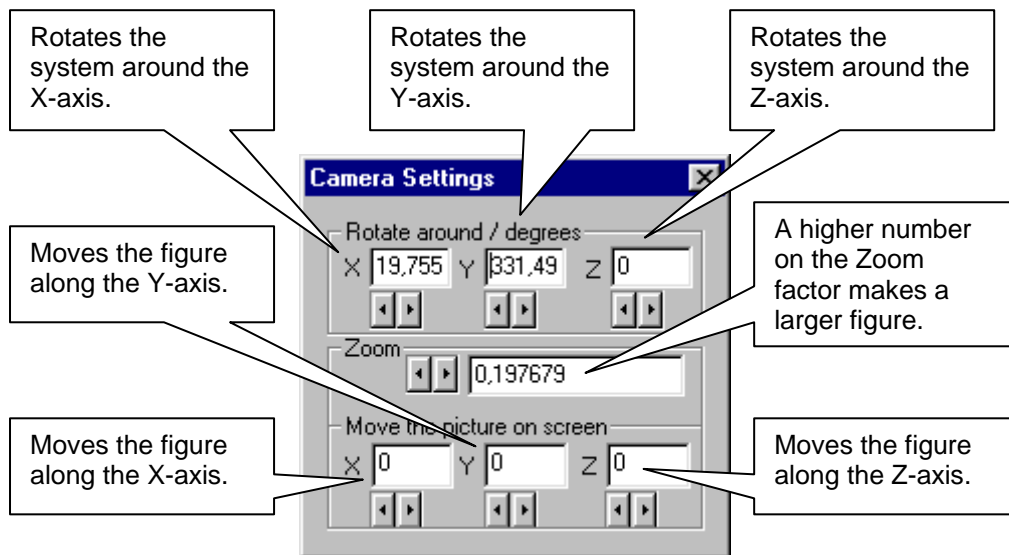
Using the Camera Setting window

To help orientation on the screen or on the paper a coordinate system is placed in the upper right corner.



The picture above shows the orientation, when all angles are set to zero (0) degrees.

The exact orientations of the three axes in degrees are shown in **Camera Settings**. You can write your angles if you want a special viewpoint.



Translating the figure means that the figure is moving along the axle. This function is mainly used to place the figure in the centre of the window.

Using the mouse

Another simpler way is to use the mouse.

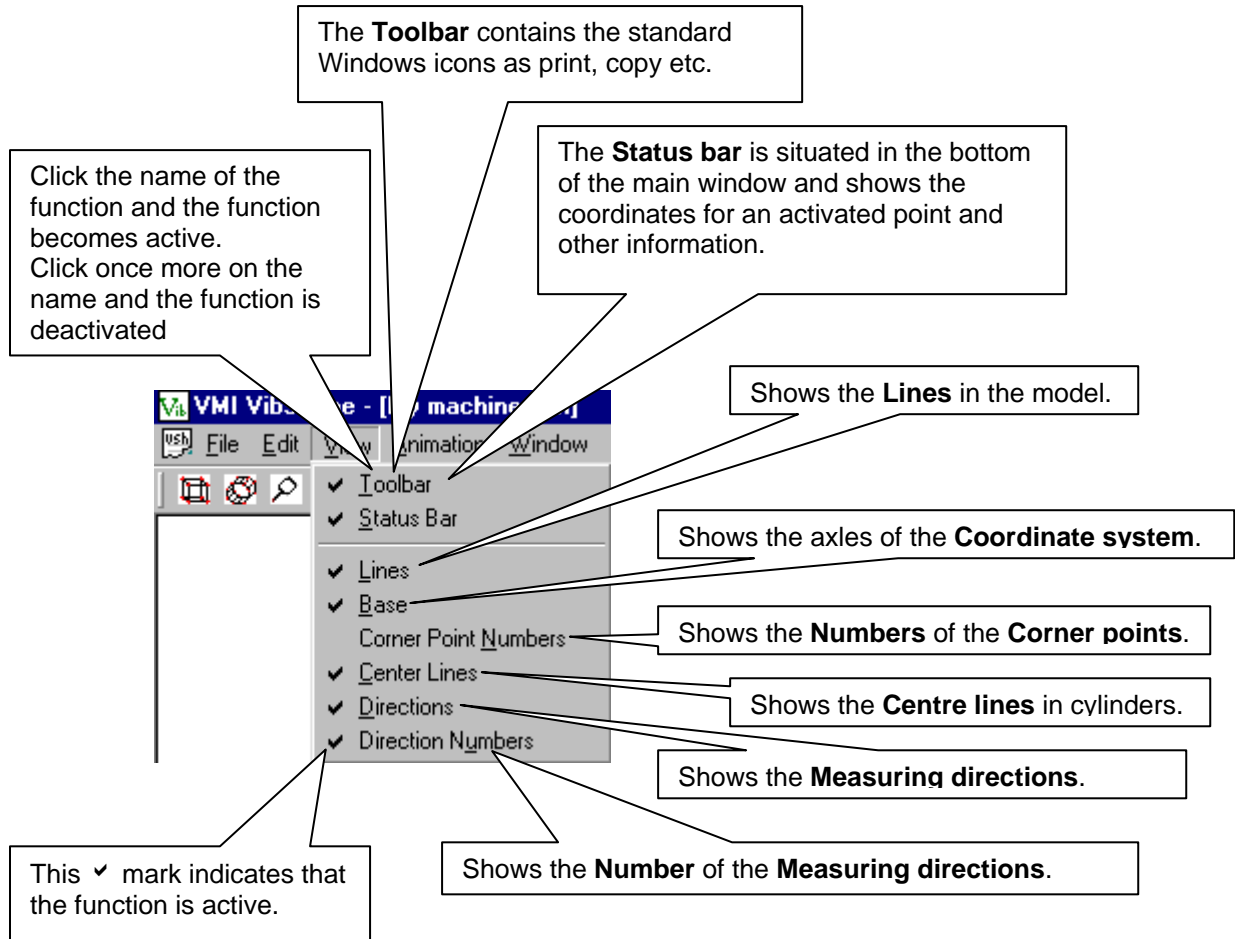
- Hold down the left mouse button while moving the mouse to the left or right side and the figure will move around the vertical axle.
- Hold down the left mouse button while moving the mouse up or down and the figure will rotate around the horizontal axle.
- Rotate the wheel between the left and right mouse button and the figure will zoom in or out. (Works only if you have wheel mouse.)
- Hold down the Ctrl button and the left mouse button while moving the mouse to the left or right side and the figure will move to the left or right. This function is used for placing the figure in the centre of the screen.
- Hold down the Ctrl button and the left mouse button while moving the mouse up or down and the figure will move up or down. This function is used for placing the figure in the centre of the screen.

Note 1.

The values in the Camera Setting window are automatically updated when the movements are made with the mouse. Movement on the screen will not change the corner point coordinates.

10 View

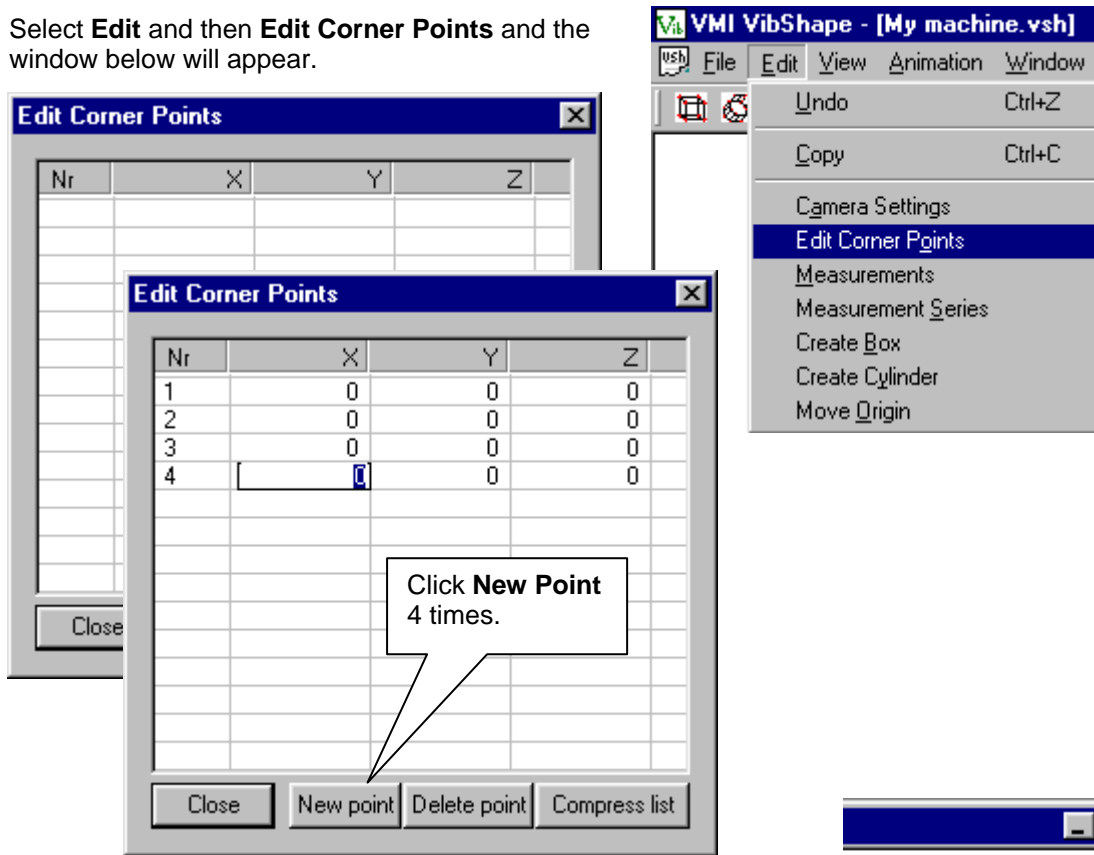
In the View pop-up menu you can activate help functions that lets you view the lines, corner numbers, measuring point numbers, measuring directions and numbers.



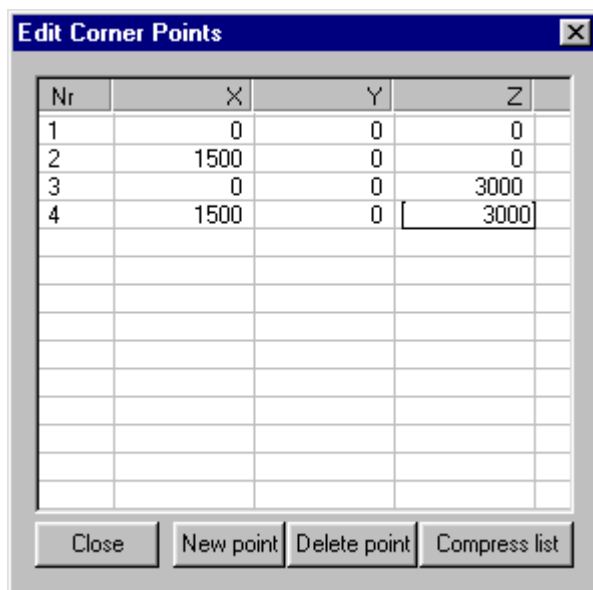
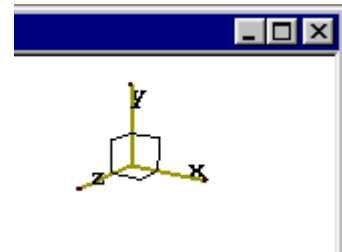
11 Edit Corner Points

As a simple example we will first draw a rectangle that is 1500mm wide and 3000mm long.

Select **Edit** and then **Edit Corner Points** and the window below will appear.



Look at the directions of the axes in the coordinate system in the upper right corner of the main window and decide which of the axes that will have the long side. In our example we choose the Z-axis.



Enter the coordinates for the points and move in the table with the **Tabulator** button. You can also use the **Up** and **Down** arrow buttons as well as the mouse.

Note 1: Adding a box or cylinder to the Edit Corner Points list.

If we later use **Create box** or **Create cylinder** these points will automatically be added to the list.

Note 2: Moving or copying a point in the Edit Corner Points list.

If we move a point or copy a point the list will automatically be updated.

12 Draw lines

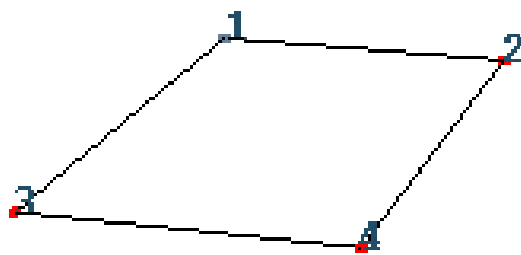
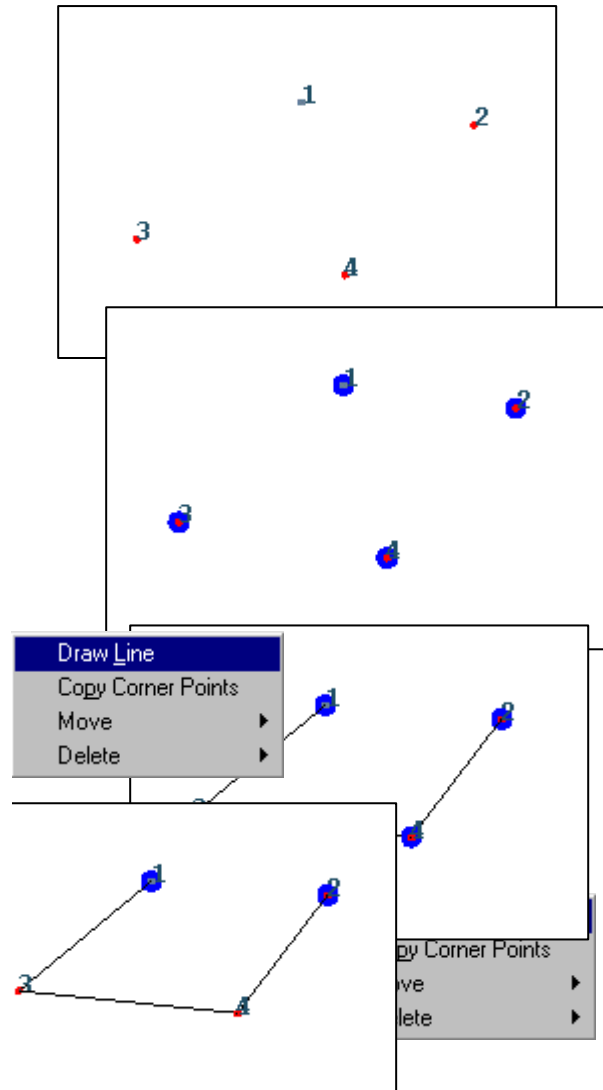
Now we will have 4 points.

