


# Exercise: Jack

**Purpose** :create an animated sketch

## 1 Draw the jack diagram

- Create the diamond: Parallelogram cone 
- Add the 2 vertical lines; one above the diamond the other below by filling in the box **L** :at 20mm.
- Add the 3 horizontal lines

2 Dimension the height of the jack double click on the dimension and check the box: **Measure**(dimension resulting from a measurement, it is variable). It is in brackets.

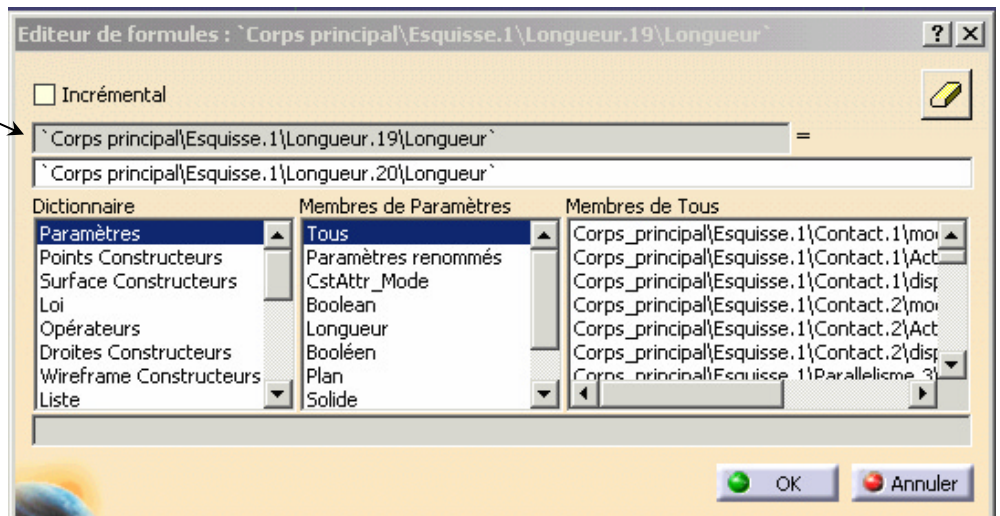
3 Put the dimension of 70 (length of the screw-nut system) and deactivate it; right click then expand the last line: **Object Distance.xx** , and **Disable**(inoperative).

4 Add the dimensions and then the relations between dimensions:

- Right-click on the dimension of the top vertical line, expand the last line: **Object length.xx** , to select **Edit formula**.The dimension of the top vertical line '**driving dimension**' will be equal to that of the bottom line '**driving dimension**'

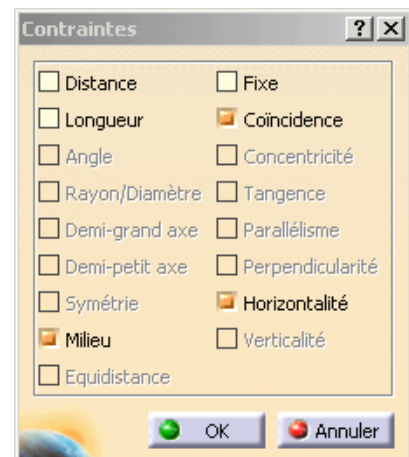
The driven dimension appears on the 1<sup>st</sup> timeline followed by =, on the 2<sup>nd</sup> line will appear the driving dimension. Click on the dimension which will be the driving dimension: here the dimension of 20 at the bottom. The symbol **f(x)** appears next to the dimension

**Remark** : optionally add operations +, /, \* and numbers or other dimensions to create a formula.



5 Complete the constraints by selecting the top horizontal line and the upper point of the top vertical line then add constraints and check: **Coincidence** and **Environment** so that the line is distributed symmetrically on both sides of the vertical line.

- Do the same with the bottom seat.
- Dimension the length of the sides of the diamond to 50mm so that it does not vary during the animation.
- Fix the bottom line which is the support on the ground: constraint **Fixed** checked.



## 6 Check operation manually by dragging a line.

The sketch animates and the height dimension changes.

## 7 Animate the sketch automatically:

- Reactivate 70mm dimension
- Select the dimension to animate here the dimension of 70 then the icon **Constraint Animation**:

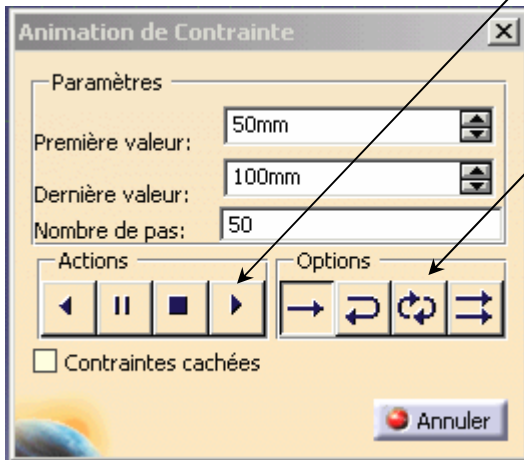


from the Constraint toolbar



The Constraint Animation dialog box appears. Enter the limit values 30 and 95 as well as the number of steps: 50.

- Animate the constraint by clicking on **Walking** then on **Loop**



**Once**: shows the animation only once.



**say again**: always in the same direction: from beginning to end.



**round trip**: shows the animation from the first to the last value then in reverse.



**loop**: shows the animation from the first value to the last value then in the opposite direction, continuously.

- Watch the evolution of the height measurement dimension.
- Change animation options: check or uncheck **Hidden constraints**

## Application

- Realize the diagram of a connecting rod crank system; use the shift 20mm function and the icon **Automatic Constraints**



to get the thickness. Select the angle value, i.e. 75

Click the Stress Animation icon



Indicate the maximum and minimum values of the constraint. For example, enter 0 and 360 degrees respectively