Change the Zoom factor until all points are visible in the window.

Click on point 1-3-4-2 with the **Left** mouse button and hold at the same time down the **Shift** button and these points will be marked with a blue circle.

Click on the **Right** mouse button and select **Draw Line** and a line will be drawn between the points in the same order as the "click order".

Click, in the same way, the remaining two points and select **Draw Line** and the rectangle will be finished.



13 Create a Cylinder

Activate the **Create Cylinder** window by either a click on the **Cylinder** icon or by first selecting **Edit** and then **Create Cylinder**.

The 'Create Cylinder' dialog box shows the following settings:

- Centre position of first cylinder base: X=750, Y=850, Z=0
- Circle around: X-axis, Y-axis, Z-axis
- Radius: 750
- Number of corners per circle: 6
- Angle for first corner in circle: 0
- Cylinder length: 3000
- Draw lines between corners:
- Draw centre line:

Callouts for the 3D model:

- This is the position of the cylinder end closest to the origin.
- The cylinder axle will be in the same direction as the Z-axle.
- This is the position of the cylinder base closest to the origin, the first cylinder base.
- Number of points around the circle
- Position of the first point in the circle
- Position of the first point in the circle

We will now rotate the cylinder 30 degrees.

The 'Create Cylinder' dialog box shows the following settings:

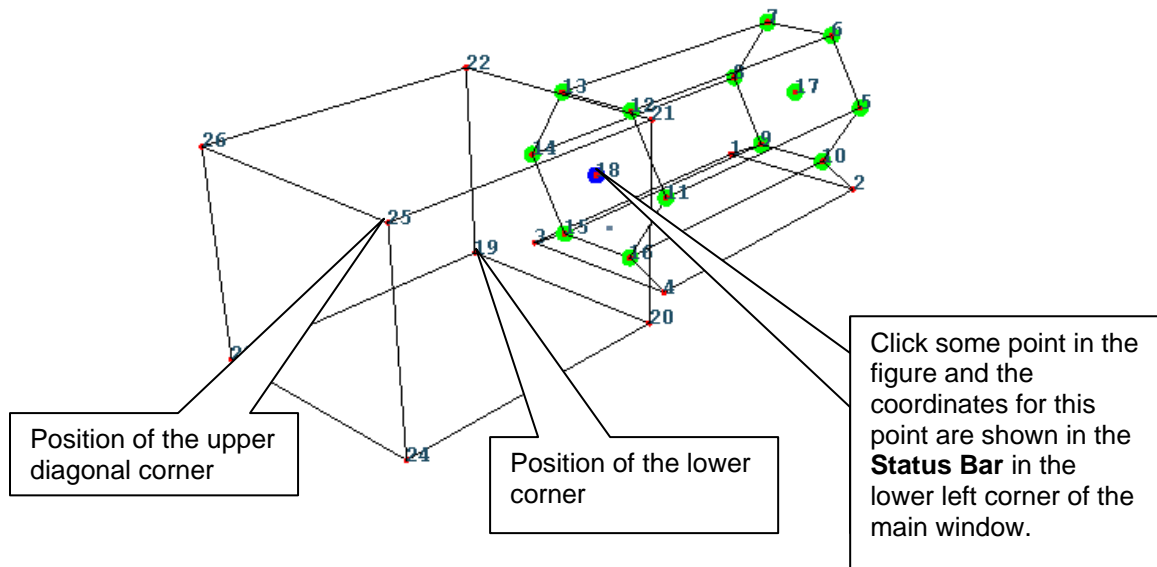
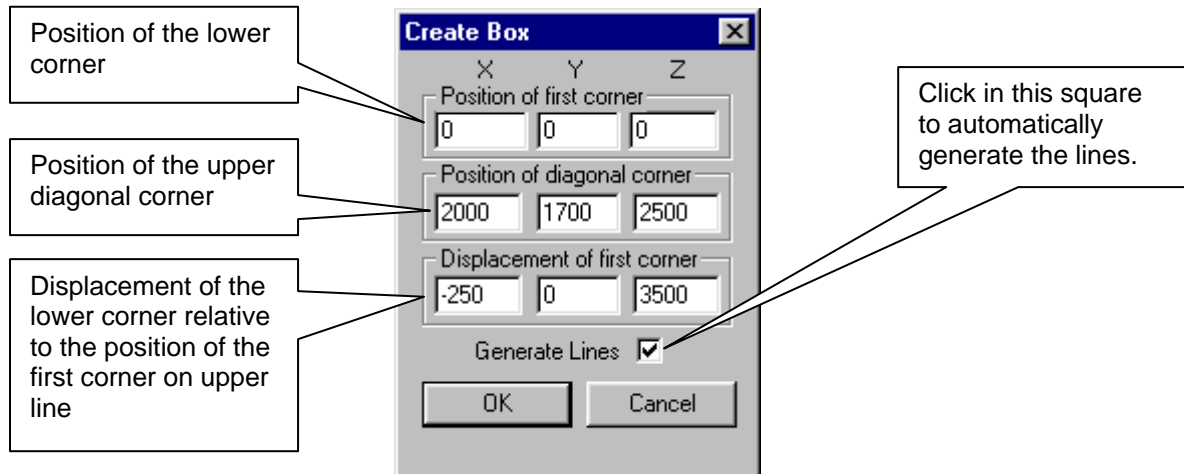
- Centre position of first cylinder base: X=750, Y=850, Z=0
- Circle around: X-axis, Y-axis, Z-axis
- Radius: 750
- Number of corners per circle: 6
- Angle for first corner in circle: 30
- Cylinder length: 3000
- Draw lines between corners:
- Draw centre line:

Callouts for the 3D model:

- Position of the first point in the circle.
- The position of the first point in the circle has been moved 30 degrees.

14 Create a Box

Activate the **Create Box** window by either a click on the **Box** icon or by first selecting **Edit** and then **Create Box**.



Use the coordinates in the **Status bar** in the lower left corner of the main window to position new parts in the figure.



Note 1: Positive (+) coordinate direction

Enter a positive number if the coordinates should be in the same direction as the coordinate system.

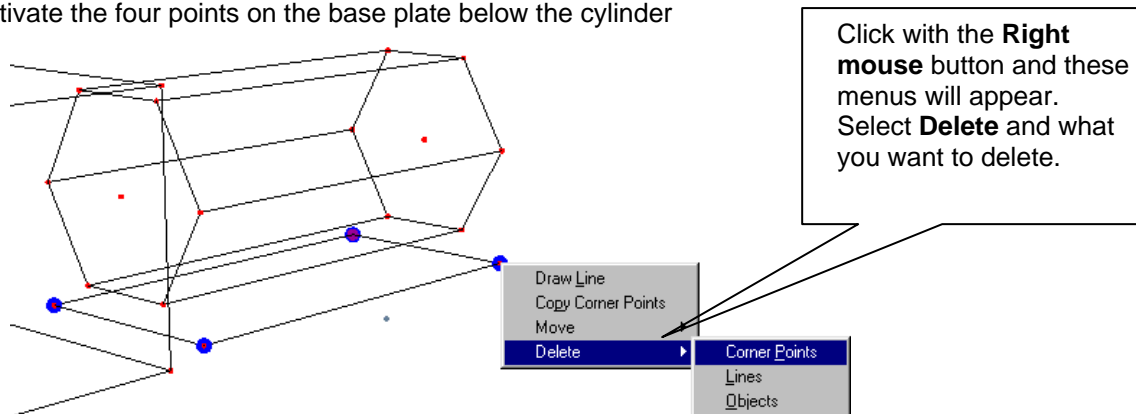
Note 2: Negative (-) coordinate direction

Enter a negative (- in front) number if the coordinates should be in the opposite direction of the coordinate system.

15 Delete Corner Points, Lines and Objects

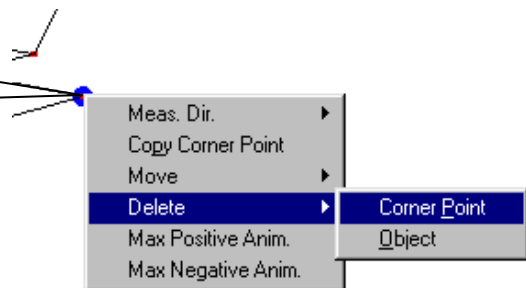
Move the mouse to one point and click with the **Left mouse** button to activate this corner point. Hold down the **Shift** button and click the other points, if you want to activate several points.

Activate the four points on the base plate below the cylinder



Do not move the mouse away from the corner point while you are clicking with the **Right mouse** button.

If only one point is activated, these menus will appear when you click with the **Right mouse** button.



Use the Undo function, if you deleted the wrong point, line or object.

Note 1: Delete a Line

You will not delete the corner points, when you are deleting a line. If several points are activated, only the lines between these points are deleted.

Note 2: Delete a Corner Point

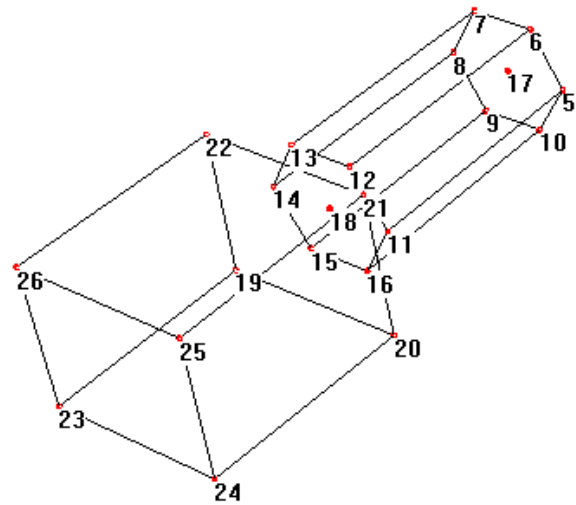
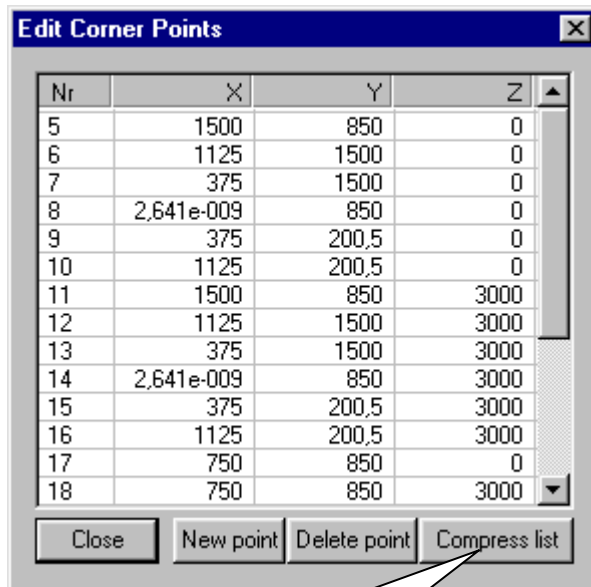
All lines going to a corner point will be deleted together with the point.

Note 3: Delete an Object

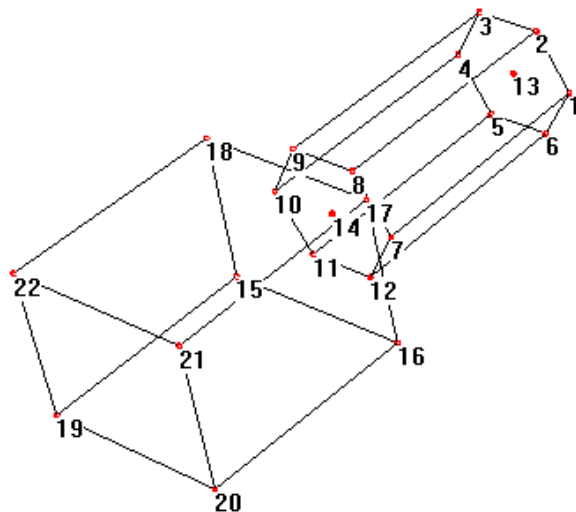
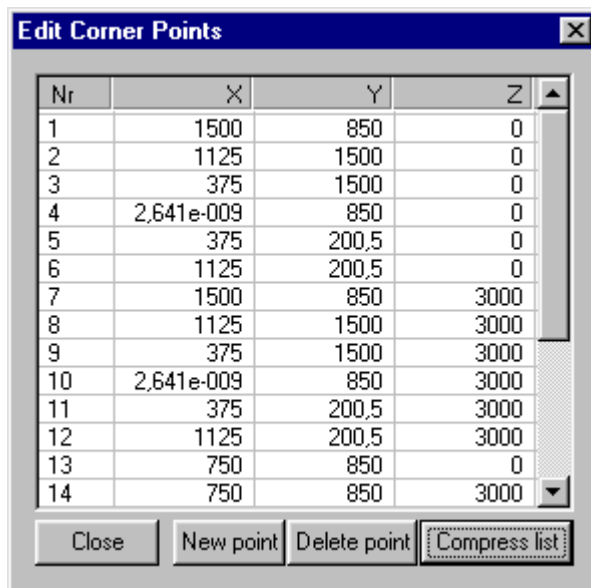
Click one corner point in the object with the **Left mouse** button and the whole object will be activated. Click with the **Right mouse** button select **Delete** and then **Object** and the whole object including the lines going to this object will be deleted.

Compress the Edit Corner Points list

We have deleted the first four points and these numbers are missing in both the figure and in the **Edit Corner Points** list.



Click the **Compress list** button and both the model and the Edit Corner Points list will be **re-numbered**.



Use the **Compress list** button as soon as you have an empty space in the Edit Point list.

Delete a single corner point from the list

Click with the **Left** mouse button the **Corner point** number.

Then click the **Delete point** button with the **Left** mouse button and this corner point will be deleted from the list.

Click the **Compress list** button and both the model and the Edit Corner Point list will be **re-numbered**.

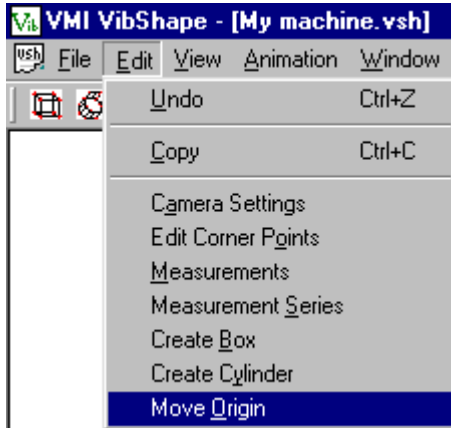
Nr	X	Y	Z
1	0	0	0
2	1500	0	0
4	1500	0	3000
5	1500	850	0
6	1125	1500	0
7	375	1500	0
8	2,641e-009	850	0
9	375	200,5	0
10	1125	200,5	0
11	1500	850	3000
12	1125	1500	3000
13	375	1500	3000
14	2,641e-009	850	3000
15	375	200,5	3000

Buttons: Close, New point, Delete point, Compress list

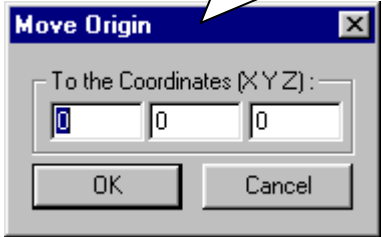
16 Move Origin

Select Edit and then Move Origin

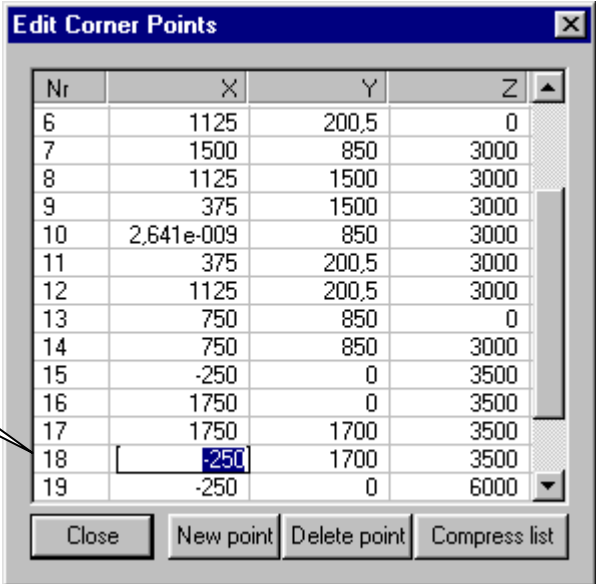
To move the origin can sometimes be very useful when adding new parts to a model or changing a model. Instead of measuring long distances and writing large coordinate numbers from the original origin we can measure and enter much smaller numbers by moving the origin.



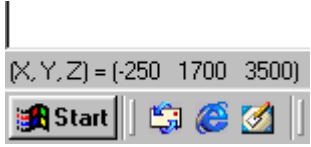
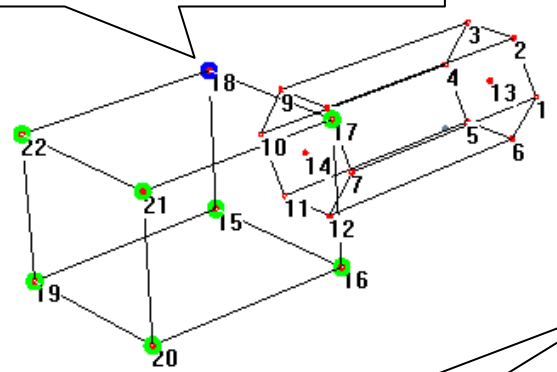
These are the coordinates for the origin when, the program starts with a new model.



These are the coordinates for point number 18 in our **Edit Corner Points** list.

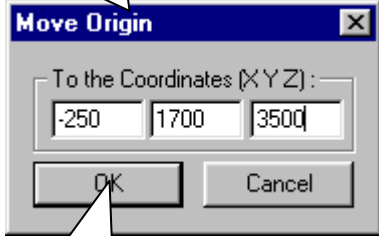


Click point number 18 and



the coordinates for point 18 are shown in the **Status Bar** in the **lower left corner of the main window**.

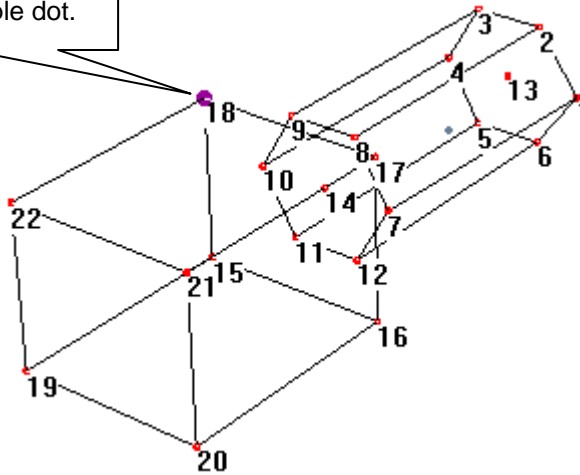
We will now move our origin to point 18 by writing the coordinates for this point in the **Move Origin** window,



Click the **OK** button and all the coordinates in the **Edit Corner Points** list will be re-calculated with point 18 as the new origin and reference point.

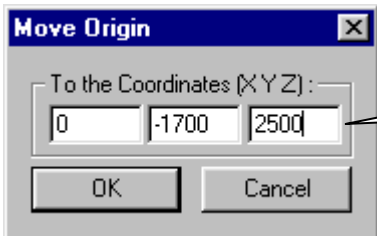
Nr	X	Y	Z
9	625	-200,5	-500
10	250	-850	-500
11	625	-1500	-500
12	1375	-1500	-500
13	1000	-850	-3500
14	1000	-850	-500
15	0	-1700	0
16	2000	-1700	0
17	2000	0	0
18	0	0	0
19	0	-1700	2500
20	2000	-1700	2500
21	2000	0	2500
22	0	0	2500

The position of the origin is indicated by a purple dot.



Move the Origin to another point

If we want to move our origin to point 19,



write the coordinates for the new origin (point 19) based on the coordinates, when point 18 is our origin.

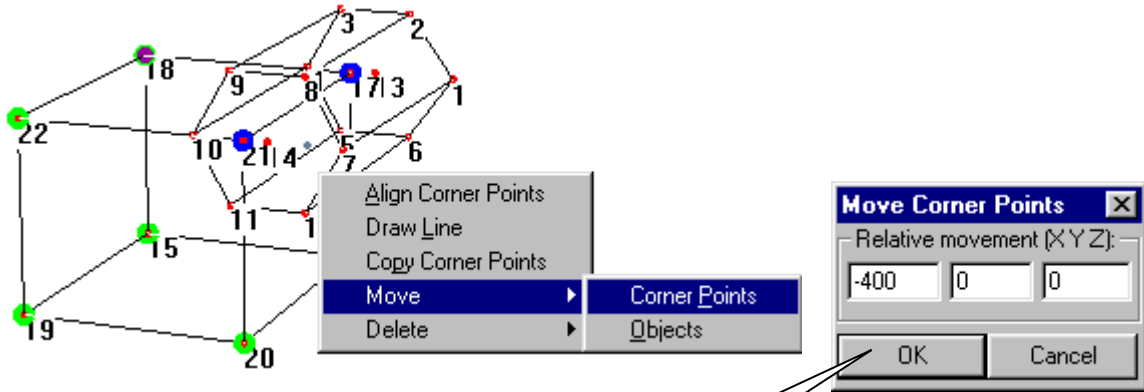
The origin will always start at the absolute origin every time you open a new or saved file.

17 Move corner points and objects

Moving corner points

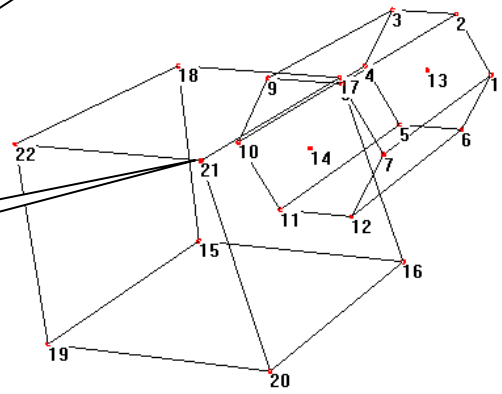
We will now change the box to be a typical fan support.

- Hold down the **Shift** button and click with the **Left mouse** button corner point 17 and 21 so that they will have a blue circle.
- Click with the **Right mouse** button and choose **Move** and then click on **Corner Points**.



We will now move these two corner points -400 in X direction or inward.
Note!
The movements are relative to each corner point's present location.

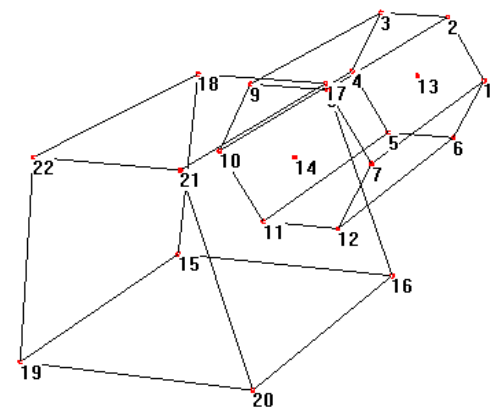
The two corner points 17 and 21 have now moved inward.



Click corner point 18 and 22 and move them in the same way but $+400$ in X direction.

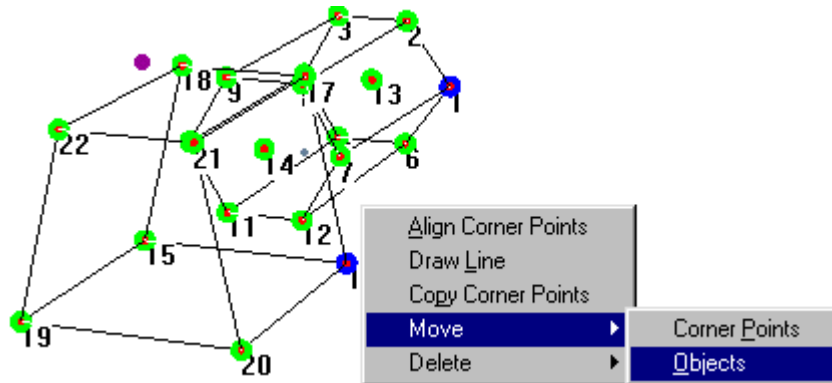
With the **Move** option it is possible to change a box or a cylinder to almost any shape and still have them grouped as one object.

It is possible to move a single corner point up to several objects.



Moving several objects at the same time

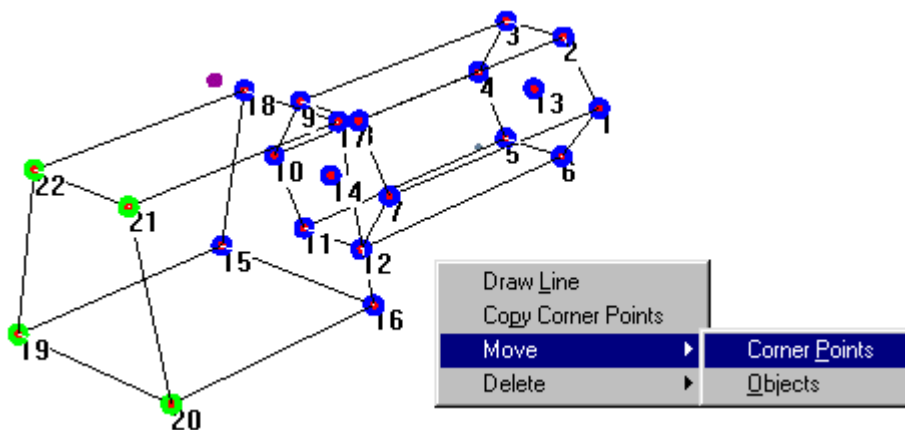
- Move the mouse to one corner point in an object and click with the **Left mouse** button to activate this object.
- If you want to activate several objects hold down the **Shift** button while clicking a corner point in another object, with the **Left mouse** button.
- Click with the **Right mouse** button and choose **Move** and then click **Objects**.



Moving objects and corner points at the same time

To move an object and single corner points at the same time we must also treat the corner points in the object as single corner points.

- Hold down the **Shift** button
- Click with the **Left mouse** button all corner points that should be moved.
- Then click with the **Right mouse** button and choose **Move** and then click **Corner Points**.



Only the corner points with a blue circle will be moved.

18 Copy and Align corner points and objects

Copy one corner point

Click with the **Left mouse** button the point you want to copy.

Click with the **Right mouse** button and select **Copy Corner Point**.

Write the position of the new corner point relative to the selected point and click on the **OK** button.

Copy this new point as in the **Copy Corner Points** menu above.

Meas. Dir.
Copy Corner Point
Move
Delete
Max Positive Anim.
Max Negative Anim.

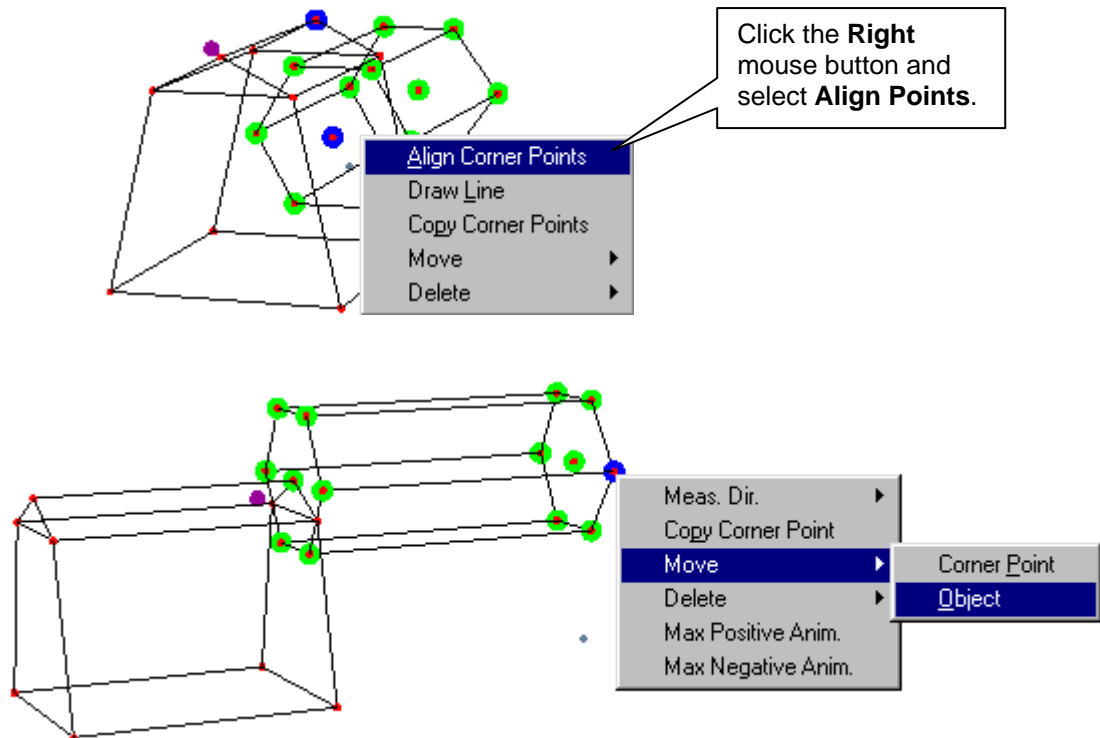
Copy Corner Points [X]
Relative movement (X Y Z):
0 1150 500
OK Cancel

Copy Corner Points [X]
Relative movement (X Y Z):
0 0 2500
OK Cancel

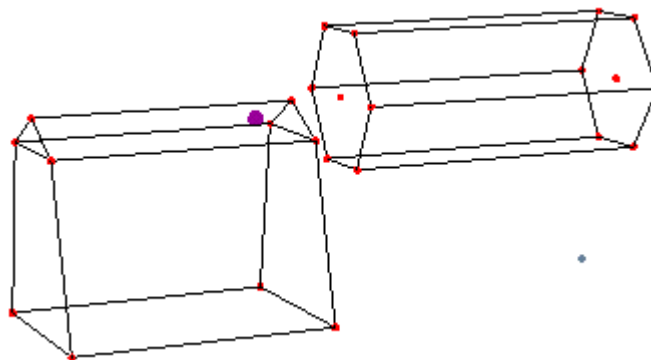
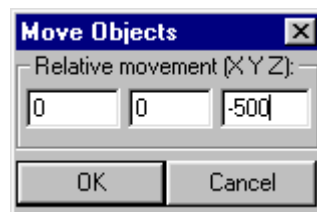
We have created two corner points simulating the centre position of the fan bearings and we have also drawn lines between these new corner points.

Align Corner Points

Click these two points with the **Left** mouse button while holding down the **Shift** button.



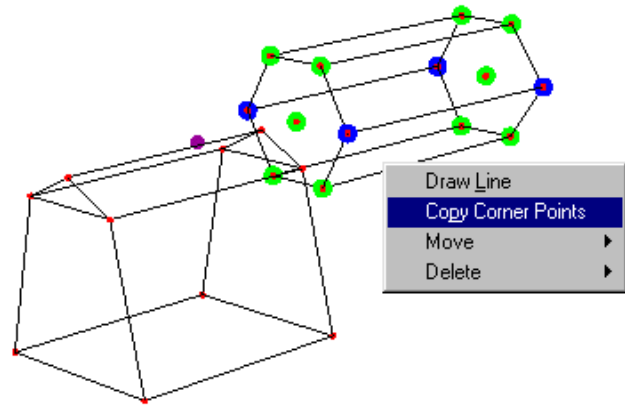
The two “shafts” are now aligned but the “motor has moved forward, +500 in the Z-direction. The “shafts” are in contact with the “fan bearing”. Click some point on the “motor”, select move and move the object back -500 in Z-direction.



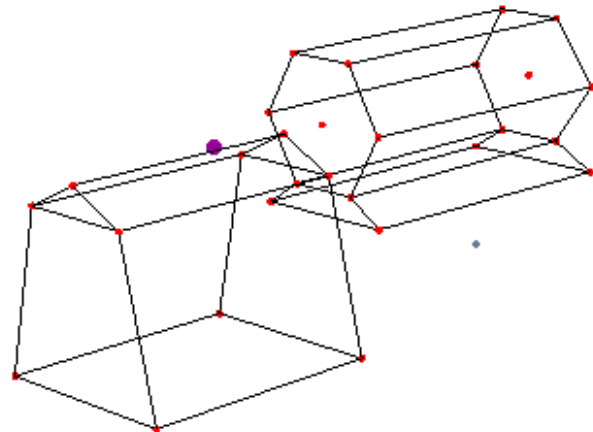
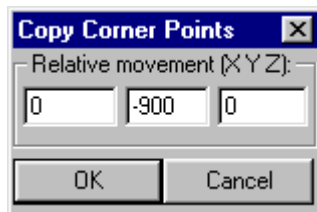
Copy several corner points

Click with the **Left mouse** button, while holding down the **Shift** button, on the corner points you want to copy.

Click with the **Right mouse** button and select **Copy Corner Point**.



Write the position of the new corner points relative to the selected points.

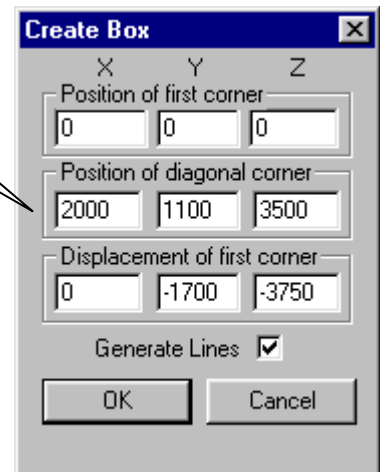
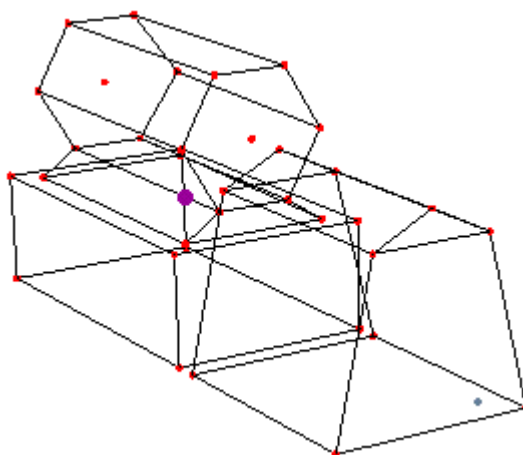


Draw the lines and we have added the base of the motor again.

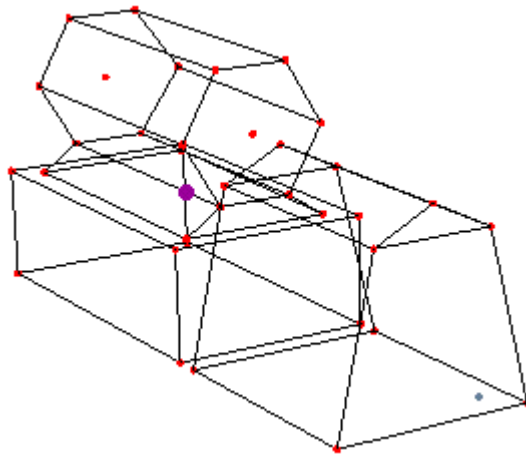
Note 1: Relative motion of marked points

All marked corner points will be copied, with a new corner point, with the same relative motion from the marked points. If we move several points 500 in the Z-direction all points will move 500 in the Z-direction from the original starting point of each point.

We will finish this model by adding a foundation below the motor by writing



The model we have made is very complicated; it contains 36 corner points and needs about 108 measurements. It looks more like a three dimensional drawing of the machine than a vibshape model.



Before we go any further we need look at the purpose of the model. If we want to know the motion due to misalignment and possible resonance amplification we can reduce the number of corner points.

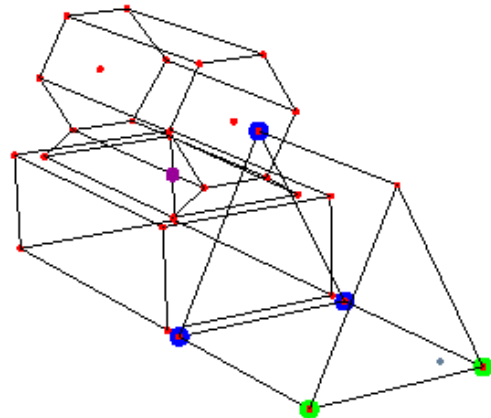
We can in advance estimate some possible motions:

- Misalignment causing twisting between the motor and the fan support.
- Misalignment causing the motor and the fan to vibrate axially.
- Unbalances causing a rocking of the whole machine.

To investigate these motions we can use a much simpler model. We keep the bottom of the supports and the bearing positions and delete all other points.

First step

In this model we have reduced the number of corner points on the fan support. Use the method described in chapter 15.

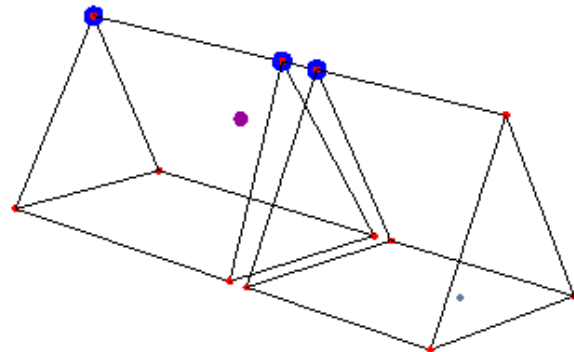


Second step

In this model we have further reduced the number of corner points in the motor and in the motor foundation.

Note1:

Do not forget to **Compress** the **Edit Corner Points** list after the unnecessary points have been deleted.



This model might seem simple but it will show all the motions we want to investigate.

19 Creating a Measurement Series

Before we add the measuring directions we have to create a name for a measuring list containing the measured values.

Because we can use the same model for different frequencies or machines we must have different names for the measured values.

Select **Edit** and then **Measuring Series** and the window below will appear.

The image shows the 'Measurement Series' dialog box with a 'Name' field and buttons for 'OK', 'New series', 'Delete series', and 'Edit properties'. A callout points to the 'Edit properties' button with the text: "Click the **Edit properties** button, if you want to make changes in an existing series." To the right, the 'Edit' menu is open, showing options like 'Undo', 'Copy', 'Camera Settings', 'Edit Corner Points', 'Measurements', 'Measurement Series' (highlighted), 'Create Box', 'Create Cylinder', and 'Move Origin'.

Click the **New series** button, if you want to create a new series.

Click the **Delete series** button, if you want delete an existing series.

The 'Edit Measurement Series' dialog box contains the following fields and options: 'Name of the Measuring Series' (with 'New Measurement' entered), 'Angular velocity / Frequency' (with '1000' entered), 'Frames/per.' (with '24' entered), and 'Amplification' (with '1' entered). There are radio buttons for 'Hz' (selected) and 'RPM', and buttons for 'Calculate' and 'Close'.

Write the name of the measuring series.

Indicate if the analysis frequency was measured in **Hz** or **RPM**. This information has no influence on the program.

Write the frequency or RPM at which the measurements has been analysed. This value has no influence on the program.

Write the number of frames or steps for one cycle. A low value gives a rapid motion. A high value gives a slow motion.

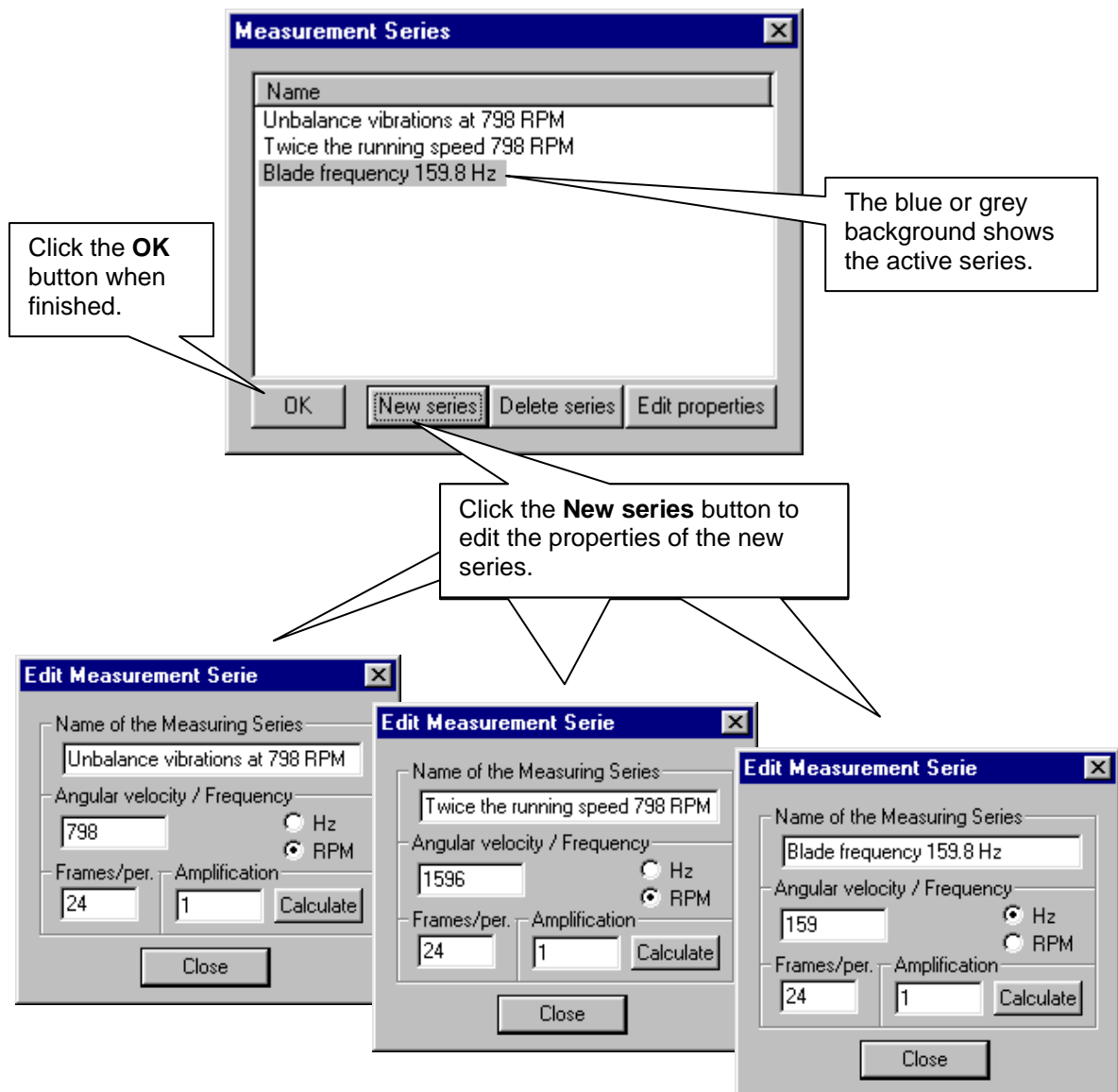
Click the **Calculate** and the program will calculate a suitable amplification factor.

Note! This option works only if the model contains an object e.g. a box or a cylinder.

The vibrations in the measuring list will be amplified with this number. A low value gives a small motion. A high value gives a large motion.

Click the **Close** button when finished.

We will create three different measuring series.

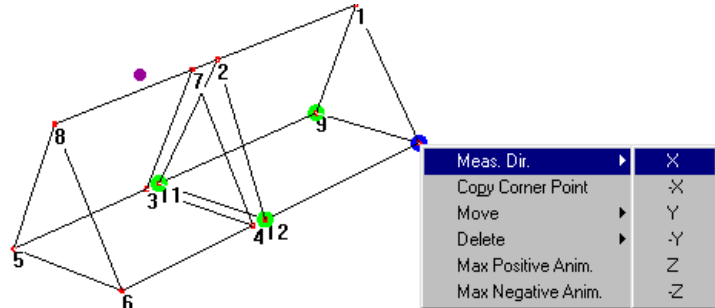


20 Creating Measuring directions

Creating measuring directions on a single corner point or a point in a box

Number the measuring directions in the order you want to measure. In our example we will start with corner point 10 on the left side of the motor.

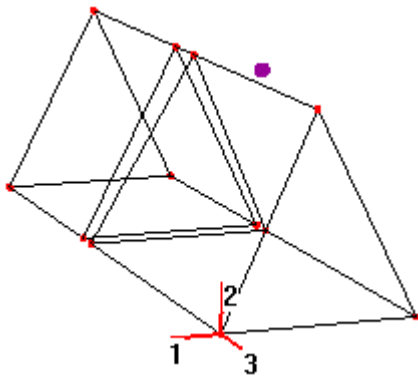
Click with the **Right mouse** button the corner point where you will add a measuring direction. Select **Meas. Dir.** and then the direction, for example **X**.



The positive X-direction means that you are holding the vibration transducer in the same direction as the X axle and with the front end of the transducer pointing towards the Origin or lower X values.

The measuring direction is indicated with a **red line**

The measuring direction is numbered automatically.



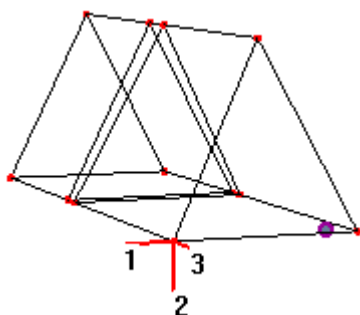
Select the other directions in the same way.

Meas. Dir.	X
Copy Corner Point	-X
Move	Y
Delete	-Y
Max Positive Anim.	Z
Max Negative Anim.	-Z

The selected directions are indicated with a mark in front of the direction.

Note 1: Opposite directions on the same corner point

You can not select opposite directions on the same corner point.



Meas. Dir.	X
Copy Corner Point	-X
Move	Y
Delete	-Y
Max Positive Anim.	Z
Max Negative Anim.	-Z

The selected **Y** direction has been changed to **-Y** but has still the same number.

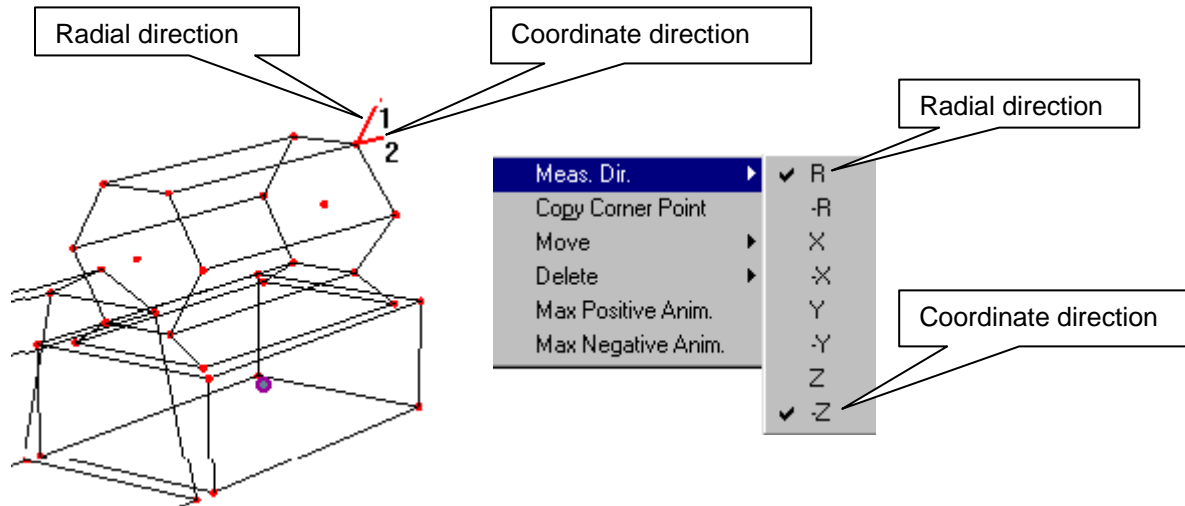
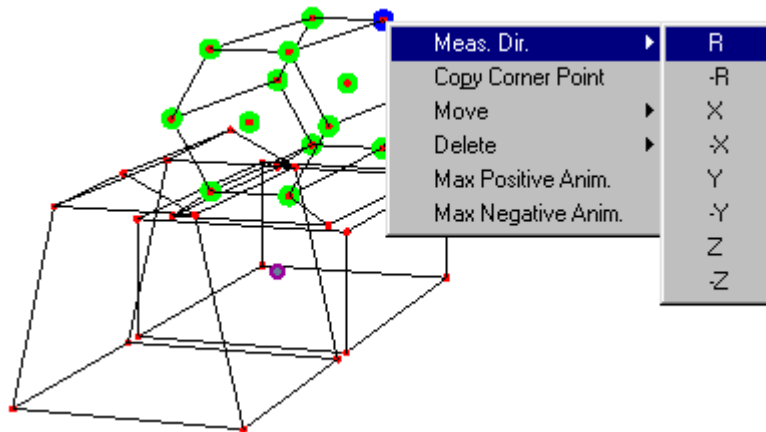
If we change the vertical measuring direction by clicking on **-Y** the selected **Y** direction will be replaced with the **-Y** but the measuring direction number will be kept.

Creating a measuring direction on a corner point in a cylinder

Click with the **Right mouse** button the corner point where you will add a measuring direction. Select **Meas. Dir.** and then the direction.

When we want to create a measuring direction on a cylinder we will have the additional option of creating radial measuring directions.

- **R** direction means that we have to hold the vibration transducer in a radial direction so that the end of the transducer is pointing towards the centre axle of the cylinder.
- **-R** direction means that we have to hold the vibration transducer in a radial direction so that the end of the transducer is pointing out from the centre axle of the cylinder.

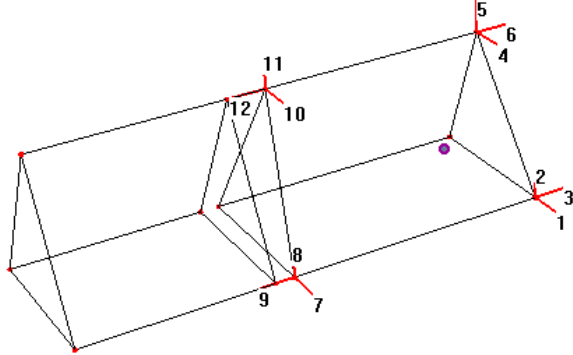


Note 1: Opposite directions on the same corner point

You cannot select opposite directions on the same point. If we change the inward measuring direction by clicking on **-R** the selected **R** direction will be replaced with the **-R** but the measuring direction number will be kept.

Erasing a measuring direction

We have numbered the measuring directions as in the model below but we want to measure on the bearing (10, 11, 12) before we measure on the base plate.



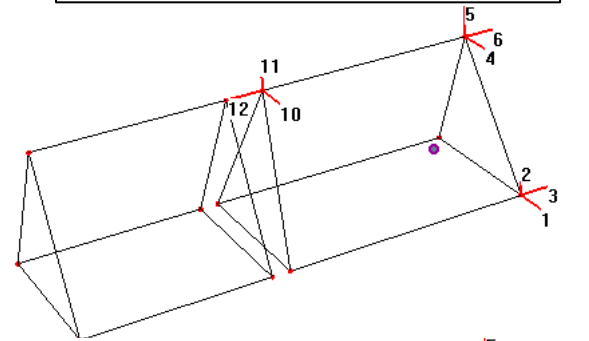
Id	Pnt	Dir	Amplitude	Degrees
1	30	X	0	0
2	30	Y	0	0
3	30	Z	0	0
4	13	X	0	0
5	13	Y	0	0
6	13	Z	0	0
7	34	X	0	0
8	34	Y	0	0
9	34	Z	0	0
10	14	X	0	0
11	14	Y	0	0
12	14	Z	0	0

Click on a direction that is already selected for example 7, 8, 9 and these directions will be erased together with the measuring direction number.

Meas. Dir.	✓	✗
Copy Corner Point	✓	✗
Move	✓	Y
Delete	✓	-Y
Max Positive Anim.	✓	Z
Max Negative Anim.	✓	-Z

Click an activated direction and that direction will be deleted.

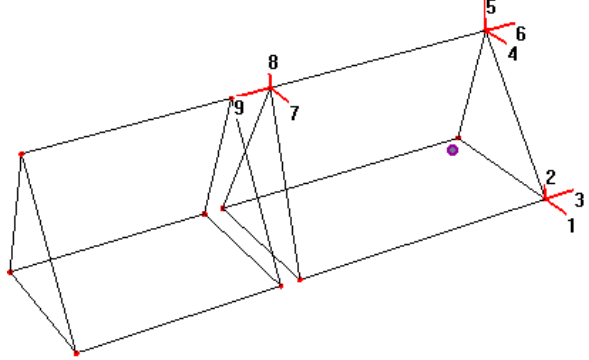
In our example we have erased the measuring direction 7, 8, 9 and these directions are missing in the Measuring list.



Id	Pnt	Dir	Amplitude	Degrees
1	30	X	0	0
2	30	Y	0	0
3	30	-Z	0	0
4	13	X	0	0
5	13	Y	0	0
6	13	-Z	0	0
10	14	X	0	0
11	14	Y	0	0
12	14	Z	0	0

Id	Pnt	Dir	Amplitude	Degrees
1	30	X	0	0
2	30	Y	0	0
3	30	-Z	0	0
4	13	X	0	0
5	13	Y	0	0
6	13	-Z	0	0
7	14	X	0	0
8	14	Y	0	0
9	14	Z	0	0

Click the **Compress list** button and both the list and the model will be re-numbered.



This is the finished model with all measuring directions.

Note 1: The basic model

This is the basic model for all the three measuring series, because it is only the vibration values differ not the measuring directions.

Note 2: Measuring directions

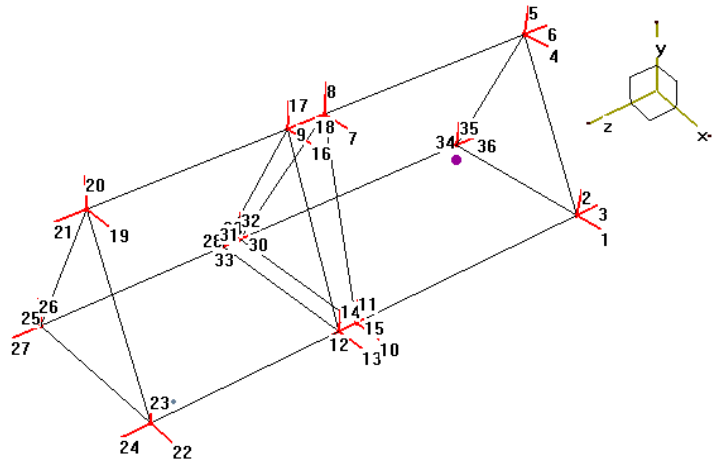
Use the same measuring procedure for all the corner points; this will help you later when you are taking the actual measurements.

If your procedure is:

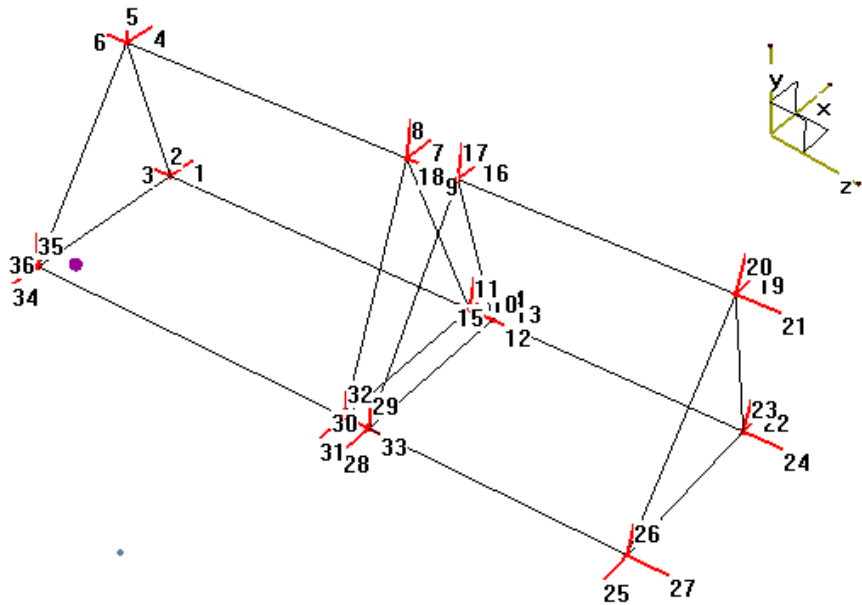
1. Horizontal
2. Vertical
3. Axial

Try to implement that order on all other corner points.

Do not start to measure vertically on the next corner if you started to measure horizontally on the previous point, it will sooner or later create confusion about the measured direction



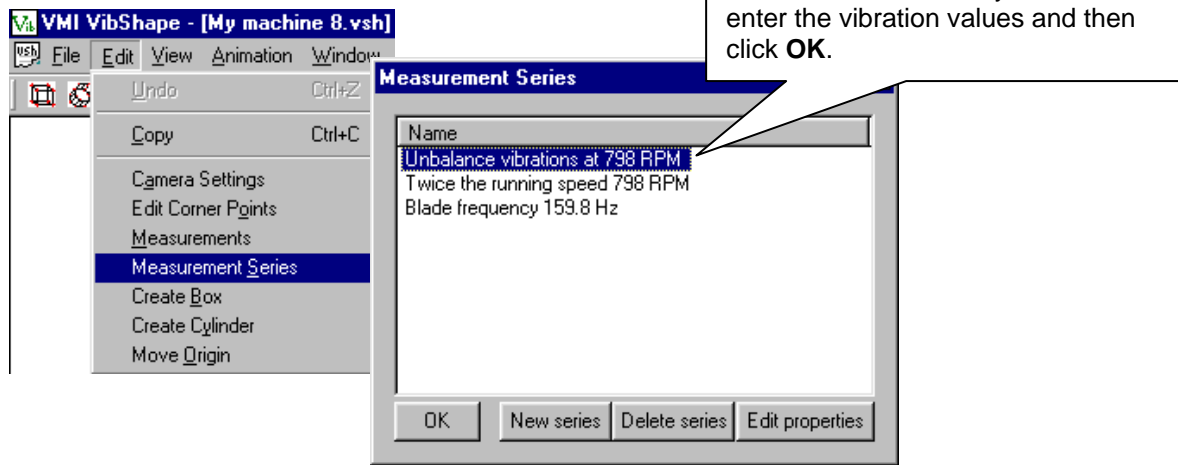
Re-measure as soon as you are uncertain about the corner point or measuring direction number.



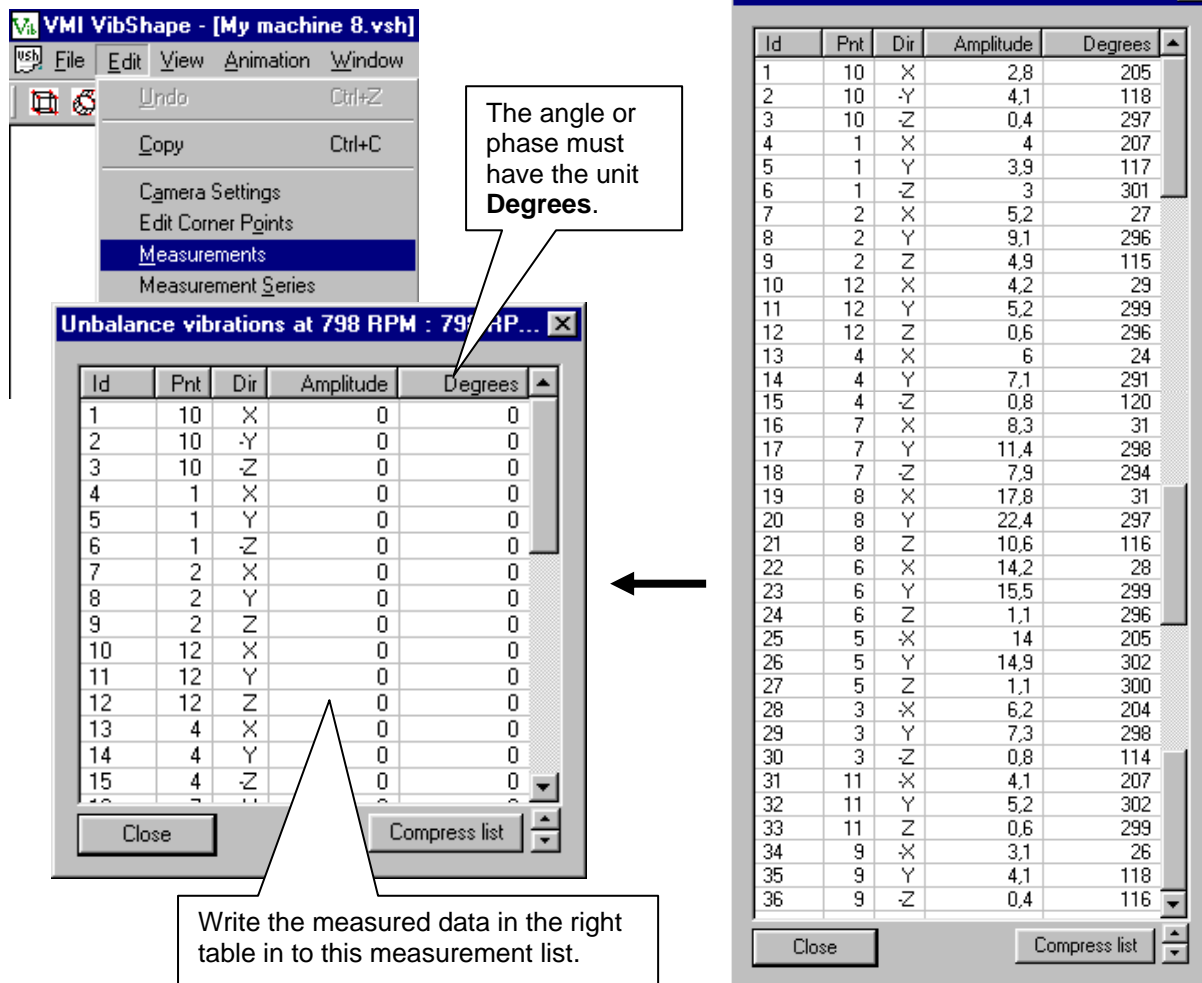
Make a printout of the model from different view angles and use this as a guide when you are measuring.

21 Entering the Vibration values

Click **Edit** and then **Measurement Series**.



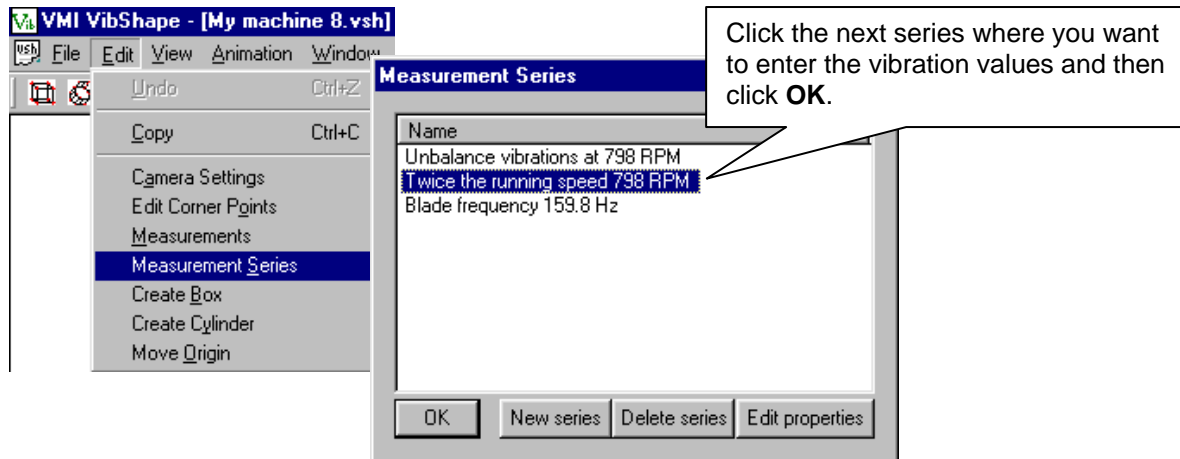
Click **Edit** once more and then **Measurements**.



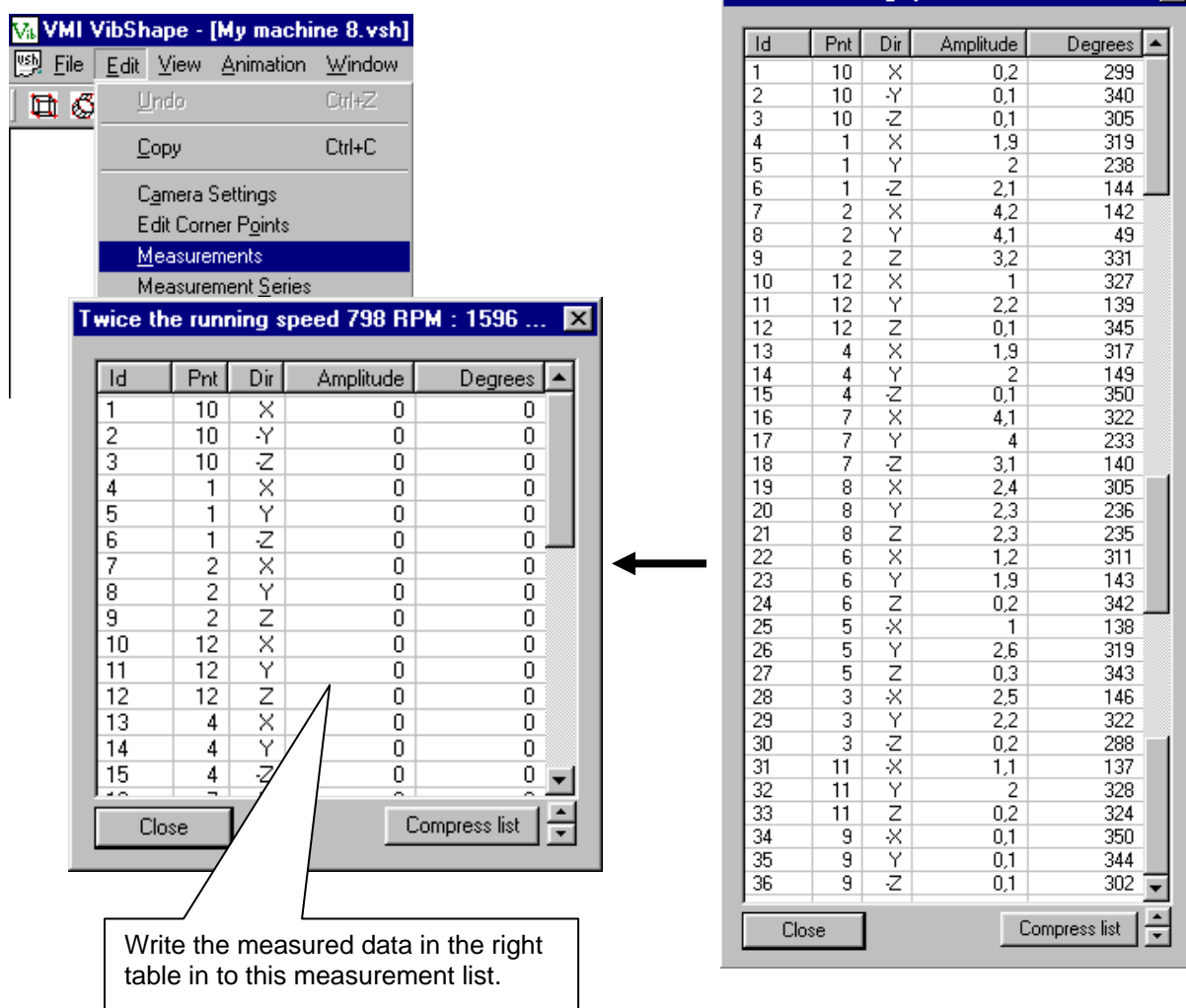
Note 1.

You can use any measurement unit for the amplitude as long as all amplitudes in the list has the same unit.

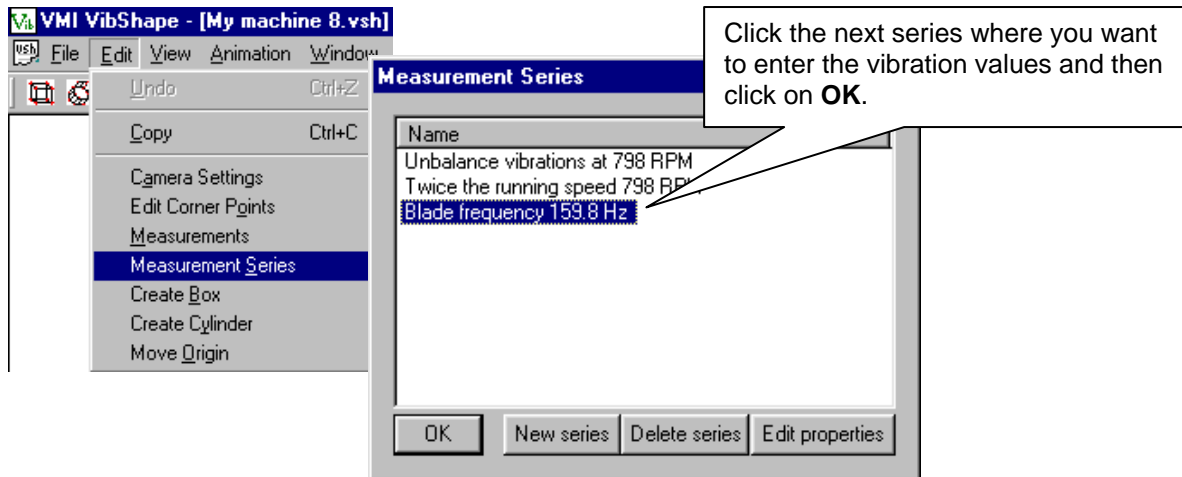
Click once again on **Edit** and then **Measurement Series**.



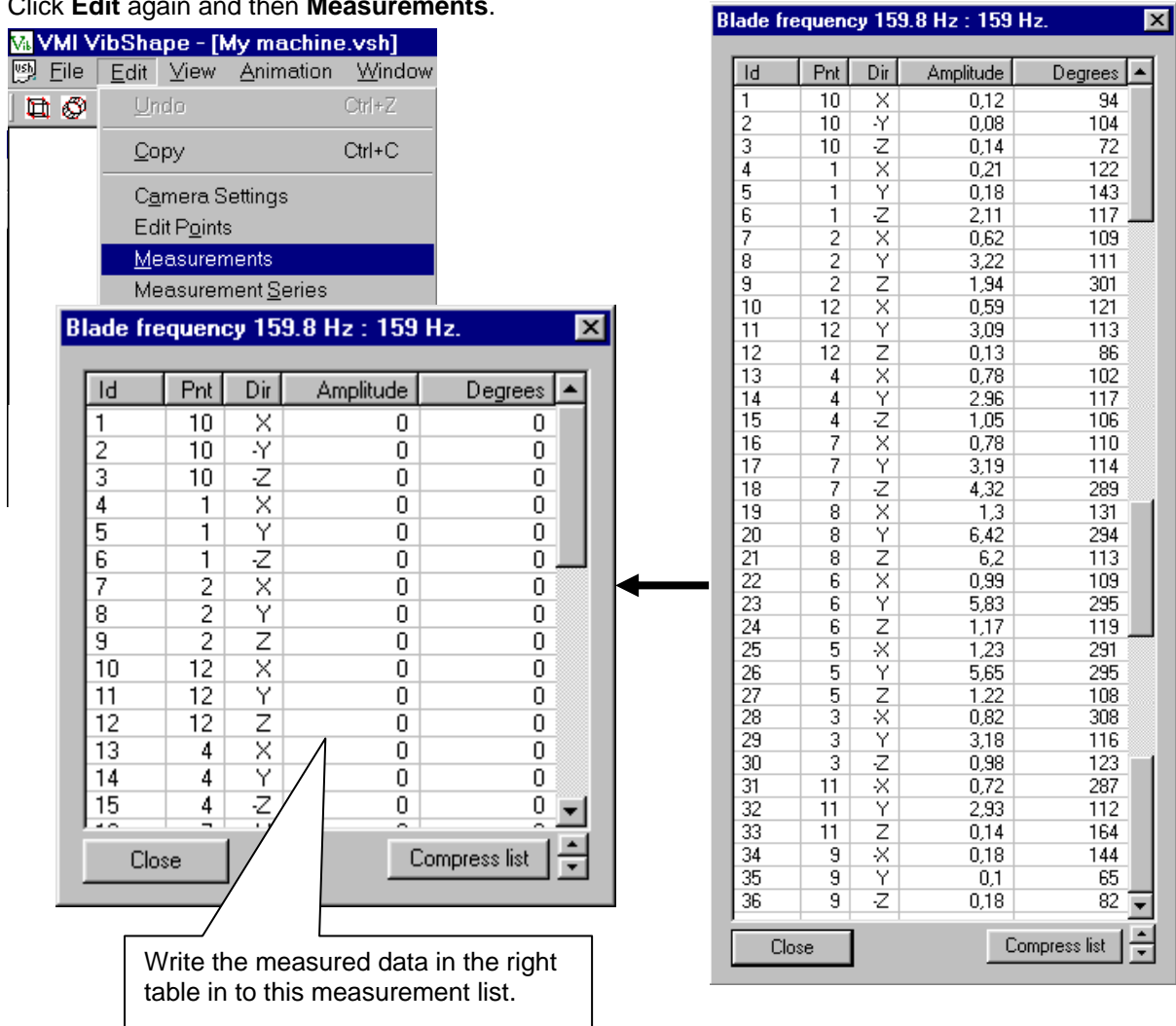
Click **Edit** again and then **Measurements**.



Click **Edit** once more and then **Measurements**.

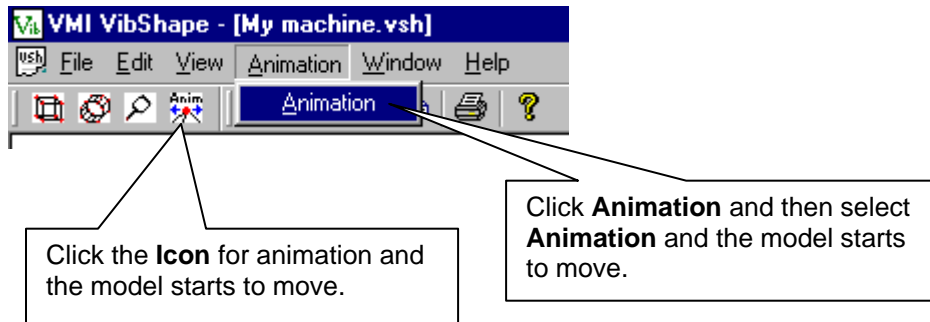


Click **Edit** again and then **Measurements**.

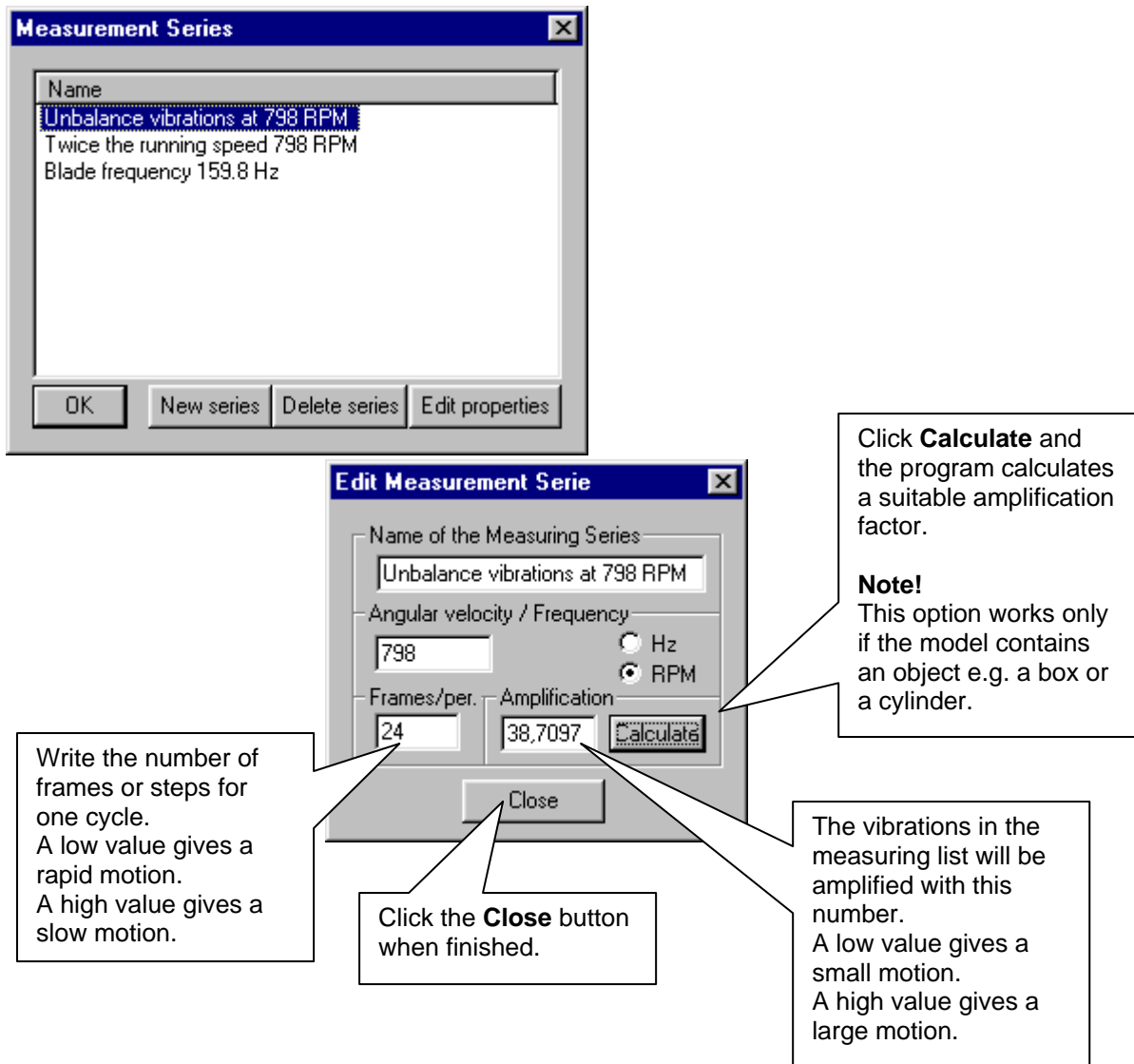


22 Animation

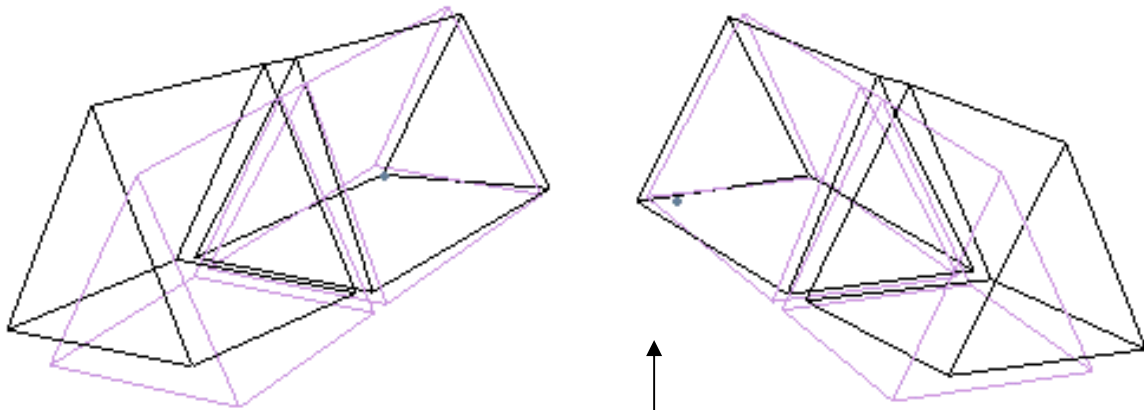
There are two ways to start the animation.



If the amplitude of the motion is too small or too large click **Edit** and select the **Measuring series**. Click the **Edit** button to activate the window **Edit Measurement Series**.



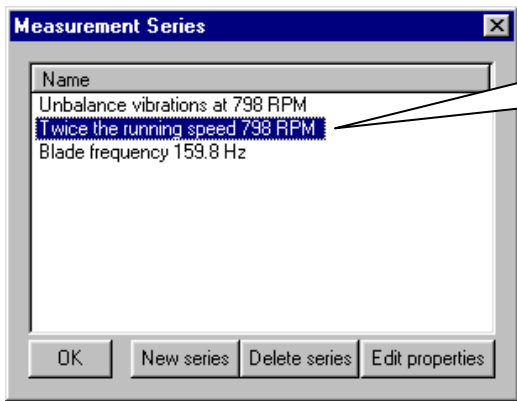
Viewing the object from different angles during animation.



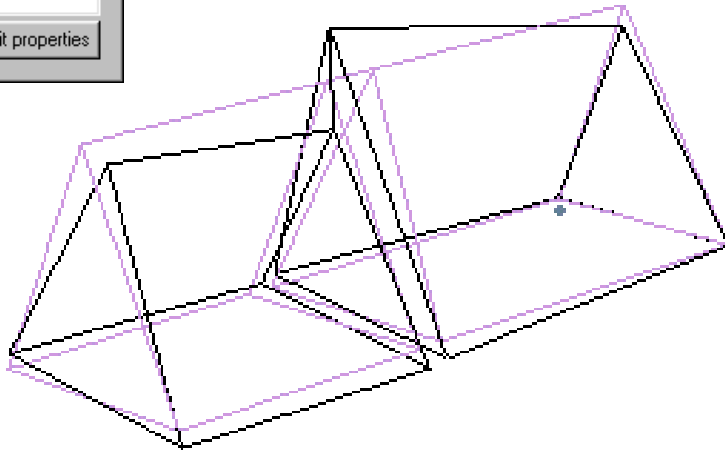
Put the mouse somewhere on the screen. Hold down the **Left mouse** button while you move the mouse sideways and figure will rotate horizontally.

Put the mouse somewhere on the screen. Hold down the **Left mouse** button while you move the mouse up and down and figure will rotate vertically.

Click **Edit** and select **Measurement Series**.



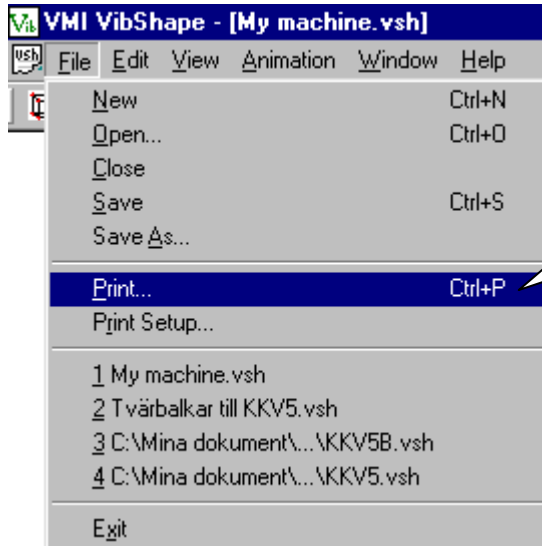
Click the next Measuring Series and then click somewhere outside the Measurement Series window and the figure will move according to the values in this list.
Do not close this window, it's a quick way to analyse the different modes of vibration.



23 Print and Copy an animated model

Printing

Select File and then Print and a bitmap picture of the model will be printed.



In animation mode
Click **Print** when the model is in the position you prefer.

Note!
Increase the number of frames in the **Edit Measurement Series** window if the motion is too fast.



A simpler way to get a printout is to click the **Printer Icon**.

In animation mode
Click the **Printer Icon** when the model is in the position you prefer.

Note!
Increase the number of frames in the **Edit Measurement Series** window if the motion is too fast.

Copy to Windows clipboard



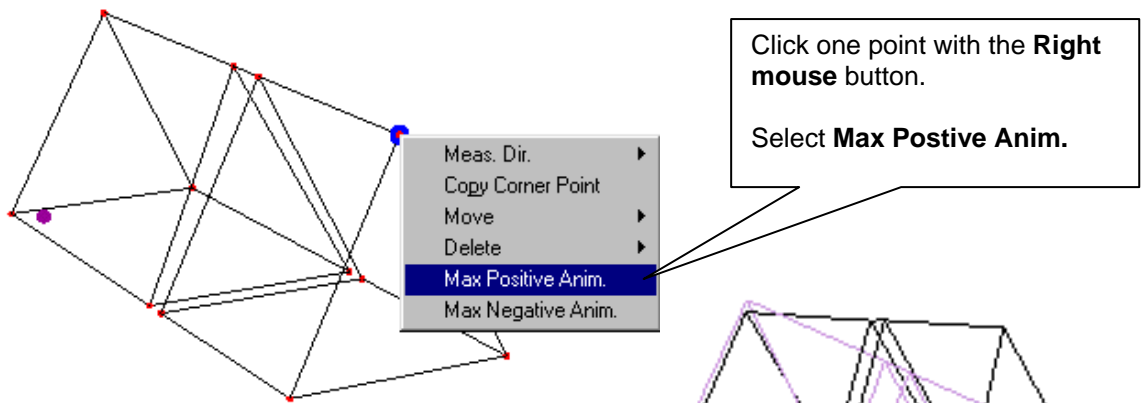
Click the **Copy Icon** and the picture is copied to the Windows clipboard.

In animation mode
Click the **Copy Icon** when the model is in the position you prefer.

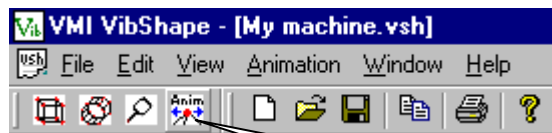
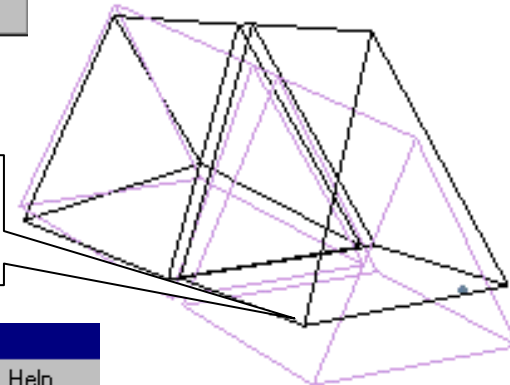
Note!
Increase the number of frames in the **Edit Measurement Series** window if the motion is too fast.

Copy the Max positive and negative motion

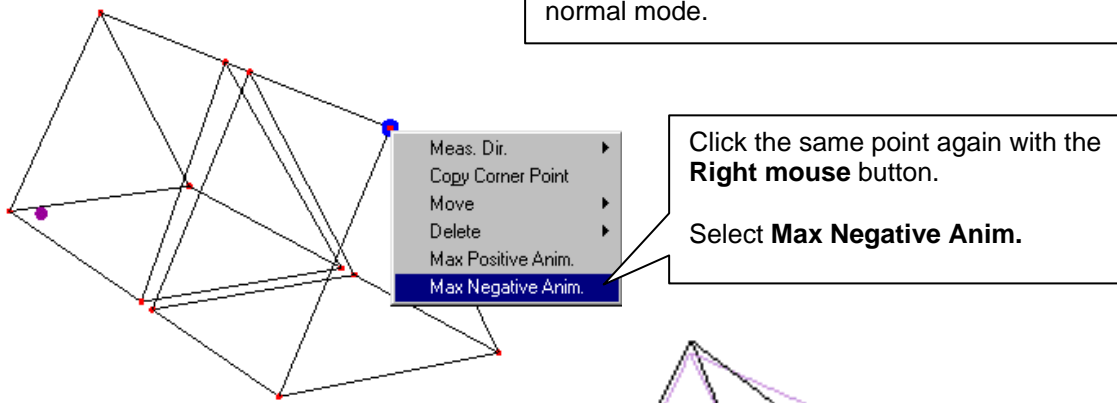
As a help with the documentation Vibshape has a built in function that calculates the maximum positive and negative motion and automatically stops the motion in that position.



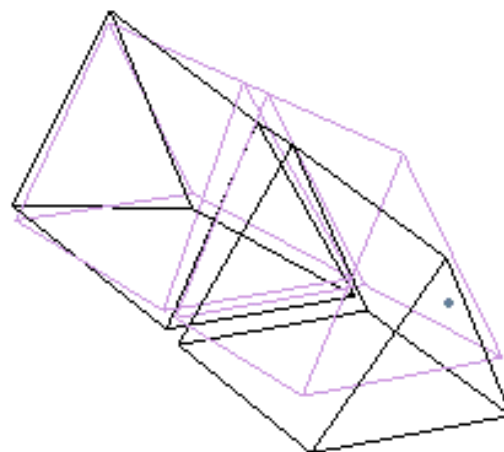
The model will automatically move to the max. **positive** deviation and stops in this position. Copy this picture to your report document.



Click the Animation button to de-activate the animation mode and our model will return to normal mode.



Note 1:
Use the Windows Paint program to cut and paste if you do not want to copy the whole window.



24 Some problems and solutions

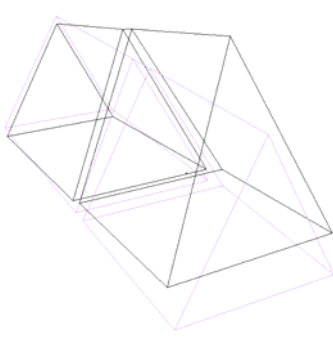
The background is black

Try to use a different screen setting. The settings High Color (16bit) should work.

The movements on the screen do not follow the mouse movements.

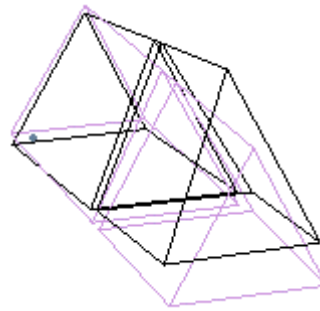
When you move the model sideways or up and down with **Ctrl + Right mouse** button it can happen that the model does not follow the mouse movements. This is due to the Graphic card in your computer. If this is unacceptable try to reduce the number pixels on the screen. Try with 800x600 or reduce the size of your active model window by grabbing one of the window corners with the mouse.

When I copy an animated model the lines for the normal position becomes unreadable.



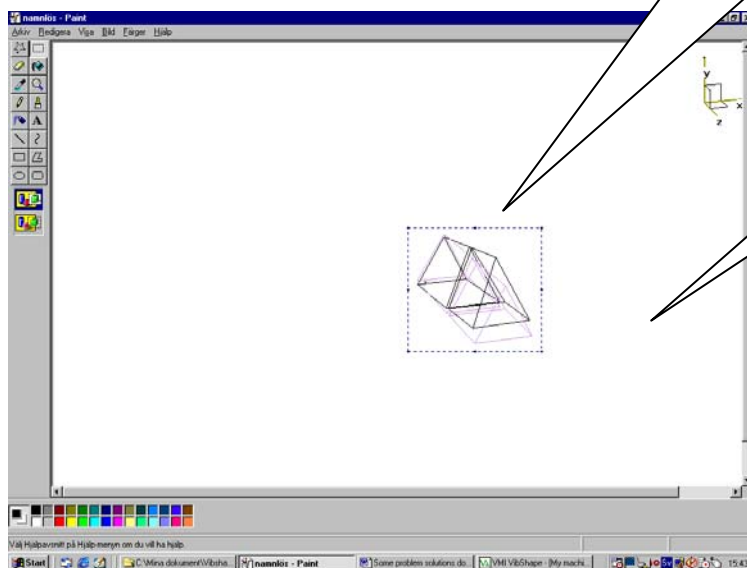
This model had maximum size in the Vibshape window before it was copied to this document.

The lines become very weak when the picture size is decreased.



This model had a small size in the Vibshape window before it was copied to the Windows Paint program.

Cut only the model from the window and the lines become more visible.



The **Windows Paint** program

How do I send an animated model to another person who doesn't have the Vibshape program?

Copy the vibshape.exe file together with your model files, ending with .vsh, and send it on a disk or by e-mail.

You are free to copy the vibshape.exe file because it will only run in demo mode. It is impossible to make new models without the protection key connected to the computer.

The wheel on the mouse does not work.

You must install the driver delivered together with the mouse. The standard Microsoft mouse driver will sometimes not support the wheel mouse.

The wheel on the mouse is occasionally not working, especially after I have opened a model.

Open the **Camera settings** window and increase or decrease the Zoom factor and the wheel on the mouse starts working.